

Electronics &  
**MUSIC Maker**

DECEMBER 1983 95p

INCORPORATING COMPUTER MUSICIAN

*Gary Numan*

**PSYCHIC TV**

**PHILIP  
GLASS**

Personal Keyboard  
Guide

Sky roadtest the DX7

**REVIEWS**

Prophet t8 Synthesiser  
Yamaha PC1000 Keyboard  
Gansbro AD-1 Echo  
Korg MM25 Monitor  
Decillionix DX1 Digital  
Sound Effects System

Christmas Greetings  
and  
Best Wishes  
for the New Year

# MC-202 MicroComposer by Roland



**“one of the hottest  
new products for 83!”**

- Basically the MicroComposer is in two parts. MicroComposer and Monophonic Synthesizer.
- The MicroComposer has two channel sequencers which can also programme accent and portamento.
- Total memory capacity: 2,600 notes
- Playback facility through built-in synthesizer with almost same features as the SH-101.
- Tape sync facility.
- Built-in cassette interface.
- Input facility by tapping or in real time.
- Liquid crystal display.

**Roland**

**Roland (UK) Ltd.,**  
Great West Trading Estate,  
983 Great West Road,  
Brentford, Middx. TW8 9DN.  
Telephone: 01-568 4578.

# BEWARE!

COMPARED WITH  
**CRUMAR**  
OTHER ELECTRIC  
PIANOS ARE LITTLE  
MORE THAN TOYS.



At some time you must have played around on a toy organ where only one note played at once, if you depressed more than one it was baffled. This is fine when you're learning and regard the black notes as something to keep away from, but no use to a musician.

Many manufacturers of electric pianos seem to treat professionals with nearly as much scorn. They only allow you to have eight or if they are feeling exceptionally generous twelve notes sounding at once.

This may not seem too much of a problem at first as you've only got ten fingers and thumbs to strike the keys with ...but the decay pattern of a note leaves it sounding on a diminishing intensity for many seconds after you first struck it, and think how many notes you play in as short a time as say five seconds. In a break, a string, easily thirty or forty.

On other manufacturers limited 8 note polyphonics, when you press the ninth note, it will cut out the natural decay of one of the other notes giving a thinner washed out sound. 12 note polyphonics are only 4 notes better...more than half the notes you play are still cut off early.

With Crumar you have total polyphonics, all the notes can play at the same time. This makes so much difference to the sound and what you can do with it.

Crumar as leader in electric piano technology, also give you true fully dynamic touch sensitive keyboards, programmability and more sound for your money.

*Make sure that you don't finish up with an expensive toy-  
Choose Crumar - the professional's choice.*

## CRUMAR BABY GRAND

A baby Baby Grand Piano, 46" wide and only 35" front to back. The Crumar Baby Grand has 12 presets of Piano, Electronic Piano and Synthesiser sounds. The Filter control gives you a dozen variations to the presets. The keyboard touch response is adjustable to fit your hands. A built in Tremolo and Detune feature let you make concert sounds from an elegant portable. It has a built-in amplifier (40 Watts R.M.S.) which gives enough power to play the Baby Grand on every occasion where outside amplification is not available, and it can also accommodate an external instrument, and even a microphone. It weighs about half of the weight of a large piano.

**SAVE  
£550**

R.R.P.  
£1799

**CHASE PRICE  
£1249**

### INTEREST FREE CREDIT

Deposit ..... £133  
12 Monthly Payments ..... £93  
TOTAL CREDIT PRICE ..... £1249

EQUIVALENT TO ONLY  
**£21.47**  
APPROX.  
PER WEEK  
FOR 52 WEEKS

### Also available CRUMAR DP 80



The DP 80 is a professional road Piano which offers six preset sounds and two modes that give you 12 sounds in all. Not only are the most popular Piano and Synthesiser sounds available, but the alteration of the Treble, Bass, Tremolo and Detuning let you find hundreds of possible treatments. A 7th preset selector represent a Free Mode, where you can access the two Filters and Sensitivity controls to make your own unique Piano or Synthesiser sounds. And if you want to change any of the presets, a trap door on the front panel will open to give you easy access to setting up your own bank of sounds. It is finished in a durable for the road material. A Baby Grand in a portable package.

R.R.P. £1300  
**CHASE PRICE  
£999**

**INTEREST FREE CREDIT**  
Deposit £111  
12 Monthly Payments £74  
TOTAL CREDIT PRICE £999

EQUIVALENT TO ONLY  
**£17.08**  
APPROX.  
PER WEEK  
FOR 52 WEEKS

### Plus

	R.R.P.	CHASE
CRUMAR DP30 PIANO	£1,000	£799
CRUMAR ROADY PIANO	£400	£299
CRUMAR ROADRUNNER	£300	£249

ALL AVAILABLE ON INTEREST FREE CREDIT!

# CHASE



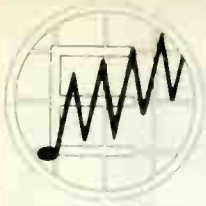
**LONDON** 22 Chalfon Street, off Euston Road, London NW1 Tel 01 387 7626 7449

**LEICESTER** Union Street, off High Street, Leicester LE1 4HA Tel 0533 59634

**MANCHESTER** 58 Oldham Street, off Piccadilly, Manchester M4 1LE Tel 061-236 67945

**BIRMINGHAM** 10 Priory Queensway, Birmingham, B4 6BS Tel 021 236 8146

OPENING HOURS Tues-Sat (inc.) 10.00am-5.30pm. Please note our stores are closed on Sunday and Monday. All goods subject to availability.



# Electronics & Music Maker

December 1983

Volume 3

Number 10

## SPECIAL FEATURES



**Gary Numan** .....16  
*One of the most successful, certainly the most consistent, of Britain's electronic musicians, Gary Numan has succeeded in taking his eclectic and compelling music into the mass market. Gary talks of his songwriting and recording techniques, his past career, and what he plans for the future.*

**Psychic TV** .....8  
*One of the strangest new groups of the 1980s, PTV have pioneered the use of the holophonic system of recording sound for their new album, 'Dreams Less Sweet'. Tim Oakes talks here to Genesis P Orridge, founder member of the band, about the new system and the mystique of PTV.*



**Philip Glass** .....22  
*Fashionably minimalistic, America's premier avant garde composer recently visited the UK for an all too brief concert tour. He has been cited by many international stars as one of their first influences, yet commercial success has eluded him. Dan Goldstein listens to what he has to say.*



**Steve Gray on the DX7** .....26  
*Sky's keyboardist was one of the first musicians to take the Yamaha DX7 on the road for the band's last tour, here he explains how it stood up to the rigours of the road.*



**Personal Keyboard Special** .....84  
*The art of packing high tech facilities into micro musical instruments is reaching a peak. We take a look at some of the latest innovations to emerge and a few that we can hope to see in 1984.*

**Industry Profile: MPC Electronics** .....62  
*Innovators of The Kit and the Music Percussion Computer, MPC explain their approach and hint at some new products to come.*

**Inkeys** .....90  
*A potted history of this popular electronic music cassette magazine, by its co-founder Dennis Emsley.*

## COMPUTER MUSICIAN

**Contents** .....65

**Rumblings** .....66  
*All the latest news and reviews on the computer scene.*

**Which Micro** .....68  
*Continuing the extensive guide to the many micros available.*



**Studio Focus** .....70  
*Durham University Electronic Music Studio.*

**Decillionix** .....74  
*An exciting sound-sampling effects generator.*



# contents

*Korg range, a home, stage or studio monitor with a myriad of capabilities.*

**Yamaha PC 1000** .....36  
*In conjunction with the Personal Keyboard Special, we examine one of the most advanced, and popular, of the new breed.*

**Carlsbro AD1 Echo** .....81  
*A new addition to the Carlsbro range, a robust and inexpensive stage echo machine.*

## PROJECTS



**Advanced Music Synthesis**.....54  
*Trigger, gate and clock pulses.*

**The Valve Driver**.....92  
*A valve overdrive simulator for guitar or keyboards.*

## NEWS

News & Events	.....5
Readers Letters	.....6
Subscriptions	.....55
Reader Survey	.....59
Back Issues	.....88
Classifieds	.....95
Advertisers Index	.....96

## REGULAR FEATURES

<b>Music Maker Equipment Scene</b>	.....14
<b>Videotek</b>	.....44
<i>The making of a rock video promo.</i>	
<b>Advanced Music Synthesis</b>	.....54



**Record Reviews**.....46/42  
*E&MM staff listen to some of the latest new releases – with an ear for a few stocking fillers.*

**Concert Reviews**.....52  
*Judie Tzuke, Tangerine Dream, Depeche Mode, Dio.*

**America**.....57  
*Latest equipment news from the States.*

**Cassette Review**.....82  
*Some more readers cassettes come under scrutiny.*

## INSTRUMENT REVIEWS

**Prophet T8**.....28  
*The new Sequential Circuits touch sensitive programmable poly synth.*

**Korg MM-25 Multi Monitor**..38  
*A powerful new addition to the*



**Publisher** Terry Day

**Director** Dennis Hill

### Editorial & Production

**Assistant Editor** Ian Gilby  
**Assistant Editor** Tim Oakes  
**Assistant Editor** Dan Goldstein  
**Consultant Editor** David Ellis  
**(Computer Musician)**  
**Art Editor** Pat Haylock  
**Secretary** Patricia McGrath  
**Mail Order/Subscriptions** Sonja Betts

### Consultants

**Electro-Music** Keith Emerson  
 Robert Moog  
 Hubert Bognermayr  
 Tony Bacon  
 Dave Crombie  
 Alan Townsend  
**Keyboard** Patrick Moraz  
 Rick Wakeman  
 Dave Bristow  
**Wind** Bruno Spoerri  
**Guitar** Peter Maydew  
**Percussion** Warren Cann  
**Organ** Ken Lenton-Smith  
**Stage Equipment** Ben Duncan  
**Projects** Paul Bird  
 Robert Penfold  
 Paul Williams  
 Jeff Macaulay

**Editorial Offices** Alexander House  
 1 Milton Road, Cambridge CB4 1UY  
 Tel: 0223 313722

**Advertisement Manager** Tony Halliday  
 Tel: 0223 313722

**Advertisements:** Graham Butterworth  
 Tel: 0223 313722

**Editorial and Advertising Offices**  
 Alexander House, 1 Milton Road  
 Cambridge CB4 1UY  
 Tel: 0223 313722

**Publishers** Glidecastle Publishing Ltd  
 Alexander House, 1 Milton Road  
 Cambridge CB4 1UY  
 Tel: 0223 313722

**Distribution Consultant** Jim Burns  
 Tel: 0223 313722

**Distributors** Punch Distributors Services  
 23-27 Tudor Street,  
 London EC4 70HR

**Printers** Thomas Reed Printers Ltd  
 (Sunderland and London)

**Typesetters** Sackville (Billericay)

### Copyright

All material is subject to world wide Copyright protection, and reproduction or imitation in whole or part is expressly forbidden. All reasonable care is taken to ensure accuracy in preparation of the magazine but Glidecastle Publishing Ltd cannot be held legally responsible for its contents. The Publishers cannot assume responsibility for the return of unsolicited manuscripts, photographs, artwork or projects. Permission to reproduce printed circuit board layouts commercially or marketing of kits must be sought from the Publisher.  
 © Copyright 1983 Glidecastle Publishing Ltd.



## Interface '84

George Orwell has a lot to answer for. His compelling, fearful look at 1984 casts a grim shadow over the rise of technology. Happily his dark views have not been completely realised, and the march of progress has brought some incredible new technology into the hands of musicians. The development of the digital recording techniques, computer music and MIDI bode extremely well for the future, allowing us greater freedom and flexibility in the writing and recording of music. This creative aspect is developing by the day and the only point is the failure to educate the new musicians so that they can make proper use of these new advances as compositional and recording tools. There must be a case for manufacturers to begin to turn their attention to educating the new musicians of tomorrow. Not only would this provide them with future consumers for their products, it would also generate a whole new world of design, communication and comment from an educational standpoint. The education systems of Europe have been long in penury, unable to meet the demand for knowledge into high-tech musical equipment. This is not solely a financial situation either – there simply are too few musicians/technologists/teachers to provide the courses.

The recent television series 'Rockschool' touched on this area, among its' capable and sensible looks at techniques, but this was a drop in the ocean. With the development, and popularity, of the video, we now have the potential for those few teachers to reach a massive audience, not only among individuals, but also in schools, colleges, universities and other public establishments. The question remains: Who will set the ball rolling? At any rough estimate, the production of, say, 5,000 video cassettes (and that is a conservative estimate) plus the pre and post production costs required, makes the whole idea uneconomic. But there must be a case here for the casting of bread upon the stagnant music waters of the 1980s. Correspondence on this would be especially welcome here at E&MM, and perhaps we can generate some sort of interest and interface between all the various factions involved.

## Reader Survey

Meanwhile, we must look to our own house. With tastes and fashions in music, equipment and, again, technology changing so fast, we'd like to know what you want and need from E&MM over the coming year (and beyond). To help us in this, we have printed a special Reader Survey. It is on pages 59/60. Please help us to help you by filling this in and returning it to us.

It only remains for all of us here at E&MM to wish you all a very Merry Christmas and a creative and prosperous New Year.



## KORG WORLD TOUR REPORT

Ronnie Scotts

The **Korg World Tour** is being undertaken by the Franklin brothers, Mike on keyboards and Tim on bass and effects, with special guest Korg endorsers from the countries visited. We caught the show at Ronnie Scotts, where **Rick Wakeman** and **Brian Chatton** (ex-Jackson Heights and the John Miles Band) joined in the proceedings.

Apparently the Franklin brothers run a recording studio and concert facility in Chicago and have worked with such big names as Stevie Wonder. It was a tape of their music (American Jazz-Rock) which was playing as people arrived. They began the proceedings with a 'perverted' version of Eleanor Rigby, Mike jumping between EPS-1 Piano/Strings, Polysix, Poly-61, Mono/Poly, and BX3 organ whilst controlling three KPR-77 Drum Machines, and Tim pinning it all down on a fretless Fender Precision. Mike then preceded to run through the merits of the range of keyboards he was

using, making particularly impressive noises with the touch sensitive strings of the EPS-1 and the lead sounds of the flexible Mono/Poly. This was followed by a session on the SAS-20 Personal Keyboard. Next it was the KPR-77 in the spotlight. Then over to Tim for a demo of the modular effects he was using finishing with a feature on the SDD 3000 Digital Delay, first half ended with a medley including pieces by Vangelis and the Human League. After a five-minute break, Brian

Chatton, dressed as an Errol Flynn-style buccaneer, came on to do a few numbers with the lads. The second piece, a virtuoso solo performance of one of the Brandenburg Concertos, was particularly impressive. The third, called 'Camel Pate' (a reference to eating experiences on the road) showed the Poly-61 as a good generator of percussive sounds.

Then it was Wakeman's turn, beginning with a medley from the 'Six Wives'. He was full of praise for Korg reliability re-

counting anecdotes of Brazilian torrential rain and conjugal strife to illustrate. Wakeman concentrated on the Trident, but also used the EPS-1, with odd snippets on BX-3 and Poly-61 and finished up with a high-speed rendition of 'Merlin the Magician'.

The whole event finished about 11 and all present left having had a good evening's entertainment as well as a new insight into the Korg range.

## Futuristic video

Future Music, who recently announced the opening of a new store at 202 New Kings Road, Fulham, London SW6, are also poised to open a new concept in video recording studios.

At their Chelmsford store (10 Baddow Road) they are modifying their existing 24 track recording studio to take a complete video recording and editing suite - giving complete capability for video tape production, including live and pre-recorded soundtracks.

Using a selection of cameras from JVC and Sony, plus two Sony editing and collation suite/recorders, Future Music are planning to extend the current music studio control room (above the video/recording studio itself and linked via cameras and monitors for visual communication, to allow for full lighting and sound capabilities - and a lot more space.

They have already started work on 'video demos' of equipment - a major innovation for both consumers wishing to view new instruments and for shops too small to cater for major 'roadshow' demonstrations - and will be available for musicians' own videos over the coming weeks.

Further information is available from Future Music, 10 Baddow Road, Chelmsford, Essex. Tel: (0245) 352490.

## MIDI

**Rose-Morris** have announced that early next year a retro-fit **Midi Kit** will be available for all **Korg Poly 61** models. This will enable musicians to interconnect synthesisers and computers, and all keyboard data, programme data, joystick data (both axis) and sustain pedal selection will be able to be transmitted or received by Midi.

The retro-fit package is to be welcomed, say Rose-Morris, since it keeps faith with the many current Poly 61 users allowing them to continue to own one of the top 6 voice synthesisers and not an obsolete version.

The kit will be simple to install but not a DIY exercise. Rose-Morris say the kit will only be available from Korg Key Centres when supplies become available. Rose-Morris also plan to keep a stock available of Poly 61 ready converted as an extra charge option, and again Korg Key Centres will advise the delivery time.

The price for the Rose-

Morris/Korg kit is yet to be announced but it is expected to be reasonable for such an important technical conversion.

## MUSICOM '83

Holiday Inn, Utrecht, Holland.

One of the first events of its kind this side of the Atlantic, Musicom was a celebration of the increasing union between electronic music and computer technology. It was organised by Felix Visser of the Synton organisation, who not only make the Syrinx synth (reviewed in *E&MM* June 83) but also distribute the Fairlight and 360 Systems (*E&MM* August 83). Besides these products, there were many other state-of-the-art electronic instruments present, including the Rhodes Chroma, the PPG Wavetern, the Alpha Syntauri, the Oberheim range, the Synthex and the Sequential Circuits range, with the first public European showing of the T-8. Budget-price synths were also well represented, with Roland, Korg and Yamaha much in evidence. Over the three days, more than 2,500 people visited the show, of which 1,800 were registered as serious visitors, and all this despite transport strikes and a Peace demonstration in The Hague.

## New music shops

In the centre of London, a new music shop going under the inspired name *Allbang and Strummit* just opened as *E&MM* went to press. Managed by Jon Gold and Mike Goode (both previously at the Rose Morris store in nearby Shaftesbury Avenue) the shop stocks Schecter, Aria, Washburn, Sigma, Ibanez, Kramer, Kawai among their guitars, and Ohm, Badger and Halkan amongst the amplifiers. Since they were so new, final detail of their keyboard ranges was yet to be finalised, but they already had a wide selection of Casio and Siel in stock. They will be opening a specialist Home Recording department in the near future.

*Allbang & Strummit* are at 22 Earlham Street, London WC2. Tel: 01-379 5142.

Music writer Dave Crombie has given up his journalistic direction to concentrate on opening a new keyboard and home recording shop in Ealing West London. The shop, *Chromatix* is due to open in Early December at 1, Oak Road, Ealing, London W5. No details of stocks were available at press time.

# Readers Letters

Send to: Readers' Letters, Electronics & Music Maker  
Alexander House, 1 Milton Road, Cambridge CB4 1UY

## Computer Psychology

Dear E&MM,

I thoroughly enjoy your magazine, combining as it does my four great interests: music, electronics, computing and (since very recently) psychology. One of the most exciting possibilities in this broad area is the use of the computer in music as more than a work-horse for composition and regurgitation of it's user's own music, as a composer in its own right.

Martin Glover's letter in your September issue touched on this, and I feel obliged to correct some of the distortions which it contained.

Firstly, in describing the computer as working "on the principle of being able to answer the question - is it yes or no?" he is correct, but only as correct as someone who says that people work on the principle of electrons spinning round or leaving a nucleus of neutrons and protons. While both are true, neither describes the machine at a useful level.

Described in such forms, the computer indeed seems unlikely to be able to create a piece of music. However it would then also seem unlikely to be able to simulate paranoia so accurately that psychiatrists cannot reliably distinguish between "computer paranoid" dialogue and human paranoid dialogue. This has in fact been achieved (and is by no means the most impressive feat of Artificial Intelligence), so Mr Glover's description of a computer's functioning should not be taken as any indication of what computers are potentially capable of.

Mr Glover neglects the fact that there is a level at which the human brain operates in exactly this yes/no manner. So in theory there is nothing that the human brain can do that the computer cannot. Linked with the greater memory capabilities of the latter, the potential is astounding.

Mr Glover's second oversimplification is in stating that "at no time is there any input from the computer which has not originated from the programmer." Again, this is no more true of a computer than it could be of a human being. The computer can not only re-assemble segments of music fed to it, but also rewrite its own programs to invent new ways of doing this, or even make critical judgements of its constructions by comparison with other pieces

of music or in response to listener reaction.

Even if one argues that any output from such a program is still originating from the programmer, then one would surely have to accept that the same is true of Mozart whose ability to compose 'unfolded' from his genetic make-up and its interaction with his musical and other experience, ie. simply on interaction of programming with input from outside.

In summary, it can be said that as there is no known mental function which cannot be simulated by a computer, it must be theoretically possible to produce a computer system capable of composing music. The problem in implementing such a system is twofold; the complexity of human music-composing procedures is manifest, and must be unravelled to be simulated; furthermore the amount of experience which such a system would have to accumulate (or be given as a package) in order to produce any music with 'feeling' is immense.

Clearly such a system is a long way off, but we must never lose sight of the possibility through reasons of ignorance or scepticism. Apart from straight composition, other possibilities exist; one which I've often found, amusing is that of a system which monitors listeners' mood changes via psychological measures and adapts its musical output accordingly to produce the ultimate in either mood-fitting or mood-shifting music!

Anyone interested in the possibilities of Artificial Intelligence would be well advised to read Margaret Boden's "Artificial Intelligence And Natural Man" (ISBN 0 85527 700 9).

Bob Leiser  
Department of Psychology  
University of Glasgow

## Kitting Up

Dear E&MM,

I am planning to buy an electronic drum kit that I can use primarily in a studio environment. It needs to be electronic because of the type of music I play, the recording aspect, and the neighbours!

My budget limit is around £600, and I wonder if you could tell me what is available under that sum. I don't really need a programmable kit as it will only be used for recording - so it

would be an unnecessary expense.

Many thanks for a great magazine.

P.M. Haze  
Beaconsfield  
Bucks.

*There are several types of kit that fall into this category - the mini kits and the full size drum kits. The first category covers the Mattel Synsonics Drums (around £110), The Kit (at £150 and the added advantage of the extra add-ons), and the M.P.C. (at around £599). The M.P.C. has the capability to interface with stage pads - which would allow you to build up a full system over a period of time - the extras would cost £299.*

*On the full kit side, your budget precludes the purchase of Simmons - but would allow for the new Klone Kit 2 from Honky Tonk - at about £499. (Reviewed in E&MM November 1983).*

## Drumming Dentist?

Dear Sirs,

I am in my final year of Dentistry at the University of Birmingham, and am preparing a dissertation on the role of Electronic Drums, comparing them with the role of the sound of real drums, in contemporary music.

I have used your magazine as a source for obtaining the names and addresses of manufacturers of Electronic Drums. Perhaps you could give me details or information on the Music Percussion Computer and any details of the new British products called the Desert Drums.

Yours faithfully,  
G.A. Evans,  
Llandudno, Gwynedd.

*Further info on the MPC is available from MPC Electronics Ltd, The Gables, Station Road, Willingham, Cambs CB4 5HG. Tel: 0954 60264. Desert Drums can be found at Atlantex Music, 1 Wallace Way, Hitchin, Herts. Tel: 0462 31513.*

## Great 'Syn'ths & PCBs

Dear Sirs,

I have recently constructed both the SYNTOM II and SYNBAL and have found them to be excellent in terms of sound quality and design. I would like to use them to form a large 'percussion' system but find that buying ready-made PCBs adds unnecessarily to the cost when I can perfectly adequately produce the boards

myself. Therefore I hope you can advise me whether E&MM would be prepared to supply foil patterns by mail order - at a nominal fee, of course.

On the same subject I see from the latest issue, October 1983, that another correspondent has written to highlight your practice of not printing foil patterns; a policy which I'm sure you are aware is out of step with all other electronics magazines (even Elektor recently succumbed to pressure and now prints foil patterns for direct use when producing PCBs).

I'm sure the sale of PCBs is not the mainstay of E&MM's finances, as in my experience E&MM sells out faster than any other magazine!

Yours sincerely,  
G.K. Prosser,  
Clapton, London.

*E&MM has no plans at this present stage to provide foil patterns for PCBs, even on a mail order basis. The reasoning behind this is simple: not enough people as yet have requested foil patterns, and due to the lack of space within the cramped project pages, we cannot afford to include them, as it would most certainly reduce the space normally allocated to our projects. All we can say is that if the trend does alter in favour of foil patterns, then we would reconsider our position.*

## Transpozer

Dear Sirs,

Some users of the E&MM Transpozer have experienced quantisation noise problems, which manifests itself on low frequency signals in the absence of any 'masking' high frequencies. Although this can at times sound rather like distortion, it is quite easy to remove (unlike distortion!). Tim Orr overcame the problem in his excellent E&MM Digital Delay by boosting high frequencies on the input, and attenuating them on the output. This pre-emphasis/de-emphasis solution could not, however, be applied to the Transpozer due to the spectrum shifting which takes place during transposition. In most cases, a little EQ'ing, or even a little treble control tweaking will solve the problem. A more complete answer though, would be to use the HSR Dynamic Noise Filter on the output, which will very effectively reduce the quantisation noise, while retaining the clarity of the signal.

Paul Williams  
Stevenage

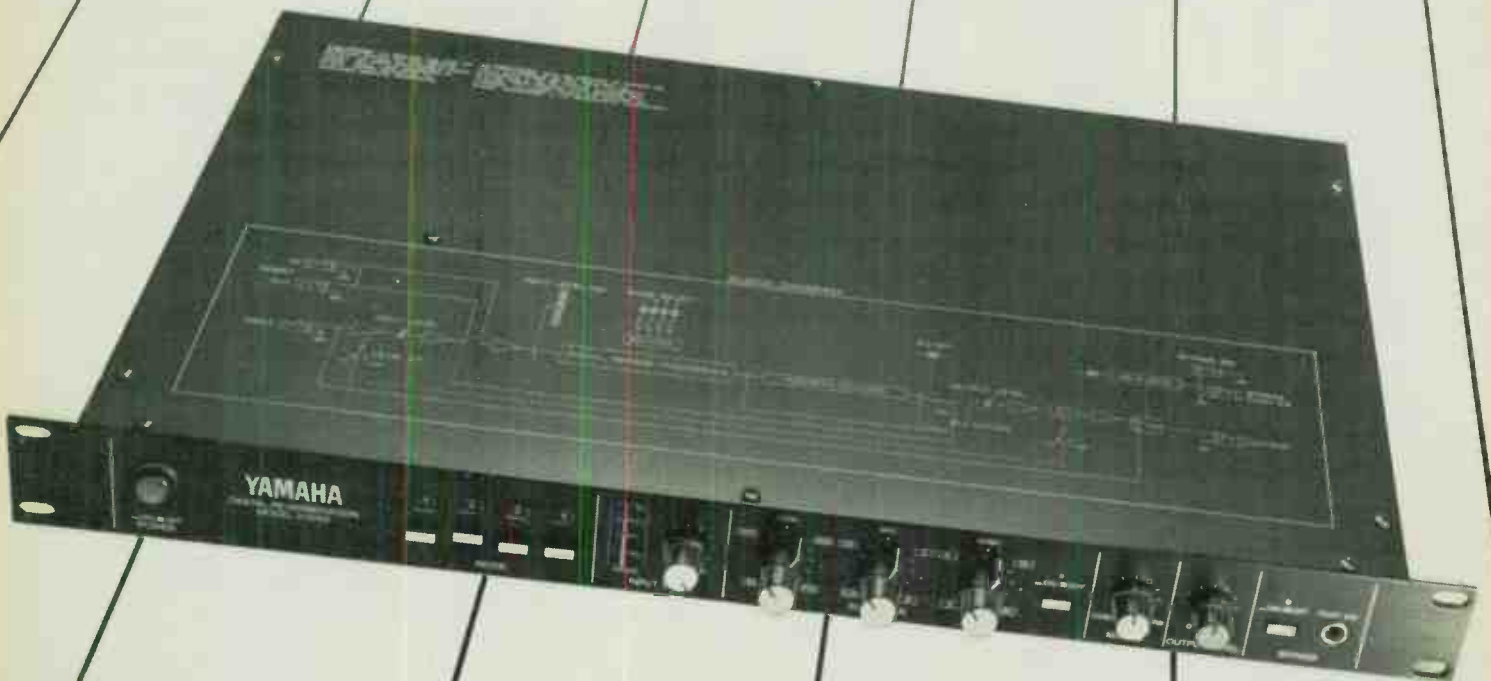


# YAMAHA'S R1000 DIGITAL REVERB

Digital reverb is accepted throughout the professional audio industry as representing the state of the art.

The R1000 brings digital performance to both the musician and the engineer, on stage and in the studio, for less than the cost of many spring devices.

It's pure fairy dust, and at £493.00 inc. VAT, it's going for a song

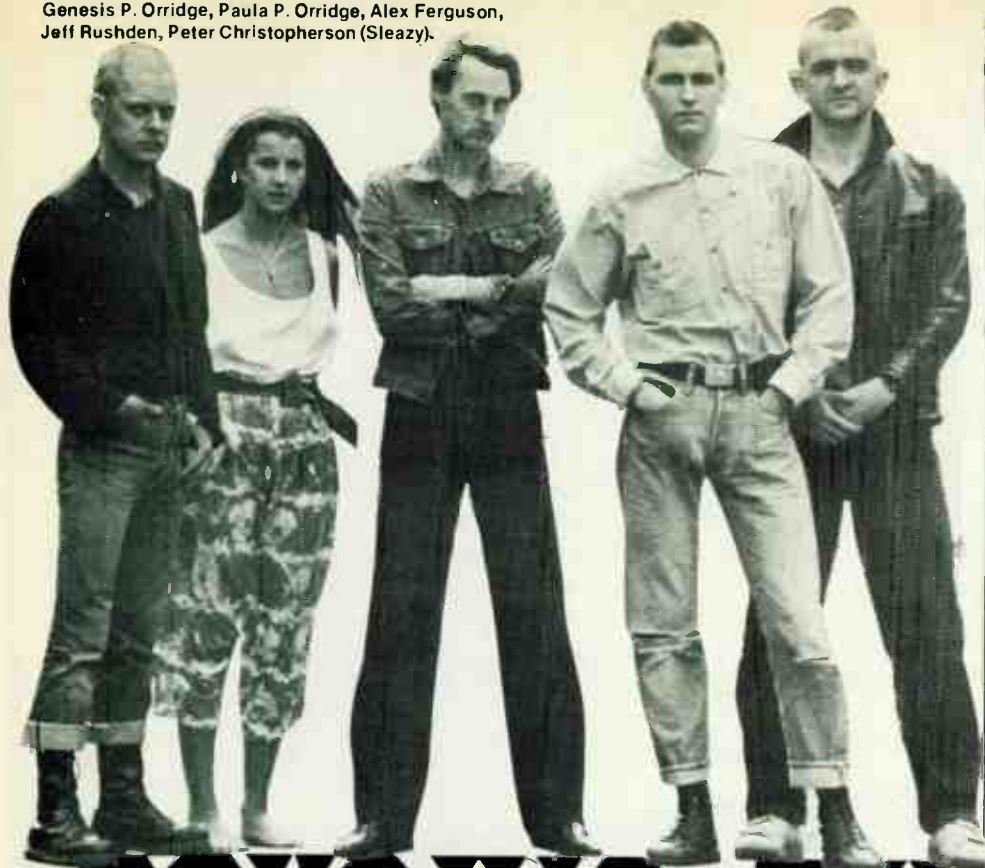


- 4 reverberation time presets.
- 3-band parametric equalisation.
- 75dB dynamic range.
- Front panel or footswitch bypass unit.
- Insert loop for additional signal processing.
- Direct/reverb mix control for in-line operation.
- Eq in/out switch with LED indication.
- Compact 19-in. rack mounting.



Yamaha Musical Instruments, Mount Avenue, Blotchley, Milton Keynes, Bucks, MK1 1JE  
Tel: (0908) 71771. 24 hour Ansaphone: (0908) 649222.

Genesis P. Orridge, Paula P. Orridge, Alex Ferguson, Jeff Rushden, Peter Christopherson (Sleazy).



# PSYCHIC TV

Through the contention, accusations of hype, critical panning, and general disbelief, Psychic TV have emerged as a powerful force in the music of the 1980s. Utilising the Holophonic sound technique, coupled to their own idiosyncratic blend of music, the band press on with their 'curious music'. Below, Genesis P. Orridge talks of the mythology of the band, the holophonics, and the creation of the tracks that became 'Dreams Less Sweet' their new album on Some Bizarre. Whatever is whispered, groaned or enthused about Psychic TV, one thing can be said – they are intriguing.

**W**e spent the time between Throbbing Gristle and Psychic TV working out whether we wanted to do anything more, and if so what. This became a long six months of talking. It was Alex who preempted Psychic TV existing, because he used to ring me up and say "Look you have to do something. just give me some lyrics and I'll work on them". He nagged at me for a while, so, basically to shut him up, I sent him some scribbled lyrics. He started work, and that became the basis of *Just Drifting* and *Stolen Kisses* and that formed the trigger for the whole thing happening.

If you are a member of Psychic TV there is one main requirement, and that is that you give the band 100%, 24 hours a day and you are prepared, if things took a wrong direction, like an ultra right-wing government, to go to prison to protect the right to speak and live as a member of the band. The dedication is the first order, the musicianship is the second. We spend a lot of time talking over the ideas and the theories that we want to project before we ever start. That was the reason behind the six months or so that we spent before the LP was actually started. We began by working out between us everything that was possible, we didn't discount

anything, anything from opera, through country and western to reggae, then we started to say that we would like to try. From this came a subsequent 'list' which was composed on the left hand side of all the things that we definitely wanted, and on the right all those things that we definitely wanted to avoid if at all possible. It was basically a sort of curiosity, 'what would an opera singer sound like with wolves' and that sort of thing. They dictated the form, and what was left from the list, after all the adding and subtracting, became the album.

The selection process for the tracks that finally appeared was very much an emotional thing. We recorded a lot more material than appeared on the album, and we went through all the material that we had, and took away that which didn't tell the listener anything new, or that the listener would not learn anything from. Other ones appear to come into a non-category due to the style, but it was the content that we were concerned with, and at times it was camouflaged.

We also had the problem of how much material can actually be placed onto an album. That was why there are more tracks on the cassette tape than on the record. For

us, it is the cassette that tells the full story, in the right order.

The cassette begins with Hymn 23. This was played on the church organ in Hampstead. In addition we recorded different notes sung by the opera singers and put them onto the Emulator, and then played the Emulator back as if it was a church choir. That is the reason behind the strange modulation behind the sound, that of human voices, but tuned like an organ.

Basically, side one is the seductive dogmas of society and this is what we consider to be the enemy. Then side 2 is our sort of world. So, the organ at the beginning of side 2 is the opposite of that on side one – he has a breakdown, and from there on in you are in our world that is rather more illogical and chaotic, but has a feeling and an energy that is lacking in the other world – which always ends in death.

There is the society of control on one side, and Eden – the uncorrupted world where man is still an instinctive animal, on the other.

## The Effects

Technologically 'Dreams Less Sweet' is the most advanced album ever released. Just on the level that it is the very first totally holophonic release, and we did not use a microphone at all. It is all on 24 track digital, and the recording was done on video cassettes, which were edited using video editing techniques. All the sound effects that are in there we recorded ourselves. A few examples: we went out with the head, Ringo, to a friend who trains champion attack dogs and recorded the growling of the dog as it attacked, for the gunshots we got a man who used to be the Sergeant At Arms in the Army base in Aldershot and who now works for a company called Bakti And Co (*sic*) who do all the gun sound effects for television. He came down with a case full of machine guns and the like. We had to get local Police permission to do the recording – basically to tell them that it wasn't an uprising. He ran around the fields around the studio, stalking and attacking Ringo and running past him, shooting him, and it was all taken down on the portable video recorder and later placed onto the main tapes. The coffin, and the sound of the burial was all for real. We actually dug a grave, we bought a real coffin from the undertakers in Farnham and placed Ringo in there and shovelled back the soil to give the recording of someone being buried.

The bonfire sounds were recorded in the field as well. It was the time that I nearly got killed. They didn't tell me that it was soaked in petrol. You can hear them saying 'Go on light the fire', we left that on, because the next moment I vanished into the flames. We had a video running at the time, recording visually, and I really was surrounded by the flames. Every time that I hear that bit I get a shiver, a chill. I didn't half move fast out of there! Then the scream that follows it is actually Alex Ferguson laughing – but tinged with nerves.

Because Ringo is actually a head, a lot of people think, through the language, that he is a dummy head. He is not. To explain; the sounds that we hear are not only through our ears, they are also through the head – the brain. The brain decides, when it has received the information, whether something is behind you or above or whatever. You don't actually have to move your ears or your head – you can close your eyes and 'see' where the sound is coming from. That is the brain process. Zuccarellis great contribution is that he has worked on the way that the brain interprets and processes the material that it is given. Ringo, then, is a real

skull. An actual human skull. Over that is a rubber skin and over that is real human hair. Below are a pair of polystyrene shoulders. This is realistic because sound travels through the ears, through the bones, and also through the skin. Ultimately, I suppose, Zuccarelli wants to build a body too. The problem here is building it without flesh. It has, for instance, to have lungs. This is so that we can reproduce the sounds of a very loud noise actually hitting the body.

The way that we found the Zuccarelli process was fairly round-about. We always use Ken Thomas as our engineer, simply because he seems to be the only engineer who can handle the way that we work. For the first half of our recording is very chaotic and it seems very illogical – there aren't a lot of bands who start their recording by buying coffins, digging graves, and hiring machine gunners . . .

So Ken just learned to go with the flow, and he trusts us. He is also the man who is responsible for turning the ideas that we have into actual studio technology and getting them into the project. He happened to know Mike King from years before, when they both worked at Advision, and Mike King is Hugo Zuccarelli's partner. So when the process was developed he took it to Ken and played it to him. He was working with us at the time on the *Forced Hand Of Chance*, and he came in saying "You guys should hear this, your going to love this, it is built for you" and we started work on our ideas for the process almost immediately.

## Holophonics

The process is quite complex, and being boffins they hate the way that I explain it, but for the man in the street, of which I am one as well, it can be explained like this: Like radar, or a bat. Ringo sends out a frequency, at seven cycles per second, and that fills up the space that it is in. It bounces off the room itself, the furniture, the people, the instruments, anything in fact that is within its air space. That goes through a box, the interference with the sound, and it transfers the sound that it is presented with to the tape. But as well as that, any sound or movement within the room is also an interference, then this also becomes part of the signal. It is like a 3D picture of the space that is around it – in sound. When you create another sound in that space then it becomes a 'piece' in the room.

This is then registered, as well as your own movements within the space. That is the theory, the difficult part of the whole process, and the part that we don't know, is how in fact that signal is then presented to the tape.

The thing that everyone is obsessed with is Ringo himself, the head. But all that he is, is a transmitter/receiver, sending out the signals and then sorting out the material that comes back.

I am not a technical expert on the system, but from what I've been told, and what I have overheard, there are no microphones involved in Ringo. It is like one of those Polaroid cameras that works out the distance and then takes the photo. This is the basis in logical terms to what Ringo does – but on a much more technical scale.

Everything on the album was recorded with Ringo, except for *Catalan* and *The Pack*, when we didn't have him. The wolves growling are actually holophonic, but they were fed into the Emulator. There is another album out in a limited edition of 1,000 copies that is just the wolves. Holophonic wolves through an Emulator. One side of the album is called *Trained To Kill* and the other side *Sexual*. It came about when we were recording *The Pack*, and a friend of ours Joy De Val

(sic) was there and loved the sound of the wolves. We set it up, and he made a master tape of two lots of twenty minutes – both sides. The album is called 'Music For Hashashin', under his project name of Vagina Dentata Organ. It is ambient, and I suppose our answer to 'Music For Airports'.

We hope that people will treat 'Dreams Less Sweet' as a mental experience. It has sections, but nothing is quite what it seems, in the same way that nothing in a dream or a fantasy film is quite what it seems. I thought that it could have turned out really alien, but as we worked on it I found that, because we didn't have to think about stereo or anything, it became easier to get an alien feeling without the content or the style having to change.

The beauty of the system is that it gives you freedom. Basically, freedom for your imagination. 'What would it be like if someone whispered right behind you, and then a mile away?' and you can do it. It isn't just the effect of that – it is real, you have to go a mile away and do it. What you hear on 'Dreams Less Sweet' is real.

Once you get used to the idea that you can do anything, and move around, you are then completely liberated and through that liberation you can start to experiment with it. You start to push against whatever boundaries present themselves. At one point we actually hung Ringo from the ceiling and swung him across the room. We sat him in the chair as if he was the listener – which he is of course – and we played and sang at him. Whatever happens to Ringo, or around Ringo, is exactly what you will hear. It makes life a lot simpler once you believe it, and realise quite what is happening.

Doing the vocals was much nicer than using a microphone. I stood there, and stroked his hair as I sang. When things got more aggressive I could shout at him.

The physical process is that the signals go to Ringo, then via two wires from him to The Box and then that goes into the tape. On the location work we used the Betamax portables and then transferred those signals onto the master. There was no mixing to do, all we had to do was set the levels. It gave us enormous freedom to go out and do some location recording, like going down 300 feet underground to record the drums in a cave. That would be overlaid with the sound of voices in a church, and the vocals done in a caravan . . .

What I don't know is to what extent the process is useful to other bands. I can't see people wanting to hear Kajagoogoo running around their head recording their basic bass lines . . . but there are a lot of musicians I can think of who might find it useful.

We did attempt to do some live recording with Ringo, but it was very hard. First we had to find a place in the room that was perfect for the recording and sit Ringo there. But because he is rather conspicuous the audience would all be going "Ooh what's this?!" – and that is all you would get from the tape. The other way of recording, while there was no one in the room, defeats the object – and also Ringo can 'feel' that the room is empty, that the seats are empty and that there really is no-one there. In theory you could get a very, very good idea of a live performance, but in practice you would either have to have a very well behaved audience, or string Ringo up in the air – which wouldn't be realistic. You can 'feel' through Ringo. For instance you can 'feel' when he is in the enclosed space of the coffin.

Alex said, after we had been recording, that we do treat him like a person, and that it

was very, well, comfortable, playing to him. But there are other reasons why we treat him as a real person. He goes to sleep at night for instance. He has a special box to 'sleep' in and gets his eight hours like the rest of us. He also likes to be warm, which is something that Hugo discovered.

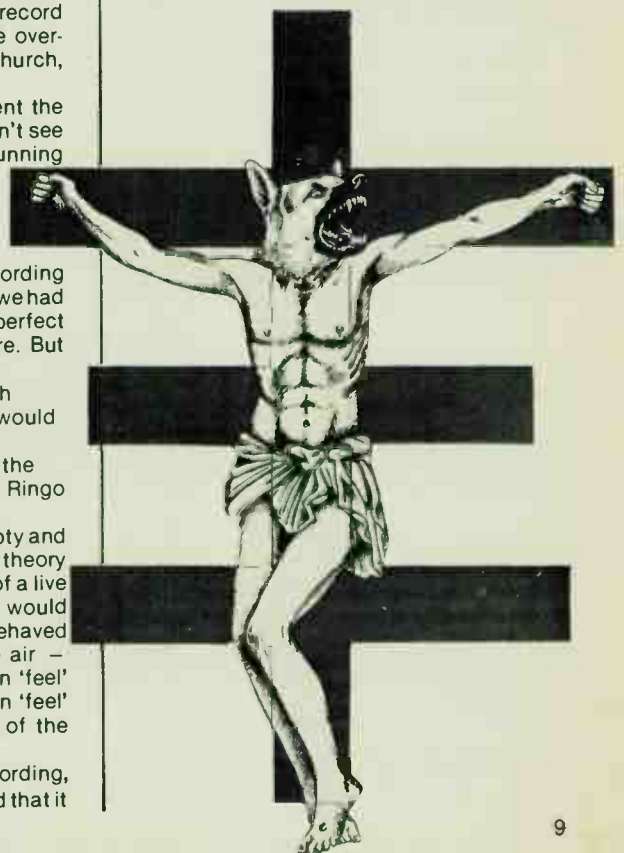
It has become the standard way that we record things, and when we were forced to go into a 'normal' 24 track studio it threw us completely. We had to come back after a week because we had forgotten about the mixing! And the stereo, and the positioning. In three weeks our entire attitude and technique of recording had been changed. We were trying to play to microphones like we did to Ringo and the sound was wrong, quite flat and 2D.

Apart from the Emulators and the like, the basic instruments that we used on the album were an old Burns Bass that I found. Someone had thrown it away. Alex hired an Ovation acoustic guitar, and the drums were from junk shops and second hand – but we fitted them with real skins. Alex also plays one of those short scale guitars, very tiny. Jeff uses the Stick bass in there as well.

## The Mimic

What we were aiming for was an overall sound, and not technical music. That was where the Stick bass came in, playing more intuitive drones than technical works. In addition we used a Mimic, the new unit, like an Emulator but samples a cassette. You can have a Walkman, or similar, with an album recorded onto it which could be anything from the John Barry Seven, the Crossroads theme, our old album, holophonic wolves – anything. It would play, and when you press the button it is that second of material that is fed into the machine. I suppose that you could plan it out and have, say, five minutes of one sound, the five of another and so on. But it is the random idea that appeals, almost spiteful in its quality.

I tried the Fairlight, but I find it really boring. I feel that there is too much technology there than the average person can deal with. I find that the Emulators are much much more versatile, the Fairlight is technology, but the Emulator is an instrument. The Emulator is like a synth should always



have been. The Fairlight is a Godzilla sort of thing — just a bit hard to handle.

It isn't that we are against technology as such — we used to use computers for sampling, in much the same way as the Fairlight, in the days of Throbbing Gristle, and I think that we may turn to computers again for the video switching, to get the visual programs right. But with the computers, I don't feel that they could be very useful to Psychic TV, they are a bit too academic. We like an element of chance and the computer doesn't have that, I suppose you could build in a program that allowed for it but . . . it is easier for the Mimic.

## PTV Live

The live performances that we are planning are very hard to describe. The closest to it on the album would be something like Eden. It sounds corny and clichéd, but it will be a bit like *Sister Ray* on overdrive — the element of TG at its worst.

It's going to be completely out to lunch — but organised, a very rhythmic feel, plenty of tuned percussion like tympani, with the addition of some holophonic material — again rhythm. You can't play through Ringo live, but what you can do is use pre-recorded tapes that have been made via Ringo. A normal PA is rather bad for the holophonics because it is split into horns, mid range and bass which defeats it to some extent. Holophonics is really more suited to things like Walkmen or even car stereos.

Eden really is the odd track out. It was recorded with us all just having a jam around Ringo. There was a rhythm tape fed in, which formed the basis, and then I listened through to try and find some pattern, and then wondered if it was manic

or melodious. Like sampling through your brain to gauge the structure.

I very much like the Emulator — it's the first time that I have really felt that I like a keyboard. It has no limits, your imagination can go as far as you want, and the only structure is the keys themselves. On *Ancient Lights*, the squealing noises there in the background are actually Tibetan thigh bone trumpets that were played into the Emulator.

Another effect that I think forms an important part of the whole album is the car sequence — where you hear a car going right over your head. This was done outside the studios where there was a manhole cover which was the sewer. We lifted out the lid, and, being small, I got volunteered to go in. I crawled in with Ringo and pushed the head above the level of the cover. They took it in turns to drive a car straight at me and I had to keep looking to make sure that he was close enough to the car. I had to be pulled out of there! The things you do for art.

## The Real

You have to learn to live with the real. A lot of musicians are so used to harmonisers, AMS, reverb and plate to make something wrong sound good. This way there is no chance 'later on' to make the rubbish sound good, you get what you get and have to live with it — unless you want to do it again. The possibilities of doing drop in's are slight — it is possible, but they would have to remember exactly where you were standing, make sure that nothing in the room had been moved, that sort of thing. The orchestral piece lost about 80% because someone went wrong somewhere.

I think that Roger Waters is planning to use the holophonics again on his next

album, he was very trepidant on the last LP with it, so now he is planning to do more. I think that he may be a bit more courageous because of what we have done.

We made a special point of making the album as varied as it possibly could be simply to confound those people who said that it was just going to be an album of sound effects. We always have used sound effects and we would have done that anyway, but we wanted to prove that the holophonics can be used for music. It has been an aid to us because it also keeps the mystery which is important to the band.

## Curious

Otherwise it's just music and we try to be one step ahead of the music. I think that people are patronised by too many musicians, and even more by too many record companies who live in the assumption that they will be happy with what they are given and will make do, and even that they don't want to be confused or stimulated. We take the view that people are incredibly curious and nosy. That's why they talk over the back fence and go into pubs and *talk*. That is what human nature is like. So if you take a private mythology — some would call it in-jokes, then you give it a quality that is the impression that there is more, deeper in, and that if they dig down they will discover more and more. If people ask of us in an interview "Why did you use that symbol?" then there is a reason for it — even though the reason may seem stupid to them. That doesn't matter, it is the fact that there is a reason behind it that will keep people curious and keep them digging into it to try and find some more. The whole of Psychic TV was planned.

Tim Oakes

E&MM

# Psychic TV

## Dreams Less Sweet

**D**isturbing wolves or mad dogs run across the floor towards you. Someone fires off a machine gun just behind you, while right in front of you the telephone rings. A car roars past with the horn blaring. Whispers in my left ear. I am in a coffin, the lid is closed; the soil rattles onto the lid. Claustrophobia. A cacophony of car horns in the distance.

Just a few lines from notes taken while listening to the album *Dreams Less Sweet*. And dramatic those sound effects are! Dreams less sweet . . . are nightmares.

What has clouded the opinions of many are the presence here of those holophonics. Utilised by the band to emphasise their music, they have, in fact, eclipsed the actual content. It is the music that is curious, not simply the effects, however revolutionary they may be. Their strange blend of insistent guitars, powerful percussion, and gentle vocals fulfil that need for a 'curious music' that transcends the ambient with a powerful generation of mental interest that beggars comparison. There are 22 tracks here, and all (bar one) are compelling to the listener. The musicianship and compositional skills expressed are undeniably some of the forces that will see us well into the 1980s, on a path that Psychic TV, almost single handed, have paved. The lyrics range from the eerie (the spine-tingling repetition of 'He Is The Father Of Fear, The Muscle Of Sin') to the disarmingly infantile ('Santa Claus Is Checking His List/Going Through It Twice/Seeing Who Is Naughty And Who Is Nice').

The first Psychic TV release, using 'Binaural Sound', made little impact, but *Dreams Less Sweet* is the clincher.

The actual sound of the instruments is superb. The acoustic guitar is crisp and clear, while the spatial dynamics of the church organ used sound like those of a cathedral! As mentioned before, however, the vocals are the most intriguing, ranging from a whisper (right in your ear if you wear headphones . . .) to a snarling roar. And all done with a realism that is astounding. The Emulator sounds are less successful, with a degree of 'otherness' when compared with the original acoustic recordings. This, perhaps, is a shortfall that cannot be overcome unless someone comes up with a 'thinking' Emulator that can subtly alter the basic sound to fit the environment.

But in a strange way, it works. The Emulator sound of the wolves growling has all the wrong acoustics. You hear wolves growl out in the open air, and to encounter them in an aural environment something like a living room is somewhat startling.

Thus a picture is built up by the band in subtle washes. The movement from track to track is hairline, while the overall impression is one of profound conceptualism — only without the concept — based on an idea of linking the listener to the material by curiosity. The investigation of the sublime and the wary study of the ridiculous.

It becomes hard to describe the style of the music here simply because it is new. Overtones of King Crimson are present with an edge of Souxsie. The vocals are sub-Jim Morrison and really tie together the various sections and temperaments the album expresses.

Juxtaposition is the paramount overview of *Dreams Less Sweet*, like wolves in the living room, and the music reflects this. The



subject matter is, to an extent, outwardly sincere, but the coupling of sinister forms to sweet and innocent lyrics creates an entirely new emotion.

But all this falls flat on its face for one track here — the malevolent soundtrack of 'In The Nursery'. The imagery fails, and the repetition of the words loses the listener's concentration.

But one minus point is overwhelmed by the verve and sophistication of the album: take a tip and listen on (good) headphones. Curious? You should be.

Tim Oakes

E&MM

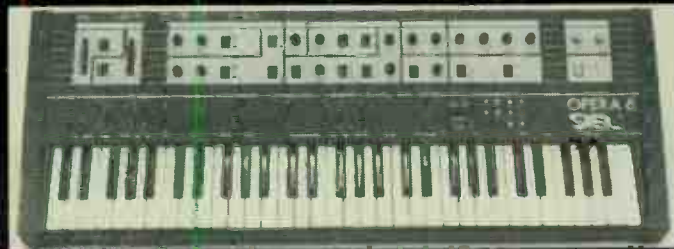
# Fill me with your sweet music

## SIEL®

6 VOICE POLYPHONIC SYNTHESIZER • TOUCH SENSITIVE DYNAMIC KEYBOARD  
100 PROGRAMMES WITH THE ABILITY TO MODIFY OR REPLACE WITH YOUR OWN SOUNDS  
MIDI COMPUTER INTERFACE • CASSETTE INTERFACE  
ALL CONTROLS ARE PROGRAMMABLE EXCEPT MASTER TUNE AND VOLUME

SIEL MIDI EQUIPPED OPERA 6 can be connected to any other MIDI equipped instrument giving you two different sounds simultaneously.

The SIEL MIDI is compatible with home computers for programme storage and multi keyboard orchestration



### LIST OF SIEL STOCKISTS

**ABBEY MUSIC LTD.**  
5/6 Market Place.  
Burton on Trent.  
Staffs.

**ACHILLE ROMA MUSIC.**  
456 Ashley Road.  
Parkstone.  
Poole.  
Dorset.

**AG LIB MUSIC.**  
184 Roxburgh Street.  
Greenock.

**ALLBANG & STRUMMIT**  
22 Earham Street.  
London.  
W.C.2.

**APPROXIMATE MUSIC LTD.**  
244 Ham Road.  
Worthing.  
West Sussex.  
BN11 2QJ.

**BEDFORD MUSICAL INDUSTRIES.**  
58 Midland Road.  
Bedford.

**BIRDS MUSIC CENTRE.**  
9 Sackville Road.  
Bexhill on Sea.  
Sussex.

**BIRMINGHAM BAND INSTRUMENT CO**  
27 Lynton Square.  
Perry Barr Shopping Centre.  
Birmingham.  
B42 1AT.

**BOOSEY & HAWKES LTD**  
295 Regent Street.  
London.  
W1R 8JH.

**PETER BROCKLEHURST ORGAN CENTRES LTD.**  
1 Kncwle Road.  
Mirfield.  
W. Yorks.

**CALDER MUSIC.**  
3 Main Street.  
Mid Calder.  
West Lothian.

**CAPITAL KEYBOARDS.**  
96 Morningside Road.  
Edinburgh.

**DON'T FRET MUSIC.**  
164 Main Street.  
Prestwick.  
Ayrshire.

**EDEN MUSIC.**  
78 Station Road.  
Ashington.  
Northumbria.

**WILLIAM FRANKS (PIANO & ORGANS) LTD.**  
73/75 Buchanan Street.  
Blackpool. Lancs.

**FRONTLINE MUSIC.**  
1 New Road.  
Ayr.

**SESSION MUSIC.**  
York Street.  
Belfast.

**PAUL GARVEY MUSIC.**  
20 Sidgate.  
Eldon Square.  
Newcastle on Tyne

**PETER GRAY**  
212a Wellingborough Road.  
Northampton.

**MESSRS GREENWOODS.**  
20 Guildhall Street.  
Preston.  
Lancs.

**GEOFF GOUGH MUSIC.**  
6 Gloucester Street.  
Leamington Spa.  
Warwick.

**GUITARZAN & BONGO BILL.**  
23/27 Middlesbrough Road.  
South Bank.  
Middlesbrough.  
Cleveland TS6 5NW.

**HAMERS MUSIC.**  
Oxford Road.  
Reading.  
Berkshire

**HESTAIR HOPE LTD.**  
St. Phillips Drive.  
Royton.  
Oldham OL2 6AG.

**IAN HOLMES.**  
5 Glasgow Road.  
Dumfries.

**J.S.G. MUSIC.**  
108B Main Street.  
Bingley.  
Yorks.

**ILFORD ORGAN CENTRE.**  
27 Centreway.  
High Road.  
Ilford.  
Essex.

**LONDON ROCK SHOP.**  
26 Chalk Farm Road.  
London N.W.1.

**LONG EATON ORGAN CENTRE.**  
167 High Road.  
Chilwell  
Nottingham.

**LOTHIAN ORGAN STUDIO.**  
43 North Street.  
Bo'ness.  
West Lothian.

**McCORMACKS.**  
33 Bath Street.  
Glasgow.

**BILLY McEWEN.**  
4 East Grey Street.  
Mauchline.  
Ayrshire.

**MANOR PARK ORGAN CENTRE.**  
447 High Street North.  
Manor Park.  
London E12.

**MID-SUSSEX MUSIC.**  
38 High Street.  
Crawley.

**MORLINGS LTD.**  
149-151 London Road.  
Lowestoft.  
Suffolk.

**ROSE MORRIS CAPITOL KEYBOARD CENTRE.**  
81/83 Shaftesbury Avenue.  
London W.1.

**MUSIC CITY.**  
58 Vicar Street.  
Falkirk.

**MUSIC IN WEMBLEY.**  
536 High Road.  
Wembley.  
Middx.

**MUSIC UNLIMITED.**  
176/177 Windmill Street.  
Gravesend.  
Kent DA12 4NP.

**MUSICAL EXCHANGES.**  
89a Old Snow Hill.  
Birmingham  
B4 6HX.

**MUSICAL SWOP SHOP.**  
627 Pollokshaw's Road.  
Glasgow

**MUSIOLAND.**  
148/152 North Road.  
Cardiff CF4 3BH.

**NORTHERN SOUNDS.**  
13 Oxford Street.  
Workington.

**ONE WAY MUSIC.**  
3 Windsor Arcade.  
Birmingham.

**ONE WAY MUSIC.**  
100 School Street.  
Wolverhampton.

**CLIFF OWEN MUSIC AND ELECTRIC.**  
8/10 Cameron Road.  
High Road.  
Sewen Kings.  
Ilford.  
Essex.

**PIPES MUSIC GALLERY.**  
809/811  
Tottenham Court Road.  
London.  
N17 8ER.

**RAE SOUND EQUIPMENT.**  
9/11 William Street.  
Cookstown.  
Northern Ireland.

**RAINBOW MUSIC.**  
251 & 255 Hawkhill.  
Dundee DD2 1DO.

**REIDY'S HOME OF MUSIC.**  
Penny Street.  
Blackburn.  
Lancs BB1 6HJ.

**ROADSHOW MUSIC.**  
46 Henderson Road.  
Bridge of Allan.  
Stirlingshire.

**SESSION MUSIC.**  
163 Mitcham Road.  
Totting.  
London.  
SW17 9PG

**SHEPPEY MUSIC.**  
187 High Street.  
Sheerness.  
Isle of Sheppey.

**HARDY SMITH MUSIC CENTRE.**  
2a Outram Street.  
Sutton in Ashfield.  
Nottingham.

**SOCODI MUSIC LTD.**  
9 The Friars  
Canterbury.  
Kent CT1 2AS

**SOUND ENGINEERING LTD.**  
King Street.  
St. Helier.  
Jersey.  
C.I.

**SOUND SENSATION.**  
166 London Road.  
Southend-on-Sea.  
Essex.

**SOUTHERN MUSIC.**  
40/41 Castle Street.  
Western Road.  
Brighton.  
Sussex.  
BN1 2HD.

**STAMFORD MUSIC SHOP**  
Cattlemarket Road.  
Peterborough.

**STAMFORD MUSIC SHOP.**  
11 St. Mary's Hill.  
Stamford.  
Lincs.

**TOWER MUSIC.**  
Topping Street.  
Blackpool.  
**BERT VEALE (MUSICAL) LTD.**  
8 New Street.  
Neath.  
West Glamorgan.

**JACK WHITE ORGANS.**  
9 Burling Street.  
Cambridge.

**MINNS AND CRANES MUSIC LTD.**  
57 Gevis Place. Bournemouth.

**Unit A4.**  
Brent Cross Shopping Centre.  
Brent Cross.

**The Arndale Centre.**  
Eastbourne.  
3 Alderman Judge Mall.  
Kingston.

13 Broadwalk.  
Broadmarsh Centre.  
Nottingham.

14 Cornwall Street.  
Plymouth.

18 Arndale Centre.  
Poole.

59 Butts Centre.  
Reading.

158 above Bar Street.  
Southampton.

