

MSX *Beowulf* COMPUTING



SPECTRAVIDEO ENTERS THE ARMS RACE

WIN AN ARM BUMPER LISTINGS ISSUE

MSX

MT-BASE

the number one data base

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at your nearest dealer



MT-BASE is famous for its quality, speed and user-friendliness

MT-BASE is a card index system which allows you to store data normally stored on conventional cards. From important addresses to stock, from your stamp collection to a prospect-address system, from a membership list to an agenda etc etc. With MT-BASE the possibilities are endless. You can choose from 7 built-in card indexes, and design an unlimited number of card indexes yourself.

The reviews are the proof

Read the reviews! "The best price/performance we have ever seen." "Out-performs any other database on MSX." "A very special card index, unbelievable speed." "Even the most spoiled user will be satisfied." These are extracts from reviews by European magazines.

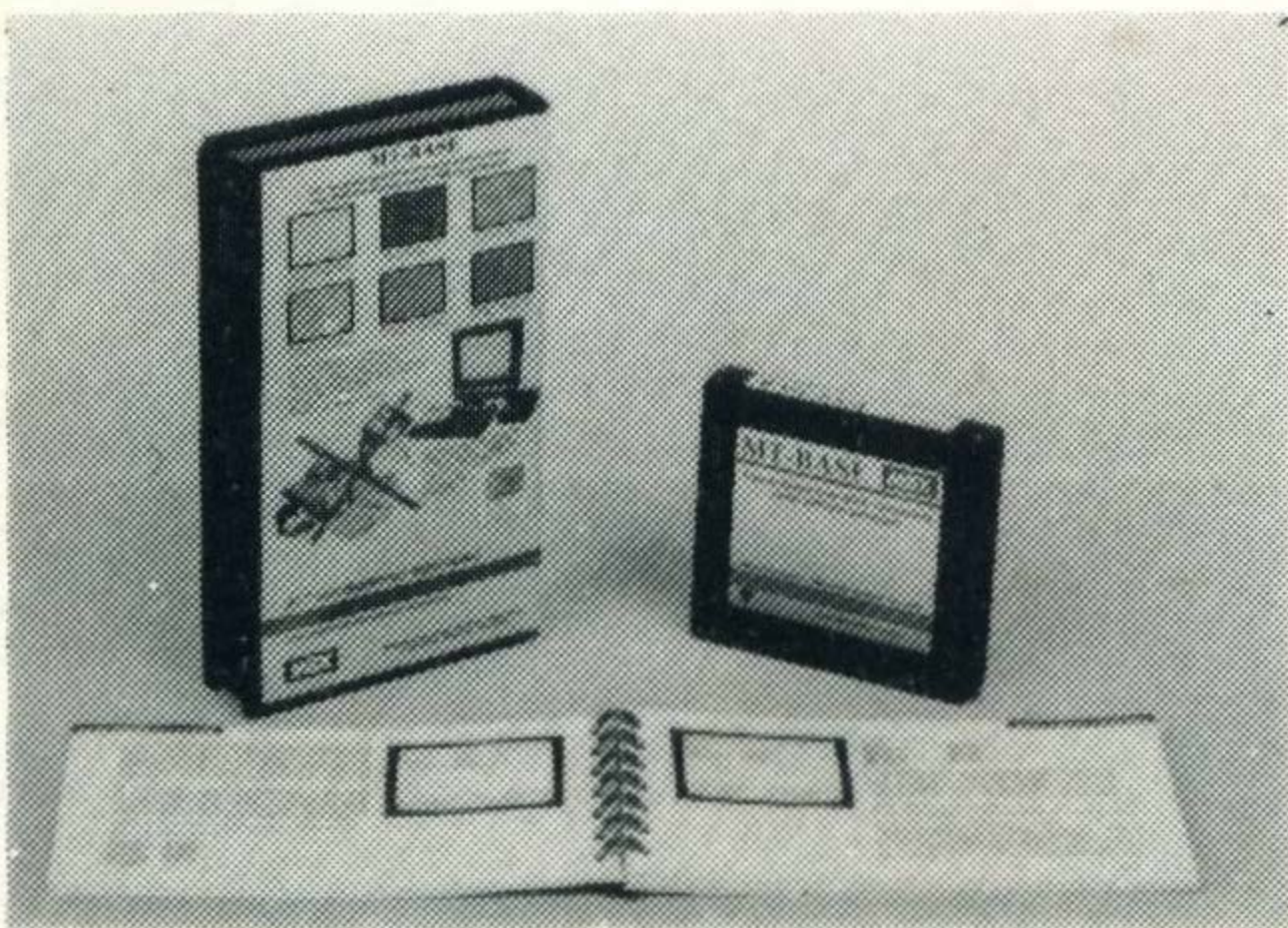
Extensive manual

MT-BASE is easy to learn, and easy to handle, so much so that the manual is almost superfluous! Nevertheless, each MT-BASE program comes with an extensive manual of over 150 pages with examples and 'help-pages'. If for any reason you are not sure about a certain part of the program just look at the top right hand of the screen which points to the 'help-page' in your manual.

Printing

The printing features of MT-BASE are almost unlimited. You can produce labels, lists, forms etc etc in any design. It's just a question of 'composing' your label from your records!

Plastic carrying case



Extensive manual

Memory expansion

The MT-BASE system can be used on all memory sizes. It even uses RAM expansion cartridges up to the maximum MSX configuration. This means that should you decide to expand your MSX computer at a later date to 256Kbyte or even 1 Megabyte MT-BASE already supports it!

For disk and cassette

Because MT-BASE is on cartridge (which can be plugged directly into your MSX cartridge slot) a diskette or cassette can be used to store your data — this gives you more data storage and doesn't alter any MT-BASE functions — you can start now on a cassette based system and expand at a later date to a diskette base system.

Easy plug-in module

For MSX Computers

£49.95

(inc. VAT)

DISTRIBUTORS

Belgium: Wvde Elektronika, Machelen, 02-2511358. UK: Electric Software, Long Stanton, 0954-81991. Germany: Sony Deutschland, Köln, 0221-59661. Finland: Sanura Suomi OY, Helsinki, 0-441233. France: Sony France, Clichy, 01-7393206. Spain: Sony Espana, Barcelona, 03-3306551. Italy: Sony Italia, Milano, 02-6121551. New Zealand: Please Promotions, Packuranga, 562529.

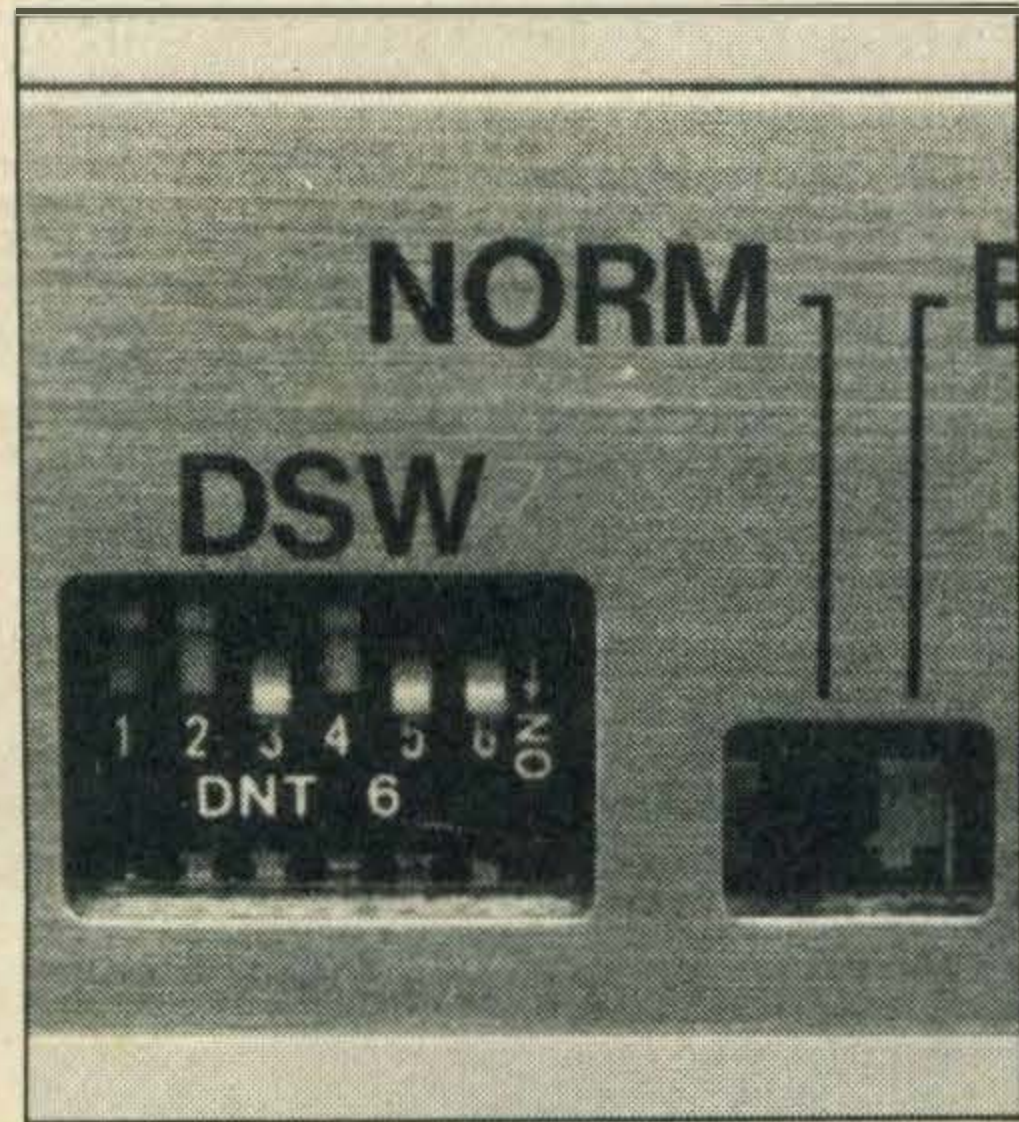
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Micro Technology, PO Box 95, 3353 GZ Papendrecht, Netherlands. Telex: 62425. Tel: 010-31-78410977.

Eurocard, Mastercard,    welcome.

REGULARS

4 NEWS. Catch up on the latest news — low cost printers, Cheetah's new joystick, MSX clubs, new software houses plus the latest software.



11 POSTBAG. Having trouble with your programming or stuck on your favourite game? Whether its praise, criticism or tips you want to pass on, drop us a line we're here to help.

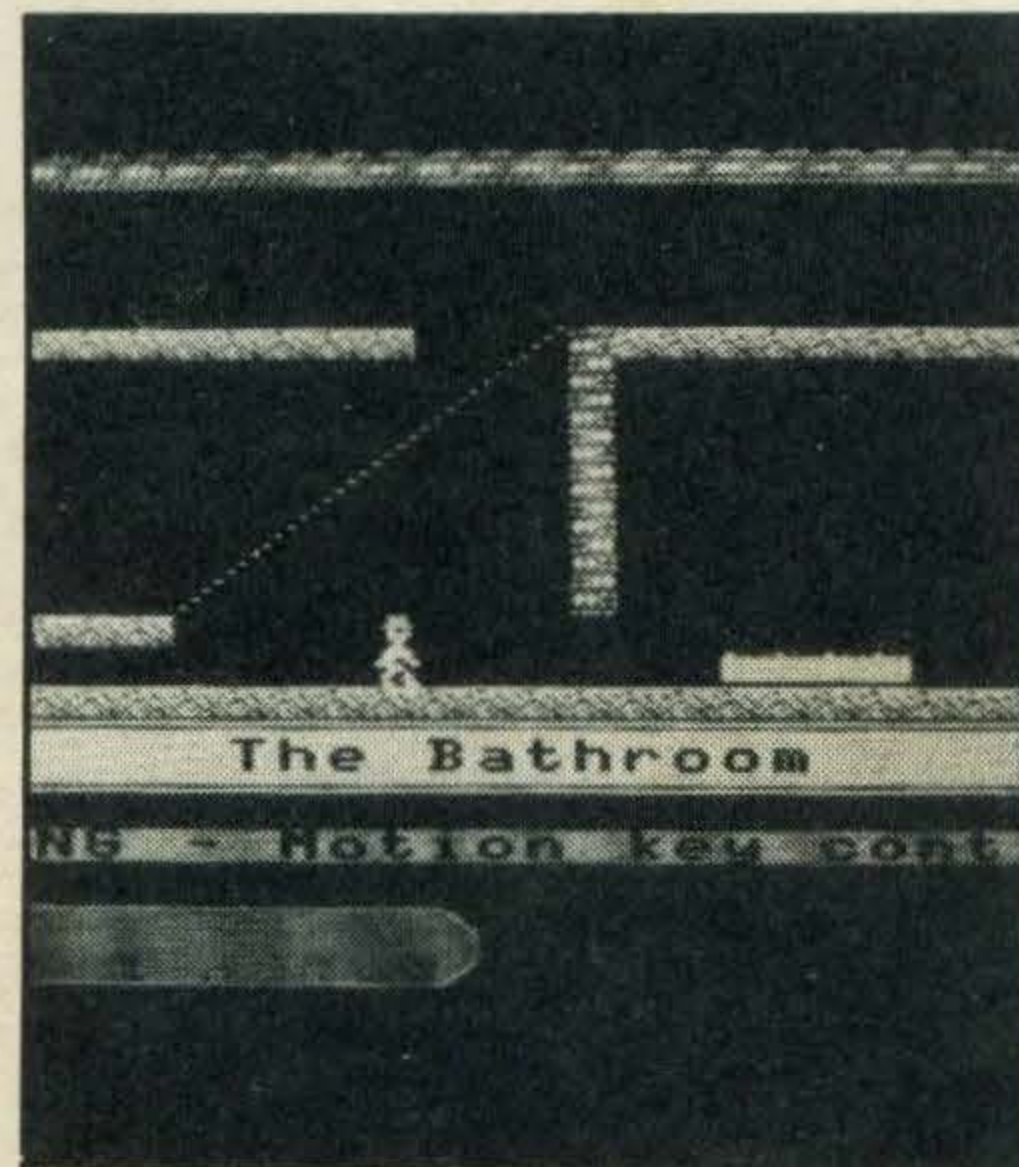
25 READER INFO. Missing an issue? Then find out what we've covered in previous issues and reserve yourself a copy by taking out a subscription.

FEATURES

18 BASIC COURSE. This month we show you how to read and write tape files from within a program.

30 FIVE FINGER EXERCISE. Our listings are always in demand so here are two top-notch feature length games ready to key in and run.

37 DUTCH LEAVE. We take a look behind the scenes at Aacksoft in Leiden and find out what games are in the pipeline and Europe's reaction to the latest MSX 2 machines.

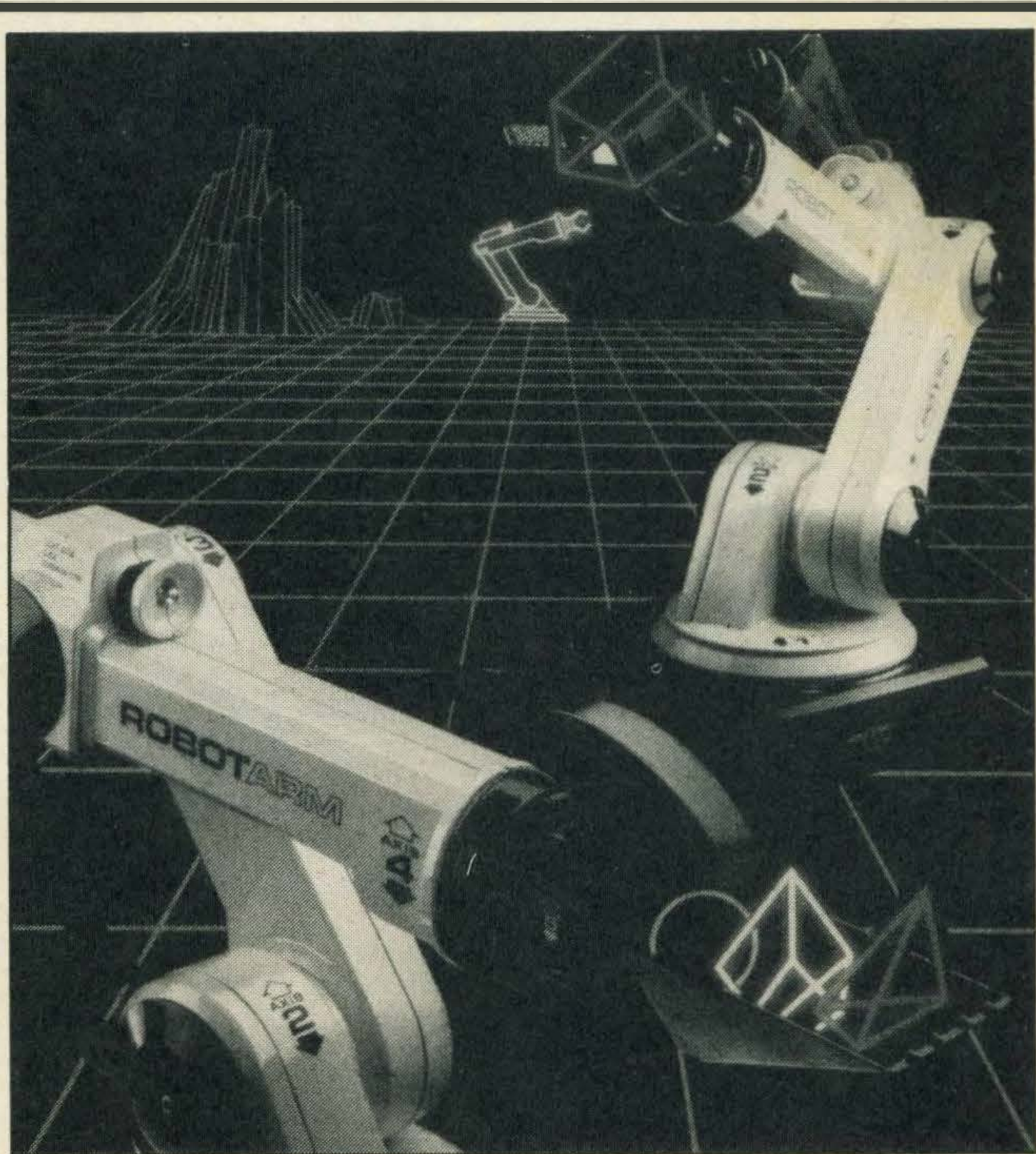


42 JET SET WILLY II. Stuck in the rocket room? Then find your way around without exclusive map of software Project's elusive game.

MSX COMPUTING

APRIL/MAY 1986

Editor: Simon Craven **Assistant Editor:** Julia Alexander **Art Editor:** Richard Grill **Photography:** Mike Cameron, Paul Dudley **Publisher:** Gareth Renowden **Publishing Director:** Eric Verdon-Roe **Advertising Manager:** Neil Alldritt **Production Assistant:** Ivor Game



46 SPECTRAVIDEO'S ROBOTARM. We've managed to lay our hands on the first robotic arm for MSX—courtesy of Spectravideo.

The arm can be used to introduce youngsters to computing and help them grasp a basic understanding of robotics and elementary programming.

We tried it out with two Quickshot I joysticks plus a ROM cartridge interface with some interesting results.

The Robotarm is easy to operate, great fun to use and one of the most practical educational peripherals for MSX yet. So why not read for yourself how you can use it with your MSX micro?

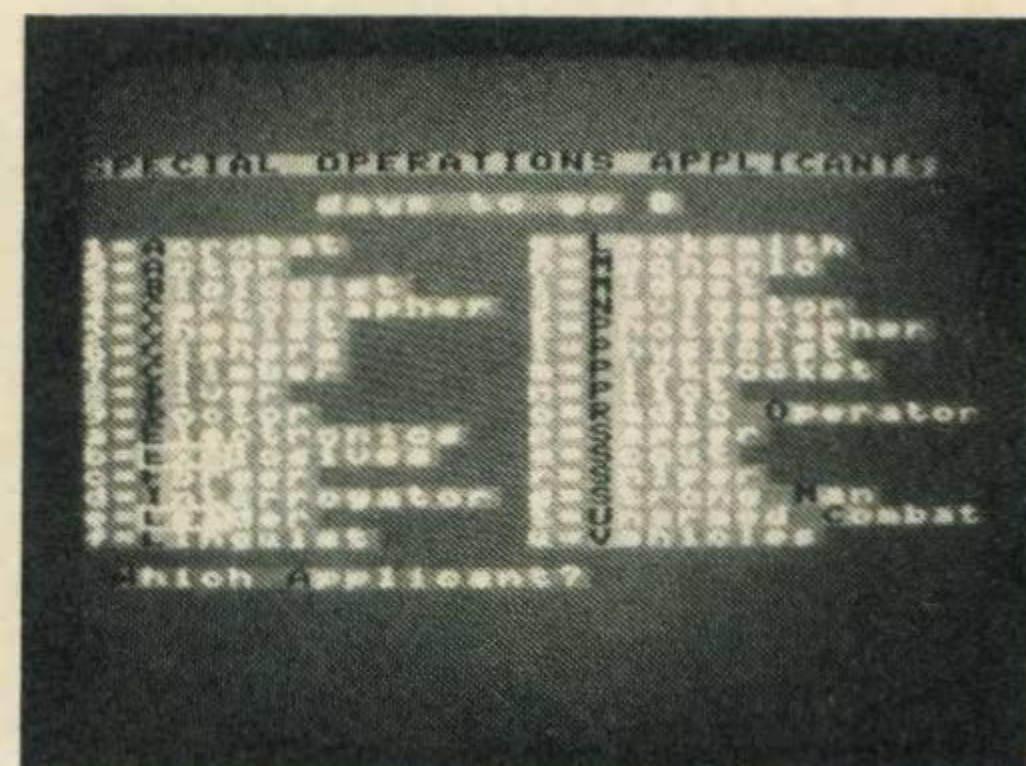
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44 COMPETITION. It's a joke! Make us laugh and you could win yourself a robotic arm.

DEPTS

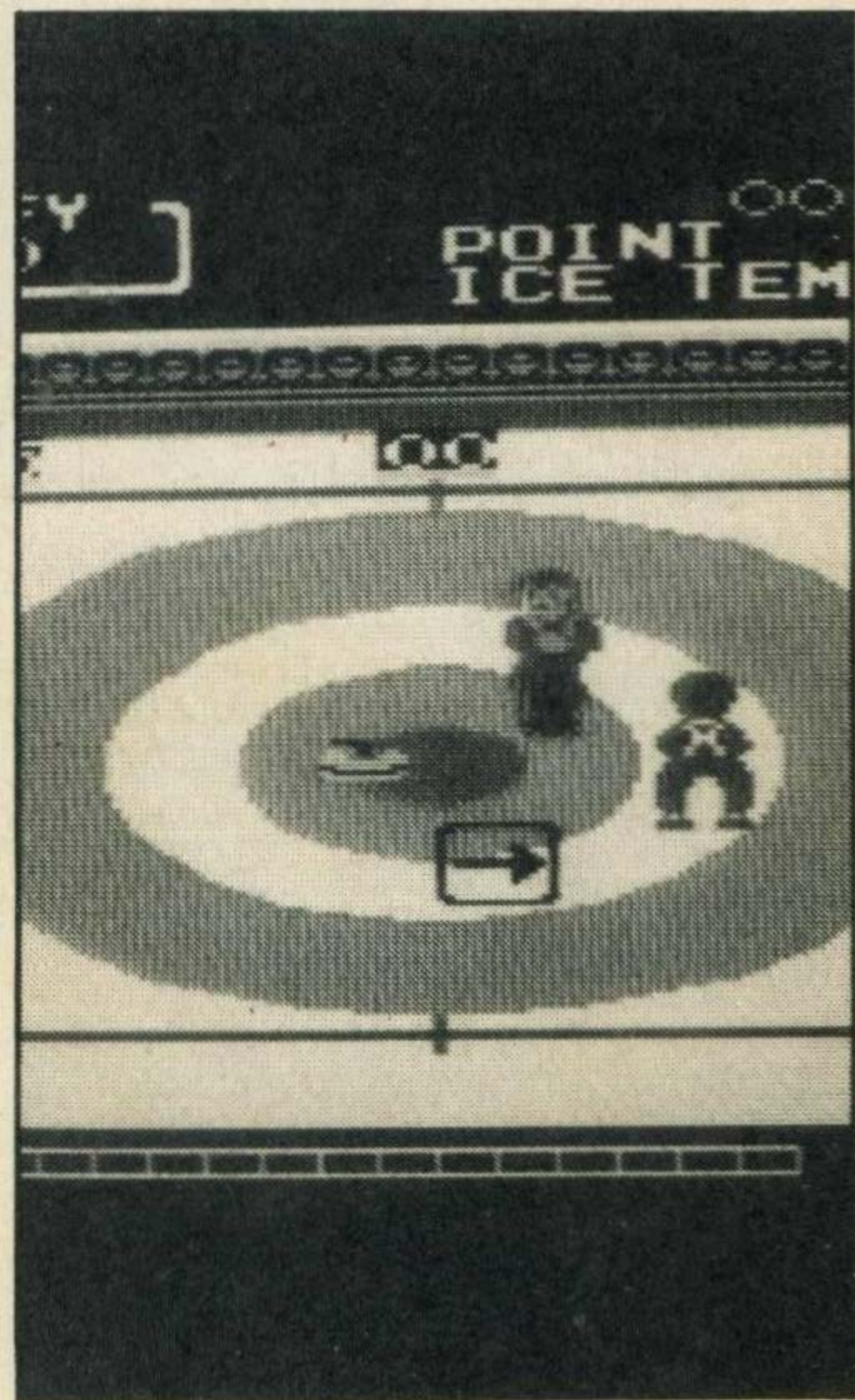
22 MUSIC. An exclusive review of Wigmore House's audio visual cartridge — the key to a new musical experience for MSX users.

28 ADVENTURE QUEST. Our adventurer extraordinaire Mike Gerrard answers more readers' queries and passes on hints and tips to help you through the *Lords of Time* and *Special Operations*.



REVIEWS

14 PRINTOUT. Six new books this month including an updated and revised version of the infamous Hacker's Handbook.



49 SOFTWARE SCENE. We've five pages of the latest software releases including Konami's *Hyper Sports 3*.

Also featured is a bumper batch of low-cost arcade games from Aacksoft in Holland.

LISTINGS

52. Flex those fingers tap those keys we've got eight pages of listings — all tried, tested and ready to go.

P-p-pick up a p-p-Pelikan

As an entertainment activity, buying computer consumables — fanfold paper, floppy disks, printer ribbons and the like — must rank right up there with watching the grass grow. It also has the side effect of costing you money.

This combination of factors is obviously putting off a lot of would-be purchasers from getting down to the shops and stocking up with the necessities, and if you spent half an hour every morning trying to decipher some of the faintly-printed letters we get you could appreciate the gravity of the situation.

Full marks then to Pelikan, for trying to put a bit of pizzazz into printer ribbons. Buy one of its ribbons before October 31st and you get an entry form for a free draw which stands you a chance of winning a new Ford Fiesta. You also get wonderfully clear black output from your printer instead of the worn-out pale grey variety.

Pelikan ribbons are available for most popular makes of printer so the offer should be applicable to the majority of those with printers on their MSX machines. Act now before the editor has to trade in his mobile rustbucket for a pair of dark glasses and a white stick.

Pelikan can be contacted at Berechurch Road, Colchester CO2 7QH.



More Mosaic tie-ins

As software publishers get shorter of really original ideas for computer games, another wave of titles related to TV, radio, books and films is on the way.

The latest announcements include two adventure games from Mosaic, including a sequel to the company's best-selling *Adrian Mole* spinoff.

Mosaic claims to have sold over 100,000 copies of *The Secret Diary of Adrian Mole* so far, on a range of machines including MSX. Responsibility for the design and coding of the sequel, *The Growing Pains of Adrian Mole*, once again rests with Level 9. Mosaic will handle the publishing and marketing aspects. Regular readers of MSX Computing will find this news encouraging — we always look forward to any product from the Level 9 programmers.

A fresh departure for the Mosaic/Level 9 combination is the announcement of a computer game based on the mythical residents of Ambridge. *The Archers* is currently scheduled for release in time for Christmas, and Mosaic's Joe Land assures us that the long-running radio soap has 'recently seen a surge in popularity with over a million new listeners'.

What Mosaic intriguingly refers to as 'complex multiple scripts' are being developed by William Smethurst who edits the Radio 4 programmes. Even so, it must be a daunting task to blend the activities of the Ambridge community into a storyline that will rivet the typical MSX software buyer to his keyboard. Pass me the fertiliser m'dear, just going out to plant a few joysticks . . .

Stripped-out Wordstar to appear on MSX 2 range

MicroPro International is planning to release an MSX version of its famous word processing package to coincide with the launch of MSX 2 machines.

Robin Oliver, managing director of MicroPro says there is a strong demand for *Wordstar* and that an MSX version is an expansion of the range of packages already available.

Pocket Wordstar, which includes Mail Merge, was launched in July last year and an MSX version was planned, but we're still waiting.

The versions available for other machines have received a mixed reception, however. The inclusion of the mail merge facility is of limited value to a typical MSX or Amstrad user, and *Pocket Wordstar* loses quite a few of the advanced editing functions boasted by the full-scale version.

Since the MSX 2 machines are easily capable of running the full *Wordstar*, why not follow the lead of many other software publishers in the professional market and produce a full-feature product at around the £50 mark? After all, the eight-bit versions of *Wordstar* have been sold in vast numbers over many years and it has surely repaid its development costs many times over.

As it is, making users of highly capable computers like the MSX 2 and Amstrad range into second-class *Wordstar* users will only encourage people to pirate 'real' *Wordstar* unofficially and illegally, which cannot be in anyone's long-term interests.

Pocket Wordstar for MSX 2 machines is set to cost £49.95. Release dates for MSX 2 are still set for late summer or early autumn, with Mitsubishi and Yamaha likely to be among the leaders.

For more information on *Wordstar* contact MicroPro International, Haygarth House, 28-31 High Street, Wimbledon Village, London SW19 5BY. If it's urgent give them a ring on 01-879 1122.

High speed and low cost from Samleco

If you're after a low cost dot matrix printer then Samleco's latest offering could well suit your requirements and not cost

a small fortune!

The DX-86 is the company's latest dot matrix printer and costs £219. With a print speed

of 120cps and 35cps near letter quality it's ideal for the small business and home computer user.

Other features include a friction and reversible pin feed and there's also a heavy duty tractor feed version available for companies using multi-part continuous stationery and labels.

The DX-86 also operates with a matrix of 9×9 in draft mode and 18×18 in near letter quality. And nine foreign languages are also supplied as standard.

More information can be obtained from Samleco on (0753) 854717.



K-Soft debut with new MSX adventures

Newly-formed MSX software house K-Soft Computers has got off to a flying start with three text adventure titles for MSX.

Castle on Cara Island, *Zarwain Disaster* and *Division One* are reviewed in our Software Scene and the company has two more titles in the pipeline.

Gold Bullion and *Yes Minister* are in the final programming stages and should be available by the time you read this issue of *MSX Computing*.

K-Soft is also working on a database but that's not likely to be available until later.

Wales hails MSX sales

Yet another MSX club has sprung up this time over in South Wales.

It is called The MSX Club (Wales) and is being run by PJ Morgan in Swansea.