114 Kenwyn Street.  
Truro.

87/91 Hanover Street.  
Liverpool.

19 Blackfriars Square.  
Worcester.

8 Old Bridge Street.  
Dyfed.

Haverfordwest  
57 St David's Centre.  
Cardiff.

(U.K.) Limited, Suffolk House, Massetts Road, Horley, Surrey RH6 7DT Tel: (029 34) 76153/4 Telex: 878119 WCALGW G



# GUITARS & BASS GUITARS

WE STOCK A SELECTION OF CAREFULLY PICKED MODELS:  
 FENDER/SQUIER: 57 (mn) and 62 (rn) Stratocasters  
 FENDER/SQUIER: 52 butterscotch Telecaster  
 FENDER/SQUIER: 57 (mn) and 62 (rn) Precision  
 FENDER/SQUIER: 62 jazz basses (sb, white, black)  
 FENDER STRATOCASTER: Standard USA model now in  
 IBANEZ NEW Roadster RS 1000 with tremolo arm  
 IBANEZ Musician 924 (fretted) 940 (fretless) bass  
 ARIA: a new tasty models from this enormous range  
 WESTONE: Thunder 1A Active bass outstanding value  
 WESTONE: Thunder & Concord budget basses from £119  
 WESTONE: Ralder senior guitars & basses  
 ROLAND: G-808 Neck thru body guitar synth £423  
 ROLAND: G-303 same shape as 808 fitted neck £349  
 ROLAND: G-303 left handed in stock £419  
 ROLAND: G-505 with trim blue red or sbst £365  
 ROLAND: G-202 net red or blue with case £259  
 ROLAND: GR-300 blue loop unit for all models £450  
 STEINBERGER: on demo for sale when available  
 STRATA BASS: NEW headless bass come and try it!  
 STRATA GUITAR: NEW and it's British  
 PLEASE SEE OUR WEEKLY ADS IN MELODY MAKER FOR DISCOUNT  
 PRICES AND CURRENT STOCK

TOKAI  
 VINTAGE  
 CLASSICS

## REBORN OLD TOKAI Electric Guitars

TOKAI: ST-50 54 vintage most colours w/ceroid  
 TOKAI: ST-55 64 older (rn) with tremolo arm  
 TOKAI: ST-60 80 100 models (only a few left)  
 TOKAI: TJB-45 64 basses - choice of colours  
 TOKAI: TPB P bass models - choice of colours  
 TOKAI: TE-50 rosewood or maple fingerboard  
 TOKAI: TE-70 edge bound body T middle  
 TOKAI: TE5-100 5 135 Dot semi ac case  
 TOKAI: TFV-70 Flying V replica - it's true  
 Don't be put off by the fact the numbers of these beautiful guitars they are  
 finally made replicas of the best ones that America can give you will be  
 disappointed! Most cases available for both guitars and basses only £49.00

# DRUM MACHINES

OUR  
 RRP PRICE

- BOSS: NEW DR-110 Dr. Rhythm (programmable) £118 £79
- BOSS: DR-55 Dr. Rhythm with trigger output £155 £69
- AMDEK: RMK-100 bass drum machine £70
- AMDEK: PK-100 percussion synth kit with pad £60
- AMDEK: HCK-100 Hand Clapper with pad £55
- JHS: DX-5 Pro rhythm mini drum synth £69
- SOUNDMASTER: SR-88 New! 88 keys £89
- YAMAHA: MR-10 preset with 10 pads £9
- YAMAHA: KP-10 10 pads with 10 triggers £59
- MATTEL: Synthesizer programmable pad control £149
- THE KIT: full mini sized kit with 10 pads £29
- KIT BASS DRUM PEDAL: with 10 pads £19
- THE TYMP: Tympani cord to be triggered from KIT £34
- SYNKIT: Synthesizer with 10 pads £189
- MPC SYNC TRACK: tape sync for bass drum £270
- ROLAND: TR-606 Drummer programmable £270
- ROLAND: TB-303 Bassline bass synth £389
- KORG: KK 55B 96 pattern preset rhythm unit £449
- KORG: KPR-77 programmable rhythm unit £350
- ROLAND: CR-5000C Computer drum synthesizer £455
- ROLAND: CR-800C Computer drum synthesizer £299
- ROLAND: PB-300 Programm Plus for HiFi bass drum £755
- ROLAND: TR-808 Rhythm Computer POA
- MUSIC PERCUSSION COMPUTER: KRC 6x Zeal £999
- ROBERHEIM: NEW DX Digital MXR: Digital Drums £1550
- ROBERHEIM: DMX digital drum unit £199
- ROBERHEIM: digital drum unit with DMX POA



# ELECTRIC PIANOS

OUR  
 RRP PRICE

- YAMAHA CP-80 Electric Grand £4299 POA
  - YAMAHA NEW/PF-15 88-note weighted piano keys £949
  - YAMAHA NEW/PF-10 76-note touch sensitive keyboard £749
  - YAMAHA CP-7 5 octave stretch or 4 speakers £369
  - KORG S80 5 octave with string ensemble £999 £799
  - KORGLP-10 portable built in speaker £349 £299
  - ROLAND NEW/HP-400 7 octave 88 keys piano £125
  - ROLAND NEW/HP-300 6 octave 88 keys piano £975
  - ROLAND NEW/PR-800 Digital MIDI HP piano £385
  - ROLAND NEW/PB-300 Rhythm Plus for HiFi piano £299
  - ROLAND HP-70 Piano Plus series 6 octave £650 £485
  - ROLAND HP-60 Piano Plus series 6 octave £525 £395
  - ROLAND EP-11 76 note auto tone rhythm £335 £275
  - ROLAND HP-30 76 note with 4 speakers £315 £235
  - ROLAND EP-8060 Dual voice piano £525 £365
- Please send 25p stamps for Roland Piano Plus brochure

# INCORP. COMPUMUSIC

# THE LONDON ROCK SHOP

26 CHALK FARM RD. LONDON NW1. ☎ 01-267-5381



## THE OBERHEIM SYNTHESIZER PERFORMANCE SYSTEM



**DMX: DIGITAL DRUM MACHINE**  
 Digitally recorded drum sounds, tape syncing, 50 song tracks each containing up to 255 sequences, 100 different sequences (max. 100 bars). Quantize mode auto-corrects up to 1/4th note interchangeable sound cards (choice of 21) please ring for stock and prices

OUR DIRECT IMPORT PRICE £1995



**DSX: 16 VOICE DIGITAL POLYSEQUENCER**  
 6,000 notes in 10 song sequences (each containing up to 10 layered tracks). 10 merges which parallel sequences. Tape syncing, loop, transpose & autocorrect. Interfaces with OB-XA, OB-X and OB-B. B extra CV/Gate outputs for other synths. Cassette program dump with monitoring

OUR DIRECT IMPORT PRICE £1395



**OB-8: 8-VOICE POLYPHONIC SYNTHESIZER**  
 120 memories, 12 split & 12 double memories, prog. split keyboard, Stereo output, intelligent prog. arpeggiator, dual LFOs, "Page 2" controls include inv. phase, e.p. lin., & matched portamento, glissando, 2 LFO envelope generators with inv. etc.

OUR DIRECT IMPORT PRICE £2995

### DX: DIGITAL DRUM MACHINE

New, lower priced model with the best budget digital drum sounds available £995

\*The Oberheim "State-of-the-Art" Performance System is unmatched by any other manufacturer

This incomparable composing set-up must be heard to be believed - it is simply quite superb

# AMPS, CABS & COMBOS

OUR  
 RRP PRICE

- ROLAND Cube 60 Keyboard (silver) £325.00 £225.00
- ROLAND Cube 40 Keyboard (silver) £249.00 £175.00
- ROLAND Cube 60 Chorus (grey) NEW £285.00 £199.00
- ROLAND Cube 40 Chorus (grey) NEW £240.00 £169.00
- ROLAND Cube 100 (orange) dual overdrive £399.00 £279.00
- ROLAND Cube 60 footswitch overdrive £270.00 £189.00
- ROLAND Cube 40 1x10 w. master volume £230.00 £159.00
- ROLAND Cube 20 w. master vol. + reverb £175.00 £122.50
- ROLAND Cube 60 Bass portable studio combo £299.00 £209.00
- ROLAND Spirit 50 Bass 50w 1x15 w. castors £269.00 £189.00
- ROLAND Spirit 30 Bass 30w 1x12 £205.00 £143.50
- ROLAND Spirit 15 Bass practice combo £149.00 £99.00
- ROLAND Spirit 50 w. reverb 50w 1x12 £250.00 £175.00
- ROLAND Spirit 30 w. reverb 30w 1x12 £199.00 £139.00
- ROLAND Spirit 10 w. master volume £99.00 £69.00
- ROLAND Jazz Chorus JC 50 1x12 £350.00 £245.00
- ROLAND Jazz Chorus JC 120 2x12 w. castors £665.00 £465.00
- ROLAND Bolt 30 1x12 valve over drive £345.00 £239.00
- ROLAND Bolt 60 1x12 valve over drive £449.00 £314.00
- ROLAND Bolt 100 1x12 Electro Voice speaker £725.00 £499.00
- CARLSBRO Cobra 90 keyboard combo 1x15 £288.77 £245.00
- CARLSBRO Hornet 45 kb d combo 2 ch + rev £199.64 £169.00
- CARLSBRO Hornet 45 bass combo 1x12 £165.77 £139.00
- CARLSBRO Cobra 90 bass combo 1x15 £237.07 £199.00
- SESSIONETTE 75w 2x10 combo 291.00
- SESSIONETTE 75w 1x12 combo inc. f. switch 265.00
- SESSIONETTE 100w 4x10 of 1x12 bass combo due mid Dec 195.00
- PEAVEY Basic 40 40w bass combo 259.00
- PEAVEY TKO 65 65w bass combo 335.00
- PEAVEY TNT 130 130w bass combo 525.00
- PEAVEY COMBO 300 210w bass combo 477.00

- PEAVEY CENTURION 100w bass 335.00
- PEAVEY DECADE 100w guitar 99.99
- PEAVEY BACKSTAGE 20w 1x10 reverb 155.00
- PEAVEY STUDIO PRO 40 40w 1x12 210.00
- PEAVEY BANDIT 65w 1x2 Scorpion speaker 292.50
- PEAVEY SPECIAL 130w 1x12 high powered 352.50
- PEAVEY CLASSIC 65w 2x12 Scorpion 449.00
- PEAVEY HERITAGE 130w 2x12 572.50
- PEAVEY 2x15 Black Widow 500w bass cab 410.00
- PEAVEY 1x15 bass cabinet 179.00
- PEAVEY 1B10 2x10 1x18 bass cab 382.50
- PEAVEY 3620 2x10 powered 210w cab 382.50
- PEAVEY KB-300 130w keyboard combo 1x15 425.00
- V-AMP VA-10K budget keyboard practice amp 71.76
- V-AMP VA-30K 30watt keyboard cab 141.68
- V-AMP VA-60K 60watt keyboard cab 171.12

Above is only a selection of our range of amplification; we also carry the complete TRACE ELLIOT range in our London store.

# BOSS EFFECTS UNITS

- NEW BOSS ITEMS:**
- DE-200: Rock mounting digital delay with 100dB return, max. delay 1.500 m. unique sampling trigger input £350
  - HAS: Play Bus "Rockman" type headless amp and distortion effects with 50w bass with headphones and head set monitoring £175
  - FULL COLOUR BOSS CATALOGUE WITH DESCRIPTIONS OF ALL UNITS - Please send 25p in stamps to cover postage costs.

# AMDEK KIT EFFECTS UNITS

- \*AMDEK KIT EFFECTS UNITS: with step by step guide with notes
- NEW MODELS: HCK-100 Hand Clapper with 100 Triggers £60.00
  - OCK-100 Octave (1 and 2 octave down) £60.00
  - DMK-200 Arpeggio delay 20-2000ms. 6000 £11.00

INSTANT CREDIT UP TO £1,000 AVAILABLE TO CREDIT CARD HOLDERS (APR 33.2%) Written details upon request

Please send me the following items: \_\_\_\_\_

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

I enclose £ \_\_\_\_\_ which includes £ \_\_\_\_\_ for post and packing.

Please ring for p&p charges and allow 28 days for cheque clearance and delivery. Credit card sales sent next day. We accept Access, Barclaycard, Eurocheques and part-exchange by arrangement.

**THE LONDON ROCK SHOP**  
 26 Chalk Farm Road, London NW1  
 TEL: 01-267 5381/7851 (OPEN 7 DAYS A WEEK)  
 7, Union Street, Bristol, Avon  
 TEL: 0272 276 944 (MON-SAT 10.00-18.00 hrs.)

WE GIVE SOUND ADVICE AT A BETTER PRICE



# MUSIC MAKER EQUIPMENT SCENE

Following many, many years of manufacturing turntables, hifi systems, record players and the like, Dual have introduced their first truly portable product – the PCP1 Autoreverse personal cassette player with Dolby B and stereo.

As well as featuring the two important facilities of Dobby B and Autoreverse, Dual's PCP1 has metal tape capability, two headphone sockets for companionable listening and a mute switch to facilitate conversation. The autoreverse can be set to reverse once or to play continuously. The PCP1 is styled and finished in khaki and dark brown. Its power comes from four pen cells providing long life and more hours of listening pleasure.

With a recommended retail price of only £69.95 Dual's PCP1 comes complete with carrying case, strap and a pair of miniature folding headphones.

Hayden Laboratories Limited, Hayden House, Chiltern Hill, Chalfont St Peter, Bucks SL9 9UG. Telephone: (0753) 888447.

As the latest addition to its product range, Rank Strand Sound have now been appointed by MB Electronic GmbH of West Germany as exclusive UK distributors for their microphones and accessories.

The range falls broadly into two categories, dynamic and electret, and these microphones are aimed at the live music and home recording markets.

The consider microphones available either by components or in mono or stereo sets are for more professional live applications and studio use. A choice of capsules for different configurations plus unique accessories such as a "Jecklin disc" for stereo recording, attenuators etc, are offered to suit a variety of requirements.

A wide range of stands and adaptors completes the range and all products are precision built to the high standard traditionally expected from a German manufacturer.

For further details and prices, contact Rank Strand Sound, P.O. Box 51, Great West Road, Brentford, Middx. TW8 9HR. Tel: (01) 568 9222.

Atlantex Music Ltd., UK distributors for MXR Innovations, have announced that the National Aeronautics and Space Administration (NASA), in Houston, USA, has installed a

MXR Digital Time Delay Model 175 in its ground based space shuttle communication control centre.

It will be used as an important part of the communications system for synchronising the Video and Audio communications received from the Astronauts during space flight.

A powered mixer, the first in the UK to provide sophisticated console level standards in a portable system, has been introduced by Toa Electronics Limited.

Combining easy operation and installation with a tough hard-wearing design the MX-106 can be used in even the most demanding live performances.

The lightweight six input channel system, which costs £590, featuring a special graphics equaliser that tailors sound and quality levels to meet various different requirements. The internal power amplifier is rated at 120 watts into 8 ohms, 200 into 4, and 300 into a 2 ohm load.

Other facilities include auxiliary input controls, an analog echo delay and fluorescent high intensity bar graph output meters.

Toa Electronics Limited is the new independent UK division of the multinational Toa sound and communications empire which has been involved with voice communication technology for 40 years. For further information contact Toa Electronics Limited, P.O. Box 82, Castle Street, Ongar, Essex. Telephone 0277-364333.

A joint-venture company is in the process of being formed to

distribute Nakamichi products in the United Kingdom and Eire. The new company, which will have an equal shareholding by B&W Loudspeakers and Nakamichi Corporation, will be fully operational with effect from 1st January 1984.

In the interim period, B&W Loudspeakers (U.K. Sales) Ltd. will assume responsibility for all sales and service in the U.K. on behalf of the Nakamichi Corporation.

Nakamichi already successfully distribute B&W products in Japan, and this new joint-venture company in the U.K. will enhance two complementary manufacturers in the audio field.

For further information from B&W Loudspeakers (U.K. Sales) Ltd., Meadow Road, Worthing, West Sussex BN11 2RX. Telephone: (0903) 205303. Telex: 87342 Monex G.

Service: B&W Loudspeakers (U.K. Sales) Ltd., Elm Grove Lane, Steyning, West Sussex. Telephone: (0903) 815919.

A new portable stage speaker system has been introduced by Electro-Voice, the Stage 200. It is a constant directivity speaker system suited to any environment in which you are looking for a discreet sound source of high quality. It can also be used for stage monitoring applications.

Housed in a black moulded plastic cabinet with a grey grille, the 16-Kg, 38 x 61 x 22 cm w/h/d system is capable of reproducing sound pressure levels of 120dB at 1 metre on axis. The S-200 provides a well-defined 100° horizontal and vertical coverage zone of acoustic

output in the critical range from 500 to 10,000 Hz. The result is a uniform audience without hot spots or dead zones at certain frequencies.

The S-200 is equipped with a high-output version of EV's Super-Dome tweeter coupled to a high-frequency section is made of the newly developed EVM Pro-Line 12S which, thanks to new heat-resistance voice coil materials and proprietary manufacturing techniques, can handle and incredible 300 watts continuous power (per EIA Standard RS-426). The computer designed woofer and optimally-vented enclosure make for a combination of compactness, extended bass and high-frequency response and low distortion that is unsurpassed by any other speaker system of this size, the manufacturer claims.

The system's crossover network is a 12dB/octave dual section type with crossover point at 2,000 Hz.

The S-200 can be used with or without an external equaliser. Without it the frequency response ranges from 90 to 18,000 Hz +3dB, making the system suited to many applications. The optional active equaliser expands the bass response to 50 Hz. A third equalisation possibility exists: that of switching the speaker to the high-output mode without the active equaliser, which permits the use of the S-200 as a highly efficient floor monitor.

Further information from: Shuttle Sound, Unit 15, Osiers Estate, Osiers Road, London SW18 1EJ. Tel: 01-871 0966. Telex: 27670 Shutso G.





# MUSICAL DISCOUNT WAREHOUSE

# HOBBS MUSIC

## CASIO MAGIC AT MAGIC PRICES "WE'RE THE CASIO KIDS!"



**CT 1000P**  
This 5 octave polyphonic digital keyboard is in a class of its own – 1000 sounds available by numerical combinations of **feet, envelope and modulation.** Programmable arpeggios and built-in sequencer (The nearest you will get to a poly synth at the price).

**CASIO®**



**DT 30**  
Automatic chords/harmonys – 8 sounds – 18 rhythms. Easy memory system – data display – tape interface option.

**CASIO®**



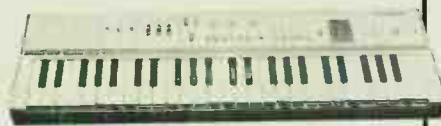
**PT 50**  
The latest in the P.T. range with Rom pack memory.

**CASIO®**



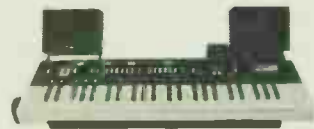
**MT 41**  
22 preset sounds – 6 auto-rhythms/bass patterns – 8 note polyphonic.

**CASIO®**



**MT 65**  
20 pre-set sounds – 12 auto rhythms/bass and arpeggios – 8 note polyphonic – 2 types of modulation effects (the most versatile of the M.T. range musically).

**CASIO®**



**MT 800**  
The latest and most sophisticated in the M.T. range with stereo sound and external speakers – a Rom park memory system makes this exciting keyboard easy to learn.

**CASIO®**



**CT 7000**  
Full size keyboard – 5 octaves stereo – 20 sounds – 12 rhythms – multi-track memory chords, bass & arpeggios. Top of the Casio range.

**CASIO®**



**CT 610**  
The latest from Messrs. Casio – full 5 octave keyboard with exciting stereo sounds – a real bargain – hearing is believing – available in wood finish or silver and grey.

**CASIO®**



**CT 405.**  
The most popular of all Casio full size keyboards – fun for all the family with 20 pre-set sounds – 12 auto-rhythms and modulation chime vibrato and reverb effects.

**CASIO®**

# HOBBS MUSIC

**ALL PRODUCTS CARRY FULL MANUFACTURERS WARRANTY**

*Available with Access, Barclaycard, American Express*

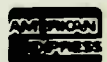
**0524 60740 or 34443**

**MARY STREET  
LANCASTER LA1 1UW**

**0524 60740**

**FREE SECURICOR DELIVERY  
NO CALLERS WEDNESDAY –  
PHONE ONLY**

**MAIL ORDER**



# Gary Numan

**W**hen Tubeway Army signed to small independent label Beggars Banquet in the latter half of 1977, few could have predicted the impact the band would make on British popular music. Conceived, inspired and led by singer/guitarist Gary Numan, TA made two singles for Beggars Banquet before spending a month at Spaceward Studios in Cambridge to record their debut album, entitled simply 'Tubeway Army'. It quickly became known as the blue album, owing to its limited edition coloured vinyl pressing and spot-colour sleeve, and Radio 1 DJ John Peel was sufficiently impressed by it to offer Numan a BBC session.

It was at about this time that Numan began to turn away from his guitar-playing to concentrate on synthesizers, and the first results of this transformation were evident on the Peel session, which contained such tracks as 'Down In The Park' and 'I Nearly Married a Human'. Both these songs featured on Tubeway Army's second – and, as it turned out, last – LP, 'Replicas'. Recorded in just five days, it was universally panned by the music press who were tiring of Numan's '1984' lyrics and completely failed to appreciate the musical and technical step-forward the album represented.

The general public, however, did not.

The album's second single, 'Are Friends Electric?', was issued as a limited edition picture disc by Beggars Banquet's new owners WEA, and this promotion helped it into the lower regions of the singles charts. Within a few weeks Tubeway Army found themselves performing the song on 'Top Of The Pops' and shortly afterwards 'Friends' reached the number one position. The band also played live for BBC2's Old Grey Whistle Test, at that time something of a rarity since Numan was never all that keen on the idea of doing gigs.

In many ways, the success of *Are Friends Electric* came at an inopportune time for Numan, as he had already been considering disbanding Tubeway Army and performing under his own name instead. He did this in the summer of 1979, and a couple of months later went into the studio to record his third LP, *The Pleasure Principle*. A single, *Cars*, was taken from the album and reached the number one spot, staying there for four weeks.

Recording time for *The Pleasure Principle* was a little excessive at 11 days, and musicians playing on it included Ultravox's Billy Currie, Cederic Sharpley and original Tubeway Army bassist Paul Gardiner. Numan then launched into a massive UK tour to tie-in with the release of *The Pleasure Principle*; the support act were *Orchestral Manoeuvres In The Dark*.

A period of relative inactivity followed, and Numan confesses he finds it difficult to continue the same rate of working.

'I was very prolific in the early days, but now there's so many other things to do. Every time I've released an album since *The Pleasure Principle* there's been a bigger time gap between each recording. There are other things that come into it too. For the latest album, *Warriors*, I had a problem in that at first I just couldn't think what to write about. At that time everything was going



fine, and I don't normally write about happy things I write about things that bother me a little bit: the nastier side of life, if you like.'

The albums that followed *The Pleasure Principle*, *Telekon*, *Dance*, and *I, Assassin* all have their own distinctive musical and lyrical character, and this isn't just happenstance.

**'I've tried to mix synths and traditional instruments in a way that'll stop people seeing electronics as a threat. . . sooner or later they'll have to see them as an addition rather than a replacement.'**

'Each album has its own particular mood and atmosphere. When I come to do an album the first thing I think of is the title. Often I decide on the album's title before I've even written any of the songs for it. I already know that the next album's going to be called 'The Hunter', for instance. Working from that title I'll be able to write a story and work out the characters that fit in it.

'It's odd in a way because I write the lyrics last of all. As a rule I record everything on the track except vocals and go into a corner somewhere on my own and write the lyrics from notes I've made beforehand. Often what I do is sing a guide vocal without any proper words. I find it's much easier to just sing noises than it is to write the words first and then get the music and the vocal line to fit those words.'

Since *The Pleasure Principle* turned the popular music world on its head with its synthesizer 'wall of sound', each Gary

Numan album has signalled a slight but significant change of emphasis. *Telekon* was very much a piano-based album, while the star of *Dance* was undoubtedly Numan's recently acquired Linn rhythm machine. *I, Assassin* was perhaps his most varied album instrumentally, with a whole host of influences from Oriental music to the piano works of Debussy and Satie. The new album, *Warriors*, is the funkiest and jazziest record so far. . .

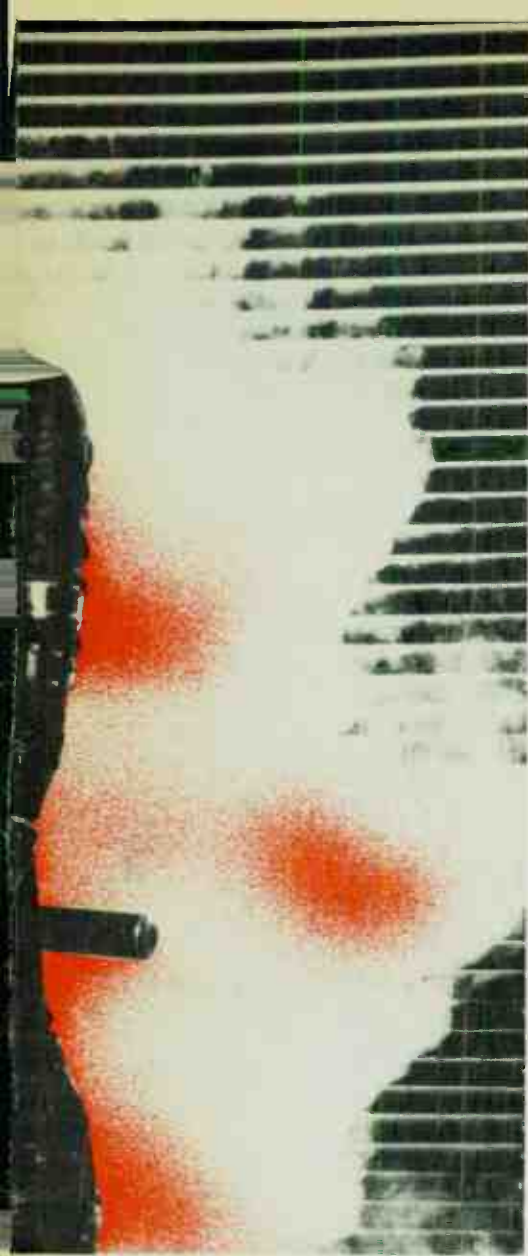
'I listen to a lot of other people's music, and one thing that happened this year was that I started listening to jazz for the first time. Up until then I'd never really been interested in it at all, but then I met Joe Hubbard, the bass-player, and his stuff was the first jazz I'd heard that had some sort of form to it. The other jazz I'd listened to just seemed to be solos and self-indulgent stuff, but his material had the same degree of technical skill and was actually composed of songs; things you could actually sing along to.

'I listened to a lot of Dick Morrissey's music too, and that's why *Warriors* has such a jazzy feel to it.'

*Warriors* was recorded at Shepperton Studios, in which Numan now has a 75 per cent share. Once a rather cold, bare environment, the complex is now a much friendlier place, thanks to some fairly drastic alterations by Gary's father. Hundreds of other big-name acts use the studios when Numan isn't using them, though the equipment is fairly conventional.

'We've got a Studer 24-track machine and a Trident desk. Also there's quite a few





different effects units: an AMS digital reverb, an Eventide harmoniser, and a lot of MXR stuff – digital delays and flanger/doublers. At the moment I'm sticking with analogue equipment. Shakatak came in and did one or two things with the Sony PCM digital recorder, but to be quite honest I wasn't all that impressed with it. I think the whole of this digital thing is a bit of a waste of time. It seems to me that while the specifications are immaculate, the records themselves aren't actually sounding any better.

'People are spending enormous sums of money on all this advanced equipment and ending up with a sound that isn't as good as

---

**'I don't think I'd ever do without an acoustic drummer, because it's when you start mixing electronics with ordinary drums that things start getting interesting.'**

---

the one they had in the first place. I defy anyone to tell the difference between a digitally-mastered record and an analogue one recorded on half-inch tape at 30ips. You can't do it. There's just no difference at all.'

In the area of synthesizers also, Numan is surprisingly conservative in his approach, shunning such recent developments as computer interfacing in favour of the instruments he knows from experience.

I think I'm a bit out of touch with what's happening in the synthesizer world. I haven't got any MIDI gear and I'm not really interested in the computer side of things. I suppose I am interested in it in a loose kind

of way, but the expense of it is phenomenal.

'The other day I tried an Emulator with a sax disk on it, but it didn't really sound all that great. It didn't really sound like someone playing a brass instrument, it just sounded like a computer. If I ever want a sax sound I think I'd much rather just use Dick Morrissey or someone.

'The Fairlight is a very, very clever instrument, and I know a lot of people who swear by it, but from my point of view a good song is a good song whether you play it on a Fair-

---

**'From my point of view, a good song is a good song whether it's played on a Fairlight, an Oberheim, or an upright piano.'**

---

light, an Oberheim or an upright piano. Obviously you can improve on a bad song by using clever production techniques but that isn't really what I'm interested in doing. The way I see it is that technology is moving ahead so fast, I no longer feel the inclination to keep up with it. What's been happening is that people have been in such a rush to buy the latest instruments, they've given up on their old keyboards before they've really had a chance to get the best out of them. So I decided to get out of that race and stick with the instruments I knew, the Minimoog, the Polymoog, the ARP Odyssey... I shouldn't think I'll ever throw them away.

'The main synth on *Warriors* is the Oberheim OBXa, which has really come into its own for me. It's one of the reasons I'm still not convinced by computer synths, because I'm still getting so much out of the Oberheim, and I've really only just started with it.'

There has always been – and probably always will be – more to Gary Numan's music than just synthesizers. Unlike some of his contemporaries he has never felt the desire to set up on his own without any other musicians playing with him, surrounded by banks of keyboards and electronics. His band will always be an integral part of his music, and a major feature of his arrangements: synthesizers rub shoulders with grand pianos, acoustic drums fill-in over LinnDrum patterns.

'I don't think synthesizers and conventional instruments have really been integrated properly yet. On a lot of my records – and on *Warriors* in particular – I've tried to mix synths and traditional instruments in a way that'll stop people seeing electronics as a threat. There are certain people who stubbornly refuse to accept synthesizers, but sooner or later they'll have to see them as an addition rather than a replacement.

'People tend to associate me with a cold, stark sort of sound, but I think I've eliminated that completely with this new band. I'm not forgetting synths completely but the guitars and saxophone are very important to me now. Also I'm working with Cederic Sharpley again, and he's easily the best drummer I've played with. I don't think I'd ever be without an acoustic drummer, because it's when you start mixing electronics with ordinary drums that things start getting interesting. Ced obviously has to stay in time with the rhythm machine to a large extent, but he does some marvellous fills where he just goes slightly off the beat, and then in an instant he's back with it again. It's something drum machines can't do because they're so precise, and not many other drummers can do it either, in my experience.'

From the word go, Numan has always been his own producer, so it came as something of a surprise to his followers to learn that for *Warriors* he had received assistance from one Bill Nelson.

'I only got Bill in because the record com-

pany made me. They wanted me to work with someone else in the studio because they thought I was getting stuck in a rut. To a certain extent I suppose that was true. I've always had my own individual approach to recording each instrument and that can pose certain problems because you can end up with a lot of your material sounding the same. Bill's got his own approach too, and the idea was that we would bounce ideas off each other.

It didn't really work out in practice because he sees music as a form of art, and I don't. I see music first and foremost as entertainment, something that's fun to play and listen to. As far as I'm concerned, I



don't care if my music is forgotten tomorrow, just so long as people get enjoyment out of it today. I'm here to be an entertainer, not an artist. There are lots of people who, before they release a record, go through the whole argument of what it might mean, and I think that takes all the fun out of music.

'So what happened was that *Warriors* sounded pretty much as it would have done if Bill Nelson hadn't been there, though he did play some good guitar on it, of course. In any case, I don't think my music has ever really stood still; I try to make each album follow on logically from the last, so that you can see a sort of natural progression developing.'

---

**'I think digital recording is a bit of a waste of time. It seems to me that while the specifications are immaculate, the records themselves aren't actually sounding any better.'**

---

But if Numan's arrangements and song-writing have continued to grow and mature at a steady pace, one element that has remained consistent is his characteristic vocal sound. He has made several attempts to alter the way his voice appears on record, but so far these have been largely abortive.

'The main problem I have with singing is that I don't really get a chance to exercise my voice regularly. I hardly ever sing between albums so there's really only two or three weeks in a year when I'm really stretching my voice. I think my voice is mellowing gradually as I get older and of course now that I'm touring again I'm getting more of a chance to sing louder which is always useful.

'As far as recording vocals is concerned, I don't really have any particular mic or desk EQ that I use consistently, but I do tend to use harmoniser a lot. In fact I now record all my vocals with a harmoniser on from the start. I used to use the Eventide model but I've now switched to AMS. The Eventide was OK but they never really sorted out the glitching problems. We had two de-glitching cards fitted to ours but they still didn't eliminate the problem completely. The AMS on the other hand has got a lovely wide sound to it... a metallic sort of sound that suits my voice well.



'What happens is that I tend to sing completely differently when I'm using the harmoniser. When I'm recording I often start singing while the engineer's in the process of setting the harmoniser up, then as soon as it comes in, my voice changes automatically. I become more confident because the tone is so much fuller. The notes themselves don't change, it's just the phrasing: it becomes punchier, more aggressive.'

As already mentioned, the early part of Numan's career was fraught with worries

over live performance: In fact, the 'Teletour' of 1981 was planned as his farewell tour. However, he has now come to realise the value of playing to a live audience.

**'As far as I'm concerned, I don't care if my music is forgotten tomorrow, just so long as people get enjoyment out of it today. I'm here to be an entertainer, not an artist.'**

'I'm more at home with playing live than I used to be. I no longer find it a source of great anxiety, though it's still a strain physically. The *Warriors* tour is a very big one and we're playing a long set – nearly two hours including the encores – but it's worth it because I'm getting more out of playing live than I ever have before. The other night we used Nady stage microphones for the first time, and that gave the bassist and the guitarist more freedom to move about. It has a great effect on me too because there was so much energy on stage, I got really excited.

'I'm very pleased with the way the tour's gone. Two or three years ago I'd have hated this tour because some of the places haven't sold out – one of them was only about 50 per cent full. But I'm old enough to realise now that what matters is that this time around we're playing to more people than we ever have before, by quite a margin, in fact. Also the gigs themselves have been much more fun to play. The first night at Hammersmith Odeon was incredible. Every member of the band said afterwards that that was the best gig they'd ever played: it was something special from the moment we walked on stage. To be honest I never really felt at home on a stage until that night... it was just like being famous all over again.'

**E&MM**



## Gary Numan Hammersmith Odeon

After a lengthy absence from live work, Numan returned to these shores to play a huge string of dates to tie-in with the release of his latest album, *Warriors*. Although by all accounts some of the provincial gigs were far from full, all the London dates were sold out some way in advance, no mean achievement for venues the size of the Hammy Odeon and, later on, the Dominion.

Support act Tik and Tok gave a brilliant rendition of The Lovin' Spoonful's 'Summer In The City' to get their brief but memorable set underway. Their fusion of electropop, dance and mime went down extremely well on the night in question despite the fact that most of the audience had come to see one man and one man only...

Since his *Pleasure Principle* tour some years ago, Numan has taken great trouble over the design of the band's live set, and this year's was the most spectacular of all, with keyboardist Chris Payne, drummer Cederic Sharpley and Gary's brother John Webb (playing synth and a little sax) playing within the 'rooms' of a derelict town-house. Bassist Joe Hubbard and guitarist Russell Bell stood either side of Numan, while coloured spotlights and dry ice were much in evidence, though so far Gary has remained unimpressed with the capabilities of lasers.

By far the most memorable feature of the

occasion was the improvement in 'togetherness' displayed by this band as opposed to its previous incarnations. For the first time since the Tubeway Army days, Numan's back-up band played as a group rather than as a collection of individuals. This was particularly evident when the rhythm section began to let go on such songs as 'She's Got Claws' and (especially) 'We Take Mystery To Bed'. A minor quibble was that although Sharpley's mastery of how to play drums in time with rhythm machines remains unmatched, one or two of Hubbard's bass solos were if anything a little too self-indulgent for an audience to whom egoistic playing is at best something strange and unknown and at worst a complete anathema.

For much of the set, Numan wisely concentrated on the more dynamic, danceable pieces from his now rather large repertoire, though when he did dabble in the atmospheric (as on 'Tracks', one of the encores, for instance) it was with some conviction. Fortunately, the set was long enough for the band to play a broad cross-section of material, the first Tubeway Army album being the only era not represented on the night in question.

Nevertheless, the emphasis was firmly on *Warriors* (not surprising when you consider that the band that played at the Odeon was virtually identical in make-up to that on the record) and from the half-dozen or so songs played, the staggering version of 'Sister Surprise' with its juxtaposition of rhythm guitar and percussive synth sounds was probably the most memorable.

By the time the concert was over, the



audience (most of whom had been dancing, or at least standing, for the entire evening's proceedings) were both exhausted and refreshed, while the queue for autographs outside the stage door afterwards was the longest this writer has seen for quite some while.

Thank heavens Numan's 'farewell' tour was not quite as final as he'd originally intended... this performance was rich entertainment indeed.

# KAWAI

## Puts you in control!

FOR  
**£999** R.R.P.  
inc. V.A.T.



### KAWAI

POLYPHONIC SYNTHESISER

# SX-210

8-VOICE PROGRAMMABLE POLYPHONIC SYNTHESISER

- \* 46 Programmable Parameters & 32 Memories
- \* 8DCO, 8VCF, 8VCA, 8VCF-EG, 8VCA-EG
- \* Portamento & Glissando
- \* Tone Memory Lettering

- \* 100-step Variable Parameters
- \* Chord Memory
- \* Tape Interface
- \* Easy Operation

For your free literature on the **SX-210** please complete the coupon and send with a stamped addressed envelope.

Name \_\_\_\_\_

Address \_\_\_\_\_



U.K. Trade Distributors:

**John Hornby Skewes & Co. Ltd.**

Salem House, Garforth, Leeds LS25 1PX.

EMM/SX/83



## Gary Numan Warriors

What a difference a year makes. 1982's LP offering, *I, Assassin*, was a patchy offering distinguished more by the lack of a central musical core than anything else: an infuriating collection of the brilliant and the mediocre.

*Warriors*, on the other hand, is a work of considerably greater unity. Unity of thought (lyrics); unity of arrangement (instrumentation); and unity of technique (production). It's probably the album that succeeds most in achieving what it sets out to achieve since *The Pleasure Principle*, and that was some while ago.

Paradoxically, it's also the album on which Gary Numan has most readily collaborated with other musicians. Whereas on *Dance* Mick Karn played a little bass on one or two songs, on *Warriors*, Dick Morrissey plays sax on *all* the tracks, regardless of whether there really ought to be a sax there or not.

The production is more dynamic than it's been for some while, possibly than ever before. This makes the music come to life in a way that can only be surpassed at a live gig (see accompanying concert review) and, astonishing though this may seem to some, there are only two tracks on *Warriors* that aren't genuinely danceable.

The opener and title-track is still something of a disappointment to these ears, though in the context of the album (as opposed to a single release) it makes a pleasant if rather innocuous introduction to the LP's more serious material.

'I Am Render', the following track, is something of a novelty since its music was penned by Gary's brother John Webb, with lyrics (and, by all accounts, a not insignificant amount of arrangement work) by Numan. It's a brisk, bubbling piece with some innovative synth work by Chris Payne and the first in a series of stunning sax solos by that man Dick Morrissey. 'The Iceman Comes' is the closest *Warriors* gets to the atmospheric tracks that characterised so much of *Dance*, with its deliberate, hesitant vocals and dominating Linn Drum rhythm patterns.

'This Prison Moon' is another up-tempo song, this time featuring the talents of Tracey Ackerman (once of Shakatak, now starting out on a solo career) on backing vocals. Her delicate precision both contrasts with and compliments Numan's darker tones, while the track is further enlivened by another impressive guitar solo from Bill Nelson.

'My Centurion' makes a fitting closer for side one, chronicling as it does Numan's first (almost) tragic plane crash and the events leading up to it. It's far from being a melancholy piece, though sparkling would hardly be the word for a song that includes excerpts of air-traffic-control-to-pilot conversation in its arrangement. There's plenty of life here though, with some classic percussion breaks from Numan stalwart Cederic Sharpley and some Russell Bell guitar work which is positively Thin Lizzy.

It's side two's opener, 'Sister Surprise' however, which is the album's outstanding track. Its brilliant mixture of percussive (Oberheim) synth sounds insistent drumming and metallic rhythm guitar make it instantly memorable, while its sheer length (well over eight minutes) marks it out as

being the most significant track on offer here, both technically and musically.

The two songs that follow, 'The Tick Tock Man' and 'Love Is Like Clock Law' come as something of an anti-climax, for although they both have their merits, they are melodically undistinguished by comparison with 'Sister Surprise' and suffer as a result.

*Warriors* ends with a bang however with the splendid 'Rhythm Of The Evening', featuring yet more saxophone and some mightily appealing percussion work to boot. Add background synth lines that take a hint from Blancmange's 'Living On The Ceiling' and lyrics with shades of latter-day Joy Division (*The rhythm of the evening will tear us apart again*) and you've got a track that would put many more 'soulful' bands to shame. The song builds up to a remarkable climax in the shape of one of the most effective 'stop-the-tape-at-random' endings I've heard for some while.

It seems likely that the average record-buyer will heed the advice of the weeklies and get no further than the macho sleeve artwork, but Numan has already declared his intention to dispense in future with the trappings of being an image-conscious superstar and concentrate instead on integrating synthesisers with conventional instruments, and should he pursue such a course to its natural conclusion this album may well be surpassed by future developments.

In the meantime, and as the first stage in what could become a fascinating musical transition, *Warriors* makes extremely rewarding listening, and I can only hope that it gets the public recognition it deserves.

An essential purchase.

Dan Goldstein

E&MM

DECEMBER 1983

E&MM

TEL.

01-680-1042  
01-681-0328

TELEX 266332 MOROUK G

# RockBottom

74, LONDON RD., WEST CROYDON, SURREY.

(ALL PRICES INCLUDE V.A.T.)

**MUSIC PERCUSSION COMPUTER**  
INCLUDING 2 x 81 INTERFACE



**NEW!** £575  
(2 x 81 AND VDU SHOWN NOT INCLUDED)

PLAYABLE WITH STICKS OR HANDS — 8 TOUCH SENSITIVE PADS — ON BOARD MICRO PROCESSOR — LIVE OR STEP INPUT — TAPE SYNC INPUT-OUTPUT — FLIGHT CASED.

"THE KIT" DRUM MACHINE NOW ONLY £149



**Roland**

MC 202 MICROCOMPOSER	£255
MC 202 + TR 808 DRUMATIX	£430
MC 202 + TB 303 BASSLINE	£420
MC 202 + SH 101 SYNTH	£450
JUNO 60 POLYSYNTH	£818
JUNO 6 POLYSYNTH	£525
Jx3P PROG-POLYSYNTH	£765
TR 808 RHYTHM COMP.	£499

FULL RANGE OF ROLAND CUBE, SPIRIT, AND JC AMPS BOSS, AND AMDECK EFFECTS ALWAYS AVAILABLE.



**KORG** KPR — 77 PROGRAMMABLE RHYTHM NOW ONLY £299




**19" RACK**

IBANEZ DM500	£250
IBANEZ DM1000	£325
IBANEZ HD1000	£375
IBANEZ DM2000	£POA
CUTEC CD425	£395
ARIA DEX1000	£338
MAXIM MOD 1000	£295
MAXIM MOD 1500H	£326
MAXIM GE909	£193
VESTAFIRE RVI	£229
KORCSDD 3000	£683
ROLAND SRE 555	£575
ROLAND SBF 325	£234
ROLAND SPH 323	£227
ROLAND SEQ 315	£299
ROLAND SPA 240	£295

**THE LARGEST KEYBOARD STORE IN THE SOUTH**

**DEBUT OF THE DX7 DIGITAL PROGRAMMABLE ALGORITHM SYNTHESISER: AN HISTORIC MOMENT IN THE REFINEMENT OF SYNTHESISED SOUND! AVAILABLE THROUGH ROCKBOTTOM**



DX7 £1,299  
DX9 £899

ALL THE P.S. RANGE AVAILABLE THROUGH ROCKBOTTOM

PF15 DIGITAL PIANO £949  
PF10 DIGITAL PIANO £749  
DX1 (64 MEMORIES) £9,799

**POLY-61** NOW ONLY £695

Revolutionary new low cost 6 voice programmable polyphonic synthesiser. Heads a range that covers the whole keyboard spectrum. We know your needs and the price you want to hear.

**Cutec**

MR 402 (3 1/2 i.p.s.) FOUR TRACK MULTI-CASSETTE RECORDER £395

**OVER 450 GUITARS ON SHOW**

**Clarion**

XD5 FOUR CHANNEL MULTI-TRACK CASSETTE RECORDER £549  
XA5 MASTER CASSETTE DECK AND MIXER £899. CONSOLE STAND £149  
ALL ACCESSORIES AVAILABLE

**HOME RECORDING**

**YAMAHA**

MR10 DRUM UNIT £89

MT44 4 CHANNEL CASSETTE DECK POA  
MM30 4 CHANNEL MIXER, L.E.D. 7 BAND GRAPHIC POA  
RB30 COMBINED RACK AND PATCH BOARD FOR MT44/MT30 POA

OVER 300 AMPLIFIERS ON DISPLAY

**CASIO**

7000	£495
405	£245
501	£325
701	£445
PT 50	£99
PT 30	£58
PT 20	£42
MT 41	£89
MT 45	£85
MT 65	£135
MT 70	£199
MT 11	£32
202	£239
TA Interface	£19

£235

**NEW STEREPHONIC ELECTRONIC DRUM SHOWROOM NOW OPEN**

**Aria**

AT ROCKBOTTOM THE BEST BASS IN THE BEST PLACE!



INSTANT CREDIT UP TO £1,000 SUBJECT TO STATUS



**Marshall**

IN ROCK BOTTOM RED FINISH!

100W VALVE SUPER LEAD TWIN CHANNEL AMP TOP £311  
100W VALVE MASTER VOLUME TOP £311  
100W VALVE NEW SUPER BASS £311  
260W 4x12 LEAD CAB ANGLED £210  
260W 4x12 LEAD CAB BASE £210  
50W VALVE 2x12 SPLIT CHANNEL + REVERB COMBO £344  
12W TRANSISTOR 410 BASS COMBO £74  
50W 1x12 KEYBOARD COMBO £222  
60W 1x15 KEYBOARD COMBO £262

IN USUAL BLACK MARSHALL FINISH:-

12W TRANSISTOR 1x10 M/V COMBO £69  
30W TRANSISTOR 1x12 M/V COMBO £133  
50W TRANSISTOR 1x12 SPLIT + REVERB COMBO £224  
50W VALVE 1x12 MASTER VOLUME COMBO £256  
50W VALVE 2x12 MASTER VOLUME COMBO £299  
150W/200W TRANSISTOR 1x15 BASS COMBO £349  
150W BASS EXTENSION CAB £130  
30W TRANSISTOR 1x12 BASS COMBO £133

ALL COMPLETE WITH P.V.C. COVERS!

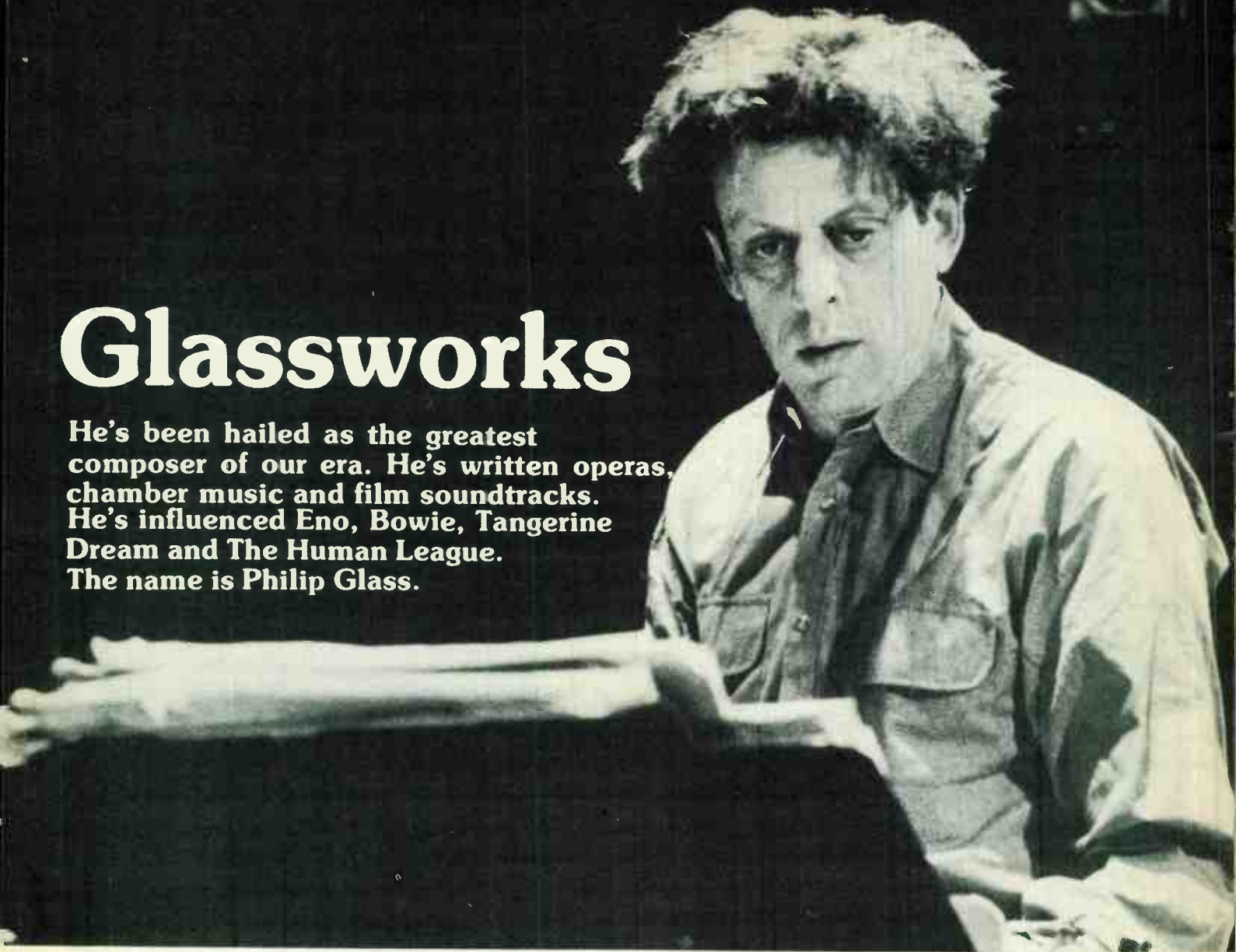
**250 CYMBALS, 30 KITS IN STOCK!**



**ORDER BY TELEPHONE!!**  
Quote Your Credit Card Number For Immediate Despatch

# Glassworks

**He's been hailed as the greatest composer of our era. He's written operas, chamber music and film soundtracks. He's influenced Eno, Bowie, Tangerine Dream and The Human League. The name is Philip Glass.**



Philip Glass emerged during the middle to late sixties as one of a group of composers and musicians (among them Terry Riley and Steve Reich) involved in writing, performing and recording serial or 'systems' music. The essence of this music was repetition, with wind and keyboard instruments playing the same simple motifs over and over with slight, almost imperceptible, shifts of emphasis as the piece continued.

It was on the one hand stunning and entrancing (and, to some ears, maddeningly monotonous) while on the other it had as its basis a series of complex, rigidly-adhered to arithmetical formulae, of which the casual listener would only be half-conscious.

Glass' first recorded work, *Music In Similar Motion*, was released in 1969 on his own Chatham Square label, and bears a strong resemblance to Terry Riley's *A Rainbow In Curved Air*, while the music's sheer minimalism has hints of John Cage or Stockhausen. Until recently, Glass' ensemble began every concert with an excerpt from *Music In Similar Motion*, and it's a work that's still dear to him as a composer.

'It's got a few nice little compositional tricks in it. For instance there's a bit near the end where it adds and subtracts in the same figure, and that makes the piece interesting arithmetically. Of course, that isn't all there is to it because it's also got a tremendous emotional impact, because it's so repetitive, so monotonous. The reason we always played it first was that people either loved it

or hated it. Quite a few people used to walk out after the first twenty minutes. It was a way of finding out which members of the audience were really interested in my music.

'The instrumentation we had in '69 was very basic. Most of the LP was recorded on an old Farfisa organ, a dual-manual one. I got quite attached to it, but eventually I think it just fell apart. Fortunately I succeeded in finding a similar sort of sound on the Prophet 5 a couple of years back, so I've stored that in memory which means I've got access to that organ sound at any time.'

The second major landmark in Glass' musical career came some time later in 1976, when he collaborated with stage designer Robert Wilson to create *Einstein On The Beach*, a 4½-hour opera based on the life and times of the well-known physicist and amateur violinist. It was premiered at the Avignon Festival the same year and a little later the production moved to Metropolitan Opera House in New York, where both performances were completely sold-out. *Einstein* has since become something of a contemporary opera masterpiece, but as Glass recalls, initial reaction was more than a little mixed.

'The people in the audience who were traditional opera lovers didn't like it one bit, because it was so long and repetitive, because the stage design was avant-garde, and because of lots of other factors I've never been able to work out. As those people left the auditorium, they handed their ticket stubs to others outside who were trying to

get in, and it was those others that liked it.'

The opera was released subsequently as a four-record boxed set, though unfortunately the maximum length of LP sides imposed limitations on the music in its recorded form. The set is still available on import from French label Tomato Records, and CBS will be re-issuing it in the Spring.

Since *Einstein*, Glass has written two further operas, *Satyagraha*, about the early life of Mahatma Gandhi, and *Akhmatov*, set in Ancient Egypt. *Satyagraha* was premiered in Holland in 1981 while *Akhmatov* receives its first performance in Stuttgart in March 1984. Glass is also due to record *Satyagraha* for CBS at some time during the Spring.

## Music Theatre

'I prefer to call my opera work music theatre, because when you think of opera you do tend to think of *Rigoletto* and *Aida* and *Falstaff*, and I think my work has more to it than that. It has a broader base because it involves collaborating with designers, choreographers and so on, and also I defy a lot of operatic conventions — quite a lot of the actors speak, for example.

'People say opera has declined, but I don't think that's really the case. I think quite a lot of people are writing in that field, but I'm one of the few actually getting his work staged, which is a shame really. There's still a big opera audience out there and the only problem is finding the backing



to produce a completely new work.'

Philip Glass has achieved considerably more than merely writing a couple of critically-acclaimed operas, however. He wrote his first film soundtrack (for *North Star*) in the mid-seventies, and this project saw the appearance of a sharper, more disciplined and more lyrical form of Glasswork.

'I like working in opera more than anything else because the pieces can be as long as they need to be, but then again I like taking a rest from that. It's very refreshing, changing in scale from the extended work of an opera to the shorter, more disciplined pieces of, say, a film score.'

Certainly, *North Star* is one of Glass' most accessible works, as is his second composition for film, the much-acclaimed *Koyaanisqatsi*. The latter received its debut in New York (as part of that city's Film Festival) just over a year ago, while a part of the score received its first UK performance at the Dominion Theatre earlier this month.

The sheer alacrity with which Philip Glass composes might lead the casual observer to suspect that quality suffers as a result. Nothing could be further from the truth...

'I often work on a lot of different projects simultaneously, but I always try to do as much preparation as possible for each work. For an opera I might spend a year or two, perhaps more, liaising with the other people involved, thinking about different ideas. Films are obviously less work – you've got less time in which to do them, for one thing – but for *Koyaanisqatsi* I still spent a lot of time looking at sections of the film, edited, unedited, and talking with the director, Godfrey Reggio.

'There is a definite work process inherent in the way I compose music, but there's no real logic to it. I've been writing music for over 30 years now, and I think it helps a lot, having so much music behind me, though I think my best work may be yet to come. I used to work in a slightly more systematic way, but now I think I've got ways of working I'm not even familiar with myself.'

Establishment sceptics cite as Glass' two major faults his willingness to incorporate electronic or amplified instruments

in his work and his outrageously unconventional recording techniques. Glass himself is at a loss as to how to explain these criticisms. On the first point, for example, he sees the adoption of electric instruments as a perfectly natural musical development, and shares Robert Moog's view that a synthesiser is no more contrived an instrument than, say, a violin.

'For this tour we're using the Emulator for the first time, and it's a damn good instrument. We've programmed a woman's voice into it, and Dora Ohrenstein sings and plays it at the same time. Actually it sounds very much like the chorus on the record of *The Photographer* – it doesn't have quite the same sound, obviously, but it has the same sort of weight to it, which is nice.

'In many ways using these keyboards live is mainly an economic decision, because if you're going to ask me whether or not I'd rather tour with a whole group of singers, the answer is yes I would! On the other hand, this is chamber music, and if I can keep the number of players down to seven, we get a tighter ensemble. We did a concert recently at Carnegie Hall, and for that we hired four brass players and six other singers, and when you add that to the seven we've got it tends to get a bit like a chamber orchestra. Because my music depends on precise, intricate ensemble playing, I find the more people I'm working with, the more difficult things become.

## Range

'The way we use synthesisers now is to extend the range of acoustic instruments. For instance on *The Photographer* there's a trombone line that plays at several different octaves, one of which is too low for a trombone, so we played that line on a synth. So what you're hearing is not a pure trombone sound, it's an extended sound.

'There are a lot of synth sounds that we've come to like a lot – and we aren't the only ones. You know, synthesiser sounds are almost always reminiscent of acoustic ones. I mean, what is a completely pure sound? Is there such a thing as a sound that doesn't sound like an instrument? Does

such a thing exist? I suppose it does, but to be honest very synthetic sounds don't really interest me all that much; they've got no emotional impact to them. When I think of a trombone I think of all kinds of emotions and feel and colour, and synthesisers can only augment that, they can't replace it.

'Synthesisers are still not accepted by the serious music establishment, but who cares? I'm not really sure why it is – there's no rational explanation for it. You know, there are still people around who say you shouldn't edit tapes. I mean, what can you do with these people? In the end you know what'll happen to them? They'll grow old and they'll die, that's what'll happen to them.'

This leads us nicely on to the subject of recording, something on which, if anything, Glass has even stronger views...

## Sonic Photographs

'We're not in the business of making sonic photographs of pieces of music. To us a record is not a form of documentation, a record is a record. I'm not interested in just making live recordings and then releasing them, because you can do things in a studio that you just can't do anywhere else. When we're making a record, we're trying to do the best we can, whatever that takes. In performance, we're limited by all kinds of things; the personnel, what we can play and so on.

'Musicians in rock music realised the potential of studios a long, long time ago, but I know that among classical musicians, we're really the only ones using the recording studio the way it should be used, except of course that Glenn Gould beat us to it. I admired his music a lot, but he got an awful lot of criticism. People said his music was faked, but what's faked about listening to a record? Personally I like to put a record on and get in the bath-tub and listen to it – I don't care about the way it was recorded or where the edits are or anything.

'What you're doing with a record is you're trying to give people at home a way of hearing the music, and that's really the only obligation we have.



'When we're recording we start off by laying down a clicktrack. Then we put down the basic track and log in all the rehearsal points by voice. Then we notch all those rehearsal numbers to a SMPTE code on the tape-machine, so that way we can go to any place on the tape, instantly. All of *The Photographer* was done with a clicktrack, and so was *Glassworks*, even the solo piano pieces.'

'Some people say that pieces of music should vary in tempo as they go along, but it's not just tempo that gives music its colour: it's changes in colour, changes in harmony, changes in instrumentation. My feeling is that when you get into recording, you should drop all your preconceptions and just start again from square one.'

One aspect of Glass' music that has remained constant throughout his career is its broad range of appeal; it seems his performances attract people with five years' classical training and people with no training at all. In roughly equal proportions.