Membership costs £5 and for that you'll receive a regular magazine every two months, with bumper edition to keep you going over the Easter and Christmas periods.

PJ is on the look out for new members so if you live in Wales and would like to join the club it can be contacted at 230 Dunvant Road, Dunvant, Swansea, West Glamorgan SA2 7SR.

After-sales service

If your MSX is feigning dead and the guarantee has expired, don't panic!

We have managed to track down a couple of companies that offer a nationwide MSX repair service.

Electronic Maintenance Services is based in Peterborough (telephone 0733 75025) and Nobles is based in Southend (telephone 0702 63377) both offer a quick turn-around service and guarantees.



Panasonic pulls the plug

Rumours that Panasonic has stopped marketing its CF2700 MSX micro are well founded.

A spokesman for the company has confirmed that Panasonic UK is no longer selling MSX micros or its car-

tridge based software.

When pressed for details Panasonic told *MSX Computing* that 'all the machines we had in stock have been sold and there are no plans to replenish stocks at the mo-

ment. But the company will be keeping an eye on the market.'

Over in Japan the company is actively selling its MSX micros and software with no plans to cease production.

User groups and clubs spring up across nation

MSX user clubs seem to be springing up all over the country and we've just located two more to add to the list.

The first called the MSX Computer Club has been formed by Dean Adams from his home in Southgate.

Membership costs £6 per year and you'll receive a free compilation tape containing jokes and games as well as a fortnightly newsletter — can't be bad!

The MSX Computer Club can be reached at 173 Hampden Way, Southgate, London.

MSX West is based in Somerset and has only just been formed by Mark Smith who is eager to hear from anyone interested in joining.

Mark says the aren't any MSX clubs in the Devon, Cornwall and Somerset regions which is why he decided to start one himself. And once the club is established Mark intends to keep members up to date with all the latest MSX developments.

Interested? Then contact Mark at 14 Beech Hill, Wellington, Somerset, enclosing a stamped addressed envelope.

Incidentally, the next issue of *MSX Computing* will carry a complete round-up of UK MSX clubs and user groups. If you want your club to be included send us all the details by April 30th 1986 so that we can feature your club in the next issue.

Keeping a clean head

Keeping tape heads clean in data recorders used to be a job for a technical whizz but thanks to Global Software's Operation Caretaker you can easily do it yourself.

The kit costs £9.95 and include an azimuth alignment tape, head cleaner/demagnetiser and a screwdriver.

Also included is a tape speed measure so that you can check to see if your tapes are running too fast or slow.

But, take a tip from us: if you're not sure of what you're doing don't grab your screwdriver but seek the advice of your dealer.

Further details of Operation Caretaker from Global Software on 01-2228 1360.

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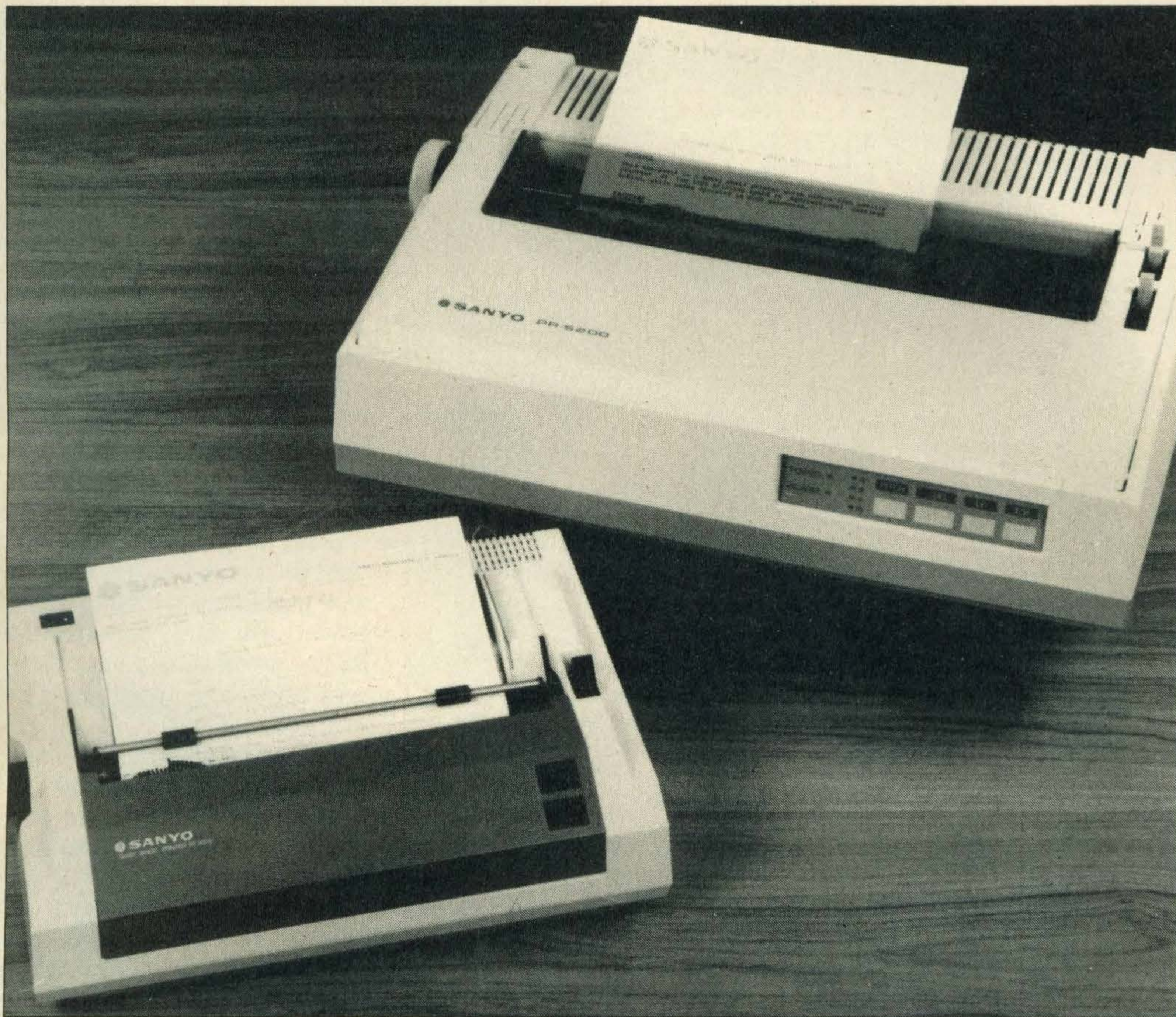
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If you must have true letter quality Sanyo offers a low-cost solution

Sanyo's daisywheel at a 'dotty' price

If you're after a low cost daisy wheel printer, then Sanyo's PR3000 might fit the bill.

It costs around £199 and offers bi-directional printing at the speed of 20 characters per second.

Other features include

switches to alter the pitch and produce test prints and indicator lamps to show 'power on' and 'error' conditions.

Sanyo has also launched the PR5200 which is aimed at the small business user and retails for around £299, this

also offers bi-directional printing but has a print speed of 20 characters per second.

Both printers have centronics interfaces.

For more details contact Sanyo Marubeni on Watford 46363.

Brother's new baby printer

Brother is making further inroads into the home computer market with the launch of its latest dot matrix printer.

Costing £225 the 1109 operates at 100 characters per second and also offers a 25cps letter quality printing facility.

Features include a 2K buffer, built-in tractor feed and a dual centronics and RS232C interface.

The 1109 can also print in three type styles — Pica, Elite and Prestige.

Brother can be contacted on (061) 330 6531.

MSX starter pack offer demand causes delays

Those of you who bought MSX machines recently may have found a yellow card within the packaging entitling you to a free copy of *MSX Computing* and a games cassette by Kuma. If you sent this off but have not yet received the goodies, don't panic, we haven't lost your card. We ran out of the packs a few weeks ago, and although a fresh supply has been arranged, the backlog that built up during the 'missing' fortnight is still slowing up the system. Meanwhile we're sorry for the delay.

One person *won't* be receiving a starter pack, however —

at least, not unless he/she recognises this description and sends us a postcard. A big bad sorting machine at the GPO ate most of the person's card, and all we have left is the bottom bit. So if you live at postcode NE25 8NB, and own a Toshiba with the serial number 265524, we'd like to hear from you.

This special offer has proved just how popular MSX systems are with first-time buyers. Even at the time of going to press, we are still getting 80 to 100 cards a day, and the number received just after Christmas has to be seen to be believed.

Road Fighter winners

Lots of you entered the Konami *Road Fighter* competition in the last issue. In fact, some of you swamped us out by sending up to a dozen entries *each!* Obviously the prizes — ten *Road Fighter* cartridges and four Konami watches — tempted you.

The first four correct answers out of the sack came from K. Hubbard of Nottingham, L.P. Gonzalez of Maidstone, James Salmons of Matlock, and John Baird from East Kilbride. These four win a cartridge and a watch each. Also receiving a cartridge are Andy Yarwood of Stilton, W.J. McCracken of Carlisle, E.V. Fisher of New Milton, C. Thompson of Bedale, Andrew Carlyle of Southam, and P. Hatton of Cheadle.

Multifunction multicolour

The Korean manufacturer Samsung has moved into the home computer market with two colour TV monitors.

Both are mains powered 14 inch models but the CI-347FA is a manual monitor whereas the costing £179.99 whereas the CI-340ZA is an infra-red remote control model and costs £199.99.

Housed in black cabinets with gold (!) graphics both are fitted with anti-glare screens, loop aerials and direct audio and video input facilities using rear-mounted phono sockets, plus a front mounted ear-phone jack.

Last May Samsung displayed its MSX micro at the company's trade fair in London with a view to a launch, but as yet there are no signs of the machine being launched in the UK.

Lander

Apologies to listings fans who had trouble with M. A. Shelton's *Lander* in the February/March issue. Unfortunately we managed to slice out line 2270 on page 54, which should read: **2270 IF B\$<>"3" THEN 2230**

Easy riding with MSX

An MSX micro is at the heart of a new business venture.

Bikeline is the brainchild of Ken Gillet and Martin Peterson and is akin to the motor industry's 'Computacar' service.

'MSX is not only a very versatile micro but is a cheap way of starting up a small business and once MSX 2 becomes available we will be upgrading,' says Ken Gillet, co-owner and ex-head of Honda's training division.

Bikeline will be fully operational from April.

Taking over

Robert Maxwell's Mirror Group has bought up the software distribution firm Microdealer for a reputed £790,000.

Microdealer was formerly part of the Spectrum Group and originally distributed the Goldstar MSX micro.

CDS Micro Systems

CASTLE BLACKSTAR



Goddess in power orb shock horror

Castle Blackstar, CDS Microsystems' long awaited text adventure for MSX, is now scheduled for an April release.

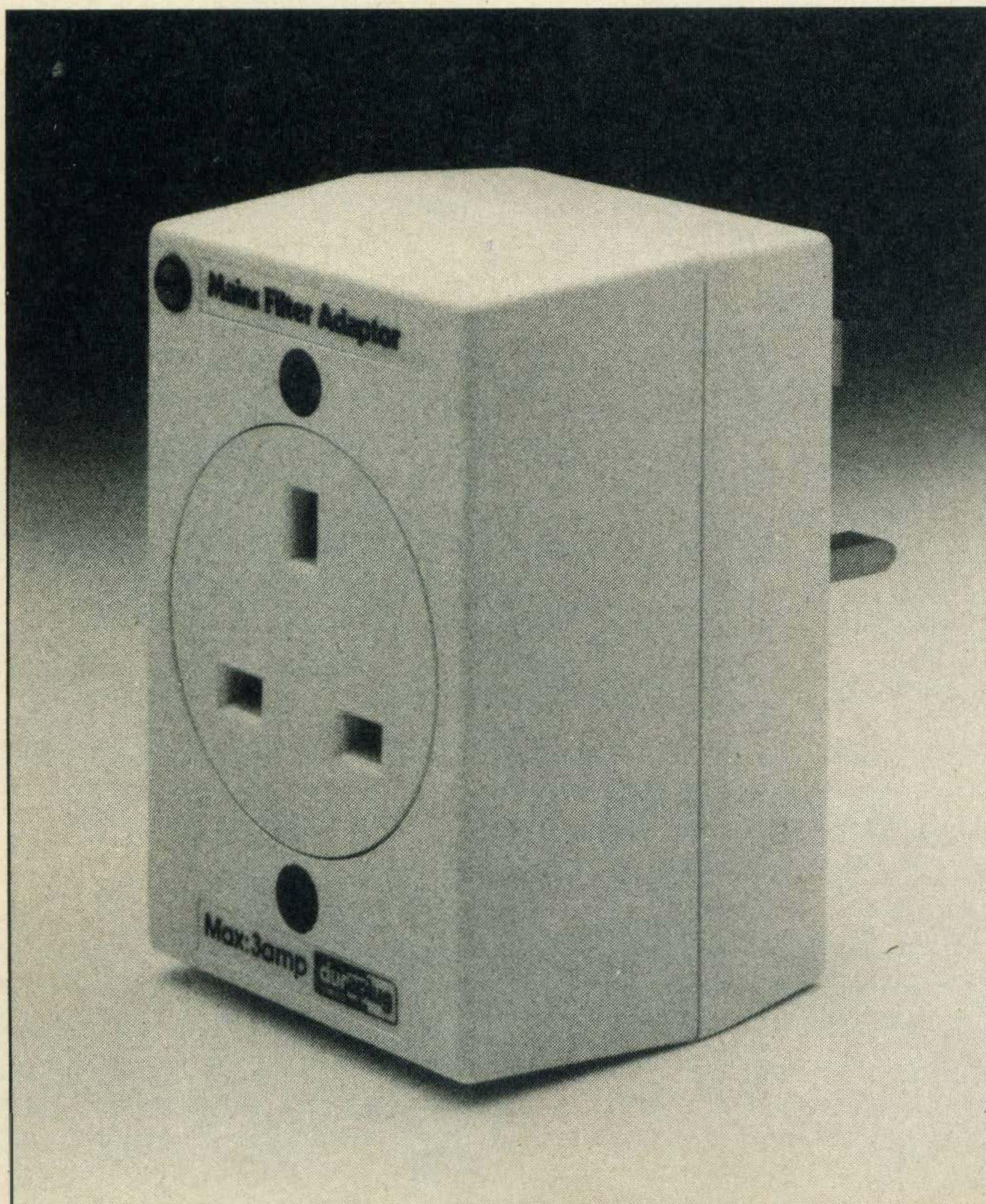
After months of programming the title is in the final production stages and is expected to go on sale for around £6.95.

Cast as a traveller you are sent on a quest by the mysterious goddess Artemis to find a power orb she has mislaid (how careless) and your journey takes you deep into the castle dungeons.

Unfortunately you are obliged to return the orb to Artemis, if you find it, but any other treasure you stumble across is yours to keep.

CDS is also planning to release a snooker title endorsed by Steve Davis no less but as yet a launch date hasn't been finalised but the price has, £7.95. Watch out for a future review.

Can Duraplug really cure gobbledegook?



No, it isn't a new kind of Lego, but Duraplug's new main filter

Mains born interference can be a nuisance especially when you're trying to download one of your programming masterpieces!

However, the good news is that Duraplug reckons to have solved the problem with a purpose built Mains Filter Adaptor which looks like an ordinary 13-amp plug and costs around £17.90.

The adaptor fits into an ordinary wall socket and according to the company provides an interference-free electrical supply.

'Electric drills, hoovers and washing machines have all been known to turn a computer users print-out into gobbledegook,' says the company but by using the filter any interference should be eliminated.

The plug is available from most electrical dealers and further details can be obtained from Duraplug Electrical, Margate Road, Broadstairs, Kent CT10 2QL or telephone Thanet 68771.

Cheetah in the running

Good news for alien zappers — Cheetah has just launched its latest auto firing joystick.

Called the 125 and costing £8.95 it has a contoured hand grip with eight directional control and a heavy duty base with four stabilising suction caps.

There are also four firing buttons, two on the base and two on the control handle.

The 125 is compatible with most home micros including Commodore, Spectrum and of course MSX, and is available from most computer retailers.

Calling Cliff

In the last issue of *MSX Computing* we published two listings, Patience and Defuze both by Cliff Walters.

However we've lost your address Cliff so if you could call the editorial office and leave your name and address we'll send you a cheque for the programs.

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Compatibility problems

I received *Jet Set Willy II* for Christmas as a present. On Christmas Day I managed to reach the rocket room but the computer jammed and reset itself when the rocket reached its destination.

I took the game back to the shop it came from where it was then checked on their Toshiba computer and worked perfectly. I then rang Software Projects who told me that the game would only work on Toshiba and Sanyo micros (I have a Sony).

Isn't MSX software supposed to be compatible with all MSX computers?

Christopher Rutherford
Hexham

We've been having the same problem ourselves. So, we too rang Software Projects to find out why.

The company's Paul Paterson tells us that there is indeed a glitch in the program and that *Jet Set Willy II* only runs on the Toshiba and Sanyo micros without resetting.

However the good news is that Paul gave us a Poke to pass on to our readers.

Before loading the game type in POKE 59451,0 then press RETURN. Once you get the OK prompt load the game as normal and you should have no problems.

Calling all radio hams

I am a radio enthusiast and I am interested in expanding the use of my micro so that it can transmit morse code as well as receive and decode it.

Unfortunately all the software houses that I've contacted do not have any software available for MSX.

Consequently I would like to ask any reader if they have a program or listing they could send me.

Thanks for an informative and interesting magazine.

V. R. Wyland
Merseyside

Despite many frantic telephone calls to manufactur-

DOS7 BAG

Here's your chance to have a say. Have you been let down by a supplier lately? Or pleasantly surprised by the service you've received? Or perhaps you're just plain stuck on level 1,001 of your favourite arcade action megagame?

Whether it's a word of praise, a moan, programming tips or a word of advice, we want to hear from you. It's your page, so put pen to paper — now.

ers and software house we too have drawn a blank.

If any of our readers have a similar interest and can help, please drop us a line as we'd be very interested to hear from you.

Programming difficulties

I have just bought an MSX micro and I am finding the basic language difficult to learn.

My previous machine was a Spectrum and I had no problems getting to grips with it but MSX BASIC is so different.



Ideal for BASIC beginners

Could you please recommend a good book that will teach me the basics?

B Thomas
Staffordshire



There are several excellent titles available that can teach you the Basic.

You could try starting off with Sean Gray's *MSX Starting Basic* published by Glentop. Another good title is *VeryBASIC BASIC* written by Ellershaw and Schofield and published by Century Communications.

Parlez vous Français

I am interested in buying a disk drive and a printer for my MSX. Please could you tell me if Spectravideo sells a printer and if so how much does it cost? Also how much is the disk drive?

I would also be grateful if you could give me any details on software for learning a foreign language, especially French-English.

Sunil Bhojwani
Kuwait

The answer to your first question is no, Spectravideo does not manufacture prin-

ters. As for disk drives they do tend to be rather expensive although some readers have been able to get a JVC disk drive for around £280 by shopping around.

The only foreign language software we've come across is called *French is Fun* by CDS (telephone 0302-21134) and costs £7.95.

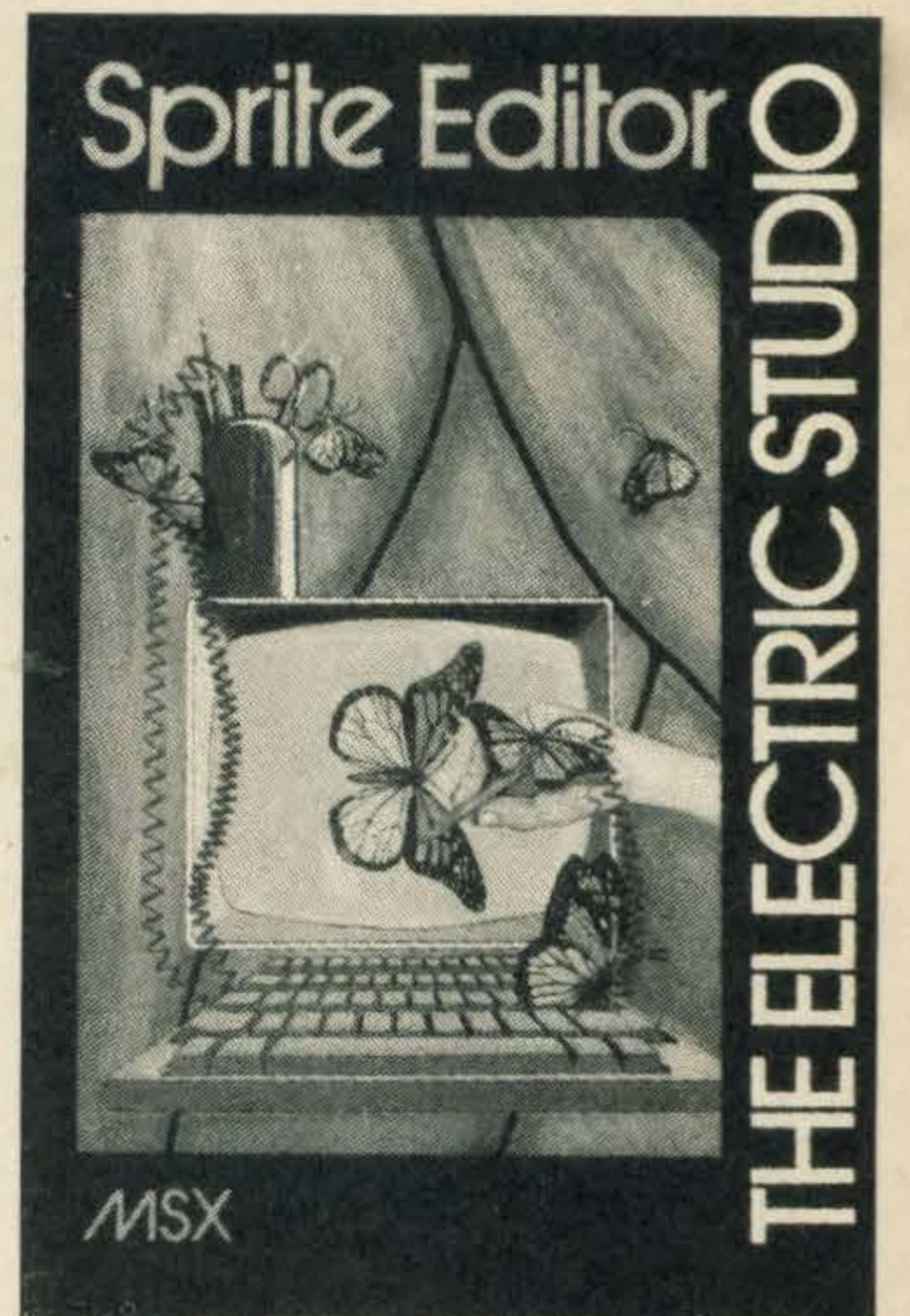
Spritely demands

Please could you tell me what sprite designers are available for MSX, what facilities they offer and how much they cost?

I have also heard that the *Designer Pencil* by Activision is available for MSX — is this true?

G Sheridan
London

The good news is that there are several sprite designers available. The three we've

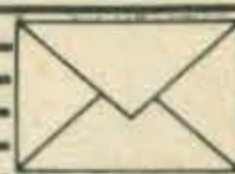


Design your own sprites

come across are Electric Studio's *Sprite Editor* which costs £6.95 (0582 595222), Anglosoft's *Sprite Designer* which has a price tag of £5.50 (0203 56221) and Panacea's *Sprite Generator* which costs £5.95 (0702 333476).

The last two were reviewed in the February/March issue of *MSX Computing*, both have their merits and Electric Studio's *Sprite Editor* was reviewed in the August edition. The ultimate decision to buy is obviously yours.

We have also been in touch with Activision and as yet there are no immediate plans to launch *Designer Pencil* for MSX.



MSX's two mystery keys

Despite reading the manufacturer's manuals that came with my Toshiba HX-10 computer I still haven't managed to find out what the SELECT and ESCAPE buttons are supposed to be used for. Please can you help?

Also, why can't you have more colour pages like other computer magazines?

Vijay Kumar
Middlesex

As such the ESC and SELECT keys have no function in BASIC programming unless you write a program using these keys.

However you've probably discovered by now that the ESC key can be used to interrupt the operation of a program (or game) or to continue operation following an interrupt.

As for the SELECT key, this is frequently used when using a word processing package.

If there were more colour pages in *MSX Computing* we would have to increase the cover price to meet the extra costs or use inferior quality paper neither of which would go down too well with the rest of our readers!

Flicking the switches

I wonder if you could tell me what the 'DIP' switches do on the back of my printer. I have read the manual but can find no reference to them.

Also does anyone know how to copy between tape and disk? I have bought a Sony disk drive but so far I have only used it for my own programs, can you recommend programs, can you recommend a tape to disk program?

S. Martin
Cheshire



The SELECT and ESC keys are normally redundant in BASIC programming

DIP switches can be found on the backs of most printers or underneath a protective plate also on the back. They are there so that you can alter the ways in which your print-out is produced: setting type styles, margins, line spacings, graphics modes and so on.

Copying material (other than programs which you have written) from tape to disk is software piracy and illegal so the answer is no!

Software in short supply

I have recently purchased a Toshiba HX-10, but I am having problems in obtaining software.

I live in one of the biggest towns in Ballymena in Northern Ireland and I can't find anyone who stocks software for MSX.

Please could you tell me if there are any stockists in Northern Ireland and Eire as I am sure I'm not the only one having problems.

Tony Allen
Ballymena

Quite a few readers from Northern Ireland have written in to us this month with the same problem.

We have managed to track down a distributor in Belfast who can supply you with stockists and software for Northern Ireland and Eire.

The company is called Gordon Howson and can be contacted at 14 Orby Link, Castlereagh, Belfast, or telephone (0232) 705000.

Keeping up production

Now that the MSX 2 machines are starting to appear does this mean that the MSX manufacturers will stop producing software for the 64K machines?

David Cooper
Cheshire

Absolutely not! MSX manufacturers will produce software for both MSX 1 and MSX 2 micros, otherwise they will be faced with a very angry user base.

Memory expansion

I read somewhere that when MSX 2 is released the manufacturers will later introduce ROM cartridges so that 'old' MSX's can be upgraded: is this true?

Also is it true that cassette recorders can damage cassette tape as I have noticed that many of my cassettes will not load the programs that have been saved on them.

Laurence Burke
Wicklow

Unfortunately the answer to your first question is no. As among other things the sound and graphics chips are different.

The current first generation of MSX's can only be 'upgraded' by adding on extra memory in the form of RAM pack add-ons which cost around £90.

As a rule cassette tapes are not damaged by cassette recorders but by the user who fails to store them properly and keep them away from such devices as a television or monitor or indeed a telephone. Any of these can corrupt your data and stop your programs from loading.

Learning by experience

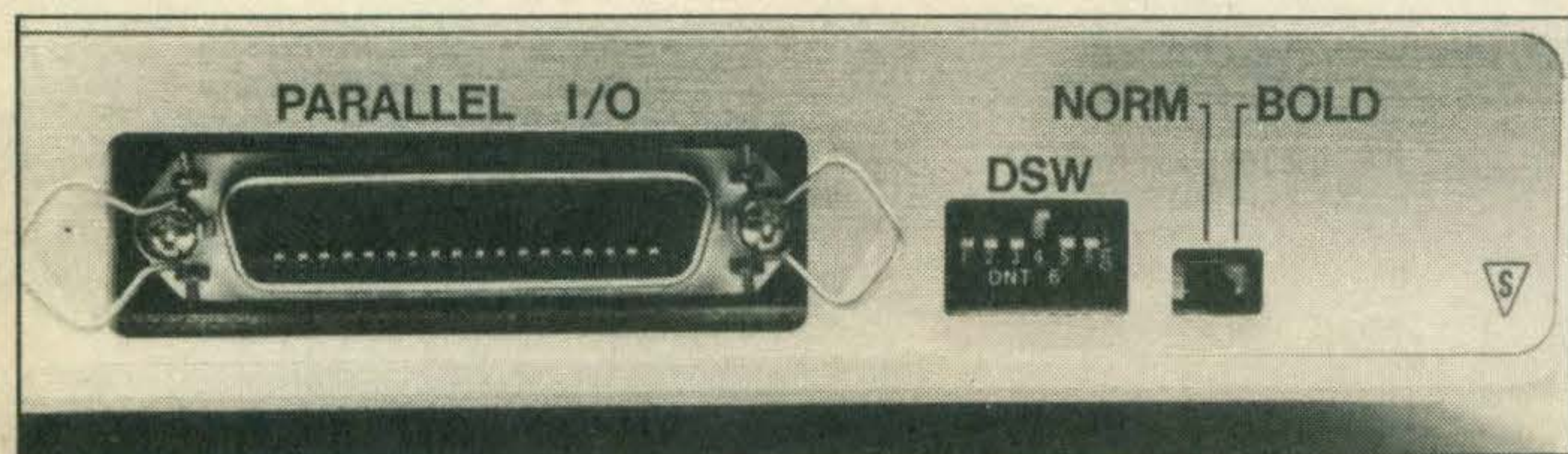
Some months ago I purchased an MSX micro. When I got it home I discovered that the information given with the micro covered only the very bare bones and none too clearly.

So it was with great relief that I discovered *MSX Computing*. The only way to learn how to program is by 'hands on' experience and by typing in many of the listings I have learnt a great deal.

MSX Computing has got me onto the keyboard where the uninspiring paperwork from Toshiba has failed!

Jim Croll
Hartlepool

It's always nice to hear from a satisfied reader.



DIP switches can be found on the backs of most printers

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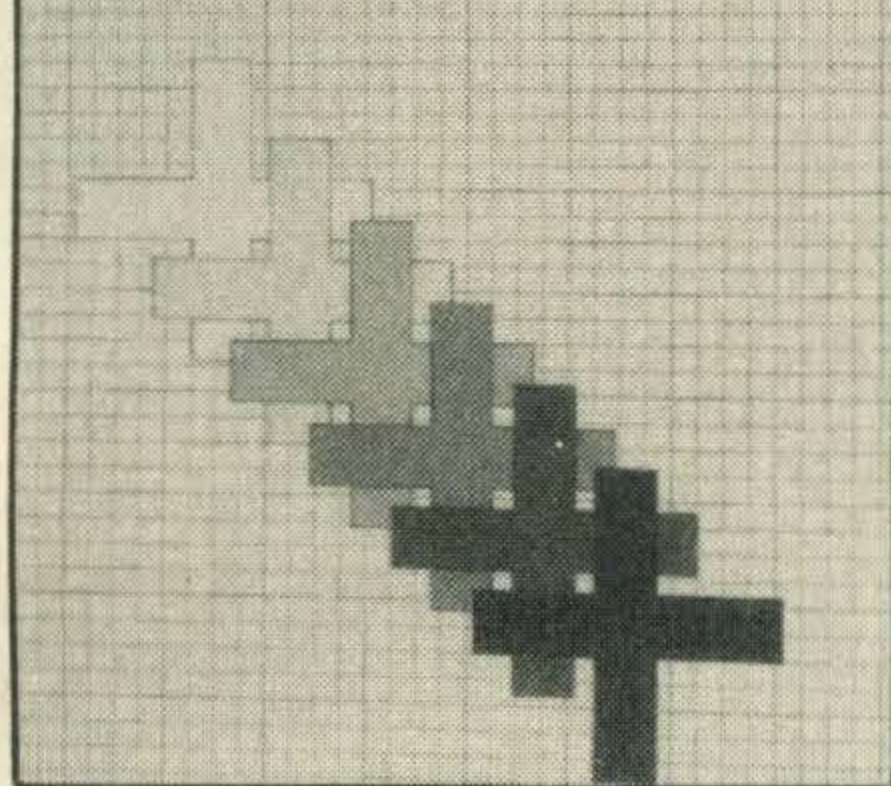
Now stockists of the
JVC KB800

Stereo Keyboard

Using Midi interface this will
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computer into an 8-track
digital tape recorder.

Easy Add-on Projects for Amstrad CPC 464, 664, 6128 and MSX Computers

OWEN BISHOP



Easy Add-on Projects for the Amstrad CPC464, 664, 6128 and MSX Computers

by Owen Bishop

Bernard Babani Books £2.95

Unless you are interested in designing and building electronic gadgets that can be controlled by your MSX, then this title is going to be of limited value.

But for those of you who enjoy dabbling with bits of wire and transistors this little number from Babani is a mine of useful information.

Despite the fact that the book is written for owners of different micros don't be put off . . . there's no need to convert any of the programs, the author does it for you.

As for the gadgets themselves the author points out that all the machines have connectors for joysticks (these are used as the input ports for the devices) and that as the ports are almost identical (9-pin DIN) so too are the connections. Therefore many of the projects can be used with either micro.

There are 16 projects to choose ranging from a picture digitiser to a lamp flasher. Or, you can design a barometer and sunshine recorder, and develop your own (albeit amateur) weather station.

The author goes to great lengths to describe each project in detail, the equipment needed to build it, and provides plenty of instructions with diagrams showing you how to construct it.

One of the most interesting projects is the picture digitiser. It is a device that allows you to scan a photograph, design or drawing and see it appear on the screen of your micro.

The author stresses that although it is a crude adaptation of the professionally made digitisers and that very fine details will be lost, you should still get a lot of satisfaction out of building and using it.

Easy Add-on Projects is one of the most practical books we've come across as the author not only suggests devices that can be built to expand your micros capabilities but also shows you how to do it. And once you've tried out some of Bishop's designs you should have enough confidence to think up and build some of your own.

PRINT OUT

Microholics

by Richard Howell

Unwin Paperbacks £1.95

There aren't many computer books that have us roaring with laughter but *Microholics* is one that does.

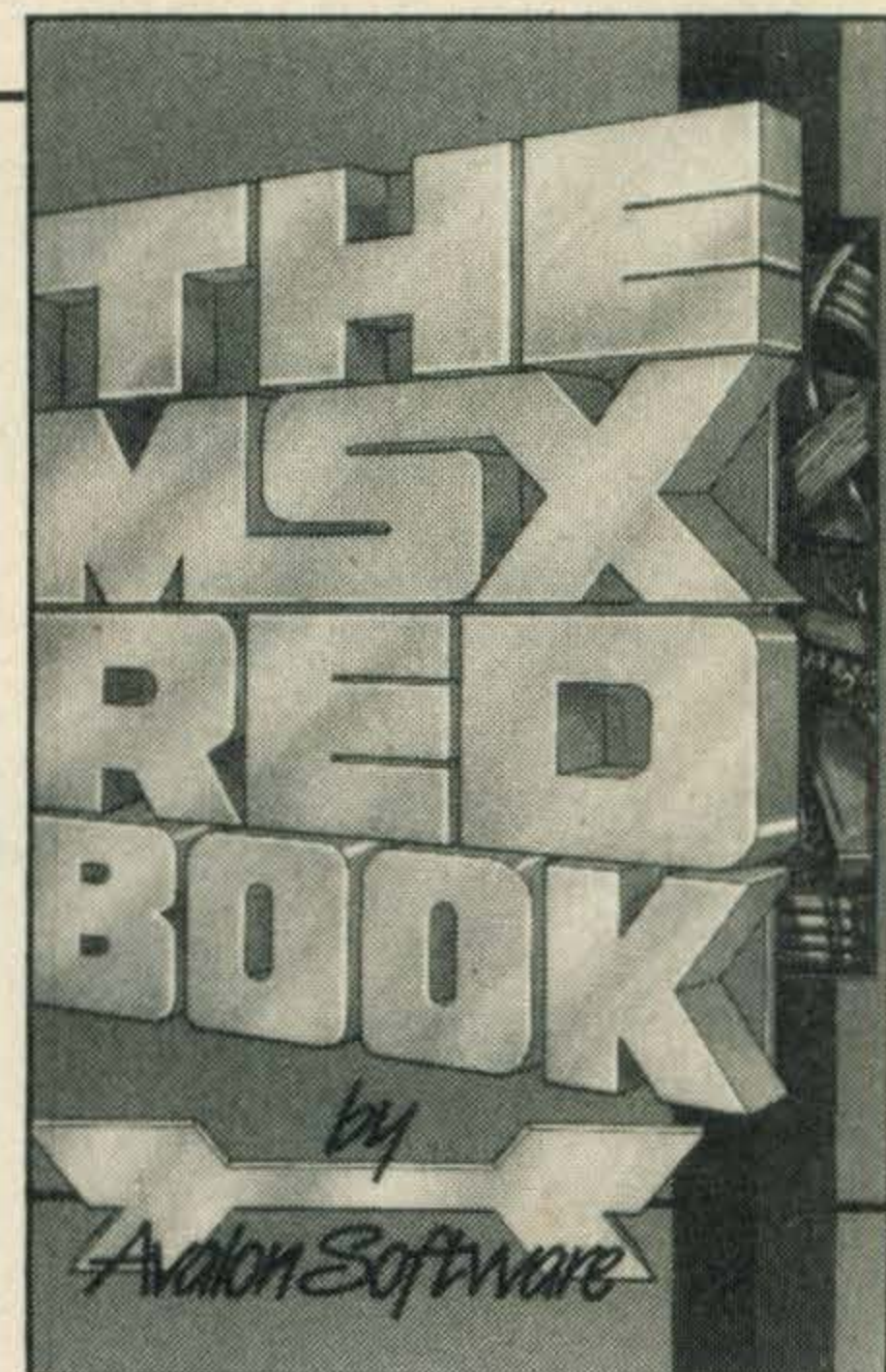
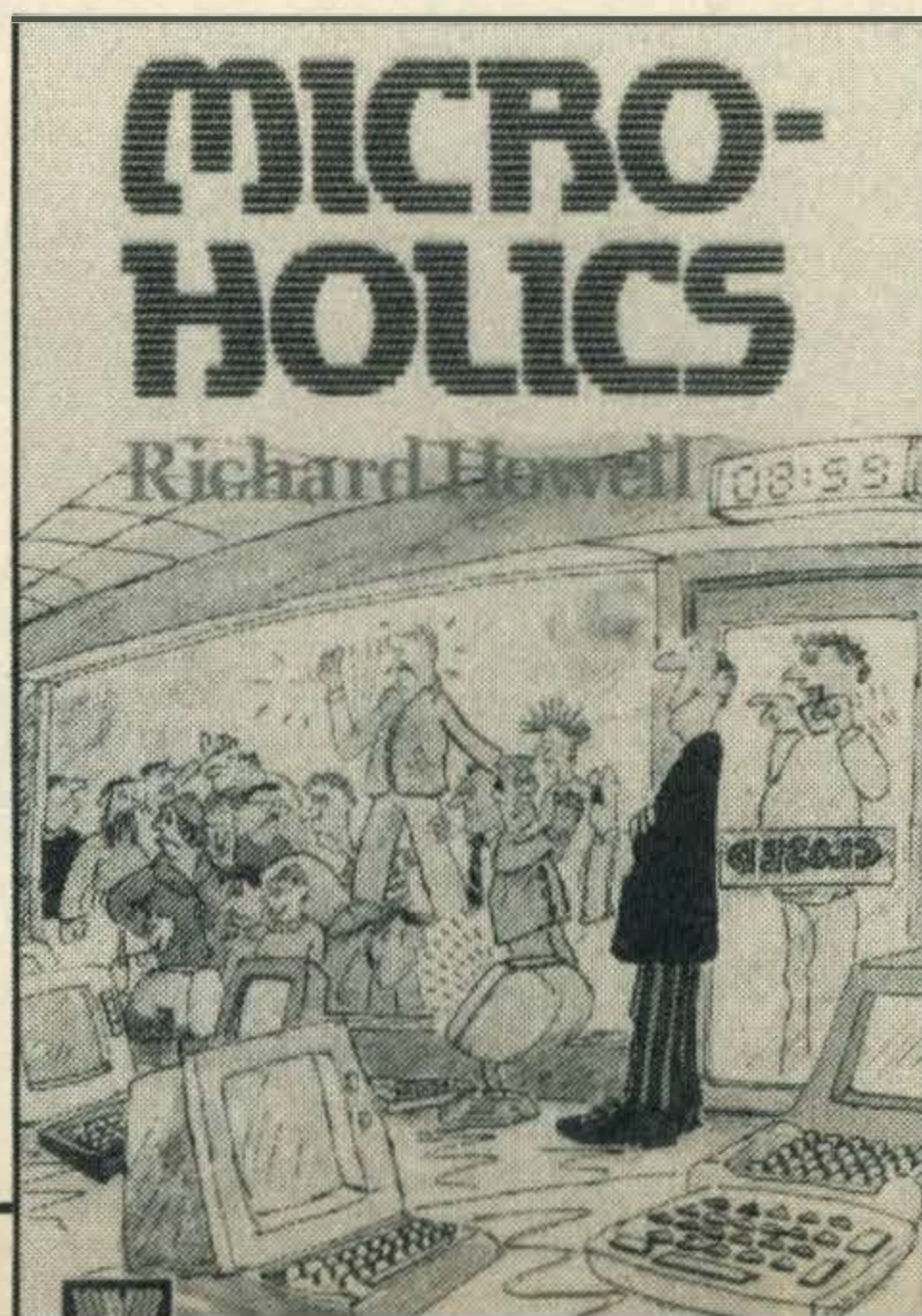
The first cartoon starts off by describing a computer shop as a 'gold mine of hi-tech paraphernalia — a symbol of The-Man-In-The-Street's accession to the Scientific Age' and goes on to say that the same premises which 'two weeks ago sold teabags to old ladies now deals out microchips to the masses'.

This is then followed with an hilarious selection of cartoons set in a micro shop, the funniest of which has the salesman telling the customer (an elderly woman) that she ought to buy a computer because 'This one has eight I/O ports, dual floppies, enhanced ROM performance — and it'll match your regency wallpaper!'

'Hazards to Health' is slightly different as the cartoons depict symptoms that can (and do) befall the micro-fraternity. For example many computer users suffer from *Microbesity*, in other words an expanding waistline, (computing is after all a sedentary pastime).

Howell also warns against the peripheral diseases that can be picked up. These include *Tapeworms* if your tapes aren't bought from a reliable source, and a *Slipped Disk* which could lay you out for weeks!

If you're looking for some light relief between typing in listings or zapping aliens invest £1.95 in this title, it'll have you in stitches.



The MSX Red Book

by Avalon Software

Kuma £8.95

No matter how hard you try there comes a time in most BASIC programming in machine code.

However without detailed information on the design of the Z80 microprocessor, video display processor and the sound generator you're not going to get very far.

And, to make things difficult MSX manufacturers (and many others) are very reluctant (for technical and commercial reasons) to give out anything more than a brief run down Microsoft's MSX BASIC and an even briefer outline of the system hardware.

This means that machines coders end up tearing their hair out for lack of information. But the good news is that *The MSX Red Book* delves where no other text has delved before (or so it claims) and reveals all. And after working your way through the text the author's reckon you should understand the inner workings of your MSX fairly well.

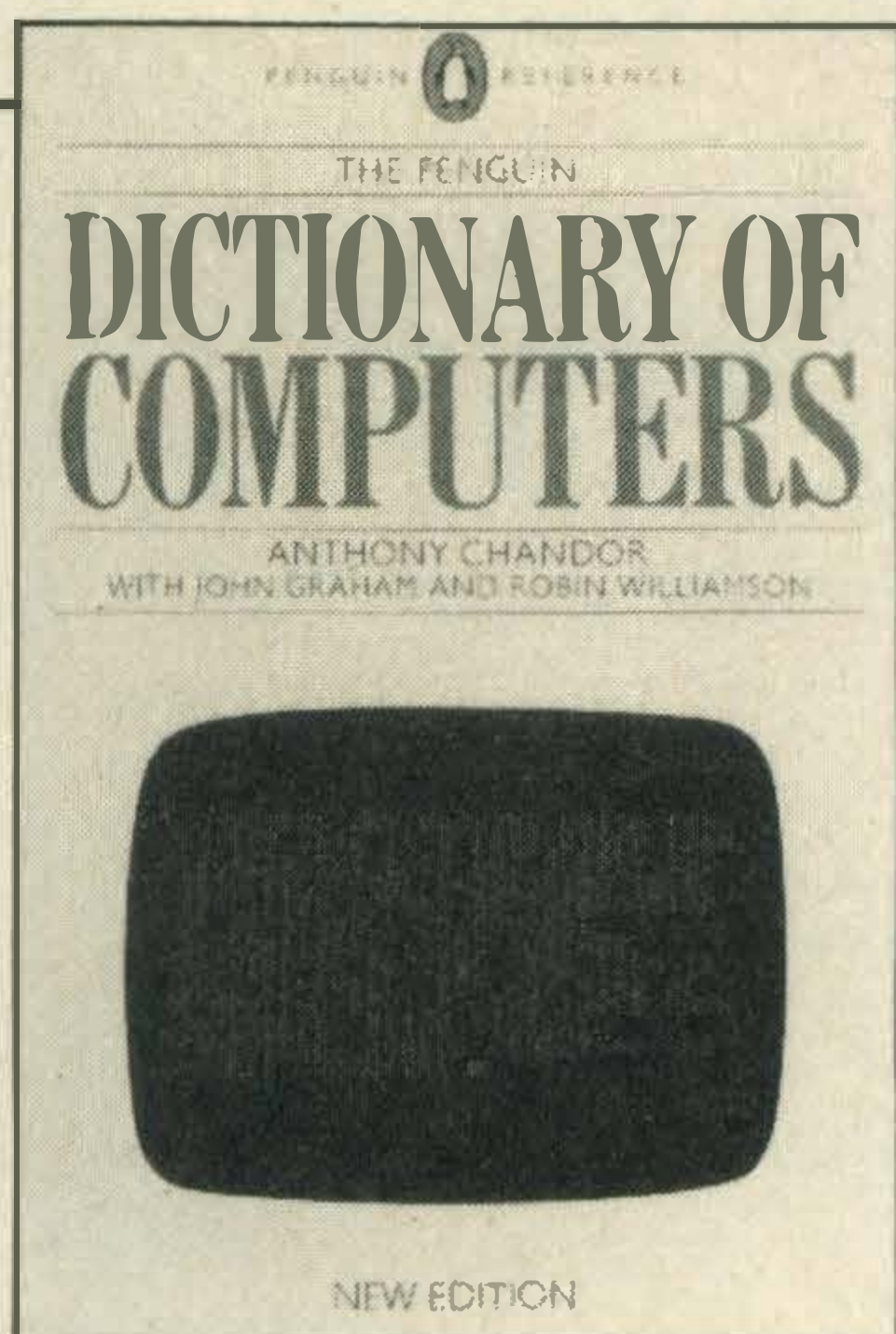
The first three chapters start by describing the operation of the programmable peripheral interface, video display processor and the programmable sound generator respectively. Diagrams are kept to a minimum and the text is very technical, but experienced machine coders should have few if any problems grasping the main points.

Chapter four analyses the software in the first part of the MSX ROM known as the ROM BIOS with the remaining ROM, the BASIC interpreter being covered in the following chapters.

In the chapter there are plenty of examples of machine code programs that make use of ROM features and many useful utility programs including a screen dump and a character editor.

The MSX Red Book is by no means a light read, but is designed to be used as a reference book that serious (and I mean serious) programmers will want to continually refer to.

With a price tag of £8.95 the book is by no stretch of the imagination expensive and contains a good deal of information that isn't found in any manufacturers manuals.



The Penguin Dictionary of Computers

by Anthony Chandor
Penguin £3.95

Most of us whether laymen or computer users have at some time or another been baffled and confused by computer jargon and its at times like these that a good dictionary is essential.

The Penguin Dictionary of Computers was one of the first computer dictionaries to appear on the bookshelves back in 1970. Since then despite the appearance of competitive dictionaries its popularity has increased and it has been through several reprints.

This latest edition has been completely revamped so as to keep abreast with new technology and terminology and will no doubt prove to be just as popular as previous editions.

Naturally it includes many of the already familiar definitions such as byte, EPROM, sequential processing, duplexing and data base. But, it also contains a lot more definitions that probably aren't so familiar.

For example, few understand what is meant by the crippled leap-frog test (I didn't) or graceful degradation and fewer still unless they're electronics buffs will know that a card cage isn't a new device for housing you pet budgie but a structure in which printed circuit boards can be mounted!

The author stresses in the introduction that his dictionary aims to provide a readable glossary giving as much information as possible and it does, many of the definitions are cross referenced so that you finish up by not only understanding a particular term but also its applications.

And, interspersed with the definitions are seventy general articles dealing with topics which require more generous treatment than can be given in a conventional definition, for example the article on Information Retrieval Techniques reviews all the techniques and highlights their differences.

If you haven't got a dictionary then this one is worth investing your hard earned cash into as it will broaden your vocabulary and improve your spelling!

Our latest batch of books includes two MSX specific texts and two general interest titles on hacking and computer projects. Reviewed here by Julia Alexander

The MSX Standard, The New Computers

by Robert Chapman Wood
John Wiley and Sons £14.95

The blurb on the back cover of this title claims that the author gives a 'fascinating insight into what the MSX standard can mean to computer users and consumers' and having read the book from cover to cover we have to agree . . . he does!

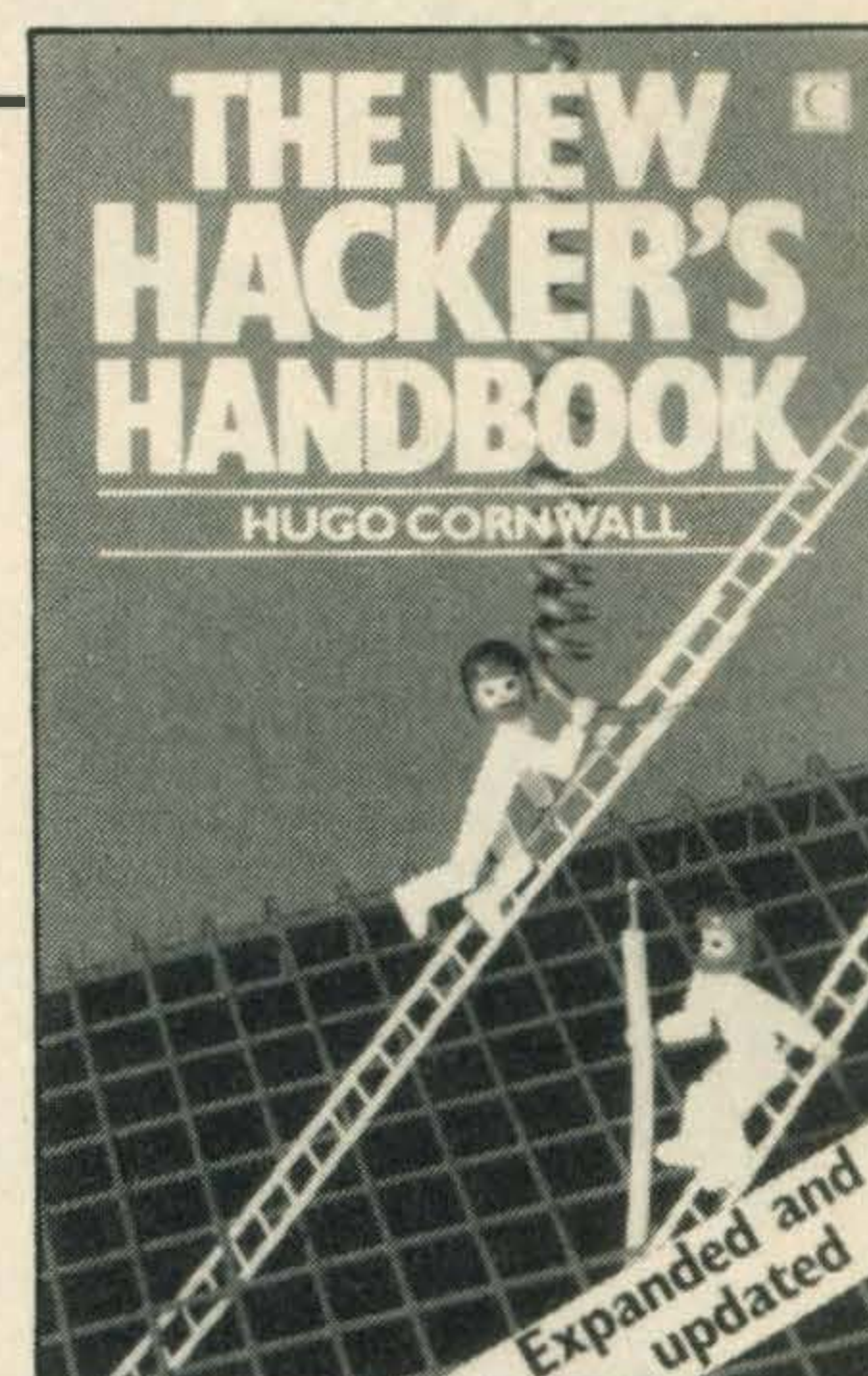
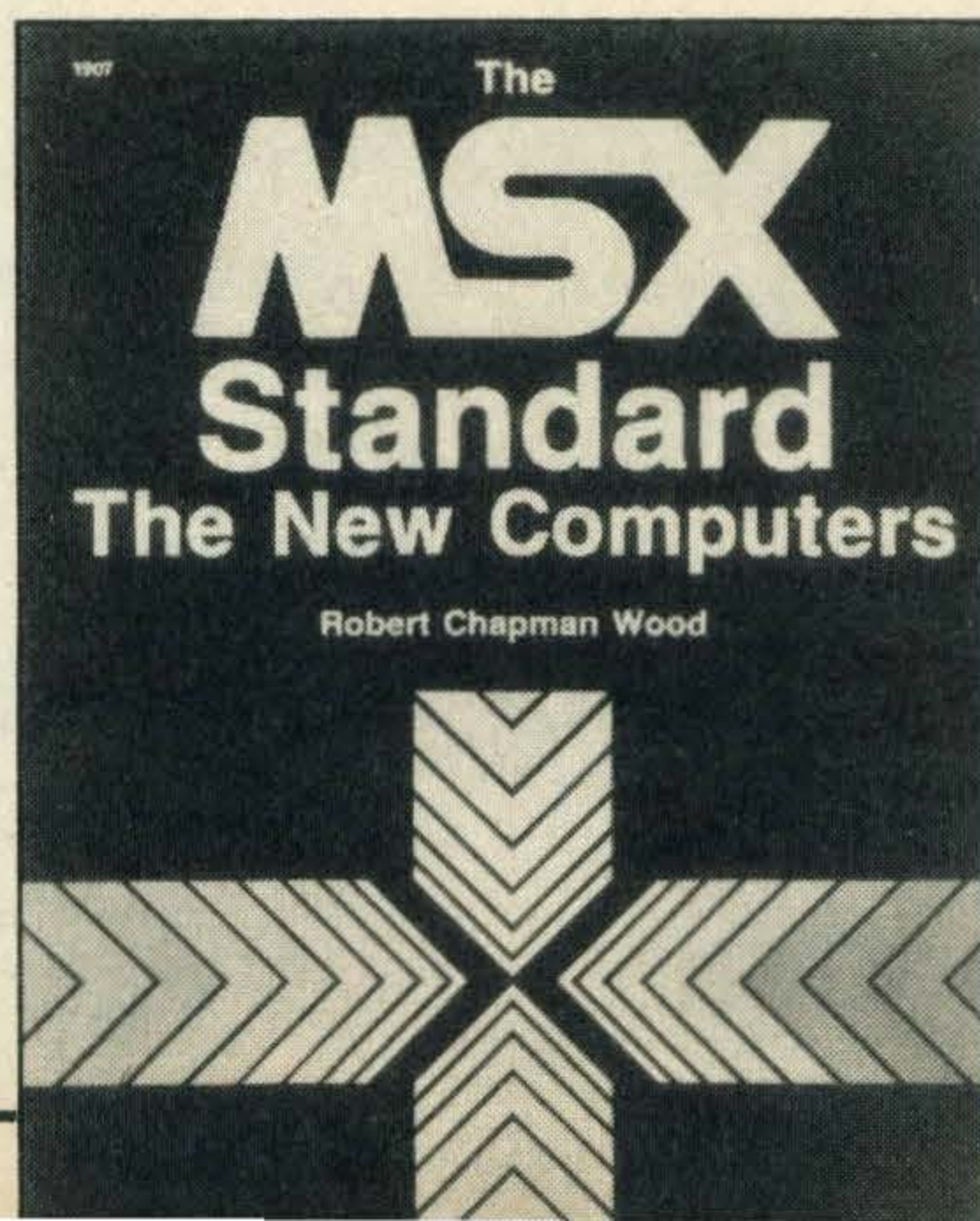
The first two chapters focus on what MSX is and how it came about. This includes a discussion on MSX 2 which is interesting as this will soon be available in the UK.

The next seven chapters aim to help you get started with your micro, how to choose peripherals, get to grips with BASIC programming and how to use a disk drive.

In the following chapters Robert Wood discusses the many ways in which you can put your MSX to good use—for creating art, music, playing computer games, communications and home entertainment.

The latter chapter does much to whet the appetite as so few MSX owners realise the potential of their system or that Pioneer's PX-7 is but the first of many micros to have interfaces for hooking up to laser disc players and video recorders.

This is one of the few books we've read that 'glows' with the author's enthusiasm for his subject. It is very well written with plenty of photographs and illustrations and although £14.95 is a lot of money to fork out, you'll be buying a book that will still be relevant when the third and fourth generation of MSX micros appear.



The New Hacker's Handbook

by Hugo Cornwall
Century Hutchinson £6.95

Due to its popularity and notoriety, Hugo Cornwall has expanded, updated and re-released his infamous book *The New Hacker's Handbook*.

The aim of this latest addition, claims Cornwall, is to keep the reader abreast of the latest developments and exploits of the computing fraternity, and to a large extent he has succeeded.

This time round the author hasn't let his imagination run riot and fallen foul of over exaggeration. Instead he has collated a lot of useful information which adds to the title's, credibility.

Included in the text are details of news services, electronic mail developments, bulletin boards and online search languages.

Unfortunately however, he has retained many of the inaccuracies of the previous edition including a re-hash of 'useful' numbers, which I wouldn't mind betting changed virtually overnight (just like last time) once the book was published.

Having said that, for this edition Cornwall has done a lot of leg work and supplies plenty of detailed information on networks, videotex services and modems.

He has also taken the trouble to include a full appendix on RS232C/V24 interfaces and tables listing the standards and tones in common use for the different modems and services.

To be honest the first edition of this book didn't really appeal and it was reviewed by us with a very cynical eye mainly because Cornwall implied that people could break into any system anywhere, which just isn't true. But this time he has done the hacker justice by not telling such tall stories.

The New Hacker's Handbook is an enjoyable and sometimes humorous read and has given me plenty of food for thought and a better understanding as to why computer users have a hankering to break into other people's systems. Cornwall best sums up the habit by saying 'Where else can you find an activity the horizons of which are constantly expanding where new challenges and dangers can be found every day.'

THE WRITE STUFF

There's more to cassette storage than loading your favourite Space Invaders tape. Time Markes explains

In the December/January issue explained how to SAVE and LOAD programs from tape. This month we are going to look at how to read and write tape files from within a program. Since many new readers will have acquired an MSX machine over the Christmas period, I have tried to include a very brief explanation of some topics already covered in more detail earlier in this series. Don't forget to order your back copies!

Most people would think of tape files as containing 'data' — numbers and text. Just to be different, though, we are going to look at how to save pictures on tape — pictures you can create yourself!

Remember that there are four MSX SCREEN modes (0-3). The best one to use for fine graphics is SCREEN 2 which has the highest resolution of 256x192 pixels. To light up a single point (pixel) on the screen, we use PSET with the appropriate coordinates. This sequence, for example, will display a single point (current Foreground colour) in the centre of the screen:

```
10 SCREEN 2
20 PSET (125,100)
30 GOTO 30
```

Line 30 is necessary to keep the program running and thus preserve the screen display. MSX automatically reverts to the previous Text Screen (0 or 1) when a graphics (SCREEN 2

or 3) program terminates.

The most obvious way to rub out a point on the screen is to display the point again in the current background colour; this is similar to the Tippex method for correcting mistakes on a typewriter. The normal default colour setting on MSX is COLOR 15,4,4

The three colour parameters are Background, Foreground, Border — the effect of a different Border colour can only be seen using SCREEN 1, of course. To rub out our centre screen point, therefore, we can use

```
PSET (125,100),4
```

This will display a point in dark blue, the default background colour.

MSX Basic also provides PRESET, another version of PSET, which, if no colour is specified, will display in the current background colour.

MSX Basic also provides PRESET, another version of PSET, which, if no colour is specified, will display in the current background colour (whichever that is). So the more simple instruction.

```
PRESET (125,100)
```

will also rub out a centre screen point — in any colour.