'I'm not consciously trying to bridge gaps, in fact I'm not really setting out to do anything in particular except do what I want to do. I don't really know why people from so many different backgrounds like my music, but I do know there's a very wide range of response. It just seems to happen that way. I think we're in an age now where we've given ourselves permission to like a lot of different things. 15 or 20 years ago, when I was at college, there were groups of people who went to piano recitals, groups that went to jazz evenings and groups who went to rock and roll gigs, but very, very few who did all three, or even just two of them.'

## Taste

It seems that Glass himself has extremely varied musical taste, and this is to some degree reflected in his compositions.

'The last week I was in New York I went to

see Berlioz' *The Trojans At Carthage* at the Met, which was terrific, I went to see Ravi Shankar at Carnegie Hall which was terrific, and I went to see a Breakdance contest at the Ritz, which was also terrific. And that was just one week! I think that there's a large public now that has as varied a taste as I have, and that could be part of the reason that so many different kinds of people get into my music.

'I think a more important reason though is that my music works on two separate levels. On the one hand, it's very direct, high-energy music, and then on the other hand it has a sophisticated structural basis to it. So if you want you can take it at a very intellectual level, or you can just forget about all that and get carried off by the music in a way.

'As a performer I like to get carried away with the sweep of the music, but as a writer I find there has to be some intellectual content because that's really what keeps me interested in writing – it has to be intricate enough arithmetically and mechanically, otherwise I tend to just lose interest.'

Another clue as to what keeps Glass' creative mind ticking lies in the sheer variety of his work, from the epic scale of his operas to the shorter chamber music pieces like *Glassworks* and *The Photographer*, his two bestselling albums to date.

'I've deliberately created a situation where I can change what I'm doing a lot. My contract gives me complete artistic freedom. I just wrote a piece of music that lasts four seconds: it's an ID jingle for public service television in the States. I like to work on lots of different things because it stops me from getting dulled – that's part of the reason I did the *Carmina Burana* thing with Ray Manzarek; it was something challenging and stimulating.'

The future will be no less varied, that's for sure. Glass is currently working on an album of songs (his first) for which he will write the

music and various lyricists (among them Laurie Anderson, Paul Simon and David Byrne) will pen the words. There's also another collaboration with Robert Wilson in the pipeline, and it's rumoured that Glass may soon start work on a joint project with *Draughtsman's Contract* director Peter Greenaway, who has already made a documentary on the composer – due to be screened by Channel 4 in the early Spring of next year.

Philip Glass' music may not always be the paragon of accessibility. His recording techniques may not always satisfy the whim of audio purists. He may never be accepted by the serious music establishment. He may never sell a million records (though whether or not this'll bother him is open to question).

What is certain is that his music, his technique and his approach are unique, and few can deny the impact his work has made on the evolution of contemporary music. If all he ever achieves is the destruction of the artificial barriers that have grown up around the different genres that make up today's music, he can retire a happy man.

Dan Goldstein

E&MM

## Discography

<i>Music With Changing Parts</i>	Chatham Square
<i>Music In Similar Motion</i>	Chatham Square
<i>Solo Music</i>	Shandar
<i>Music In Twelve Parts (1&amp;2)</i>	Virgin
<i>North Star</i>	Virgin
<i>Einstein On The Beach</i>	Tomato
<i>Dance 1 and 3</i>	Tomato
<i>Glassworks</i>	CBS
<i>The Photographer</i>	CBS
<i>Koyaanisqatsi</i>	Island



# Contemporary Music Network

new music on tour

Arts Council  
OF GREAT BRITAIN



## WEST SQUARE ELECTRONIC MUSIC ENSEMBLE

Harry Sparnaay *Bass clarinet*  
Gregory Knowles *Percussion*  
Stephen Montague *Piano*  
Barry Anderson *Director*

### Programme:

Stephen Montague *Mouth of Anger*

For bass clarinet, piano, percussion, ring modulators and electronic tape

Denis Smalley *The Pulses of Time*  
For 2-channel tape

Barry Anderson *Proscenium*

For solo percussion, electronic modulation, tape delay and 4-channel tape

Jonty Harrison *Monodies*  
For bass clarinet and tape delay

### December

Wed 7. 7.30 **LONDON** Bloomsbury Theatre 01-387 9269  
Thu 8. 7.30 **KEELE** Univ, Walter Moberly Hall 0782-621111  
Fri 9. 8.00 **BRISTOL** Arnolfini 0272-299191  
Tue 13. 8.00 **SHEFFIELD** Leadmill 0742-754500  
Wed 14. 8.00 **BIRMINGHAM** Barber Institute 021-472 0622  
Thu 15. 8.00 **NOTTINGHAM** Co-op Educational Centre  
0602-586100

Further details for the Music Department,  
Arts Council of Great Britain (01-629 9495).

# COVENTRY MUSIC CENTRE

3-5 Whitefriars Street, Coventry

## BEFORE YOU BUY ANYTHING TRY US

**WE HAVE ONE OF THE LARGEST  
SELECTIONS OF ACOUSTIC AND  
ELECTRIC GUITARS, AMPLIFICATION,  
EFFECTS, ACCESSORIES AND  
KEYBOARDS IN THE MIDLANDS AND  
OUR PRICES WILL SUIT EVEN THE  
POOREST MUSICIAN!!!**

CONTACT BARBARA OR TIM FOR  
DETAILS ON COVENTRY 0203-58571

AUTHORISED AGENTS FOR ROLAND,  
YAMAHA, KORG, RHODES, MARSHALL,  
SESSION, TRACE-ELLIOT, LANEY,  
McGREGOR, WESTONE, ARIA, IBANEZ ETC

ACCESS - BARCLAYCARD - MAIL ORDER DELIVERIES - FINANCE ARRANGED.  
DETAILS ON REQUEST - PARKING IN STREET - CLOSED ALL DAY THURSDAY

Parking in street — closed all day Thursday



## Alphaflex Ltd

Electronics & Communications  
THE PROFESSIONALS

SPECIALISTS IN  
MOBILE COMMUNICATIONS

TEL: (GUILDFORD) 0483 223459/223493

### CORDLESS TELEPHONES MCP 15A



#### features include:

- ★ Incoming and outgoing calls up to 700ft. from base unit.
- ★ One way paging up to 1 mile.
- ★ Last number re-dial.
- ★ Volume high/low switch on handset.
- ★ Automatic lock/clear system.
- ★ Low battery/talk LED on handset.
- ★ Power/charge LED on base unit.

**ONLY £69.95 + VAT  
DELIVERED**

### NEW LEGAL THE FIDELITY WANDERER

Telecom approved cordless telephone.  
Incoming and outgoing calls up to 600ft.  
from base unit. Incorporates all the latest  
features.

**★ £165.00 INC VAT  
DELIVERED**

- "Approved for use with telecommunication systems run by British Telecommunications in accordance with the conditions in the instructions for use."
- A "Prohibited from direct or indirect connection to any telecommunication system run by British Telecommunications. Action may be taken against anyone so doing."

- ★ DOOR ENTRY PHONES FROM £16.00
- ★ MEMORY DIALLERS FROM £65 INC. DEL.
- ★ CAR TELEPHONES
- ★ DIRECT DIAL
- ★ NEW INPHONE TELEPHONES
- ★ IN STUDIO COMMUNICATION HEADSETS
- ★ WIRELESS INTERCOMS
- ★ EXTENSION PHONES
- ★ ALL CB EQUIPMENT
- ★ PHONE OR POST COUPON FOR OUR DETAILS & PRICES
- ★ TRADE ENQUIRIES WELCOME

### PANASONIC 1524 DBE Remote Control Answering Machine



FULL MICRO PROCESSING

**★ PHONE FOR  
OUR PRICE**

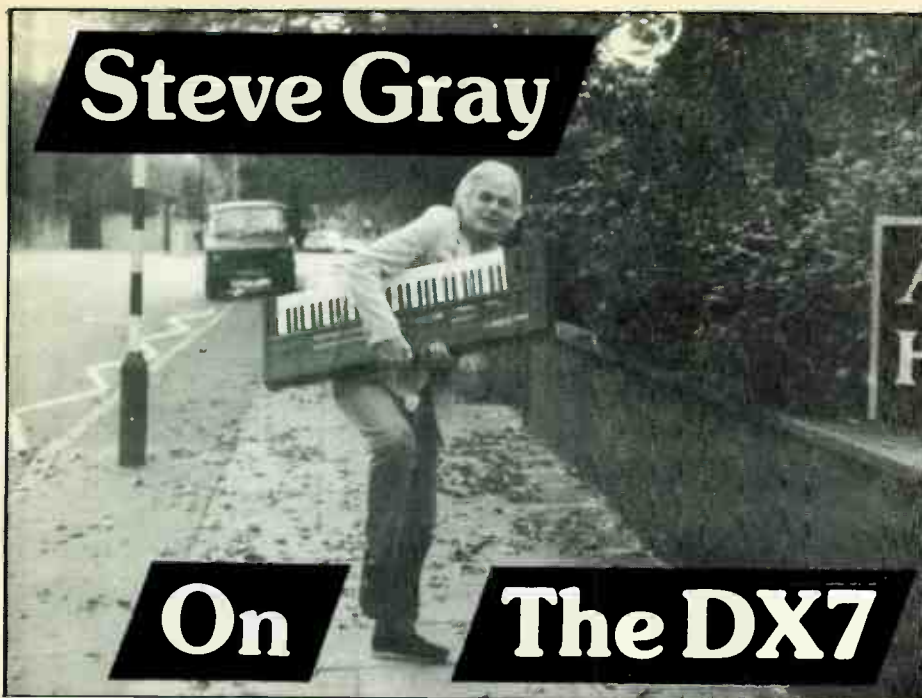
ALPHAFLEX LTD. GULF STATION, HIGH ST., RIPLEY, SURREY.

NAME \_\_\_\_\_ ADDRESS \_\_\_\_\_ TEL: \_\_\_\_\_

PLEASE SEND DETAILS ON \_\_\_\_\_

I WISH TO ORDER \_\_\_\_\_

ENCLOSE \_\_\_\_\_



## The SKY keyboardist reports on how this revolutionary instrument performs on the road.

**B**asically, for live work I have a three-keyboard set-up. On the left is a harpsichord, which has a hard-wired interface to the Oberheim OBXa. That's more or less a permanent fixture that I think would be very difficult to change if ever I wanted to. In the centre, facing the front of the stage, I have a piano hard-wired to the Jupiter 8 through a bar which is fitted to the piano. In fact the bar can be removed and fitted to any other piano I want. The system was developed by our engineer, Andrew Jones, and I believe Ultravox now use a similar system on stage.

To the right is what I call the variable section, which changes according to the material we're doing at the time. Last time we contacted Yamaha and asked if it would be possible for us to borrow a GS1. It's a truly incredible machine and we wrote a lot of material on it, but inevitably the manufacturers wanted to have it back after a while. I considered that a big problem at first but in retrospect I didn't like the non-programmable aspect of it.

It was about this time that I first heard about the DX7, and when I first played it while we were out in Japan it seemed like an excellent compromise. The only problem was that at the time they were a bit like gold-dust and it was only about a week before the start of the tour that we actually managed to get our hands on one.

Basically, the DX7 is fantastic, so anything I say has to be taken in that context. In a way I think it's the biggest advance since the polysynth. With a week to go before the tour, the first thing I had to learn was how to program the thing. I'm not a snob about using pre-programmed things - the guys who put them in there are obviously very talented programmers and they have rather more experience of the DX7 than me. So I used the factory programs, though not exclusively because when it comes down to it, the DX7 is very easy to program although it can be a little bit slow. The fact that there are six envelope generators with eight steps each makes the possible combinations that much more complex. On the other hand, having six envelopes is great because being able to use the generators properly is half of getting a good sound on an instrument like this. Once you've mastered that, the actual

development of sounds becomes quite easy.

Working with the DX7, I found I didn't like the strings all that much, and that's not just a personal thing because I've spoken to other DX7 owners and they're pretty much agreed that the string sounds aren't really up to it. Then again, I don't use strings very much with the band anyway, so it's not as important a flaw as it might sound. Most of the rest of the sounds on the DX7 are very good. Almost all the basic tones that come out of it are usable, and it's possible to emulate a lot of the GS1 sounds with it - obviously an advantage for me having gone from one instrument to the other. Finding covers for the GS1 sounds was quite easy, even though we only had a week and I'm not the fastest programmer in the world. It was all just about ready in time for the tour.

*'Basically, the DX7 is fantastic, so anything I say has to be taken in that context!'*

Turning to the machine on the road, the first thing to say is that there were no problems whatsoever with reliability or tuning. I never really got the hang of the block-diagram, because the first instrument I saw in Japan didn't have it. So I suppose it must have been something they added when they went into full production. On the other hand that isn't really a thing you would use much on the road, whether you understood it or not.

Getting the hang of the machine sufficiently for it to take the place of the GS1, and for me not to make too many gross errors on stage, was aided a lot by the owners' manual Yamaha supplied, which is very good indeed. It takes you through the instrument logically so that you can actually see what is happening at each stage. Manuals can be a problem because each manufacturer tends to use his own (non-standard) terms, and they make it difficult to learn your way round an instrument quickly.

The DX7 manual was a pleasant change from all that and, using it in conjunction with the review in *E&MM*, I was able to pick up on the workings of the instrument without long hours of study.

Then I got to the actual programming stage. I asked myself whether the sound I

wanted was complex or simple. In the case of the simpler sounds I used carriers rather than modulation because it's so much easier to work that way. If, say, I was in the middle of a session and someone asked for a sound to be made a little brighter, I'd rather just step up the algorithms than go searching in the machine for the sound I want... it makes the whole process that much faster.

On stage, the DX7 sounds as good as when you programmed it, I've played quite a few synths where the programmed sound have been great but the stage sound from the same programs really hasn't been very good at all. The DX7 holds the sounds and gives them back just as I put them in.

The keyboard is good as well. It actually caught me out a few times because it led me into thinking it was better than it really was, and I began playing it the way I would a piano. This leads me on to the question of variable keyboard pressure, because I really think instruments like this really ought to have that facility. When you think about it, everybody has their own 'feel' on a keyboard. Then again, there are quite a number of little additions I would like to see, like an individual aftertouch facility on separate notes rather than on the whole keyboard.

The program selection on the DX7 is fairly good, but there will always come a time when you hit two of the controls at once, because they're touch-sensitive. Every time you hit two instead of one, you get this great sonic explosion from inside the synth, which has a certain novelty at first but gets tiring very quickly. Mistakes like that are bound to happen, and I think the multi-function buttons on the DX7 are a drawback live, especially if you have a multi-keyboard set-up. Some of the functions are just unusable live, like the *Functions* mode and the *Edit* mode, though I suppose if you've done your homework beforehand you shouldn't really need to use them.

The main problem is one of time. At the end of a song I might have to, say, unlock the interface with the harpsichord, unlock the piano, change the settings on the JP-8, all in a matter of a few seconds. Which brings me on to the fact that it's hard to see which program the DX7 is using at any one time. It may be something Yamaha just haven't thought about because I seem to remember the GS1 was just the same.



At the end of a song the lights fade to black and there's a nice little light to tell you which program you're on, and none to tell you where the others are! It would be lovely if you could reverse it so that the program that's in use is the only LED not lit; that way you could get a quick visual grasp of what is set, and you could accomplish a very fast change, even in the dark.

With the DX7 you've got two rows of 16 blocks, with green lights and white lettering, and you don't get to see very much of that when the lights are down. By the time we got to the middle of the tour things had improved a little because I could feel my way around almost by instinct - I could get reasonably close to each program just by knowing its basic location.

*'The keyboard is good... it caught me out a few times because it led me into thinking it was better than it really was, and I began playing it like a piano.'*

Being in Normal mode all the time is a problem because the performance controls aren't programmable, so much of the expressive aspect of the instrument is lost. I can't use the Aftertouch because I play like a pianist anyway.

I have the pitch-bend set to a tone, because that's all I use normally, and also I have the mod wheel with an innocuous amount of vibrato on it. As far as the breath controller goes, I prefer the CS-01 anyway... I think it's a great little machine even though it's only monophonic. So I think another possible improvement for the DX7 would be to have the performance controls fully programmable.

The hardest aspect of my working on stage is the logistics of making sure I'm at



the right keyboard at the right time. For the first week of a tour I can't concentrate on the music that much, because I'm spending all my time getting all the switching right. There's one particular piece where the DX7 has to change programs in almost no time at all; the end of one bar is one program and the downbeat of the next is another. The changing on the DX7 is not quite as positive as it is on the GS1, so I have to come off a beat early to get enough time to change programs. That was how I discovered the musical explosion - when I hit the controls badly there was this enormous crash!

Finally, setting up on stage is very easy

indeed. Straight out of the flightcase and away. I use the volume pedal, which I like very much, and the sustain pedal because it helps me get as close to the original GS1 sounds as possible. I also use the portamento pedal occasionally though I don't think I used it much on the last tour.

What really amazes me is the difference in price between the DX7 and the DX1. I would have thought there'd be a market for something like a DX5, which would be a sort of midpoint between the two, with Aftertouch on individual notes and that complete programmable stage function.

E&MM

**Soho SOUNDHOUSE** **SOHO SYNTH HOUSE**

18A SOHO SQ. LONDON W1V 5FB  
01-434 1365  
All prices are for cash and include VAT

**Roland**  
JX-3P POLYSYNTH | JP-6  
MC-202 COMPOSER | SYNTH

Available from stock this month. All Roland synths, pianos, echos, amps, effects, pedals, switches, cases, interfaces, accessories and anything else Roland

**LONDON'S NEW AUTHORISED MAIN DEALER** Now with the full service back-up of Roland UK

**BOSS** **AMDEK**

CE-2 Chorus	£46	Chorus Kit	£44
BF-2 Flanger	£57	Flanger Kit	£49
DM-2 Delay	£69	Distortion Kit	£26
CE-3 St Chorus	£58	Compressor Kit	£29
PHI-R Phaser	£53	Tuning Amp Kit	£30
SD-1 Super Overdrive	£41	Delay Machine Kit	£104
DS-1 Distortion	£41	Phaser Kit	£32
CS-2 Comp Sust	£47	Prog Rhythm Kit	£74
New TU12 Digital Tuner	£34	Perc Synth Kit	£45

**KORG KEY CENTRE** POLY 61 KPR THE ROGUE 2VCO £199 77 THE SOURCE £599 etc.. TAURUS PEDALS £350 etc.. THE MEMORY MOOG £POA

**GODWIN 749 STRING CONCERT**

**CARLSBRO KEYBOARD AMPS**  
K90W COMBO £245  
K90W 15" JBL £349  
H45 COMBO £165  
H45W 12" E.V. £250  
Come in for a demo

**COMPU-MUSIC**  
Come in and see the Apple IIe and ZX81 running the

ROLAND DG CMU-800 R	RHODES CHROMA KIT II
---------------------	----------------------

Coming soon: Commodore, Prophet

**MATTEL SYNONICS DRUMS**

Touch Sensitive Tunable Tom Storage Memory Accent Control £109 inc P&P

MR10	£89	Digital Drums	£1499
MT44 M Tracker	£395		
CE25	£999	SOUNDMASTER	
CP70B	£POA	4CH Mixer	£65
CP80	£POA	4CH. St Mixer	£69

**YAMAHA**

PRO1	£POA
Prophet 600	£POA
Prophet V	£POA
Prophet T8	£POA

**IBANEZ**  
DM1000 Digi/Delay £295  
HD1000 Harmonizer £345

**EVANS**  
EP100 £89  
MD1500 Digital £249

**RHYTHM MACHINES**

Roland TR808	£519
Roland TR606	£178
Boss DR rhythm	£79
Kay programmable	£59
Korg KPR77	£299
Soundmaster Stix	£119

**The KIT** Bass Drum, Hi Hat, Toms, Cymbal, Auto Hi Hat £149 inc P&P

**SPECIAL OFFERS**

LOGAN Strings	£169
SH Arp Axe	£159
YAMAHA CS01	£129
ROLAND SDE 2000	£349
DIGITAL ECHO	
OCTAVE CAT	£229
HOHNER Planet T	£189
HOHNER EK61	£145
S/H MOOG	
SOURCE	£450
E/H CLAP TRACK	£45
NEW JUNO	
ALUMINIUM	
F/CASE	£89

To: Soho Soundhouse Mail Order Freepost 38 London W1E 6QZ

Name \_\_\_\_\_ Address \_\_\_\_\_ Tel \_\_\_\_\_

Please send me Model No(s) \_\_\_\_\_  
I enclose cheque/postal order for £ \_\_\_\_\_  
debit my Access/Visa account No \_\_\_\_\_

**NO STAMPS REQUIRED**

E&MM/12/83

# PROPHET T8

## Touch-Sensitive Polyphonic Synthesiser

Ever since the announcement that Sequential Circuits were working on a touch-sensitive version of the perennial Prophet 5, everybody has been waiting with baited breath to see the result of their endeavours. In the meantime, we have seen the highly successful Pro-One redefine the standards for the monophonic synth, and the 5 continue to sell steadily despite competition from all sides (a rare event in the professional keyboard market — where are all the other synths of five years vintage?).

But now, over two years later, after several changes in design philosophy, the T8 is finally being shipped to dealers. The first units arrived in Europe recently and we managed to take a good look at one at Sequential Circuits European Headquarters in Holland before they were dispatched to eager shops and awaiting customers.

The RRP of the instrument in the UK is £4,700 and as such represents a large investment for any keyboard player. So what features have they added to the basic Prophet to make it worth the price and how successful are these developments?

### Keyboard

Obviously the most vital part of any touch sensitive synth is the keyboard. For years the quality of the keyboard has not been of over-riding importance on synthesisers as its function was merely selecting the notes to be heard and automatically triggering the envelopes. But when the keyboard becomes part of the expressive control of an instrument (as it always has been on a piano), then the quality and feel of the design assume a greater significance.

The keyboard on the T8, we are happy to report, fulfills all expectations. Wooden keys go back, 14" of 15" into the machine to

give an authentic weight to the action. Here they tip a smaller wooden lever on which are focussed the optic sensors which time the velocity of the key-strike (see photo).

Timing the interval between the start and finish of the key descent is the most common method of determining the force with which the key is struck. Normally, two contacts are affixed to each key. One is broken when the key begins to move and the second is made when the key reaches the end of its travel. The harder the key is struck the shorter the time taken and so a harder strike is registered.

This was the system with which development began on the T8, but it was found to be too insensitive for the level of control SCI were aiming for, so a new system using the optic sensors was developed. These give a more accurate indication of key travel beginning and ending and the micro-processor times the interval in the usual way.

The keyboard is a delight to play, giving the light but responsive touch of an acoustic piano. The weighting of the key allows one to gauge the different speeds of keystroke required to obtain the different effects.

Below each key is a pressure sensor which serves to measure the amount of 'second touch'. This is a separate function which can be activated after the key has been depressed. Pushing harder on any key means that various elements of the sound can be altered.

The optical sensors also fulfil a second role, that is timing the release of the key. This time can also be used to control various parameters. We will come onto all these various elements of the sound which can be varied by the velocity and pressure information later but first let us have a look at the basic controls of the instrument. The design is based very much on the original Prophet 5, so those of you who are already familiar with this old faithful may prefer to skip the next section.

### Basic Format

The Prophet voice design is centred around 2 VCOs, 24dB Low Pass Filtering, a separate ADSR for both VCF (that is the filter) and VCA (amplifier) and a comprehensive modulation section. Particular features which have made it popular include Sync between the Oscillators, the fact that Osc B can be used as a second LFO to modulate the filter and the frequency or width of Osc A, as could the filter envelope. None of this has been lost on the T8, so those who have spent years familiarizing themselves with the nuances of the Prophet design will find it time well spent.

However, some of the features which were missing on the old Prophets have now been catered for. Polyphonic Glide, originally not included (because Dave Smith didn't see the point of it) is now standard. Originally Filter Tracking (to move the filter cut-off frequency in relation to oscillator pitch, thereby keeping the harmonics con-

tained in the sound constant) was originally on or off. Now it is fully variable between 0 and 100%. Amounts of modulation can now be memorized as part of a patch whereas before they had to be introduced by the Mod wheel — an Initial Amount control sets the level of modulation before the wheels increase it up to maximum.

### New Features

Besides eight-note polyphony, the T8 has several new features in synth programming. The envelopes feature two of these. The first is the ADR switch. By selecting this, the sustain time is automatically reduced to zero, so that when the decay reaches the sustain level, the envelope is automatically forced into the release phase. This is particularly useful for percussive envelopes, from pianos through the drum sounds.

The second innovation on the envelopes is the Second Release switch. This allows a second release time to be memorized for each patch, and activated by the foot pedal. This can then be used like the sustain pedal on a piano when not depressed a shorter release time can be programmed, when it is depressed a longer release can also be obtained. This feature can be programmed separately or together for both the filter and amplifier envelopes.

Another innovation is a Programmable Volume control which allows a sound to be stored at a particular level. Of course, this is relative to whatever setting Master Volume is on when the program is recalled. However, it does allow you to boost a quiet patch (for example if the filter cut-off is low) without changing the quality of the sound. Similarly louder patches can be moderated to balance their quieter neighbours.

	LEFT 1 RIGHT		LEFT 2 RIGHT		LEFT 3 RIGHT	
1	ACOUSTIC PIANO I (LOW END)	ACOUSTIC PIANO I (HIGH END)	STRINGS I VELOCITY ATTACK	STRINGS I	BRASS I	BRASS II
	SPLIT (L <sup>R</sup> )		DOUBLE		SINGLE	SINGLE
2	HONKY TONK	HONKY TONK	VIOLIN I	VIOLIN II	ENSEMBLE BRASS	ENSEMBLE BRASS
	DOUBLE		SINGLE	DOUBLE	DOUBLE	
3	ACOUSTIC PIANO II	ELECTRIC TINE I	VIOLA	CELLO	BRASS III	BRASS IV
	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE
4	ELECTRIC PIANO I	ELECTRIC TINE II	CELLO— SINGLE LINE	STRING— SINGLE LINE (HIGHER OCTAVE)	COMIC WOW	MAYNERD PITCH BEND by PRESSURE
	SINGLE	SINGLE	DOUBLE		SINGLE	SINGLE
5	ELECTRIC PIANO II	ELECTRIC TINE III	STRINGS with PRESSURE VOLUME	STRINGS with PRESSURE (ONE OCTAVE UP)	STRINGS COMBINATION	BRASS COMBINATION
	SINGLE	SINGLE	SINGLE	DOUBLE L2	DOUBLE	
6	PIANO COMBINATION	STRING	ORGAN I	ORGAN I	CATHEDRAL ORGAN	CATHEDRAL ORGAN
	DOUBLE		DOUBLE		DOUBLE	
7	ACOUSTIC PIANO— BOTTOM III	ACOUSTIC PIANO TOP III	STRING COMBINATION	BRASS COMBINATION	POLY-MOD LFO 10 PULSE WIDTH	POLY-MOD LFO 10 FILTER
	SPLIT (L <sup>R</sup> )		DOUBLE		SINGLE	SINGLE
8	MOON WAVES	UNISON-ALIEN	VIDEO GAMES	POLY-WIND	CATS UNDER PRESSURE	CHOPPER with PRESSURE
	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE





Programmer

The T8 also has the Split/Layer feature which has been available on synths such as the OBXa, the JP-8, and the Synthex for some years now. This means that the keyboard can be split at any point and a different sound (with four voices unless Unison has been programmed) can be set up on either side of the split. Alternatively, each note played (up to four) can be used to trigger two different programs, effectively doubling voices. In addition, two programs being used in Split or Double mode can be stored together and selected as a Link patch, which makes complex set-ups quickly available.

The programmer itself actually stores 128 programs at any one time, selected as either a Left or a Right sound. If the switch marked Left is lit, then a new sound can be selected for that side by tapping a number between 11 and 88 (64 programs) on the keys numbered 1 to 8. Pressing the Right switch allows 64 different programs to be selected in the same manner.

In Single mode only the switch illuminated (left or right) controls the sound of the whole keyboard, whereas in Double both are heard at once. In Split mode, Left controls the lower voice, and Right the upper.

Velocity Parameters

These are controlled by four potentiometers at the top right-hand end of the panel. The first of these controls the effect of different strikes on the rate of Attack and Decay of the envelopes. The more to the right this control is set the more effect is exaggerated. For example, a fast strike will give an even shorter attack and decay, whereas a slow strike will result in a much longer attack and decay. Next to this is the knob which controls the effect upon the Release. As its value is increased, then the release times are more exaggerated in a

similar manner to the Attack/Decay knob. This particular control 'goes one better' than a piano, where release rate cannot be controlled. The last two pots control the effect on the filter and amplifier envelopes respectively of the velocity effect. Both amounts can be set positive or negative allowing inverse responses to be programmed.

Although four controls may not seem many for the much-vaunted velocity sensing, don't forget the effects produced are to a great extent altered by the individual ADSR and Second Release settings of each envelope. The overall response is extremely flexible and can easily and quickly be changed to suit individual taste. We will see some of the effects that can be produced later, when we come on to look at the factory presets.



Pressure-Mod

The signal from the individual pressure pads under each key can be routed to modulate the frequency of Osc A and/or B, Pulse Width, Filter, Amplifier, LFO, Amount and/or Frequency. The routings for all these are to be found in the Pressure-Mod section at the top left-hand end of the panel. The amount knob allows you to increase the effect either positively or negatively. The various effects which can be obtained from pressure are as follows:

**Frequency A/B:** 'bending' the pitch of either or both oscillators.  
**PW:** changing the Pulse Width if a Pulse Waveform has been selected.

**Filter:** the Filter can be opened or closed.  
**Amp:** the overall volume made louder or quieter.

**LFO Amt:** the amount of modulation from the LFO can be increased/decreased.

**LFO Freq:** the LFO modulation can be made to go faster/slower.

All these effects can be produced simultaneously or selectively, giving an extremely wide range of pressure-controlled performance options. Let us now look at some of the Factory Programs to see the use to which Product Specialist John Bowen has put these velocity and pressure controls.

T-8 PROGRAMS										
LEFT 4 RIGHT		LEFT 5 RIGHT		LEFT 6 RIGHT		LEFT 7 RIGHT		LEFT 8 RIGHT		
GOLLYWOG CAKEWALK	POLYGLIDE	VIBALIMBA	VIBALIMBA	CHORUS with PRESSURE VIBRATO	CHORUS	--UNISON-- BASS with PITCH BEND	--UNISON-- LEAD with VIBRATO by PRESSURE	PERCUSSIVE ORGAN	KEY CLICK	1
SINGLE	SINGLE	DOUBLE		DOUBLE		SPLIT (E <sup>3</sup> )		DOUBLE		
SHIN-SHEN	HOMAGE	PIANO/ STRING	PIANO/ CURTAR PRESSURE- VIBRATO	CROSS FADING PATCHES by VELOCITY	CROSS FADING PATCHES by VELOCITY	CROSS FADING PATCHES by PRESSURE	CROSS FADING PATCHES by PRESSURE	PIED PIPER	PIED PIPER	2
SINGLE	SINGLE	SINGLE	SINGLE	DOUBLE		DOUBLE		DOUBLE		
HARP I	HARP II	JOSEF	FILTER with VELOCITY on ATT/DEC	GRUNGE SLIDE	MUNCHKIN- LAND	--UNISON-- LUCKY MAN	--UNISON-- PITCH BEND and VIBRATO	FILTER FUNK	DIGITAL SYNC with INVERTED PITCH BEND	3
SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	
SYNC A	XYLOPHONE	CLAY I	CLAY II	PULSE WIDTH OCTAVE by PRESSURE	PULSE WIDTH OCTAVE by PRESSURE	ALBEDO & O	--UNISON-- LEAD with PITCH BEND by PRESSURE	SUPER PERCUSSIVE with PRESSURE	THE RD W SOUND	4
SINGLE	SINGLE	SINGLE	SINGLE	DOUBLE R46	DOUBLE L46	SINGLE	SINGLE	SINGLE	SINGLE	
SYNC SWEEP with PRESSURE	ELECTRIC TUNE with HEAVY LEADIE EFFECT	CLAY/PIANO	CLAY III	STEEL DRUM	STEEL DRUM	--UNISON-- STRING BASS	FLUTE	RELEASE OCTAVE	RELEASE OCTAVE	5
SINGLE	SPLIT (E <sup>3</sup> )	SINGLE	SINGLE	DOUBLE		SPLIT (A <sup>3</sup> )		DOUBLE		
ORGAN II	ORGAN II	SYNTH-A- CHORD	HARPSI CHORD	CROSSFADE II (STRINGS)	CROSSFADE II (PLUCKY)	DRONE IN A	--UNISON-- SYNC SWEEP	PRESSURE COOKER	RANDOM SAWTOOTH ARPEGGIATOR	6
DOUBLE		SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	SINGLE	
HORN BLIP	HORN TONE	PLEIDES	METALLIC I	RHODESY	ANGELIC GLIDE	DUPLICATE of R77 DETUNED for CHORUSING	SUPER PERCUSSIVE II with VELOCITY	VOCAL HARMONICA	MEWT FLUTE	7
DOUBLE		SINGLE	SINGLE	SINGLE	SINGLE	DOUBLE R77	SINGLE	SINGLE	SINGLE	
BIG BELLS	BIG BELLS	--UNISON-- TYMPANI	TOM	VELOCITY SOUND EFFECT	PRESSURE SOUND EFFECT	SPACE TRK	SPACE TRK	METALLIC PERCUSSIVE	METALLIC PERCUSSIVE	8
DOUBLE		SINGLE	SINGLE	SINGLE	SINGLE	DOUBLE		DOUBLE R77	DOUBLE L77	



LONDON (01) 979 9997



The 6th Annual Synthesizer Tape Contest  
"THE WINNER'S PIECES"

A CASSETTE COMPILATION FEATURING RECORDINGS FROM A  
UNIQUE SELECTION OF INTERNATIONAL TALENT

- |   |  |
|---|--|
| <p><b>A</b></p> <p><b>CLASS C</b></p> <ol style="list-style-type: none"> <li>1. Markus Gross (18. W. Germany)<br/>"Benzol"</li> <li>2. Shawn Lucas (20. USA)<br/>"The Telephone"</li> <li>3. Guy Grim (16. Australia)<br/>"Bye Bye Bach"</li> <li>4. Geoff Durrant (18. UK)<br/>"Men of God Go Forth"</li> <li>5. 野比 健 (18. 日本)<br/>"七上"</li> <li>6. Ken Abino (18. Japan)<br/>"Hibe"</li> <li>7. Erik D. Huber (11. USA)<br/>"The Last Valley"</li> </ol> <p><b>CLASS B</b></p> <ol style="list-style-type: none"> <li>7. Perry R. Cook (18. USA)<br/>"Eibon's Librifish Into Boston"</li> <li>8. 小野 正 (18. 日本)<br/>"Speed Way"</li> <li>Francis Chou (20. Japan)<br/>"Speed Way"</li> </ol> | <p><b>B</b></p> <p><b>CLASS B</b></p> <ol style="list-style-type: none"> <li>1. 坂本 龍一 (18. 日本)<br/>"441"</li> <li>Mayaya Matsuzaka (11. Japan)<br/>"Resurrection"</li> <li>Alan Thibault (18. Canada)<br/>"Space Time Dimension (Kuark's Music)"</li> <li>1. Gary St. Germain (18. USA)<br/>"Thawen (Sweet Flutes-Guitar)"</li> <li>4. Kalle Bernard (18. France)<br/>"Distance"</li> <li>5. 吉川 信子 (17. 日本)<br/>"夜更草 (夜更草)"</li> <li>Yoshio Yoshikawa (17. Japan)<br/>"Sonata No. 1 (for Mrs.) Beethoven"</li> </ol> <p><b>CLASS A</b></p> <ol style="list-style-type: none"> <li>6. Edward Patterson (18. Canada)<br/>"Angel Dance"</li> <li>7. Magnault Jacques (18. Canada)<br/>"Nominus at Epansagement (Birth &amp; Growth)"</li> <li>8. Armin Ithara (11. Canada)<br/>"Dover March of the Military"</li> </ol> |
|---|--|

PRICE: £3.95p + 50p post & packing

PLEASE MAKE CHEQUES/PO'S PAYABLE TO E.S.S.P. DISTRIBUTION

"Of all the compilation albums I've heard, this one is very special! It's an excellent example of the many different sounds and engineering techniques synthesized by all ages and nationalities. Essential listening for every home synthesist".  
The E.S.S.P. Librarian.

# Home Studio RECORDING

## Subscribe!

### Special Introductory Offer To E&MM Readers

At last! A magazine set to cater for the growing demands of the home studio enthusiast. All the features and reviews, news, interviews and information that you need. With the recording technology and techniques changing almost every day, **Home Studio Recording** will keep you informed.

- For 12 Issues:
- UK..... £10.00
  - Europe & Overseas (surface mail)..... £11.00
  - Airmail (Europe only)..... £16.00
  - Airmail (Outside Europe)..... £25.00

Please fill in the form on the right and send it with your remittance to: Subscriptions Department, HOME STUDIO RECORDING, ALEXANDER HOUSE, 1 MILTON ROAD, CAMBRIDGE CB4 1UY.

Please send me the next 12 issues of Home Studio Recording. I enclose a cheque/postal order\* for £10.00/£11.00/£16.00/£25.00.

NB: Please make cheques payable to 'Home Studio Recording'.

Print or type clearly:

Name.....  
Address.....

# BRITAIN'S No. 1 MAIL-ORDER SERVICE

Our unique 7 day money back guarantee gives you complete confidence in ordering the latest technology through the post.



High Part Exchange allowance on your old equipment. Tel. for quote.

- |   |                            |
|---|----------------------------|
| BOSS BF2 Flanger.....£59                    | ROLAND SH101.....£199      |
| BOSS CE2 Chorus.....£59                     | ROLAND RS09.....£299       |
| BOSS CE3 Chorus.....£69                     | ROLAND Juno 6.....£595     |
| BOSS CS1 Distortion.....£42                 | ROLAND Juno 60.....£869    |
| BOSS CS2 Compressor.....£48                 | ROLAND JX3P.....£699       |
| BOSS DM2 Delay.....£79                      | ROLAND Jupiter 6.....£1595 |
| BOSS RX100 Reverb.....£101                  | ROLAND Jupiter 8.....£275  |
| BOSS DM100 Delay.....£139                   | ROLAND MC202.....£250      |
| BOSS DR55 Rhythm.....£81                    | ROLAND TR606.....£199      |
| BOSS KM600 Mixer.....£99                    | ROLAND TB303.....£210      |
| BOSS MA15 Monitor.....£85                   | ROLAND CR5000.....£250     |
| ALL BOSS in stock - prices include carriage | ROLAND CR8000.....£337     |
| TASCAM MODEL 38                             | ROLAND TR808.....£565      |
| 8 Track in stock.....P.O.A.                 | ROLAND HP30.....£225       |
| TASCAM MODEL 34.....P.O.A.                  | ROLAND HP60.....£399       |
| TASCAM MODEL 32.....P.O.A.                  | ROLAND HP70.....£499       |
| TASCAM 244 portastudio.....£650             | ROLAND EP11.....£297       |

### NEW PRODUCTS from ROLAND All in stock now!!!

- NEW!! BOSS HA5 play Bus headphone amp with stereo chorus - incredible.....P.O.A.
- NEW!! BOSS DE200 digital delay.....P.O.A.
- NEW!! Roland SDE3000 digital delay 4.5 sec programme delay on 8 channels.....P.O.A.
- NEW!! Roland SDE1000 Delay 1.125 sec delay on 4 channels.....P.O.A.

- |                            |                            |
|----------------------------|----------------------------|
| ROLAND SH101.....£199      | ROLAND Juno 60.....£869    |
| ROLAND JX3P.....£699       | ROLAND Jupiter 6.....£1595 |
| ROLAND Jupiter 8.....£275  | ROLAND MC202.....£250      |
| ROLAND TR606.....£199      | ROLAND TB303.....£210      |
| ROLAND CR5000.....£250     | ROLAND CR8000.....£337     |
| ROLAND TR808.....£565      | ROLAND HP30.....£225       |
| ROLAND HP60.....£399       | ROLAND HP70.....£499       |
| ROLAND EP11.....£297       | ROLAND JCS50.....£275      |
| ROLAND JCS20.....£475      | ROLAND JCS20.....£125      |
| ROLAND Cube 20.....£199    | ROLAND Cube 60.....£275    |
| ROLAND Cube 100.....£248   | ROLAND Cube 40K.....£199   |
| ROLAND Cube 60K.....£248   | ROLAND Cube 40CH.....£199  |
| ROLAND Cube 60CH.....£220  | ROLAND Bolt 60.....£295    |
| ROLAND Bolt 60.....£295    | ROLAND Spirit 10.....£135  |
| ROLAND Spirit 10.....£135  | ROLAND Spirit 15B.....£110 |
| ROLAND Spirit 15B.....£110 | ROLAND PA80.....£325       |
| ROLAND PA80.....£325       | ROLAND PA 1250.....£425    |
| ROLAND PA 1250.....£425    | ROLAND S60.....£180        |
| ROLAND S60.....£180        | ROLAND S60T150.....£299    |
| ROLAND S60T150.....£299    | ROLAND RE201.....£399      |
| ROLAND RE201.....£399      | ROLAND RE501.....£499      |

## MAKE IT A MUSICAL CHRISTMAS

### ORDER BY POST NOW FOR XMAS DELIVERY

Telephone your Access or Barclaycard number for instant despatch - remember all our Casio prices include carriage.

NEW CASIO PT50 £99 With FREE headphones while stocks last.  
For the first time! only £99 while stocks last.  
A keyboard that takes a ROM pack. You simply slip it in to listen, learn and create.



- |                      |                             |
|----------------------|-----------------------------|
| CASIO MAGIC AT ABC   | CASIO CT501.....£275        |
| CASIO VL.....£35     | CASIO CT602.....£345        |
| CASIO PT20.....£49   | CASIO 1000P.....£295        |
| CASIO PT30.....£69   | CASIO CT701.....£399        |
| CASIO MT41.....£89   | CASIO 7000P.....£495        |
| CASIO MT45.....£99   | All prices include carriage |
| CASIO MT65.....£149  |                             |
| CASIO MT70.....£199  |                             |
| CASIO CT202.....£245 |                             |
| CASIO CT405.....£245 |                             |

FREE headphones with every MT65 & MT70 while stocks last.  
CASIO 7000 only £495

CASIO Amazing new models in stock now.

FREE keyboard stand with every CT CASIO while stocks last.

## YAMAHA KEYBOARDS



Up to £1000 ASK FOR WRITTEN DETAILS  
INSTANT CREDIT AVAILABLE

- |   |                        |
|---|------------------------|
| YAMAHA DX7.....P.O.A.                     | YAMAHA PF10.....P.O.A. |
| YAMAHA DX9.....P.O.A.                     | YAMAHA PF15.....P.O.A. |
| YAMAHA MT44 Homerecorder 4 track.....£339 |                        |

14-16 HIGH ST. ADDLESTONE SURREY  
Tel 0932 40139/54877  
56 SURBITON RD. KINGSTON SURREY  
01-546 9877



# ABC MUSIC



## Presets

The manual comes with a handy reference sheet listing all the Factory Programs (Left and Right), which can be detached and laid on top of the synth until you are familiar with the presets. These are very logically laid out in groups of sounds for ease of location. The first column (all the programs ending with a 1) contains all the piano sounds, the second strings, the third brass, etc, with all the pitchless sound effects in the last row. Each pairing tells you whether the Left and Right sounds are designed to be used in Single, Split or Double mode.

Most synth manufacturers tend to put one of their impressive sounds on the first preset of bank 1, but even so left 1.1 on the T8 comes as a revelation. Below middle C, the sound is indistinguishable from a real piano. John Bowen has used the velocity to accentuate Osc A which is up 3 octaves plus a major 6th (an important harmonic on the piano when struck hard) from Osc B which provides the fundamental frequency. But the second release option allows the right pedal to work identically to a real piano sustain pedal.

Right 1.1, designed to cope with the top end of the piano is less successful (although streets ahead of most synths). However, we found that Right 7.7 (another split acoustic piano patch) to be more realistic and split with Left 1.1 proved most effective.

Other piano sounds on this bank include a fruity Honky Tonk (2.1 Double) and a couple of electric pianos, Left 4.1 which has the growl of a Wurlitzer and Left 5.1 with more of the delicacy of the Rhodes.

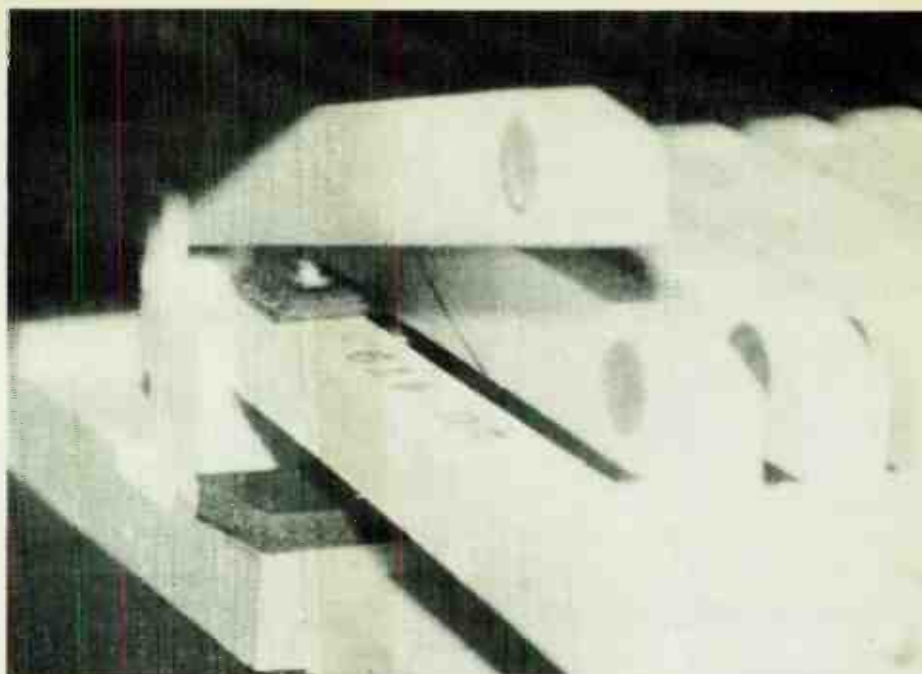
2.2 gives you a double string sound. By combining a velocity sensitive patch with a less responsive sound, it ensures that even the gentlest playing gives you a basic sound level (often a problem with string ensembles from a touch sensitive machine – some notes can get lost and give an unbalanced chord) but with extra emphasis on certain lines or chords available by either velocity or pressure controls.

2.2, 3.2 and 4.2 give you solo strings sounds, violin, viola and cello respectively. All have velocity controlling the imitation of bow speed and pressure bringing out higher harmonics and vibrato. By careful combination of these programs, it is possible to get a highly realistic string quartet. Other strings include Strings with Pressure Volume (Double 5.2) and Strings with Brass (Double 7.2).

Brass sounds are also available as solo or ensemble patches, varying from strident (Right 1.3) to mellow (Left 3.1). Sounds created by complex cross-mod, with Sync and ring mod type effects from Osc B (whose frequency can of course be controlled by pressure – giving performance control of complex modulations) or on 2.4 (called Shin-Shen), 3.4 (Harp), 5.4 (Sync Sweep), and 7.4 (rejoicing in the name of Polymod LFO to Pulse Width).

The 5s are all percussive sounds. Double 1.5 (called Vibalimba) changes from vibes to marimba if you hit it harder. There are a couple of very responsive Clavs (Left and Right 4.5), a totally unelectronic harpsichord (Right 6.5) which respond beautifully from the keyboard and a lovely tinkly Metallic 1 (right 7.5).

The next group of sounds show you some of the effects that can be created by Pressure: Chorus with Vibrato (1.6), Cross Fading (2.6), Pulse Width Mod (4.6) and Sound Effects (8.6).



What about 'fat' lead sounds, we hear you cry? For these we go to the 7s. Making use of the Unison/Track, Pressure and Velocity Sensing, they range from Lucky Man (left 3.7), a close copy of the Moog solo sound on the ELP track of that name, through Vibrato by Pressure (right 1.7), Sync Sweep by Pressure (Right 6.7), Bass with Pitch Bend (Left 1.7) to the best of all, Right 3.7, which has the lot, Pitchbend, Vibrato, Filter Bend, and LFO Mod, all brought in by pressure – the ultimate lead sound.

The 8s are all sound effects from Timpani, Bells, and Toms, which are powerful percussion options, to others with such names as Alien, Moonwaves, Cats under Pressure, Space Trek, Pressure Cooker, Pied Piper, and Newt Flute. These have to be heard for they are indescribable.

In the manual, it states that the presets should be regarded 'not as absolutes but as examples' and should serve as a starting point for you to create your own sounds through the editing process'. However, the Factory Programs are so good that we suspect that the same will happen as with the original Prophet 5 (4 out of 5 repairs came back with the original sounds untouched). Indeed, this is one of the best sets of factory programs ever provided with a synth, and will be a major selling point in itself.

## Sequencer

The only new feature of the T8 which we have yet to mention is the Real Time Polyphonic Sequencer. This has a total capacity of 670 notes and will record up to eight individual sequences with a preset sound, velocity information and looping.

The T8 comes with some demonstration sequences already in. Particularly impressive are Number 1, a funky brass sequence,

and Number 4, a double bass and flute duo which is incredibly realistic.

To create your own sequences, you merely press the record switch, sequence select and one of the number switches. The sequence doesn't begin to record until you start to play. A preset selected before you begin to play is recorded as part of the sequence. A loop point can be created by the foot switch which can also start and stop sequence playback, leaving the hands free to do the playing. The sequences are played back exactly as recorded, but they can be played four times faster or slower.

## Internal Construction

The internal layout of the T8 is extremely concise. The 14 inch deep keyboard, with its single contact board underneath, sits on the base. Along the back of this runs the mounting with the optical sensors on it. The potentiometer circuit board is attached to the panel and lifts off with it. The rest of the instrument is on three circuit boards which sit across the main body on a shelf. These contain not only the eight voice cards but the main control board as well.

An increasing part of the design has been digitized, including the envelopes (hence their increased flexibility) but the essential sound components i.e. the oscillators and the filters, are still analogue. The T8 now uses two processors, the Z80 which does the keyboard scan and associated functions (velocity and pressure sensing) whilst the newer Z8000 handles the routings and presets, as well as the envelope generation and sequencing. The oscillators are still Curtis 3340s and the filters 3372s, as with the later revisions of the Prophet 5. The VCAs, which used to be 3280s, have now been replaced by 3360s.



202 New King's Road,  
Fulham, London SW6.  
Tel: 01-731 5993

10 Baddow Road,  
Chelmsford, Essex.  
Tel: (0245) 352490.

# FUTURE

## Roland

WE ARE THE SPECIALISTS! LARGEST STOCKS!  
LOWEST PRICES!

SH 101  
£195

JP6 £1495

NEW!

### ROLAND'S WINNERS!

JX-3P + PG200 £799

JUNO 6 £535 JUNO 60 £799

SH 101 + MC202 £475



NEW!

CALL FOR SPECIAL DEALS OVER THE SUMMER PERIOD INCLUDING  
FREE CASES! FREE DELIVERY! INSTANT CREDIT!  
FAST MAIL ORDER!! ROCK BOTTOM PRICES!!

MC 202  
£299

## KORG

FUTURE MUSIC now has  
the complete range  
available at very competitive  
PRICES!!!



Korg Poly 61 £769 inc Case

## CASIO

MAIL ORDER  
SPECIAL



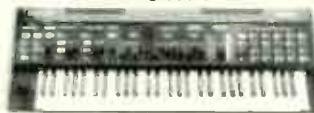
MT 70  
£159!!!

PT 20	£49.95
PT 30	£69
PT 50	£99
MT 45	£139
MT 65	£139
MT 800	£249
CT 610	£345

## Rhodes

CHROMA

The digital analogue hybrid now  
available with pressure sense  
Apple Interface on demo  
NOW!!!



CHROMA POLARIS available  
from FUTURE MUSIC soon!!!

## Roland

SPECIAL OFFERS!  
ALL NEW GUARANTEED!!

RS09 Strings Organ	£275
VK09 Organ	£275
HP400 Piano with MIDI	£799
HP300 Piano with MIDI	£799
JP8 with OCB	£2495
EP 6060 Piano	£395
HP 30 Piano	£275
HP 60 Piano	£395
HP 70 Piano	£495
EP 11 Piano	£275



## YAMAHA

THE INCREDIBLE RANGE OF DX SYNTHESISERS  
NOW ON DEMONSTRATION AT FUTURE MUSIC!

DX 1 Synth	£POA	Yamaha's Revolutionary FM Sound Generation System creates stunningly realistic and creative sound synthe- sis at affordable prices!
DX 7 Synth	£1295	
DX9 Synth	£895	
PF10 Piano	£749	
PF15 Piano	£949	



COME AND TRY  
THEM NOW!

## SEQUENTIAL CIRCUITS

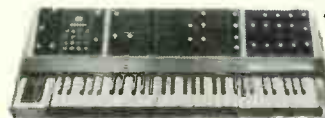
PROPHET 600 £1395!

99 memories polysyncer!  
In Stock Now!

Pro 1 - In Stock £349

THE FANTASTIC T8 IN STOCK AT LAST  
The guv'nor polysynth with every feature

£3999!



The Memorymoog £2495  
Moog Rogue £225!

## BOSS

BOSS TU12 TUNER

World's 1st hands free  
computerised tuner

£39



SPECIAL OFFER!

Buy a full set of pedals at our normal  
price, and get a BCB 6 pedal board,  
worth £65 FREE!

BOSS & AMDEK Pedals!

BF 2	£54
CE 2	£52
CE 3	£59
DM 2	£76
PH 1R	£49
OC 2	£42

AMDEK

SPECIAL Amdek kits now  
at 30% discount!!!!



Roland Spirit 10	£65	Fender Showman	£499
Roland Spirit 30	£129	Carlsbro Cobra 90K	£288
Roland Spirit 50	£165	Carlsbro Cobra lead	£237
Roland Bolt 60	£295		
Roland Bolt 100	£425		
Roland Cube 60K	£225		
Roland Cube 40K	£165		
Roland Cube 60 CH	£199		
Roland Cube 40CH	£159		
Roland JC 120	£455		
Roland JC 50	£235		
Fender Harvard	£165		
Fender Yale	£235		
Fender Studio lead	£299		
Fender Stage lead	£335		



## Fender

ELITE STRATOCASTER: New style Tremelo,  
active pre-amp, new neck and truss rod design,  
improved machine heads, individual pick up  
selector switches

ELITE TELECASTER: Dual noise cancelling  
pickups, active electronics, 3-way pickup selec-  
tor, separate volume & tone controls.

ELITE PRECISION: Dual noise cancelling  
pickups, active electronics, new di-cast mach-  
ine heads, new finishes.



Call for  
low low prices

## Washburn

## Ibanez

New Am 50 semi-Acoustic now  
in stock Full range of Blazer  
Guitars and Bases in stock  
phone for details.

Aria Pro II



SPECIAL! Buy any controller  
with or without GR300 Base  
unit, and get a GR100 Base  
Unit FREE!  
G 808 + GR300 ..... £799  
G 303 + GR 300 ..... £699  
G 505 + GR 300 ..... £599



FAST MAIL ORDER

NO DEPOSIT HP

INSTANT CREDIT

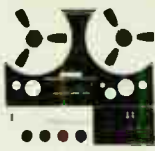
# MUSIC

104-106 Elm Grove,  
Southsea, Portsmouth.  
Tel: (0705) 820595.

85 St Mary's Street,  
Southampton, Sussex.  
Tel: (0703) 26798.

## Fostex

MULTITRACK RECORDERS  
A8 — 8 Track Dolby C  
A4 — 4 Track Dolby C  
A2 — 2 Track Dolby C  
250 — 4 Track Cassette



NEW!

A8LR

Capacity to record on all 8 tracks at once. Ideal for Live recording, etc Call for **SPECIAL Prices!**

### EFFECTS!

3160 Reverb : 3070 Compressor Personal Monitor  
Professional Mikes : 350 Mixer : 3030 Dolby C  
3050 Digital Delay

## X-15

Multitracker  
AVAILABLE NOW!

4 Track  
Battery/Mains  
Cassette.  
Dolby B. Mixer.  
Plays Standard  
Cassettes

ALL FOR AN  
INCREDIBLY LOW  
£299!

COMING  
SOON!  
The Fantastic NEW  
B16



## Accessit

This professional quality home recording gear available now.

Compressor \_\_\_\_\_ £51.69  
Equaliser \_\_\_\_\_ £51.69  
Noise Gate \_\_\_\_\_ £51.69  
Reverb \_\_\_\_\_ £132.25

FREE MAIL ORDER. PHONE FOR DETAILS.



## YAMAHA

PERSONAL STUDIO SYSTEM!



MT44 4 track runs at normal speed, Dolby B-C £399  
MM30 Mixer 4 input echo graphic £199  
RB30 rack-patchbay, tape store £149  
COMPLETE SYSTEM ONLY £699!

## Clarion

SEE THE RANGE OF CLARION HOME RECORDING EQUIPMENT  
On Demonstration NOW!  
at FUTURE MUSIC



NEW ARIA PERSONAL RECORDING EQUIPMENT.  
Available soon!  
CUTEC RANGE AVAILABLE NOW!

## DRUM MACHINES NEW!! CACTUS KIT NOW AVAILABLE!!

Boss DR55 .....	£85
Mattel synsonic .....	£99
The Kit .....	£149
The Kit II .....	£595
Klone Kit II .....	£499
Roland CR5000 .....	£199
Roland CR8000 .....	£299
Roland TR 808 .....	£495
Ardek Handclapper .....	£60
Simmons .....	£POA
Drumulator .....	£185
Yamaha MR 10 .....	£79

## SIMMONS

SDS5 Kits always in stock  
NEW SIMMONS SEQUENCER,  
HI-HAT and CYMBAL MODULES  
NOW IN STOCK!



## Drumulator

Only agents in Essex and Hants!  
We are proud to announce ourselves as  
exclusive Essex and Hampshire agents for the  
fantastic DRUMULATOR.

The digital drum machine we've all been  
waiting for!

Amazingly  
Low  
£985



## DRUMS & PERCUSSION Maxwin 700 ONLY £299



CAPELLE DRUMS & STANDS  
IN STOCK  
PAISTE CYMBALS 30% OFF

### Keyboards

C ARP Odessey .....	£299
C Clarinet D6 'tatty' .....	£195
C Clarinet D6 .....	£275
C Rhodes Stage 73 .....	£350
C Casio 301 .....	£175
S Roland CSQ 600 .....	£199
F Roland CSQ 100 £99	
C Korg Micro Preset .....	£150
C Roland RS09 S/H £175	

### Guitars

P Roland GR300 + G303 .....	£499
P Jaydee Roady Bass .....	£249
S Jaydee Hooligan .....	£240
S Kramer Flying V .....	£275
S Kramer Pacer .....	£240
C Yamaha BB 1200 .....	£255
C Ibanez RS 924 Bass .....	£225
C Washburn Fretless Vulture .....	£225
C Washburn A15 .....	£125
S Washburn Eagle, Black .....	£250

P=Portsmouth

F=Fulham

C=Chelmsford

S=Southampton

### FUTURE MUSIC STOCK CLEARANCE SALE!! Many New & Used Bargains

#### Amps

P Burman GX3 .....	£195
P Burman Pro 501, 1 x 12 .....	£340
S Burman Pro 501, 2 x 12 .....	£385
P Polytone Mini Brute .....	£210
P Polytone mini Brute Bass .....	£195
C + S Yamaha JX50B .....	£195
S C-Tape 6 way drum pickup .....	£199
S Hi-watt 50w .....	£60
C Hi-watt 100w top .....	£145
C Carisbro Stingray top .....	£125
C H/H 100w Slave .....	£95
C Laney 100w Slave .....	£75

#### Misc

P Canery 12-2 Mixer .....	£275
P Morley Flanger .....	£ 59
C Tellux mini disco .....	£175

### ORDER FORM

Name .....

Address .....

Telephone number: .....

Please send me the following goods:

I enclose a cheque/Postal Order for £.....  
Or please debit my Access/Visa Account

No.: .....

Signature: .....

NO DEPOSIT H.P. AVAILABLE!

H.P. Quotation Required

Please send me details on the following goods;  
enclose a large s.a.e.).