Now we know how to write and rub out on the screen, we can design a convenient method of directing the 'pencil' movement from the MSX keyboard. The most familiar way of controlling screen posi-

tion is with the cursor keys — so perhaps we can borrow the use of these for the duration of the program? If your ASCII code map is always elusive, remember you can check the codes of all the keyboard keys with a sequence like this:

```
10 K$=INKEY$:IF
K$="" THEN 1020 PRINT
ASC (K$): GOTO 10 RUN
```

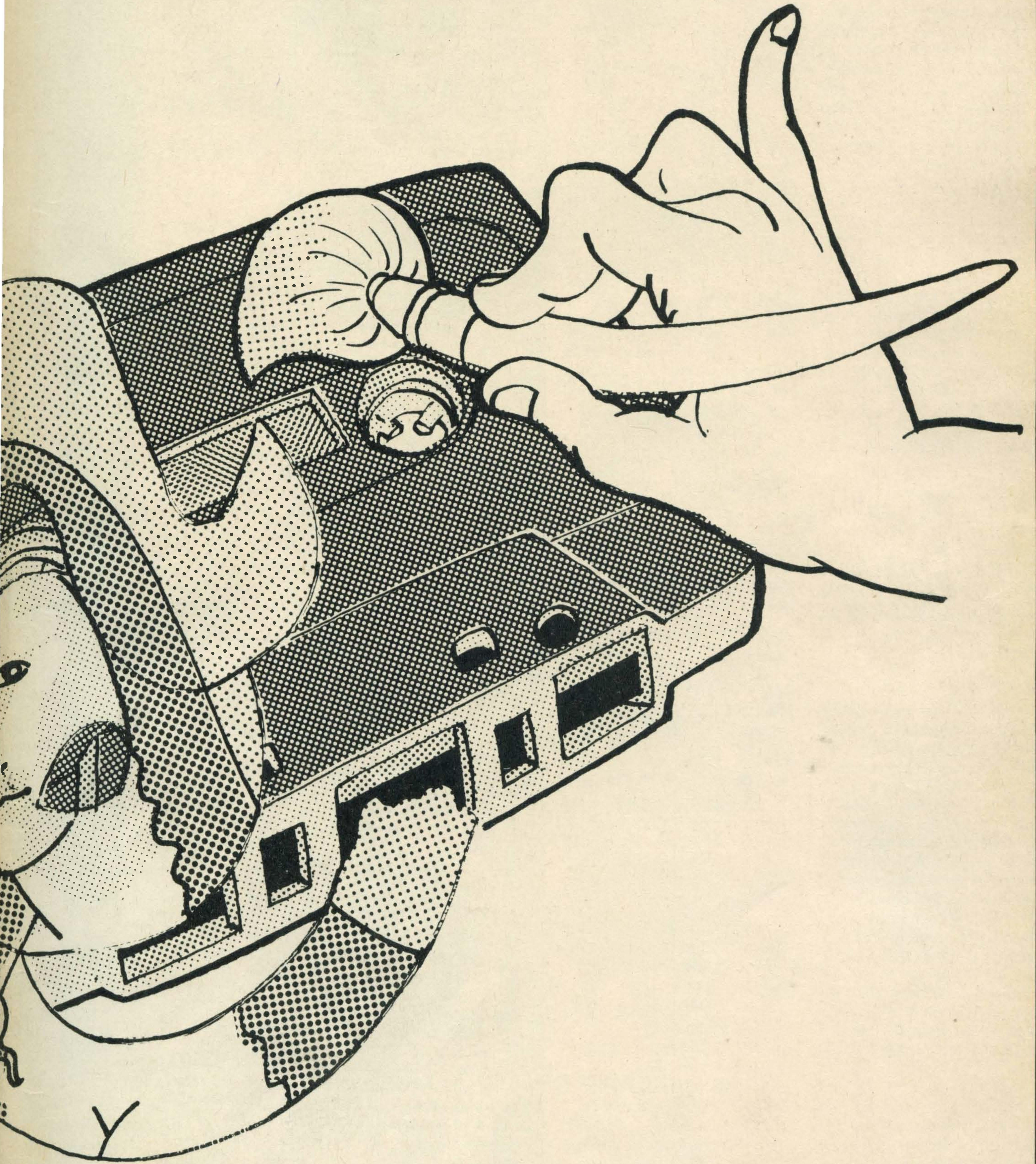
Apart from the usual numbers and letters, you will discover the ASCII codes of most of the control keys — including the Cursor 'diamond'. Check that RIGHT LEFT UP DOWN match the ASCII code range 28-31.

Mixing these ingredients together, stirring skillfully and muttering incantations, we can now produce an instant sketching program:

```
05' Sketch #1
10 SCREEN 2:S=1
20 A=125: D=100
30 PSET(A,D):K$=INKEY$
40 IF S=-1 THEN PRESET
(A,D)
50 IF K$="" THEN 30
60 IF K$=CHR$(32) THEN
S=-1
70 IF ASC(K$)=28 THEN
A=A+1
80 IF ASC(K$)=29 THEN
A=A-1
90 IF ASC(K$)=30 THEN
D=D-1
100 IF ASC(K$)=31 THEN
D=D+1
120 GOTO 30
```

Now you can produce artwork





directly on the screen using the cursor keys — and the space bar as an ON/OFF switch to turn your pencil into a rubber!

That's great, I hear you say — but suppose I want to keep my sketch? Once the computer is switched off, or I run another program, my picture is lost . . . true! Although we can't actually store a line or curve in the MSX, the next best thing is to get the program to 'remember' — and then reproduce — the movements of the pencil.

We usually store groups of numerical or text information in a table or list called an 'array'. Such a variable area is set up using the instruction DIM. It's easy to create a short subroutine which will add the current pencil movement to a simple two dimensional array (P) like this:

```
200 'SUB:Store Artwork #1
210 IF C=0 THEN DIM P(1000,2)
220 P(C,0)=S
230 P(C,1)=A:P(C,2)=D
240 C=C+1:RETURN
```

We then introduce an extra line to the original program — Sketch #1:

```
55 GOSUB 200
```

This will cause each pencil movement to be stored successively in the array P (for Picture). You may remember that I prefer to GOSUB to a 'comment' line in case I need to insert lines at the beginning of my developing subroutine. So far so good, but how do we retain the stored pencil movements when the computer is switched off? Perhaps if we CSAVE the program and subsequently CLOAD, the information in the array P will be dumped and restored with the program? Well it won't, I'm afraid — all variable space is cleared during the loading process.

The answer is to get our Basic program to write the contents of the array P to a tape FILE. Like any manual (paper) file, we need to OPEN the file before it can be written to or read — like this:

```
OPEN "CAS:" FOR OUTPUT AS #1
```

The logical file number #1 will be referred to when we come to write/read to the opened file. For most simple

programs, only one file number will be involved, but if more are needed the value of MAXFILES must be reset. MSX allows up to 15 files to be open at the same time! Before you start designing your next program to make use of this facility, just imagine what physical tape movements will be required? Clearly this multi-file facility is largely for disk handling (e.g. sorting).

The instruction to write to tape is in fact a variation of PRINT — like this:

```
PRINT #1,X
```

As with the normal PRINT to the screen, we can write variables or constants of all types to a tape file. It is also OK to write a string of items — like this:

```
PRINT #1,P(C,0),P(C,1),P(C,2)
```

When we have finished writing to the file, it must be CLOSED (CLOSE #1) and OPENed again when we need to read it — like this:

```
OPEN "CASE:" FOR INPUT AS #1
```

Notice that the file is opened FOR INPUT (rather than OUTPUT). To read a tape file, we do use a variation of INPUT and, like PRINT, can process a number of

```
INPUT #1,P(C,0),P(C,1),P(C,2)
```

To complete processing and close the INPUT file, we can tell if the end of file has been reached by checking the condition of a special reserved word EOF — for example:

```
IF EOF(1)=-1 THEN CLOSE #1
If EOF(n) is set (by MSX) to -1, then we are at the end of file #1.
```

So . . . finally, I include the full 'Doodle-Dump' program showing the freehand cursor-driven doodle routine + optional dump to tape using ESCape (ASCII code 27). To retrieve your sketch — RUN20, remembering to line up the tape correctly first. The program has a limit of 1000 pencil movements — many more than that will require different techniques, which we can look at in a future issue. The program principles in 'Doodle' can be used for many other much more conventional applications.

```
10 SCREEN 2:GOTO150
20 SCREEN 2:GOSUB500
30 GOSUB340:GOTO160
40 '
50 '** Doodle-Dump **
60 '
70 '* CC. Tim Markes FEB86 *
80 '
90 *****
100 'RUN:Sketch PIC (Cursors)
110 'ESCAPE:Write PIC to tape
120 'RUN20:Read PIC from tape
130 *****
140 '
150 S=1:A=125:D=100
160 PSET(A,D):K$=INKEY$
170 IFS=-1 THEN PRESET(A,D)
180 IF K$="" THEN 160
190 GOSUB280:'record move
200 IF K$=CHR$(32) THEN S=-S
210 IF ASC(K$)=31 THEN D=D+1
220 IF ASC(K$)=30 THEN D=D-1
230 IF ASC(K$)=29 THEN A=A-1
240 IF ASC(K$)=28 THEN A=A+1
250 IF ASC(K$)=27 THEN GOSUB430
260 GOTO160
270 '
280 'SUB:Write to array
290 IFC=0 THEN DIM P(1000,2)
300 P(C,0)=S
310 P(C,1)=A:P(C,2)=D
320 C=C+1:RETURN
330 '
340 'SUB:Array to Display
350 SCREEN 2:C=0
360 S=P(C,0)
370 A=P(C,1):D=P(C,2)
380 PSET(A,D):C=C+1
390 IF S=-1 THEN PRESET(A,D)
400 IF P(C,0)<>0 THEN 360
410 RETURN
420 '
430 'SUB:Write to tape
440 C=0
450 OPEN"CAS:"FOR OUTPUT AS #1
460 PRINT #1,P(C,0),P(C,1),P(C,2)
470 C=C+1:IF P(C,0)<>0 THEN 460
480 CLOSE#1:RETURN
490 '
500 'SUB:Read Tape to array
510 DIM P(1000,2):C=0
520 OPEN"cas:"FOR INPUT AS #1
530 INPUT#1,P(C,0),P(C,1),P(C,2)
540 C=C+1:IF EOF(1)<>-1 THEN 530
550 CLOSE#1:RETURN
560 '
570 '
580 '
590 '* CC.Tim Markes FEB84 *
600 '*****
```

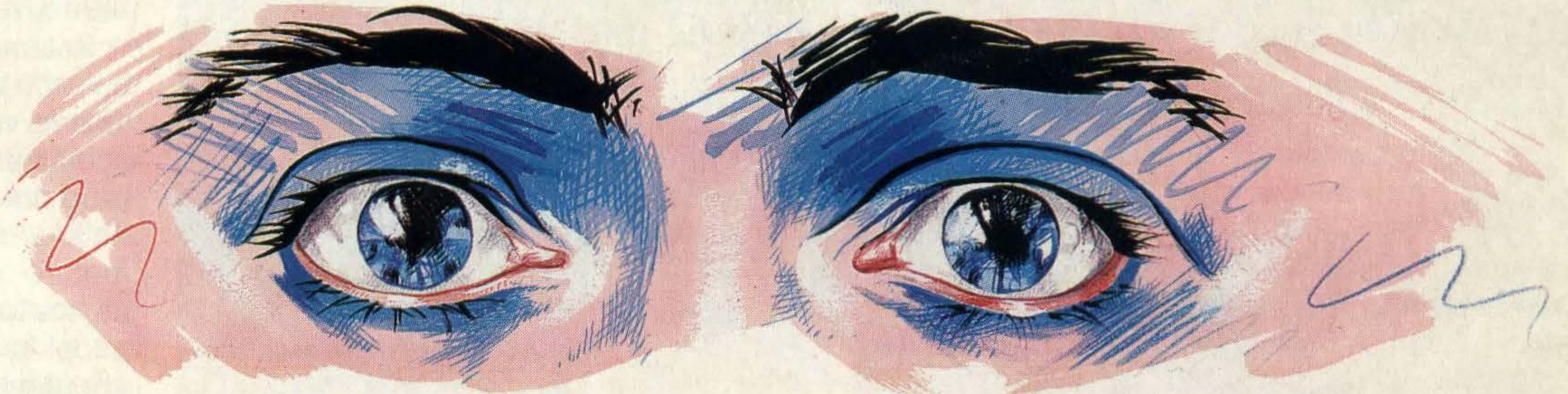
WITH THE PIONEER PX-7 PERSONAL COMPUTER



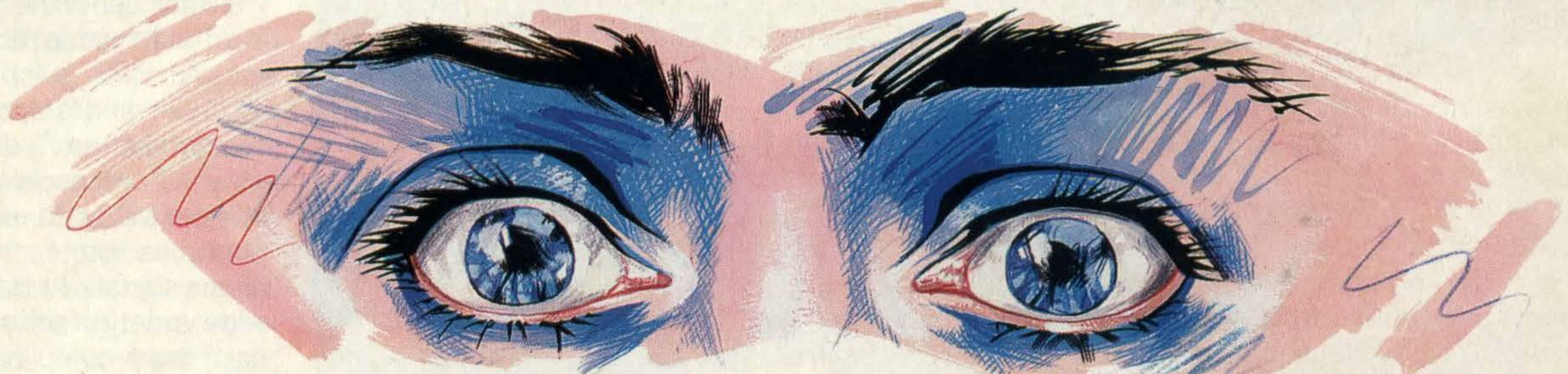
YOU CAN ADD TEXT AND ANIMATED DRAWINGS TO YOUR VIDEOS



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PIONEER

On the crest of a wave

A highly cost-effective package for heavy-duty hi-fi buffs and electronic music makers

We earnestly recommend Wigmore House to come up with a more descriptive name for this product. An "Audio Visual Cartridge" could be almost anything.

Investigating the manual reveals that when the cartridge is inserted into the slot on your MSX machine, it converts it into an oscilloscope display and spectrum analyser of the audio signals sent into the device.

Unless you are a dedicated hi-fi fan this might not make any sense, so before going into a more detailed explanation of this particular product, let's go into the ideas behind it.

An oscilloscope is an instrument used to give a visual display of the waveform of an electrical signal. It consists of a cathode ray tube (television tube in English) in which the stream of electrons, and hence the bright dot on the screen, is controlled by the external signal being measured and by parameters set by the user. When set correctly, the waveform will be displayed on the front of the tube. A waveform is the visual representation of the shape of the audio signals you wish to examine.

A spectral chart is usually obtained using a spectrum analyser. This analyses and separates the constituent frequencies of a particular waveform.

The VC10 can operate either as an oscilloscope or as a spectrum analyser. Like all

cartridges it must be plugged in before switching the computer on, but in this case the optional Wigmore Mouse must also already be attached if it is required, otherwise the program will recognise only the keyboard. The cartridge takes precedence over a disk drive, so if you have one of these plugged in you can let it remain and the machine will revert to using the disk when the cartridge is removed.

When the VC10 is operating, the basic green screen layout does not change very much. The main item of interest is either the waveform or the spectral chart — selecting which one you want displayed is done using the display of icons at the bottom of the screen. If the mouse is not used the cursor keys and space bar act as substitutes.

Sub-menus can be called up on many icons, and selections made by pressing the second mouse button. I found this rather confusing, as it is easy to forget which button to click.

The values of all the user definable parameters are graphically displayed on the right hand side of the screen, although unfortunately without any units, but the setting may be either of two parameters depending on whether you are in oscilloscope or spectrum analyser mode.

Either mode may be used to study an audio signal which is input via the built-in microphone or the two phono sockets

marked left and right. This means that you can shout, sing at it, analyse the dulcet tones of your favourite articulated lorry or make a serious study of recorded or self-played musical sounds — and in stereo as well. Control over the inputs is done by selecting the "source" icon and choosing left, right or mic inputs to be displayed as left or right channel with some limited control over the gain of each one.

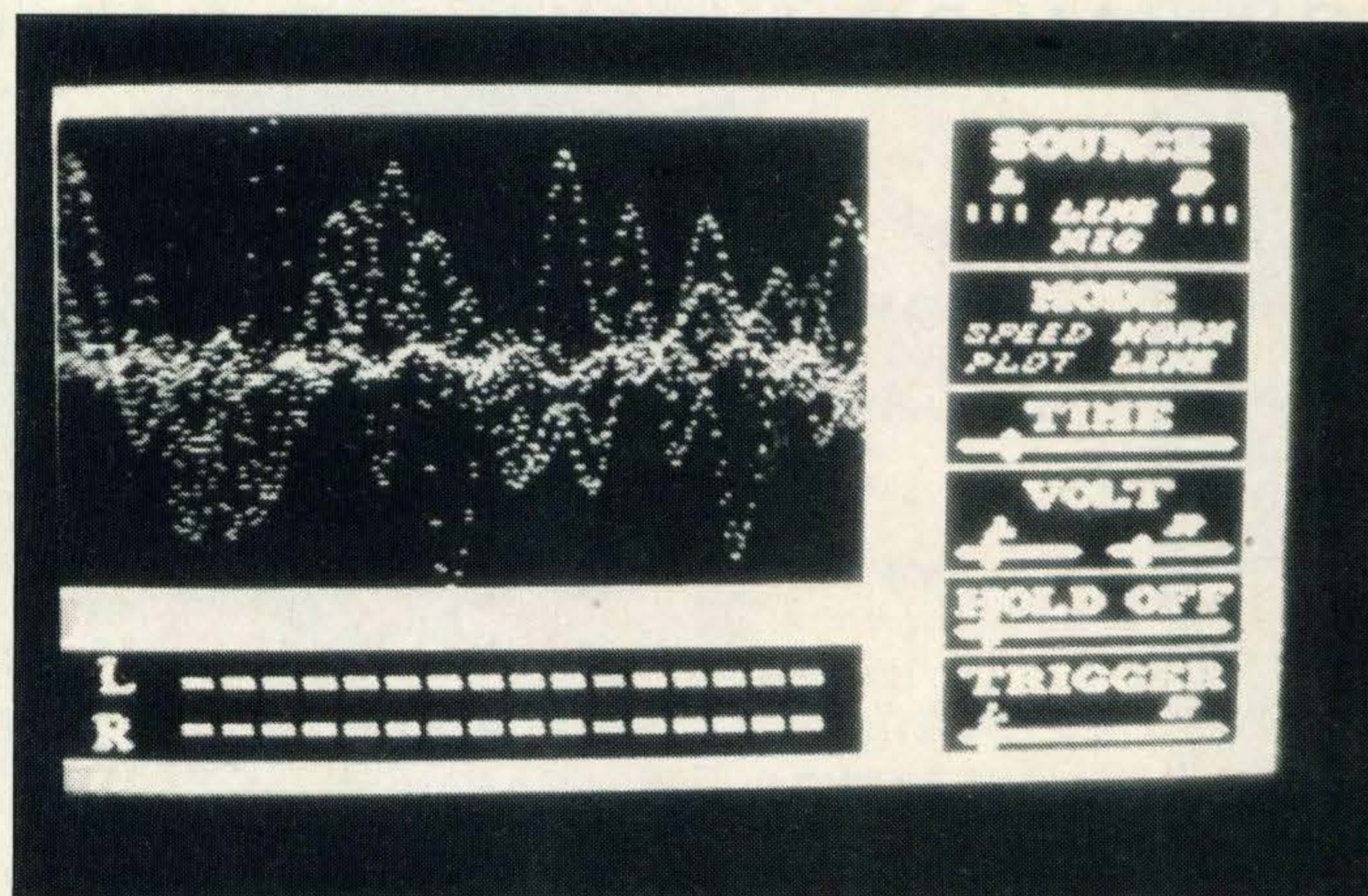
Does it work, you ask? The answer is definitely yes and great fun it is too, when you have finally deciphered the manual and know how to con-

trol all those wavy lines on the screen.

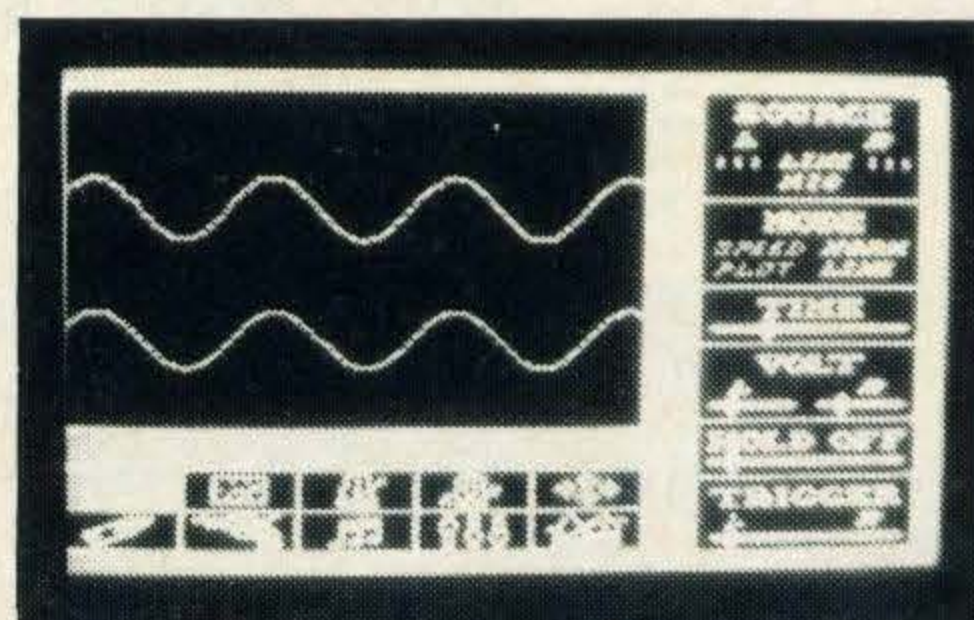
The cartridge was initially run on a Sony Hit Bit into a Philips amber screen monitor and some of the selections were almost impossible to read due to the choice of colour made by the program, which is fixed for those sections of the screen. Having run most of the tests using this equipment, it was then repeated on a Yamaha CX5M with a Sony colour monitor, and in this case the situation was vastly improved with all the details readily visible. With the many colour options available to the user the display can be made highly attractive and readable.

Selecting the musical symbol icon allows you to create a limited variety of sounds, presumably to run through the program via the microphone. This was not the most useful feature since it reduces the device to toy status rather than a tool to analyse other sounds about which you wish to know more.

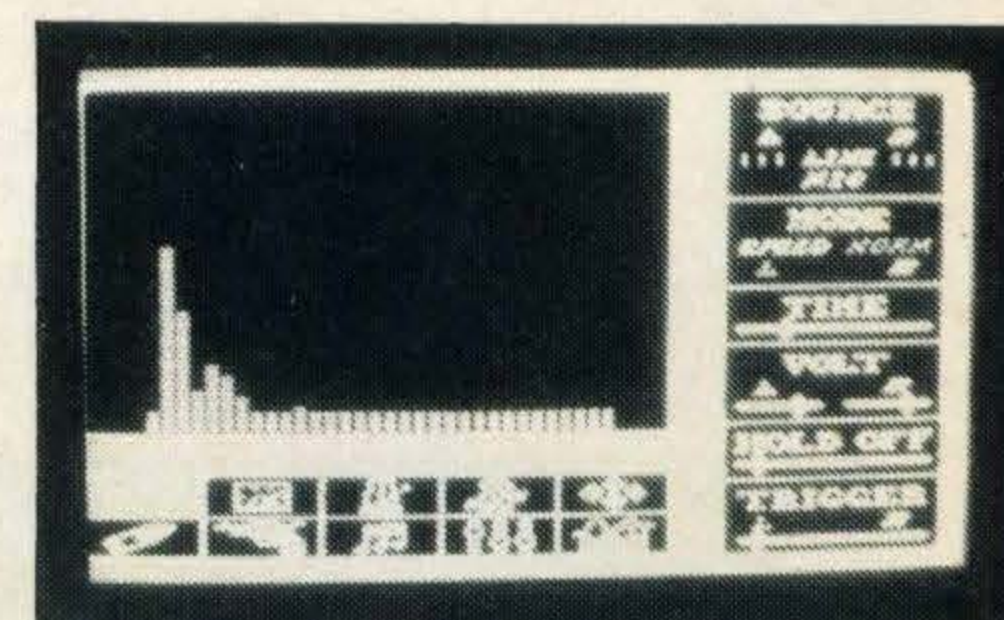
In fact, use of the microphone is of little value due to background noise, despite the facility to set different trigger levels so that the wave display does not start until required. A better alternative is to use the two phono sockets which allow clean signals to be studied. A wide variety of sounds was tried from the previously mentioned



Not the sky at night, but a disintegrated waveform



A bargraph in SPEANA mode



Waveform in OSCILLO mode

radio (other music gave the same results) to complex waveforms constructed on a professional digital synthesiser and even simple SIN waves.

In OSCILLO mode, when scanning, the waveform display is accompanied by a peak level meter which replaces the selection panel of icons and shows both channels simultaneously. The wave, however, is constantly moving while scanning, which makes accurate determination of the shape difficult, although it is frozen when scanning is interrupted.

Unless careful choice is made of the vertical and horizontal 'spread' setting the wave disintegrates into a formless pattern of dots that owes more to the sky at night than a continuous line. It is not clear whether this lack of resolution is due to the inherent limitations of the video capabilities of MSX or the program itself.

In SPEANA mode, one of the channels is shown as a bar graph, but with the peak level meter showing both L and R as in OSCILLO mode. Similarly, the display is constantly shifting when scanning, but freezes when stopped. The second bar from the left represents the reference frequency set by the user and the height is then the amount of that frequency component in the overall sound. The bars to the right are twice, three times, four times that reference frequency, and so on, whereas the first bar is half the second. In theory, then the graph can show a component up to 31 times the reference frequency.

In practice, however, this is unnecessary since you rarely find anything higher than the tenth harmonic. A faster response is obtained if speed mode is selected and the bars are paired, only allowing up to the fifteenth harmonic, but as explained this is usually quite sufficient. Unfortunately if you are attempting to analyse a particular tone, for example a synthesiser 'voice' the reference frequency should be set at the fundamental frequency. In other words, if you play middle C (256 Hz) into one channel of the VC10 the reference frequency should be set at 256 Hz, but the increments in the adjustment only allow a nearest

setting of 243 or 303, which rather limits the value of the chart.

Having made the desired analysis, we now wish to save it in order to compare to other charts. Here we strike the biggest drawback with the VC10. No printer facility! This is really an inexcusable omission since any results obtained are therefore lost when power is switched off which again leads one to suppose that this is little more than a toy, as opposed to a serious tool for the musically inclined.

The implementation of the mouse is acceptable without

being of a Macintosh standard. There is no freedom of movement for a cursor character as on the Mac, but a duplication of the step-by-step action generated by the cursor keys.

However this module should also be recognised as a stand-alone unit since it can be very successfully operated by the keyboard alone, or in fact somewhat advantageously in conjunction with the mouse, when faster adjustment of some settings can be made using the cursor keys. In some cases the mouse appeared to be slipping, as the adjustment on screen was not smoothly

executed. Different surfaces were tried but with little effect, although I can say that a polished wood table is not suitable as the sliding feet take the polish off (oops!).

At £97.75 the price is not out of this world, but if you take the mouse as well at £69.90 it is beginning to get pricey, however that does include a graphics software program on cassette. When you compare this with a professional digital oscilloscope with a freeze feature at a cost of £2000, which in the musical context does no more than the VC10, then this package is a very good deal.





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December 85/January 86

Make the most of your micro's memory and reach the parts you've never reached before. We show you how to load and save those programming masterpieces

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Just send your name and address plus a £1.45 cheque or postal order made payable to Haymarket Publishing Ltd, to **MSX Computing Book Sales, 12-14 Ansdell Street, London W8 5TR**, stating which issues you require.

Listed below are the currently available back issues with a brief description of the major features, tests and reviews in each. All issues carry software reviews and listings.



compatible printer with the aid of control codes

Make music with Digital Music System's latest music cartridge

We put Toshiba's word processor, Bank Street Writer, through the mill

February/March 86

The Cat tested — a tracker ball to control games and serious applications.

Formatting the screen display for BASIC programmers with lots of text and numbers to handle.

Exclusive Sorcery map shows you the way around Virgin's best-seller.

Mike Gerrard explores Level 9's Worm in Paradise.

Word processing and programming books reviewed.

The world's first MSX camera.

EVENT QUEUE

In the June/July issue of *MSX Computing* we show how you can go about making hardware additions for your MSX machine. Starting right from basics we open up the mysterious world inside the MSX case and introduce the tools and techniques you need.

We've been impressed by the quality of program listings sent in recently, and our highlighted Feature Listing is *Dambusters*, an exciting WWII action game.

Stuck somewhere in *Knightlore*? The secrets of Ultimate's bestseller are unmasked by our two-page map.

Plus a bumper software review section, books, listings and your Adventure problems solved. On sale Wednesday 11th June.

(Contents subject to late revision)

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Adventure Quest

Stuck in the goblin's dungeon? Lost in a maze of twisty passages? Mike Gerrard, arch adventurer, is here to offer help and advice

Having devoted most of last time's column to a worm (the one Level 9 put in paradise, if you missed it), let's catch up on readers' problems.

I had two letters in the same post from readers both stuck in the same problem, and that's the Roman Hypocaust that appears in Time Zone 8 of *Lords of Time*, also from Level 9 — and if they get a lot of mentions it's because they've had the good sense to publish lots of MSX adventures. But back to the Hypocaust, a mean maze if ever there was one. I normally print answers to problems backwards, so readers who are currently trying to figure something out don't read the solution inadvertently and have the challenge spoiled for them. But as this one involves a sequence of directions you must take, I think I'd better print it forwards otherwise you might find yourself disappearing up your own Hypocaust.

Readers who don't want to know kindly rejoin us at the start of the next paragraph. The readers who did want to know were Anthony Bevan of Horsham in West Sussex and J. Magee from Barry, South Glamorgan. For their benefit and anyone else, take a drink before you go into the Hypocaust, and make sure your drinking horn is full of water. Thirsty work, crossing Hypocausts. When in, the directions you must take are SOUTH, SOUTH, WEST, WEST and SOUTH, and you may have to take a drink along the way.

Having written back to Anthony Bevan I heard from him again, saying that he'd now survived that section and had reached the end of the game, but was having difficulty throwing the nine ingredients into the cauldron. A skeletal hand kept stopping him, which he said his wife suggested was a sinister omen as Anthony's 66 years old! It goes to show that not all adventurers and MSX'ers are teenage whizz-kids. I gave Anthony a hint on dealing with the skeletal hand, involving the throwing of a small smooth object, though I wasn't able to guarantee that this would work in real life.

A recent survey done by The Adventurer's Club Ltd showed that its 2,000 or so members covered a pretty wide age range, too. About half were in the 18-35 bracket, and about a quarter were over 35. Perhaps that's because there's a comparatively high membership fee of £10.95, but it's worth it as the club does give very good value for money. It covers all types of machines, and although as yet the MSX membership is small, if you'd like another regular dose of adventure reading besides *MSX Computing* then contact the club at 64-c Menelik Road, London NW2 3RH (01-794 1261). For your membership money you get a very thick dossier every month (usually at least 20 pages), containing reviews, news, interviews, hints and discounts on software, as well as access to a regular phone-in helpline five days a week. As Level 9's Pete Austin recently agreed to become the club's Honorary President and contribute a monthly column to the dossier, that gives it the seal of approval in anyone's eyes.

But back to our own helping hints, and *The Hobbit* this time. Gollum's riddles were causing problems for Mrs Lloyd at RAF Laarbruch, who wrote to me after spending four weeks trying to puzzle them out for herself. Little did she know that in fact you don't need the answers to the puzzles. If you try to answer but get it wrong, then you get what's for, but if you simply refuse to answer and carry on wandering round the locations, nothing happens to you. Just ignore Gollum, despite the fact that he'll follow you and keep asking the riddles.

Lords of Time (again) was providing some riddles for Vicki Hanley, who said if I didn't help her soon she'd end up pulling all her hair out in frustration. As we don't want bald readers, here are some of Vicki's problems solved:

- 1) Getting the keys from under the shed: TENG AMASA ENOTS EDOLE HTESU.
- 2) Getting the silver coin. You've got several things to do before you can get this, but the first step is: NIAG APAE



HTSOP MOCE NIM AXE.