BARCLAYCARD AMERICAN EXPRESS ACCESS



## Back Panel

The Audio Outputs provided are Mono or Stereo, Left and Right. In Double or Split Mode, the Left and Right assigned sounds (four voice channels each) are routed to their respective outputs, whereas in Single whichever of the two is selected is routed to both sides. Headphones (with a minimum impedance of 1200 Ohms per element) can be connected either through two mono jacks to Left and Right, in which case the sound will be in stereo or they can be put

through the Mono socket using a stereo jack, giving a mono signal to both channels.

Footswitches can be used to control the operation of the Second Release (see New Features paragraph), Unison/Track or the Sequencer. A piano-type dual pedal comes as standard with the instrument which will operate any two of these functions at one time.

The Cassette Interface provides unlimited storage of programs (128 or 8 at a time) or sequences, so a library can be built up and reloaded at a moment's notice. Save/Load time for 8 programs is about 14 seconds or 94 seconds for 128 programs or 8 sequences.

The Record Enable/Protect switch allows presets and sequences to be overwritten or protected from accidental erasure, depending on the position.

The MIDI In/Out sockets allow the connection of an MIDI devices, giving access to

program parameters as well as allowing external sequencing. Sequential Circuits are soon to be bringing out a sequencer using their MIDI Sequencer Interface unit with a Commodore 64. Alternatively, E&MM's Micro-Midi board (E&MM May 83) could be used in conjunction with a suitable personal computer and software.

### Conclusion






The Prophet T8 is essentially a performer's instrument. The high quality wooden keyboard and quick programmer functions make it a superb performance machine which responds to the subtlest of playing techniques. Sequential Circuits designs have always been both easy-to-use and flexible. The T8 is no exception, and adds velocity-and pressure-sensing to the Prophet's repertoire.

Unfortunately, the RRP of £4,700 means that large number of aspiring players will not be able to afford this, but for those who can get the wherewithal together, it will indeed be money well spent.

**Paul Wiffen**

**E&MM**

For further information contact Sequential Circuits, Postbus 16, 3640 AA Mijdrecht, The Netherlands.

			<p>4/8 SMALLBROOK QUEENSWAY BIRMINGHAM</p> <p><b>021-643 4655</b></p> <p><b>PURVEYORS OF KEYBOARDS TO THE GENTRY!</b></p>		
<p><b>KORG®</b></p> <p>SIGMA PRESET POLY 61 · POLY 2 TRIDENT II</p>		<p> <b>Roland</b></p> <p>SH101 CHECK OUR PRICE JUNO 6 JUPITER 8 MC202 JUNO 60 JX3P IN STOCK JUPITER 6</p> <p>All the rhythms you could want. Full range of electric pianos.</p>			
<p></p> <p>LIBERATION (the white one) MEMORY MOOG - ROGUE OPUS 3</p>		<p> <b>YAMAHA</b></p> <p>DX9 - DX7 PF's when we get them! Lots of accessories</p>		<p><b>CASIO®</b></p> <p>FULL RANGE INCLUDING THE NEW MT800</p>	
<p>SPECIAL KEYBOARD AMPS BY YAMAHA - OHM &amp; PEAVEY. GET YOUR CHRISTMAS EARS ON!</p>					
<p><b>AHB</b> ALLEN AND HEATH BRENELL LTD</p> <p>MIXERS SYSTEM 8 ON DEMO</p>		<p>RECORDING</p> <p>58 PRO 8 TRACK 38 8 TRACK 34 4 TRACK 32 NEW MODEL, 2 TRACK</p>		<p><b>TASCAM</b>  <b>YAMAHA</b></p> <p>244 PORTASTUDIOS 234 NEW SYNCH SET 4 TRACK RACK MOULD 122 HIGH SPEED CASSETTE</p> <p>MT44 - MM30 RB30</p>	
<p>JBL MONITORS - AMPEX TAPE - POEYER HEADPHONES - PACKAGE PRICES</p>					
<p><b>BARCLAYCARD - ACCESS - AMERICAN EXPRESS - INSTANT CREDIT - MAIL ORDER</b></p>					



# YAMAHA'S 1984 KEYBOARDS. SPACE-AGE PCM TECHNOLOGY AT STONE AGE PRICES

Yamaha's new range for '84. **LIMITED OFFER. HURRY.** Owing to great demand please order before Christmas. We don't want to disappoint you.

Micro Musical are the mail order specialists in electronic keyboards. Every keyboard carries our extended manufacturers guarantee for an incredible 18 months. All prices are fully inclusive of VAT, packing and same day despatch. Full 14 day money-back guarantee if not absolutely delighted.

## THE MICRO MUSICAL PRICE PROMISE

As established leaders in this field, we guarantee to match any other advertised offer. This promise embraces our entire range of electronic keyboards.

*Brian Saunders*

Send for leaflets giving full information of all our range of keyboards, now available at

**Micro Musical**

**FREEPOST,  
37 WOOD LANE, SHILTON,  
COVENTRY CV7 9BR.  
OR PHONE 0203 616760  
FOR DETAILS.**

### PC-100

Incorporates unique playcards – a breakthrough in data compression technology. Sound great in minutes. Advanced players can add their own ideas. 12 Playcards supplied. Great selection available. RRP £345

Micro Musical Price

**£299**

### PS-25

"Live" Rhythm Accompaniment. Ten instruments in one. Chord sequence programmer. Play in any key. Automatic piano ripple. Pitch control. Plus many other features. RRP £385

Micro Musical Price

**£345**

### PS-400

Truly portable. 44 Note Keyboard. Realistic voices. Ten instrument sounds. Ultra real drums. Easy-play auto bass chord. Computer-like playback memory for programmed accompaniment. Pitch control. Including case. RRP £235

Micro Musical Price

**£199**



**PS-300** 37 note keyboard. 8 authentic voices – choose the sound that suits the music best. Ultra real drums – be a one man band! Easy-play auto bass chord lets you play chords and accompanying bass using just one finger. Including case. RRP £199

Micro Musical Price

**£149**



**PS-55** Beautiful STEREO sound. 32 voices. 16 incredibly life-like rhythms and multi-memory system. The completely new Yamaha instrument you've all been waiting for! Huge variety of sound effects for full musical expression. RRP £529

Micro Musical Price

**£479**

### PS-35

Stereo Symphonic sound. PCM tone generator creates 16 sensational life-like rhythms . . . fill-ins . . . handclap effects. Computerised functions allow beginners to enjoy themselves straight away and the accomplished to break new sound barriers. RRP £429

Micro Musical Price

**£379**

### PC-1000

Top of the Range. . . it makes everyone sound like a virtuoso. Anyone can play. Advanced Playcard System shows you which melody and chord notes to play – and backs you up with fully orchestrated accompaniment. Huge range of effects and voice realism. The possibilities are endless. RRP £599

Micro Musical Price

**£550**



**SEND OFF YOUR ORDER TODAY**  
NO STAMP NEEDED

TO: MICRO MUSICAL LTD., FREEPOST, 37 WOOD LANE, SHILTON, COVENTRY CV7 9BR.

Please send me  qty Keyboard Model No.  Value   
I enclose cheque/postal order to the value of £  or debit my  
Access/Barclaycard  account No.

I understand that if I am not delighted I may return the Keyboard(s) to you within 2 weeks in good condition and my money will be refunded in full.

NAME

ADDRESS

POSTCODE

**24 HOUR  
TELEPHONE  
ORDERING  
SERVICE:  
0203  
616760**



The PC-1000 is the latest addition to the Yamaha Portatone range, Keyboards which combine portability with a wide choice of preset sounds and accompaniments. This model also incorporates the Playcard system for teaching beginners keyboard notes and the basics of notation, melody, rhythm and chords.

The instrument is completely portable thanks to the possibility of using 6 HP2 batteries to power it. Alternatively external power from a 9-12V adaptor can be used via a female phono plug. Yamaha even have a Car Battery Adaptor accessory (CA-1) which allows you to power the keyboard from a car cigarette lighter socket.

The unit has a 49-note keyboard (4 octaves C-C) which can be used, as a whole, with the Orchestra and Solo voices or split to give Single Finger Chords of Fingered Chordal accompaniments as well as Auto Bass, all synchronised to the rhythm unit. The 12cm internal speaker handles 5W, but the PC-1000 can be plugged through an amp or your hi-fi with a stereo signal. AUX IN allows an external signal (record player, mic, radio etc) to be put through the built-in speaker. Two more sockets on the back panel allow volume and sustain to be controlled by footpedal accessories (EP-1 and FC-5 respectively). You can also listen to the unit on headphones which disconnects the internal speaker and allows you to practice without driving the family mad.

## Panel

Starting from the left-hand end of the panel, the first control is the Transposer. This alters the pitch of the keyboard in semitones over a range of an octave (down a fourth and up a fifth). The manual says this allows you to play with other instruments, but I suspect the fine tune on the back would be more useful for tuning to other people's instruments. Still, it does allow you to play a difficult piece of music in an easy key. Next to this is Master Volume. Then we come to the Auto Bass Chord Section. Besides its own individual volume control, there are five switches. First, there is Normal, which effectively turns this section off and allows you to play the whole keyboard normally. Then there is a Single Finger Chord system. When this is in operation any note in the marked section of the keyboard gives you the major chord of that name and, if the rhythm section is running, then an auto bass line and rhythmic chordal accompaniment is provided. Using more fingers below the actual key note (always the highest) allows other chords to be played. Playing a white note below gives you a 7th and a black note gives you the minor chord. Playing both a white and black note gives you, not sur-

prisingly, a minor 7th chord. When the rhythm is running the bass lines alter accordingly. What ever chord is sounding is named in the LCD display to the right of this section. This is a good feature as it allows the beginner to hear the difference between the sound of various chords and know which is which.

## Orchestra

Now we actually come onto the keyboard sounds. In the polyphonic Orchestra section, there are 12 tones, again chosen by six switches and a latching selector (with a status LED). They are:

**Jazz Organ** – a nice 'hammony' plunk at the beginning of the sound but a bit thin afterwards. Good if played on fast chords.

**Pipe Organ** – Quite authentic. A little sustain gives a nice church acoustic.

**Brass** – The right tone, but too much of an organ envelope.

**String** – A fuller sound but a bit too organ-like still.

**Jazz Flute** – Quite good with a nice delayed tremelo effect.

**Clarinet** – Has that characteristic hollow sound.

**Reed** – Very nice again with delayed vibrato.

**Music Box** – Perhaps a bit too full a sound for a music box but a very useful sound nonetheless.

**Piano** – The best of the polyphonic sounds. Has a nice edge to it.

**Harpichord** – A good envelope (fast attack, fast decay) but a bit thin and fizzy.

**Jazz Guitar** – Whilst it sounds nothing like a guitar, it's a very useable sound with punch and depth.

**Vibes** – another very reasonable imitation which sounds very full and has a pleasing tremelo as well.

All these sounds are 9-note polyphonic over the entire keyboard in the normal mode, but only three note polyphonic if the Auto Bass Chord and Arpeggio are in use (presumably because these devices require the other six). Sustain is available on all of these via a slider and there is a volume control to adjust their level. Alternatively they can be taken in and out instantly by a switch marked Orchestra On.

## Solo Sounds

Twelve solo sounds are selected in a similar way, but with a greater choice of effects is available. Besides Sustain, there is Vibrato depth, from none to a Max which is just right, and Celeste, which appears to be an ensemble chorus effect, which rounds out the sound. The sounds themselves are:

**Piccolo** – a very pleasant sound, full and lyrical.

**Organ** – Authentic electronic organ sound with a nice key-click.

**Trumpet** – Not so good. Very buzzy and thin. Helped a lot by the Celeste effect.

**Oboe** – Recognizable but a bit thin.

**Clarinet** – Same as Orchestra version but a bit fuller.

**Violin** – Excellent with a real bowed effect.

**Synth** – Actually sounds like a synthesiser with the filter opening up.

**Banjo** – An unusually good plucked sound for a keyboard like this.

**Piano** – Not so authentic as the Orchestra version, but a good solo voice.

**Harpichord** – Much better than the Orchestra one, with a fuller spikier sound.

**Guitar** – Again nothing like a guitar but perfectly useable.

**Vibes** – Identical to Orchestra voicing, but a bit louder. Ideal for bringing out the tune.

Selecting Fingered Chord allows the more advanced player to play his own chord shapes but have the bass line and rhythm taken care of. As the LCD also tells you what chord is being fingered, this is also good for beginners, helping them learn what notes comprise any given chord. Unfortunately this setting doesn't change the chord for different inversions, but this is perhaps for more advanced players.

The Memory switch in this section acts as a 'hold' device allowing you to move from one chord to the next (either Single Finger or Fingered), and Variation gives an alternative bass-line. Each rhythm (see later section) has its own bass-line pattern, but without Variation these are restricted to tonic and fifths. Pressing Variation brings in the possibility of seconds and thirds to give more interesting lines.

Arpeggio is the next section along. Again synchronised to the rhythm pattern it provides a rising and falling arpeggio based on the chord held down in the Auto Bass Chord Section. This can be mixed in with an individual volume and Variation changes it to just ascending notes.

On to the Rhythm Section proper. Again an individual volume control is provided and, of course, a tempo control as well. There are 16 rhythms, selected by eight switches and a latching upper/lower selector. The usual selection of rhythms is provided – Swing, Waltz, a couple of Disco beats, a few Rock rhythms and a handful of latin patterns.

the bass drum has a nice thud to it even through the limiting built-in speaker, but through external speaker it packs a fair punch. The snare is less successful, not having a crisp enough attack for the Rock and Disco rhythms. But the real successes are the usual weak points of this type of keyboard. The Hi-Hat makes the Disco beats and the Cymbal is the most realistic

# YAMAHA PC-1000

I've heard in a long time. The Swing beat actually sounds like a real drummer.

The fills are activated by a handy Fill-in button at the left-hand end of the keyboard, and there are 5 variations selectable for each pattern. Generally speaking these are very authentic, but all the third variations are basically rest bars. The Tom-Tom sounds are OK but there is a bit too much pitch in them.

hand-claps (1 or 2) can be added to each rhythm, and have a reasonably realistic sound. However, they can get a bit tedious, so Yamaha have thoughtfully enabled them to be taken out of all the patterns.

The rhythm unit (and along with it the chords and auto-bass line) is started by pressing the start button, but there is also a synchro-start facility. This starts the rhythm unit automatically when the keyboard is first struck. However, at the first opportunity you should change back to ordinary playing, because otherwise problems occur with the rhythm resetting every time you change chords. Attempting to change chord too fast means that the Auto facility registers two notes held down which, in turn, means a wrong chord will be played.

All these sounds are monophonic and are automatically assigned to the top note being held down at any time. Unfortunately this makes using it a bit tricky especially in Normal Mode. If you take your right hand off the keyboard (which will presumably be playing the melody line), then the solo voice jumped down to the highest note in your left hand. The problem is not so acute in Auto Bass Chord mode but care is still required. Still with a bit of practice the solo voice helps bring out the lead/melody line nicely.

## Playcard

Now we come onto the teaching section of the keyboard using the Playcards (which combine traditional musical notation with a magnetic strip along the bottom which allows the keyboard to read off an entire arrangement of the tune, melody, accompaniment, rhythm, tempo and mix included. By inserting the card in the right-hand end of the slot provided and running through to the playing position in the middle, the magnetic strip is automatically read, and when this process has been successfully completed the LED above the top key lights up. If this doesn't happen, a second run through the slot will correct the situation.

Then after a couple of seconds the piece begins playing. Although the arrangements of even the most contemporary pieces are a bit Radio 2-ish, the card does rigidly follow the notes and chords played, ideal for the beginner to see what's going on. An obbligate (counter-melody or decoration) is provided to make a fuller arrangement. You can stop the song playing at any point by hitting the stop button.

But the real joy for the learner is that, besides having the music in front of him (which you don't get with the Casio ROM system), the LEDs above the notes light up to show how the melody is being played. The



chord notes are also light and the name given in the LCD display.

Once you have familiarised yourself with the tune, you can being the learning process in earnest. After playing along with the tune a couple of times, you can switch in Melody Cancel. Now the tune is not played (leaving you to take over) but the LEDs still light. In the initial stages, the use of the Free Time key is invaluable, as it prevents the accompaniment from running away whilst you are still fumbling for the right note. The chords, bass and rhythm actually wait for you to play the appropriate note(s) before going on. When you feel a bit more confident you can use the Melody Cancel without Free Time.

The next stage in the learning process is Chord Lesson, which indicates the chords and waits for you to play them before proceeding with the automatic performance of the melody. Again, when you feel confident of the chord structure, there is a mode (Chord Cancel) which still indicates the chord notes but expects you to keep up with the tune. In this way you can learn melody and accompaniment separately and put them together afterwards.

Other features the Playcard system allow are Preset Balance Cancel, so you sort out the mix of sounds yourself, Phrase Repeat, which allows you to program repetitions of tricky phrases for extra practice in learning, and Instrumental Sequencer. This last one enables you to program a set of sound

changes automatically during your performance.

For the days when you no longer need the Playcards a proper music stand is also provided, which can be stored on the underside of the unit.

## Conclusion

The overall layout of the PC-1000 is extremely clear and easy to use. A multitude of LEDs on both keyboard and switches tell you what you are hearing (or what you should be playing) and the LCD display for chords is very helpful.

Soundwise, the PC-1000 has one of the best rhythm boxes available on this sort of keyboard. Whilst the keyboard sounds are not in the same class, they range from good to useful and can easily be switched in and out.

But the real selling point of this unit is the Playcard system, which is a great help for teaching (particularly reading music, a skill which is still much needed but many people miss out on). Twelve different Playcards come with the machine and sets of others featuring particular tastes in songs are readily available.

### E&MM

The RRP of the PC-1000 is £625. For further information and your nearest dealer, contact Yamaha Special Products, Mount Avenue, Milton Keynes, Bucks, MK1 1JE (Tel. 0908 71771).





## Korg MM-25 Monitor

**M**usicians who play both guitar and electronic keyboards face something of a dilemma when it comes to choosing amplification. On the one hand there are few – if any – amps with inputs capable of doing both instruments justice, while purchasing two separate combos is both expensive and, for many people, impractical.

Now Japanese giants Korg have introduced the MM-25 Multi Monitor, a portable combo amp designed to match the same company's KMX-8 mixer reviewed in last month's E&MM. The unit shares the mixer's composite metal and plastic construction and matt grey finish, and is built to the same robust standard.

Like all combos, the MM-25 can be divided into three main sections: pre-amp, amp and loudspeaker. The pre-amp section seems conventional enough at first glance, with two inputs positioned to the left of the unit's front panel. The first of these is a straightforward line input with an impedance of 50k, but it's the second socket (marked 'Function') that provides the greatest source of interest.

Essentially, the function input's impedance level can be selected from a choice of six settings provided on a rotary control above the jack socket. First of these is a mic input with an impedance of 10k, followed by Guitar, Distorted Guitar and

High Keyboard (all 500k), Low Keyboard (also 500k, but with 10dB less gain), while last of all is a Line input with identical specifications to the separate jack described above.

There is of course an overall volume control governing both jacks, though sadly no individual mixing is provided, making level matching possible only by controlling whatever controls are present on the instruments in use. There are also two tone controls, Bass (operating at a fixed frequency of 100Hz) and High (10kHz). Oddly, these controls have entirely different cut and boost parameters, the bass pot being capable of a maximum of 10dB boost and 15dB cut while the treble can manage 14dB of boost but only 8dB of cut. However, while this looks more than a little strange in the context of a spec sheet, in practice both functions work well enough, though in these hi-tech times of graphic equaliser-equipped amplifiers, the facilities of the MM-25 are perhaps a little basic in this respect.

Lastly, the pre-amp section has a Line Output for connecting a second MM-25 (to make up a stereo pair, say) or side-step the need for miking-up when recording.

The main amplifier is specified as having an output of 25 watts rms, 50 watts peak, though when the amp is pushed towards its (not inconsiderable) limits, it sounds like rather more. The amp drives a single full-

range speaker of 12cm diameter, the latter presenting a load of four ohms.

A bass-reflex vent is located at the top of the unit and this (together with the amp's solid construction, I would guess) assists greatly in giving the MM-25 that solid, clean and undistorted sound that so many other Mini-Monitors aspire to, but never quite manage to achieve.

With the possible exception of the Mic input, which has perhaps a little too much gain for its own good, all input functions were dealt with admirably by the MM-25, Distorted Guitar being the most impressive given the limitations imposed by the unit's size and power. It's no exaggeration to say that the Korg confidently out-performed many combos of twice or three times its size, and this is particularly impressive when you consider that, as hinted at earlier, many of its competitors are considerably less versatile when it comes to handling different types of input.

As if to emphasise the MM-25's versatility, Korg have provided the output section with two headphone sockets (both with an impedance of 32 ohms), one of which cancels the output of the loudspeakers completely – so now you can blow your own brains out with an overdrive guitar solo and still be on friendly terms with your neighbours.

As an all-purpose monitor, the Korg MM-25 is (to my knowledge, at least) more or less unequalled in the confidence with which it deals with almost any situation that might arise. Subjectively, it adds little character of its own to the input signal (again, with the exception of the Mic input), and its signal-to-noise ratio is extremely creditable at better than 75dB with volume at maximum and tone controls flat.

No reverb or chorus unit is provided, but this would be out of character with the MM-25's possible functions as a home studio active speaker or as an accurate (and forceful) on-stage monitor for live work. The unit is usefully light at around 5kg, and a built-in foldaway handle makes it all the more easily portable.

For those on tight budgets (or for those who are undecided about precisely which sort of monitoring to plump for) the MM-25 begins to make an awful lot of sense, and my only gripe is that Korg have not fitted any form of 'EQ cancel' switch to bypass the tone controls completely, which would make the unit that much more suitable for studio monitoring (in stereo pairs, of course). Yet as it stands the MM-25 is still an impressive piece of hardware, and I only wish other manufacturers would follow Korg's example in providing a monitor that really can be used in virtually any situation.

**Dan Goldstein**

**E&MM**

*Recommended retail price of the MM-25 is £159.95 (inc VAT). Distribution is by Rose-Morris, 32-34 Gordon House Road, London NW5 1NE. Tel. 01-267 5151.*





# SIMMONS



## Electronic Drums

### SIMMONS UK MAIN AGENTS

Al Music	Manchester	061-236-0340
Ardertons	Guildford	0483-38212
Argents	London	01-379-6690
Argents	Worcester	0905-611774
Bootleg	Epsom	03727-24528
Carlsbro	Mansfield	0623-651633
Carlsbro	Sheffield	0742-640000
Carlsbro	Nottingham	0602-704820
Carlsbro	Leicester	0533-24183
Drum Cellar	Bristol	0272-741026
Duck Son & Pinker	Bath	0225-65975
Furlongs	Sevenoaks	0732-460353
Future Music	Chelmsford	0245-352490
Future Music	Portsmouth	0705-820595
Future Music	Southampton	0703-26798
J.S.G.	Bingley	0274-568843
Livewire	Cardiff	0222-496619
McCormacks	Glasgow	041-332-6644
Eddie Moor	Bournemouth	0202-35135
Session Music	Belfast	0232-238502
Sidestreet	Edinburgh	031-337-1071
Sounds Plus	Bury St Edmunds	0284-703366
Southern Music	Brighton	0273-733387
Stix	Peterborough	0733-52357

Simmons Electronics Ltd.,  
Abbey Mill, Abbey Mill Lane, St. Albans,  
Herts. AL3 4HG  
Tel: 0727 54601/2. Telex: 8952387

## ELECTRONIC EQUIPMENT CO

ELECTRONIC EQUIPMENT CO  
SPRINGFIELD HOUSE, TYSSEN ST, LONDON E8 2ND  
TEL: 01-249 5217/8/9. TELEX 8953906 EECOI



**LESLIE TREMELO SPEAKER SYSTEM.** A Two-speed rotating baffle system which when used as part of an Organ, Hi-Fi or Disco System produces the famous LESLIE effect. The unit comes complete with a 50 watt 8 ohms speaker at peak output, two 220/240v 50Hz motors with central drive to rotating Horn/Baffle, this gives a three way sound effect i.e. normal tremelo sound when stationary, wraparound sound when revolving at 1 rev per sec and supersound at 7 revs per sec. Baffle size 485mm x 395mm Overall depth from speaker magnet to central boss of rotating horn/baffle 300mm approx. £200 for 5, £360 for 10, £825 for 25, £1,500 for 50, £2,700 for 100. Sample sent for £45 + £5 P&P. £57.50 inc VAT.

**SWELL PEDAL** incorporating the latest technology volume controlled by photo electric cell, designed to be mounted in a console, detachable metal mounting plate with roller stop for easy installation. Size 250mm x 120mm matt black finish. £56.25 for 5, £103.50 for 10, £238 for 25, £428.20 for 50, £788 for 100. Sample sent £12.50 + £4 P&P. £18.98 inc VAT.

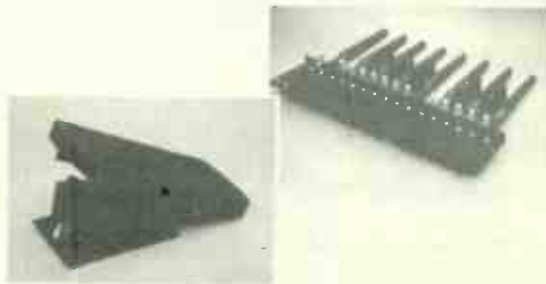
**ORGAN KEYBOARDS.** High Quality 54-note Keyboard manufactured by Fatar in Italy. Keys are mounted on a pressed steel frame with steel springs on each key. Note range 'C' to 'F'. £100 for 5, £180 for 10, £410 for 25, £775 for 50. Sample keyboard sent for £25 + £3 P&P. £32.50 inc VAT.

**TWIN KEYBOARD AND FRAME.** Two 37-note 'C' to 'F' Keyboards mounted on a plastic frame. Keyboards are offset by one octave and are hinged for easy adjustment. Manufactured by FATAR. £175 for 5, £315 for 10, £710 for 25, £1275 for 50. Sample sent for £40 + £4 P&P. £50.60 inc VAT.

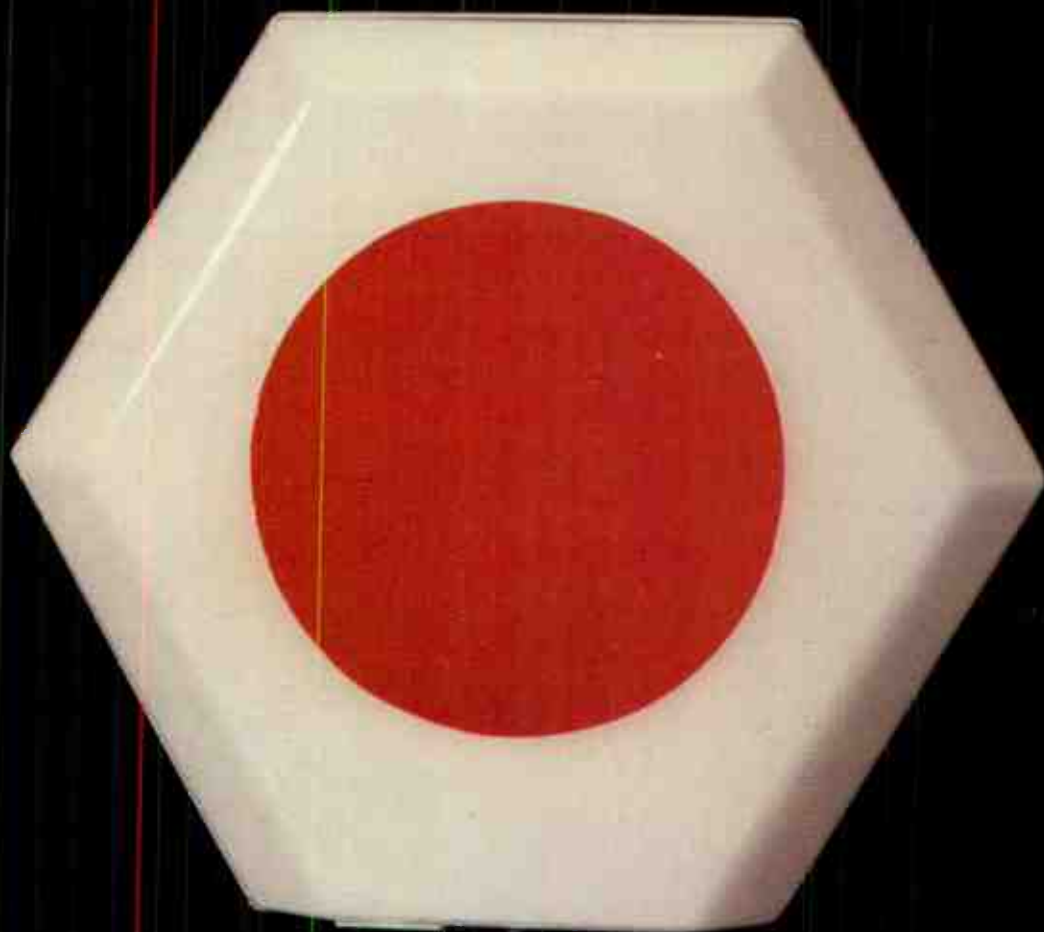


**TWIN KEYBOARD AND FRAME.** 2.44 note 'F' to 'C' Keyboards mounted on a metal frame hinged for easy adjustment. Keyboards offset by one octave with keyboard separator giving simulated wood effect clipped between the two keyboards. Manufactured overall dimensions width 1,027mm, height 131mm, front and back 361mm, keyboard separator approx 1094mm. £202.50 for 5, £372.60 for 10, £883.35 for 25, £1545.35 for 50. Sample sent £45.00 + £4 P&P. £56.35 inc VAT.

**ORGAN PEDALBOARD.** A high quality 13 note 'C' to 'C' Pedal board. Notes are manufactured in a hardwearing plastic covering steel leavers. Contact switch fitted to each pedal unit 380mm x 250mm. £108 for 5, £198 for 10, £822 for 50, £1513 for 100. Sample sent for £24 + £4 P&P. £32.50 inc VAT.



# suppliers of electronic drums to Japan since 1983



... **SIMMONS**

Simmons Electronic Drums, manufactured in St. Albans, England are now available in thirtytwo countries including Japan.  
Check them out at your local dealer.

Al Music, Manchester 061-236 0340  
Andertons, Guildford 0483 38212  
Argents, London 01 379-6690  
Argents, Worcester 0905-611774  
Bootleg, Epsom 03727 24528  
Carlsbro, Mansfield 0623 651633

Carlsbro, Sheffield 0742 640000  
Carlsbro, Nottingham 0692 704820  
Carlsbro, Leicester 0533 24183  
Drum Cellar, Bristol 0272 741026  
Duck Son & Pinker, Bath 0225 65975  
Furlongs, Sevenoaks 0732 460353

Future Music, Chelmsford 0245 352490  
Future Music, Portsmouth 0705 820595  
Future Music, Southampton 0703 26798  
J.S.G., Bingley 0274 568843  
Livewire, Cardiff 0222 496619  
McCormacks, Glasgow 041 332-6644

Eddie Moor, Bournemouth 0202-35135  
Session Music, Belfast 0232 238502  
Sidestreet, Edinburgh 031-337-1071  
Sounds Plus, Bury St Edmunds 0284-703366  
Southern Music, Brighton 0273-733387  
Stix, Peterborough 0733-52357

Simmons Electronics Ltd., Abbey Mill, Abbey Mill Lane, St. Albans, Herts. AL3 4HG Tel: 0727 54601/2. Telex: 8952387

# RECORD REVIEWS

Singles

## Yello Lost Again Stiff BUY 191

More above average stuff from the Swiss electropopsters. 'Above average' isn't really a very revealing phrase but it's just about all I can think of to describe a record that has the makings something truly historic but just falls down at the last hurdle.

For like so many European bands, Yello make the mistake of copying English forms and styles without paying sufficient attention to carving out an individual character of their own. This is a pity, because 'Lost Again' is really a Very Good Record Indeed (it certainly shows a few British electronic duos a thing or two). It's just the lack of identity that bugs me and which, if I'm not very much mistaken, will prevent it getting the chart coverage its creators so richly deserve.

It's taken from a new album (also on Stiff) which should be out by the time you read this, and which I await with some enthusiasm.



## Helden Holding On ZiCa ZICA 01

With a fair amount of live work behind them, Warren Cann and Hans Zimmer have finally risked everything and committed their efforts to vinyl on their own (independently distributed) record label. It's been well worth the risk.

While not a complete success, 'Holding On' is a well constructed little piece which sees Cann's pounding, syncopated drum-beats providing the backdrop for some controlled synth doodling from Herr Zimmer and some pretty convincing vocal work from guest artist Zaine Griff.

Nothing is perfect (the chorus strays a little too far into MoR territory, for one thing) but after a couple of listens 'Holding On' joins that elite band of electronic records that can truthfully

be said to be addictive.

The single is only a taste of things to come, however, as the duo plan to release the whole of their *Spies* album (from which 'Holding On' is taken) later this year, and if this is anything to go by, it should be a pretty significant release.

In the meantime, 'Holding On' could conceivably make the charts (with proper distribution) or at least become a cult indie hit. I dare you not to buy it.

## The Cure The Love Cats Fiction FICSX 19

The third in The Cure's trio of 'experimental' singles (all of which have made the charts, incidentally) is probably your last chance to catch Smith, Tolhurst and company having a party before they retreat into their darker incarnation for the new album.

'Love Cats' is a tongue-in-cheek jazz special, complete with vibes, double bass, funk piano and ironic sixties lyrics

(we should have each other for tea/we should have each other with cream!). Surprise, surprise, the whole thing works wonderfully - I can just see Terry Wogan going up to the news with it on Radio 2.

It probably won't go down too well with traditional Cure fans of the old school, but then I don't think it's really meant to. The Cure have a knack of simultaneously delighting newcomers and infuriating those who know their music well.

Almost certainly their last chart hit.

## Italian Electronic Technology takes the lead . . . . .

**£299**  
RRP inc. VAT



EKO's amazing new keyboard, combining the latest microchip technology with Italian design excellence.

- 4 - OCTAVE Keyboard.
- 10 PRESET voices, including PIANO, VIBES and JAZZ ORGAN.
- VARIABLE SUSTAIN.
- 12 RHYTHMS.
- FULLY AUTOMATIC ACCOMPANIMENT with manual or one-finger chords and MEMORY.
- ARPEGGIO.
- A.C.C. SYSTEM giving full chords on melody.
- CHORD SEQUENCER can pre-programme up to 250 chords.
- TRANSPOSER shifts up to 6 semi tones up or down.
- MAINS, BATTERY or CAR LIGHTER powered

# EM EKO 10

For your free literature on the EKO EM10 please complete the coupon and send with a stamped addressed envelope.

Name \_\_\_\_\_

Address \_\_\_\_\_



U.K. Trade Distributors:

**John Hornby Skewes & Co. Ltd.**

Salem House, Garforth, Leeds LS25 1PX.

EMM/EM10/83

# CAN'T PLAY A NOTE?...

The beauty of the PC-1000 is that it's ideal for all kinds of players, from absolute beginner to accomplished performer.

Because besides being a multi-voice, multi-rhythm keyboard with many effects it also has the Yamaha Playcard System which actually shows you which melody

# ... WE KNOW YOU CAN

and chord notes to play—and backs you up with fully orchestrated accompaniment.

It's fantastic! You can use the Yamaha Playcard System to learn how to play or to have unlimited enjoyment making music.



## INTRODUCING THE NEW YAMAHA PORTATONE PC-1000 IT'LL MAKE YOU SOUND LIKE A VIRTUOSO...

### Advanced Yamaha Playcard System

The Playcard System, which uses Yamaha's unique Playcards, is perfect for everyone—especially if you've always wanted to learn the



keyboard but didn't think you had the ability or the time to do it. Melody and Chord Lamps light up to show you which notes to play.

**FREE TEMPO** Puts you in command of the accompaniment—you can follow the Melody Lamps as slowly or as quickly as you please.

**CHORD LESSON** Makes the music wait until you play the correct chord notes indicated by the Chord Lamps.



Kemble Yamaha, Mount Avenue, Bletchley,  
Milton Keynes.  
Tel: (0908) 71771 24Hr Ansaphone: (0908) 649222

Please send me information on Yamaha portables.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

\_\_\_\_\_

Kemble Yamaha, Mount Avenue, Bletchley,  
Milton Keynes.  
Tel: (0908) 640202 24Hr Ansaphone: (0908) 649222

# RECORD REVIEWS



## Tangerine Dream Hyperborea Virgin V2292

As the march of electronic music continues ever onward, Tangerine Dream, once a part of that march themselves, drift further and further towards its periphery. For though they remain just about the most prolific purveyors of Euro-rock going, each of their more recent albums has signalled a gradual progression rather than a fully-fledged revolution, as has been the case with some of their competitors. *Hyperborea* is no exception.

It begins promisingly enough with 'No Man's Land', a fascinating collage of ethnic and traditional synth sounds which has as its basis a strong (if a little one-dimensional) Hammundesque leadline and sparkling, syncopated string-synth accompaniment.

The title-track comes next, and this is divided into two sections. The first is dreamy and atmospheric, with some delicate wind and piano sounds over another (more conventional) string-machine backing, but this atmosphere is rather rudely disturbed by the piece's second section, an up-tempo, rhythm-machine based track which utilises the same instrumentation as the first section but adds a full-frontal Moog solo over the top. None too subtle.

Side one's closer, 'Cinnamon Road', is something of an oddity. Its structure is that of a conventional three-and-a-half-minute Top 30 hit, but the lack of vocals (and the fact that TD have rarely ventured into this kind of terri-

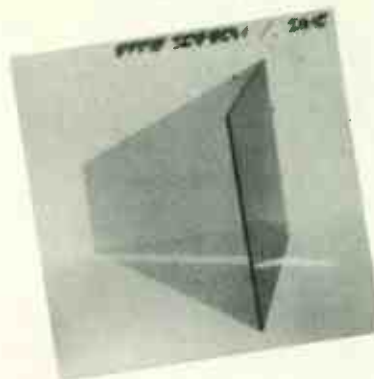
tory before) makes the whole piece rather disquieting if nothing else.

Side two is entirely devoted to 'Sphinx Lightning', a real magnum opus in the Tangerine Dream tradition. It starts well enough with some neatly conceived (if slightly monotonous) tribal rhythm-machine patterns underpinning some fairly 'safe' lead synth work. A drifting, ambient centre section follows, and it's this which is really the album's highlight, containing as it does some glorious, shifting synthscapes the like of which TD have previously hinted they were capable of but never actually delivered. Unfortunately, 'Sphinx Lightning's' ending is something of an anti-climax, though this would be of much less significance if what led up to it wasn't quite so long-winded.

A somewhat mixed album, then, though one which I'm sure many TD fans will play over and over and still not grow tired of. Sooner or later, however, people are going to have to realise that, although Messrs. Franke, Schmoelling and Froese continue to innovate with their instrumental arrangements and unconventional production techniques, they seem to be a little lacking in inspiration melodically: there's no real way for instance that the casual listener would be able to tell the difference in time between 'Sphinx Lightning' and the non-vocal sections of *Cyclone*, despite the fact that there are five years separating them.

Perhaps I'm being a little too pessimistic, but I can't help feeling TD's most creative era has been and gone.

**Dan Goldstein** **E&MM**



## Eddie Jobson Zinc

EMI Capitol EST 4001831

At last, the long-awaited solo album from Mr Jobson, whose past collaborations read like a Who's Who of Progressive Rock. He started playing keyboards and violin in Curved Air, then Roxy Music. He took over from David Cross playing violin in the latter days of King Crimson before becoming one of the guiding forces in the quasi-Crimson regrouping U.K. When that excellent unit came to a premature end, he guested with Jethro Tull for a while, before leaving to concentrate on this solo opus. Even as we go to press, we hear that he has joined the ranks of Yes to replace Tony Kaye who is unavailable for the upcoming tour.

This album justifies his position within the band, both for his consummate musicianship (check his piano playing on 'Prelude' or the violin solo on 'Turn It Over'), and his increasingly complex compositional style. Of particular note are the harmony vocal parts which are closer to Yes than to any previous musical association. Perhaps the most staggering fact about the album is that it was recorded using only three keyboards: Yamaha CS80, the MiniMoog and a Grand Piano. The range of sounds is astonishing and to produce these from two analogue synths of the past (even if they are great synths of the past) shows Jobson to be a very capable and inventive programmer.

The musical styles vary between the quasi-Teutonic electronic music of 'Transporter' (the mood piece which serves as intro and outro for the record) and 'Walking From Pastel' (reminiscent of the 'Sahara of Snow', joint composition with Bill Bruford which finally surfaced on the latter's second solo album) and up-tempo techno-rock with constantly changing chord structures and complex time signatures ('Through the Glass' and 'Resident'). The four guitarists

he uses (including Gary Green of 'Gentle Giant') take a back seat against his virtuoso keyboards and violin. Michael Barsimanto contributes fiery drumming on the up-tempo tracks, but this really is Jobson's showcase. He handles all the vocal parts as well, mostly delivered in a falsetto style reminiscent of Jon Anderson. Indeed, many of the tracks on this album would not be out of place in a Yes set. It will be interesting to see if any will be used in the forthcoming Yesshows.

## Herbie Hancock Future Shock CBS 25540

There are only six tracks on the whole of *Future Shock*, and two of them ('Rockit' and 'Autodrive') are singles released earlier this year, so the remaining four have got to be pretty good for the album to justify its existence. Sadly, they don't quite manage it.

The title-track is a prolonged and disappointingly conventional re-make of the old Curtis Mayfield song (and this despite some promising percussion work by Jamaica's finest, Sly Dunbar), while 'TFS' is little more than an inconsequential collection of bleeps and buzzes laid over an instantly forgettable bass riff.

Things brighten up a little on side two however with 'Earth Beat', an inspiring, almost charming little piece with plenty of those oriental percussion sounds the Fairlight reproduces so well, and two or three catchy lead synth lines.

Singles apart, though, *Future Shock's* real star is its closing track, the pounding, insistent 'Rough'. This time Sly Dunbar really makes his presence felt with a thundering — though far from repetitive — rhythm that acts as a backdrop for some more Fairlight percussion and some pretty astonishing vocal effects.

Hancock's high-pitched soul vocals may not be to everyone's

# RECORD REVIEWS

taste, but there's little doubt that his recent work has resulted in a unique blend of modern technology and old-fashioned jazz-funk, the final package being fashioned in a way that is both tasteful and satisfying. *Future Shock* is an essential purchase if 'Rockit' and 'Autodrive' aren't already in your collection, even if some of the accompanying tracks do their creator scant justice...



## Greg Lake Manoeuvres

Chrysalis CHR 1392

It will be noticed by anyone with half an ear that Gary Moore (he of the lightning runs on albums by Thin Lizzy, Coliseum II, Cozy Powell) exercised a considerable presence on the first Greg Lake album, drawing particular acclaim for his searing solo on 'It Hurts'. Well, on 'Manoeuvres' he's back. But only on the first side, which leads to a rather schizophrenic album. The 'A' side features the heavier side of Lake's song, some co-written by Moore. It opens with three barnstormers 'Manoeuvres', 'Too Young to Love' and 'Paralysed' which feature blistering guitar work by Moore. What keyboards there are on the quieter verses seem almost and afterthought to the basic nature of the tracks. Ironically the next track, 'A Woman Like You', a gentle ballad that shows off Lake's voice, is the only track written by Moore. Keyboards flood the chorus producing an orchestrated feel which is rather out of place on this side. But on 'I Don't Wanna Lose Your Love Tonight' the heavy feel is back, even if it is augmented by a great Hammond sound.

Flip over to Side 2 and one would swear it was a different album. The opening goes straight back to the latter days of ELP. Fanfare synth, suspended chords, from which emerges that famous Lake acoustic guitar (see 'C'est la Vie', 'I believe In Father Christmas'). The lyrical verses are underscored by a lyrical fretless (uncredited). The keyboards on this track are, however, the only

intrusion by the ghost of Keith Emerson. In contrast, 'Famous Last Words' is the closest track on the album to a pop song with 'Ooo' vocals and the obligatory key change at the end. But it is the next track 'Slave to Love' which is the real revelation. Sparkling acoustic guitar, silky smooth Prophet strings and imitation 1st violin parts punctuating the fatalistic lyrics. The solo passages contrast Mark Knopfler-type acoustic phrases against a distant Hackettesque electric, with a solitary Simmons Tom hammering the 3rd beat. This really is the old magic of those Lake solo tracks on the ELP albums ('The Sage', 'Still You Turn Me On', 'Hallowed Be Thy Name') revisited.

'Haunted', a heavily orchestrated number with another great vocal performance, proves that Lake could easily cross over to being a commercial balladeer. The final track 'I Don't Know Why I Still Love' continues in this vein, but has more of the desperation and power of 'It Hurts'. All this track lacks is that searing blues-based solo which Gary Moore could have provided. What a shame he wasn't around when this one was recorded. Whilst the first side suffered perhaps from a surfeit of Moore's histrionics, the stronger songs on side 2 might have benefitted from the raw power of his guitar playing, for sometimes they come dangerously close to Radio 2 material.



## Ray Manzarek Carmina Burana

A&M AMLX 64945

This album is really the result of the endeavours of four people. Carl Orff, who wrote the original music to the medieval poems found amid the debris of a Bavarian monastery; Ray Manzarek, the former Doors keyboardist, who has re-orchestrated Orff's music for rock-band; and Philip Glass and Kurt Munkacsy, who took time out from their 'serious music' activities to produce the finished arrangements.

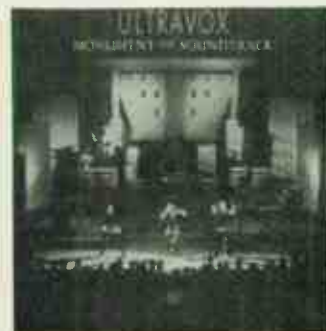
As a fusion of classical styles of composition and contemporary performing and recording techniques, the album works well, avoiding the commercial barbarism of the 'Hooked On Classics' medley records. However, as an enhancement of the original this *Carmina Burana* falls a little flat, as despite the strenuous endeavours of the musicians concerned, the band fails even to approach the sheer excitement and dynamics of a full orchestra.

This would perhaps be compensated for if the band had been able to instill more 'life' into the work, but alas, adhering too rigidly to Orff's time signatures has prevented them from really 'letting go' as a rock band should.

As a result, the album's best moments are the quieter, more atmospheric sections of the work, where the sterling performance put up by the principal singers (under the direction of another of Glass' associates, Michael Riesman) is shown to its fullest.

The recording is particularly fine, all the instruments (including Riesman's synthesisers) being clearly defined and collected to form a coherent and convincing musical whole, though again, it could be said that the production is a little too polished for the new arrangements to succeed fully.

As it stands, this *Carmina Burana* can be considered something of a flawed masterpiece, as well, of course, as being of considerable curiosity value.



## Ultravox Monument The Soundtrack

Chrysalis CUX 1452

Ultravox are one of that rare breed, an electronic band capable of producing a unique live atmosphere that bears little or no relation to that created on record. Of the six tracks on *Monument*, five were recorded live at the Hammersmith Odeon in December of last year, the sixth being the title-track, an all-new – and mildly wonderful –

studio instrumental which opens side one.

It's followed immediately by a raucous version of 'Reap The Wild Wind', a song which, for this writer at least, never really quite made it in its previous incarnation as a studio single. 'The Voice' rounds off the first side and, screaming teenagers apart, it's a controlled and memorable rendition.

Side two kicks off with 'Vienna', the song that put Ultravox on the road to stardom in the first place, and it's here that the band begins to show its first signs of vulnerability, drifting a little out of time now and again and not quite managing to match the precision with which the studio version was so immaculately crafted. 'Mine For Life' reinforces the belief that Ure, Currie and Co are more at home playing insistent, up-tempo material while 'Hymn', which provided a sparkling encore live, makes a fitting choice for the album's closer.

Critics will doubtless assert that Ultravox make music that is cold and emotionless but for those that need convincing that this is not the case (though there won't be anyone who's seen them live who'll fall into that category, I'll warrant), *Monument* makes the perfect introduction. There has been some studio jiggery-pokery (mainly to reduce levels of audience applause, I shouldn't wonder), but what has been doctored has been doctored discreetly, and there's no doubt that, as live albums go, *Monument* captures the atmosphere of a rock concert extremely well, both on- and off-stage.

To explain the title, *Monument* is in fact the soundtrack to a video of live Ultravox footage which is to be released shortly, and, as their gigs depend quite heavily on visuals these days, the tape should be quite something. For those who don't possess video machines, however, listening to this LP with your eyes closed should prove effective enough.

My only quibble is that the band's record company decided to make *Monument* a budget-priced (£2.99) affair. To my mind, there's nothing more infuriating than a live album that provides only a snippet of a band's concert performance. The double live album is a tried and tested formula for transferring the atmosphere of a live gig on to vinyl, so why not let Ultravox make use of it?

Still, there's always a few odd live tracks still available on the B-sides of 12" singles, plus for the real diehards, the matchless 'Retro' EP from circa 1978.

- 6-voice polyphonic synthesizer (two oscillators per voice) using the same stable oscillators and accurate computer tuning as the Prophet-5, the industry standard
- 100 programs which can be modified or replaced by your own sounds
- New filter circuit which delivers exceptionally full tone colours while maintaining the classic Prophet sound
- Real-time, non-volatile polyphonic sequencer
- Dual-mode arpeggiator: up/down or assignable
- Chord tracking
- Cassette Interface
- Computer Interface - MIDI (Musical Instrument Digital Interface)

We think you'll agree that the New Prophet is one hell of an instrument. Compare it to ANY polyphonic synthesizer on the market. Based on Sequential Circuits' years



# the new

For more information, write to Sequential Circuits, Inc.,



of successful innovation, the PROPHET-600 is the only instrument available that offers the professional features and bold sound of a Prophet. Experience counts.

Sequential Circuits, in conjunction with several other manufacturers, has pioneered the development of an easy-to-use system for interfacing synthesizers with one another and with home computers. The MIDI-equipped PROPHET-600 can be connected with one cable to any other MIDI-equipped instrument. For example, when two PROPHET-600's are interfaced, either keyboard can control both synthesizers, allowing four oscillators per voice and two different programmes, sounding simultaneously! The MIDI is also compatible with home computers for program storage, patch print-out, music notation, sequencing, and multi-keyboard orchestration.



# prophet

**SEQUENTIAL  
CIRCUITS INC**

P.O. Box 16, 3640 AA Mijdrecht, The Netherlands.



# Concert Review

## Judie Tzuke Any Trouble Hammersmith Odeon

The band who took the stage bearing the name Any Trouble bore very little resemblance to the Stiff protégés of two or three years ago. The previous Any Trouble were very much a guitar-based band (indeed they had a high turnover of keyboard players, because the role was neither demanding nor central to the band sound), so it came as some surprise to find the front of the stage piled with various keyboards and even more of one to see band leader and primary songwriter, Clive Gregson, abandoning his traditional guitar in favour of the ivories. The only other remaining member of the original band, bass guitarist Phil Barnes, was also doubling on keyboards, as was new man Steve Gurl.

However, Gregson's songwriting — the mainstay of the band's earlier success — remains consistently good and the new material compared favourably with new arrangements of old songs like 'Trouble With Love'. Perhaps the jagged edge which the band had in the early days has been smoothed, but the result is a broader, more atmospheric back-drop to the songs, something of which they were always capable but are only now exploiting to the full.

Judie Tzuke's band have also made a similar, if more widely publicised, move towards keyboards, with the addition of a second keyboard player. Previously producer Paul Muggleton had filled occasionally on a second keyboard part, but in the latest edition of the band he concentrates on backing vocals, percussion and some rhythmic guitar. New man Don Snow now

shares all the keyboards with Tzuke stalwart, Bob Noble. Both were using a Yamaha CP80 piano as the basis of their set-up, to which Snow added an OBXa, an electric piano and a Roland mono-synth. Noble was using a CS80, a JP-8 and a string synth.

The result of this greater emphasis was that keyboard parts from the albums remained in the live set, and each player put in a more relaxed performance. Previously Bob Noble had always been stretched to playing parts simultaneously and jumping from keyboard to keyboard without time to breathe.

From this fuller sound-base, the vocals and the lead guitar stood out in sharp relief and the whole thing was powered along by a solid but inventive rhythm section. Drummer Matthew Letley's kit cut through well and provided a wide range of sounds thanks to the augmentation of his acoustic heads by Simmons electronic drums. Bassist Gary Twigg alternated between solid rhythm playing on a Jazz bass and lyrical lines on a fretless.

Mike Paxman's guitar lines cut through like a knife. Alternating between a Schecter Tele and a Gibson semi-acoustic through the new Fender Showman amps, he provided surging chordal power and searing lead lines, with all the melodic feel of his playing on the albums aided by some additional power and edge.

Ms Tzuke's voice soared over the top with a clarity which was a credit to both her and the sound engineer. Although she complained several times of a cold and sore throat, her voice never faltered or cracked on even the highest lines, far out of the range of the average singer.

The songs from the new album (*Ritmo*) held up well

against the older material, although they are different in style. Full of urban angst, they tell of gangs ('Nighthawks'), the pressure of city life ('Push Push, Pull Pull') and violence on the streets ('Walk Don't Walk'). The band's backing vocals added to this feel of hostility and alienation with repeated lines in the style of a theatrical Chorus, but I couldn't help feeling this was a bit overdone after the third successive song. However, the lead vocal came across well above them, and 'Push Push, Pull Pull' featured a fine bubbling bass-line from Gary Twigg. 'Another Country' displayed the strength of the new keyboard-orientated line-up to good effect.

Of the older material, 'I am the Phoenix', 'City of Swimming Pools' and 'Sportscar' sounded particularly good, but come the encores, the concert reached new heights. Returning with the classic 'Stay With Me Till Dawn' (as poignant as ever), the band then crashed into a manic 'Black Furs', and then disappeared. They returned, however, to finish with 'How Do I Feel', one of the few love-songs from the new album, a ballad which proved to be the highlight of the evening (as final encores should be, but seldom are). This time the repeated 'How Do I Feel' chorus from the band really succeeded, an emotionless chant contrasting with Judie's desperately yearning solo. The full choruses had a power which bordered on the operatic, and the drums and keyboards provided a stark but compelling backdrop. A stunning end to a well-constructed set, proving that white singers can sing from the soul too.

Paul Wiffen

## Tangerine Dream

Lycabettus Theatre, Athens

The end of August saw Tangerine Dream play two concerts at the Lycabettus open-air amphitheatre in Athens. It was the first time any elec-

tronic music had been performed in Greece, and perhaps not surprisingly both concerts were almost completely sold out. It's no exaggeration to say that people came from all over the country to see TD play.

They weren't disappointed.

The band played a two-hour set (excluding no fewer than three encores), coming on stage at 9.30pm and performing about 45 minutes of music from their new LP, *Hyperborea*. The second half comprised some more familiar material, with music from the *Exit* and *Logos* albums. This half also saw the introduction of lasers, the first half making do with colour slides for the music's visual accompaniment.

The second concert (on August 31) was plagued by high winds, some damage being caused to on-stage equipment, but despite this I felt the evening was more satisfying musically, with Edgar Froese and Johannes Schmoelling creating some perfectly synchronised synth lines.

Press and media reaction to the presentation was extremely favourable, a rare thing for Greece and particularly astonishing when you consider that nobody here is accustomed to seeing somebody 'play' an instrument that consists only of rows of knobs and buttons. That, for me, was the highlight of the occasion. I'll never forget seeing Chris Franke twiddling the knobs on his 'black boxes' through binoculars. (Yes, I was that far away, and I had a good seat!).

The Greek television service recorded sections of both concerts on videotape for broadcast later in the year, so Tangerine Dream should be reaching even more Greek homes by the time you read this.

All credit to the band for coming out to play in what amounted to 'uncharted waters', but I have just one complaint. Why Athens and not Thessaloniki?

Omiros Karajas



# STUDIO-QUALITY DIGITAL RHYTHM

**Böhm**  
Digital ~ Drums



The Böhm Digital Drums - 24 Percussive sounds digitally stored for ultimate realism - 180 rhythm patterns, 180 drum breaks, 36 two bar solos, 36 four bar solos; you can also programme your own rhythm patterns, or complete sequences up to 500 bars long. A sophisticated auto-accompaniment section also available.

Böhm Digital Drums, available ready built, or as a do-it-yourself kit. The complete studio quality rhythm unit. Send for free illustrated brochure.

## HEAR IT!

A 7" demo record of this amazing machine will convince you that you cannot be without Böhm Digital Drums. For your disc, please send cheque or postal order for £1.45 - payable to Swankit Instruments.

**Böhm** PROFESSIONAL KITS

SWANKIT INSTRUMENTS, CHANTRY PARK,  
HENFIELD, WEST SUSSEX. BN5 9JE  
Tel: HENFIELD (0273) 494238

## MISSING LINK



A DUAL CHANNEL SWITCHABLE PATCHING SYSTEM  
WITH CABLE TEST FACILITY.

XLR, STEREO/MONO JACK, PHONO & DIN COMPATIBILITY

KELSEY ACOUSTICS LTD  
28 POWIS TERRACE, LONDON W11 1JH  
01-727 1046/0780



# ROCK CITY



10 MOSLEY STREET NEWCASTLE UPON TYNE NE1 1DE  
Tel: 0632 (324175)

The **BIG** one in **KEYBOARDS** — please telephone **NOW** for details of our pre-Christmas bonanza on all the following:

**YAMAHA:** full range including PF and DX keyboards.

**ROLAND:** Juno 6's, at £549, Juno 60's — £799. SH101's at £199, and extra special deals on JX3P's, MC202's and Jupiter keyboards.

**CASIO:** Everything from a VL to a 7000.

**AND**

KORG — MOOG — SEQUENTIAL CIRCUITS —  
MUSIC PERCUSSION COMP — IN STOCK

**IF YOU WANT THE BEST DEAL YOU'RE EVER  
LIKELY TO GET ON A KEYBOARD OR RELATED EFFECT,  
TEL: 0632 (324175) NOW!**

# Concert Review

## Depeche Mode

St. Davids Hall, Cardiff

Friday, September 30, saw the palatial surroundings of the newly erected St. Davids Hall in Cardiff recoiling at the onslaught of a powerful dose of Depeche Mode, playing only their second gig in Cardiff for nigh on two years.

Supporting Depeche was Matt Fretton who gave a splendid performance to the accompaniment of a Teac 4-track backing tape. Doing a solo performance of this nature must take some doing but Matt, resplendent in a pink suit, did it with great vigour, leaping, dancing, and singing his way through his set which lasted getting on for an hour. The 4-track backing tape was put together by Matt himself and sounded chunky with its' driving percussion and synthesisers. Also on the tape was a brass section. It seems that Matt has two tapes, one which contains the brass and one that doesn't, as he sometimes has the brass section live on stage with him. His music is varied: sometimes electronic, sometimes with a Gabrielesque ethnic feel to it and sometimes very funky. He played his last single and his latest, 'Dance It Up', which deserves to be a hit.

There was a short break to clear the stage, and then Depeche took up their positions to an ecstatic response. The stage was set with David Gahan flanked on each side by Alan Wilder who played a Jupiter 8 (with another as a spare!) and Andy Fletcher who had an OBXa. Martin Gore was centre stage at the back and had at his disposal a newly acquired Yamaha DX7 which replaces the PPG because it's too unreliable. He also had an Emulator, a variety of flutes and a 12-string guitar. The band also had a Sundrum each, and these were used to great effect during the show.

The backing tape was as powerful as ever and sounded particularly good. They now use an 8-track to accommodate the extra sequencers and keyboard parts, while their drum sound is now provided by a Drumulator, extra percussion being synthesised.

The band kicked off with the latest single 'Love, In Itself', from their excellent new album and finished with 'Just Can't Get

Enough'. Sandwiched in between were tracks from their three albums and, of course, most of their singles. One of the highspots of the gig for me was their rendition of 'Pipeline', also from 'Construction Time Again'. David Gahan left the stage for Martin to take the vocal mic while Alan hit a huge sheet of corrugated iron and Andy scraped some strange tubular device. Meanwhile the tape provided various synthesised (and sampled?) metallic industrial sounds.

The set was very good indeed and consisted of what appeared to be simple flat screens, but during the course of the gig they rotated into various configurations to reveal that they were, in fact, lighting gantries. They gave the stage an unforgettable atmosphere.

The sound was also excellent. The 13K rig was supplied by Audiolease: punchy but still clear. Two Roland Space Echoes, an MXR DDL and a Lexicon 224 digital reverb were used for effects.