3) Filling the Porsche with petrol: T'NOD UOY.

As a diversion to prevent too many other readers doing Kojak impressions, let's continue our advice on adventure playing by looking at one of the problems that was causing Vicki trouble, which was getting a silver coin from out of a compost heap. If you come across a puzzle, don't assume that you will be able to solve it at once, and that if you can't you must be doing something wrong. Problems are often put in the first few locations of an adventure which in fact can't be solved till almost the end of the game. I was recently playing an adventure on another computer where a pirate appears very early on. I battled away for a while trying to get at the pirate's treasure by every method, fair or foul. I attacked him with daggers and swords, tried to bribe him with food and drink, but nothing worked so I carried on playing till eventually, almost at the end of the game, I found something which I thought might work. So I went travelling back to the start, and the pirate was pacified.

This applies wherever you happen to be in an adventure, not just at the start. If you need to solve a problem you can bet your boots that the answer won't be lying around in the location next door. Lets face it, if you were writing an adventure, would you make it so easy?

Another factor to consider is that problems aren't always solved directly. You might have to carry out several acts before coming up with something that will solve the original problem for you. With the unobtainable silver coin in *Lords of Time*, for instance, you first have to find another object close by, then do something to that whereupon you'll encounter another character, and if you can then do a good deed for that character (which involves travelling to another time zone and later returning) you may be rewarded with the silver coin. Level 9's adventures frequently involve complicated puzzles like that, so don't be afraid to go off and leave a problem unsolved in the hope that you can come back to it later.

Lords of Time

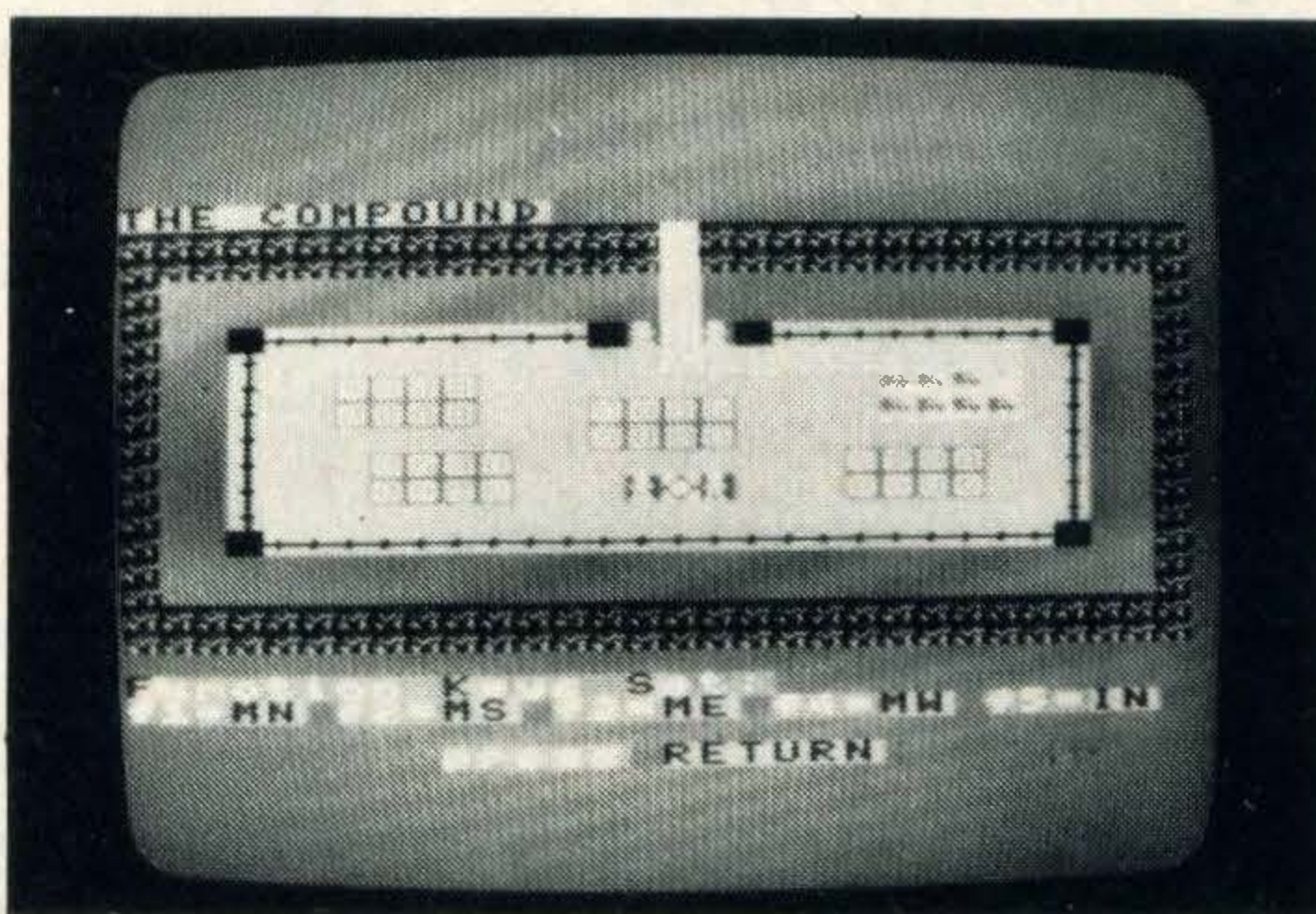


Level 9 Computing

Level 9's *Lords of Time* and *Lothlorien's Special Operations* are still very popular with adventurers old and new and are rapidly becoming classics in their own right

Sometimes, though, you're unable to go off and explore, as Scott Webster from Rotherham found in Melbourne House's *Classic Adventure*. He discovered that on returning to where he'd snuffed out the snake, he heard an announcement telling him that the caves were closing and he was transported to a couple of locked locations. It's just coincidence that you happened to be returning to the snake, Scott, as the closing of the caves could happen with you anywhere, it's something that comes about after a certain number of moves and from which, I'm afraid, there's no escape. You've just taken too many moves to solve all the problems and will have to try again.

Melbourne House has recently produced a sequel to *Classic Adventure* on several



other machines, *Morden's Quest*, though in fact it has almost nothing to do with the original, and there are no plans to release an MSX version at the moment.

And the next reader please. Robert Clark of Bradford wrote without giving his address (typical tight-fisted Tyke), so I was unable to write back and help with his problems on *Classic Adventure* and *Special Operations*. Snakes and fissures were holding Robert up, so:

- 1) To cross the fissure: DORK CALB EHT E VAW.
- 2) To kill the snake: DRIB EHT ERF D NAET ULFE HTY ALP.

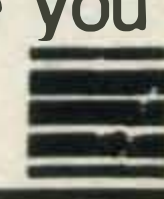
Note that to kill the snake in *Classic Adventure* you have to get musical, too, though in *Colossal Adventure* that doesn't apply.

In an earlier issue I mentioned that Kevin Walsh was having trouble getting past the guards and into the compound in Lothlorien's *Special Operations*, and as well as Robert Clark of no fixed abode, several other readers have also written in with the same problem. I wasn't able to help as in fact I only got hold of a copy of the game the other day, so I'm grateful to Peter Mitchell, Paul Kerlake, A.H. Baker and David Styles, who all took the trouble to write in with the answer. To get past the guards you need: SESS APDN ASMR OFINU. One of these must be: DEGROF. You find both of them by: SEER TEHT GNIH CRAES. You'll also need a password, and to get this: EVAC MORF KOOB REHP ICED. Peter Mitchell adds a warning, that when the guards ask you for your passes and you're invited to press RETURN, don't press RETURN but press F5 instead.

After his help on *Special Operations*, David Styles asks how to stay down the wells in *Red Moon* without running out of breath. You're going to need three things, David: KSALF DNA KSAM SAG, GNIBUT.

David's also having trouble restoring his saved games with *Red Moon*, and all I can say is that when I've done that it's worked perfectly so there's possibly something wrong with the cassette recorder, or you may have a faulty tape. I assume you've tried pressing RETURN or typing LOOK to see if there's any response to that. But if your tape recorder is working properly when saving other adventures, it might be worth contacting Level 9 to see if you can have a replacement tape. Level 9 is one of the friendliest and most helpful software houses, so don't be afraid to ask for advice.

And don't be afraid to ask my advice either — or offer some tips yourself if you're feeling pleased at completing an adventure or simply cracking a particular problem. If you're having problems figuring out *Zakil Wood*, don't forget to send me a stamped addressed envelope and I'll let you have a copy of the solution. See you next time.



FIVE FINGERED

EXERCISE

SKIVER by A.J. Ellis

In the first of our two feature listings this month, you are put in charge of the gearbox production line in a large automated car factory. Since it's hard working for a living you prefer to spend your time playing cards while the robots take care of the work — but now your supervisor has caught you at it, and hidden your cards, playing table and chairs in various locations around the factory.

Your only chance of turning the tables is to use the factory robots to find your missing equipment, while avoiding the hazards of the running production line. Control is by the joystick, and pressing the fire button ducks the robot beneath a hazard.

This game is in two parts. Save the first program as "SKIVER" and the second as "CAS:".

```

1 REM ** SKIVER TITLES **
2 REM ** BY A.J. ELLIS **
3 REM ** 1986 **
10 SCREEN 2:COLOR 7,1,1:CLS
20 OPEN "grp:" FOR OUTPUT AS #1
30 DRAW"BM0,40C10U8R82E32R29F8L10D8R1
8F8L26D8R114D8L137U16L16G16L85"
40 DRAW"BM133,32U24L16G8R16D16R8"
50 PAINT(125,36),10
60 PRESET(98,52):PRINT#1,"presents"
70 LINE(0,71)-(256,71),15
80 LINE(0,120)-(256,120),15
90 X=53:Y=89
100 COLOR 2
110 FOR N=1 TO 16 STEP 2
120 PRESET(X,Y):DRAW"S4C2H5L10G5D5F5R
10F5D5G5L10H5"
130 LINE(X+15,Y-5)-(X+15,Y+25)
140 LINE(X+15,Y+15)-(X+35,Y-5)
150 LINE(X+20,Y+10)-(X+35,Y+25)
160 LINE(X+50,Y-5)-(X+50,Y+25)
170 LINE(X+65,Y-5)-(X+80,Y+25)
180 LINE-(X+95,Y-5)
190 LINE(X+130,Y-5)-(X+110,Y-5)
200 LINE-(X+110,Y+25)
210 LINE-(X+130,Y+25)

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220 LINE(X+110,Y+10)-(X+125,Y+10)
230 PRESET(X+145,Y+25):DRAW"C2U30R15F
5D5G5L15R5F15"
240 X=X+1:Y=Y-1
250 NEXT N
260 COLOR 7:PRESET(122,130):PRINT#1,"
by"
270 PRESET(93,145):PRINT#1,"A.J.Ellis
"
280 PRESET(114,160):PRINT#1,"1986"
290 PRESET(40,180):PRINT#1,"loading..
..please wait"
300 RUN"CAS:"

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```

1 REM ** SKIVER **
2 REM ** BY A.J. ELLIS **
3 REM ** 1986 **
10 SCREEN 0
20 KEY OFF
30 COLOR 7,1,1:CLS
40 PRINT"
50 PRINT:PRINT:PRINT:PRINT" INSTRUCTIONS"
in charge of the gearbox
production line in a car fact
ory."
60 PRINT:PRINT" The manager, Mr.Sako
Kaki, caught you and your colle
agues playing cards during workin
g hours.
70 PRINT:PRINT" He took your cards
, table, and chairs and hid the
m all over the factory."
80 PRINT:PRINT" You must use the
factory robots to get them back."
90 PRINT:PRINT:PRINT:PRINT" PRES
S (C) TO CONTINUE"
100 I$=INKEY$:IF I$="C" OR I$="c" THE
N GOTO 110 ELSE 100
110 CLS:PRINT:PRINT:PRINT" Use joys
tick to control robot."
120 PRINT:PRINT" Press fire button
to duck."

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130 PRINT:PRINT:PRINT:PRINT" SELECT
DIFFICULTY:"
140 PRINT:PRINT:PRINT" 1 = SLOW":P
RINT:PRINT:PRINT" 2 = MEDIUM":PRIN
T:PRINT:PRINT" 3 = FAST":PRINT:PRI
NT:PRINT" 4 = VERY FAST"
150 I#=INKEY#:IF I#="1" THEN V=3
160 IF I#="2" THEN V=5
170 IF I#="3" THEN V=7
180 IF I#="4" THEN V=9
190 IF I#>"0" AND I#<"5" THEN GOTO 20
0 ELSE 150
200 SCREEN 2,2
210 OPEN "GRP:" FOR OUTPUT AS #1
220 FOR X=1TO32
230 READ A:A#=A#+CHR$(A)
240 NEXT X
250 SPRITE$(0)=A#
260 FORX=1TO32
270 READ A:B#=B#+CHR$(A)
280 NEXT X
290 SPRITE$(2)=B#
300 FOR X=1 TO 32
310 READ A:C#=C#+CHR$(A)
320 NEXT X
330 SPRITE$(3)=C#
340 DATA 0,0,0,8,4,2,1,1
350 DATA 3,79,255,255,79,7,0,0
360 DATA 0,0,0,0,0,0,0,7
370 DATA 159,255,255,255,255,31,7
380 DATA 24,60,60,60,24,24,255,189
390 DATA 189,189,189,36,36,36,36,102
400 DATA 0,0,0,0,0,0,0,0
410 DATA 0,0,0,0,0,0,0,0
420 DATA 0,0,0,0,0,0,0,0
430 DATA 3,128,255,7,7,255,0,0
440 DATA 0,0,0,0,0,0,0,0
450 DATA 192,68,206,255,255,206,0,0
460 Z=0:B=101:C=168:C%=0:L%=5:S%=1:F%
=0
470 COLOR 1,15,1:CLS
480 PRESET(10,5):PRINT#1,"Cards":C%
490 PRESET(88,5):PRINT#1,"Robots":L%
500 PRESET(172,5):PRINT#1,"Sector":S%
510 FOR X=50TO185 STEP 45
520 LINE(0,X)-(256,X+5),13,BF
530 NEXT X
540 LINE(48,50)-(65,55),15,BF
550 COLOR 3:FOR X=50TO90 STEP 4
560 PRESET(50,X):PRINT#1,"TS":REM TO
OBTAIN GRAPHIC SYMBOL "TS" HOLD DOWN
GRAPH KEY AND PRESS FH
570 NEXT X
580 LINE(198,95)-(215,100),15,BF
590 FOR X=95TO135 STEP 4
600 PRESET(200,X):PRINT#1,"TS"
610 NEXT X
620 LINE(48,140)-(65,145),15,BF
630 FOR X=140TO180 STEP 4
640 PRESET(50,X):PRINT#1,"TS"
650 NEXT X
660 COLOR 8:PRESET(20,177):PRINT#1,"C
":REM TO OBTAIN GRAPHIC SYMBO. "C" HO
LD DOWN SHIFT AND GRAPH KEYS AND PRES
S
670 COLOR 1:PRESET(180,177):PRINT#1,"
E":REM TO OBTAIN GRAPHIC SYMBOL "E" H
OLD DOWN GRAPH KEY AND PRESS

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680 PRESET(20,132):PRINT#1,"F":REM TO
OBTAIN GRAPHIC SYMBOL "F" HOLD DOWN
GRAPH KEY AND PRESS ;
690 COLOR 8:PRESET(230,132):PRINT#1,"
D":REM TO OBTAIN GRAPHIC SYMBOL "D" H
OLD DOWN SHIFT AND GRAPH KEYS AND PRE
SS ;
700 IF S%=7 THEN GOSUB 1190 ELSE 710
710 COLOR 8:PRESET(80,87):PRINT#1,"C"
720 COLOR 1:PRESET(230,87):PRINT#1,"E
"
730 PRESET(20,42):PRINT#1,"F"
740 COLOR 8:PRESET(180,42):PRINT#1,"D
"
750 FOR DLY=1 TO 300:NEXT DLY
760 PUT SPRITE 0,(Z,158),14,0
770 PUT SPRITE 1,(Z+140,113),14,0
780 PUT SPRITE 4,(Z+70,68),14,0
790 PUT SPRITE 5,(Z+210,23),14,0
800 PUT SPRITE 2,(B,C),4,2
810 IF B>248 THEN B=248
820 IF B<0 THEN B=0
830 ON SPRITE GOSUB 1100:SPRITE ON
840 Z=Z+V
850 IFZ>256 THEN Z=0
860 S=STICK(1)
870 IF C=168 AND S=3 OR C=123 AND S=3
OR C=78 AND S=3 OR C=33 AND S=3 THEN
B=B+3
880 IF C=168 AND S=7 OR C=123 AND S=7
OR C=78 AND S=7 OR C=33 AND S=7 THEN
B=B-3
890 IF STRIG(1)=-1 THEN GOSUB 1440
900 IF POINT(B,C+16)=3 AND POINT(B+8,
C+16)=3 AND S=1 THEN C=C-3
910 IF POINT(B,C+20)=3 AND POINT(B+8,
C+20)=3 AND S=5 THEN C=C+3
920 IF POINT(B+4,C+10)=1 OR POINT(B+4
,C+10)=8 THEN GOSUB 950
930 IF POINT(B+4,C+12)=10 OR POINT(B
+4,C+12)=2 THEN GOSUB 1240
940 GOTO 760
950 COLOR 15:IF C=168 AND B>125 THEN
PRESET(180,177):PRINT#1,"[" :REM TO OB
TAIN GRAPHIC SYMBOL "[" HOLD DOWN GRA
PH KEY AND PRESS P
960 IF C=168 AND B<125 THEN PRESET(20
,177):PRINT#1,"["
970 IF C=123 AND B>125 THEN PRESET(23
0,132):PRINT#1,"["
980 IF C=123 AND B<125 THEN PRESET(20
,132):PRINT#1,"["
990 IF C=78 AND B>125 THEN PRESET(230
,87):PRINT#1,"["
1000 IF C=78 AND B<125 THEN PRESET(80
,87):PRINT#1,"["
1010 IF C=33 AND B>125 THEN PRESET(18
0,42):PRINT#1,"["
1020 IF C=33 AND B<125 THEN PRESET(20
,42):PRINT#1,"["
1030 BEEP
1040 IF C%=52 THEN RETURN ELSE 1050
1050 C%=C%+1:COLOR 15:PRESET(55,5):PR
INT#1,"[" :COLOR 1:PRESET(50,5):PRINT
#1,C%
1060 IF C%=52 AND F%=4 THEN GOTO 1290
1070 IF C%=8 OR C%=16 OR C%=24 OR C%=
32 OR C%=40 OR C%=48 THEN GOTO 1080 E
LSE RETURN

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LISTINGS

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1080 PUT SPRITE 0,(0,-32):PUT SPRITE
1,(32,-32):PUT SPRITE 2,(64,-32):PUT
SPRITE 4,(128,-32):PUT SPRITE 5,(160,
-32)
1090 S%=S%+1:PRESET(225,5):COLOR 15:PR
INT#1,"[[":PRESET(220,5):COLOR 1:PRI
NT#1,S%:Z=0:B=101:C=168:V=V+1:GOTO 66
0
1100 SPRITE OFF:PUT SPRITE 2,(64,-32)
:L%=L%-1:PRESET(140,5):COLOR 15:PRINT
#1,"[[":PRESET(135,5):COLOR 1:PRINT#1
,L%
1110 IF C<168 AND C>123 THEN C=168
1120 IF C<123 AND C>78 THEN C=123
1130 IF C<78 AND C>33 THEN C=78
1140 IF C=33 THEN C=33
1150 PUT SPRITE 3,(B,C+2),4,3
1160 SOUND0,200:SOUND1,15:SOUND8,16:S
OUND12,30:SOUND13,9
1170 FOR DLY=1 TO 600:NEXT DLY:PUT SP
RITE 3,(96,-32)
1180 Z=0:B=101:C=168:IF L%=0 THEN GOT
O 1400 ELSE 760
1190 COLOR 10:PRESET(20,42):PRINT#1,"
TY":REM TO OBTAIN GRAPHIC SYMBOL "TY"
HOLD DOWN GRAPH KEY AND PRESS FY
1200 PRESET(180,42):COLOR 2:PRINT#1,"
XWY":REM TO OBTAIN GRAPHIC SYMBOL "XW
Y" HOLD DOWN GRAPH KEY AND PRESS R-Y
1210 PRESET(80,87):COLOR 10:PRINT#1,"
TY"
1220 PRESET(230,87):PRINT#1,"XS":REM
TO OBTAIN GRAPHIC SYMBOL "XS" HOLD DO
WN GRAPH KEY AND PRESS RH
1230 GOTO 750
1240 IF C=33 AND B<125 THEN PRESET(20
,42):COLOR 15:PRINT#1,"[[
1250 IF C=33 AND B>125 THEN PRESET(18
0,42):COLOR 15:PRINT#1,"[[[
1260 IF C=78 AND B<125 THEN PRESET(80
,87):COLOR 15:PRINT#1,"[[
1270 IF C=78 AND B>125 THEN PRESET(23
0,87):COLOR 15:PRINT#1,"[[
1280 F%=F%+1:BEEP:IF F%=4 AND C%=52 T
HEN GOTO 1290 ELSE RETURN
1290 SPRITE OFF:PUT SPRITE 0,(0,-32):
PUT SPRITE 1,(32,-32):PUT SPRITE 2,(6
4,-32):PUT SPRITE 4,(128,-32):PUT SPR
ITE 5,(160,-32):COLOR 1,15,1:CLS
1300 LINE(0,120)-(256,191),1,BF

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1310 DRAW"BM65,60C2R120D5L15D50L5U50L
80D50L5U50L15U5":PAINT(70,62),2
1320 DRAW"BM35,40C10R5D35R30D40L5U35L
25D35L5U75":PAINT(37,42),10
1330 DRAW"BM110,40R35D19L5U14L25D14L5
U19":DRAW"BM110,115U49R5D9R25U9R5D49L
5U35L25D35L5":PAINT(112,42),10:PAINT(
112,113),10
1340 DRAW"BM210,40R5D75L5U35L25D35L5U
40R30U35":PAINT(212,42),10
1350 LINE(85,59)-(95,56),8,BF
1360 COLOR 7:PRESET(20,128):PRINT#1,"
You have collected all your card
s, and the table and chairs."
1370 PRINT#1," Now you can skive of
f with your workmates to play car
ds."
1380 PRINT#1,:PRINT#1,:PRINT#1," P
RESS (S) TO PLAY AGAIN."
1390 GOTO 1430
1400 SPRITE OFF:PUT SPRITE 0,(0,-32):
PUT SPRITE 1,(32,-32):PUT SPRITE 2,(6
4,-32):PUT SPRITE 4,(128,-32):PUT SPR
ITE 5,(160,-32)
1410 COLOR 7,1,1:CLS:PRESET(40,60):PR
INT#1,"YOU RAN OUT OF ROBOTS"
1420 PRESET(35,110):PRINT#1,"PRESS (S
) TO PLAY AGAIN"
1430 I$=INKEY$:IF I$="S" OR I$="-s" TH
EN RUN ELSE 1430
1440 IF C=168 THEN C=178
1450 IF C=123 THEN C=133
1460 IF C=78 THEN C=88
1470 IF C=33 THEN C=43
1480 PUT SPRITE 2,(B,C),4,2
1490 Z=Z+V
1500 IF Z>256 THEN Z=0
1510 PUT SPRITE 0,(Z,158),14,0
1520 PUT SPRITE 1,(Z+140,113),14,0
1530 PUT SPRITE 4,(Z+70,68),14,0
1540 PUT SPRITE 5,(Z+210,23),14,0
1550 FOR DLY=1 TO 55:NEXT DLY
1560 IF STRIG(1)=0 THEN GOTO 1570 ELS
E 1490
1570 IF C=178 THEN C=168
1580 IF C=133 THEN C=123
1590 IF C=88 THEN C=78
1600 IF C=43 THEN C=33
1610 RETURN

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A BRIDGE TOO FAR

Steer your tank through deadly minefields, cross the bridges and blow them up to delay the enemy. Like *Skiver*, this program loads in two parts, with a title program running the main game. Start by typing in the title program and save to tape as "BRIDGE". Then type NEW or reset the computer, and type in the main program, saving it just after the earlier program on the tape, under the name "CAS".

If you are very impatient, you can actually dispense with the title screen program altogether—the main game will still operate as normal—but the title screen is impressive, and worth the short amount of typing it takes to key it in.

This program also requires the use of a joystick to play it, but by replacing the joystick scanning routine in lines 650 to 730 with a cursor key scan, the keyboard could equally well be used.

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1 REM ** A BRIDGE TOO FAR:TITLES **
2 REM ** BY A.J. ELLIS **
3 REM ** 1985 **
10 SCREEN 2:COLOR 7,1,1:CLS
20 OPEN "GRP:" FOR OUTPUT AS #1
30 DRAW"BM0,40C10U8R82E32R29F8L10D8R1
8F8L26D8R114D8L137U16L16G16L85"
40 DRAW"BM133,32U24L16G8R16D16R8"
50 PAINT(125,36),10
60 PRESET(98,52):PRINT#1,"presents"
70 LINE(0,70)-(256,70),15
80 LINE(0,110)-(256,110),15
90 DRAW"BM6,100C12U18E2R11F2D18L4U6L7
D6L4":DRAW"BM10,90U5E1R5F1D5L7"
100 DRAW"BM29,100U20R13F2D6G2F2D6G2L1
3":DRAW"BM33,88U4R6F1D2G1L6":DRAW"BM3

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3,96U4R6F1D2G1L6"
110 DRAW"BM47,100U20R13F2D6G2F2D8L4U6
H2L5D8L4":DRAW"BM51,88U4R6F1D2G1L6"
120 DRAW"BM65,100U20R4D20L4"
130 DRAW"BM72,100U20R13F2D16G2L13":DR
AW"BM76,96U12R6F1D10G1L6"
140 DRAW"BM92,100H2U16E2R11F2D4L4U1H1
L5G1D10F1R5E1U1H1L3U4R6F2D7G2L11"
150 DRAW"BM108,100U20R15D4L11D4R7D4L7
D4R11D4L15"
160 DRAW"BM139,100U16L6U4R16D4L6D16L4
"
170 DRAW"BM154,100H2U16E2R11F2D16G2L1
1":DRAW"BM157,96H1U10E1R5F1D10G1L5"
180 DRAW"BM172,100H2U16E2R11F2D16G2L1
1":DRAW"BM175,96H1U10E1R5F1D10G1L5"
190 DRAW"BM196,100U20R15D4L11D4R8D4L8
D8L4"
200 DRAW"BM214,100U18E2R11F2D18L4U6L7
D6L4":DRAW"BM218,90U5E1R5F1D5L7"
210 DRAW"BM232,100U20R13F2D6G2F2D8L4U
6H2L5D8L4":DRAW"BM236,88U4R6F1D2G1L6"
220 FOR P=12 TO 120 STEP 18
230 PAINT(P,82),12
240 NEXT P
250 FOR P=146 TO 236 STEP 18
260 PAINT(P,82),12
270 NEXT P
280 Y=81:Z=2
290 LINE(0,Y)-(255,Y),1
300 Y=Y+Z:Z=Z+1
310 IF Y>100 THEN GOTO 320 ELSE GOTO
290
320 DRAW"BM121,120":PRINT#1,"by"
330 DRAW"BM92,140":PRINT#1,"A.J.Ellis
"
340 DRAW"BM113,160":PRINT#1,"1985"
350 DRAW"BM40,184":PRINT#1,"loading..
..please wait"
360 RUN"CAS:"

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1 REM ** A BRIDGE TOO FAR **
2 REM ** BY A.J. ELLIS **
3 REM ** 1985 **
10 SCREEN 0
20 COLOR 15,1,1:CLS:KEY OFF
30 LOCATE12,2:PRINT"INSTRUCTIONS":LOC
ATE12,3:PRINT"-----"
40 LOCATE2,5:PRINT"Use Joystick to gu
ide your tank through the minefi
elds and over the bridges."
50 LOCATE2,9:PRINT"Each minefield has
more mines than the last one.
"
60 LOCATE2,12:PRINT"Once you have cro
ssed the middle section of the br
idge press the fire button to bl

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ow it up.
70 LOCATE2,17:PRINT"P.S. Don't get hi
t by the bombs."
80 LOCATE8,20:PRINT"PRESS (S) TO STAR
T."
90 I$=INKEY$:IF I$="S" OR I$="s" THEN
GOTO 100 ELSE 90
100 SCREEN 2,2
110 COLOR 11,10,1:CLS
120 OPEN"GRP:"FOR OUTPUT AS #1
130 FOR M=1TO32
140 READ A:B#=B#+CHR$(A)
150 NEXT M
160 SPRITE$(0)=B#
170 FOR M=1TO32
180 READ A:C#=C#+CHR$(A)
190 NEXT M
200 SPRITE$(1)=C#
210 FOR M=1TO32
220 READ A:D#=D#+CHR$(A)
230 NEXT M
240 SPRITE$(2)=D#
250 FOR M=1TO8
260 READ A:E#=E#+CHR$(A)
270 NEXT M
280 SPRITE$(3)=E#
290 DATA 192,224,240,255,127,31,0,0
300 DATA 0,0,0,0,0,0,0,0
310 DATA 0,1,241,253,255,253,1,1
320 DATA 0,0,0,0,0,0,0,0
330 DATA 0,0,0,0,0,0,0,1
340 DATA 255,3,1,63,127,255,106,63
350 DATA 0,0,0,0,0,0,0,248
360 DATA 252,252,248,252,254,255,174,
252
370 DATA 4,6,3,17,25,13,71,99
380 DATA 49,153,205,103,51,155,207,12
7
390 DATA 32,96,192,136,152,176,226,19
8
400 DATA 140,153,179,230,204,217,243,
254
410 DATA 158,255,158,0,0,0,0,0
420 I=20:L%=1:T%=5
430 LINE(0,0)-(256,55),7,BF
440 DRAW"BM256,55C2L256U5E10R40E5R15F
15R30E20R30F10R10E10R5F15R10E5R25D14"
450 PAINT(150,50),2
460 COLOR 11
470 FOR M=1TO1
480 X=INT(RND(1)*235)
490 Y=INT(RND(1)*188)+60
500 PSET(X,Y):PRINT#1,CHR$(211)
510 NEXT M
520 LINE(0,0)-(256,9),5,BF
530 COLOR 15:DRAW"BM30,2":PRINT#1,"LE
VEL ";L%:DRAW"BM150,2":PRINT#1,"TANKS
";T%
540 P=0:Q=15:R=245:S=101:T=21
550 PUT SPRITE 0,(P,Q),13,0
560 PUT SPRITE 3,(P+5,T),15,3
570 PUT SPRITE 4,(P+120,Q+10),13,0
580 PUT SPRITE 5,(P+125,T+10),15,3
590 P=P+5:T=T+4
600 IF T>180 THEN T=21
610 IF P>256 THEN P=0
620 PUT SPRITE 1,(R,S),1,1

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630 SOUND0,255: SOUND1,11: SOUND8,13: SO
UND2,200: SOUND3,13: SOUND9,12: SOUND7,4
0
640 ON SPRITE GOSUB 1370: SPRITE ON
650 Z=STICK(1)
660 IF Z=1 THEN S=S-2
670 IF Z=2 THEN S=S-2: R=R+2
680 IF Z=3 THEN R=R+2
690 IF Z=4 THEN R=R+2: S=S+2
700 IF Z=5 THEN S=S+2
710 IF Z=6 THEN S=S+2: R=R-2
720 IF Z=7 THEN R=R-2
730 IF Z=8 THEN R=R-2: S=S-2
740 IF R<0 THEN GOTO 800
750 IF R>245 THEN R=245
760 IF S<50 THEN S=50
770 IF S>172 THEN S=172
780 IF POINT(R+2,S+16)=11 OR POINT(R+
6,S+16)=11 OR POINT(R+10,S+16)=11 OR
POINT(R+14,S+16)=11 THEN GOTO 1370
790 GOTO 550
800 SPRITE OFF: SOUND8,0: SOUND9,0: PUT
SPRITE 0,(0,-32): PUT SPRITE 1,(32,-32
): PUT SPRITE 3,(96,-32)
810 PUT SPRITE 4,(128,-32): PUT SPRITE
5,(160,-32): CLS
820 LINE(0,0)-(256,55),7,BF
830 DRAW"BM94,55C2L94U31R20F3R21E15R5
F20F5D6F5D6": PAINT(50,30),2
840 DRAW"BM161,55C2R95U10L5H30L15G20L
14G5D5G6D4": PAINT(200,30),2
850 LINE(20,191)-(94,56),4: LINE-(161,
56),4: LINE-(236,191),4: PAINT(127,57),
4
860 LINE(43,35)-(46,130),1,BF: LINE(21
3,35)-(216,130),1,BF
870 LINE(43,35)-(5,100),1: LINE(216,35
)-(250,100),1
880 LINE(56,100)-(56,60),1: LINE(203,1
00)-(203,60),1
890 LINE(91,100)-(91,88),1: LINE(165,1
00)-(165,88),1
900 LINE(0,100)-(256,105),1,BF
910 CIRCLE(129,26),85,1,3.3,6.08,.8
920 LINE(0,0)-(256,9),5,BF
930 COLOR 15: DRAW"BM30,2": PRINT#1,"LE
VEL ";L%: DRAW"BM150,2": PRINT#1,"TANKS
";T%
940 R=245: S=84: P=0: Q=15: T=21
950 F=STRIG(1)
960 PUT SPRITE 1,(R,S),1,1
970 PUT SPRITE 0,(P,Q),13,0
980 PUT SPRITE 3,(P+5,T),15,3
990 PUT SPRITE 4,(P+120,Q+10),13,0
1000 PUT SPRITE 5,(P+125,T+10),15,3
1010 P=P+5: T=T+3
1020 IF T>100 THEN T=21
1030 IF P>256 THEN P=0
1040 SOUND0,255: SOUND1,11: SOUND8,13: S
OUND2,200: SOUND3,13: SOUND9,12: SOUND7,
40
1050 Z=STICK(1): IF Z=3 THEN R=R+2
1060 IF Z=7 THEN R=R-2

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1070 IF R>245 THEN R=245
1080 IF POINT(128,102)=1 AND R<0 THEN
R=0
1090 IF POINT(128,102)=4 AND R<0 THEN
GOTO 1430
1100 IF POINT(R+8,100)=4 THEN GOTO 12
60
1110 ON SPRITE GOSUB 1370: SPRITE ON
1120 IF POINT(128,102)=1 AND F=-1 THE
N GOSUB 1140
1130 GOTO 950
1140 SPRITE OFF
1150 PUT SPRITE 2,(85,84),8,2
1160 PUT SPRITE 6,(155,84),8,2
1170 SOUND6,20: SOUND8,20: SOUND10,103:
SOUND12,80: SOUND13,16: SOUND7,55
1180 FOR DLY=1TO800: NEXT DLY
1190 PUT SPRITE 2,(64,-32)
1200 PUT SPRITE 6,(192,-32)
1210 LINE(93,85)-(163,105),4,BF: LINE(
93,130)-(163,135),1,BF
1220 FOR M=130TO135 STEP .5
1230 LINE(93,M)-(163,M),4
1240 NEXT M
1250 RETURN
1260 SPRITE OFF: PUT SPRITE 0,(0,-32):
PUT SPRITE 3,(96,-32)
1270 PUT SPRITE 4,(128,-32): PUT SPRIT
E 5,(160,-32)
1280 FOR M=100TO120 STEP .5
1290 PUT SPRITE 1,(R,M),1,1
1300 NEXT M
1310 PUT SPRITE 1,(32,-32)
1320 PUT SPRITE 2,(R,M),15,2
1330 SOUND6,20: SOUND8,20: SOUND10,103:
SOUND12,80: SOUND13,16: SOUND7,55
1340 FOR DLY=1TO800: NEXT DLY
1350 PUT SPRITE 2,(64,-32)
1360 T%=T%-1: IF T%=0 THEN GOTO 1470 E
LSE 900
1370 SPRITE OFF: PUT SPRITE 0,(0,-32):
PUT SPRITE 1,(32,-32): PUT SPRITE 3,(9
6,-32)
1380 PUT SPRITE 4,(128,-32): PUT SPRIT
E 5,(160,-32): PUT SPRITE 2,(R,S),8,2
1390 SOUND6,20: SOUND8,20: SOUND10,103:
SOUND12,80: SOUND13,16: SOUND7,55
1400 FOR DLY =1TO800: NEXT DLY
1410 PUT SPRITE 2,(64,-32): T%=T%-1: IF
T%=0 THEN GOTO 1470 ELSE 1420
1420 IF S=84 THEN GOTO 900 ELSE 520
1430 SPRITE OFF: SOUND8,0: SOUND9,0: PUT
SPRITE 0,(0,-32): PUT SPRITE 1,(32,-3
2): PUT SPRITE 3,(96,-32)
1440 PUT SPRITE 4,(128,-32): PUT SPRIT
E 5,(160,-32)
1450 L%=L%+1
1460 COLOR 11,10,1: CLS: I=I+20: GOTO 43
0
1470 COLOR 15,1,1: CLS
1480 DRAW"BM45,70": PRINT#1,"YOU REACH
ED LEVEL ";L%
1490 DRAW"BM37,170": PRINT#1,"PRESS (Y
) TO PLAY AGAIN"
1500 I$=INKEY$: IF I$="Y" OR I$="y" TH
EN 1510 ELSE 1500
1510 COLOR 11,10,1: CLS: GOTO 420