In all the band played for about 1 1/4 hours plus an encore. They looked good, sounded good and gave a good show - exactly what the audience paid for. David Gahan is a great frontman for the band and his voice comes over much stronger live than it does on record in my opinion (he's also quite a stylish mover). The rest of the band remain fairly static, however, preferring to concentrate on their playing and backing vocals which, incidentally, were spot on throughout.

Depeche Mode are off to America very soon. Let's hope that they can win the hearts of Stateside audiences - if they perform as they did in Cardiff I see no reason why they shouldn't.

**Steve Howell**  
**Dio**  
**Hammersmith Odeon**

The scene, Guy Fawke's night, outside the Hammersmith Odeon, the sky occasionally lit by rockets, but few of the waiting crowd appreciating them, instead they were standing around with glum faces as the voice came over the loud speaker system yet again that tonight's concert was sold out. The touts are doing brisk business, quoting £40.00 a ticket and are finding punters willing to

pay out that amount of money.

The artist concerned? Ronnie James Dio, with his new band named, strangely enough, Dio, out on their first concert tour of the U.K. having previously only played Donnington Monsters of Rock Festival. R.J.D. must be one of the most under-rated rock vocalists - it's all too easy to dismiss heavy metal, and his past pedigree has not really brought him to the attention of unbelievers in this genre of music. However, the fans of heavy metal acknowledge that R.J.D. is THE top vocalist in his field and it is probably only his obvious interest in the occult that stop people writing Dio is God on their leather jackets!

Anyway, onto a review of the gig itself. As the curtains draw back, the obligatory dry ice fills the stage and the only thing discernible through the mist is a green and red lit cavern centre stage with a shadowy figure emerging from it. The band explodes into "Stand Up And Shout", Track one on their new(ish) album, "Holy Diver". As the mist clears we can see the stage set for the first time, hard-board cliffs tower nine feet in the air, providing a good backdrop and an excellent and interesting drum platform. An additional advantage was that the stage, minus any backline, left plenty of room for the band to walk, or in R.J.D.'s case, bounce, around.

The sound from the massive (GLI?) PA system was good, though reports from very near the stage at the centre, centred on the fact that at times the monitors and backline drowned the PA. It seems very unfair to complain about the occasional lapse in the high standard of the mix, but when R.J.D. climbed onto the cliffs, standing in front of the drums, the signal coming through the mic failed - and they were very slow to recover. The crowd were vociferous in their complaints! Generally though, the clarity of the sound provided by the system at such high levels was an unexpected bonus.

After playing numbers from their new album, which most of the crowd were obviously familiar with, they went into Black Sabbath's "Children of the Sea" and even R.J.D. couldn't compete with the audience. For fans read fanatics.

But though the man was definitely the flavour of the evening, that didn't mean that the rest of the band's efforts went unappreciated. Vinny Appice on drums, provided a pyrotechnic solo, which, if it wasn't quite to my taste, certainly hammered the crowd into submission, and when playing with the band he gave them a rhythmic grounding which repeatedly used all twelve of his drums. The bass drum however, seemed to be a trifle loud, not all the headbanging was voluntary...

Jimmy Bain on bass proved to be a popular and talented player forming a great partnership with Appice. There was even a discussion in the pub opposite, after the show, that he was one Jimmy Page in disguise! On guitar was the much praised Vivian Campbell, and after the reviews that he has been receiving there seems little that I can add. Despite his distracting habit of ending a long guitar solo, moving to another part of the stage and starting again, the solo still managed to retain the crowd's interest, containing enough different styles to make it worth concentrating on. His straight guitar playing was a copy of how it is on the records, but that, in itself, is an achievement.

As for the man himself, his whole performance was stunning. Not only did his voice seem to be in fine fettle, ranging from the gentle beginnings of 'Don't Talk To Strangers' though a guitar/vocal battle during 'Man On The Silver Mountain' combined with glitter bomb fireworks, (Dio won on points) to the heavy raunch of 'Shame On The Night', but he also seems to thoroughly enjoy being on stage, and it shows. He behaves like a hyperactive dwarf when moving around the stage and the way he played with the audience, giving the sign of the goat and seeming to catch everyones eye enchanted us all. Does he really expect us to believe he's the wicked hobgoblin? He seems too nice and friendly!

The only things which did strike a wrong chord were the fact that the (occasional) keyboard player, who was off stage, was completely unacknowledged (or was it taped?), which came over as a bit pointless, and that the gap between the end of the set and the encore was far too long, antagonising the fans. However they are minor quibbles about an otherwise extremely enjoyable evening.

And where does he go from here? Over the Rainbow, probably. Blackmore won't like that.

**Dot Willig** **E&MM**

DOD Electronics announces a new line of high quality signal processing equipment. . . .

# The DOD Pro Products Group



The all new DOD Professional Products Group contains the ten most needed pieces of equipment necessary for professional signal processing, from digital to analog delay units, fifteen to thirty one band graphic equalizers and much, much more.

Each product in the DOD Pro Products Group has been designed with the professional in mind. All DOD products have user-friendly controls and status indicators for quick and easy operation. Each product contains the latest circuit technology for performance and reliability, and all DOD products are manufactured and tested in America.

Check out the new DOD Pro Products Group at your local DOD dealer and see why DOD continues to be the leader in cost-effective quality equipment.



distributed in the UK by

 **Rank Strand Sound**  
PO Box 91 Great West Road  
Brentford Middlesex TW8 9HR  
Telephone 01 563 9223 Telex 37378

DOD Electronics Corp.  
2953 South 300 West  
Salt Lake City, Utah  
(801) 485-8534

# Advanced Music SYNTHESIS

by Steve Howell

In order to produce a note or a sound on a synthesiser, the keyboard needs to provide two things; a control voltage for pitch and tone and a gate/trigger pulse to 'fire' the envelope generators – without either or both of these you'll be back in the days when Stockhausen messed around with Wien-bridge oscillators. The control voltage we have already looked at but for those of you who have not been following these workshops (tut, tut, shame on you) I'll recap briefly. The Voltage Controlled Oscillators (VCOs) require a control voltage applied to their input in order to produce a change in pitch. When derived from the keyboard each semitone represents 1/12th of a volt (1 volt giving an octave change) which gives us the diatonic scale we are so familiar with here in the West. The 1 volt per octave system has been standardised by most manufacturers so that synthesisers of different makes can be interfaced but sadly this is not the case with the gate and trigger pulses, as we will soon discover.

The GATE pulse initiates the Attack and Decay portions of the envelope and sustains the note at the level set by the Sustain control for as long as you hold the note. Upon release of the note the Release portion comes into play and the sound will die away at a rate determined by the Release control. On a monophonic synthesiser, if you hold a note whilst playing another note the gate pulse won't be released and so the Release portion won't occur – neither will the Attack and Decay portions of the 'new' note. All you will get is a change of pitch at the volume and filter level set by the Sustain control. This is known as single triggering (Figure 1) and can be found on older Moog instruments as well as other synths. Single triggering can be a most expressive way of playing as it allows you to bring in the Attack and Decay with your playing techniques so that legato notes can be played. Be careful, however, if you set the Sustain control(s) to minimum because without releasing your finger off the keyboard before playing the next note,

	Output			Input		
	FSK	Gate	Trigger	FSK	Gate	Trigger
Drum Computer	•		P	•		
Micro Composer	•	P	P	•	•	
Rhythm Box			C			
Sequencer		P			•	•
Sample & Hold			C		•	•
Arpeggiator			C			•
Keyboard		•	•		•	•
Envelope Generator						•
Drum Synth						•

Figure 3 Table showing inputs and outputs of triggering devices.

P = Programmable trigger adaptors.  
C = Clock output.  
(•) = Standard trigger or gate input/output.

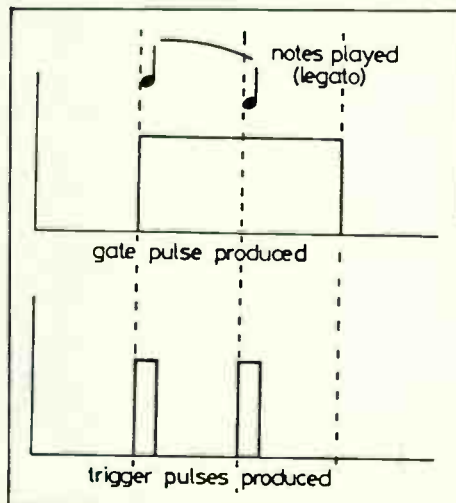
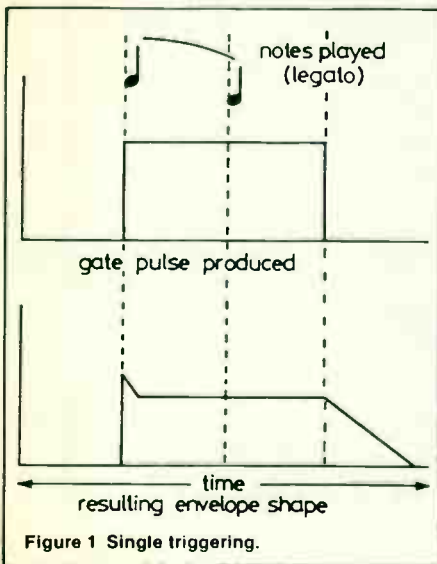
you can end up with no 'new' note because the Attack and Decay portion won't be initiated.

The TRIGGER pulse, on the other hand, is a one-shot pulse that does not sustain and is responsible for triggering the Attack and Decay portions of the sound regardless of whether or not another note is being held. Although both the Gate and Trigger pulse are used to 'fire' the EGs the end result can be quite different because regardless of how you play the keyboard, the Attack and Decay portions will always be present, making it difficult to play legato lines. It does solve the problem of having a sound with no sustain because each new note will have its own envelope articulation and

you're not left with a silence if you inadvertently leave your finger on another note. This mode of operation is known as multiple triggering (Figure 2) and is more useful for plucky staccato lines where each note has the initial 'bite' of the envelope.

If all that sounds confusing, don't worry. It seems that triggering and gating are some of the most difficult concepts for some synthesists to understand but with experimentation and practice it should all become clearer. Most synthesisers nowadays have the option for single or multiple triggering as it is quite easy to turn a multiple system into a single system simply by switching out the trigger pulse and leaving the envelope shaping in the hands of the gate pulse only. You should therefore be able to try out various envelope shapes and compare the effect in the two different triggering modes.

The most common form of pulse is the positive 'V' trigger and gate type. This is a pulse which rests at 0 volts when no note is being played. As soon as a note is played the voltage rises to a positive value (between 4 and 15 volts, depending on the



manufacturer). As soon as the note is released, the voltage drops to 0 volts again and waits for the next depression of a key. This system is used by Roland, ARP, Sequential Circuits and Oberheim and is considered the standard gate/trigger pulse system.

Another type is the 'S' trigger. This is found only on older Moog instruments. When no note is played the voltage rests at 12 volts, and as soon as a note is played the voltage drops to 0 volts. The term 'S' trigger is not entirely accurate as it is only a gate pulse and not a trigger pulse in the strict sense of the word, so older Moogs were just single triggering instruments.

The other type of gate/trigger pulse available to synthesists is the negative 'V' trigger. This type of pulse is found on Korg and older Yamaha instruments and instead of rising to a positive voltage level from 0 volts (as with the positive 'V') it falls to a negative voltage (usually around -5 volts).

What all this means is that without a suitable interface it is impossible to use, say, a Minimoog with a Roland SH101, because the gates are totally incompatible. Although manufacturers standardised the 1 volt per octave system for pitch, they didn't alter their gating systems.

Those then are the keyboard-initiated pulses. Because envelope generators require a hard-edged pulse to initiate an envelope cycle, it is possible to substitute the manually provided pulse with a stream of automatically generated pulses. The low frequency oscillator (LFO) can generate a square wave and this can be used to trigger the EGs. The 'auto-repeat' function on some synths is simply a switch that routes the square wave output from the LFO into the gate input of the EGs. In this mode the LFO is operating as a Clock Pulse Generator.

Many other devices require a clock pulse to initiate an event of some form and many of these have their own clocks built-in so that they can be used as free-standing devices. It's a simple matter to take the internal clock to an output so that it can be used to control some other device, and most manufacturers have seen fit to provide a clock output and also the facility to override the internal clock so that it can be triggered off an external one. Electronic music has a wide range of devices that generate or require a clock pulse and the table (Figure 3) lists all these devices. This table does not take into account the fact that some units may be incompatible and some form of interface (such as the E&MM Universal Interface) may be required to link devices and feed it to two or more other items so that it becomes the master clock setting the speed of everything else. The possibilities are virtually endless and limited only by your imagination and the hardware at your disposal.

So far we have only looked at 'one-event-per-pulse' triggers but there are other types of triggers and gates such as FSK, SMPTE and, of course, MIDI codes. These use a stream of pulses for one musical or rhythmic event. These codes are more versatile and more precise than the other types of trigger but they can be a bit more complex to work with. They also require some expensive hardware to get them operational but once this is done the results can be, quite simply, stunning.

That just about concludes triggers and gate pulses. I've not mentioned the use of a click-track to trigger a synthesiser as this can also be a bit involved but don't worry, this will be covered fairly soon.

Over the next few months, I'll be looking at specific types of sounds such as strings, bass sounds, percussion, and so on, as well as interfacing various items of equipment.

**E&MM**

E&MM DECEMBER 1983



## Subscribe!

**SUBSCRIBE NOW** to the biggest selling UK music monthly with a world wide readership from Cambridge to Cape Town! With coverage of all the latest in instruments, amplification and accessories, plus interviews with the leading artists and performers of the day – can you afford to do without it?

For 12 Issues:

UK.....	£15.50
Europe & Overseas (surface) .....	£16.20
Airmail (including Europe) .....	£23.50
Airmail (outside Europe) .....	£37.50

(Would overseas subscribers including Eire please note that payment should be covered by bankers draft in pounds sterling.) Subscriptions normally start with the current issue of E&MM.

**Please fill in the coupon below, and enclose it with your cheque (or bankers draft) to: Mail Order Dept. ELECTRONICS & MUSIC MAKER, Alexander House, 1 Milton Road, Cambridge CB4 1UY.**

*Please send me the next 12 issues of Electronics & Music Maker, I enclose a cheque/postal order for £15.50/£16.20/£23.50/£37.50, made payable to Electronics & Music Maker.*

Please print or type clearly:

Name .....

Address .....

Star sounds \*\*

Star quality \*\*

Star features \*\*

Free  
SECURICOR  
DELIVERY

on all orders over  
£100 (UK mainland  
only) Add just £2.50  
on lower price  
orders

SUPERB  
KITS  
FOR THE  
MODERN  
MUSICIAN

TRANSCENDENT 2000 — although only a 3 octave keyboard the 2000 features are comparable to much larger, more expensive synths. ★ Portamento ★ Pitch bending, ★ VCO with shape ★ Pitch modulation ★ Dynamic sweep control ★ ASDR envelope shaper ★ Slow LFO oscillator ★ New pitch detector ★ Sample hold and many, many more features. BUY IT — BUILD IT — PLAY IT at a price special to E&MM readers of only **£149.00 + VAT.**

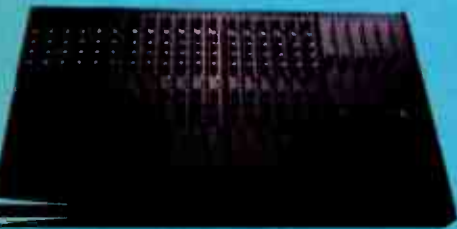


SALES  
COUNTER  
Collect your order  
from the factory.  
Open 9-12/1-4.30  
Mon-Thurs. Easy  
parking, no  
waiting

Digital Delay Line — With its ability to give delay times from 1.6 mSecs to up to 1.6 secs. Many powerful effects including phasing, flanging, A.D.T., chorus, echo &



vibrato are obtained. The basic kit is extended in 400 mS steps up to 1.6 secs. Simply by adding more parts to the PCB. Compare with units costing over £1,000!  
Complete kit (400 mS delay) **£130 + VAT**  
Parts for extra 400 mS delay **£9.50 + VAT**



This versatile modular mixer featured as a constructional article in Practical Electronics can be built up to a maximum of 24 inputs, 4 outputs and an auxiliary channel. Each input channel has Mic and Line inputs, variable gain, bass and treble controls and a parametric middle frequency equalizer. There are send and return jacks, auxiliary, pan and fader controls and output and group switching. The output channels have PPM displays and record and studio outputs. The auxiliary channel also has a PPM display and there is a headphone monitor jack and a built-in talk-back microphone. The mixer modules plug into base units each of which takes up to 6 channels. To eliminate hum, the power supply is in a separate cabinet.

**KIT PRICES**

Input channel	£19.90	Base unit and wooden front	£27.50
Output channel	£18.50	Pair of mahogany end cheeks	£12.50
Auxiliary channel	£22.50	Power Supply and cabinet	£19.50
Blank Panel	£3.00		

All prices are VAT exclusive

Free Soldering  
Practise Kit on  
request with your  
first kit — useful  
tips, well  
illustrated.

MPA 200 — is a 300W high power 100W amplifier its smart styling, professional appearance and performance make it one of our most popular designs. With adaptable inputs the MPA accepts a wide range of yet straightforward construction makes it ideal for the first time builder. Complete kit **£49.90 + VAT**



Chronosonic 5000 — a 5 channel lighting system powerful enough for professional use yet controllable for home effects. Sound by itself lends to music, lighting or separate effects — each channel can handle up to 100W yet minimal wiring is needed with our single board design. Complete kit **£49.50 + VAT**

Incredible  
price for  
Polysynth  
£230.00  
Extra voice  
£35.00

SP2 200 twice the power with two of the reliable, durable and economic amps from the MPA 200 fed by separate power supplies from a common toroidal transformer. Superb finish and quality components throughout — up to (even over) the standard of high price factory built units! Complete kit **£64.90 + VAT**



TRANSCENDENT POLYSYNTH — A four octave polyphonic synthesiser with outstanding design characteristics and versatility and performance to match.

Complete kit **£230.00** plus VAT (single voice)  
Extra voice (up to three more) **£35.60** plus VAT

WORLD  
LEADERS  
IN  
ELECTRONIC  
KIT DESIGN  
AND SUPPLY

PORTWAY INDUSTRIAL ESTATE

ANDOVER, HANTS SA10 3WW

ORDER BY PHONE (0264) 64455



Simply request your chosen kit and quote your Access or Barclaycard Number.





**Y**ou've only had your new guitar two months and already you've changed the pickup and now you want to change some of the electronics.

Well, Ron Lukowski and Steven Menconi, like thousands of other guitarists, have gone through the same thing many times. Now they're starting their own company, LM Guitars, to fill a market niche somewhere between the mass-produced sameness of regular factory guitars and the totally individual uniqueness of custom guitars.

"Why pay twice for something?" asked Ron. "Why buy a Gibson and then put the Duncan pickup on it you want? We've created a hand crafted guitar that will bridge the gap between stock and custom guitars."

What Ron and Steve have done is designed their own solid body electric guitar which comes in two different body styles. The guitarist then chooses all the hardware and electronics as well as the finish. The models are made of hard rock maple and have rosewood fingerboards. But Ron and Steve will not make the hardware and electronics themselves. Instead, the hardware and electronics will be selected from those made by other companies and the two have been in touch with some 50 manufacturers to arrange direct wholesale purchases.

"We ask guitarists questions such as, what sound are you looking for? What kind of pickups do you like? Who makes your favourite vibrato? Is there specific machine head that you like? Do you prefer jumbo or thin frets?" Ron said.

Even if a guitarist selects "top-of-the-line" hardware, Ron and Steve say they could be able to finish the guitar for less than \$1,000.

They've dubbed their line the **Blueprint Series** and say it will be introduced in January. Meanwhile they work part-time at two different music stores in the suburbs of Chicago, build more guitar bodies, and play in local rock bands.

Ron plays bass as well as guitar and his new electric bass appears, at first look, to be a Steinberger, until one notices the word "Allen" on the body. It's one of a growing number of near-copies of the Steinberger bass and the Steinberger guitar.

Although the Steinberger bass has been out for several years, the Steinberger guitar was first introduced at last June's National Association of Music Merchants Music & Sound Expo at Chicago's McCormick Place. By the first weeks of September, imitation Steinberger guitars were on the market.

"We got our first Steinberger guitar imitation in the store I work at in early September," commented Ron. "Kramer, Hondo and a couple other companies make them."

Ron's Allen bass is made by Hondo and has a list price of \$390, compared with \$1,800 for the real Steinberger. It also has an ash body and maple neck, while the Steinberger is crafted out of a blend of fibre-reinforced epoxy. The fingerboard is imitation

forced epoxy. The fingerboard is imitation ebony and the neck has an aluminium shim instead of a rod. Clearly, all that it has in common with the real thing is the physical design, and the balance that comes with it.

Fretted Industries has introduced a new semi-hollow guitar, the Washburn HB-35, which co-owner Oscar Schmidt says avoids the 'wolf tones' or dead spots usually associated with the temperamental instrument. Wolf tones occur when body resonance cancels out certain frequencies, which leads to dead spots at certain places on the fingerboard. For increased tonal shading, the HB-35 features a two-band parametric EQ which is powered by two 9-volt batteries. Select, highly flamed, book-matched maple in eight ply binding is utilized for both the back and top while the five piece neck construction uses rock maple and rosewood laminates. To provide an extra kick for more aggressive playing styles, the strings are fixed through the body. The suggested list price for the HB-35 is \$899. A new version of the famous 'Rockman' headphone practice amp is now available called the **Boss HA-5 Play Bus** with Boss RH-11M Headphone/Mic.

Two musicians can hook up and play together with the HA-5 and the addition of the headphone/mic enables them to converse with one another. When practicing, the HA-5 can be interfaced with a cassette player or rhythm machine for the accompaniment. And when used between an instrument and amplifier, the HA-5 becomes an effects box suitable for live performance. A full Stereo Chorus has adjustable rate and depth while a 35 mSec stereo short Delay furnishes a doubling effect. The tone can be adjusted with individual bass and treble controls. There's even a built-in fast response noise reduction circuit. All connections can be made simply with a ¼-inch patch cord.

Microphone volume on the headphone/mic is turned off when it is raised or lowered out of speaking position so that undesired sounds are not picked up. The retail price is \$180 for the HA-5 and \$90 for the RH-11M.

For more traditional amplification, **Ampeg** has a new line of lead and bass model amplifiers with power ranging from 10 watts through 60 watts rms. The 30 watt (EG-30L) and 60 watt (EG-60L) models include full voice reverb systems while the bass models (designated EG-30B and so on) are equipped with Line Out facilities and extra pull-switch tonal variations and 15-inch speakers. Other features on various models include 'over-drive' type master volume circuits, middle controls, and presence controls.

For greater ruggedness, all amps in the EG series include poly covers, deep textured black vinyl, steel reinforced strap handles with chrome end caps, full-wrap black corners and a ¾ inch thick cabinet. Prices begin at about \$100.

Ampeg also has a new addition to its "V" series line of tube amplifiers, the Ampeg V7SC, with a conservative rating of 100 watts. Features include remote switching of each channel, reverb, a 3-way foot controller with three LED indicators, dual-in-line, full length, EQ shift, mid boost, and separate pre/post volume control and master volume control.

Both **Rane Corporation** and **Blamp Systems** introduced new equalizers, recently, the Rane Model RE 27 combines a precision third-octave equalizer with a third-octave real-time analyzer housed in a single 3½-inch high rack-mount steel chassis. The RE 27's display consists of three LEDs above each equalizer slider - red, green and yellow from top down. After activating the built-in pink noise generator, each glider is moved up or down until the green LED above it is lit. When all LEDs are green, the system is normalized within +/- 1 or +/- 3 dB accuracy, switchable.

Additional features on the Rane RE 27 include a switchable curve select for "Flat" or "House Curve" for smaller clubs and lounges, calibrated flat-response condenser microphone and transformerless auto unbalanced/balanced/floating input and outputs. Suggested retail price is \$799.

Blamp's new professional equalizer are the EQ/140 parametric, the EQ/220 graphic and the EQ/230 two-third octave graphic.

The EQ/140 is a single-channel, four-band parametric equalizer engineered to function at very low levels of noise and distortion.

The EQ/220 is a 10-band is a 10-band professional graphic equalizer designed for portable or fixed sound reinforcement, studio recording, broadcast, monitor speakers or home hi-fi use. Features include gyrator-simulated inductor circuitry, EQ bypass switching, two independent channels and overload peak indicators.

The EQ/230 is a 30-band two-third octave graphic equalizer designed for professional applications. Features include 10-segment LED ladder on each channel, tape monitoring pre/post, overload peak indicators and floating and balanced circuitry on all inputs and outputs.

A solid state digital delay loop, with a delay range from one-fourth second to four seconds all at full 16 kHz bandwidth, is featured on the new **Delta Lab Echotron ADM-4096**. The unit also offers infinite repeat capabilities, sound-on-sound and can be synchronized to most drum machines.

**Polytone Musical Instruments** has introduced a new model of its single unit Modulator/Octave Divider which has twice as many stages as its predecessor and offers a 90° phase shift rather than a 180° phase shift, for a smoother Doppler effect in its modulator mode. The modulator can be switched on and off remotely and a speed pedal is available to alter the speed of the clock while an instrument is being played. The octave divider, which is controlled by a master remote footswitch box, allows instruments to sound one octave below the note being played.

*Jerry De Muth*



# SEQUENTIAL CIRCUITS INC

## UK DEALER LIST

ABC MUSIC, Addlestone	0932-40139
ABC MUSIC, Kingston	01-546 9877
ALPHA MUSIC, Leeds	0532-457500
ROD ARGENTS KEYBOARDS, London	01-379 6690
ROD ARGENTS KEYBOARDS, Worcester	0905-611774
PETER BONNER MUSICAL, Eastbourne	0323-639335
PETER BONNER MUSICAL, Hastings	0424-421885
CAMBRIDGE ROCK, Cambridge	0223-316091
CARLSBRO, Leicester	0533-24183
CARLSBRO, Mansfield	0623-651633
CARLSBRO, Nottingham	0602-581888
CARLSBRO, Sheffield	0742-640000
DOUGIE'S MUSIC STORE, Northwich	0606-782522
FUTURE MUSIC, Chelmsford	0245-352490
FUTURE MUSIC, Southsea	0705-820595
GIGSOUNDS, Streatham, London	01-769 5681
LIVEWIRE, Cardiff	0222-496619
LONDON ROCK SHOP, Bristol	0272-276944
LONDON ROCK SHOP, London	01-267 5381
McCORMACK'S MUSIC, Glasgow	041-332 6644
MUSIC GROUND, Doncaster	0302-843037
ONE WAY MUSIC, Wolverhampton	0902-23060
ROCK BOTTOM, West Croydon	01-680 1042
SESSION MUSIC, Belfast	0232-38502
SESSION MUSIC, Londonderry	0504-46796
SOHO SOUND HOUSE, London	01-434 1365
SOUTHERN MUSIC, Brighton	0273-733387
WISHER(DERBY) LTD, Derby	0332-48156

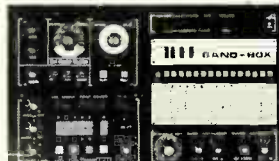
# CLEF ELECTRONIC MUSIC

## BAND-BOX PROGRAMMABLE BACKING TRIO

**THREE PIECE BACKING BAND**  
Generates the sounds of three instrumentalists to back Soloists & Cabaret Acts

**DRUMS + BASS + KEYBOARDS**  
Over 3,000 chord changes (60 scores) on 132 different chords — extendable to 200 scores

R.R.P. £469 (extension £119)



## MASTER RHYTHM PROGRAMMABLE DRUMS

Twenty-Four Rhythm programmable Drum Machine with 12 instruments Eight sections are extended to 24 32 measures for two bar programming Sequence operation and instrument tone adjust

R.R.P. £129



## MICROSYNTH

2½ Octave Music Synthesizer with two Oscillators, two Sub Oct. Switched Routing and Thumbwheel A comprehensive instrument offering the full range of Synth Music & effects

DIRECT FROM CLEF £215

## ELECTRONIC PIANOS

SPECIALISTS SINCE 1972



Clef Pianos adopt the most advanced form of Touch Sensitive action which simulates piano Key inertia using a patented electronic technique

**PRICES DIRECT**  
7½ OCT. £695  
SIX OCT £620  
STAGE 6 £580

**KITS AVAILABLE**  
Band Box £314  
Master Rhythm £79  
Microsynth 137  
Percussion Synth £89  
String Ensemble £198.50  
Pianos — See Lists

**PRICES INCLUDE VAT, UK CARRIAGE & INSURANCE (CARRIAGE EXTRA ON MFD PIANOS)** Please send S.A.E. for our complete lists, or use our telephone VBA ACCESS Service. Competitive quotations can be given for EXPORT orders. We are also looking for more Retail outlets

All instruments may be seen in our showroom

## CLEF PRODUCTS (ELECTRONICS) LIMITED

(Dept E&MM/12/83) 44a Bramhall Lane South, Bramhall, Stockport, Cheshire SK7 1AH. 061-439 3297

# Southern Music

THE SUSSEX KEYBOARD CENTRE 0273 733387



40/41 CASTLE ST  
WESTERN RD  
BRIGHTON

Westone

SEQUENTIAL CIRCUITS INC

Roland

SIMMONS

CARLSBRO

SEL

KORG®

WE WISH ONE AND ALL A MERRY HIC! XMAS AND AN EVEN MERRIER HIC! HIC! NEW YEAR, AND DON'T FORGET, IF YOU'RE HAVING TROUBLE GETTING THE GEAR OR GIFTS YOU REALLY WANT, AND AT THE RIGHT PRICE, WE WILL EQUAL ANY CURRENTLY ADVERTISED PRICE IN THIS MAGAZINE

TEL: 0273 733387

YAMAHA

Marshall

mog

BOSS

Aria®

Squier

Fender

Dynacord

Ibanez

wem

We are the Largest Stockists of New and Used Group Gear in Sussex with over 50 Keyboards always in stock. 100s of Guitars and Amplifiers, both new and S/Hand. A full range of Pedals, Rhythm Machines including The Kit, Clef Bandbox, Symsonics Drums and Lots, Lots more — and don't forget our Disco Department.

INSTANT CREDIT UP TO £1000 — MAIL ORDER — PX — ACCESS — BARCLAYCARD

# READERSHIP SURVEY

**T**imes change. Technology in the 1980's is developing so fast that a new advance seems to be emerging almost every week. Just looking back over 1983 at some of the incredibly innovative new sectors of technology that have come to fruition – like digital, the laser disc, MIDI and sound sampling – the speed that the developments have taken place are breakneck and breathless. Similarly with music, the fashions are almost 'flavour of the minute'! So, to help us keep in touch with what YOU will be doing in 1984 (and beyond) we'd like you to fill in the questions below. Just a few minutes while you digest the turkey and pud will help us a great deal to know what you need and want from E&MM over the coming months. (You can photocopy the page or just write out the answers.) To make it interesting, we are offering a year's subscription to E&MM to the first 10 replies drawn out of a hat. Thanks for your help – and the seasons greetings to you all from the staff of E&MM.



## EQUIPMENT/INSTRUMENTS

Below are a list of instruments, please state which you play and/or own and underneath state make/model:

- |                             | PLAY OWN                 |                          |
|-----------------------------|--------------------------|--------------------------|
| 1. Synthesiser (polyphonic) | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Synthesiser (monophonic) | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Piano                    | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Organ                    | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Personal Keyboard        | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Other Keyboard           | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Electric Guitar          | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Acoustic Guitar          | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Bass Guitar              | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Drums                   | <input type="checkbox"/> | <input type="checkbox"/> |

- |  |                          |                          |
|--|--------------------------|--------------------------|
| 11. Cymbals                            | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Other percussion (not machines)    | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. Drum Machine                       | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. Microphones (vocal)                | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. Microphones (other)                | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. Other instruments (specify)        | <input type="checkbox"/> | <input type="checkbox"/> |
| _____                                  |                          |                          |
| _____                                  |                          |                          |
| 17. What is your principal instrument? | _____                    |                          |
| _____                                  |                          |                          |
| 18. What is your second instrument?    | _____                    |                          |
| _____                                  |                          |                          |

What effects do you use?

- |                            |                          |
|----------------------------|--------------------------|
| 19. Harmoniser             | <input type="checkbox"/> |
| 20. Reverb                 | <input type="checkbox"/> |
| 21. Phase/Flange           | <input type="checkbox"/> |
| 22. Compressor/Limiter     | <input type="checkbox"/> |
| 23. Distortion             | <input type="checkbox"/> |
| 24. Equaliser              | <input type="checkbox"/> |
| 25. Chorus                 | <input type="checkbox"/> |
| 26. Analogue Delay         | <input type="checkbox"/> |
| 27. Digital Delay          | <input type="checkbox"/> |
| 28. Sequencers             | <input type="checkbox"/> |
| 29. Other (please specify) | <input type="checkbox"/> |
| _____                      |                          |
| _____                      |                          |

## MUSICAL ASSOCIATIONS

- |  |                          |
|--|--------------------------|
| 30. Are you in a band?                           | YES/NO                   |
| 31. What is the line-up (guitar/keys/drums etc.) | _____                    |
| _____  |                          |
| 32. What type of music do you play?              | _____                    |
| (eg. rock, electro-pop, etc.)                    |                          |
| _____  |                          |
| 33. Are you:                                     | <input type="checkbox"/> |
| Professional                                     | <input type="checkbox"/> |
| Semi-Professional                                | <input type="checkbox"/> |
| Amateur  | <input type="checkbox"/> |

## ELECTRONICS INTEREST

- |   |         |
|---|---------|
| 34. Are you interested in the practical electronics side of music?                  | YES/NO  |
| 35. Do you build projects?  | YES/NO  |
| 36. Do you buy PCBs or kits shown in E&MM?  | YES/NO  |
| 37. Do you buy kits, PCBs and components from other sources to build E&MM projects? | YES/NO  |
| 38. How much would you estimate you spend on musical electronic projects a year?    | £ _____ |

## READING HABITS

- |  |                          |
|--|--------------------------|
| 39. How thoroughly do you read E&MM?                       |                          |
| All articles   | <input type="checkbox"/> |
| Most articles  | <input type="checkbox"/> |
| A few articles   | <input type="checkbox"/> |
| 40. How many hours, on average, do you spend reading E&MM? | _____ hours              |
| 41. How thoroughly do you look at the advertisements?      |                          |
| I check them all   | <input type="checkbox"/> |
| I look through most of them                                | <input type="checkbox"/> |
| I study a few  | <input type="checkbox"/> |
| I never look at them                                       | <input type="checkbox"/> |
| 42. How regularly do you buy E&MM?                         |                          |
| Every issue  | <input type="checkbox"/> |
| Occasionally   | <input type="checkbox"/> |
| Infrequently   | <input type="checkbox"/> |
| 43. How do you usually obtain E&MM?                        |                          |
| On Subscription  | <input type="checkbox"/> |
| From a newsagent   | <input type="checkbox"/> |
| Borrowed from a friend/library                             | <input type="checkbox"/> |
| 44. If you buy your copy, how many other people read it?   | _____                    |
| 45. What happens to your copy of E&MM?                     |                          |
| I pass it on   | <input type="checkbox"/> |
| I keep it  | <input type="checkbox"/> |
| I throw it away  | <input type="checkbox"/> |
| 46. What areas of music are of most interest to you?       |                          |
| Electronic Music   | <input type="checkbox"/> |
| Progressive Rock   | <input type="checkbox"/> |
| New Wave   | <input type="checkbox"/> |
| Dance Floor/Disco  | <input type="checkbox"/> |
| Jazz-Rock  | <input type="checkbox"/> |
| Classical  | <input type="checkbox"/> |
| Others (please specify)                                    | _____                    |

47. How interesting do you find the following features in E&MM?

- |                      | Wouldn't read E&MM without it (1) | Would like more (2)      | Would rather see less (3) |
|----------------------|-----------------------------------|--------------------------|---------------------------|
| 48. ARTIST INTERVIEW | <input type="checkbox"/>          | <input type="checkbox"/> | <input type="checkbox"/>  |

49. KEYBOARD REVIEW
50. GUITAR REVIEW
51. AMPLIFICATION
52. EFFECTS REVIEW
53. PERCUSSION
54. PLAYING TECHNIQUES
55. MUSIC MAKER EQUIPMENT SCENE
56. NEWS & EVENTS
57. RECORD REVIEW
58. READERS CASSETTE REVIEW
59. CONCERT REVIEW
60. COMPUTER MUSICIAN
61. PROJECTS
62. AMERICA
63. ADVANCED MUSIC SYNTHESIS

Would you like to see more of the following?

64. Sound on Stage YES/NO
65. Psychology of Music YES/NO
66. Video YES/NO
67. Instrument Customising YES/NO
68. Projects YES/NO
69. Industry Profile YES/NO
70. Overseas News YES/NO
71. Others (please specify) \_\_\_\_\_

72. How often do you read the following magazines and how do they rate
- A = Subscriber
- B = Regular Reader
- C = Occasional Reader
- D = Very Good
- E = Good
- F = Average
- G = Poor
- H = Never Read It
73. ELECTRONIC SOUNDMAKER \_\_\_\_\_
74. GUITAR PLAYER \_\_\_\_\_
75. HOMESTUDIO RECORDING \_\_\_\_\_
76. INTERNATIONAL MUSICIAN \_\_\_\_\_
77. KEYBOARD \_\_\_\_\_
78. MELODY MAKER \_\_\_\_\_
79. MUSICUK \_\_\_\_\_
80. NEW MUSICAL EXPRESS \_\_\_\_\_
81. ONE TWO TESTING \_\_\_\_\_
82. SOUNDS \_\_\_\_\_

83. Do you read any computing magazines? YES/NO. Specify \_\_\_\_\_

84. Do you read any electronics magazines? YES/NO. Specify \_\_\_\_\_

### BUYING HABITS

85. Do advertisements influence your purchasing decisions? YES  NO  SOMETIMES
86. In general do you buy instruments/equipment that:  
You are familiar with   
Are of an unknown quantity   
Is recommended to you by another user
87. How much do you spend on instruments/equipment to make music in a year?  
£1 - £500  £500 - £1000   
£1000 - £2000  £2000 - £3000   
£3000 - £5000  Over £5000

### READERSHIP PROFILE

88. SEX - Male   
Female
89. AGE - 17 or under   
18 - 21   
22 - 25   
26 - 30   
31 - 35   
36 - 40   
Over 40
90. DOMESTIC SITUATION  
Married   
Single
91. OCCUPATION \_\_\_\_\_
92. Does your job or course of study involve you in:  
MUSIC   
ELECTRONICS   
COMPUTING
93. Do you have any qualifications in:  
94. MUSIC (please state) \_\_\_\_\_
95. ELECTRONICS (please state) \_\_\_\_\_
96. COMPUTING (please state) \_\_\_\_\_
97. Please indicate your income:  
Up to £5,000   
£5,000 - £8,000   
£8,000 - £10,000   
£10,000 - £15,000   
Over £15,000



Please feel free to ignore this section and only fill it in if you wish your questionnaire to be included in the draw for one of the 10 FREE Subscriptions to ELECTRONICS & MUSIC MAKER. All information given will be treated in the strictest confidence. Thank you for your co-operation.

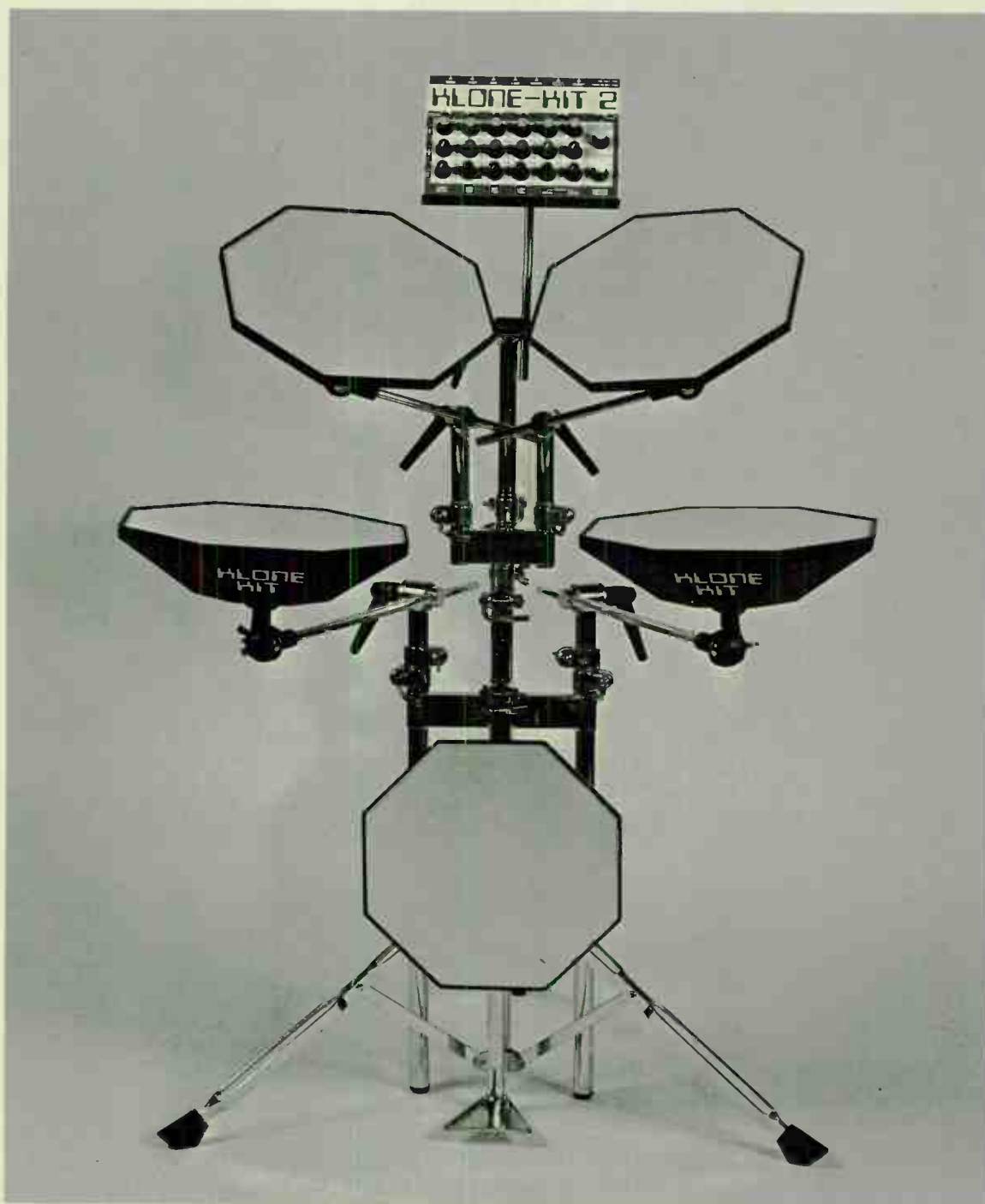
NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

Post Code \_\_\_\_\_

Send to E&MM (Readership Survey), Alexander House, 1 Milton Road, Cambridge CB4 1UY.

# KLONE-HIT 2



## THE ALL NEW 'KLONE-KIT 2' ELECTRONIC PERCUSSION SYSTEM

Available in BLACK, RED or WHITE. UK price including VAT and delivery £499

- \* RUBBER playing surfaces for authentic stick bounce \* TOUCH sensitive pads \*
- \* RAISED edge for 'rim-shots' \* UNIQUE all-in-one heavy duty double braced stand \*
- \* INDIVIDUAL boom arms for each pad, allowing ultimate adjustment and rigidity \*
- \* NEW control module gives acoustic and electronic drum sounds including hand claps \*
- \* SNARE drum has pitch bend up and down to give TABLA, SIMMONS or TALKING drum sounds \*
- \* TRIGGER LED's, LINE outputs, Headphone output \* COMPLETE in fibre drum case measuring 36x12x12in \*

MANUFACTURED by HONKY-TONK MUSIC, 300-302 London Road, Hadleigh, Essex SS7 2DD. TRADE ENQUIRIES CONTACT: Mr Dave Sibley, Honky-Tonk Marketing, Southend Telephone (0702) 553647



# MPC Electronics

There can be few people in the UK who haven't seen, heard or played a Kit. The invention and manufacture of this micro drum machine caused a storm in the music industry and a revolution in home recording (where traditionally the drums were either out of the price ranges and musical capabilities of most musicians, or were poorly recorded from muted drum kits).

A year has passed since the release of The Kit, and in that time almost 10,000 of them have been sold. What most people are unaware of is the company and the inventors behind both this capable little instrument and the new Music Percussion Computer: **MPC Electronics**. So, since they inhabit the same glorious acres as *E&MM* in sunny (?) Cambridge, we took a trip out to see who they are.

Outside the celestial city, in the village of Willingham, set amid forested acres of apple trees, lies the administrative heart of MPC Electronics. The imposing house that fronts the road hides a group of small offices, where we found Mike Coxhead, organiser, Managing Director, troubleshooter, *patron de la Kit*, and raconteur. He told us first about the origins of MPC.

'Well, the company was first thought of when Clive Button came to see me with a small grey box that he had put together. It was a basic idea for an electronic drum kit that you could play with your fingers. It all sounded a bit far-fetched really – and my bank manager was horrified when I told him I was thinking of backing the idea. But I thought the idea was sound, and we both started work on getting the grey box into a respectable looking unit that we could take over to the NAMM show in Atlanta.'

From the initial meeting of the two up to the NAMM show gave them just a year to design and build the embryonic Kit. With redesigned cosmetics and a host of new ideas in it, they managed to cobble together one single prototype Kit. Mike slipped it into his briefcase and headed for Atlanta.

'The problem was that we just had the one Kit – apart from the Grey Box – and while it was being demonstrated on the stand, occasional technical problems would crop up and we would have to dive behind the curtains at the back of the stand and tell the

public that the press were reviewing it! Then we'd repair it in double-quick time and get it back out there.'

Despite this, The Kit won the 'Product Of The Show' award, and the orders started to flood in – a bit too fast for such an embryonic electronics company.

'The reaction over there was incredible. It made me realise that I was right, that the risk was worth it. All the way along I knew that it was a gamble – but it all excited me and I felt that, given the right marketing pos-

sibilities, it could be a very serious contender to the Japanese. But from a businessman's point of view I was very naive when we started in the electronics business. I had no grounding in factories or in the making of any sort of hardware. I just thought that you got the components together, built the units and marketed them. I also thought that, if you were unlucky, you might get 5% of them back for repairs... In the event it was nothing like that. We originally had the casings made in Israel because that was the only place that could deliver fast enough. They were a disaster and we had to find a UK maker to take over. Then the parts were late. It was hair-raising.'

But with time, MPC Electronics managed to get the Kit into production. And heartbreak time came round again...

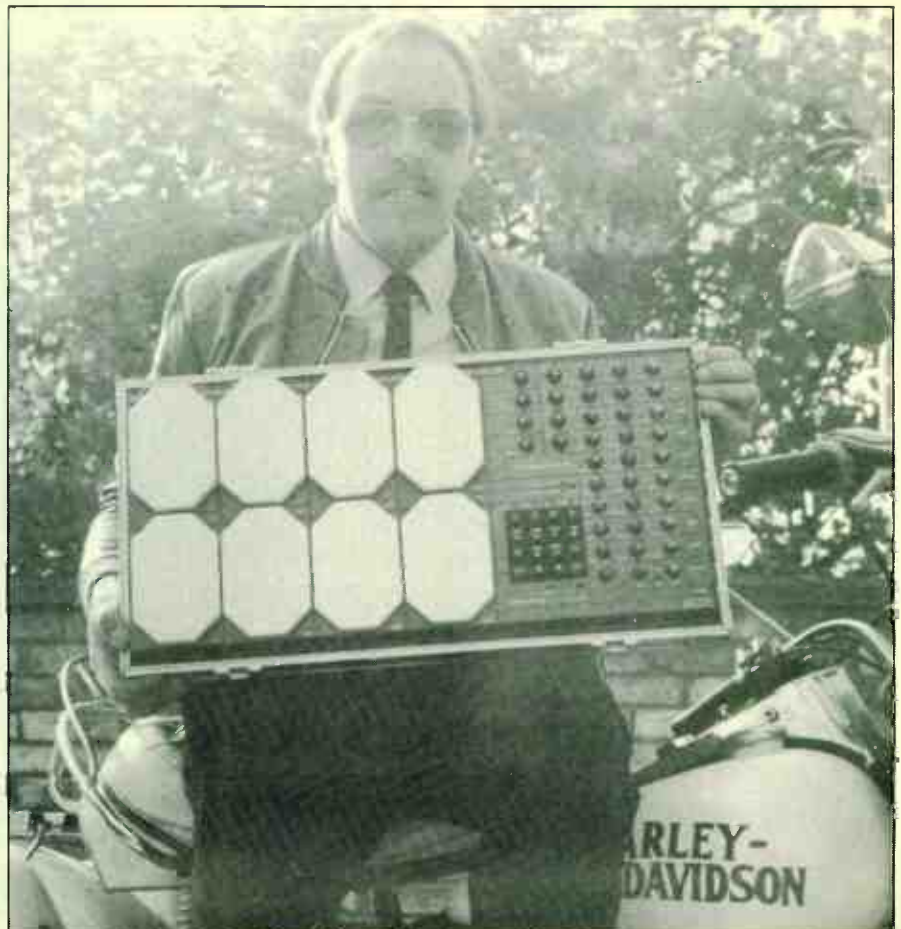
'We managed to make up the first 20 Kits to send over to the states just after the trade show. There we were at four in the morning and the time came... we tried them, and they didn't work!'

Happily, after that things began to go right for them. With MXR taking on the USA distribution and promotion and Atlantex in the UK, the word began to spread. The shops began to shift them like hot cakes, and soon everyone was tapping away. The rest is history.

Mike Coxhead's history in the music business is as interesting as it is varied: roadie for the Who, Pink Floyd and Santana, guitarist and lead singer with innumerable bands (including The Clones), and now his interests lie, as well as the electronics, in the diverse building industry.

'I had never really seen a drum machine before Clive popped up with the Grey Box. I'd always worked with 'real' drummers and I wasn't a drummer at all. That was, I suppose, one of the reasons I liked the Kit, I always tap things, and finding a piece of equipment that could help me tap like a drummer was amazing!'

(Suprisingly, neither Clive Button nor



Mike with the M.P.C.

Mike play drums at all – but no real problems there – Leo Fender can't even tune a guitar...)

But even as the Kit was selling they started work on another project, the Music Percussion Computer.

'The M.P.C. unit itself is basically the next generation on from The Kit. In the early days we always harboured an idea for a much bigger unit that could be played with sticks. We also had specific ideas of what the unit was supposed to do. We especially wanted it to be able to take in a whole pattern of drums, and then replay them – while the pads were being played over the top of them.'

Work was started on the M.P.C. in November of 1982. Like the Kit, they had a trade fair deadline – Frankfurt in February 1983, and again they turned up with a prototype – and, in the best of show biz traditions, stole the show – again. Back in blighty, they started to manufacture the M.P.C. as a saleable item.

(For a full review of the M.P.C. – see the August edition of E&MM.)

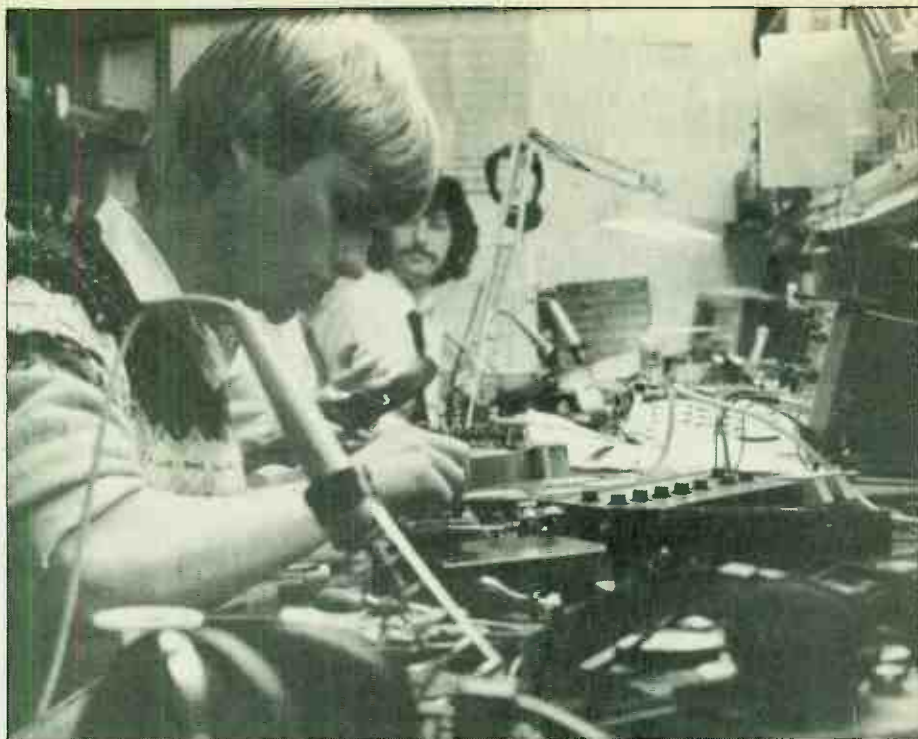
And to confuse matters even more nicely – they also continued work on the 'add-on' units for the Kit. Like the Clap, the bass drum pedal and the tympani – building up from what is essentially a simple drum machine to a whole modular system of units that can be linked together – the latest addition to the collection being the Sync Track which allows the home recordist to perfectly site the drum sound with the rest of the tracks. And it all came from a small Grey Box... or, more accurately, the capacious mind of Clive Button. So, our next stop was the modern factory complex that MPC Electronics have set up on the outskirts of Cambridge and it was here we found Clive, plus a new addition to the MPC company – Chris Reed, a design technologist. Surprisingly, they won't let anyone else deal with the final quality control – each and every Kit, M.P.C. and accessory goes through their hands at some time or another to ensure that everything works perfectly. The day that we descended on them Clive was perfecting the latest advance for the M.P.C. (yep, they're advancing that too...) in the shape of stage pads. He explained:

'We asked a lot of drummers to come in when the M.P.C. was first on the boards, and they gave us a lot of valuable information. The unit contains all the useful functions of the Linn, plus the computer interface and all. What we didn't have was the capability to interface with an electronic drum kit. That sort of thing just didn't exist.'

So they built one. Stage pads as such are familiar to most drummers, so, for those of us with a fretted and key'ed background a brief explanation: they are rather like practice pads, but they contain a 'trigger' that activates the various sections of the M.P.C. Thus a complete electronic drum kit can be built up from the M.P.C. But more of that in a future issue.

Now that MPC Electronics have 'gone direct' selling direct to the public – (they felt they wanted more of a face in the market), the feedback is also coming directly into them. This is one area that Mike Coxhead loves – hearing how and why people have bought the equipment, and what they use them for. All too often the music business can be a vacuum, manufacturers putting their equipment together not knowing their market or even the short comings that may be present – not so MPC. They take a very serious look at the comments that come in, and they act on them.

'Yes, the feedback we are getting now is both gratifying and surprising. I suppose that the first surprise came when we found



that The Kit, which was basically designed for the home recordist, was being bought, and played, by drummers. After that, the ideas started to come in. A lot of them we can't really deal with – people don't understand that we can't make minor modifications to each and every Kit! On a synth or something that costs several thousands that might be feasible, but with the volume we turn out it isn't really practical. But, the Bass Drum pedal, for example, was the result of feedback. Players wanted to free that bass drum and get it onto the floor. They also wanted the hi-hat to be foot operated, and we made that too.

'But the letters I love are those from bands who tell us about what they do with The Kit. There was one that I really treasure from a guy in Brooklyn in the USA. He wrote and told us that his band were due to be thrown out of the venue they played in because of the volume of the drums, and the space. So they got The Kit. That saved both their gig, and the venue, and now they've turned professional.'

Their design and development policy is also an eyebrow raiser, they, in Mike's words 'want to try and come up with equipment that no one else is doing – they may be based on existing markets but we want to fill in all those niches that still need to be catered for.' To this end they recently started work on a new keyboard – again with the deadline of Frankfurt in February.

'I obviously can't say much about the new keyboard... even for a sneak preview!

Suffice to say that it will be in the area of the Fairlight, but it will retail for under the £1,000 mark.'

As E&MM readers shake their heads in studied astonishment at this statement, those of a fretted nature may like to dwell on this:

'We've also started work on a new fibre optics guitar – but this won't be available for at least a year. The idea is that the musician will play it like any conventional instrument – except that the strings will be like beams of light – you will, I suppose, be bending light.'

And to add something for those who like a good stereo...

'Somewhere deep in the back of Clive's mind is a brilliant new hi fi system and that I'm shutting up about completely, except... it won't use speakers'

Speechless? We just have to wait. And patience, as they say, is a virtue.

So there is a brief profile of one of the youngest, but certainly one of the most successful of the UK electronics companies. With The Kit, the Kit's accessories, the M.P.C. and the M.P.C. accessories, plus the host of ideas that spring eternal from the fertile minds of Clive Button and Chris Reed, coupled to the matchless marketing of one Mike Coxhead, we shall be hearing lots more from MPC Electronics in the future. Let's hear it for the Grey Box!

E&MM



turnkey **BY MAIL**

Studio Supply for Cre

arding

# Four track mixdown mixer offer

If you decide to take the systems approach to four track, you'll want a mixer with tone control and panning to mix the four tracks to stereo.

For a limited period\* we are offering the 1478 mixer, free of charge when you buy a Yamaha MT44 or Tascam 234 four track tape deck.

**Yamaha MT44 . . . . £P.O.A**  
**Tascam Syncaset 234 . . £499**

\*Offer valid while stocks last.



## Tannoy Winners

The classic monitor sound of the Tannoy, at a price within reach of home studio owners.

**Stratfords . . . . . £110**

Take another 5% off the total price when you buy a complete monitor package which also includes a Quad amplifier.

**303(45W/ch) . . . . . £135**  
**405(80W/ch) . . . . . £215**

**FREE**



## The Tape Care Specialists

As well as best prices on Ampex, we stock all 1/4" accessories. Edit block **£4.00**. Splicing tape **£2.51**. Leader tape R/W **£3.60**. Cleaning kit **£3.00**. Head Demagnetiser **£18.50**. Single edged blades (10) **£0.67**. Chinagraphs (12) **£3.00**. Also full range in 1/2, 1, and 2 inch.

## Digital Reverb Breakthrough

Yamaha's other multitrack wonder this year. Variable, digital reverb with mixing and sweep eq. Great sound and of course, no spring springing.

**Yamaha R1000 . . . £465.00**

## The multitrack war only you can win.

There's a fight going on for leadership in multitrack.

Both major eight track makers want your business, so they offer enticing deals on their top selling product packages.

The **Fostex Quarter Inch** offer includes the A8 recorder, 350

mixer and ready to run accessories. The others, **Tascam Half Inch** includes the 30 Series, 38 recorder and mixer. Call us or call in for our **Confidential War Zone Price.**

*Merry Christmas to all our customers.*

## Rack Shop - the lowest prices ever on our Top Selling Effects

**Drawer Gate** Stereo noise gate offering full control and sidechain patching . . . **£279.00**

**MXR Shift Doubler** the top time and pitch shift effects in one rack package . . . . . **£349.00**

**Drawer Lim/Comp** every dynamic control facility for tight, punchy sound . . . . . **£325.00**

**Effectron** One sec delay plus all the time warp effects from the Deltalab experts . . . **£399.00**

**MXR 175** The new long delay from the masters of musicians studio effects . . . . . **£449.00**



## Hot Booms

Sold by big name mike makers as their own brand. We tracked the source to Germany and offer savings by buying direct. Very stable, non slip clutches, fold easily for storage. Boom reaches everywhere. We're so convinced of their usefulness, that we are offering bulk discount.

**£24.00** each, or only **£123.42** for 6

**Mike Arm** that reaches everywhere, table clamp . . . **£23.50**

## Producer Packages

Your choice of ready to run suitcase studios from the two most important manufacturers



**1 244 Producer Packages** from Tascam, the builders of the original Portastudio includes all you need to get started the moment you get it home ☆ AKG D80 Microphone ☆ DH61s Headphones ☆ Pack of 4, 2 meter phono leads ☆ 10, Maxell C60 Cassettes ☆

**Tascam 244 . . . £599**



**2 Fostex Producer System** includes the acclaimed 250 Multitracker plus all the ready to run accessories as listed above for the Tascam system.

**Fostex 250 . . . . . £589**

**3 Fostex Musical Sketchbook**, the remarkable X-15 Tracker is a studio in the palm of your hand. Available with full range of accessories . . . **P.O.A.**

## Rock & Roll Klotz

Extra heavy duty cable with a thick, flexible outer and easy strip construction.

Stocks are available in matt black only, with white lettering.

**Mike Cable (twin) . . . 50p/m**  
**Guitar Cable (single) . . 50p/m**  
**Patch Cable (single) . . . 40p/m**  
**Speaker Cable, twin . . . 48p/m**  
Sample on request

## The New Dynamic Fostex Mike

You've got to hand it to them, every new product from Fostex offers more quality for less. Their brand new microphone for stage or studio use, the very rugged 505 has a familiar sound, yet a low price tag. Cardioid pattern, with built in windshield, and all the Fostex quality.

**Fostex 505 . . . £40**

**We OPEN** for sales & demos every Saturday 10-2

Prices shown are exclusive of VAT and postage. Please add 15% and our postage charges as follows;

**up to £9 . . . . . £1.00**  
**over £40 . . . . . £2.00**  
**over £40 to £300 . . . . £3.00**

Please check directly for bigger items.



Call for a **FREE** copy of our **44 pg. home studio catalogue**

**Brent View Road, LONDON NW9 7EL. Tel 01-202 4366 Telex 25769**



# computer MUSICIAN



# Computer MUSICIAN Rumblings

## Sound with Elan

Those who braved the tropical heat of the Personal Computer World Show, held at the Barbican in early September, stood a fair chance of temptation beyond endurance when in close vicinity of the stand of the British firm, Elan Enterprises Ltd. Very pretty graphics (on video) and a seductive commentary heralded an extremely interesting new micro – the Elan Enterprise – earmarked with an equally interesting price of £200.

Like other British firms (Sinclair and Acorn in particular), Elan's ploy has been to pre-announce their product so that software houses, marketing executives, and others of that ilk can be persuaded to gird up their loins in the direction of their micro rather than any other sort. Watch out for (or avoid) the pre-Christmas TV advertising that's due to hit our screens shortly. Seems a bit thick, really, considering that the projected release date is quoted as April '84. Superficially, all this sounds like just another clever marketing concept to get yet another Z-80 micro off the ground, but there are plenty of reasons for keeping a close watch on Elan's activities.

First, the machine will address up to 4Mbytes of memory (though only 64K is provided with the basic machine). Secondly, it has an expansion option ('The Stack') which allows more memory to be added together with 3.25" microfloppy disk drives. Thirdly, the machine has a quite superb ergonomically and aesthetically pleasing design, and comes with a built-in quad joystick which can be used either for games or as a mouse input device.

Aside from those goodies, what makes the Elan Enterprise really stand out are the promised graphics and sound capabilities. On the graphics front, we're promised a special chip (called 'Nick') that pumps out 256 colours (phew!) with a resolution of 672 x 512 pixels. What's more, those dots of phosphor can be switched around at a pretty impressive rate. In fact, the Elan Enterprise looks to be the strongest contender so far in the Tron-on-a-micro stakes.

Of course, it's the sound side that's of particular interest to us computer musicians, and, for once, a new micro intended for the consumer market place looks like being considerably more inventive than the competition – British or otherwise (MSX, take heed!). Again, there's a dedicated ULA chip for this aspect of the micro's activities (called 'Dave' this time – no relation, I hasten to add), which is said to give 4 channels of stereo sound (a nice touch is that Walkman-type headphones will probably be provided with the micro), with user-programmability of envelopes, filtering, and ring modulation over 8 octaves. In a future 'Chip Chat', we'll have a detailed expose of what goes on inside 'Dave'...

## Midi Interfacing

Though the MIDI interface itself is pretty much standard for all new polysynths these days, it's still somewhat difficult to appreciate just how effective Sequential Circuits brainchild will be in the long term. What's really needed is some decent sequencing software that pushes the interface to its limit.

A German firm called Music Centre have announced both a MIDI interface for use with any micro and sequencing software for the Commodore 64. The software includes a composer program (CPM 1.1) which provides six channels, each with a 1500-note capacity, instrument changing, velocity programming, and easy editing. In addition, there's also a real-time sequencer program (RSQ 1.1). The MIDI interface is available for around £77, and the Commodore 64 software (on disk) for £46. Music Centre can be found at Martener Hellweg 40, 4600 Dortmund, West Germany. We'll be reviewing this interesting-sounding combination in a few issues' time...

## Micro Composing

Anybody who's tried writing for a stringed instrument without actually being able to play it will appreciate the trials and tribulations of the composer who's asked to write a guitar concerto. The usual technique is to sit down with pen and paper, fret diagrams, some knowledge of the anatomical limitations of finger placings, and, if you're lucky, a friendly guitarist who's prepared to be a guinea pig. Patrick Gowers, on the other hand, elected to use a BBC micro to guide him towards playable chords when writing his 'Stevie Concerto for Guitar', commissioned by John Williams for performance at the Royal Festival Hall on September 23. Gowers says his micro indicated that there were between 250 and 300 conceivable D chords!



## Apples on the Cheap

One of the biggest complaints levelled at the Apple IIe is its price. Even with fairly generous discounts, the basic machine is still going to cost in excess of £600, and that seems a bit steep in comparison to what you can get for under £200 these days (the Commodore 64 is a case in point). But the beauty of the Apple is its versatility and expandability, and those features are sure to keep it running for a good few years yet.

So, what we need is a micro that's Apple-compatible but half the cost. Well, a number of Apple 'lookalikes' have at last appeared on the scene that offer all or more of the features on the original machine for less than half the price, and seem to have got around Apple ROM copyright problems. The cheapest is the RAM II, an Apple II-compatible machine that includes a numeric keypad and also has lower case characters. This is available for the fairly unbelievable price of £250. The only catch is that at present it has to be ordered direct from Saudi Arabia, though the quoted price includes freight charges and a money-back guarantee. For more info on this sheep in sheik's clothing (groan), try contacting Autoram, PO Box 147, Jeddah, Saudi Arabia, or their UK information centre (Tel: 0923 771306).

Two other lookalikes with more definite British connections are the BASE 64A and the Computer 'X', though both are apparently made in Taiwan. The BASE 64A costs £349 (+ VAT), comes with 64K of RAM that's expandable to 192K, has a Mini-Writer word processor in ROM, and has a superior keyboard with upper/lower case, function keys, and a numeric/cursor keypad. More info on this can be had from Wolfcrown Ltd., 101 Jermyn Street, London SW1Y 6EE (Tel: 01-930 1991).

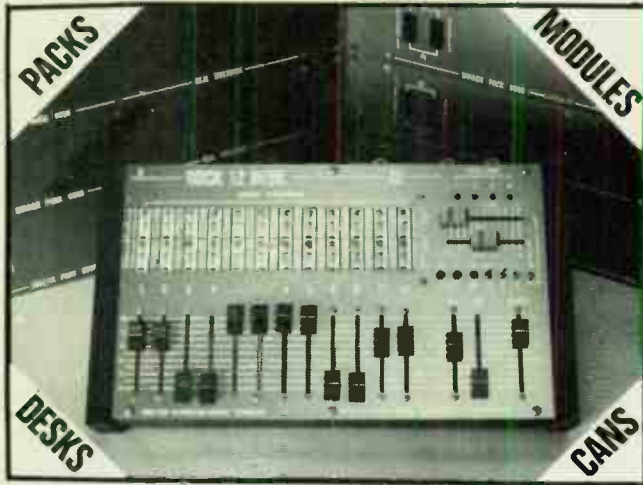
The Computer 'X', on the other hand, comes in two flavours, first, as a 48K Apple II-type machine (£295 + VAT), and secondly as a 64K Apple IIe-type machine (£455 + VAT). Both of these are available from C.I. Cayman Ltd., 31 Lansdowne House, Water Street, Birmingham 3 (Tel: 021-705 7097).

All three of these firms also sell cheap disk drives (£160 or thereabouts) and lots of reasonably-priced expansion cards. Bearing in mind that a BBC Micro with disk interface and single disk drive would cost around £650, these cheap Apple alternatives are worth thinking about if you're counting pennies. How Apple is likely to react to this infiltration of their jealously guarded territory is difficult to say, though the fact that Apple now has 28 law suits pending against Far Eastern companies selling Apple copies is a pretty strong hint of what can be expected.

Personally, I think that Apple should adopt the more realistic attitude taken by IBM over copies, ie. licensing other companies to use their software rather than fighting endless and tedious legal battles. Watch out for a comparative review of some of these Apple look-alikes coming up in 'Computer Musician' shortly...

# LIGHTING SYSTEMS

FOR BANDS AND THEATRES



Who manufactures a twelve channel desk with sound chase, sound to light, strobe, triple masters, and a powerful 240 switch program matrix, for under £300. Multicore leads from 10 to 50 metres, power packs up to 2400 Watts per channel, (even transformer loads) and a range of modules for custom built rigs and installations? Answer: We do.

13A POWER  
PACKS £120  
30A - £182  
60A - £270

**MJL SYSTEMS**  
45 Wortley Rd.,  
W. Croydon, Surrey  
CR0 3EB U.K.  
01-689 4138

PAR56 -  
300W CANS  
£25 TRIPODS  
- £36

## OMP NEW MOSFET POWER AMPLIFIER MODULES

Most power Mosfet amplifiers are based on the Mosfet manufacturer's application notes which by no means utilises the full potential of these devices. Our new Mosfet amplifier designs incorporate BRAND NEW sophisticated circuits that out-perform in all respects amplifiers using the original circuitry. If cost comparisons form the basis of your purchase REMEMBER our units are supplied as one single ready assembled and tested module, complete with power supply and integral toroidal mains transformer. All that is required is the connection of a load (loudspeaker etc.), mains lead and input source, thus eliminating wiring problems. The units are open and short circuit proof insuring stress free power delivery into virtually any load. On board drive circuits are incorporated to power a compatible 11 segment L.E.D. Vu meter available as an optional extra.

**APPLICATIONS:-**  
HI-FI, PA, DISCO, INDUSTRY

100WATT RMS



MODEL OMP/MF100

200WATT RMS



### SPECIFICATIONS

	OMP/MF100	OMP MF200
OUTPUT POWER RMS	100W 4ohm	200W 4ohm
BANDWIDTH	1Hz-160KHz	0.5Hz-160KHz
SENS. FOR MAX. OP	500mV	500mV
SLEW RATE	45V $\mu$ S	50V $\mu$ S
S.N.R.	125dB	128dB
T.H.D. FULL POWER	0.002	0.002
T.H.D. TYPICAL	0.001	0.0005
SUPPLY	240V AC	240V AC
SIZE	300 x 123 x 60mm	300 x 150 x 100mm

PRICES MODEL OMP/MF200

OMP/MF100 £39.00+£5.85 V.A.T.+£2.00 P&P  
OMP/MF200 £65.00+£9.75 V.A.T.+£4.00 P&P  
Vu Meter £9.00+£1.35 V.A.T.+50p P&P

300WATT  
VERSION  
AVAILABLE  
POA

\*Large S.A.E. brings details of loudspeakers, Piezos, Mixers etc.  
Terms: Cash Cheque Postal Orders Bank Draft/Visa Access with order. Official orders welcome.

## B. K. ELECTRONICS

UNIT 5, COMET WAY, SOUTHEND-ON-SEA,  
ESSEX. SS2 6TR TEL: 0702-527572

## SEIWA

WINS THE VALUE FOR MONEY  
RACE BY A GOOD NECK—THE  
BODY IS NICE TOO!

Overall we reckon this guitar is one of the best value newcomers around. Really impressed us on sheer value for money MUSIC U.K.

A fine guitar at a silly price. First class value for money. SOUNDS

Finishing is to a commendable standard. Aggressively chunky tone with satisfactory helpings of body and sustain.

ONE, TWO, TESTING

AS SEEN ON TV  
BBC's "ROCKSCHOOL"

COLOURS  
SR100: Red, Black, White  
SR100B: Red, Black, Blue

Prices include VAT  
SR100 Guitar (illus.) £129  
SR100B Bass £139  
This is not a Misprint — Prices include a **HARDCASE** (clear)

Send cheque, etc., payable to "Musicians Direct Supply Co." plus £12 carriage and packing for Guitar or Amp. (C&P U.K. Mainland only. Allow 28 days despatch)

## ALLIGATOR

GREAT AMPS FOR  
ALL INSTRUMENTS

### RAVE REVIEWS TO PROVE THE NEWS

Sound — just one word will do. Superb. One of the best E.Q. sections of any amp currently on the market. Tried with a variety of guitars, a Juno 6 synth and I can't remember the last time I was so impressed by the tonal versatility of one amplifier. SOUNDS

A universal amp suitable for guitar, bass, keyboards, synths or anything else that makes music, this is their goal and they have gone about it in a very comprehensive way. Really does the job of and it ain't half loud. INTERNATIONAL MUSICIAN

Mammoth spread of tone, standard of construction is excellent. Provides the heavy rock thump that combos don't always manage. The sound is surprising, far more projection and strength in the lower frequencies than the size of the cab would lead you to believe. MELODY MAKER

Sounds more like a top quality valve amp. Delivers a searing lead sound. Ability to handle bass guitar is little short of staggering. Wholeheartedly recommend them to any player quite regardless of what instrument he or she played. MUSIC UK

Full marks for thought design and application. Real bonus for keyboards, especially Bass synths. ONE, TWO, TESTING

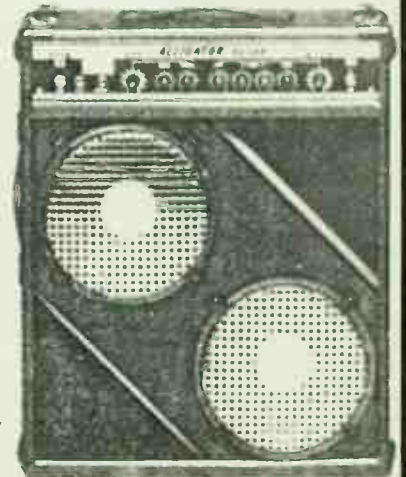
No matter what signal you present to it — bass, guitar, percussion, machine or synthesiser, they all sound clean and true. All of the Alligator range represents excellent value for money. E&MM

120W RMS.  
£299 inc VAT

This Combo is suitable for Bass, Lead, Synths, Drum machines, etc. 21" x 26" x 10".

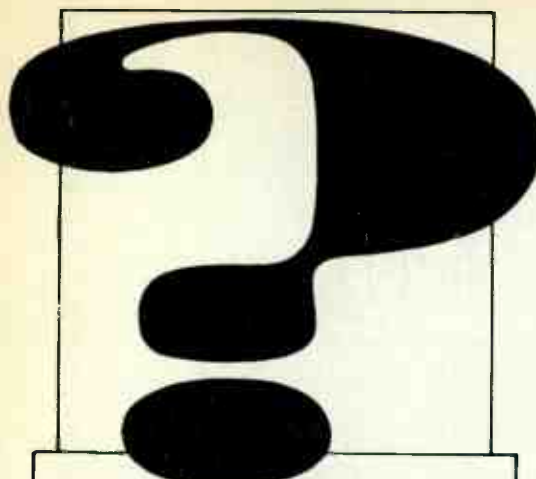
Weight 50lbs. Active 4-band E.Q. D.I. o/put, H.P. socket sustain/boost control, standby switch, bi-polar power unit will produce 150w when extra 8 ohm cabinet is used.

5 YEAR  
GUARANTEE



**MUSICIANS DIRECT SUPPLY CO., Dept E&MM12**  
176B Field End Road, Eastcote, Middlesex. 01-866 7414

If you are not happy with your purchase just return it within 7 days of receipt for refund. Send for Brochure—it's free. Visits by appointment



# WHICH MICRO?

## ZX81 (currently £45 inclusive of 16K RAM pack)

A casual look inside the ZX81's casing will soon show that Sir Clive had something other than sound on his mind when putting together this wedge of plastic and silicon – not a piezo transducer or speaker in sight. So, as the ZX81 stands, it's as silent as the grave, and just about as appetising when it comes to making music on it. That said, there's a fair range of add-ons and software designed for squeezing sounds out of the machine.

**HARDWARE:** The Zon X Sound Unit (£25.95, from Bi-Pak, PO Box 6, 63A High Street, Ware, Herts) and **Stuart Systems Music Synthesizer** (£22.42 (kit) or £29.32 (built), from William Stuart Systems Ltd., Dower House, Billericay Road, Herongate, Brentwood, Essex CM13 3SD) are typical of the ZX81 add-on industry's approach to sound synthesis, with yet more materialisations of the ever-popular (?) General Instruments sound chip. Whereas the Zon X is a self-contained unit (with speaker, amplifier, et al., all ensconced in a neat(ish) plastic box), the Stuart Systems unit comes as a PCB that's as naked as the day it was born. The latter does, however, include a 16-line control port that's very useful for extending one's interfacing activities into the sophisticated realms (for the ZX81, that is) of drum machine syncing and the like.

The Zon X was reviewed in the Dec '82 issue of E&MM, and the article also includes a simple program for setting up all the registers in the Zon X's sound chip. Away from sound FX and the like to more serious compositional intentions, the software that comes with the Zon X isn't much help, but the Stuart board has a reasonable 'Composer' program written for it (for an extra £8.50) which gets note inputting into some sort of shape.

**SOFTWARE:** The ZX81 **Multisequencer** (available from VES, 10 Ashlake Road, Streatham, London SW16 £5) is one of the few (and brave) software-only packages that earn their keep by toggling the ZX81's cassette port. This one in particular does better than most by producing a square wave over a range of about 5 octaves, and allowing over 30 different sequences of up to 16 notes, which can then be played in any

order with real-time control. The program is limited to monophonic sequences and produces a rather annoying buzz when nothing is playing, but the note coding works well and there are also some reasonably interesting visuals that accompany playback.

**Micro-Music** (available from ZX Micro-Pro, BCM Micro Pro, London WC1N 3XX for £5) is a similar program, but, since it fits in just the basic 1K of the unexpanded ZX81, there's no point in thinking that it'll emulate a Fairlight, or even do what the Multi-sequencer does. In fact, all it does is produce tones from the cassette port according to finger tapping on the keyboard.

## 'Micromusic'

If your aim is to turn the ZX81 into something that's more like a musically useful sequencer, then your best bet is probably to have a look at the series of articles that ran in the Dec '81 to Mar '82 issues of E&MM, under the heading of 'Micromusic'. These describe the construction and programming of a polyphonic sequencer using an additional input/output port (capable of driving Wasps and Gnats directly) together with the option of DACs (if you're intending to use 1 volt/octave synths). Peter Kershaw's software can cope with seven monophonic synthesizers, each with up to 1825 events, and makes for a reasonably straightforward system of music entry. That's the good news. The bad news is that no PCBs were ever designed for the project, so it's over to wire-wrapping and Veroboard this time round. The other problem is that the Wasp has its sustain disabled when interfacing via the link socket. Still, if you're after a cheap 12,000 note polyphonic sequencer, you can't expect to get the earth for peanuts...

In 'Rumblings' last month, I made some noises about the AMICS system being developed around the ZX81, also aimed at running EDP synths on the cheap. Unfortunately, those plans have been somewhat squashed by the apparently impossible task of getting the ZX81 to accept Z-80 machine code downloaded from an Apple. Yet more ULAs turning into UFOs. So, the long and the short of the story is that the system will instead be based around the Spectrum, a move that'll be greeted with a huge sigh of relief from all that value their sanity. Mind you, if anyone has been able to successfully turn their ZX81 into a dedicated music processor, we'd like to hear from you – offers of riches galore, untold glories, and all that sort of thing.

## Jupiter Ace (£90)

The really interesting thing about the Jupiter Ace is the fact that it runs in FORTH. The beauty of this language is that it is 'threaded', ie. a 'kernal' FORTH word becomes the subject of discussion of another word, which, in turn, donates itself to a further word, and so on and so forth (aargh...). A bit like the dietary habits of fishes, really. As an example, let's define the word STARS:

```
: STARS          (: starts word definition)
  "*****"      (print three asterisks)
  200 100 BEEP   (play a note of pitch
                  value 200 for 100 ms)
  ;              (; ends word definition)
```

Now, whenever you say STARS, the Ace will respond with three asterisks and a bleep. One point of confusion is the way a word or command (BEEP, for instance) comes after the parameters it uses (200 and 100, in this case). Similarly, a simple addition like 28 +

76 would be written as 28 76 +. That's because FORTH uses Reverse Polish Notation (like most Hewlett Packard calculators), which may be something of a stumbling block for those who like to see their mathematical operators between, rather than after, numbers.

Programmers that go green behind the gills at the sight of GOTOs (BBC ones in particular) are inclined to do graceful flips into structuralist hyperspace at the mention of FORTH. So, if some clever clogs of a salesman tries switching your attention away from BASIC, just remember that his mind probably works at the level of the following bit of idiocy:

**Truism:** The Jupiter Ace uses the structured language FORTH.

**Truism:** Structured programming is a very good thing.

**Assertion:** Therefore the Jupiter Ace is a very good thing.

In fact, music and FORTH make excellent bed partners because of the common ground they share in hierarchical structures. For instance, the Ace's one and only music command, BEEP, can be used to define a higher level word, BAR, which, in turn, might become PHRASE and then PART. One could go further, but the problem is that various factors make the Ace less of an ace than the foregoing might have led one to expect: firstly, there's an incredibly mean amount of RAM that's user-accessible (just 1K in fact); secondly, the keyboard is Grottsville, Arizona (similar to the rubbery Spectrum, or like prodding a dead fish); thirdly, the display is B/W only (at present, anyway); and fourthly, what sound there is is low and very limited (one channel that's rather reticent about making itself heard (Oric, take note) via a piezo transducer without the option of an external output).

Still, the saving graces of the Ace are that it's fast (FORTH runs at almost 80% of the speed of machine code), reasonably cheap, and should be relatively easy to expand. In fact, a 16K RAM pack is available now (from Stonechip Electronics, Unit 9, The Brook Industrial Estate, Deadbrook Lane, Aldershot, Hants., price £24.50), which should help the Ace's lot in life considerably. There's also a soundboard add-on being produced (though no details have yet been advertised) by Essex Micro Electronics, 4 Hatch Road, Brentwood, Essex.

So, if one's after a polyphonic synth controller and sequencer, the Ace might be just the ticket. However, the Spectrum would appear to have such a headway that it'd take a brave man to back the Ace's chances in that direction, FORTH or no FORTH. On top of that, there's the real difficulty of assessing the Ace without adequate software models. In fact, I've yet to see a single item of commercial music software for this micro. So, all you ace Ace programmers, send in your words of wisdom!

## SPECTRUM 16K (£99) or 48K (£125)

The Spectrum is a regular occupant of the Number 1 position of the micros sales chart, and rightly so, because it's a terrific machine for games and other popular applications. What it lacks in the sound and keyboard department can be improved upon by adding the usual array of Sinclair add-ons, though you may feel somewhat cheated once your cheap 48K machine has zoomed over the magical £200 mark. Still, it does have good colour graphics, a reasonable (if idiosyncratic) version of BASIC, the Design Council's stamp of approval, the microdrive, and loads and loads of software

(including a small number that are musically oriented).

Like the Jupiter Ace, the Spectrum is a single-command micro when it comes to music – another BEEPer, in fact. In theory, the Spectrum BEEP has a range of 18 octaves, from 8.17 Hz to 14,080 Hz, a piece of info which is of dubious value considering that Spectrum BASIC limits the pitch range to 130 semitones. But unlike the Jupiter Ace's BEEPING FORTH, the Spectrum goes along with the usual convention of putting the parameters, duration (in seconds) and pitch (+ve and -ve semitone offsets away from middle C), after the command. Also, Spectrum BASIC has a PAUSE command, which allows some more-or-less subtle delay to be added between notes. So, putting these snippets together gives us a typically tedious and unmusical rendition of a million-dollar tune:

```
10 FOR I = 1 TO 5
20 READ P
30 BEEP 0.5,P
40 PAUSE 250
50 NEXT
60 DATA 21,23,19,7,14
70 END
```

Well, it could be worse. At least the Spectrum designers have provided the option of directing the BEEP to an external amplifier via the cassette mic socket, which offers a vast improvement over the wretched piezo. In fact, played through a decent sound system with some echo and chorusing, it's of surprisingly good quality – albeit a square wave. One major problem with the musical side (joke) of Spectrum BASIC is that the program actually stops while BEEP is doing its thing, which means that ambitious programming attempts aimed at turning the 'qwerty' keyboard into something vaguely reminiscent of a synth have a habit of coming unstuck. In short, programs have to be written so that each note is either a predetermined length or a sequence of very short notes played in a stuttering Stylophone fashion.

As with its little brother, there's a fair range of software covering both software-only and hardware-assisted music making.

**HARDWARE:** Here, there's a choice between the sort of hardware that just amplifies the basic sound output from the mic socket, and that which drags another GI sound chip into service. Frankly, I can't see the point of adding on another amplifier and speaker of doubtful quality if you've got anything like a Hi-Fi system to hand, but I guess that some users might be adequately titillated by hearing a poor sound a bit louder and a bit better. If that's the case, then the **Spectrum Sound Amplifier** (£7.75, from Fuller Micro Systems, 71 Dale Street, Liverpool 2) should do quite nicely.

However, a greater chance of guaranteed aural satisfaction is likely to be achieved with one of the sound chip add-ons. For instance, there's the simply named 'Add-on', which packs the usual 4 sound channels, 3 joystick ports plus the amplification of the standard output into the same box-on-the-back, and at a reasonable price (£20.50, from Micro Power, 8 Regent Street, Chapel Allerton, Leeds LS7 4PE).

Other possibilities include the **Fuller Sound Box** (£30.75, from Fuller Micro Systems, 71 Dale Street, Liverpool 2), which uses the GI AY-3-8912 chip and provides a single joystick port and the Zon X (see ZX81). However, using the latter on the Spectrum also necessitates an extra outlay in the shape of a special Spectrum extension board (£6.80, address as above in ZX81 section). That's because the Spectrum edge

connector doesn't give access to any sort of clock, and so an external crystal is needed to generate the sort of clock signal that's necessary to get the sound chip generating away.

**SOFTWARE:** Not an amazing array of commercial goodies, but there are a few worth having a look at. One of the few treading the CAI boards is **Note Invaders** (£9.25, from Chalksoft, 37 Willowslea Road, Northwick, Hants.). This includes programs for note recognition in both a traditional and a frantic games format (naming notes before you're blasted from the sky – or something along those lines). This software is also available for the BBC Micro and the VIC-20. Another bit of software using the basic capabilities of the machine is **Composer** (£5.95, from Contrast Software, Farnham Road, West Liss, Hants. GU33 6JU). This is fairly basic (a simple sort of 200-note sequencer), but it does have good editing facilities. On the sound FX side, there's a utility program called **White Noise & Graphics** (£5.95, from Gilsoft, 30 Hawthorn Road, Barry, South Glamorgan, CF6 8LE), which adds various commands to BASIC, including those for explosion-type sound FX.

Another possibility is simply called **Sound FX** (£5.50, from DX Tronics, Unit 2, Shire Hill Industrial Estate, Saffron Walden, Essex CB11 3AQ), but I haven't a clue what it actually does.

## Spectrum Lookback

Frankly (and this isn't blowing one's own trumpet), the more than casual musical user of the Spectrum would probably do well to look at the various Spectrum articles that have appeared in E&MM over the last year. Starting off with the basic machine, there's the **Beepquencer** that appeared under the banner of 'Micromusic' in the Oct '82 issue. Basically, this is a sequencer which allows you to enter up to 16 repeating tunes, each with up to 32 notes over a range of 4 octaves, complete with cassette save and load facilities. Next on the list is the **Spectrum Synth Controller**, which materialised in the Nov '82 issue. This is similar in operation to its basic predecessor, but uses some extra hardware (an I/O port plus a CV-producing DAC) to drive any standard analogue synth. The main drawback to this project is that no PCB

was designed, so I'm afraid it's back to the old veroboard and smouldering iron.

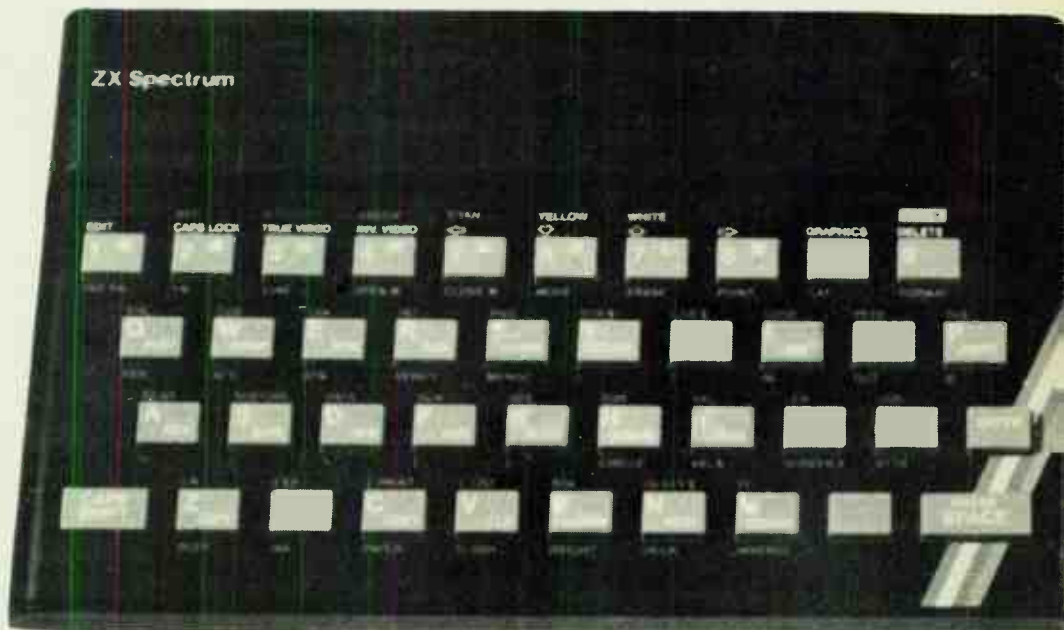
A more ambitious (and interesting) project is the OMDAC (June '83). This is a general-purpose module for interfacing a micro with up to 8 synths, and also provides in and out control lines (suitable for drum synths et al.) and an ADC for reading in potentiometer settings and the like. Though the original design centred around using it with the Acorn Atom and Spectrum, there's no reason why it shouldn't be used with any 8-bit micro, including the BBC Micro, Commodore 64, or Apple. The other good news is that a PCB is available (£5.95, direct from E&MM). The bad news is that there is not much in the way of software available yet. However, there must be a market for a cheap polyphonic sequencer to control all the sundry analogue synths that musicians have a habit of accumulating over the years, so we'll move hell and high water to get some sort of software development program under way.

## MIDI micro?

Finally, there's the intriguing area of the MIDI, the Musical Instrument Digital Interface that the majority of synthesizer manufacturers have agreed upon. It's early days to foresee precisely how earth-shattering this development will be, but one thing that's clear is that musicians may not take too kindly to being asked to part with a large amount of cash for an extra micro and all its attendant peripherals on top of the MIDI synth itself. That's where a cheap (but good) micro like the Spectrum can step in with a vengeance, and, with the advent of the microdrive, it becomes an even more sensible proposition as a MIDI micro. The May '83 issue of E&MM includes the majority of the available info on the MIDI in one article and a hardware design for a Spectrum MIDI board in another. The PCB for this is available directly from E&MM (for £4.25), but a ready-made board may also be available some time in the future. As with the OMDAC, home-grown software is at a rather early stage of development (the Prophet 600 MIDI-dump program in the August '83 issue, for instance) and any programming ideas or complete programs are likely to be received with open arms by E&MM!

David Ellis

CM





## Durham University Electronic Music Studio

The electronic music studio at Durham was established in 1970 with the modest resources of two Revox tape recorders, a portable Uher mixer, a second-hand jackfield and a VCS 3 synthesiser. At that time electronic studios in Britain were few and far between, nonetheless we were quite unprepared for the widespread interest shown in our tentative first steps. As the very existence of this magazine so clearly demonstrates the subsequent explosion of activity in the field of electronics and music has long since eclipsed those early pioneering days and left institutional studios such as ours with a dilemma, either merely to duplicate commercial studios by purchasing and updating manufactured equipment, or to develop alternative and hopefully more attractive systems by custom design and development.

Durham chose the latter approach at a very early stage, and has sustained a programme of research and development as a major priority, under the direction of the author. Technical engineering was initially spearheaded by John Emmett, spirited away by the research division of Thames Television in 1976. Since this date responsibility for hardware has been in the hands of Ron Berry, building up not only the resources for the analogue studio, but also more recently all the special interfaces required for our second, all-digital studio. (Regular readers of E&MM will recall Ron's article on the *Home Electro-Musician* in July, 1983).

### Analogue Studio

The two studios will be described separately, although it is important to stress that composers will often combine the resources of both studios in realising a piece. In the analogue studio two VCS 3 synthesisers and a keyboard are the only items of commercial electronic music equipment. Even these will be released for live group work when a further bank of envelope shapers and ring modulators has been constructed. The rest of the system consists of the following custom-built items; a 24

element oscillator bank, a digital pink noise generator, 2 third-octave filter banks, 4 adjustable filter units, a stereo frequency shifter, 4 signal processors, a digital delay line, and a spectrum analyser.

The oscillator bank is divided into two groups of twelve oscillators, one group producing sine/square waves, the other ramp/triangle. In designing this unit particular emphasis has been placed on frequency stability, freedom from interaction (eg. locking together), and waveform purity; features not particularly notable in commercial voltage-controlled designs. For composers brought up on synthesisers it is usually a pleasant surprise to discover that it is possible to combine several oscillators to create rich and stable textures which do not drift apart during a break for tea. The pink noise generator is integral to the spectrum analyser, its digital design ensuring a distribution of noise energy through the audio spectrum sufficiently smooth to calibrate the analyser itself, as well as being available as a studio sound source.

The two filter banks each consist of twenty-eight fixed frequency filters, wired in parallel to encompass a range of nine octaves. The gain control for each filter may be adjusted from +6 dB to -infinity, providing a shaping facility significantly more powerful than a conventional equaliser. The four adjustable filters may be switched between high pass, low pass, band pass, band stop and all pass modes, with a 'Q' factor variable between 1 and 200. Coarse and fine tuning controls allow accurate frequency tuning, matching the specification of the oscillator bank.

This emphasis on manual control facilities, so much a feature of studios of the '50s and early '60s might appear distinctly old fashioned. It is important to appreciate, however, that the range of music produced by a studio such as ours is very broad, stretching from rock to the avant garde. Towards the latter end of this stylistic spectrum the desire to work more intimately with the components of electronic synthesis increases sharply, hence the need for

more precise control over each parameter. Voltage control networks are still important as a facility for adjusting several parameters simultaneously, and sequencers provide a useful means of recording these changes. The freedom to 'play' systems, however, must be weighed carefully against any consequential loss of accuracy in the sound generation process itself. As will be seen shortly our all-digital studio overcomes all these drawbacks, but not without producing one or two of its own.

The stereo frequency shifter provides a facility for modulating applied signals against an internal sine wave generator to produce either sum or difference tones. A conventional ring modulator, such as that available on our VCS 3s, generates both sum and difference tones simultaneously. Whilst the resultant effect is a rich spectrum of sound, the unavoidable mixing of these products often results in a harshness which restricts their usefulness. The ability to generate these sidebands independently is thus invaluable when exploring the more subtle features of this modulation technique.

The signal processors combine the characteristics of a number of commercial devices and a few of our own in a single unit. Incoming signals may be subjected to varying degrees of compression, expansion, gating or level inversion as required, an adjustable level detector determining the point of triggering, and variable attack and decay circuits the speed of response. Side-chain filters may be switched into the level detector feeds to allow the units to be activated by particular frequency areas, for example the thump of a drum or notes from a bass guitar. The voltage function generated by one processor may be used to operate another, particularly useful when it is desirable to gate one sound with another. The digital delay line was built in the early 1970s and uses outdated technology. It has its uses, however, not least as an effects unit for frequency modulating incoming audio signals. This is achieved by voltage controlling the internal clock which determines the speed at which sound samples are digitized and subsequently resynthesised. In view of the intervening delay, sounds may thus be coded and decoded at different rates, producing FM effects more usually associated with digital synthesisers such as the Fairlight or the Synclavier.

Sequencer facilities may be provided via the digital studio. This particular link, however, is not at present encouraged for reasons of system efficiency, and a micro-processor controlled unit is under construction to service such requirements. This particular technology is now so cheap and powerful that custom design is far more attractive than any commercial unit.

### Flexibility

The studio mixer is a 32/16/2 desk, custom-built to our own specifications. Comparable large commercial mixers are primarily intended for conventional recording and broadcast environments and are not entirely ideal for the more specialist requirements of the electronic music studio. In many situations it is desirable for the mixer to be used as an extension of the treatment facilities described above. Complete flexibility has thus been a design priority. Any input channel may be routed via simple thumbwheel switches to any output channel, or panned between any pair of channels, or connected to any one of four joystick controls for quadrasonic manipulation. Spatial positioning and movement,

whether in stereo or quad, are important features in many electronic works, and the flexibility of this arrangement has proved very popular.

Reverberation facilities consist of a Great British Spring, accessed via a pair of echo sends on each input channel. Equalisation facilities consist of six units per channel, spaced 1½ octaves apart from 50 Hz, with a variation of + or - 24 dB, this particularly wide degree of variation reflecting the role of the mixer as a treatment device. For straight mixing the equalisers may be switched out completely to ensure a perfectly flat response. Simple VUs indicate the level on each input channel, and output levels are monitored via a bank of BBC pattern PPMs. Input gain selectors, phase inversion switches and microphone monitoring facilities complete the range of facilities.

Such a large mixer offers many advantages, in particular the facility to treat the unit as a series of smaller mixers by dividing input and output channels up into groups. The system can thus be configured at one go for several stages in the preparation of a work without the need for endless repatching. The patch system itself is unusual, for in place of the conventional patch bay of jack sockets and interconnecting leads we use a pair of pin matrix boards. Despite their size (58 x 74 holes and 38 x 33) composers find them simple to use and very easy to check, for in place of the usual mess of intertwined cables one is faced with a neat arrangement of pins. Pin patch systems have generally been viewed with some suspicion, doubts being fuelled by some very badly assembled versions in early synthesisers. Our experience over ten years, however, has more than justified our choice. A damaged pin is quickly replaced at insignificant cost, and we have never experienced a single broken board contact. Even the inevitable spillage of a cup of coffee, after the initial interesting effect of everything shorting together, has been quickly cleared up with no lasting legacy of dirty contacts. Careful screening of all cables at installation and attention to earthing points gives us a crosstalk figure between adjacent channels better than - 75 dB, with a hum figure lower still.

The recording facilities consist of six A77 and B77 Revoxes and two multitrack machines, one ½" 4-track, the other 1" 8-track. Brenell transports have been used for the latter, all the electronics being custom built. In addition a ¼" 4-track teac is available for running off performance tapes. Two Revoxes are fitted with the manufacturer's + or - 50% speed variation controls. A further two have been studio modified to provide a variation between dead stop and flat out, in practice about 24" per second. An accurate indication of tape speed can be obtained by displaying the speed of capstan revolution on a frequency counter. Noise reduction facilities consist of a bank of Dolby A units, and quad monitoring is via Quad amplifiers and Tannoy loudspeakers.

## Digital Studio

The digital studio, established in 1981, was the first of its kind in this country, although others are now following our lead, notably the University studios at Nottingham and York. The equipment consists of a PDP 11/23 minicomputer with 192Kbytes of memory, 10 megabyte hard disk and dual floppy disk storage facilities, 2 VDUs, a line printer, various I/O ports, a programmable clock, and custom-built, fully buffered 16 bit

The analogue music studio.

stereo digital to analogue and analogue to digital conversion facilities, capable of operating at speeds up to 50kHz. A special bit slice hardware 'floating point' processor is incorporated, allowing mathematical calculations to be executed at speeds approaching those attained by much larger machines.

Reference has already been made to large digital synthesisers such as the Fairlight and the Synclavier, now to be seen regularly on stage in rock and pop concerts. Avant garde composers too have been exploring their facilities in increasing numbers as one by one institutional studios across the country scrape up the £25,000 or so required to purchase one. What is not generally realised is that these synthesisers, based on microprocessors, are derivatives of research and development into digital synthesis, initiated as long ago as 1957 by Max Mathews, working at Bell Telephone Laboratories, New Jersey. Working entirely in software, on large computers, Mathews constructed a series of MUSIC programs, further developed by others during the '60s and '70s to become the main compositional facility at many of the main international electronic studios, for example IRCAM in Paris, and Stanford in California. At MIT, however, Barry Vercoe developed a version known as MUSIC 11, written in machine code for the PDP 11 range of computers, and it is this package which has been installed at Durham on hardware costing significantly less than the commercial synthesisers discussed above.

## MUSIC 11

The characteristics of programs such as MUSIC 11 are rather different to those of a commercial synthesiser, so it is potentially misleading to make a strict comparison. A few general points nevertheless may usefully be made. Fairlights and the like are performance orientated systems with an immediate response, offering the user a finite range of options, for example up to 8 voices at any one time. Manufacturers, however, have generally been reluctant to release details of the latter for fear of revealing trade secrets, and their insistence on non-disclosure agreements has restricted the accessibility of program libraries and programming techniques to others. The preferred method of operation, via the keyboard and special console is nevertheless very versatile and adequate for many purposes.

MUSIC 11, being entirely a software simulation on a standard computer is restricted only by memory space and processing

power, allowing the composer a far wider range of choices.

Specifying upwards of 48 oscillators, using a variety of waveforms and envelope characteristics, for example, presents no difficulty. Indeed the degree of control which may be exercised over individual parameters is limited only by the willingness of the composer to enter sequences of instructions. Further, since the programming language is freely available to all, no restrictions are imposed on the interchange of information.

The tradeoff for this enhanced versatility is a lack of immediacy, for even a computer as fast as ours cannot calculate the sounds in 'real' time. An intermediate stage has thus to be introduced, which involves a wait perhaps of several minutes whilst the computer calculates the numerical sequences which will constitute the final sound, and stores them in order on disk for subsequent conversion.

In the earlier pioneering days when composers had to wait perhaps overnight to obtain the results of a single program run on a central computer, it was doubtful whether the ends justified the means. In our situation, with a dedicated machine of our own, experience is showing that the relatively short delay is a price worth paying for the benefits to be derived, especially in avant garde composition. At present our system lacks such aids as interactive graphics, and auxiliary input devices such as keyboards and joysticks. We expect, however, to add these facilities within the near future as part of our continuing programme of research and development.

## Course Work

Access to the Durham studio of necessity has to be restricted in the first instance to our own undergraduates, postgraduates, and members of staff, although occasionally we are able to allocate time to advanced composers from outside. Our undergraduate music degree course demands the usual combination of A levels at high enough grades, although it is not always realised that a combination of science + music is as acceptable as arts + music. A subsidiary subject must be studied during the first year, and the choice includes fields such as computing, electronics, or mathematics. Opportunities exist in our honours course to study both the theory and practice of electronic music, and also related topics such as musical acoustics. Composers may submit an electronic work as part of their degree. At a postgraduate level our one year foundation course pursues more advanced





PDP 11/23 minicomputer with peripherals.

aspects of composition, both traditional and electronic, and prepares the more able student for a further two years of study, leading to a Ph.D.

The existence of our studio influences the concert giving scene, and during the academic year a number of concerts of electronic and other avant garde music are given to which the public are welcomed. Regional interest is fostered further by links with Spectro Arts Workshop in Newcastle, who

provide studio facilities and stage concerts as an arts centre activity, and the relatively new Newcastle University studio just up the road.

**Peter Manning**

**E&MM**

*Dr. Peter Manning is the Senior Experimental Officer in Music at Durham University, currently working on a book of electronic and computer music, to be published by O.U.P. in mid 1984. Along with*

*Hugh Davies of Goldsmith's College, he is completing the entries for electronic and computer music instruments for a forthcoming dictionary of musical instruments, to be published by Grove in the new year.*

*For further information about the courses contact: Dr. Peter Manning, University of Durham, Faculty of Music, The Music School, Palace Green, Durham DH1 3RL. Tel. (0385) 64466.*

## AT LAST—THE CHROMA VIDEO

Now you can synthesize with feeling with the awesome power of a 16 voice synthesizer with completely accessible architecture. The possibilities are virtually endless — see for yourself how well known Chroma owner Peter-John Vettese has found Chroma an invaluable asset in his musical career. Now on video, Peter-John runs through some of his favourite Chroma sounds and demonstrates the technique that has captured so much attention. Chroma · Chroma Expander · Chroma/Apple Interface are all spotlighted in an exciting musical presentation guaranteed to fire your imagination. Running time 1 hour on VHS, Beta, U-Matic.

**Please rush me details of Chroma and your Chroma video.**

**My name is:** \_\_\_\_\_

**My address is:** \_\_\_\_\_

RETURN TO: KEYBOARDS DIVISION, CBS FENDER, FENDER HOUSE, JEFFREYS ROAD, ENFIELD, MIDDLESEX.



# Keyboards

20 Denmark Street, London WC2  
Telephone 01-379 6690 (sales)  
01-240 0085 (service)

# Musicstore

15 The Butts, Worcester  
Telephone: 611774

*Red  
Argent's*

*Red  
Argent's*  
**Keyboards**  
01-379 6690

*Red  
Argent's*  
**Keyboards**  
01-379 6690

*Red  
Argent's*  
**Keyboards**  
01-379 6690

*Red  
Argent's*  
**Keyboards**  
01-379 6690

*Red  
Argent's*  
**Keyboards**  
01-379 6690

*Red  
Argent's*  
**Keyboards**  
01-379 6690

*Red  
Argent's*  
**Keyboards**  
01-379 6690

*Red  
Argent's*  
**Keyboards**  
01-379 6690

*Red  
Argent's*  
**Keyboards**  
01-379 6690

## YAMAHA DIGITAL

DX9 AND DX7  
The amazing New Yamaha Digital FM  
Synths  
PF10 AND PF15 ELECTRONIC PIANOS  
★ NOW IN ★  
DX7 - £1299  
DX9 - £899

## MICROS AND THE MUSO

We are keeping up latest music related technology. The major system being the Midi based system. The first product available will be the Midi based sequencer. Manufactured by Sequential Circuits. We can also modify your old Prophet V for the new Midi interface. Phone for details.

## YAMAHA MT44

Multi-track cassette system with MM30 mixer and RB30 rack and patch bay give a good flexible home recording system at great prices. The multitrack system for the musician who wishes to play and record standard cassettes on the same machine.

## ROLAND JUNO 6 AND JUNO 60

The six voice professional polysynths have a richness in sound and textures, that up until now were only available on synths costing twice as much. Create your own sounds with these great value synths.

Special Christmas Price

## SIMMONS ELECTRONIC DRUMS

We carry huge stocks of these incredible electronic drum kits with a wide choice of colours to choose from. You must have heard these instruments as virtually every top band is now using them, but if not, then we have a private demo room where you can discover why. We haven't met a drummer yet who hasn't been amazed by the response and sound of these drums, so let us convert you - NOW!

A complete kit comprises: bass, snare and three toms together with all necessary stands and leads.

MAIN LONDON AGENTS

Phone for best possible price

## THE OSCAR MONOPHONIC

This new British mono synth has received excellent reviews and quite deservedly so. Features include 12 presets which can be replaced at your own request, 24 programs, a sequencer with 12 sequences and 12 chains that can change sounds as it plays. - £499

## ROLAND DRUMATIX AND BASSLINE

These great units are fast becoming the rhythm section, used on all home multitrack equipment. The Drumatix is a great sounding programmable drum machine, which can be connected in sync with the BASSLINE. They can be programmed to play a drums and bass for up to 8 different songs. Come into the shop for a great demo and a great price.

## ROLAND JP-6

Gives features not found on the JP-8 with better live performance facilities AND THE SAME BIG SOUND. WE LIKE IT.

## CASIO PRODUCTS

We stock the complete range of Casio keyboards from the compact electronics of the PT30 to the multitrack useability of the brand new Casio CT7000. Now in CT610 - stereo. Now available - free keyboard stand with all CT model Casios.

## NEW PRODUCTS

Roland: SDE 1000 and SDE 3000 digital delays.  
Boss: Play bus headphone amp + mike (all Rockman).  
Rhodes Polaris: We now have details of this interesting new poly from C.B.S. Available from the New Year.  
Moog SL8: A split and layered poly from Moog with built in poly sequencer and Midi interface. Available in the New Year.  
Yamaha R1000: Digital reverb - great value. P.O.A.

## DIGITAL DRUM MACHINES

We stock both the MXR and Drumulator digital machines. They produce the highest quality digital drum sounds combined with great memory potential features, up until now only available on machines costing twice as much.

Drumulator - £985  
MXR Digital - P.O.A.

## SALE LONDON SHOP

YAMAHA CS80 .....£1500  
PROPHET 600 .....£1350  
KORG POLY 61 .....£699  
KORG KPR77 .....£299  
KORG POLY SIX .....£799  
ROLAND CR5000 .....£235  
ROLAND VK09 .....£335

## ROLAND JX3P AND MC202

JX3P This 2-oscillator polysynth offers a budget priced keyboard with built in poly sequencer, and optional add on programmer. Competes very well with the big polysynths.  
MC202 2-channel version of the MC4 with built-in synth, pulse, real, or step time programming and sync to tape for multi-tracking make this a real winner.  
Phone for prices

## KAWAI ELECTRIC PIANOS

KAWAI ELECTRIC GRAND  
This 88 note electric grand is now becoming the onstage favourite of many of the top pro musicians. Also great for studio work. Call in for a demo.

KAWAI ELECTRIC UPRIGHT EP608  
The stop gap between a Rhodes and an electric grand. An electric upright with real strings and a real piano sound all for £1250.00.

## WAL CUSTOM BASS

We are proud to be exclusive central London distributors of these fine hand crafted basses. The quality and uniqueness of sound, coupled with an incredible range of tones, has made this instrument a world beater. Large stocks of fretted and fretless models available for comparison. Best selection in England.  
Price on application

## SEQUENTIAL CIRCUITS

Prophet T8. For those who thought analogue synths had peaked, the T8 is here to change your mind. A velocity and pressure sensitive, weighted keyboard allied with split and layering of sounds gives unbelievable control over the sound. S.C. have done it again. Delivery imminent.  
Still available - The ubiquitous and perennial Prophet V.

PRO ONE

We have secured the last of these fine mono synths from S.C. and will be available only while stocks last. £399.

## KOR PRODUCTS

We are the Korg Key Centre for Central London. We carry all the major Korg products including their new, Poly 61, Poly 6, Monopoly, drum machines + delay lines - best prices.

## BOSS EFFECTS

BOSS DM2 DELAY .....£69  
BOSS BF2 FLANGER .....£59  
BOSS CE3 ST. CHORUS .....£59  
BOSS VB2 VIBRATO .....£49  
BOSS QC2 OCTAVER .....£39  
BOSS TU120 TUNER .....£59  
FREE DELIVERY

## MEMORYMOOG - RHODES CHROMA

The list of features and sound possibilities of these two instruments makes them obvious contenders for anyone considering purchasing a top flight polysynth. In our professional keyboard section you can compare them with all other leading makes under ideal conditions and by appointment if desired.  
P.O.A.

## KEYBOARD STANDS

ULTIMATE SUPPORT SYSTEMS  
Now in stock - the best multiple keyboard stand from the U.S.A. 2 or 3 tier available.

SINGLE SCISSOR STAND  
Easy to erect, solid black sturdy single stand. Perfect for home, studio or live.

## ROLAND JP8 AND MC4

The JP8 is Roland's most sophisticated polysynth and is certainly the current market leader despite some very impressive competition. When linked to the MC4 micro-composer, the user has a very powerful and creative composing system which can also be used successfully in a live situation.

## SIMMONS SDS 6

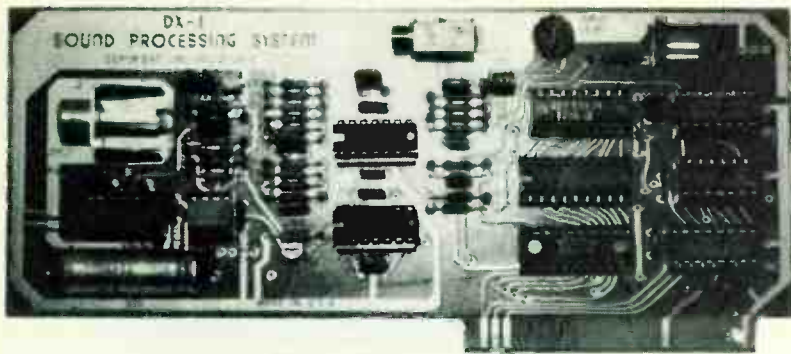
The sequencer designed to allow the non-drummer access to the exciting sounds of Simmons electronic drums. A fully programmable 8 channel, 99 program sequencer, programmable dynamics. Phone for details.

## ROD ARGENTS MUSICSTORE

Other gear at Worcester store includes Fostex, Schecter, Tokai, Premier, Jay Dee, Carisbro, Westone, Vigier, and all the best in musical equipment.

## MAIL ORDER

We offer an efficient Mail Order service to all our customers. Access and Barclaycard sales are now available over the telephone. Red Star service is available. Payment details: Bankers drafts and Building Society cheques - immediate clearance. Personal cheques - allow 5 working days.



## DECILLIONIX DX-1 DIGITAL SOUND EFFECTS SYSTEM

**B**roadly stated, the DX-1 is a sound sampling add-on for the Apple II or IIe. In fact, it's such an effective little beast that I'm only surprised no one has thought of doing this before on the ever-green Apple. After all, Mountain Computers' multi-channel A/D and D/A card has been around for four years now, and there's no reason why it shouldn't have been pressed long ago into the more-or-less musical service of sampling and regurgitation. Perhaps it takes Fairlights, LinnDrums, and Emulators to alert the add-on marketplace to something as straightforward as the delight of being able to sample your Grandmother's snores...

### Hardware

So, what do you get for the £150 that the hardware and basic software costs? Well, an ADC and a DAC aren't part of the standard Apple, so a card kitted out with the relevant chips has to be plugged into one of the expansion slots on the motherboard. For those who like chip chat, the silicon slices important to the DX-1's story are an AD7574 (ADC), an AD7528 (dual DAC), and a CA3080 (VCA). Basically, what happens is that the line level or mic input (selected with a jumper on the board) is pre-amplified and directed to the AD7574 for A/D conversion, using the successive approximations technique to provide an 8-bit output that goes onto the Apple's data bus.

The AD7574 is operated in what's called the 'ROM interface mode', which makes the conversion process very straightforward as far as software is concerned. A data READ instruction to the chip's address location results in the RD line going high. This automatically restarts the conversion process, with the BUSY line going high once conversion has been completed. In fact, to vary the sampling rate, all one has to do is strobe the RD line with READ instructions, and let the chip get on with its job. This way, the DX-1's software is able to vary the sampling rate over the range of 0.78 kHz to 23.2 kHz

and lodge the sound data in 24K of the Apple's memory.

Now, unlike the Fairlight, which has a separate 16K chunk of memory for each voice, the DX-1 adopts the more flexible approach of the Emulator, where all voices share the same memory. Of course, this is forced on the DX-1 by the architecture of the Apple, but the beauty of this approach is that you can allot more pages of memory to samples that need a larger RAM soundbase than those that are shorter in length or lower in bandwidth. However, unlike the Emulator, which has multiple DACs for as many voices, the DX-1 has to make do with just one, switching from one sample soundbase to another, according to software/user instructions. In fact, there is a second DAC on the board (the other half of the 7528), but this is used for setting the output volume level via a VCA (the CA3080 chip).

The return journey of a sampled sound starts with the initialising of various parameters, including the start address of a particular soundbase plus its length, the playback sample rate, and the playback volume. For instance, the pre-recorded Drum Set provided with the basic software breaks down as follows:

SOUNDBASE 1: Drum Set  
 REC RATE: 3  
 REC MODE: 2  
 PLAY RATE: 5

Sound	Start Address Page Hex	Length PagesHex
Snare	54 \$3600	8 \$800
Tom-tom 1	62 \$3E00	8 \$800
Tom-tom 2	70 \$4600	8 \$800
Bass drum	78 \$4E00	8 \$800
Hi-hat	86 \$5600	8 \$800
Wood block	94 \$5E00	8 \$800
Ride cymbal	102 \$6600	24 \$1800
Crash cymbal	126 \$7E00	24 \$1800

Sound data is loaded byte by byte into the accumulator, and then the RD line of one of the 7528 DACs is strobed, thereby transferring the data for D/A conversion by the chip. Like A/D conversion, this is all pretty straightforward and provides a range of playback sampling rates from .78 kHz to

30.0 kHz. The other side of 7528 dual DAC gets strobed into activity whenever a change in volume is required. Whatever 8-bit value is sent to it then gets converted to a CV for the purpose of setting the degree of attenuation by the CA3080 VCA. Finally, on the output side, there's a low-pass filter (which can be bypassed by means of a jumper) for removal of the usual digital gunge, a feedback pot option (to the input of the ADC), and an LM380 power amplifier for driving a speaker.

### Basic Software

OK, that's the tough stuff over. Now, we move on to actually playing with the thing. On booting up the system disk, which, for once, isn't copyright-protected (whoops of joy), various defaults such as board slot and volume are assumed by the software, and one of the three 96-page soundbases on the basic disk is loaded into memory. All the sampling, regurgitation, and sequencing programs have their own menus which are approached from a main menu.

The first two selections are really what I'd call fun and quick try-out options. 'Sound Samples' basically does what the menu options suggest it does. For instance, 'Cycle Sounds' is a routine that plays each sound in a soundbase five times, at increasing sampling rates, before moving on to the next sound. By comparison, 'Falling Object' repeatedly plays a sound, but progressively chops off portions of the beginning, creating a sort of 'bouncing ball' effect. 'Roller Coaster' operates in a similar fashion, but by doing an axe job on the end of the sound.

'Preset Rhythms' is a fast way of trying out various rhythmic combinations of the sounds in a soundbase. Unfortunately, most of these are pretty unimaginative, the one exception being 'Rock 2', which is a strong, driving pattern of the 'electro-rock' type. One limiting factor behind using the DX-1 as a drum machine is that you can only get one drum sound out at once (because there's only one DAC receiving sound data), so a continuous hi-hat pulse plus an on-beat bass drum is out. Actually, that's not 100% true, because you could, in theory, make samples of combined drum sounds, and then use these to spice up a pattern with the occasional illusion of a two-handed drummer at work. Of course, if you opt to construct your own custom drum set, you've got to find your drum samples, but, take a hint from me, 'Drum Drops Vol. 3' is a great source of inspiration!

What about the drum sounds themselves? Well, I must admit to being bowled over by what I heard from the DX-1. I tried putting the output through a decent combo and, on most of the sounds, it was hard to believe that there wasn't a drum set or sampling drum machine behind the action. What's more, friends reacted similarly! It's certainly quite a shock hearing such good drums coming from an Apple — especially after being accustomed to the rather woolly and undynamic sounds of the Mountain Computer MusicSystem. Of the eight drum sounds in Soundbase 1, the only two I have any reservations about are the cymbals. The 'crash' certainly crashes very effectively, but the cut-off is on the abrupt side; the same is true of the 'ride', which has plenty of initial metallic zing but cuts off before the shimmering has had a chance to establish itself. But when you consider that the cymbals have been sampled into just 6K, and that most of the sampling drum machines are now using 32K of ROM for such sounds, the DX-1 is still doing remarkably well even with these notoriously difficult sounds.

One thing that Decillionix might consider doing is to use the trick of envelope-shaping (with the on-board VCA) a continuously cycled output from a cymbal soundbase (the technique used by the MCS Percussion Computer, in fact). That way, a faster recording sampling rate could be used to get a crisper top end, and the VCA could be used to shape the sound dynamically as required.