```

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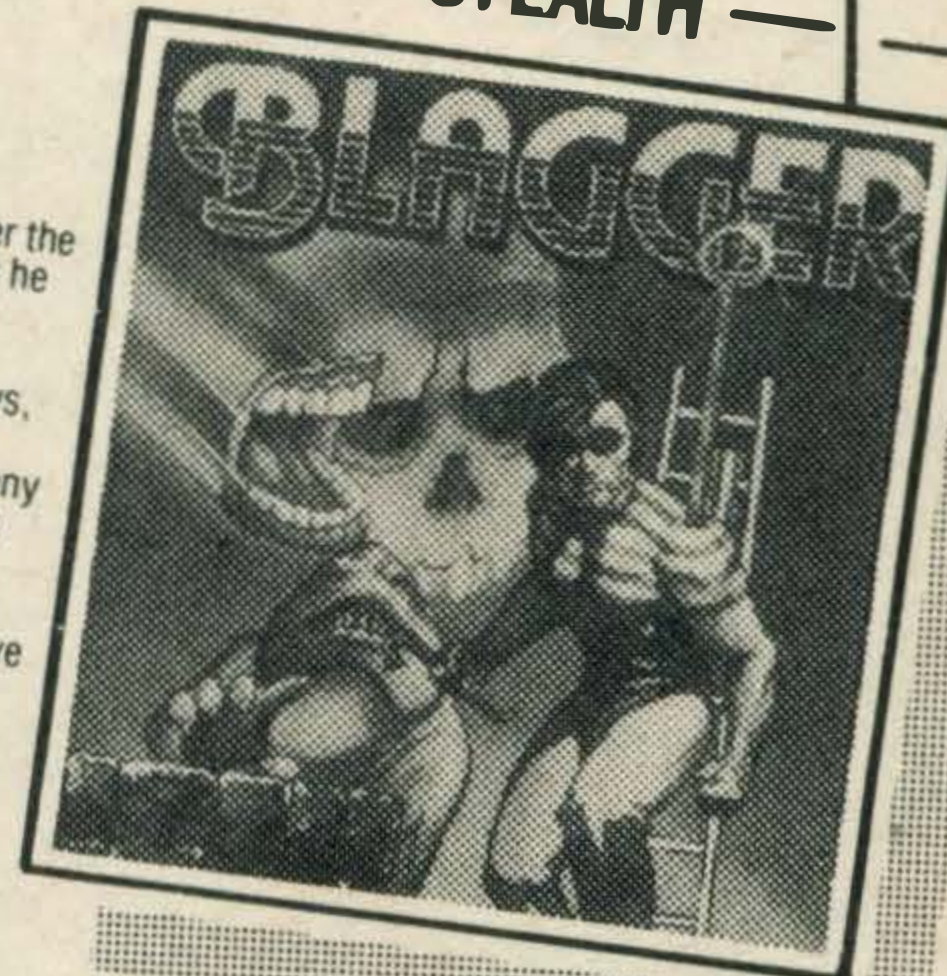


BLAGGER

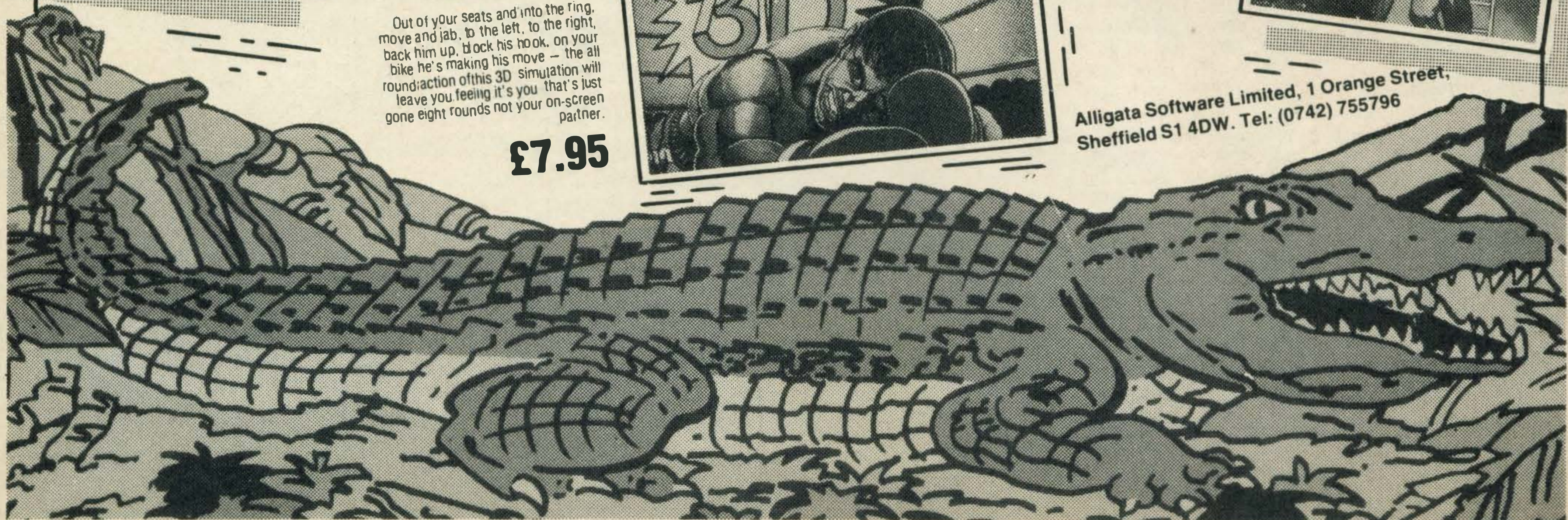
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GOING DUTCH

You should never start a riot on a KLM DC9. You tend to get slugged by a beefy Dutch stewardess, arrested on arrival and kicked back across the North Sea in double-quick time. Nevertheless I am sorely tempted, as I uncross my eyeballs from the take-off acceleration and hear the soul-crushing news that due to a technical malfunction there is *no coffee on board*.

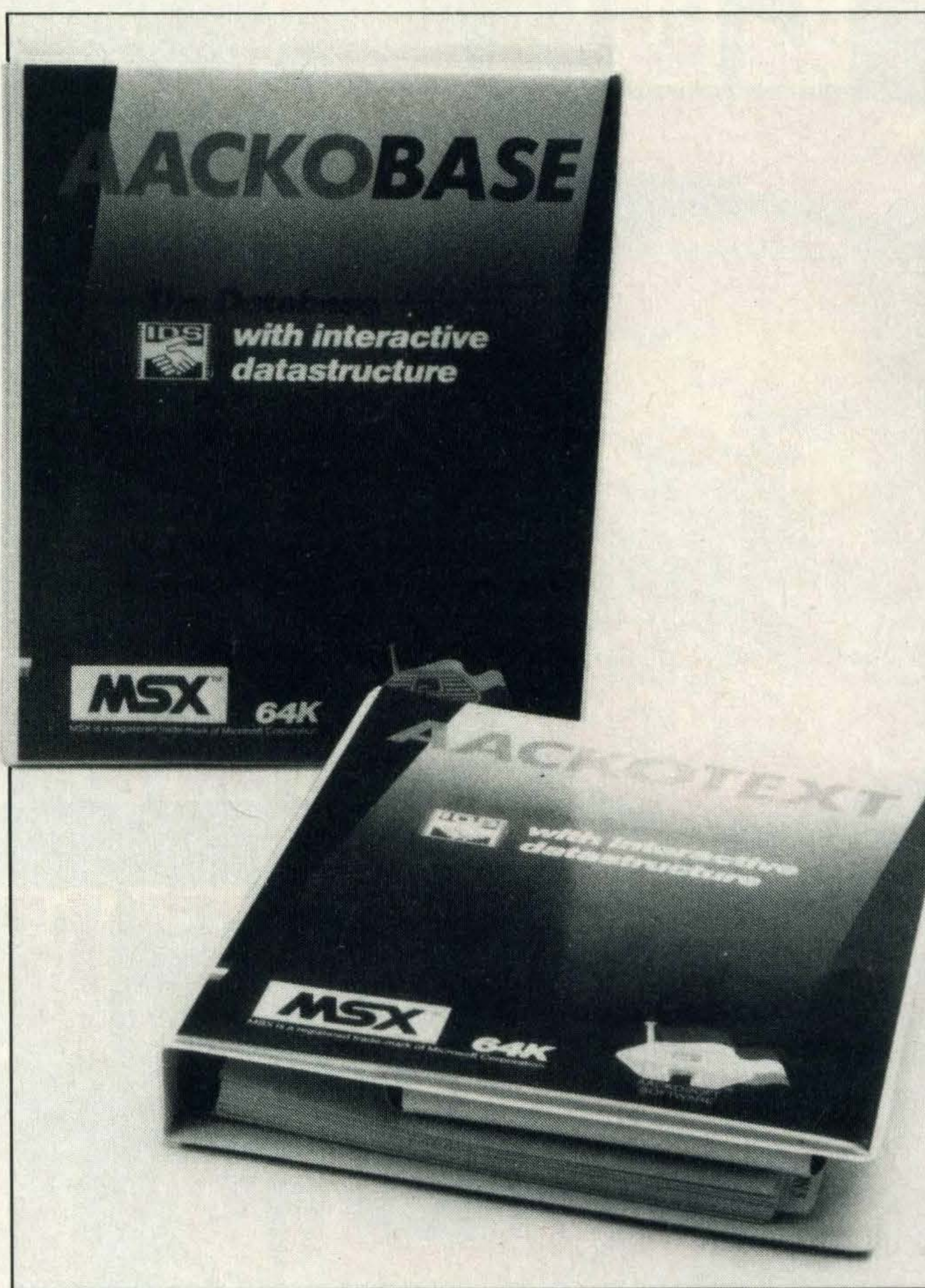
I slump back in my seat as far as the cramped economy class allows and wonder for the twentieth time this morning what I am doing here. Aackosoft's commercial director, Paul van Aacken, made it sound really easy on the phone. 'We'll pick you up from Schipol Airport at nine a.m. The flight takes less than an hour — it's a piece of cake.' It's an opportunity to find out at first hand what is happening in the busiest MSX market outside Japan, pick up Aackosoft's largest programs in time for our next issue, and get my hands on the 192K Philips MSX 2 machine, all in one day, and I accept the offer eagerly. What I don't realise until it's too late is that Holland lives one hour ahead of G.M.T. and my KLM flight will peel off from Heathrow's runway 28 Left at seven in the morning. Check-in time is six. I leave home at five. No time for coffee.

Much, much later we arrive at Schipol and I manage to spot an Aackosoft T-shirt in the arrivals area. It belongs to Inge, who drives me the twenty-odd miles to the HQ in Leiden. It is snowing hard, the temperature is minus seven centigrade and I am already starting to miss England!

Paul van Aacken crushes my hand in his and shows me into a large office, sitting across a desk the size of a young aircraft carrier. He is pretty tall and wide, and his constant activity makes him seem altogether larger than life.

A strained look crosses my

**Why is MSX the market leader in Holland?
Simon Craven gets up early to ask Aackosoft**



face as he enquires about the flight, and I explain about the caffeine problem. Fortunately he appreciates the gravity of the situation, and the day suddenly gets 100 per cent better as a soupbowl-sized cup arrives, strong, fresh and piping hot. Obviously they place a strong emphasis on the stuff here. 'You bet,' says Paul, 'I didn't get to bed until around four this morning.' Such dedication to duty strikes me as well-nigh suicidal, but Paul puts me right as he continues. 'It was Inge's birthday and we had to

celebrate — we don't normally work that late. On a normal day the programmers stay until ten or eleven. If there is a special effort on for any reason, then we do stay late, and that's why we have the best coffee.'

By now I'm wondering who these strange programmers are. I expect to see miserable faces, with fatigue etched deeply into their expressions, possibly legs manacled to desks. How else do you get people to work until 10pm every evening? Paul takes me upstairs to introduce me to them.

To my surprise they all appear to be normal, happy human beings. There is a strongly cosmopolitan feel to Aackosoft, with English and American programmers and an American quality controller. The language flying around the computer room is a high-speed mingle of Dutch, English and Universal Computerspeak, and quite hard for an outsider to follow.

MSX figures heavily in the flow of words, and everywhere you look MSX and MSX 2 machines are being used for programming, stock control, letter-writing, or running the mail order system. Unlike many software houses, Aackosoft practises what it preaches.

There are other computers in evidence, such as an IBM PC

To my surprise they all appear to be happy, healthy human beings.

which acts as a development system using the C and Pascal high level language compilers, an Apple II, a Commodore 64 and a number of Macintoshes.

The Macs are linked to a laser printer where they act primarily as typesetting and page make-up machines for the production of Aackosoft's annuals, price lists, catalogues and other fairly simple publishing tasks. Seeing the Commodore 64 and the older Apple II prompts me to ask Paul what kinds of computers have what share of the market in Holland.

He grins wolfishly. 'You see the delivery vans outside?' Standing on the snow-covered car-park are a pair of VW Golf vans, with Aackosoft and MSX written all over them in two-foot-high letters. 'There's a reason for that label. If you go into any

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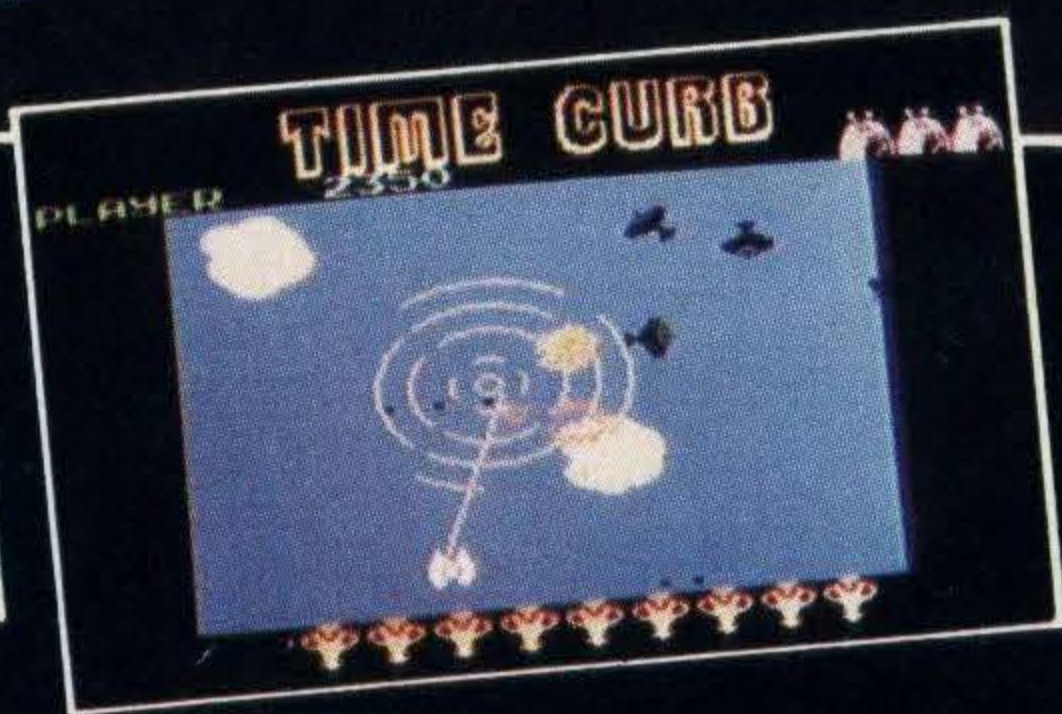


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TIME CURB

school in Holland and ask any pupil there to name a home computer, you will hear either MSX or Commodore 64. The other manufacturers are not well supported in this country.' It is a far cry from the UK market where MSX manufacturers have had a tough time breaking into a market dominated by Sinclair and Commodore. Out of the 100 top-selling computer software titles that week, 85 are on MSX machines.

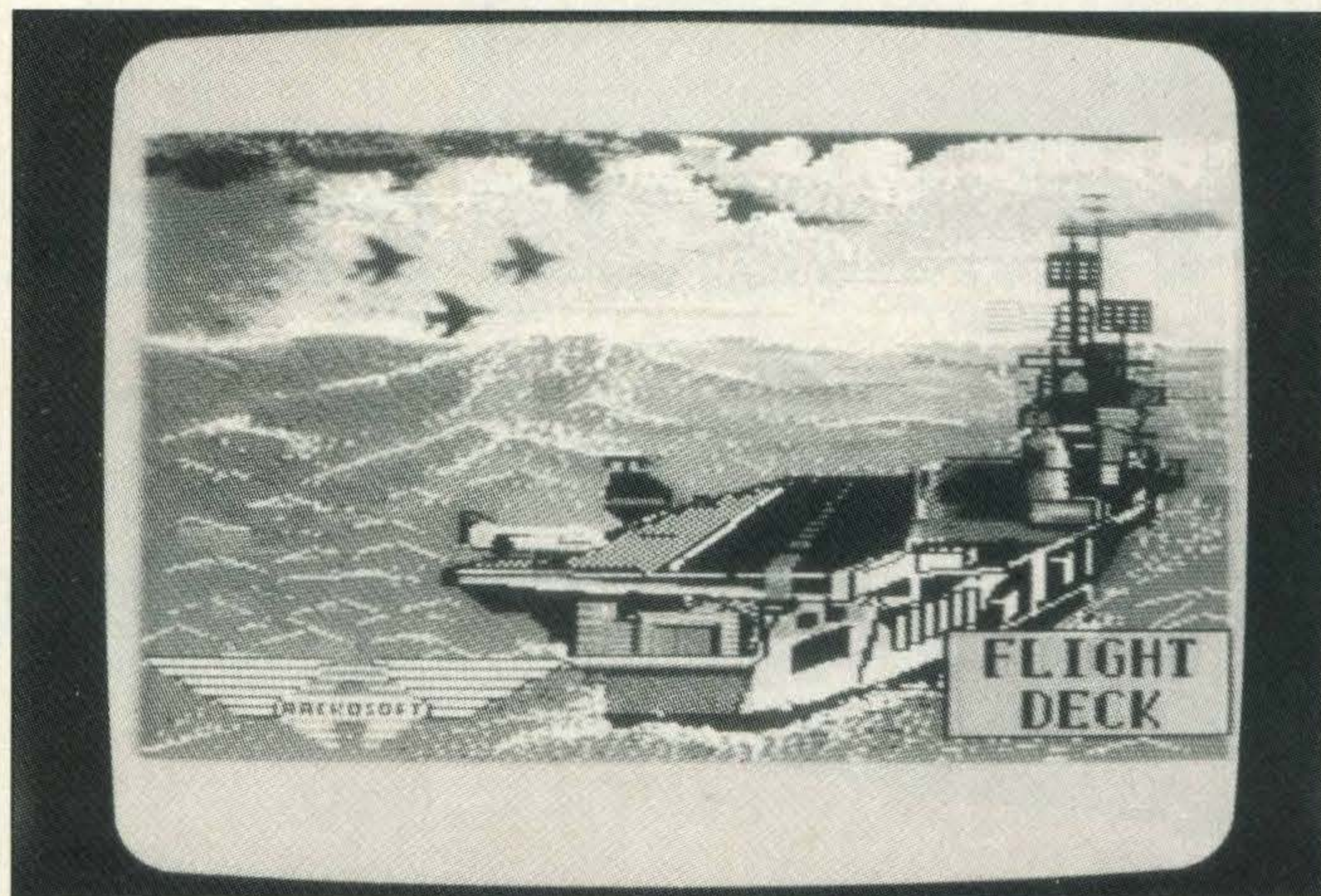
So, why is MSX such a hit in Holland? 'The market is much more mature, much more stable in Holland,' says Paul, 'which is really because the home computer took off here slightly later than it did in the UK and the US, and because the market has grown more gradually, without the stop-start peaks and troughs that you have experienced in England. These conditions are what the Japanese MSX companies are used to, from selling hi-fi and televisions. The conditions of the market in the UK have been really very difficult to predict, and that has led to less effective marketing. In particular, the machines were more sensibly priced in Europe than they were in Britain at first. Even more important was the fact that the UK and US markets had strong

The conditions of the market in the UK are difficult to predict.

domestic manufacturers with a strong grip on the market, whereas we didn't.'

Aackosoft now ships MSX software to every European country except Italy, and although the company also acts as an importer and distributor of many British and American titles for other home computers, eighty per cent of its own software development work is devoted to MSX.

There are twenty-eight titles currently on offer which break down into four categories: arcade games, simulations, educational programs and home productivity software. A common feature of Aackosoft's programs is its use of digitised



sound and pictures, like the loading screens on *Jet Fighter* and *Flight Deck*, or the screams, curses and digitised speech that grace *Kick It, Oh No!* and *North Sea Helicopter*.

While these effects are certainly dramatic, they take up a lot of memory, with the result that only small amounts of

speech can be used in any game, and the digitised pictures can only be used for static 'loading' screens, not during the game itself. So why has Aackosoft gone to such lengths to perfect these digitising techniques?

The answer lies in future MSX developments, especially

the forthcoming CD-ROM devices which are in the experimental stage on MSX 2 machines. These are specially developed variants of audio compact disc players which use a laser to read information on a silvery disc. Whereas a conventional floppy disk drive can hold a few hundred kilobytes at best, the potential for an optical storage unit such as the CD player is measured in hundreds of megabytes. This means that you can store a vast amount of data on line, opening up enormous possibilities for radically bigger and better games, among other things.

This sounds great from Aackosoft's point of view, but as Paul points out, it's one thing to talk glibly about a 10 megabyte game with hundreds of locations stored in almost

Eighty per cent of software development work is devoted to MSX.

photographic quality, and quite another to actually sit down and write the code which will draw all those pictures and make all the sound effects.

The only sensible way of doing it will be to digitise chunks of reality and feed it into the computer, and this is the ultimate application Aackosoft has in mind for its digitising techniques.

I ask Paul if he thinks all this technology is wasted on games. 'Computers are ideally suited to playing games, and I don't think anyone should ever regard it as a waste of technology, or feel that they are doing something slightly improper or shameful by using a computer to play games.'

This is pretty much what I expected from a company which makes a considerable amount of money from selling games. But after a pause some more glimpses of Aackosoft's future ambitions start to emerge. 'When you get into really big storage devices such as the CD-ROM, I think you can foresee a situation where Aackosoft would become primarily a supplier of information, and the



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actual controlling software would tend to fade into the background. There is a continuous trend towards making software easier to use, which we try to push along as quickly as possible, and the ideal for us would be to sell not a database management package like *Aackobase*, but an actual database full of information that people want to use. The software letting people retrieve information from the database would become almost a side issue — no-one would think about it separately from the database itself.'

While I am struggling with these ideas Inge provides a breathing space by bringing in more coffee. Since she is the only person I know who actually uses an MSX 2 machine, in this case from Philips, in everyday business applications, I ask her opinion.

It is a 192K machine with one

MSX can bring the computer back into the living room just like the hi-fi or video.

3.5 inch disk drive built into the right hand edge of the machine. Aackosoft's word processor and database manager have been upgraded to use the additional RAM and the 80-column display which is now available, making MSX 2 much more suitable for business use than its predecessor.

One refinement the programmers have not yet made is to start using the disk as virtual memory, so that you can edit a document too big to fit into RAM without splitting it into smaller chunks. This feature is promised soon.

Aackosoft has been developing MSX 2 software for over a year, and among the first results of its labours are a trio of business programs — a database manager, word processor and a spreadsheet — bundled together for around £100.

Coming back to MSX 1, Paul points out a few features which are not so easy for a software house to live with.



All MSX machines are hardware and software compatible with each other, as long as your machine code programs stay within the official 'rules', using none of the unofficial, undocumented features which all computers have but which are not part of the formal MSX standard. As all MSX software houses have discovered, staying within the rules is OK as long as you know what the rules are.

Aackosoft's programmers spent a year teaching themselves all about the MSX machines, disassembling the ROMs, and puzzling out the computers' inner workings, largely without the benefit of Dutch or English language documentation. The intimate support which is usually provided to independent software developers by companies like Atari and Commodore when

they release new machines was not forthcoming from the Japanese manufacturers. The twin barriers of distance and language were partially responsible, and another problem was the inexperience of the Japanese consumer electronics giants in dealing with independent companies in a way that was not necessary for televisions or hi-fi units.

Similar comments apply to the disk operating system, MSX-DOS. "It's almost impossible to tell whether the features you are using are legal or illegal", comments Paul. Aackosoft prefers to write its own disk access routines in many cases.

By now the snow has stopped, it is still cold outside but beautifully sunny and clear. A good day after all. Before leaving I tackle Paul on what he sees as the future of MSX. With

the obvious extent of the company's commitment to MSX, it is not surprising that he is optimistic. 'There is a lot of life left in MSX 1. The Z80 processor will supply enough processing horsepower for the foreseeable future. What I would like to see in the next few years is the expansion of MSX into areas of home entertainment which do not have to be just games.'

'The computer enthusiast is often a solitary person, playing alone with the computer in a room at the top of the house. MSX can bring the computer back into the living room, just like the phone, the hi-fi or the video.'