## Real-Time Rec/Play

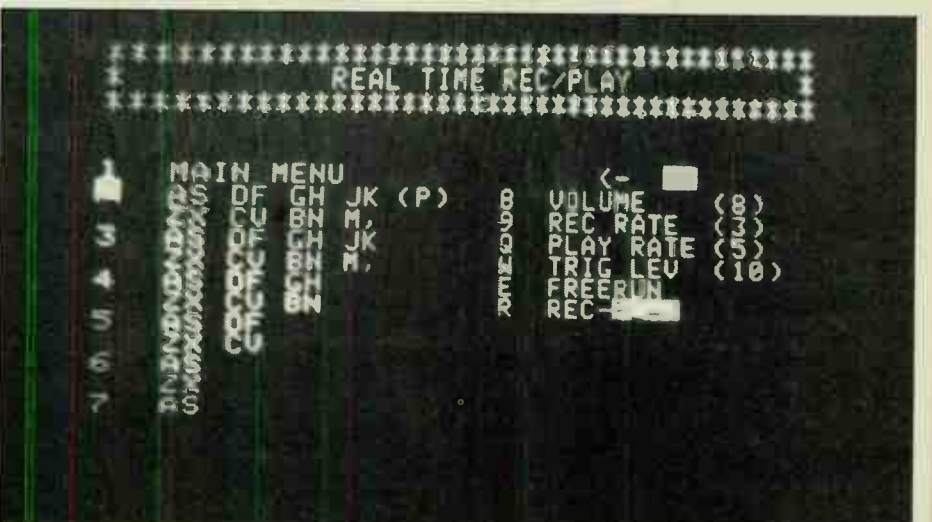
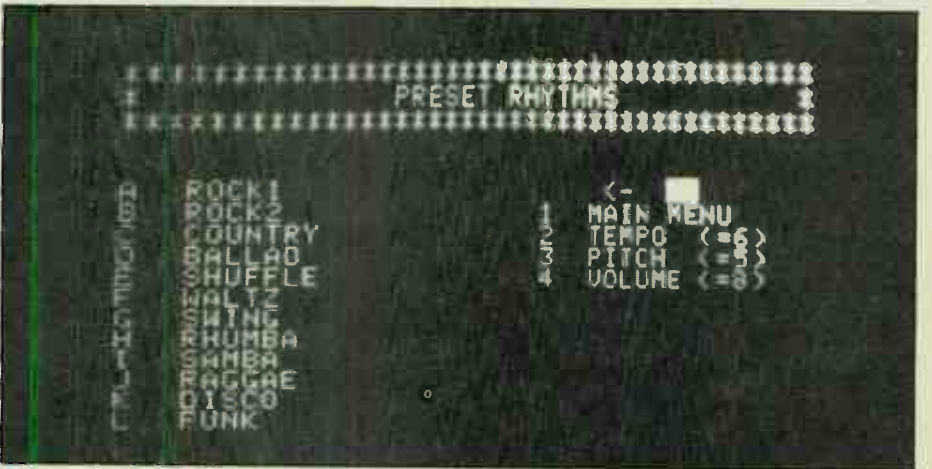
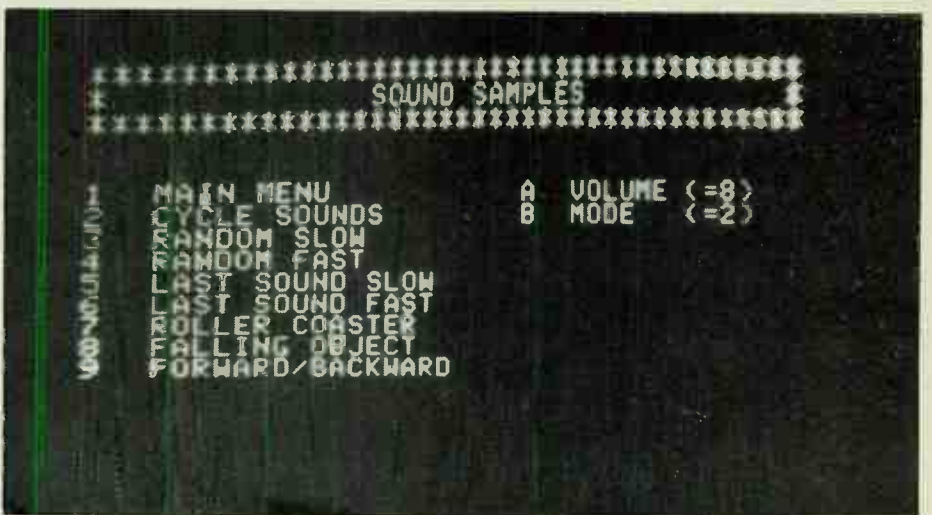
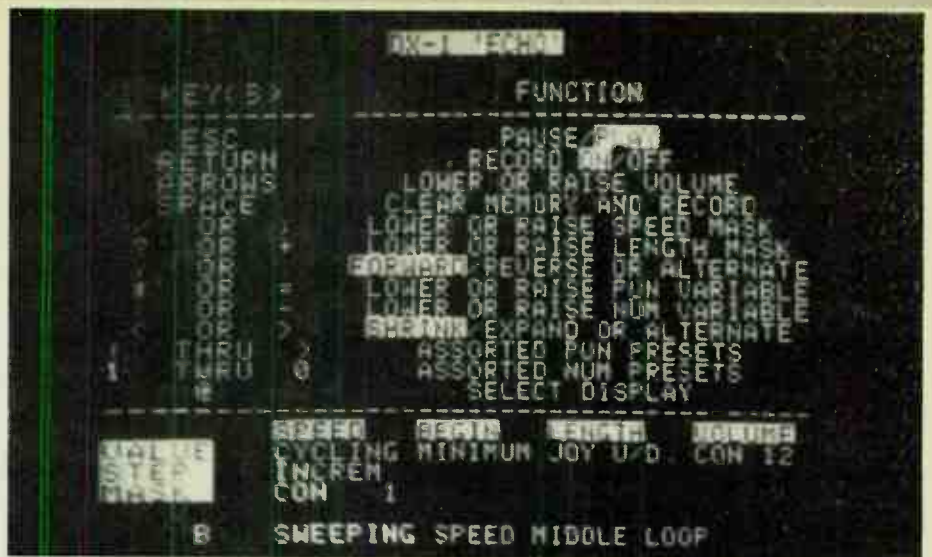
The third option on the main menu takes us away from all this preset stuff to the interactive side of the DX-1 – the real-time record and play facilities. This is where the fun really starts. The left of the picture shows the various rec/play modes, ie. the apportioning of the Apple's memory to individual sounds. We've already come across mode 2 in the case of the drum set soundbase, where the last two samples are allocated three times the memory of the first six. By way of contrast, mode 3 divides the 24K total sound memory equally into eight, and subsequent modes go about their business by allocating more memory to fewer samples.

According to whatever mode you're in, sounds can be played by pressing relevant keys on the Apple's keyboard. So, for instance, with soundbase 1, keys A and S play the snare drum, keys D and F the first tom-tom, and so on. Note that pairs of keys are provided so that you can play rolls. It's little touches like that that really warmed me to the DX-1. Selection of reverse or forward playback through a sound sample is achieved with the cursor keys, the current status being indicated by the arrows at the head of the right display column.

Recording is equally straightforward. First, the REC RATE has to be set bearing in mind the relationships between the members of the sampling *menage à trois*, ie. rate, quality, and length. For best results, a value of 5 suits percussive sounds, whilst 10 is OK for speech. One thing that's slightly confusing is that the REC RATE entered is actually inversely correlated with the sampling rate. That's also true for the PLAY RATE, so playing back a sound at a slower rate (and, therefore, a lower pitch) entails entering a larger PLAY RATE value. Not surprisingly, all this entails a certain amount of head-scratching.

The FREERUN option on the menu allows continuous input and output via the DX-1 board. The idea behind this is to allow input levels to be set so as to optimise S/N ratio, minimise distortion, and so on. The next step is to set the trigger level, so that sampling commences only once a particular input level has been achieved. The 'R' key can then be used to toggle the system into record stand-by. Pressing the left key of the pairs active within a chosen mode starts the sampling process, and pressing the corresponding right key plays the sound back. You have to watch that you don't monitor at too high a level, as otherwise all you'll end up sampling into the Apple is feedback howl, which is of no earthly use to Man or beast!

Once you've sampled whatever sounds you want in a particular soundbase, the 24K of memory can then be saved to disk. Alternatively, you might want to try out a few rhythms or pitch changes on the material, in which case you can go for the first option on the screen which takes you back to the main menu. Aside from the options we've already covered, such as Sound Samples and Preset Rhythms, there's also the delights of Auto-Sequencing.



# CARLSBRO SOUND CENTRES LTD

## CASIO®

VL 1	£35.95 inc free mains adaptor
PT 20	£49.95 inc free mains adaptor
PT 30	£69.00 inc free mains adaptor
PT 50	£99.00 inc free mains adaptor
MT 41	£89.00 inc free mains adaptor
MT 45	£99.00 inc free mains adaptor
MT 65	£149.00 inc free hard case
MT 70	£199.00 inc free hard case
MT 800	£249.00 inc free RAM pack
CT 101	£169.00 inc free mains adaptor
CT 202	£245.00 inc free hard case
CT 405	£245.00 inc free hard case
CT 1000P	£295.00 inc free hard case
CT 501	£295.00 inc free hard case
CT 610	£345.00 inc free hard case
CT 7000	£525.00 inc free hard case
TA1 Tape Recorder Interface for PT30/PT50	£19.95
Stands for CT models. Chrome	from £30

Ovation Tuner.....	£28.95
Boss Tu 12 Tuner.....	£36.00
Poly sixty one.....	£679
Poly six.....	£POA phone
KPR 77 Drum machine.....	£299
EPS 1 Piano.....	£799
SDD 3000.....	£685

## CARLSBRO

Minifex Suzz.....	£19
Minifex Chorus.....	£39
Minifex Flanger.....	£39
Minifex Compression.....	£27
AD1 Echo.....	£120
Profex ADR1.....	£275

## Effects

OC2 Octaver.....	£46
CE2 Chorus.....	£46
CE3 Stereo Chorus.....	£64
DS1 Distortion.....	£41
SD1 Overdrive.....	£41
GE7 Graphic.....	£57
BF2 Flanger.....	£61
NF1 Noise gate.....	£33
OD1 Overdrive.....	£42
PH1R Phaser.....	£57
DM2 Delay.....	£79
VB2 Vibrato.....	£51

## KORG

Korg GT6.....	£35.00
Korg Micro.....	£27.95
Sieko Tunemaster.....	£26.95

## Roland

*SH101 Mono Synth.....	£279
*MC202 Micro Composer.....	£279
*(If purchased together).....	£449
Juno 6.....	£575
Juno 60.....	£875
Jupiter 6.....	£1499
JX3P.....	£749
PG200 Programmer for JX3P.....	£149

## AMDEK

### Effects Kits

Make up your own pedal

Distention.....	£29
Compressor.....	£35
Phaser.....	£39
Tuner Amp.....	£32
Metronome.....	£32
Flanger.....	£55
Chorus.....	£47
Rhythm Machine.....	£79

Please note large size stocking required

STOCKING  
Fillers

## Guitars

Classic Guitars from.....	£29
Steel Strung Acoustics from.....	£32
Electric Guitars from.....	£49
Electric Bases from.....	£79
Hondo Les Paul style.....	£69
Tokai Vintage Guitar and Bases from.....	£179
Fender Squire Guitar and Bases from.....	£199

## Recording

Tascam 244 4 Track Cassette.....	£679
Tascam 234 4 Track Cassette.....	£560
Tascam 344 Track 10" Reels.....	£899
Tascam 38 8 Track 10" Reels.....	£1795
Tascam 32 2 Track Master 10" Reels.....	£749
Tascam 22/4 4 Track 7" Reels.....	£675
Tascam 22/2 2 Track 7" Reels.....	£345

## Fostex

X15 Multitracker Batt/Mains.....	£299
250 4 Track Cassette.....	£610
A88 Track.....	£1165
Yamaha MT44 4 Track Cassette.....	£339
Fostex Personal Monitor.....	£75

# MERRY

ORDER BY PHONE

Quote Your Credit Number For Immediate Despatch



182/184  
Chesterfield Rd  
North Mansfield  
NG19 7JD

Mon - Fri 9.30am-6.00pm  
Sat 9.30am-5.30pm  
Closed Thursday all day.

11-13 Hockley  
Nottingham  
NG1 1FH

Mon - Fri 9.30am-6.00pm  
Sat 9.30am-5.30pm  
Closed Thursday all day.

# The Great E&MM/Carlsbro Equipment Giveaway

## Competition Winners



Pictured above are Ian Rowan, Fil Ziebicki and Adrian Beeston, the winners of the E&MM Carlsbro competition, with their prizes.

The competition, which was run in the July and August editions, attracted thousands of entrants from all over the country, making



the prizewinner selection a very difficult task indeed for Graham Pell, General Manager of the Carlsbro Sound Centres. (Graham is pictured above with Adrian Beeston). The competition was sponsored by the Carlsbro Sound Centre chain, who presented a



Casio CT-1000P (won by Ian Rowan), a Roland TR-606 (won by Fil Ziebicki) and a Carlsbro Cobra 90 Keyboard Combo (won by Adrian Beeston). The winners were presented with the prizes they chose at a special reception held at the Carlsbro Sound Centre in October.

### Amplifiers

Kay 5 Watt Combo .....	£19.95
Badger Picalo 8 Watt .....	£39.95
Carlsbro Wasp Lead 10 Watt .....	£50
Marshall 12 Watt Lead Combo .....	£66
Marshall 12 Watt Bass .....	£74
Carlsbro Scorpion Lead 20 Watt .....	£93
Carlsbro Scorpion Bass 20 Watt .....	£83
Carlsbro 45 Watt Bass Combo .....	£130
Carlsbro 45 Watt Lead Combo .....	£140
Carlsbro 45 Watt Keyboard Combo .....	£155
Plus many other makes and prices	



## YAMAHA

Very large stockings only

Handy Sound 200 .....	£19
Handy Sound 500 .....	£29
PS 1 .....	£79
PS 2 .....	£99
PS 3 .....	£119
PF 10 Piano .....	£ Phone
PF 15 Piano .....	£ Phone
DX 7 Digital Synth .....	£ Phone
DX 9 Digital Synth .....	£799

## SIMMONS

STD Kit comprises 1 Bass Drum, 3 Tom Toms, 1 Snare, 1 Rack complete with all modules, leads and stands  
Assorted colours .....

£1375

(At least two stockings required)

### Percussion

All leading names, fantastic selection of kits and all accessories including congas, bongo's, cymbals, cases and Electronic Drum Machines and Computers from £89

### Accessories

You name it, we've got it! Strings, straps, cases, pedals, effects, sticks, heads, tapes, all at Discount Prices and don't forget Hot Lick Teaching Tapes for Guitar at £8.50

# CHRISTMAS

Hot Line

720 City Rd  
Sheffield  
S2 1GJ

Mon - Fri. 9.30am-6.00pm  
Sat. 9.30am-5.30pm  
Closed Thursday all day.

22/32  
Humberstone Rd  
Leicester  
LE5 0AR

Mon - Fri. 9.30am-6.00pm  
Sat. 9.30am-5.40pm

Mans. 0623-651633  
Notts. 0602-581888  
Sheff. 0742-640000  
Leic. 0533-24183

Free Delivery  
UK Main  
Land

Closed for Hols, Dec  
25th, 26th, 27th.  
Open 9.30, Dec 28th,  
all branches.

## Auto-Sequencing

Again, this option has its own menu, and one way to start investigating it is to try out the ten demo sequences already on the disk with the sound samples you've just enshrined and dissected into byte-size pieces. Basically, the sequencer allows control of six different parameters for each sequence event:

- 1 ADD - Address (in pages, 54-149)
- 2 LEN - Length (in pages, 1-96)
- 3 DUR - Duration (relative to the time it takes to play one page)
- 4 PIT - Pitch (1=high (fast), 254=low (slow))
- 5 DIR - Direction (0=forward, 1-254 = reverse)
- 6 VOL - Volume (0 = quiet, 254 = loud)

Four groups, each with a maximum of eight events (an example is shown in the lower half of the picture), can be entered using the SEL/LIST GROUP and ENTER STRING options, and these can then be chained together by a further group which sets up repeats of these groups. In fact, it's rather like the 'patterns' and 'tracks' of the Roland TB-303. However, those six parameters make the sequencing of the DX-1 a lot more flexible than most of the competition. In fact, the sky's almost the limit when you're able to leap into a sound sample at any page address, switch from forward to reverse regurgitation, and vary the pitch and volume over such a wide range. All in all, a powerful musical tool.

Mind you, life's not all sweetness and roses - especially when you try producing a rhythmically precise sequence with lots of pitch changing. The problem is that altering the PIT parameter also alters the time that it takes to play through each page. So if you're after something like a run of semiquaver burps going up in pitch, the only way that they'll come out approximately in time with each other is if you also manipulate the DUR and LEN parameters at the same time to balance things out - and that's not easy. Also, there are big problems in getting out playback that's pitched accurately enough for the more demanding musical applications. More on that anon...

## Echo, Echo, Echo...

A further item of software, called 'Echo', adds real-time audio processing to the capabilities of the DX-1. Unfortunately, the ease of use of the basic DX-1 software is nowhere near as apparent with this addition. This criticism also applies to the manual's explanations of what's actually going on, software-wise. For instance, in describing the looping side of the DX-1's echo business, the manual states, "the outer loop is the outermost echo loop in any given echo selection. The outer loop contains 1 to 146 middle loops. The quantity of middle loops corresponds to the length value. Each middle loop consists of 256 inner loops". OK, but nowhere in the manual is there an attempt to equate these loopy (sorry) ideas with the more meaningful (to micro users, anyway) term of 'pages of memory'. Since the manual for the basic software constantly uses this term to help explain what's going on, it's obtuse in the extreme to confront the user with an entirely different line of reasoning in the Echo manual. In fact, it appears as if the Echo software is an entirely different product, written by an entirely different person.

Anyway, nit-picking apart, the software of 'Echo' sets out to provide a delay line with all manner of control points as to the start, end, and speed of the process. A feedback pot is also provided for connection with the DX-1 so that regeneration can be added. Invoking these control variations is a

question of choosing one of the 50 echo routines (a reference card is handily provided as an *aide memoire*) and pressing various other keys to change speed, volume, and so on. Apart from straight echo, the software also makes plentiful use of random cycling of variables to create unusual (and generally unmusical) effects. The best effect I got was with the 'H' echo routine, where the looping is limited to just 1 or 2 pages of memory. Changing the speed of playback (the sampling rate, in other words) alters the pitch and bingo, you've got a nice metallic-sounding harmoniser.

## Conclusions

With high quality machines like the Drumulator and LinnDrum around for comparison, it'd be very easy to tear the DX-1 to shreds on basic hardware considerations, but that'd be silly as the DX-1 is way below their price range, and was probably never intended as anything more than what its makers call it - a 'digital sound effects device'. In fact, it more than makes up for its limitations with ingenious software, and I'm sure it will find much favour with Apple-owning musicians in search of sampling facilities. That said, there are areas needing attention.

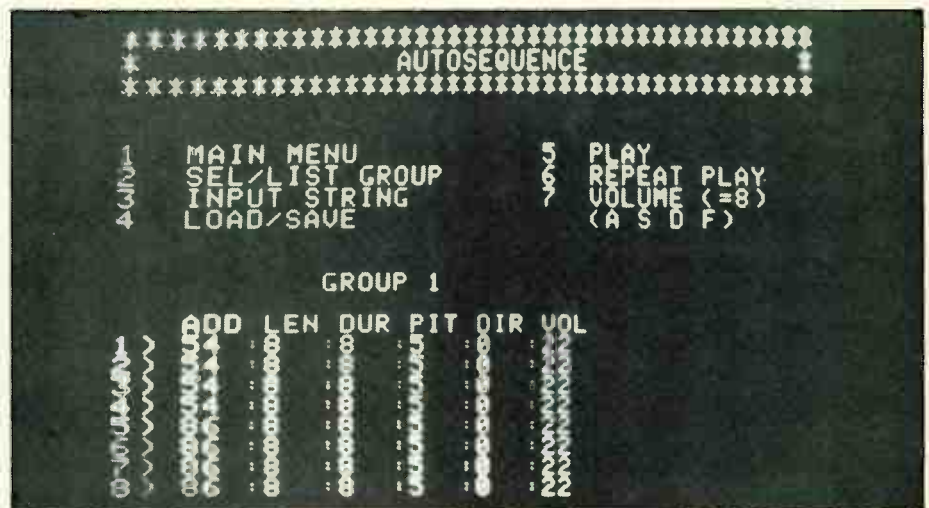
The jumper selection between mic and line inputs is a pain, and an extra socket for line input would be a sensible addition. With lower sampling rates, the frequency content of the input signal becomes a fairly critical factor in determining playback quality, and some sort of low-pass filter would be a welcome addition to the input stage. Ideally, it'd be nice to switch the output of the volume DAC to controlling a VCF when recording, so that the input cut-off could be set according to the sampling rate.

The fact that the 8-bit conversion is non-

companding (unlike, for instance the Oberheim DX, Emulator, and Drumulator, to name but a few) means that the DX-1 isn't going to be as noiseless as these machines. However, as the DX-1 board is silent unless a sound is being strobed out, the only time you really hear the noise is when low bandwidth sounds are recorded at a low sample rate. Where this is particularly apparent is with the Echo and Sound Processing software, because of the continuous input and output that's going on. One obvious improvement would be to replace the ADC and DAC chips with companding chips, but that's obviously a major hardware re-design job. In fact, the non-companding MXR Drum Computer demonstrates rather well that standard 8-bit conversion can do a pretty convincing job of discontinuous sound regurgitation, and the DX-1 appears to be equally effective.

On the whole, the software is extremely good, but there are a number of improvements that could be made to improve the DX-1's position in the sound sampling stakes. First, I don't see any reason why the software limits itself to the basic 48K Apple; the majority of users now have 16K RAM cards in their machines, and moving DOS onto the RAM card would raise HIMEM by 10K, giving 34K rather than 24K for sound storage. Secondly, the system is crying out for a sync facility to enable it to be interfaced with MC-202s, TB-303s, and the like. Why not use the annunciator I/Os on the games socket for that purpose - like Syntauri, for instance?

Thirdly, there's the rather more significant problem of pitch and tempo resolution. At the moment, not only is it impossible to get out a sound at exactly the pitch sampled, but, more importantly, all the sample rate resolution is concentrated at the slow end of the scale. For instance, if you sample at



15.9 kHz (a REC RATE of 5), then the nearest playback sample rate is 15.6 kHz (a PLAY RATE of 7). Selecting a PLAY RATE of 6 raises that to 17.0 kHz, 5 to 18.5 kHz, and so on up in rather large steps. What this means is that it's a hit and miss affair persuading a DX-1 sound to coincide with equal-temperament tuning. That's unlikely to be a problem with drums (apart from the tuning of toms), but it's clearly disastrous if you're trying to make the sequencer deliver an E-flat arpeggio of woofs!

Fourthly, the on-board VCA could be made to do more than just altering the volume for each soundbase that's trotted out of memory. Why not shape the sample playback with a software-generated envelope? That'd probably give the DX-1 the edge on some sampled drum machines. More importantly, adding an envelope to longer sounds that invariably get cut off in their prime (cymbals, for instance) would enable them to be more naturally decayed than with the usual abrupt transition to zero amplitude when the pages run out.

I gather from Dan Retzinger, the designer of the DX-1, that Decillionix are now conversing with Syntauri and Passport Designs with a view to interfacing the DX-1 with their respective keyboards. I assume the aim is to turn the DX-1 into something like the Mimic (where is that, by the way?), ie. a monophonic, sampling keyboard. To do that, they'd certainly have to sort out the pitch resolution problem, though I don't really see any great problems there, provided they also get their sampling and playback routines more equally balanced than at present. As it stands, then, the real strength of the DX-1 lies in the wonderful things you can do with the auto-sequencer, rather than being able to prod things in real time.

Something that I still can't get over is the degree of realism obtainable from a sound stored in just 8 pages of memory. 2K isn't much when you've got to fit the idiosyncracies of a snare drum, hi-hat, burp, or bark into a sampling system, but it works incredibly well with the DX-1. When I think of the fairly awful quality of the Chamberlain waveform-sequencing approach (through 15 or so pages, mark you), I can't help feeling there's an important lesson to be learnt here. Perhaps it all comes down to the fact that the DX-1 sampling approach captures inharmonic components as well as harmonic, whereas waveform-sequencing is, by definition, limited to those that toe the periodic line. It sure makes you think...

#### Likes

*Dynamic sound quality*  
*Ease of use*  
*Foolproof software*  
*Flexible sequencing*  
*Real-time playing*  
*Pre-recorded samples*  
*Flexible sound processing*  
*Friendly and informative manual*

#### Dislikes

*Jumper line/mic input selection*  
*Lack of input filter*  
*Lack of sync facilities*  
*Under-usage of VCA*  
*Pitch/tempo resolution*  
*Lack of 16K RAM card option*  
*Lack of mixing soundbases*  
*Preset Rhythms*  
*Noise with Echo software*  
*Echo user interface*

Prices: DX-1 System (includes basic software) \$239  
Echo and Sound Processing software \$149  
4 disks of prerecorded samples (Vols 2-5) \$79

Availability: either from Computer Music Studios, 62 Blenheim Crescent, London W11 (Tel. 01-221 0192), or direct from Decillionix, PO Box 70985, Sunnyvale, CA 94086, USA (Tel. 408-732 7758).

## EFFECTS REVIEW



# AxEMusic

COLCHESTER - IPSWICH

We are now Sole U.K. agents for the  
STUDIOMASTER COMBO

**Roland**

JX-3P  
JUNO 6  
JUNO 60  
SH 101



**BOSS Pedals**

*Marshall.*

100W Valve amp  
50W Valve combo  
50W Transister combo

Kits



**TASCAM**

244 PortaStudio  
34 4 track reel to reel



**KORG**

Poly 61  
Poly 6  
Mono Poly  
KPR 77  
Korg Guitar tuner

PHONE FOR UP TO THE MINUTE PRICES

96 HIGH STREET, COLCHESTER, ESSEX.

(0206) 65652

41-43 ST. NICHOLAS STREET, IPSWICH,  
SUFFOLK. (0473) 54996

## SUPER KITS!

For Better Music & Effects

Sets incl. PCBS, Electronic Parts, Instructions, Boxes, Wire, Solder, Batteries not incl, but most will run from 9v to 15v OC supplies. Fuller details in list.

CHORUS UNIT: A solo voice or instrument sounds like more!	KIT 162	£31.40
COMPRESSOR: Limits & levels maximum signal strength	KIT 133	£10.86
COMPUTER RHYTHM GEN: 9 drums for digital control	KIT 185	£30.64
COMPUTER SYNTH INTERFACE: Sequencing & composing aid	KIT 184	£17.44
DIGITAL SEQUENCER: 128 notes programmable	KIT 76LK	£55.63
ECHO UNIT: With double tracking	KIT 168	£44.30
FREQUENCY DOUBLER: Raises guitar frequency by 1 octave	KIT 98	£9.80
FREQUENCY CHANGER & WAVEFORM MODIFIER: Tunable Unit	KIT 172	£34.46
FLANGER: Fascinating effects plus phasing	KIT 153	£22.74
FUZZ: Smooth distortion effects whilst keeping natural attack & decay	KIT 91	£10.57
GUITAR EFFECTS: Multiple variation of level & filter modulation	KIT 42	£15.40
GUITAR OVERDRIVE: Fuzz plus variable filter quality	KIT 56	£19.73
GUITAR SUSTAIN: Extends effective note duration	KIT 75	£19.04
GUITAR TO SYNTH INTERFACE: With voltage & trig outputs	KIT 173	£32.87
JABBERVOX: Voice disguiser with reverb & tremolo	KIT 150	£23.84
MAD-ROJ: Variable sirens, incl police, galaxy, machine guns	KIT 146	£9.96
METRONOME: With audible & visual beat & down-beat marking	KIT 143	£13.81
MICROPHONE PRE-AMP: With bass & treble switching	KIT 144	£9.21
MUSICAL CALL SIGN: 8 notes programmable	KIT 121	£12.91
NOTE-TRIGGERED ENVELOPE SHAPER: Level & ASDR controls	KIT 174	£17.15
NOISE LIMITER: Reduces tape & system hiss	KIT 145	£9.97
ORGAN 3-OCTAVE: With harmonics. Details in list.	(Less than £160.00)	
PHASER: With automatic & manual depth & rate controls	KIT 164	£18.40
REVERB: With variable delay & depth controls	KIT 122	£21.20
RHYTHM GENERATOR: 15 switchable rhythms	KIT 170	£35.64
RING MODULATOR: With integral oscillator control	KIT 179	£15.76
ROBOVOX: Versatile robot type voice modifier	KIT 165	£21.03
ROGER 2-GONG: 2 gongs sounded at end of transmission	KIT 126	£11.38
SCRAMBLER: Codes & decodes transmissions authorised chains	KIT 117	£22.09
SPEECH PROCESSOR: For clearer transmission	KIT 110	£9.68
STORM EFFECTS: Automatic & manual, wind, rain, surf	KIT 154	£15.86
TREMLOLO: Deep tremolo with depth & rate control	KIT 136	£9.71
VOCODAVOX: Modular vocoder	KIT 152	£64.31
VODALEK: Robot type voice modulator	KIT 155	£12.44
VOICE OP.FADER: Full level & sensitivity controls	KIT 167	£14.21
VOICE OP.SWITCH: With variable sensitivity & delay	KIT 123	£13.41
WAH-WAH: With auto trigger, manual & oscillator control	KIT 140	£17.26

MANY OTHER GREAT KITS IN CATALOGUE such as Autowah : Bass boost: Call sign : Compator : Frequency generator : Funky wobulo : Harmonola : Hum cut : Mixers : Sequencers : Synthesizer interface : Treble boost : Tone control : Vibrator : Voice filter : Voice-operated fader : Wheeby-jeeby : Wobble-wah : Plus digital synthesizer : Junior synthesizer : Envelope shapers : D-A converter : Multiwaveform VCO : Keyboards : Contacts, etc. Send S.A.E. for comprehensive catalogue (overseas send £1).

Add £1 P&P & 15% VAT to all orders. (Overseas post details stated in cat). Payment CWO, PO, Access, Barclay, or pre-arranged collection. Despatch usually 10-14 days. Details correct at press, E&OE.

PHONOSONICS, DEPT MM3D, 8 FINUCANE DRIVE, ORPINGTON, KENT, BR5 4ED.  
Tel: ORPINGTON (STD 0689) 37821. Mon-Fri 10-7. Callers by appointment.

YES - WE ALSO HAVE A KIT MAINTENANCE & REPAIR SERVICE!



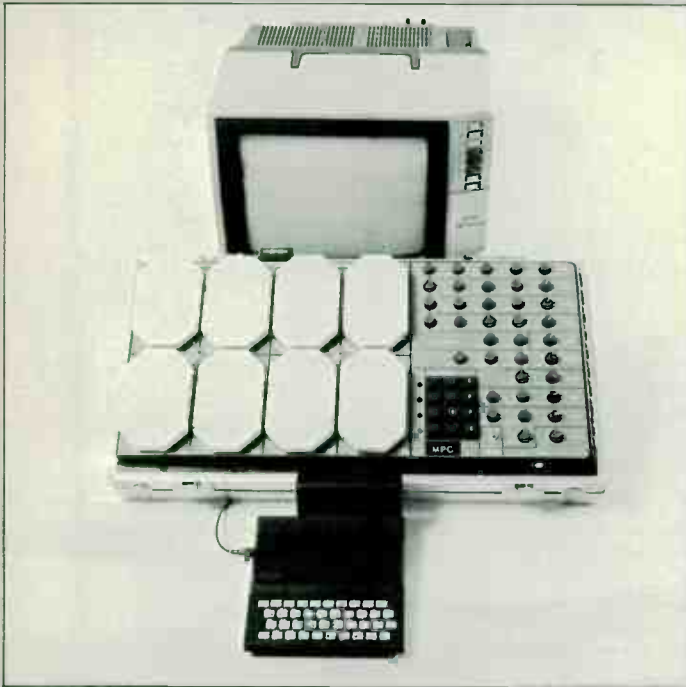
## MPC ELECTRONICS LTD.

THE GABLES, STATION ROAD, WILLINGHAM, CAMBS CB4 5HG  
TEL. WILLINGHAM (0954) 60264 (24HR)

# THE MUSIC PERCUSSION COMPUTER

PLAY WHAT YOU FEEL – SEE WHAT YOU PLAY

FULLY PLAYABLE & PROGRAMMABLE DRUM COMPUTER WITH DIGITAL & ANALOGUE CIRCUITRY



All in all the MPC is a big step forward as far as Drum Machines are concerned. It embodies features which make it a hybrid composed of the best of other Drum Synthesizers. Its computer section puts it in an educational area both as a musical instrument and an information store.

*International Musician, '83*

Once seen it is ultimately usable, aggravatingly usable, aggravatingly addictive, and, when compared with what else is available, priced at a figure which is beyond belief.

*John Newey, '83*

The MPC is an extremely well-crafted, cleverly designed unit that makes good use of the home computer link-up. Internal construction is to a very high standard.

*E&MM, '83*

**RRP £599 INC VAT**  
**UNBEATABLE VALUE**

## ALL BRITISH MADE

▼ THE **AMAZING KIT** AS SEEN ON TOMORROW'S WORLD PUTS THE MUSICIAN BACK INTO DRUM MACHINES. NOW EVEN BETTER VALUE AT **RRP £149.95**



### THE CLAP

AS HEARD ON MANY TOP 20 RECORDS. THE BEST CLAP SOUNDS AROUND AND ONLY **RRP £69.95**

### ◀ THE SYNKIT

GIVES YOU SYNDRUM & A WIDE VARIETY OF OTHER SOUNDS WIDELY ACCLAIMED

THE **BASS DRUM** HI-HAT  
PEDAL FOR THE KIT. **£29.95**

ALSO AVAILABLE: **THE TYMP** GIVES YOU ALL THE SOUNDS OF A PEDDLE TYMPANI RANGE AT YOUR FINGERTIPS **RRP £59.95** AND A **POWER PACK** FOR THE KIT & ACCESSORIES **RRP £19.95**

FOR FURTHER DETAILS OF THE ABOVE AND YOUR LOCAL DEALER, PHONE MPC ELECTRONICS ON 0954-60264 (24 HRS)

**"LET YOUR FINGERS DO THE DRUMMING"**





# Carlsbro AD1 Echo

With so many new delay and echo machines on the market, it becomes a little easy to be blasé about what, initially at least, looks to be a fairly standard echo machine.

But the Carlsbro AD1 is not quite what it seems. At the price, it comes over much cheaper than tape based echo units with similar facilities and is even cheaper than a number of delay pedals that are on the market with much fewer facilities. How Carlsbro quite manage to put them out at this price eludes me, for the quality of the unit is certainly not in question – as we will see later.

Available in the now familiar Carlsbro plastic casing, the AD1 can also be removed for simple rack mounting (standard 19"). A carrying handle is supplied on one end that is comfortable, and also folds down flat to allow the unit to be stacked neatly.

The rear panel contains just the power supply input, a three way bulgin socket, and the lead is supplied with the unit. Also complete with the unit is a footswitch and cover. The facia panel contains 'the works', making all the connections simple and easy in performance.

On the far left is a single input socket, with an adjacent peak limit indicator. (Max input is 1V at 300Hz). Next along is the control section, from l to r: Gain, Delay, Regen, Bass, Treble and Echo Volume. Strangely, the Gain and Delay are 300° with '5' at the top (0-9), while Regen is the same, but with '4' at the top (0-8), the same as Echo Volume. Bass and Treble controls are + or - 4 with '0' at the top. Spice of life I suppose.

Next section, is the Effect on/off 'push on' type switch, with a tiny (but bright) LED to denote status. The remote switch socket is also situated here (logically). Then comes no less than three separate outputs: Direct, Mix, and Delay. Finally, an on/off 'push on' type mains switch completes the controls, again with its own LED status indicator.

So, to operation. The first thing that struck me was quite how quiet the unit was, even when wound up to extreme levels in an attempt to detect noise. Yes, there is some there in the form of a slight HF hiss, but what is that compared to the clunk, buzz, rattle and chatter from the equivalent tape unit? Tested with a Beyer B500 microphone however, a slight problem was discovered in that a fairly 'gutsy' vocalist will cause the PPL on the input to start its flashing. This is supposed to be variable via the gain control,

but even down as low as mark 3 on the dial the same emerged. Guitarists and keyboardists could rectify this with the flick of a switch, but for vocalists there seems little that can be done – you can't turn down a mic! The fact is that some microphones have an output that will trigger this so it is just a case of trying to get the matching right, or of using a small volume pedal. Output gain was good and very fluid, with a standard rise in volume, with no obvious 'jumps'. The manufacturers state that the delay is from 40ms-30ms, and that can't really be argued with. The Regen control orders the return rate for the unit and IT IS FIERCE!

But back to the output sections supplied. The three of them allow the user much greater freedom – and a mass of extra applications.

The 'direct' out gives the dry, un-echoed signal, the 'mix' out gives both dry and echo, while the 'delay' out gives echo only. Any combination may be used and thus – a left signal can be taken to the left output on mixer or recording using the 'direct' out, and the 'delay' out to the right, and a superb cross-stereo effect is set up. In addition, the monitors for performance can be fed from the 'mix' out.

Experimentation with the AD1 proved

that this is a capable delay machine with some interesting and exciting additions that are quite out of the price range.

Obviously this is not a studio quality effect, but is certainly quite capable of delivering a good reverb and echo sound for performance. The quality of the components used is to the usual Carlsbro level – robust and functional rather than fancy, but that is no detriment to its value as a low priced efficient effects unit.

Perhaps Carlsbro will consider manufacturing a slightly larger version of AD1 (AD2 perhaps?) with three or four inputs with separate volume controls. This would then allow the unit to be used as mixer/echo for musicians – and would, I imagine, add little to the cost compared to the purchase of mixer and echo units as separate items. This would, of course, be functional rather than creative, but a cost cutter at any level of the market is a benefit.

In conclusion then – a well priced, well built echo/reverb that is a credit to its manufacturers.

**E&MM**

*The Carlsbro AD1 retails at £151.51. Further information is available from Carlsbro (Sales) Ltd, Lowmoor Road Industrial Estate, Kirkby in Ashfield, Notts. Tel. (0623) 753902.*

ADI TECHNICAL DATA	
DELAY TIME	40 - 340 milliseconds infinitely variable by DELAY control
INPUT LEVEL	100K ohms (peak programme LED indicates clipping) variable gain
OUTPUT LEVEL	0.5V nominal
DELAY BANDWIDTH	40Hz - 6kHz
DELAY CONTROLS	BASS ± 14dB at 50Hz TREBLE ± 15dB at 5kHz
DIMENSIONS	12.5 H x 47 W x 27.5 D cms.
WEIGHT	4 Kilos

# CASSETTE REVIEW

The revolution in home recording has opened up a whole new world of multitrack to almost every musician. So there really is no excuse! Here at E&MM we'd like to hear your music, recorded on a couple of cassette decks or in the 24 track facility at the bottom of the garden... It seems that as people get more aware of the potentials of the micro recording systems available today, so the tapes we receive show the extent that their knowledge has broadened their musical horizons - so keep on experimenting and keep us informed.

If you have sent us a tape recently and are waiting for a review don't despair! Our luckless postman brings another load twice a day and we wade through them as fast as we can - be patient, but don't wait for a review if you have something new, send it in.

Enclose your tapes in their library boxes (accidents happen...) and send them with details of the musician(s) involved, their equipment, and the recording process used, with a picture if at all possible, to: E&MM Cassette Reviews, Alexander House, 1 Milton Road, Cambridge CB4 1UY. (Please enclose SAE for return.)

Over the coming months we will be aiming to cover as many different types of music as you can send - live tapes are especially welcome.

The subjective scores below are all out of a maximum of ten in each category, making a total of 40.

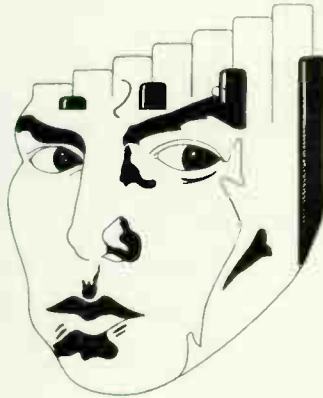


**COLOUR ME POP:** (Oxford). Two Tracks. Michel White, vocals, Fender strat Stratocaster. Sarah Guenier, vocals Minimoog, Roland RS09, Kord Polysix. (Plus: Kevin Davies, bass guitar, Ian Greatorex drums, clap trap, Jon Gill, tablas, congas.) Recorded by John Glazier of WhYzed Productions, this was put down on a simple sixteen track, but sounds like a full 24. The music is well written electro-pop, played to a high standard. But their shortfall seems to be that their tracks lack a positive hook. But exceptionally well done, this could easily be a commercial release. The system they employed was that of recording the rhythm section with a guide vocal, followed by the Instrumentation then final vocal. This has given them a definite 'feel' for the vocals which are strong and catchy. The 'danceability' of the songs is undeniable, pointing the finger towards a sort of Bow Wow Wow meets the Human League! Sarahs keyboard work is extremely good, with some clever use of the eastern influence on much of her work, which, coupled up to the tabla and conga playing, makes for a quite unique sound. Michels' vocals don't grate after a while - a nice change from the norm as he can vary his voice nicely and avoids the obvious vocal cliches.

Music:9 Production:9 Presentation:5 Tape:8

**MONTH OF SUNDAYS:** (London). Eight tracks. Jamie Dexter, vocals, keyboards, Casio 403, Mattel Synsonics Drum Machine, Casio VL Tone. Nick Nidgely, vocals, bass guitar. Paul Rayski, vocal guitars. (Plus Xavier Combs, guitar). Interesting tape from a band that have really made the most of what little equipment they have. recorded on an Akai 4000DS Mk II and a Realistic 4 channel mixer, they have worked hard at these tracks - though the tape quality leaves quite a bit to be desired. It is more an indication of their writing abilities than a show of their production skills. Almost Hawkwind-like overtones here on the repeated riffs, though boredom sets in after a while. Better equipment would aid them immensely, as would an outside producer to help sort the wheat from chaff. Quality control is needed here! Having said that, one track in particular, 'Red Letter Day' proved a clever mix of keyboards and guitar, though again hampered by the poor recording quality.

Music:6 Production:4 Presentation:7 Tape:5



**SHOCK HEADED PETER:** (Esher) Ten tracks. Nigel Hills, Pro One, Korg Micro Preset, Casio 1000, Tascam Portastudio. Amazing abstract music from this solo performer who seems to fit into the mould of Fripp/Eno/Gong/Sancious. More stereo separation would have made all the tracks here more interesting, a spacial feel over a framework of droning power do not a great deal of interest make. Much shorter, and much more varied tracks, would be easier on the ear, and please, stop using the organ pre set on the Casio, it sounds extremely weak, and you have a whole lot more to choose from! Nigel comments: "Shock Headed Peter is an umbrella title for future projects, and while I'm solo at present, I hope to work with a guitarist soon in the Fripp/Holdworth/ Howe mould." Anyone out there? Write to us at E&MM and we'll pass it on.

Music:7 Production:7 Presentation:8 Tape:7



**CHAPTER 29:** (Torquay). Four Tracks. Ian Churchward, guitars. Jeremy Brimicombe, Vox Organ, Wasp Synth. Elizabeth Honeywill, vocals. David Clifford, bass guitar. Shelley James,

drums, perc. Well constructed and honed performance from this five piece. Their clever use of guitars here gives a better backing than the usual sequencer and gives the tracks a more 'sixties' feel, especially on 'Turning Back' and 'Here Comes The Mystery', which could almost be a Byrds cover. This feel is aided by Jeremy's Vox Organ, but the level changes on the cassette spoil the production somewhat. But, a very enjoyable band and one that could create some exceptional music, given the breaks. Definitely a band that I would like to see live. Star track here though is 'Mad Men Laughed' with attendant early Floydish lyrics and guitar sound. The tracks were recorded at Swan Studios in Torquay by Steve Norris, who may be the person responsible for keeping the band very fresh sounding. Eclectic but fun.

Music:7 Production:8 Presentation:3 Tape:6

**STREET ALIENS:** (London). Four tracks. John Sylum, vocals. Rob Hurt, bass. Kevan Gould, drums. Bruce Harman, guitars, vocals. Neo Bowiesque vocals here provide the excellent front for a raucous but well thought backing. John Sylum has an expressive and strong voice that is quite engaging, but the production lets them down a little, strangely since the tracks were recorded at two studios, including the respected RMS. The bass is a bit thin, but the guitar sound is powerful and versatile, and the energy and pace keep up throughout. Sort of powered Joy Division here at times, but with the edge of sophistication à la post Punk '78 that makes the listening quite forceful and, probably, the playing too. Lyrics need some attention, but overall, a good sound, from an interesting band to watch out for.

Music:7 Production:8 Presentation:7 Tape:7



**THE AARDVARKS:** (Chelmsford/Manchester). "It Seemed Like A Good Idea At The Time" Five tracks. Dave Owen, keyboards, vocals. Chris Scarlott, glockenspiel, vocals. Geoff Jacyna, synth. John Guest, drums. Jonathan Plews, bass. Powerpop band, creating some exciting music. The band are just about a year old now, and, they say, have written over 50 songs. The five songs here demonstrate that they can write some really good lyrics ('Sign On The Dotted Line') and some pretty mediocre ones too ('Salford Sunset'). In between, they are a fun band playing well-rehearsed and well written music. This tape was recorded at Earthbeat Studios in Eccles (8 track) and they seem to have made the best of the facilities, falling down only on the drum sound, and the backing vocals. The bass is crisp and powerful, while the keyboard work is kept to a high standard throughout. The lack of a guitar sound leaves the drive to the bass, which leaves some gaps, but they make up in part in sheer enthusiasm. Boisterous, and with a great lead vocal sound, this band could well bear fruit if given time in a good studio with a producer who wont try and curb their bounce.

Music:8 Production:6 Presentation:5 Tape:7

# Get carried away with Casio this Christmas.

Casio electronic keyboards can cost as little as £40. And yet small or large, they're so easy to play and make the ideal Christmas gift.

Whether you play live or record at home Casio keyboards give you programmable sounds and multi-track recording capability – they can make beginners into musicians and players into one-man bands.

And all come with Casio's outstanding performance, quality and value for money.

See your Casio stockist for everything that's on offer – from portable go-anywhere keyboards to the magnificent top of the range models.

You'll be amazed at what you hear.

#### One Key Chord Play

The memory function allows you to store chosen chords for playing back in the correct sequence with just one finger.

#### Auto Accompaniment

Select any chord simply by pressing the Chord/Selection Key

#### Automatic Chord Harmonics

Store any melody in the memory and at the push of a button the PT 30 will play it back with full chord backing.

#### Liquid Crystal Display

Musical information is displayed, providing a useful learning aid.

#### Auto Play

Store a melody and play it back at the touch of a button with chord, bass and rhythm accompaniment.

#### Music Everywhere

3-way AC/DC power supply, including batteries. Auto power-off function. Built-in speaker. Output jack for auxiliary equipment.

#### 18 Auto Rhythms

18 rhythms, including 6 arpeggio patterns, let you match any melody. Simply set the tempo and balance and the PT 30 does the playing.

#### 8 Preset Sounds

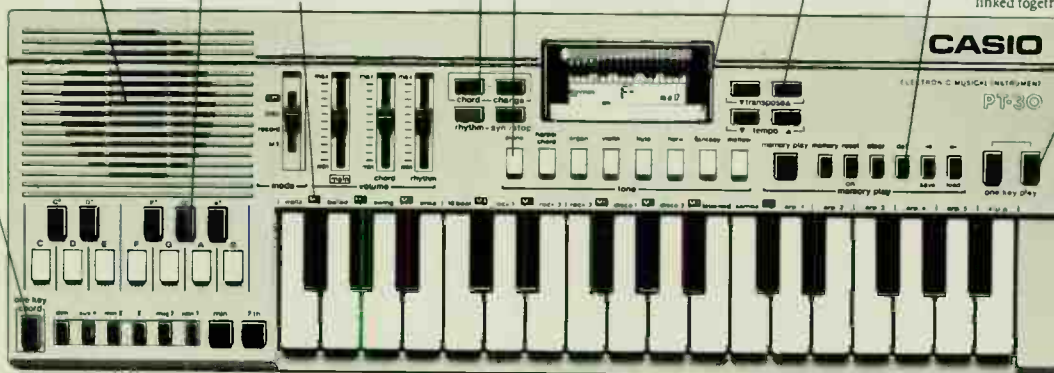
One touch gives a choice of 8 different instrumental sounds: Piano, Organ, Violin, Flute, Horn, Fantasy, Mellow and Harpsichord.

#### Transposing Function

The transposing function eases difficult chord techniques and provides smooth pitch changes.

#### One Key Play

The notes of any melody stored in the big 508 note memory can be played back with bass and rhythm accompaniment by tapping a button. Or, divide the memory in 8 separate sections which can be linked together in any order.



PT 30 Multi-Feature mini-keyboard R.R.P £79

#### Digital Tuning

Clear visual reference of tuning frequency facilitates transposing in the range of minus 1 octave to plus 0.5 octave.

#### Programmable Arpeggiator/Sequencer

Up to 127 steps and 9 note pitches can be stored to create a wide range of arpeggio or sequencer accompaniments. Each pattern is adjustable for tempo and tone.

#### 1000 Programmable Sound Combinations

Up to 1000 musical sounds can be obtained by combining the elements of Feet, Envelope and Modulation. The digital display provides a visual reference. Up to 10 sounds can be stored for instant recall.

#### Variable Effects

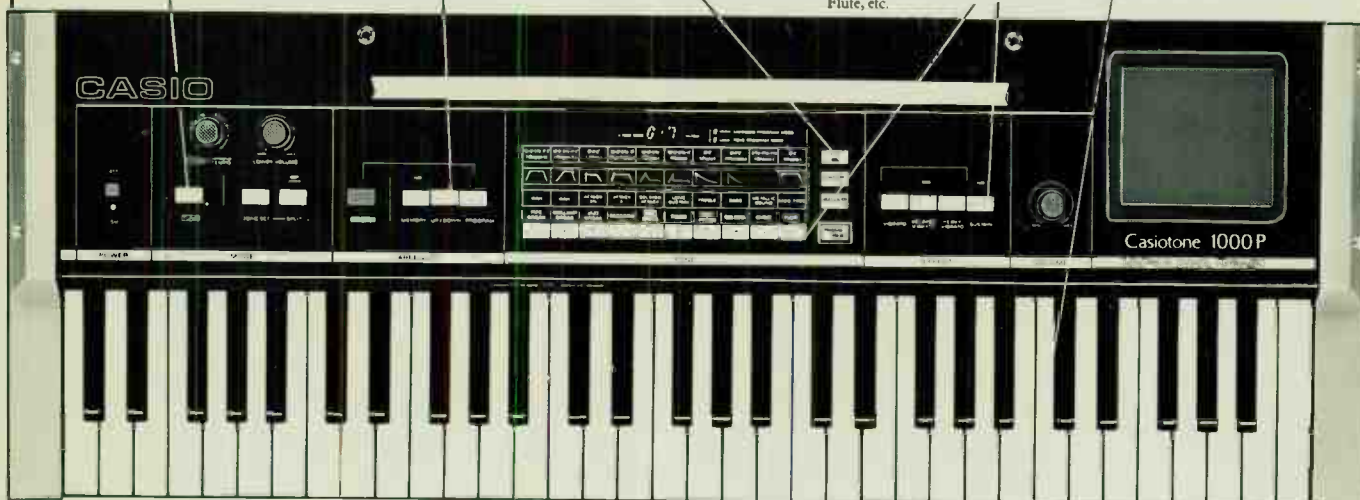
Sustain and three types of vibrato are available to add colour and expression to the voicings.

#### 10 Preset Sounds

A wide range of sounds are available at a touch: Piano, Jazz Organ, Brilliant Organ, Brass, Chime, Flute, etc.

#### Split Keyboard

The 8 note polyphonic, 5 octave keyboard can be split with one touch to provide a two tier independent voicing facility.



CT 1000P 1000 sound, programmable keyboard R.R.P. £375

Illustrations not in proportion.

See the full Casio keyboard range at your local music shop.

Casio Electronics Co. Ltd., Unit 6, 1,000 North Circular Road, London NW2 7JD.

# CASIO MAGIC!



EKO Pony

## THE E&MM PERSONAL KEYBOARD GUIDE

With Christmas just around the corner and scarcely a week going by without the introduction of some sort of personal keyboard product, E&MM takes an in-depth look at the state of the market and focuses attention on some of the more outstanding instruments.

**R**ecent advances in modern technology have made an enormous impact on the way we spend our leisure time. You can't walk down a High Street these days without seeing video recorders, home computers, multi-function watches and laser-disc players of one sort or another.

One field that has benefitted greatly from these advances is that of domestic keyboards, indeed 'domestic' has now become something of a misnomer since quantum leaps in the miniaturisation of electronic circuits has led to many of today's instruments being taken out of the home and into just about any kind of environment you care to name. 'Portability' is a salesman's daydream no longer.

It was perhaps ironic (though possibly inevitable) that the first manufacturer to take the technological developments and give them a useful job to do in the context of keyboard was a company whose previous experience of designing and marketing musical instruments was virtually non-existent.

Casio Electronics, a Japanese industrial giant who had made the quartz digital watch and the pocket calculator accessible to millions the world over, brought a completely fresh approach to contemporary keyboard design with their first product, the CT-201.

This had as its basis thirty preset sounds (selected with the white notes of the keyboard) generated using digital approximations of conventional instruments' waveforms. While some of the sounds left a little to be desired, the overall standard was astonishingly high considering that the keyboard was eight-note polyphonic and that the 201 retailed at just the right side of £300.

That Casio brought a welcome breath of freshness to what was becoming a slightly stale budget-keyboard market cannot be doubted, though surprisingly, rival manufacturers were slow to take up the Casio challenge, feeling that the watchmakers had overreached themselves in trying to bridge the gap between the domestic and professional keyboard markets.

How wrong they were.

Within weeks of the 201's announcement, Casio's UK division were flooded with orders from musical instrument dealers throughout the country, and the model's smaller brother, the four-preset M10 with miniature keyboard and a sub-£70 price-tag, was soon in similar demand.

To some extent, Casio's lack of music experience was reflected in little design details (like the fact that the 201's output socket was a phono instead of a 1/4" jack), but these deficiencies (if that's the right word) were quickly rectified with the introduction some months later of the 201's successor, the CT-202.

This featured 49 preset sounds and a considerably more 'professional' presentation, and all at a price no higher than the model

it replaced. In retrospect, the 202 was something of a high-point in Casio's model development, as from that moment on, their products became more and more domestically orientated. This shift of emphasis was to some extent forced on Casio by commercial reality: the domestic market is considerably more lucrative than the 'group gear' sector, and in any case major competition – in the form of an entirely new range of keyboards from music experts Yamaha – was already concentrated on the home buyer.

Many mourn the fact that, with the possible exception of the CT-1000P, Casio have neglected the professional market to such a degree in recent months and years, but at the same time, the new generation of 'family' keyboards (both from Casio and their rivals) have far more to offer than a brief glance at a spec sheet would suggest.

For although it's probably true to say that many of today's personal keyboards can trace their ancestry directly back to the all-singing, all-dancing console organs which still dominate the upper end of the domestic keyboard market, several of them contain innovations that are unlikely to be seen on 'professional' equipment for some time to come, such as ROM packs, music printing, light-pen bar-coding, and programmable sequencers and arpeggiators of increasing complexity and versatility.

True, many of the instruments under discussion here are marketed primarily as 'easy-play' introductions to music performance for the non-technically minded, but many of their educational and compositional functions are of considerable use to the pro or semi-pro player (remember Depeche Mode playing 'Get The Balance Right' on a Casio PT for Jim'll Fix It?).

In addition, many of these personal keyboards have found their way onto recordings in their own right. Few are likely to forget Trio's VL-Tone-laden 'Da Da Da' in a hurry, while Kraftwerk's obsession with the melody-making capabilities of pocket calculators and the like is now well-documented on their Computer World album.

The sheer portability of many of these instruments has led to them being played almost anywhere at any time, their battery-operation being a considerable boon to musicians finding themselves stranded in hotel rooms needing an hour or two's warm-up before a concert.

It could be argued that some of the models described in the following pages have taken auto-play functions too far, limiting the creative freedom of the musicians at which they're partly aimed, but it's very much up to the individual purchaser just how large a degree of automation he requires.

So, armed with E&MM's guide, you should find a keyboard to suit your needs – and, of course, your pocket.

Perhaps better-known for their hi-fi and a comprehensive range of upmarket organs, Technics' first foray into the personal keyboard market was the SX-K200, an ingenious device capable of playing back prerecorded ROM packs as accompaniment to the owner's manually-performed melodies. More excitingly, it also takes RAM packs, on which can be recorded your own arrangements and compositions of up to 50 bars each. Eight compositions can be stored on each pack, blank RAMs being readily available at around the £12 mark. Along with the usual auto-accompaniment features, the SX-K200 also has a rhythm machine whose sounds have been derived using Pulse Code Modulation techniques, resulting in an almost LinnDrum sound at a fraction of the price. A stripped-down version, missing a few of the larger model's effects but retaining most of the essentials is available under the label SX-K100. Underrated.

Casio's PT range falls somewhere between the VL-Tones and the MT series in both size and price. The PT-30 illustrated here is a monophonic instrument which features an LCD



Yamaha MP1



keyboard display to indicate which notes/chords are being played at any given moment. An optional accessory is the TA-1 interface which enables the contents of the keyboard's 508-step memory to be stored digitally on tape. Formation of one-finger chords and arpeggios is also provided for, and the instrument is something of an education in music theory as well as being a useful compositional tool. Well worth the extra £20 over the cost of its baby brother, the PT-20.

The first keyboard to feature a light-pen to 'read' bar-codes of musical score information was the Casio CT-701, but its full size put it beyond the reach of many potential buyers at just under £500. In response to this, the makers produced the MT-70, a miniature version with almost identical facilities but priced more competitively at under £200. Bar-coding was the first system developed whereby a musician could play along to a pre-recorded library of accompaniments, though it has now been joined by playcards and ROM packs. If you can put up with the diminutive keyboard (and it's not as small as some), the MT-70 is fine value.

JVC's smallish range is more home-orientated than many, and the KB500 is really quite a conventional keyboard. Thanks to a healthy stereo output, switchable sustain and an impressive ensemble circuit, the KB500's polyphonic sounds are considerably beefier than those of some of its rivals. There's also quite a comprehensive auto accompaniment section, though unfortunately the price you pay for good-quality voices is the lack of any programmability outside the 'compucorder' chord sequencer. You pay yer money . . .

In a market where Japanese manufacturers dominate almost to the point of monopoly, Italian company Eko manage to remain competitive despite considerably higher production costs. The Eko Pony Synth is a bold attempt to fuse the standard personal keyboard functions with, as its name suggests, one or two facilities more normally found on monophonic synths. Both mono and poly voices are of good quality, in addition to which there's also the possibility of mixing two or more of the preset rhythms together, an unusual feature to say the least.

The Yamaha MP-1 is unique in the personal keyboard market in featuring an easy-to-use music printer which transcribes melody notes and chord symbols as you play them on the keyboard. The printer uses miniature ball-point pens whose water-based ink lasts for about 500 bars of music, after which they are quickly and easily replaced. Other facilities include ten preset polyphonic voices, ten (also preset) rhythms and auto bass and arpeggios. It may seem a little on the expensive

side at an RRP of £535, but music-printing of this sort is something only a few other keyboards (costing thousands) can provide.

Casio's VL-Tone had a remarkable specification when it was introduced two and a half years ago: a monophonic synthesiser, built-in rhythm machine, real-time sequencer, transposable keyboard and a pocket calculator - all for under £40! As a result, the VL-1 became the Christmas present

for many of this country's children is both '81 and '82, though it's unlikely to have the same impact this time around. A 'turbocharged' version (the VL-5) and a slimline model (VL-10) finished in matt silver to match Casio's executive calculators were announced last year, but the novelty of the VL concept has worn off to a large degree as its rather basic facilities have been superseded by later developments. More a toy than a musical instrument.



Casio MT-40 (top) and MT-31



Technics SX-K200



JVC KB 500

## HOHNER

P120 £385.00  
Hohner Ltd, 39-45 Cold-harbour Lane, London SE5 9NR.

## TECHNICS

SX K100 £299.00  
SX-K200 £399.00  
Panasonic-Technics, 300-318 Bath Road, Slough, Berkshire.

Casio MT-70



Yamaha Portatone



Casiotone PT-30

## YAMAHA

HS500	£69.95
HS501	£69.95
PC100	£345.00
PC1000	£625.00
PS300	£199.00
PS400	£235.00
PS25	£385.00
PS35	£429.00
PS55	£529.00
MP-1	£535.00

Kemble Yamaha Ltd, Mount Avenue, Bletchley, Milton Keynes, MK1 1JE.

## CASIO

VL-1	£39.95
PT-20	£59.95
PT-30	£79.95
PT-50	£124.95
MT-41	£99.00
MT-45	£125.00
MT-65	£175.00
MT-70	£255.00
MT-800	£295.00
CT-101	£255.00
CT-202	£325.00
CT-405	£325.00
CT-1000P	£375.00
CT-501	£375.00
CT-610	£395.00
CT-7000	£575.00

Casio Electronics Co Ltd, Unit 6, 1000 North Circular Road, London NW2 7JD.

## JVC

KB300	£359.00
KB500	£439.00
KB500B	£439.00
KB500F	£479.00
KB700	£639.00

JVC (UK) Ltd, Eldonwall Trading Estate, Staples Corner, 6-8 Priestley Way, London NW2 7AF.

## KORG

SAS 20 Personal Keyboard	£599.00
--------------------------	---------

Rose-Morris & Co Ltd, 32-34 Gordon House Road, London NW5 1NE.

## ROLAND

EP11	£345.00
HP30	£299.00
HP60	£499.00
HP70	£625.00
EP6060	£525.00

Roland (UK) Ltd, Great West Trading Estate, Great West Road, Brentford, Middlesex, TW8 9DN.

## EKO

EM10	£299.00
EM12	£399.00
Pony	£259.00

John Hornby Skewes & Co Ltd, Salem House, Garforth, Leeds LS25 1PX.



Back issues are available at a special offer price of 75 pence each (inc. p&p) for 1981/82 issues only. 1983 issues are available at a price of £1.10 each (inc. p&p). All issues can be obtained from: E&MM, Mail Order Department, Alexander House, 1 Milton Road, Cambridge CB4 1UY.

Boxed issues are sold out but photocopies of articles can still be obtained from E&MM at 50p per article—sold out issues only.

### 1981

**MARCH** Matinée Organ \* Spectrum Synthesiser \* Hi-Fi Sub-Bass Woofer \* Balanced line system \* Yamaha SK20 review \* BBC Radiophonic Workshop

**APRIL** Syntom Drum Synthesiser \* Workshop Power Supply \* Direct Inject Box \* Ultravox \* Para 8700 review \* Matinée \* Spectrum

**MAY** Noise Reduction Unit \* Lowrey MX-1 review \* Apple Music System \* Matinée \* Spectrum

**JUNE** Wordmaker \* Guitar Tuner \* Hi-Fi/Group Mosfet amp \* Fairlight CMI review \* David Vorhaus \* Matinée

**JULY** Alphadac 16 Synthesiser Keyboard Controller \* Synwave effects unit \* Matinée \* Atari Music \* Duncan Mackay \* PPG Wave 2/Wersi Pianostar reviews

**AUGUST** PA Signal Processor \* Powercomp \* Hexadrum \* Matinée \* Resynator/Casio VL-Tone reviews \* Irmin Schmidt

**SEPTEMBER** Partylite \* Tape-Slide Synchroniser \* Synpac 9V effects supply \* Noise Gate \* PA Signal Processor \* Digital Keyboard \* One-handed Guitar \* Chromascope & Linn Drum reviews \* Kraftwerk revealed

**OCTOBER** Harmony Generator \* Securigard burglar alarm \* Effects Link FX-1 \* Music at City University \* dbx noise reduction & Blacel Syn-Bow reviews \* Micro interfacing \* Disco equalisation

**NOVEMBER** Landscape explored \* Casio MT-30, Roland GR-300 Guitar Synthesiser, Roland CPE-800 Compu-Editor reviews \* Melody Making on the Apple \* Phasing \* Auto Swell - Electric Drummer - Soundbooster - Toneboost projects

**DECEMBER** Rick Wakeman in 1984 \* Orchestral Manoeuvres in the Dark \* Bio Music \* Yamaha CS70M, Vox Custom Bass & Custom 25, Roland CR5000 & CR8000, Alpha Syntauri, Fostex 250 \* Synclock project \* ZX81 music

### 1982

**JANUARY** The New Tangerine Dream \* Japan Music Fair \* Fact File \* Guitar Workshop \* Reviews: Casiotone 701, Teisco SX-400, Aria TS 400, MCS Percussion Computer, Soundchaser, Beyer Mics, TC

Effects Boxes, Tempo Check \* Projects: Spectrum Synthesiser, Electric Drummer, Volume Pedal

**FEBRUARY** Ike Isaacs \* Digital Audio Discs \* Yamaha GS1 & 2 \* Reviews: Korg Trident, AKG D330BT & D202 Mics, Menta Micro, Roland TR606 Drumatix, JHS C50PM & C20B amps, Fostex A-8 8-Track Recorder, Tokai ST50 & PB80 Guitars \* Vocal PA \* ZX81 Music \* Projects: Digital Delay Effects Unit, Spectrum Synth, Percussion Sound Generator \* Resonant Filters

**MARCH** Klaus Schulze \* Robert Schröder \* Kraftwerk Music to play \* Killing CB Interference \* Reviews: Firstman SQ-01, SC1 Pro-One, JHS Pro Rhythm Mini Synth, Tascam 124AV, Wersi Comet, Hamer Prototype, Shure 517SA & B \* Synth Buyers Guide \* Projects: Power 200 Speakers, 1.6 sec Digital Delay Effects Unit

**APRIL** Martin Rushent, Human League in the Studio \* Cardiff University Electronic Music Studio \* Reverberation explained \* Reviews: Korg Mono/Poly Synthesiser, Fostex 350 Mixer, Roland TB-303 Bass Line Sequencer \* Projects: MF1 Sync Unit, Multireverb \* Electro-Music Crossword

**MAY** Holger Czukay \* Depeche Mode \* Keyboard Buyers Guide \* The Peak Programme Meter \* Reviews: Moog Source and Rogue Synthesisers, Suzuki Omnichord, Acom Atom Synthesiser, Calrec Soundfield Microphone \* Projects: Soft Distortion Pedal, Quadramix

**JUNE** Jean-Michel Jarre \* Classix Nouveaux \* Studio Sound Techniques \* Making Music with the Microtan 65 \* Reviews: Carlsbro Minifex and E-mu Systems Emulator \* Projects: Panolo and Multisplit

**JULY** Ronny with Warren Cann and Hans Zimmer \* Drum Machines Buyers Guide \* Jean-Michel Jarre Music Supplement \* Reviews: Roland Juno 6 Synthesiser, Peavey Heritage Amplifier, Steinberger Bass Guitar, TI-99/4 Music Maker Software \* Projects: Universal Trigger Interface, Electric Drummer

**AUGUST** Kitano \* Spectro Sound Studio \* Jon Lord Interview & 'Before I Forget' music to play \* Reviews: The Synergy, Korg Polysix, Tascam M244 Portastudio,

Shergold Modulator 12-String Guitar, Yamaha Professional System Effectors \* Warren Cann's Electro-Drum Column \* Projects: 8201 Line Mixer, Guitar Buddy practice amplifier.

**NOVEMBER** Patrick Moraz interview and 'Adagio For A Hostage' music to play \* Robert Moog \* Bill Nelson \* K. Schulze and K. Crimson in Concert \* Reviews: Yamaha PC-100, Technics SX-K200, Casio MT 70, Hohner P100 and JVC KB-500 MiniSynth Supplement, Gibson Firebird 2 Guitar, Alligator AT150 Amplifier, Allen & Heath 1221 Mixer, Eko Ritmo 20 \* Projects: ElectroMix 842 Mixer, Amdek Chorus.

**DECEMBER** Cliff Richard interview and Little Town music \* Patrick Moraz \* Ars Electronica \* Digital Recording Pt II \* Reviews: Elka Synthex, Crumar Stratus Synths, Tokai Basses, Shure PE Series Microphone, The Kit Percussion Unit \* Projects: The Transpozer, Amdek Percussion Synth, Canjak

### 1983

**JANUARY** Richard Barbieri of Japan \* Ultravox Music \* Patrick Moraz \* Ars Electronica \* Reviews: Westone Bass Guitar, BGW 750C Amp, Korg EPS-1 Keyboard, Clef Band Box, Zildjian Cymbals \* Projects: Synblo, The Transpozer, Amdek Compressor.

**FEBRUARY** Isao Tomita \* The Human League \* The Novatron Revisited \* E&MM Index 1981/82 \* Reviews: Linn Drum; Godwin Drummaker 32P; Wersimatic CX-1 Mattel Synsonics; Simmons SDS Drum Sequencer; Klone Kit; Movement Drum Computer 2; Korg KPR-77 Programmable; Memory-moog; Synclavier II; Powertran Polysynth; Vigier Guitars, Tokai TA35 Amp; Pearl Mics \* Projects; Synbal; Caltune; Amdek 6-2 Mixer.

**MARCH** Klaus Schulze \* Michael Karoli \* Francis Monkman \* Bernard Xoloti \* Chris Franke \* Frankfurt \* Reviews: Jen Piano 73, 5 Casio keyboards, RSF Kobol Expander, Korg Poly 61, Aria Mics, BGW 7000 Amp, Ibanez Effect Pedals, Tokai Flying V Guitar, Oric-1 Micro-computer \* Projects: The Shaper, 842 Meter Bridge, Amdek Rhythm Machine Kit.

**APRIL** Naked Eyes \* Gabor Presser \* Scarlet Party \* Frankfurt Show Report \* Ambisonics \* Magnetic Cartridges \* Reviews: SCI Prophet 600, Casio 7000, Chroma/Apple Interface, Eko Bass Pedals, Loco Box Pedals, Aiwa Cassette Copier, Vox Guitars \* Projects: Syntom II Percussion Module, Amdek Metronome.

**MAY** Keith Emerson \* Guitar Buyers Guide \* Roland MC-202 \*

Introducing the MIDI \* Reviews: Fostex X15 Multitracker, Echo Unit Supplement; 13 echo reviews, M&A K-1/B, Yamaha Portasound MP1, Carlsbro Cobra 90 Amplifier, Technical Projects DI Boxes, Boss TU-12 Tuner \* Projects: MicroMIDI, Home Active Speaker, Amdek Flanger Kit.

**JUNE** Steve Hillage \* Arthur Brown \* Larry Fast \* History of Guitar Synthesisers \* Casio Modifications \* Reviews: Synton Syrnix, Synclavier II, Clarion 4 track, Cutec MR402, Ovation Balladeer Guitar, Drumulator, Vesta Fire Flanger/Chorus, Aria AD-05 Delay, Suzuki, Mic \* Projects: OMDAC, Amdek Power Distributor, Active Bass Guitar

**JULY** Marillion \* Hans Zimmer \* Programming Yamaha's DX Keyboards \* Reviews: Kawai SX-210 Synthesiser, Aria U60 Deluxe Guitar, Trident VFM Mixer, MXR Omni Effects, Milab Mics \* Projects: Digital Signal Processing For Sinclair Spectrum, Tap Tempo, Amdek Delay Kit.

**AUGUST** Bill Nelson plus 'Chimera' music to play \* Hubert Bognermayr \* MIDI Dump \* Barclay James Harvest \* Reviews: Roland JX-3P/PG200, OSCar Synthesiser, 360 Systems Digital Keyboard, Music Percussion Computer, Fender Stage Lead Amplifier, Yamaha SG200 Guitar, Tubby Drum System, Frontline Effects \* Projects: Digital Signal Processing (Part 2) — Echo programs for your Sinclair Spectrum, Amdek Phaser Kit.

**SEPTEMBER** Peter Vetesse • Which Synth? Comprehensive Guide Prophet T8 in focus • Goldsmith's College Studio • Reviews: Oberheim DX Drum Machine, SCI Pro-FX 500, Rickenbacker 360/12 String Guitar, Rickenbacker TR75GT Amplifier • Projects: Synclap, Amdek Tuning Amp Kit.

**OCTOBER** John Miles \* Andrew Powell \* Yamaha DX1 \* ICA Vancouver \* Guitar Month \* New Pickups \* Mains Distribution Board \* Amdek Graphic EQ \* Rockman \* HH K150 Keyboard Combo \* Fender Elite Precision \* Steinberger 6 string \* Octave Voyetra Eight \* Siel Opera 6 \* MXR 185 Drum Computer \* Ross Pedals.

**NOVEMBER** Tony Banks \* John Foxx \* Moog Profile \* Software Envelope Project \* Muzix 81 \* Ibanez HD1000 Harmonics Delay \* Klone Kit 2 \* Korg MX8 Mixer \* UC1 Sequencer \* Seiko Digitals \* Eko EM10 Keyboard \* Ibanez RS315SC Guitar.



## POWERTRAN APPROVED SERVICE AND KIT ASSEMBLY

Economical work by Professionals.  
Specialists in Commercial Electronic  
Design, Assembly and Test for the  
Hi-Fi and Music Industry.

**PLEASE CONTACT:**

**COLIN MAXTED: Powertran Enquiries**

**JOHN BELL: Assembly & Test**

**RICHARD ANSELL: Design**

**01-646 5686**

## CIRCOLEC

**TAMWORTH MANOR**

**302-310 COMMONSIDE EAST**

**MITCHAM, SURREY**

**Telephone: 01-646 5686**

## SOUND SYSTEM DESIGN

All you need to know about  
Sound System Design from  
**FANE ACOUSTICS LTD**



**SPECIAL OFFER TO  
E&MM READERS  
£2.95 inc P&P**

Includes: Basic electro-  
acoustic information  
such as impedance  
matching, phasing and  
crossover networks etc.

Plus: A multitude of  
cabinet construction  
plans and a list of  
material and component  
suppliers.

To order your copy fill in this coupon and send to:  
**FANE ACOUSTICS LTD, 286 Bradford Road,  
Batley, West Yorkshire WE17 5PW**

Please send me a copy of LOUDSPEAKER ENCLOSURE DESIGN &  
CONSTRUCTION. I enclose cheque/postal order for £2.95.

NAME..... ADDRESS.....

# A1 MUSIC

**88 Oxford St Manchester 1**

**061-236 0340**

### KEYBOARDS

YAMAHA D x 9 .....	£899	ROLAND EP 6060 .....	£395
YAMAHA D x 7 .....	£1299	SEQ CIRC PRO 1 .....	£350
ROLAND MICRO COMPOSER .....	£POA	KORG POLY 6 .....	£980
ROLAND J x 3P .....	£750	KORG POLY 61 .....	£749
ROLAND J x 3P PROG .....	£160	KORG SIGMA .....	£499
ROLAND JUNO 60 .....	£899	S/H KORG GUITAR SYNTH	£250
ROLAND JUNO 6 .....	£599	RHODES CHROMA .....	£2999
ROLAND SH101 .....	£224	MOOG OPUS 3 .....	£495
ROLAND HP 70 .....	£520	MEMORY MOOG .....	£2500
ROLAND JUPITER 6 .....	£1800	MOOG ROGUE .....	£199
		MOOG SOURCE .....	£685

### RECORDING EQUIPMENT

TEAC 234 .....	£575
TEAC 38-8 TRACK .....	£1799
TEAC 34-4 TRACK .....	£920
TEAC 22/4-4 TRACK .....	£850
TEAC PORTASTUDIOS ...	LOWEST PRICES
TEAC D x 4 D .....	£222
TEAC PE 40 PARAMETRIC .....	£259
CLARION .....	BEST PRICES
YAMAHA MT 44 .....	£399
CUTEC 4 TRACK .....	£350

### DRUM MACHINES

DRUMULATOR ....	£985
ROLAND TR 808 ..	£573
ROLAND DRUMATIX .....	£187
KORG KPR 77 .....	£350

### DELAY LINES

IBANEZ DH 1000 .....	£365
IBANEZ HARMONIZER .....	£426
ROLAND SPACE ECHO	£410
ROLAND SDE 2000 .....	£475
CUTEC CD 424 .....	£347
VESTA-FIRE REVERB .....	£210
BOSS DM 1000 .....	£150

### AMPLIFICATION

**A1 MUSIC KEEP A FULL  
RANGE OF THE FOLLOWING:  
TRACE ELLIOT — MARSHALL  
CARLSBRO — H/H — PEAVEY  
OHM — ROLAND  
SESSIONETTE .....** £265

**GUITARS: FENDER — GIBSON — SQUIER — TOKAI — ARIA — WASHBURN**

**WHEN IN MANCHESTER WHY NOT VISIT OUR A1 GEAR CELLAR.**

Full range of Effects Units by  
BOSS : PEARL : LOCO : AMDEK

*All Prices include VAT at current rate, and carry the A1 Workshop Warranty  
Phone with ACCESS/BARCLAYCARD No. for fast Mail Order  
All Sales carry the A1 Workshop Warranty*



**A1 MUSIC CENTRE (Inc. G.M. services)**

Guitar - Drum & Amplification Equipment Specialists

# INKEY\$ CASSETTE MAGAZINE

by  
Dennis  
Emsley

Since attending Klaus Schulze's concert at the London Planetarium in 1977 I have realised how much a person's musical awareness is dictated by record reviewers and radio station playlists. I was only made aware of the above mentioned concert when I returned to my car after listening to Pink Floyd perform *Animals* at their concert to find, placed behind the windscreen wiper by some clever promo man, a leaflet extolling the skills of said German gentleman and his imminent appearance in the metropolis. My wife Jeanette and I came away from Klaus' concert vowing that we would do all in our power to promote electronic music; we had never heard such music before – how many others hadn't?

A chance remark to a friend who worked part-time for a small local radio station resulted in me presenting a half-hour programme on the subject of Tangerine Dream, Klaus Schulze being considered too esoteric. This was followed a year later by the offer to produce and present a fifteen-minute weekly item on electronic music on the same radio station. This raised several problems; would my own meagre knowledge of the genre be sufficient for such a project? As I had to supply all the music myself, would I be able to afford the number of records required even if I could find a supplier? And finally, could I afford the time and money involved in travelling the 50 miles or so to the radio station?

The first two problems were neatly solved by the suggestion that I contact Andy Garibaldi of Lotus Records. This proved to be the most important contact I could have made as Andy supplied all the music I needed and, more importantly, advice and introductions to various other people involved in electronic music including the editors of all the magazines that were then available; *Face Out*, *Flowmotion*, *Mirage* and *Neumusik*. The travelling problem was overcome by recording the programmes at home on cassette and posting them to the radio station. This was achieved using two cassette decks, a microphone and a borrowed mixer, with Jeanette acting as recording engineer. As the speech was recorded in real time with the music, and we had no soundproof room, recording had to take place at 2 or 3 in the morning when all was quiet and the illegal CBers had gone to bed.

After a while I stopped presenting the radio item. This was due to various factors but, with the benefit of hindsight, was the right thing to do as upon subsequent listenings it became clear to me that I had been pandering to the masses by playing only the safer, more commercial pieces of

electronic music that I had obtained. It had been my intention to include all facets of electronic music and the urge for acceptance had diverted me from my original course.

The period of inactivity that followed was frustrating for us both. Much of this time was spent bemoaning the lack of air-time given to electronic music and the fact that when it was used as background music in TV documentaries and the like, no credit was given to the artist or band. I had also come to the conclusion that written record reviews were futile owing to the shortage of adjectives to describe the music, and in any case they only served a useful purpose if the reader was familiar with the reviewer's tastes – 'one man's meat' and all that. As if to underline the point *E&MM* was then producing demo cassettes to show off various instruments and effects units they had reviewed or designed, allowing the purchaser to read the technical details and listen to the sounds as well. *SFX* cassette magazine had also been launched, containing both music and interviews but catering for the already well represented rock and pop market.

The offer of a cassette-copying plant for sale at a very reasonable price was enough to make us seriously consider producing a cassette magazine for electronic music. Andy G. was contacted; he liked our idea and offered to help with distribution, advertising and contact addresses for the artists and bands in this field of music.

Copyright was our first hurdle. Taping of records or cassettes without permission is of course illegal; it had once been possible to obtain a licence but this had ceased to exist. However, hours spent looking through various publications and telephone directories plus many wasted phone calls finally put us in touch with a Mr White at the Mechanical Copyright Protection Society; thanks to his advice and patience we discovered that we had to obtain written permission from the copyright owner of every piece of music we played and declare everything on a form from the MCPS so that royalty payments could be calculated. This has proved to be very time consuming and it is the biggest reason for *INKEY\$* only being available quarterly although it is our hope to go bi-monthly at some future date. Contacts we had built up with the help of Andy G, Klaus Schulze and Alex Douglas' 'Contact List for Electronic Music' proved invaluable in obtaining the necessary permission and, to anyone without such contacts thinking of starting such a venture as ours, I offer one word of advice – don't!

Next came the problem of equipment; we could copy tapes but could we produce a 'master' of sufficient quality? We also had no mixing facilities. I decided that as we had very little money I would build a mixer – a

simple design based on an LF351, and almost identical to the circuit published in the May 1981 issue of *E&MM*. Two such circuits were built, with one on each circuit for left and right outputs from a cassette deck, these inputs having only unity gain. The remaining channels were for a split mono microphone input with a gain of about 10dB. This allowed us to record the music from disc onto cassette, then to replay the cassette through the mixer onto a second cassette deck. A microphone plugged into the mixer allowed us to add speech over the music. Equipment used was (and still is) two JVC KD720 cassette decks (excellent machines unfortunately no longer available), and a Dual 506 turntable with monitoring being taken care of by Goodmans RB20 speakers through a NAD 3030 amp.

The master tape then completed, we set about the business of copying only to find that the copying plant had developed a fault. The plant was made up of two banks of six decks each; one bank had developed mains hum whilst the other was just plain noisy. This was a major setback; we had committed ourselves to a release date which was rapidly approaching. Money had become very short and trouble at my regular place of work had made the outlook bleak. A friend came to the rescue by putting me in touch with somebody who had copying facilities. This proved to be our saviour but in spite of the very reasonable costs involved, we had to sell the car to pay for it.

## Printing

Stickers for the cassettes were supplied at a good rate by a local printer but we could not afford the cost of printing the inserts so we settled for cheap photocopies. This was a decision we regretted and all future editions of the tape were to have properly printed inserts, laid out by my good friend Martin Reed. Our one extravagance was the use of soft cases for the cassettes which



Klaus Schulze – the inspiration for *INKEY\$*.

cost almost twice as much as conventional ones. The latter are less robust than the cassette itself and nearly always break in transit unless specially protected by Jiffy bags or the like. As the vast majority of our business is mail order, the soft cases allow us to use ordinary envelopes, saving on postage and packing.

Thus INKEY\$ no.1 was released. The response was good and has been growing ever since. We recovered our production costs and made a small profit which helped towards the purchase of a third (second-hand) KD720.

Another input was added to each channel of the mixer. This allowed us to record the music onto one tape, the speech onto another with mix-down onto the third, relieving us of the problem or re-recording the whole tape every time one of us fluffed our lines. INKEY\$ is always a C90 and the music is first recorded back to back to a total of about 42 minutes per side (to allow for errors in duplicating). This includes the introduction music, incidental music and any jingles we may use as well as the pieces we are actually featuring. This is the 'music tape'. The 'speech tape' is then made up. This includes any interviews we may have plus all the speech between tracks and the news item, once again recorded back to back with each item cued in by recording a countdown onto the tape before each item.

To mix down, some form of PFL was needed, our simple mixer not having such luxuries. A small box was made up having three stereo jack inputs feeding a three-position, two-pole rotary switch, the poles being wired to a single jack output socket into which a pair of headphones could be plugged. The inputs to the box were fed from the headphone monitor outputs on each of the three cassette decks, so by rotating the switch we could listen to any deck that we wished, thus giving us a crude PFL system.

Mix-down is as follows; outputs from decks 2 and 3 are plugged into the line inputs of the mixer, which has its outputs

connected to the input of deck 1. The speech tape on deck 3 is lined up for the first item of speech using the pause control, and the music tape in deck 2 and what will become the 'master tape' on deck 1 are set running, deck 1 in the record mode and the input controls set at the required levels. The music is faded in using the mixer and at the required time the level controls on the mixer channel controlling the output of deck 3 are raised, the music level is reduced and the pause button on deck 3 is released, thus the speech is recorded over the music onto the master tape. When that item of speech is finished, the music level is raised and the speech level fully attenuated. Then, using our PFL box, the next item is cued up on deck 3 using the pause control. The tape is completed in this way and is then ready for duplicating.

The above is a simplification (really!) of what can become a very complicated process. For some situations we need the music to finish at the same time as the speech. This is achieved by recording the speech first, timing it, and then recording sufficient music onto the music tape afterwards. With our primitive level of equipment, starting the music exactly as the speech finishes as opposed to fading it in is extremely difficult and requires a quick hand on the pause control.

For the music, speech and master cassettes we use TDK SAs which, with careful use of level controls, allow us to maintain reasonable quality with an acceptable signal to noise ratio, in spite of the low cassette speed and the number of tape to tape transfers needed.

I should add that we always 'spoil' any music we feature, either by prematurely fading it out or by speaking over part of it. This is intentional, indeed it is a prerequisite for some of the artists we feature. We are only here to give a sampler to our listeners; if they want to hear more they can buy the album or tape – even musicians must make money to survive.

## Interviews

With the profits from cassettes nos. 2 and 3, we replaced the third KD720 with a Superscope CD320 which is used in the same way as the JVC but also doubles up as our interview machine. There are lighter portables on the market, but it is well worth the effort of carrying this excellent machine around. Its built-in limiter is invaluable for interviews as the tape can just be started and forgotten which allows for a much more relaxed interview; very important as it is actually going to be heard by our customers as opposed to being transcribed for a written magazine. We also purchased two cheap tie clip microphones which helped even more. We're so pleased with the performance of these tiny microphones that we now use them for all the speech on INKEY\$ as well as the interviews, plugging them directly into the Superscope's mic inputs, recording the interviews and some other items such as the news in stereo.

Just a word about our name which should be written with a dollar sign at the end. It is the name of a function in the BASIC computer language and is most commonly used within a program to make the computer respond directly to a given key without using ENTER. It seemed relevant to us as the concept of INKEY\$ is direct response: no reviewers and very little comment. Our listeners have their own tastes in music and they have a pair of ears. It's unimportant what Jeanette or I think as the music is there for them to judge for themselves.

As we must sell our cassettes to survive, we try to include at least one well-known name on each issue, but apart from that we do not differentiate between amateurs and professionals. So long as we believe someone will enjoy their music we will try to include it, but it must be said that with the rate at which records and tapes arrive we could fill each issue twice over. Our one main frustration is that we cannot feature the occasional piece from the likes of Tangerine Dream or Jean Michel Jarre, as the big record companies simply ignore our requests for copyright permission.

We have been producing INKEY\$ for a year now and in that time we have made many friends in the field of electronic music. We have been given unreleased music by many artists, and Robert Schröder produced our intro music especially for us. Although royalties have been paid to the MCPS when required, no artist appearing on INKEY\$ has ever asked for any payment for his music. Although the number of copies in circulation is comparatively small, we have distributors in Holland and Canada, and sell as far afield as Australia, America, South Africa and Chile. We've also had a subscription application from Czechoslovakia. The latest issue, INKEY\$ 5, was released in August of this year.

As I have already mentioned, we would like to go bi-monthly in the near future. Any profits will be put towards the purchase of better equipment to improve further the quality for future issues. I am currently building a more sophisticated mixer and we would also like in the future to do all recordings and mastering on open reel machines, though the costs involved mean that we will have to wait some time yet for this.

E&MM

*INKEY\$ cassette magazine is available at £1.99 per copy from INKEY\$, 50 Durrell Road, Dagenham, Essex, RM9 5XU. Cassette no.6 features Tangerine Dream and Dave Lawrence of Pulse Records.*



Chris Franke of Tangerine Dream.



# Valve Driver

**PARTS  
COST GUIDE  
£24**

by Paul Williams

- ★ Wide range of distortion effects
- ★ Mixable odd/even harmonics
- ★ Valve sound simulation
- ★ Low impedance output for driving long cables
- ★ Low noise in/out switching

**D**istortion effects have been around under various guises for many years now, all being descendants of the original 'fuzz box'. A feature common to all distortion effects is that they add harmonics to the original signal. The important question is which harmonics? Devoted valve amp users insist that the distortion produced by these warm – hearted beasts is somehow special to the valve, and cannot be reproduced by other means.

Many valve amps produce even harmonics in abundance due to the non linear transfer characteristics of their tubes, especially the stages operating in class A configuration. Furthermore, when the signal excursions are large, clipping is not nearly as hard as in transistor amps. The signal peaks become more 'rounded off' than clipped, producing odd harmonics.

The original objective of the design presented here was to simulate these two valve phenomena; but the wide range of adjustment available on E&MM's Valve Driver goes much further than this, allowing effects anywhere from a warm, gentle valve sound to a good 'rocky' overdriven amp sound to be produced. The project is housed in a neat footswitch box with an easy access battery compartment. A socket is also provided for a battery eliminator to be plugged in.

## Circuit

The circuit diagram, Figure 1 reveals that diodes play no part in the production of distortion. Instead, an operational transconductance amplifier (OTA) is used to dynamically 'bend' the waveform, rather than clip it using diodes, as is the case with most distortion units. After being buffered and amplified by IC1a, the input signal is passed to IC2a, whose gain is dynamically controlled by the current generated by IC2c. When the effect is switched in, SW1a allows the amplified input signal to be precision full-wave rectified by IC1b. Thus when RV1 is set clockwise, the normal rectifying action of IC1b & D1 causes the current generated by IC2c to be reduced as each half cycle of the signal approaches its peak value. Since the gain of IC2a is proportional to the control current, the signal peaks become flattened. This flattening of both the positive and negative peaks causes odd harmonics to be added to the output signal, which appears at JK2 after being buffered by IC2b.

When RV1 is set anticlockwise, IC1b operates in a completely linear manner, causing the amplified input signal to be fed to IC2c, whose output current follows the instantaneous signal voltage. The control current, and thus the gain of IC2a rises with positive going signal peaks, and falls with negative excursions. This non-symmetrical effect gives rise to even harmonics. The effect is amply demonstrated by the waveforms shown in Figure 2. 2a shows an undistorted sinewave input and 2b shows the effect of even harmonic distortion, where the positive half cycle is unusually 'peaky', whereas the negative half cycle is flattened off. Odd harmonics distortion is shown in Figure 2c, where both half cycles are flattened.

IC2d additionally introduces a square term by making use of the transconductance amplifier's multiplying ability. Without IC2d, the transfer characteristics would take the form:

$$V_o = AV_{in}(B + V_{in}) \text{ with RV1 anti-clockwise}$$

Or  $V_o = AV_{in}(B - V_{in})$  with RV1 clockwise  
IC2d, however causes the transfer function to take the form:

$$V_o = AV_{in}(B + CV_{in} + V_{in}^2) \text{ with RV1 anti-clockwise}$$

Or  $V_o = AV_{in}(B - CV_{in} + V_{in}^2)$  with RV1 clockwise

Where A, B and C are arbitrary constants in each case.

RV2 allows the intensity of the effect to be controlled. Since SW1a acts only on the control path and not on the signal path, very low switching noise results when the in/out switch is operated.

If you have a guitar with an exceptionally high output level, then hard clipping dis-

tortion might be encountered, which can be remedied by reducing the value of R3. Try a value of 2k2 for starters. Similarly, if you have a low output pickup, then increasing the value of R3 will restore the proper distortion-inducing levels.

One other modifiable point is the value of R15. Its purpose is to always allow IC2a to operate with at least some gain, so that the sound does not break up completely. If the distortion is a little too tame for your liking, then R15 could be increased to, say 1M for a more 'crunchy' sound.

## Construction

This project should present no problems, as most of the 'gubbins' is contained on the PCB, leaving little wiring to do. Since the standard footswitch unit comes with a jack socket and switch mounted on a PCB, the first job is to remove the PCB assembly from the case and de-solder the switch and socket. The PCB can then be discarded. If you don't have access to a solder pump, then the solder can be removed from the joints using the bared ends of stranded wire applied with the soldering iron to the joints. The assembly of the Valve Driver PCB starts by inserting from the track side, and soldering the 8 veropins. Next, insert and solder the IC sockets, but leave the ICs out till later. Now insert and solder D1 and all the resistors, some of which are mounted vertically. Mount and solder the capacitors similarly, taking care with the switch can now be soldered in place, making sure that they are pushed firmly down onto the PCB whilst doing so. Note that the socket removed from the original PCB is JK2. Having completed the PCB, it should be checked very carefully, preferably with an eyeglass before the ICs are loaded into their sockets.

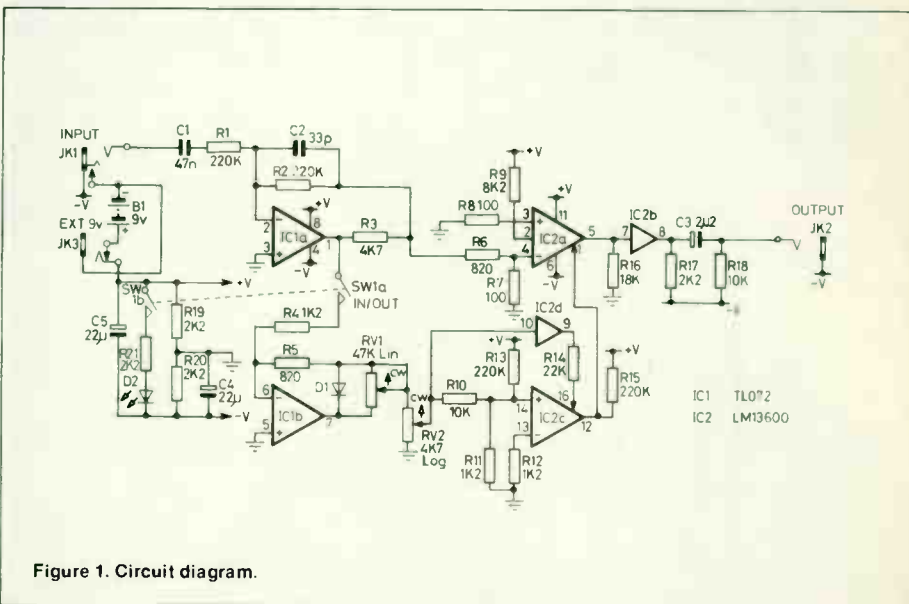


Figure 1. Circuit diagram.

Remove the inner moulding from the foot-switch case by withdrawing the two securing screws. Now prepare the two mouldings as shown in Figure 3. Additionally make a small hole in one corner of the battery compartment, and thread the battery clip wires through it. Before fitting the LED in place, using a clip and collar, solder 100mm long insulated wires onto the leads and sleeve the joints. Identify the anode wire by bending over the free end.

After mounting the pots on the inner moulding panel, they can be connected to the PCB assembly veropins using 100mm long insulated wires, along with the battery clip wires. Now drop the inner moulding back into the main moulding, guiding the LED wires through the hole in the inner moulding, and screw it in place. The LED wires can now be soldered to the PCB assembly, remembering that the bent-over wire is the anode connection. Feed the jack socket bushes into the appropriate case holes and locate the PCB on the pillars so that the switch lever drops into the actuator arm. All that remains now is to screw on the jack nuts (no need to secure the small jack), fit the control knobs, and screw on the baseplate.

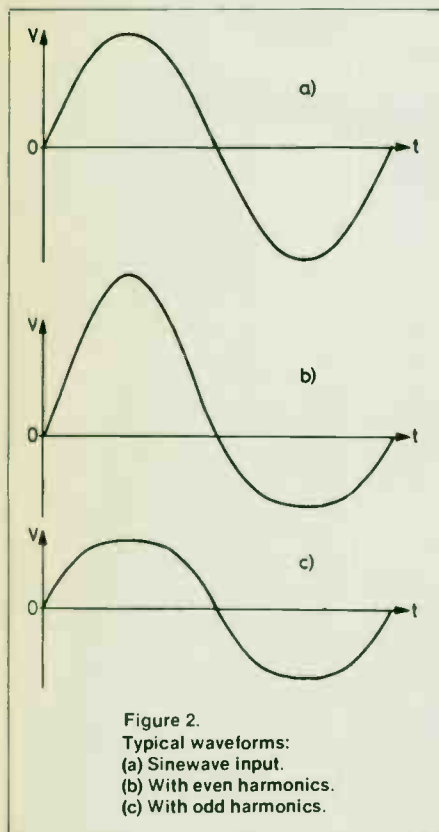


Figure 2. Typical waveforms: (a) Sinewave input. (b) With even harmonics. (c) With odd harmonics.

## Valve Sound

Once you have popped a PP3 (or equivalent) battery into the compartment located under the footpedal cover, your Valve Driver should be raring to go. Although originally intended for use with an electric guitar, any electronic or electric instrument can be plugged into the input, although it may in some cases be necessary to keep the level down to prevent hard clipping distortion from occurring. Once the instrument jack is inserted the battery is switched on, so remember to remove the input jack from the Valve Driver when it is not in use. The output jack should then be connected to the guitar input of your amplifier, or similar lowish level input on your mixer or tape recorder. The output level is about the same as the input level.

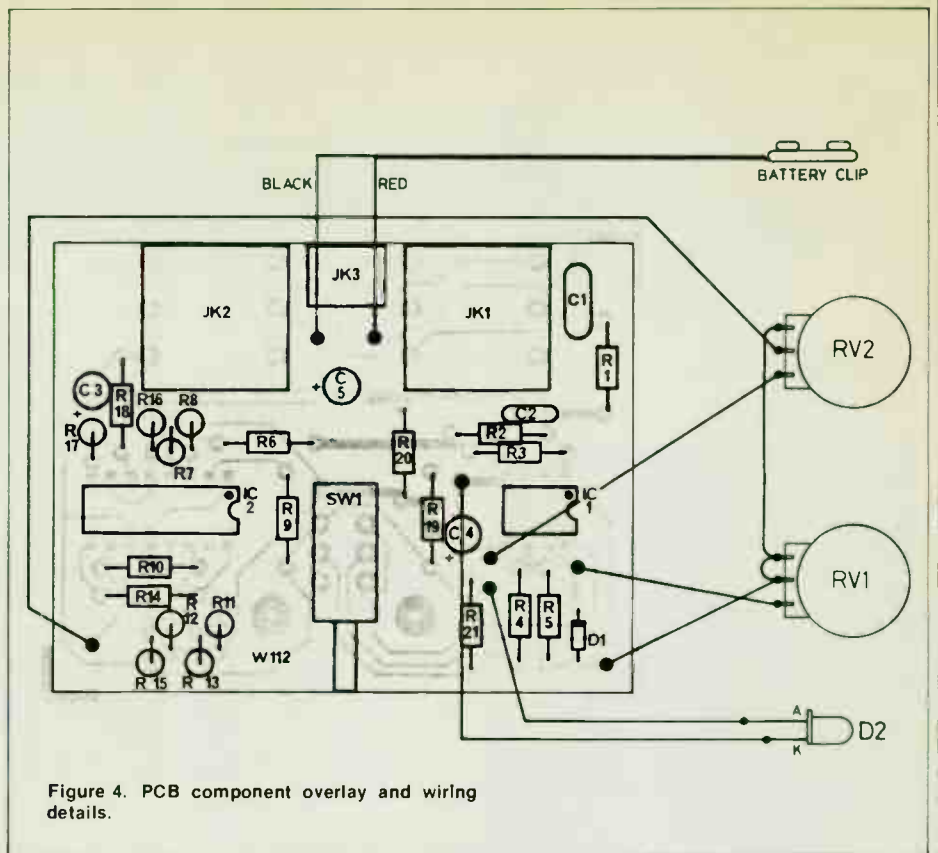


Figure 4. PCB component overlay and wiring details.

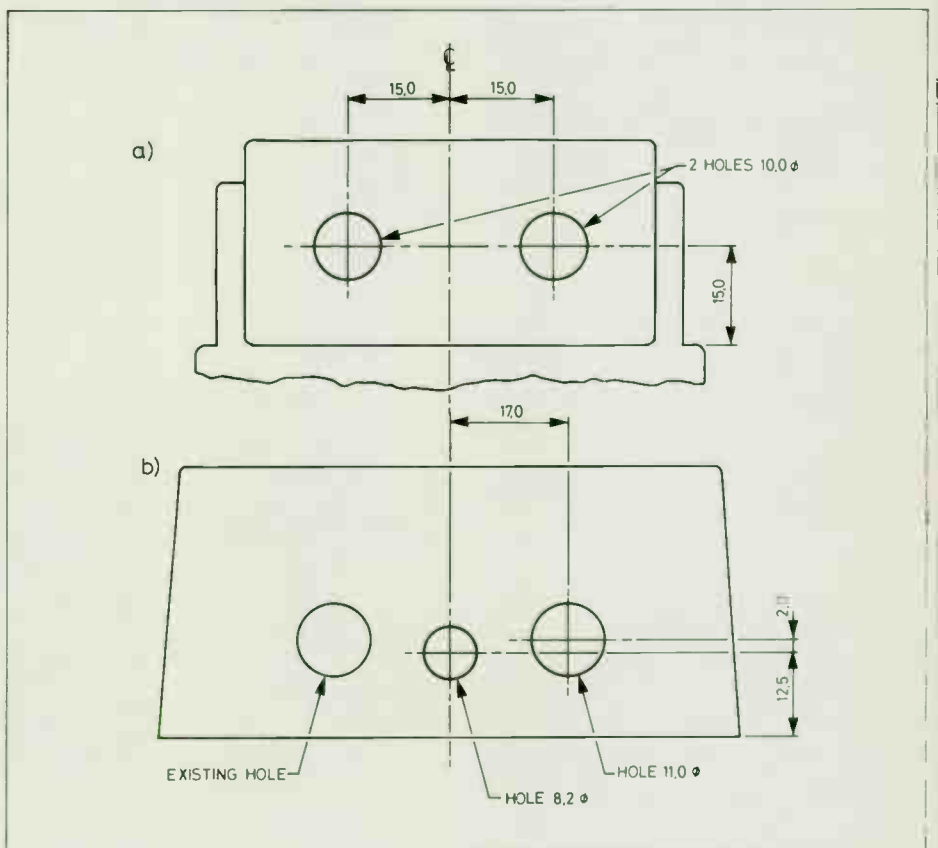
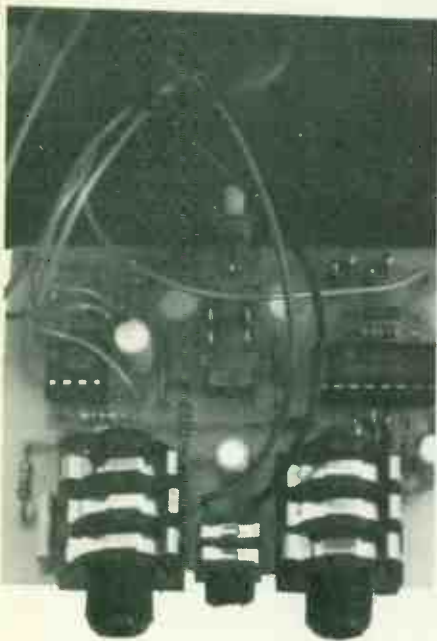


Figure 3. Case preparation (a) control panel. (b) rear socket area.

While the LED remains unlit, the signal is allowed to pass unaffected. The status of the LED is changed by operating the foot-switch, which brings the distortion circuit into play when the LED is lit. The 'harmonics' control determines the mix of odd and even harmonics which are produced. The 'valve sound' is renowned for its prominence of even harmonics, so if it's valve sound you want, keep the harmonics control towards 'even'. Some odd harmonics are desirable though, to simulate



Jack and Power sockets.



Internal construction.

the 'rounding-off' produced by a hard driven valve output stage. The 'Intensity' control, as its name suggests, simply affects the degree to which the sound is distorted; try the 2 o'clock position initially for valve sound.

The unit is by no means limited to valve sound. With both controls fully clockwise a good overdrive distortion is produced.

## Use

The position of the Valve Driver unit in the effects chain can make quite a difference to the sound. If it is early in the chain, then any succeeding filtering effects, such as tone boosters, phasers, flangers, etc. will have a more profound effect. A compressor though, would be better placed before the Valve Driver. Indeed this combination will be found very rewarding. The valve purist would, of course, insist on placing the Valve Driver last in the chain, to best simulate an overdriven amp. As always, the best placement should be found by experimenting yourself.

One final point: If you wish to run the unit from a mains power supply then this should be of the regulated 9V DC variety.

So, if you like your guitar sound 'rocky' or your keyboard sound 'dirty' and hesitate to replace your tired, old valve amp in favour of that MOSFET amp, hesitate no longer. The Valve Driver may even allow the recording guitarist to DI his lead tracks.

E&MM

## Specifications

Frequency response	: 8Hz to 22kHz (– 3dB)
Output noise	: – 82dBm (A)
Maximum input level	: – 12dBm
Standby battery drain	: 9mA
Active battery drain	: 12mA



Battery compartment.

## VALVE DRIVER PARTS LIST

Resistors – all ¼w 5% carbon film

R1,2,13,15	220k	4 off
R3	4k7	3 off
R4,11,12	1k2	2 off
R5,6	820R	2 off
R7,8	100R	
R9	8k2	4 off
R10,18	10k	
R14	22k	
R16	18k	
R17,19,20,21	2k2	
RV1	47k Lin pot	
RV2	4k7 Log pot	

### Capacitors

C1	47n Polyester	2 off
C2	33p ceramic	
C4,5	22u 16V radial electrolytic	
C3	2u2 50V radial electrolytic	

### Semiconductors

IC1	TLC72
IC2	LM13600
D1	1N4148
D2	LED

### Miscellaneous

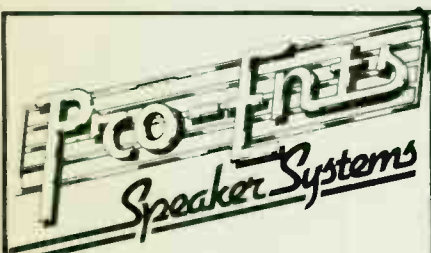
JK1	¼" PC Jack socket with make contact	
JK2	¼" PC Jack socket (supplied with case)	
JK3	3.5mm PC Jack socket	
SW1	Latchswitch (supplied with case)	
	Battery clip (PP3)	
	LED clip	2 off
	Footswitch case (Rhino 801)	2 off
	Knob	
	Knob cap	
	8 way DIL socket	
	16 way DIL socket	
	PCB	
	Veropins	

The complete kit of parts including PCB for the Valve Driver is available from E&MM, Mail Order Dept., Alexander House, 1 Milton Road, Cambridge CB4 1UY. Price £23.95 including VAT and P&P. Please order as: Valve Driver kit.

# CLASSIFIED

New rates for 1983: Lineage 34p per word (min. 12 words); Box No. 80p extra. Semi-Display: £1.00 extra. Display: £10.00 per single cm. column.

All lineage advertisements must be pre-paid. Closing date: 5th of month preceding publication. Advertisements are accepted subject to the terms and conditions printed on the advertisement rate card (available on request).



## PROBABLY THE FINEST QUALITY LOUDSPEAKER SYSTEMS AVAILABLE

Full range cabinets for Keyboards, Bass guitar and P.A. from stock

Specialist advice without obligation

Trade Enquiries 0202 825702  
Direct Sales Service 0202 826836  
Unit A1, 30, Blackmoor Road,  
Verwood, Dorset, BH21 6AX

## STEPHENS OF LEEDS

70 New Briggate. 0532-434710  
Yamaha DX's now in stock. Yamaha 4 track systems now in stock. Yamaha SGS, BB, Jumbo Guitars, Ibanez Digital Delay, Harmonisers, Cuted Multitrack Recording Gear, Roland & Casio Keyboards, Washburn Electric Guitar deals, Ludwig & Yamaha Drums, Paiste Zilajian, Sabian Cymbals. Custom Sound Amplification, Sales, Part Ex We Buy, Hire. 8 Track Recording Studio Open.

**GUERRILLA RECORDING STUDIO** is a new Central London control-room oriented 24 track studio (Otaril Souncraft) especially designed for the modern recording and electro-music artist. Inclusive facilities include a Roland JP8, Juno 60, MC4B/OP8, TR808, MC202, Linn Mkl, Movement MkII Drum Computer, Simmons, and all possible interfaces. Our rates are very competitive and yet totally negotiable. For further details call 01-286 0642/289 9224.

## Loudspeaker Cabinet Fittings

From Adam Hall Supplies:  
Coverings & frets • flight case parts  
• Celestion power speakers •  
Rear jacks & fittings • P&N stands  
Send 30p PO/cheque for illustrated catalogue

**ADAM HALL SUPPLIES LTD**  
Unit M,  
Carlton Court,  
Grainger Road,  
Southend-on-Sea  
Essex



## FOR SALE

**ESTABLISHED** electronic organ repair business covering Surrey, Sussex and South London. Ideal for self employed electronics engineer, offers around £5,000. Details Box No. 112, E&MM, 1 Milton Road, Cambridge CB4 1UY.

**KORG** synthe-bass, good condition, £150. Leatherhead 377549.

**MAPLIN** 3600 synth with 3800 digital keyboard £270. String synthesiser (Clef) with integral Formant synth keyboard controller, ADSR, VCF, etc. £200. Powertran 1024 sequencer £100. Elektor touch sensitive piano £150. All negotiable. Phone Knowle 78488 evenings (West Midlands).

**MASTER** mobile, quality 1" 8-track studio for your home or gig. £5 p.h. 01-840 2029.

**MUSIC SUITE**, high quality, low cost real time cassette duplication from 31p. 099389 8196.

**ADDITIVE SYNTHESIS**. Real-time digital oscillators, polyphonic keyboard etc., using VIC 20/other 6502 micro's. Send £3 for circuit diagrams to R. Thorp, Pine Lodge, Carleton Green, Pontefract, W. Yorks.

**244 PORTASTUDIO**, boxed and virtually unused, £475. Ring 01-439 2244, ask for Garry.

**SYNERGY** digital polysynth, 32 oscillators, 74 note touch sensitive keyboard, four track digital recorder, £1,950 o.n.o. 0332 672002.

**LP WANTED** Patrick Gleeson "Star Wars (main titles)". Any price paid (mint condition), Roland, Fliher, Heinrich, Heine, Strasse 8, 6074 Roedermark, West Germany.

**THROW SOME LIGHT** on your subjects with the PE STARDESK. Portable, programmable lighting desk. SEE PRACTICAL ELECTRONICS MAGAZINE, JANUARY ISSUE.

## ATTENTION CASIOTONE KEYBOARD OWNERS WE CAN HELP YOU

Upgrade your CT-1000P with a micro link module. Easily fitted. Link arpeggios and sequences to a drum machine. Eight programmable modes. Modification kit £75.00.

Free details write/phone now to:

Micro Musical Ltd,  
Casiotone Technical Support  
Laboratory,  
37 Wood Lane, Shilton,  
Coventry CV7 9LA  
0203 616760

## B.E.S.

KEYBOARDS, AMPLIFIERS, MIXERS AND ALL AUDIO AND VIDEO EQUIPMENT REPAIRED AND SERVICED - FIELD SERVICE AVAILABLE IN HAMPSHIRE AREA. PERSONAL CALLERS 9.00 A.M. TO 6.00 P.M. SUNDAY A.M. BY APPT. ONLY  
TELEPHONE 0329-287287  
40 EASTFIELD AVENUE, FAREHAM, HANTS  
TRADE ENQUIRIES WELCOME

## DEVELOPMENT ENGINEER

Established company specialising in the supply of high quality Robot and Computer Kits to Home Enthusiasts and Educational Establishments, require a young Development Engineer to assist in the improvement and expansion of their product range.

Candidates should be educated to Degree or equivalent in Electronics or Control Systems, with a working knowledge of micro-processors and experience in the design of small servo controlled mechanisms.

Ability to take sole responsibility from initial design concept to complete specification of hardware is essential.

Interested?

For further details send C.V. to:

Managing Director  
POWERTRAN Cybernetics Limited  
West Portway Industrial Estate  
Andover, Hants SP10 3NN  
A Feedback Group company

# CLASSIFIED ORDER FORM

Please insert the advertisement under the heading of

..... in the next issue of E&MM for..... insertions

I enclose Cheque/P.O. for £.....

Cheques and Postal Orders should be made payable to:  
**ELECTRONICS & MUSIC MAKER**

1	2	3
4	5	6
7	8	9
10	11	12
13	14	15
16	17	18
19	20	21
22	23	24

ENTER EACH WORD OF YOUR CLASSIFIED LINEAGE IN EACH BLOCK. COST: 34p per word. Underline words required in bold (add 10p extra per word)

NAME .....

ADDRESS .....

..... TEL. NO. (DAY) .....

Send this form together with your cheque to: -  
**E&MM CLASSIFIED, ALEXANDER HOUSE**  
1 MILTON RD., CAMBRIDGE CB4 1UY

Ads to be received by 5th of Month for following month's issue  
USE THIS FORM FOR CLASSIFIED LINEAGE ONLY

# SPECIAL XMAS KIT OFFER To READERS of E&MM

The fabulous  
Trancendent 2000  
3 octave keyboard

only **£149.00** + VAT.

Price incl. FREE DELIVERY  
UK MAINLAND ONLY

For further info  
on the Trancendent 2000  
and other product kits  
see ad on page 56

# POWERTRAN

PORTWAY IND. ESTATE  
ANDOVER, HANTS SA10 2EM  
ORDER BY PHONE QUOTE REF. T2EM  
(0264) 64455 ACCESS-B/CARD



## AUDIO VISUAL STUDIO

10 Baddow Road,  
Chelmsford, Essex.  
Tel: 356218



Recently opened behind the Future Music Store we proudly introduce our new 24 track audio/visual studio. Built to the highest standards we have strived to produce a comfortable environment in which to experience with state of the art audio/visual technology. The separate control room is equipped with the latest Soundcraft 24 track audio recorder and desk with the addition of 18 channel computer mix down. Master machines are by Studer with cassette copying by Nakamichi decks. Monitoring is by JBL 4343 and we have a host of 19" rack equipment for you to try from Lexicon Digital Reverb, Roland and Eventide digital delays to vocoders, flangers and phasers etc. For video monitoring we have 5 Barco Monitors (2 are multistandard) 3 JVC monitors and a brand new VO U Matic electronic edit system with a lock to our audio machines. Cameras are Ikegami, Sony and Hitachi, gelocked together through vision mixers with special effects generators. The downstairs studio is a comfortable 30' x 15' size with a large separate drum booth giving variable dry or live acoustic environments. Microphones are by Neumann, AKG, Electrovoice, Sennheiser and Shure and we are now using the revolutionary Crown SPL reflecting mics when required. We also offer excellent in studio auxiliary equipment completely free of charge. These include a Yamaha CP80 piano, Roland JPB Prophet 5 synths, Roland jazz chorus, both amps and various guitars and drums, percussion as required. For all video music sessions we are pleased to offer Linn drums, Roland TR808 MC4 with system 100M and the fantastic CMI computer system. Audio recording rates start at £20 per hour (block booking more than 4 hours) or regular rate £20 per hour (10% after 12 pm). Our resident studio manager, Mo Witham will be pleased to take bookings or offer advice, call Chelmsford 356218 now. Opening offer £150 for 10 hours recording (plus tape and VAT). Never has such advance facilities been available at such a bargain price! Book now while special opening offers are still available!

### CAN YOU AFFORD TO IGNORE THE VIDEO REVOLUTION?

More than ever, Managers, Record Companies, Agencies and Club Owners, need to evaluate your visual potential as well as your musical ability. With only an audio demo, you could easily get passed over. This is where we can help you. One of the advantages of modern video is that sound and vision can be concentrated on separately, and independently. Either build a good stereo audio master first and dub on a mixed video sequence (the most popular method). Or record the audio and visual tracks together, in the studio or at a live gig. The latter method, although far quicker and cheaper, leaves no room for editing mistakes, and limits final editing. By treating the two media separately, you are free to enjoy the spectacular effects that are available from modern audio/visual studio techniques. We have the latest Sony VO 5850 P U Matic editing equipment, making possible frame by frame resolution, perfect still frame, varispeed forward/reverse, and of course stereo sound capability. For normal work we use three genlocked cameras (professional Sony EX 1800) through a vision mixer capable of all standard effects, such as superimpose, wipes, and chroma key. Plus a Chromascope special effects generator, for those startling colour enhancements and graphics. Why not call now, and view a special Future Music promotional video, and see for yourself. Or write for a copy (enclosing £15 returnable deposit, and stating Beta VHS or U Matic Low Band).

**SPECIAL OPENING OFFER — VIDEO RECORDING £150 Per Day + Tape + VAT. All In!**



## Advertiser's Index

A1 Music.....	89
ABC Music.....	30
Alligator Amps.....	67
Alphaflex.....	25
Argent's.....	73
Arts Council.....	25
Axe Music.....	79
BK Electronics.....	67
CBS/Fender.....	72
Carlsbro Sound Centre.....	76/77
Casio.....	83
Chase Musicians.....	1
Circolec.....	89
Clef Products.....	58
Coventry Music.....	25
Electronic Equipment.....	40
ESSP.....	30
Fane.....	89
Future Music.....	32/33/96
Hobbs Music.....	15
Honky Tonk Music.....	61
JHS.....	19/42
Jones & Crossland.....	47
Kelsey Acoustics.....	51
London Rock Shop.....	12/13
Micro Musical.....	35
M.J.L. Systems.....	67
MPC Electronics.....	80
Music Ground.....	43
Phonosonics.....	79
Powertran.....	56/96
Rank Strand Sound.....	53
Rockbottom.....	21
Rock City.....	51
Roland (UK) Ltd.....	IFC
Roland (Amdek) UK.....	0BC
Sequential Circuits.....	48/49/58
Siel UK.....	11
Simmons.....	41
Soho Soundhouse.....	27
Southern Music.....	58
Summerfields (Ibanez).....	IBC
Swankit Inst.....	51
Tim Gentle Music.....	39
Turnkey.....	64
Yamaha.....	7/45



# Tom Coster And Jan Hammer On The Ibanez Digital Experience.



"Of all my equipment, my outboard gear gets the most use. The DM1000 Digital Delay is the first digital I feel comfortable with taking right from the stage to the studio. It's great for reverb pre-delay as well as for all time delay effects. The frequency response is good, and the output mix configuration is the best I've seen. The low noise floor of the DM1000 is very impressive.



"The DM2000 Digital Delay and the HD1000 Harmonics/Delay help to give me my individual sound—the sound that gives me the inspiration I need to express myself musically. Both provide the flexibility of mixing the textures by remote footswitch, giving my hands the freedom required to play the instrument. Ibanez digitals are quiet, readable and are also great when recording at home or in the studio. Great quality at a low price !!!



DM2000

DM1000

HD1000

DM500

Jan Hammer and Tom Coster are constantly working on the road or in the studio. They have found that Ibanez digital processors satisfy their needs with professional quality, reliability and state-of-the-art features.

More and more experienced synth players are turning to Ibanez digital processors. Make them a part of your experience at your nearest Ibanez dealer.

Tomorrow's Innovations  
**Ibanez**

For the latest full colour catalogue of Ibanez effects units send 30 pence to Summerfields, (Dept EMM), Saltmeadows Road, Gateshead NE8 3AJ, Tyne & Wear.

**NEW**

**Creative Kits  
for Creative Musicians...**

# AMDEK

## Flanger Kit (FLK-100)

Four controls for manual, depth, rate and resonance to provide thicker and powerful effect sounds. Uses special BBD element to assure high stability.



- Assembly process: 21
  - Control: Manual, Depth, Rate, Resonance
  - Function: Effect changeover switch, Effect indicator
  - Terminals: Input, Output, External power source
  - Delay time: 1ms — 13ms
  - LFO speed: 100ms — 16s
  - Residual noise: -95dB (IHF-A)
  - Input impedance: 470k $\Omega$
  - Output load impedance: Over 10k $\Omega$
  - Power source: 006P battery or external power source
  - Consumption current: 15mA (DC 9V)
  - Dimensions: 95(W) x 64(H) x 143(D)mm (3.74" x 2.52" x 5.63")
  - Weight: 520g (1.15 lbs.)
  - Modifiable points: 0
- Consumers:  
Questions, Problems  
Suppliers?  
Retailers:  
Supplies & Re-orders?

**USE THE  
AMDEK HOTLINE!**

# AMDEK

Roland (UK) Ltd., Great West Trading Estate  
983 Great West Road, Brentford, Middx. TW8 9DN

from the manufacturers of:  Roland /  BOSS

**AMDEK  
HOTLINE!  
01-847 1671**