Is this really the future for MSX? I don't know, but as Inge drives me back to the airport I decide that Aackosoft has a better chance than most of seeing its predictions come true.



Geography and playing techniques revealed by Darren Coulbeck

THE MAP

Jet Set Willy II has 139 rooms, sixty of which are similar to those found in the original Jet Set Willy. **Room 44** contains a rope which will take you up to the main entrance (the sewer). The rope in **room 61** takes you to the Outlet, which also leads into the sewer.

If you ever get up to the top of the house to **room 2**, climb on to the conveyor belt and jump. You will then find yourself in the **Rocket Room**. Then pick up the two objects you find, and wait. Soon you will be transported to **room 21**, the spaceship Docking Bay. **Room 6** on the spaceship is called 'Beam me down, Spotty', which includes four steps. One of these will transport you to the bathroom, and another to the planet.

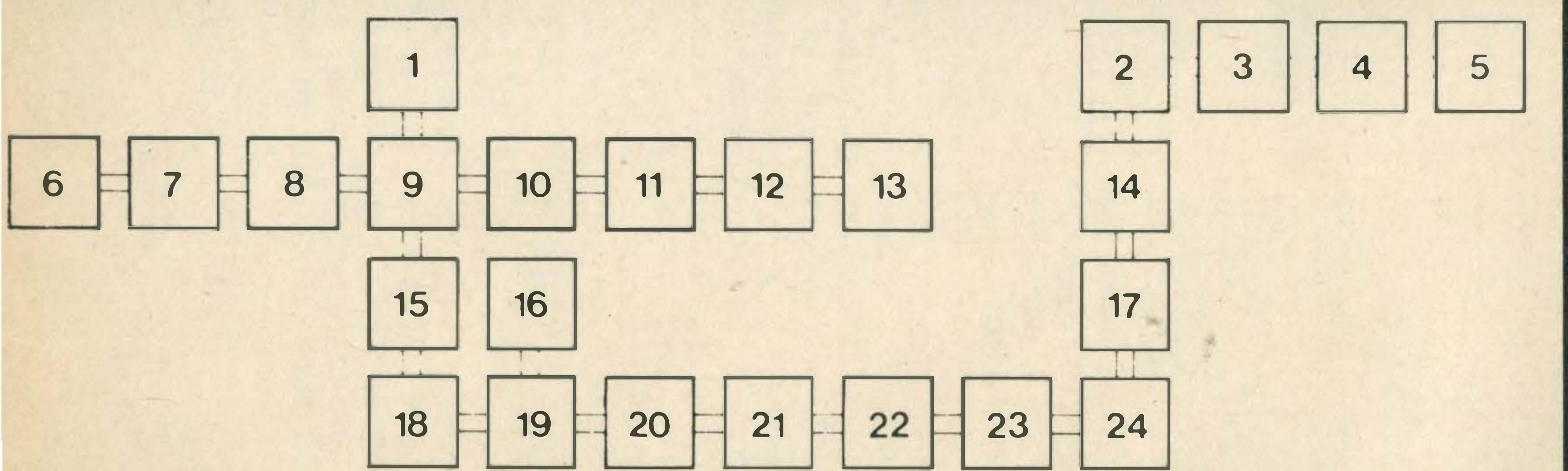
To get to the **Deserted Isle**, make your way down to the **Wine Cellar**, then squeeze through the small gap to the **Forgotten Abbey**, and on to the **Trip Switch**. Set the switch by jumping on it. Now you must progress through rooms 66, 67, 68, 83, 84,

69, 70, 71, 72, 73, 87, 88, 74, 53 to 42, 62, 61, 60 and 59 without being killed or you will have to set the trip switch again.

Once you get to the **Yacht**, collect the two objects (one in the bow). When you see the saw moving to the right, follow it and the yacht will move off. On arrival at the **Deserted Isle** you will find another object to collect. When you pick this up, a timer will start a count-down. At zero, you will be transported back to room 6 on the spaceship.

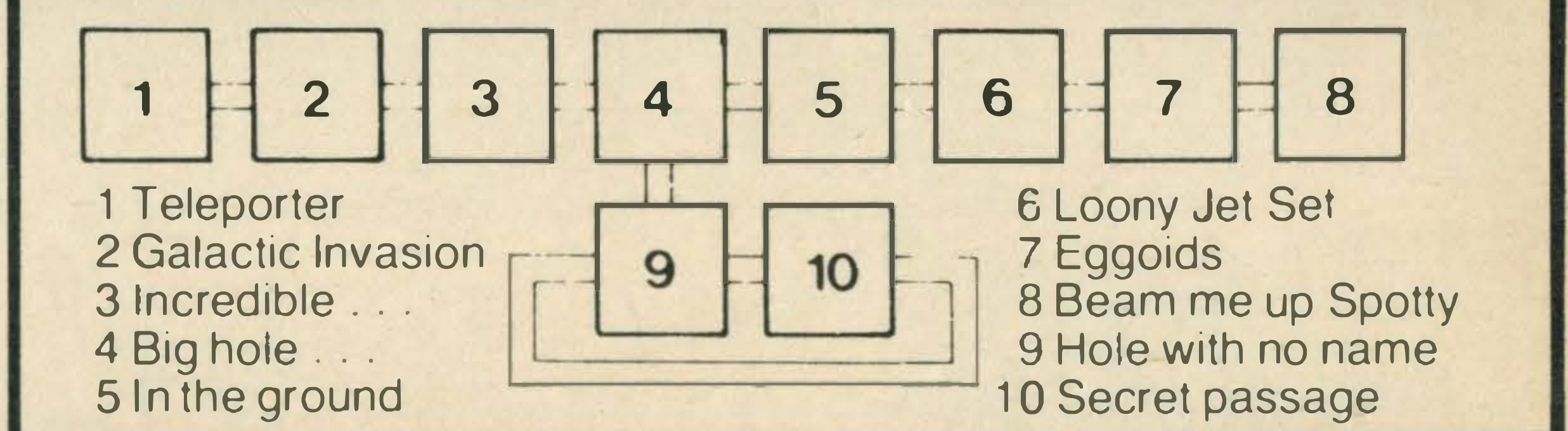
As far as I can tell, entering rooms 91-97 or 39 causes instant death, so watch out!

SPACE SHIP



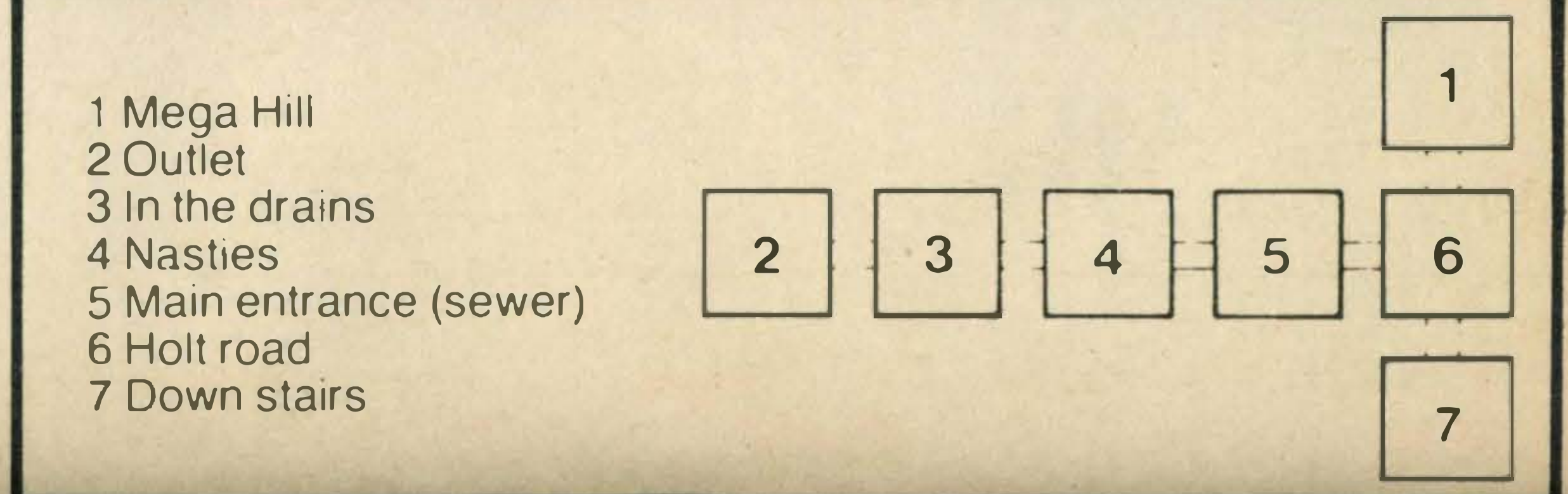
- | | | |
|------------------------------------|-------------------|-------------------------------------|
| 1 Transmit testing room | 9 Ship's computer | 17 The trouble with Tribbles is . . |
| 2 Maria in space | 10 Main Lift 1 | 18 Photon tube |
| 3 Banned | 11 Phaser power | 19 Main Lift 3 |
| 4 Flower (pot source) | 12 Sickbay | 20 Cartography room |
| 5 Star drive (early brick version) | 13 Footroom | 21 Docking bay |
| 6 Beam me down Spotty | 14 Someone else | 22 NCC 1501 |
| 7 Captain Slog | 15 Defence system | 23 Aye Appen |
| 8 Alienate? | 16 Main Lift 2 | 24 Shuttle bay |

PLANET



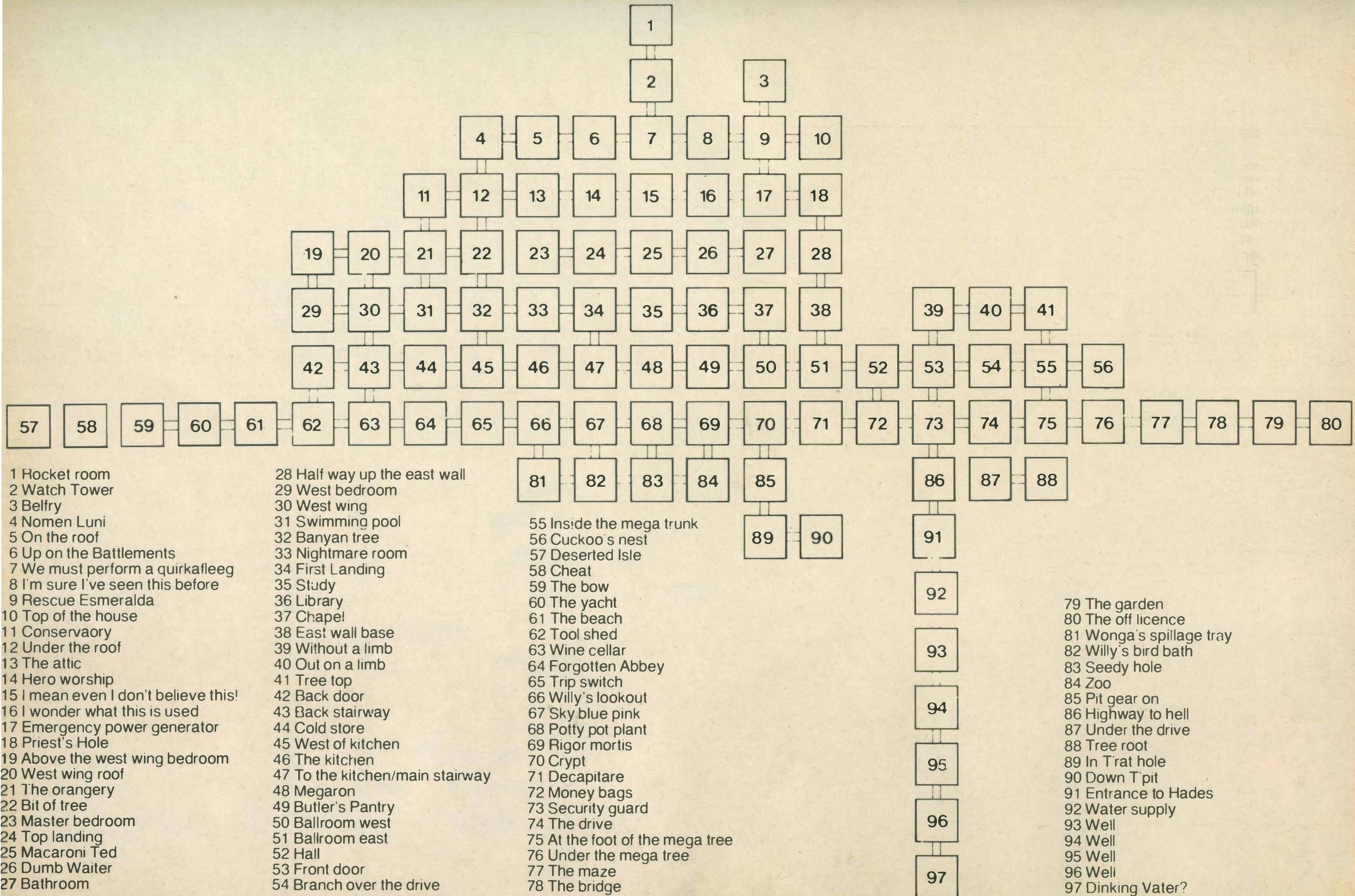
- | | |
|---------------------|---------------------|
| 1 Teleporter | 6 Loony Jet Set |
| 2 Galactic Invasion | 7 Eggoids |
| 3 Incredible . . . | 8 Beam me up Spotty |
| 4 Big hole . . . | 9 Hole with no name |
| 5 In the ground | 10 Secret passage |

SEWER



- | | |
|-------------------------|---|
| 1 Mega Hill | 1 |
| 2 Outlet | 2 |
| 3 In the drains | 3 |
| 4 Nasties | 4 |
| 5 Main entrance (sewer) | 5 |
| 6 Holt road | 6 |
| 7 Down stairs | 7 |

THE MANSION



- 1 Rocket room
- 2 Watch Tower
- 3 Belfry
- 4 Nomen Luni
- 5 On the roof
- 6 Up on the Battlements
- 7 We must perform a quirkatleeg
- 8 I'm sure I've seen this before
- 9 Rescue Esmeralda
- 10 Top of the house
- 11 Conservaory
- 12 Under the roof
- 13 The attic
- 14 Hero worship
- 15 I mean even I don't believe this!
- 16 I wonder what this is used
- 17 Emergency power generator
- 18 Priest's Hole
- 19 Above the west wing bedroom
- 20 West wing roof
- 21 The orangery
- 22 Bit of tree
- 23 Master bedroom
- 24 Top landing
- 25 Macaroni Ted
- 26 Dumb Waiter
- 27 Bathroom

- 28 Half way up the east wall
- 29 West bedroom
- 30 West wing
- 31 Swimming pool
- 32 Banyan tree
- 33 Nightmare room
- 34 First Landing
- 35 Study
- 36 Library
- 37 Chapel
- 38 East wall base
- 39 Without a limb
- 40 Out on a limb
- 41 Tree top
- 42 Back door
- 43 Back stairway
- 44 Cold store
- 45 West of kitchen
- 46 The kitchen
- 47 To the kitchen/main stairway
- 48 Megaron
- 49 Butler's Pantry
- 50 Ballroom west
- 51 Ballroom east
- 52 Hall
- 53 Front door
- 54 Branch over the drive

- 55 Inside the mega trunk
- 56 Cuckoo's nest
- 57 Deserted Isle
- 58 Cheat
- 59 The bow
- 60 The yacht
- 61 The beach
- 62 Tool shed
- 63 Wine cellar
- 64 Forgotten Abbey
- 65 Trip switch
- 66 Willy's lookout
- 67 Sky blue pink
- 68 Potty pot plant
- 69 Rigor mortis
- 70 Crypt
- 71 Decapitare
- 72 Money bags
- 73 Security guard
- 74 The drive
- 75 At the foot of the mega tree
- 76 Under the mega tree
- 77 The maze
- 78 The bridge

- 89 In T'rat hole
- 90 Down T'pit
- 91 Entrance to Hades
- 92 Water supply
- 93 Well
- 94 Well
- 95 Well
- 96 Well
- 97 Dinking Vater?

- 79 The garden
- 80 The off licence
- 81 Wonga's spillage tray
- 82 Willy's bird bath
- 83 Seedy hole
- 84 Zoo
- 85 Pit gear on
- 86 Highway to hell
- 87 Under the drive
- 88 Tree root



TAKE UP ARMS!

*Spectravideo's
Robotarm up for grabs*

Deciding that the Spectravideo Robotarm was *the* piece of MSX-compatible hardware or software to give away in this issue's competition was the easy part. The hard part was figuring out *how* to give it away. It had to be something relatively easy to enter, yet challenging enough that the winner would really deserve the prize.

After hours spent staring out of the window we were no closer to dreaming up the task we would set. It's a tricky business after all.

Many were the lunchtimes devoted to this thorny problem. Tentative suggestions, such as the Grand Spectravideo Arm Make Up This Month's Competition, failed to make it past

the first course. The idea of making up the largest possible number of words from the letters of "Spectravideo Robotarm" was one concept which lasted through until coffee, biting the dust only when we realised that checking through all the entries would keep us busy until next October at least. The quest went on. Draw a cartoon for inclusion in "101 Uses of a Dead Robot Arm"? Write a better headline for the review than we did? Invent a prototype Spectravideo Robotleg? Nothing seemed suitable.

At last, mere moments before this very page had to be sent off to the printers, a sneaky smile crept across the fatigue-strained features of the editor. "This competition's a joke", he said. We all agreed. But it seems he meant just that, and here's what you have to do . . .

COMPETITION

To have a go at winning the Spectravideo Robotarm with two Spectravideo Quickshot joysticks, send us a joke about

or involving an arm. Or lots of arms. The winner will be the reader whose entry most appeals to the editor's warped sense of humour. We want to print the winning entry, so try to keep things legal, decent, honest and truthful. Jokes can be as long or as short as you like, as long as they are funny.

RULES

1. The judges' decision is final and no correspondence will be entered into.
2. No employees of Haymarket Publishing or Spectravideo or their families may enter.
3. All entries must reach us by Monday 19th May 1986.
4. Send in as many jokes as you like, but each entry must be on a separate postcard or letter.
5. Entries must be addressed to:
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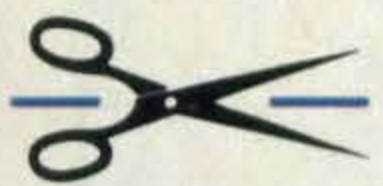
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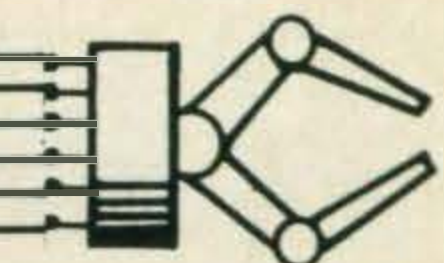
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ROBOTICS



OUT ON A LIMB!

*Spectravideo's new
MSX robot need not
cost an arm and a leg*



Want to control your own robot? If you do then Spectravideo's Robotarm may be just for you.

Over the past few weeks we've been putting the SVI 2000 Quickshot Robotarm through its paces and assessing whether it's simply the latest in hi-tech toys or a useful educational peripheral for MSX.

You can buy the arm in three different packages. Firstly, the basic arm with forceps, magnet and shovel attachments for £39.95. Once you've inserted four 1.5volt batteries and plugged in two standard D-type joysticks you can have a lot of fun (scooping up objects with the shovel or picking up paper clips with the magnet). Secondly you can buy the arm packaged with two Quickshot I joysticks for £49.95. Alternatively to get the most from it for an additional £26 (£79.95) you can buy the programmable package so that you can write your own programs and control the Robotarm via your MSX.

The package includes the Robotarm, two Quickshot joysticks two leads with D-type connectors at each end and a ROM cartridge interface which contains Rogo, a programming language very similar to Logo.

To look at, the arm is a very simple device. It has a base, upper arm, forearm and wrist (just like the two arms dangling from your shoulders).

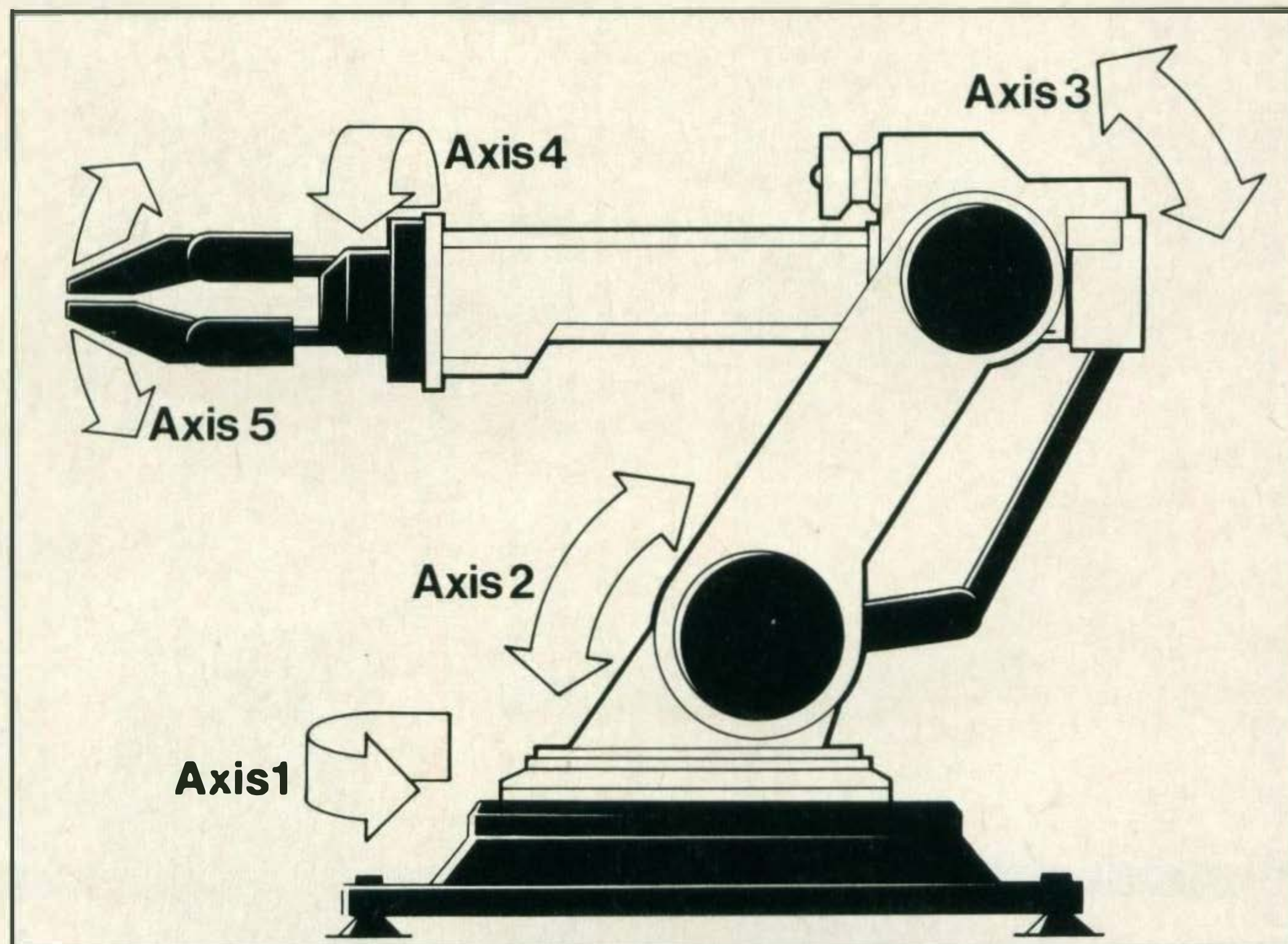
The limbs are connected together at five joints (see schematic diagram). Each joint is controlled by a motor so that each part of the arm can move independently from the others.

With a height of just over two feet the Robotarm is hardly designed for the Fiat production line but geared towards the educational market hence the vivid colour.

Spectravideo tells us that the arm is designed to equip youngsters with a basic knowledge of simple programming and elementary robotics.

To operate the arm all you have to do is make sure you have slotted in the batteries and plugged in the two joysticks and you're ready to go — without your MSX!

It took us sometime to get the coordination right but once you mastered the techniques it's



| Built-in Commands in ROGO: | | | |
|----------------------------|----------|----------|---------|
| BC | BA | LU | LD |
| FU | FD | WC | WA |
| FC | FO | SHOWARM | HIDEARM |
| SHOWTEXT | HIDETEXT | CLS | PRINT |
| LOCATE | REPEAT | STOP | TO |
| EDIT | TEST | IF | IFTRUE |
| IFFALSE | MAKE | COMMAND | DIR |
| SAVE | LOAD | SELFTEST | WAIT |
| FUN | THING | READC | READL |
| J1 | J2 | OR | AND |
| NOT | XOR | SUM | DIFF |
| PROD | QUOT | INT | ROUND |

great fun to use. But, even more fun can be had by using the cartridge interface.

The cartridge plugs into the cartridge port on your MSX and has two joystick sockets on the side of it. Into these sockets you plug the two leads with the D-type connectors at both ends and plug the other ends into the Robotarm. Then all you need do is switch on and your MSX is ready to take control.

In a matter of seconds you'll get a title screen welcoming you to the Spectravideo Robotarm and a ?. This is prompting you to type in the keyword (COMMAND) to get you started. Again within a millisecond a menu of Rogo commands appears on the screen.

To get started you only need the first ten commands which control the basic movements of the five joints. They are Base Clockwise (BC), Base Anti-Clockwise (BA), Lower arm Up (LU), Lower arm Down (LD), Forearm Up (FU), Forearm Down (FD), Wrist Clockwise (WC), Wrist Anti-Clockwise (WA), Forceps Open (FO) and Forceps Close (FC).

Now all you have to do is decide which part of the arm you want to move and how far. If you want to move the forearm up you'll need to start off by

keying in the command FU. Then supply some form of instruction to tell it how far to move. The distance is measured in 'time units'. So by keying in FU 100 the forearm will move upwards for 100 time units.

These time units do not relate to real time but are simply the chosen method of measuring the movements. Once you get used to moving the arm you will quickly learn that the higher the number entered for the time units the wider the angle of movement.

After a while by experimenting with the various Rogo commands you'll discover that the Rogo language will allow more than one command to be entered. By doing this you can get the Robotarm to perform a series of movements and in a variety of sequences.

Simply type in the commands you wish to use and press RETURN. For example, if the procedure BC 120 LU 300 WC 150 (ENTER) is typed in the base will move clockwise for 120 time units, the lower arm for 300 time units and the wrist will move clockwise for 150 time units. You can string together up to 256 characters this way and build up quite a long series of movements.

After trying out the Robotarm for several hours we ran some very simple programs just to see how far the arm can be 'stretched'. Like a human arm the Robotarm's movements are limited. The base rotates through a maximum of 270 degrees, the lower arm moves through a maximum of 90 degrees, the forearm through 85 degrees and the forceps through a maximum of 108 degrees. But despite these limitations we were not hampered in any way from programming the arm to carry out any of the tasks we devised for it.

Apart from physically controlling the arm there is a Rogo command (SHOWARM) that permits you to view a simulated model of it on the screen from four different perspectives. The simulated model can also be synchronised with the Robotarm so that each one can carry out the same movements.

A test routine is also included and by entering the command SELFTEST the Robotarm will run through all its paces and check each joint to make sure that they are functioning.

There are also the usual facilities that allow you to EDIT, RUN, SAVE, LOAD and PRINT all your instructions.

Spectravideo claims that by using the Robotarm youngsters will develop a natural curiosity and will want to learn how to control its movements and by doing so they will learn how to program in Rogo.

Rogo was chosen because it is very similar to Logo which is already widely used in schools with the Logo 'Turtle'.

Although the Robotarm is limited in its applications (for example it doesn't move across the floor, (although there are plans to manufacture a mobile version) it is aimed primarily at the very young. It is easy to master and gives an insight into how a computer can control peripheral devices. Rogo also provides a foundation for programming in other languages.

The Quickshot Robotarm may not be able to build cars, fetch your slippers or switch on the hi-fi but it can perform simple tasks that will arouse a child's curiosity and promote learning. As such it may well turn out to be one of the most educational toys we've come across yet for MSX.

SOFTWARE SCENE

Our review panel has been working overtime to bring you all the very latest MSX software releases. To help you make an informed choice, we're using a star rating system.

Each game will be awarded one to three stars for its graphics, sound, value and verdict. Business and utility software will be awarded stars

for facilities offered, layout, value and, again, verdict.

STAR RATINGS

★ Yawn!

★★ Good effort, but nothing to shout about

★★★ Great — really liked it!

N/A Not applicable

HYPER SPORTS 3 £14.95

Konami can do no wrong with its sports simulations, and *Hyper Sports 3* is the latest in a long line of top notch cartridges.

Running true to form Konami has again incorporated excellent graphics with realistic sounds and is once again a firm favourite with the *MSX Computing* team.

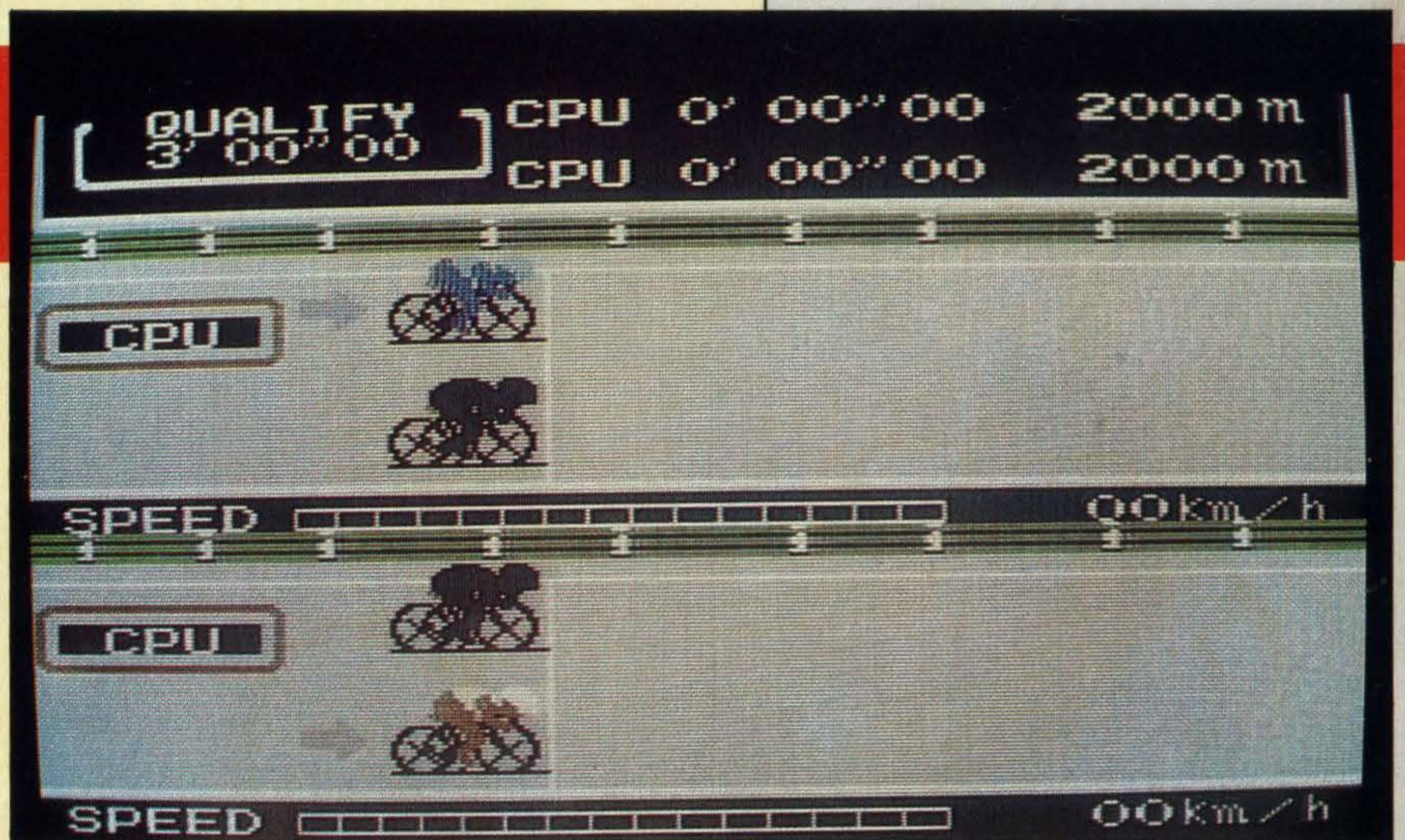
As in *Hyper Olympic 1* and *2* and the previous *Hyper Sports* carts Konami has stuck to the old but popular formula of four events each requiring a set number of points to qualify.

The first event is cycling and we spent many hours hammering away at the cursor keys, spraining wrists and chipping finger nails before we managed to scrape through to the next round, the triple jump.

The triple jump looks easy but as we all know looks can be very deceptive. The trick is to get a good speed up and not jump too high as the higher you go the less distance you're likely to travel. Several times we failed to jump at all and it took a lot of practice before we qualified.

The third game is curling and unusual as it doesn't (to our knowledge) appear in any other sporting titles. Here you have to watch out for ice temperatures, but it's great fun watching the 'sweepers' at work trying to smooth a path on the ice to give you a faster run.

Perfect timing and a lot of skill is required if you're to get a bull's-eye. After several



attempts we managed to beat the world record — just goes to show perseverance pays off in the end.

Pole vaulting is the final event and needless to say at the time of writing we've still not cracked it! It obviously requires a knack, our competitor either slides down the pole or misses altogether and ends up sobbing his heart out. But we have no intention of giving up!

A detailed manual accompanies this game and its well worth a read as it not only tells you what keys to use for each sport but also includes hints for more skilful play.

It goes without saying that as always the graphics and sound are of the same high standard we've come to expect and we can't wait for Konami to roll the next title off the production line.

What more can we say except go buy it!

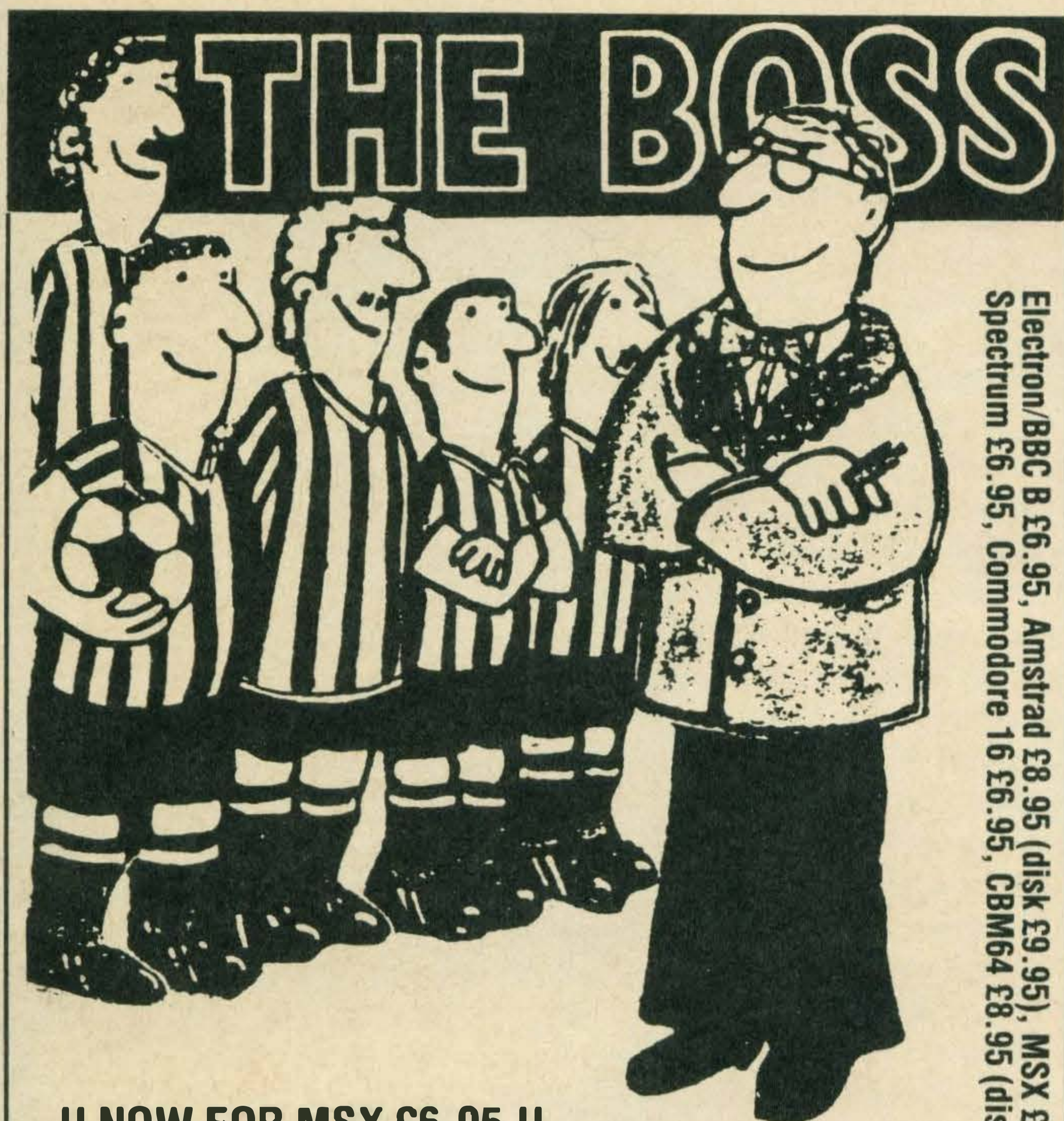
SUPPLIER: Konami
01-429 2466
TYPE: Simulation
FORMAT: Cartridge

GRAPHICS ★ ★ ★

SOUND ★ ★ ★

VALUE ★ ★ ★

VERDICT ★ ★ ★



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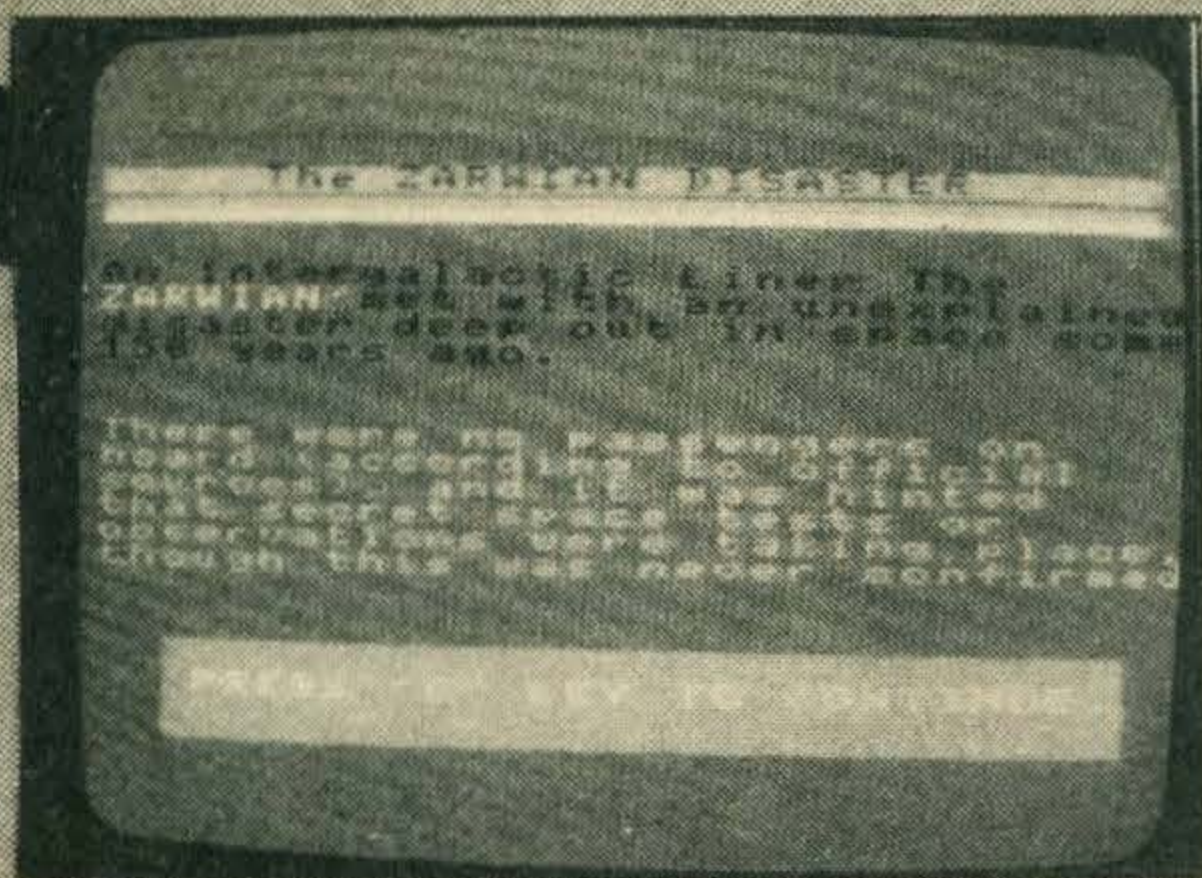
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SUPPLIER: K-Soft Computers
TYPE: Combative adventure
FORMAT: Cassette

GRAPHICS N/A

SOUND N/A

VALUE ★

VERDICT ★

ZARWIAN DISASTER

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If your wondering what a Zarwian is, it's an intergalactic liner that met with a disaster in space many years ago. There were reported to be no passengers on board, and it was said to be something to do with secret space tests, but now's your chance to find out the truth as your own ship, the cleverly named MSX, has come across the wreck of the Zarwian in deepest space.

Your first port of call is the ship's finely-carpeted reception centre, which has two large desks in one corner, each containing Data-Units for recording arrivals and departures. Perhaps you could investigate these to see if they're still operational? Well, no you can't as this isn't that type of adventure.

Your options in each location are strictly limited and always listed for you, to be summoned up by a single key-press. In this first location, for instance you could go N, S, E, W, (P)ick up something, (I)nvestigate, (F)ight or (R)un away, which immediately tells you you're going to be coming across some hostile creatures at some point. It also tells you that you won't be able to (S)ave your game.

You need a key to go north, but south is the ship's hospital, with bodies lying around, including a white-coated one. Pressing I to investigate you're told that this is the doctor

carrying a syringe which just might contain an antidote to whatever germ it was that wiped out the ship's crew. Do you take a gamble and inject yourself: Y/N?

I decided not to risk it, then went into an information centre where I was informed: "There is danger here . . . it's an android." An android, eh? Then a swords and sorcery type battle commences, allowing you to sit and watch the misspelled remark "You're attacking" repeat itself on screen along with some other choice phrases for over two minutes while you fight it out with an android until eventually the strength of one of you diminishes to zero. At which point, interestingly, the program crashed.

Even without the crash this is a poor example of a combative adventure. You have no control over the inputs, and no option but to sit and watch the screen. In the rest of the game, the location descriptions are reprinted constantly and sometimes exceedingly slowly.

K-Soft is a relatively new MSX software house and *Zarwian Disaster* is its first title. Even so for an adventure it still requires a great deal of work on it for it to be worthy of a place along side the title of Melbourne House and the highly popular Level 9 titles.

Play this game and you learn two things: what a Zarwian is and what a disaster is.

DIVISION ONE MANAGER

£14.95

As if life weren't bad enough, you've just been appointed manager of a First Division side and apart from surviving you're expected to win the Championship. Your squad is only moderate, but there's cash available to 'improve' it, the instructions tell you.

You start by choosing a name for your side from those on offer, but this is made a bit tricky as a fault in the program means that the names are overprinted and impossible to read. Easier to take the other option by naming your own team.

At the start of the season you have a cool quarter-million in the bank, and before each game you can buy or sell keepers, defenders, midfield or strikers. We tried option seven, to buy defenders, and a prompt came up saying "How much? £". We were unable to get the keyboard to respond to this so settled for the squad we had.

As each game comes up, you're told your opponents and the venue, as well as how many of the papers tip you for a win, and at this point you should also see your opponents' tactics, but yet again text is overprinted and illegible.

You choose your own tactics, on a scale from one (defence) to nine (attack), and then choose from four different systems for each of defence, midfield and attack, the defence

options, for instance, being the sweeper system, to intercept passes (always a sensible move, that), to shadow the forwards (not a bad idea really, much better than ignoring them completely) or the zone system. The minutes tick away on screen and any score is printed, giving you an option to change your tactics at half-time if you wish.

Then the full results of that week's matches are listed—or would be if the home team weren't printed over the away team, and you're given a note of your expenses and any injuries incurred, allowing you to decide whether to strengthen your squad in any department. Then on you go to the next match.

The responses in this program are far too slow, and that's even assuming the bugs about the layout were sorted out.

You must also wait an age for a key-press to register, and the program's also badly designed in that you're only allowed one trade at a time. You have to go back to the main menu and choose the option a second time if you want it, resulting in you sitting through a slow print-out of your squad all over again—very tedious!

This is definitely relegation fodder in the software league. Hopefully K-Soft has better luck next season!



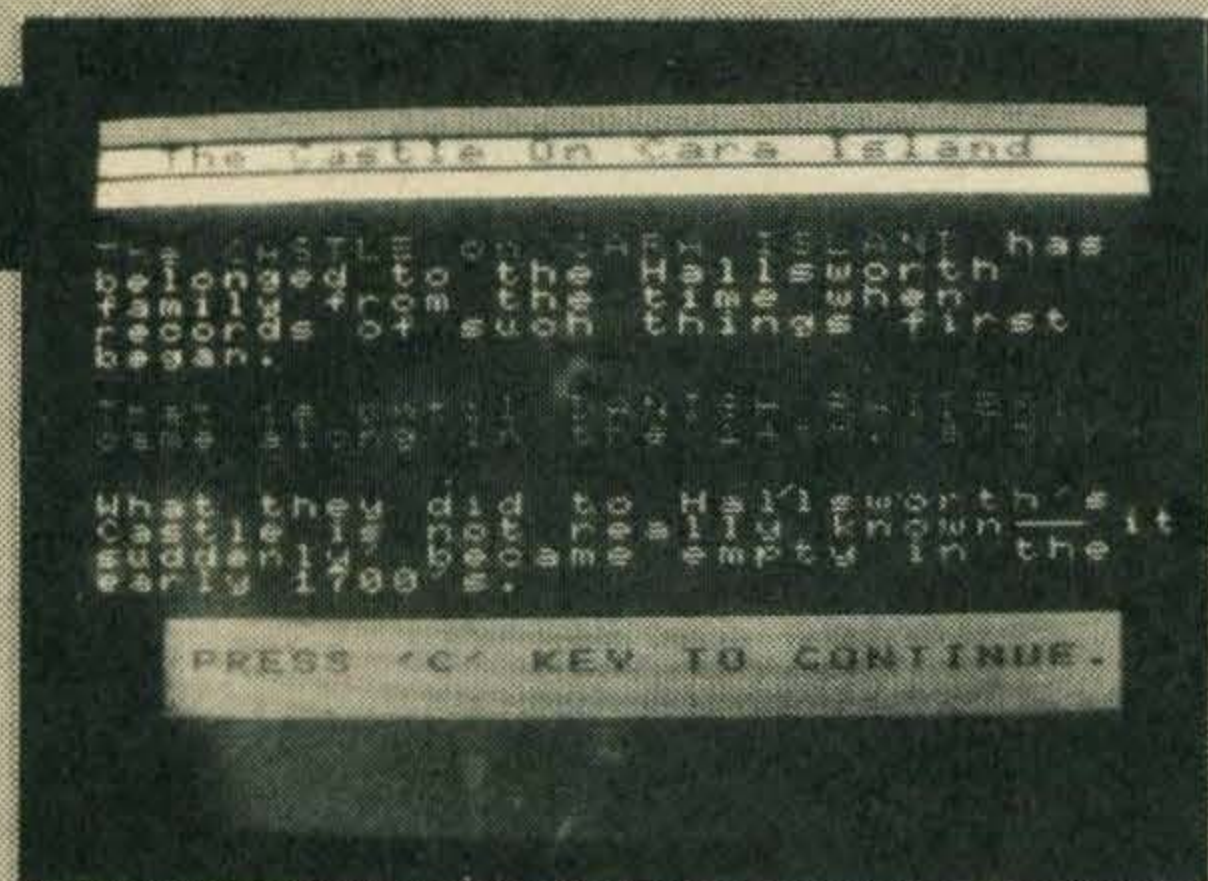
SUPPLIER: K-Soft Computers
TYPE: Simulation
FORMAT: Cassette

GRAPHICS N/A

SOUND N/A

VALUE ★

VERDICT ★



CASTLE ON CARA ISLAND

£6.95

SUPPLIER: K-Soft Computers
TYPE: Combative
 adventure
FORMAT: Cassette

GRAPHICS N/A

SOUND N/A

VALUE ★★

VERDICT ★★

This quaintly named castle has belonged to the Hallsworth family since records began, till the dastardly Danes came along in the 14th century. Quite what they did isn't known, but the castle is believed to be cursed and has been empty for the past 250 years.

Following the death of an unknown relative, Dr Markham Hallsworth, the title deeds have come into your hand along with an old map, on the back of which is part of a message which you can't quite read. Dare you visit the castle and discover its secrets? Well you've wasted £6.95 if you don't.

You make your way to the island, off the coast of Scotland, and "as you look at the tumbling moss-covered structure, you can see that the entrance doors are open and unguarded." I should hope so if it's been empty for 250 years.

Your options at any point are listed on the screen for you, and called us using a single key-press. Checking status told us that we had six points each of intelligence, power and speed, and had killed no enemies, so we could see we were in for a battling good time.

Limiting the player's options like this is very restricting, and means it's not so much a challenge, more a case of pot luck as you investigate only in locations where the program accepts the 'I' input. The program

also has faults similar to the other K-Soft games looked at this month, such as slow responses, and also one of its own: it decides to give you a status check every few moves, despite the fact that this is always available as an option if you want it, and it's doubly annoying that the screen goes blank for ten seconds or so before the status information is printed out.

The combat sequences with wizards and orcs allow you to choose whether to do battle with your intelligence, power or speed, and the victor is rewarded with additional points of whichever type you choose — a bit academic in your case as defeat means death anyway. When battle commences you sit back and watch while the screen prints exciting messages like "Bash!!!" and "Aaargh!!!"

Despite the faults, this wasn't all that bad a game, and the locations opened up nicely with plenty of decisions to make: do you sip the foul-smelling brew in the bubbling cauldron, or risk opening the safe in the picture gallery? It was rather disconcerting to find after our first game, though, that we'd already managed to score almost 50%, so you might welcome the random nature of each new game. It's not quite in the Level 9 league, but it is cheap and interesting to play.

ALIEN 8

£9.95

Long long ago . . . in a distant planet the last of the guardians prepare their starship for its final journey. All records and knowledge have been stored aboard the vessel along with their cryogenically preserved race.

All hatchways are sealed and the starship begins its journey into the inky void of space.

Aeons pass then suddenly the central computer awakens you with a report that the ship has been penetrated by aliens and life support systems are damaged.

Cast as a robot and bearing a remarkable similarity to 'Metal Mickey' your task is to repair the life support systems.

Sounds easy, but it isn't! Several thermo-lec valves are missing, not only do you have to find them but plug them into the right sockets. Many of them are disguised and blend into the scenery so it's well worth exploring all the rooms and looking in the unobvious places.

While we're on the subject of rooms it's worth pointing out that no two are alike and that you'll discover (as we did) that the furniture is mobile! And occasionally you are likely to come across the odd box suspended in mid-air.

We found this very disconcerting and in many of the rooms it took us ages to work out how to climb on to the boxes and get across the room into the next one.

You also need to keep an eye out for the intruders, robodroids, bump into one of these and you'll be exterminated and rapidly exhaust your five lives.

Throughout the game a counter at the bottom keeps you informed of how many light years have passed, how many valves you've picked up and how many lives are left.

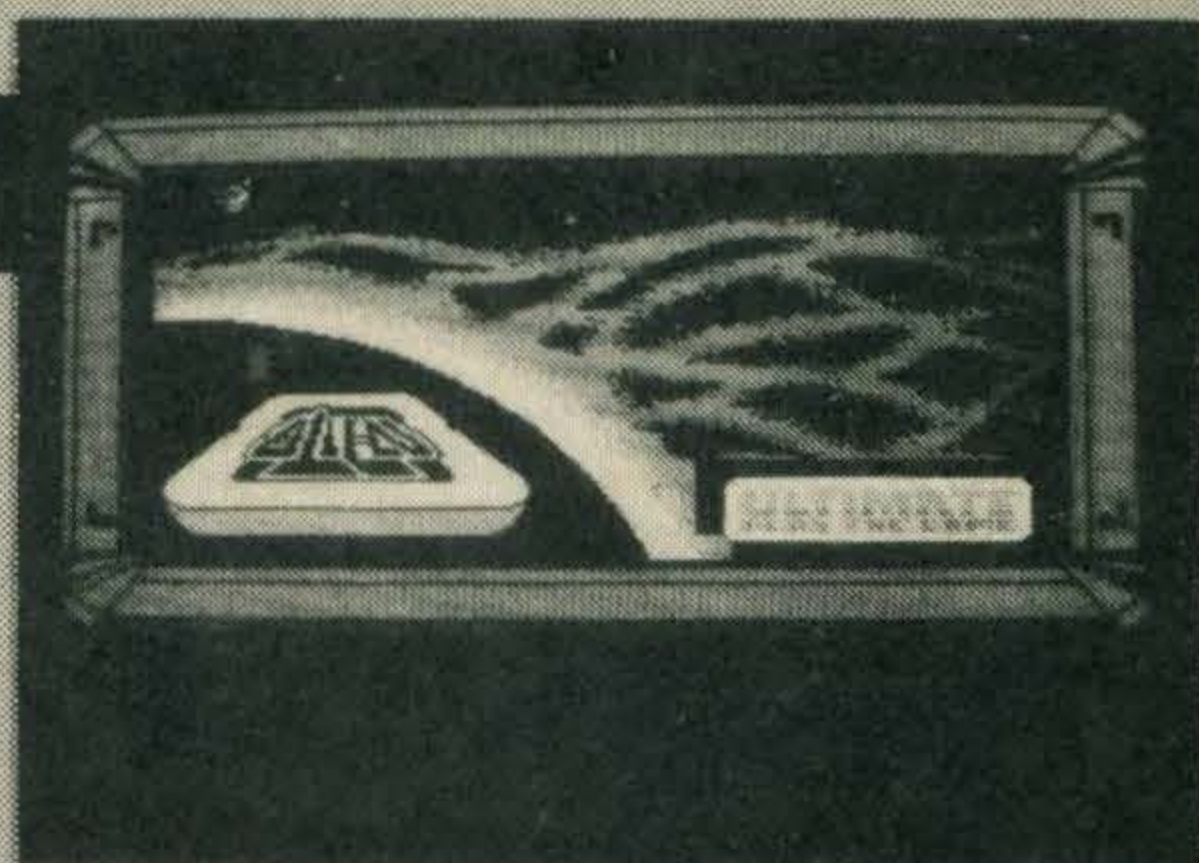
Unfortunately we only managed to find four of the valves and lost two lives in the process. But, as we're dedicated adventure players in this office we are determined not to give up.

The graphics are excellent and in 3-D so that as in real life you can hide behind walls, walk under balconies or cower in dark corners.

Our only complaint is that it's difficult judging distances when jumping and as a result our droid came a cropper several times before we got it right.

Finally, should you fail to restore the life support systems then the ship and all cryonaughts will be lost and you'll have to be re-programmed. But be warned it's not pleasant!

If you are an adventure fiend you'll enjoy *Alien 8* and won't begrudge forking out £9.95 on a title that offers plenty of action.



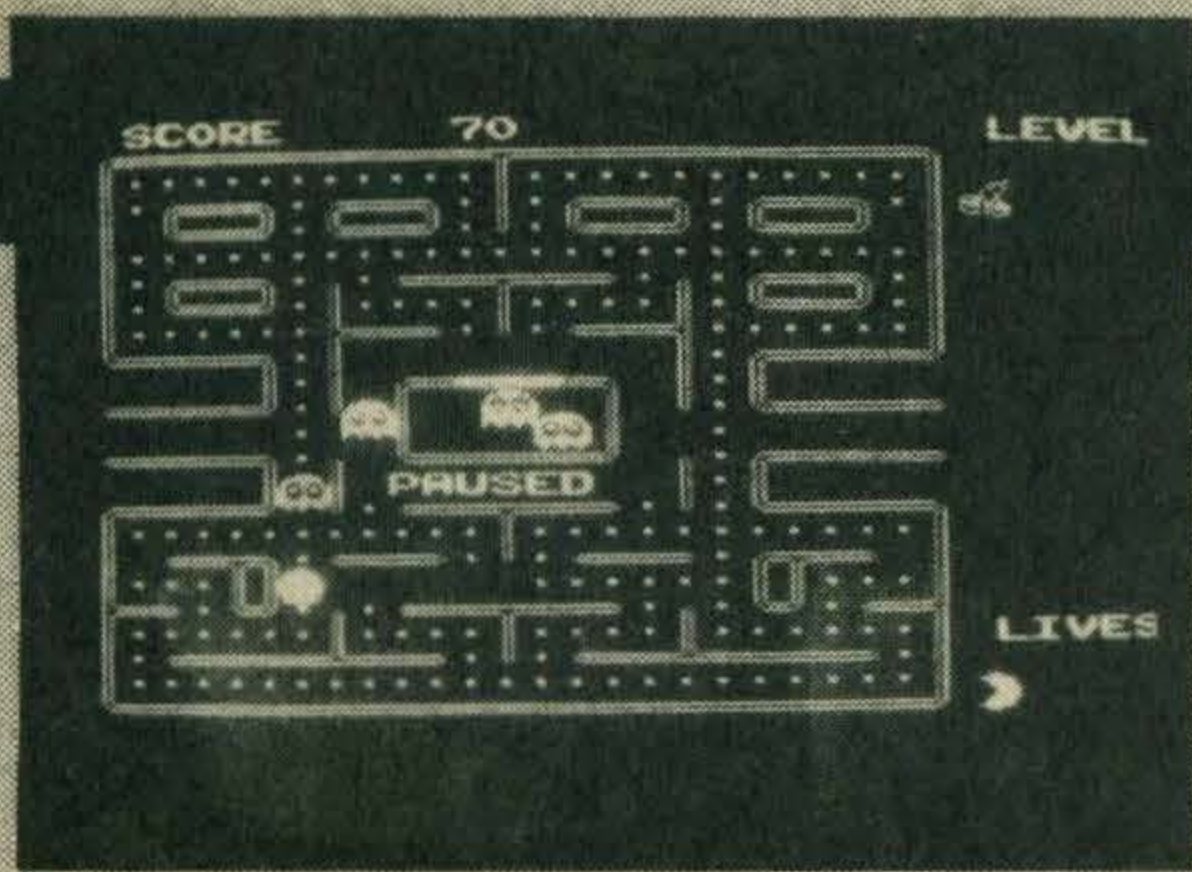
SUPPLIER: Ultimate
 (0350) 411485
TYPE: Arcade/adventure
FORMAT: Cassette

GRAPHICS ★★ ★

SOUND ★ ★

VALUE ★ ★

VERDICT ★★ ★



SUPPLIER: Nemesis
01-741 2299
TYPE: Arcade/maze
FORMAT: Cassette

GRAPHICS ★ ★

SOUND ★ ★

VALUE ★ ★ ★

VERDICT ★ ★

OH NO!

£2.99

Pac-man fans will love this game as it is based very much along the same lines.

Oh No! is a typical maze/arcade game, from the Aackosoft stable and written by Steve Course.

However, it's far superior to games of this sort as *Oh No!* has a speech facility, but more of that later.

The idea of the game is to go through the maze and eat as many vitamin pills as possible. But at the same time you have to watch out for the four ghosts called Joey, Franky, Willy and Paul, who will do their best to hamper your task.

Scattered throughout the maze are various fruits and eating these gives you bonus points and boosts up your score.

By eating the power pills (the large yellow pills) you acquire a type of immunity that allows you to confront the ghosts and eat them. When you do their body disappears and their eye balls whoosh back to the centre of the maze and seconds later will reappear as another ghost.

Should you be unlucky enough to get caught by a ghost a voice will yell out 'Oh no!' and you'll have to start over again. And when you've exhausted your three lives the same voice will yell out 'Game over'.

The speech is a really novel and fun

feature and does much to enhance the game.

Initially we received two identical copies of the game but with different cassette covers. One for the European market and one for the UK.

Why you might ask did we have two? Well the European version has a different title and was deigned unsuitable for the UK and which we're not permitted to print. Instead of *Oh No!* it is called *Oh S--t!* and that is exactly what you hear when caught by the ghosts! (We're sure you can figure out the missing letters.)

Pac-man is a very old but still immensely popular title and almost has a cult following so it's not surprising that Aackosoft decided to use the concept for *Oh No!*

If you're looking for a game that doesn't fall into the alien bashing category and isn't an adventure either then this game could well be just the one to go for. We found it very addictive and spent many lunch hours trying to beat each other's scores and it's going to remain a firm favourite.

Oh No! is an easy game to play and will no doubt be a big hit with the *Pac-man* fraternity. And at £2.99 it's a bargain that shouldn't burn too big a hole in your pocket, unlike many MSX games.

BOOM!

£1.99

The cassette cover of this game shows a picture of an atomic bomb going off and just goes to show that looks can be deceiving. The game has nothing to do with an atomic or nuclear war but is a normal run-of-the-mill space invader game.

With three ships at your disposal you have the task of knocking out a fleet of enemy space invaders.

Difficult doesn't apply. So long as you keep moving from side to side and constantly firing at the opposition you should stay alive and get through to the next level.

We're not invader fanatics and without trying too hard we managed to clock up some pretty impressive scores.

Once onto the second level you're faced with an identical scenario but with many more invaders to fight off.

After playing *Boom!* for a few minutes we discovered that if you pick off the invaders in rows at a time stand more chance of staying alive and bumping up your score. It's simply a question of technique and once that's sussed it's an easy game to play.

The subsequent levels were all very much the same and after a while our interest waned.

If you are a dedicated space invader fiend then this is going to appeal and will no doubt

provide many hours of fun and you'll relish the thought of zapping all those invaders and sending off your scores to our high score page!

But for those who aren't keen on the shoot 'em and kill 'em type games this is going to have limited attraction.

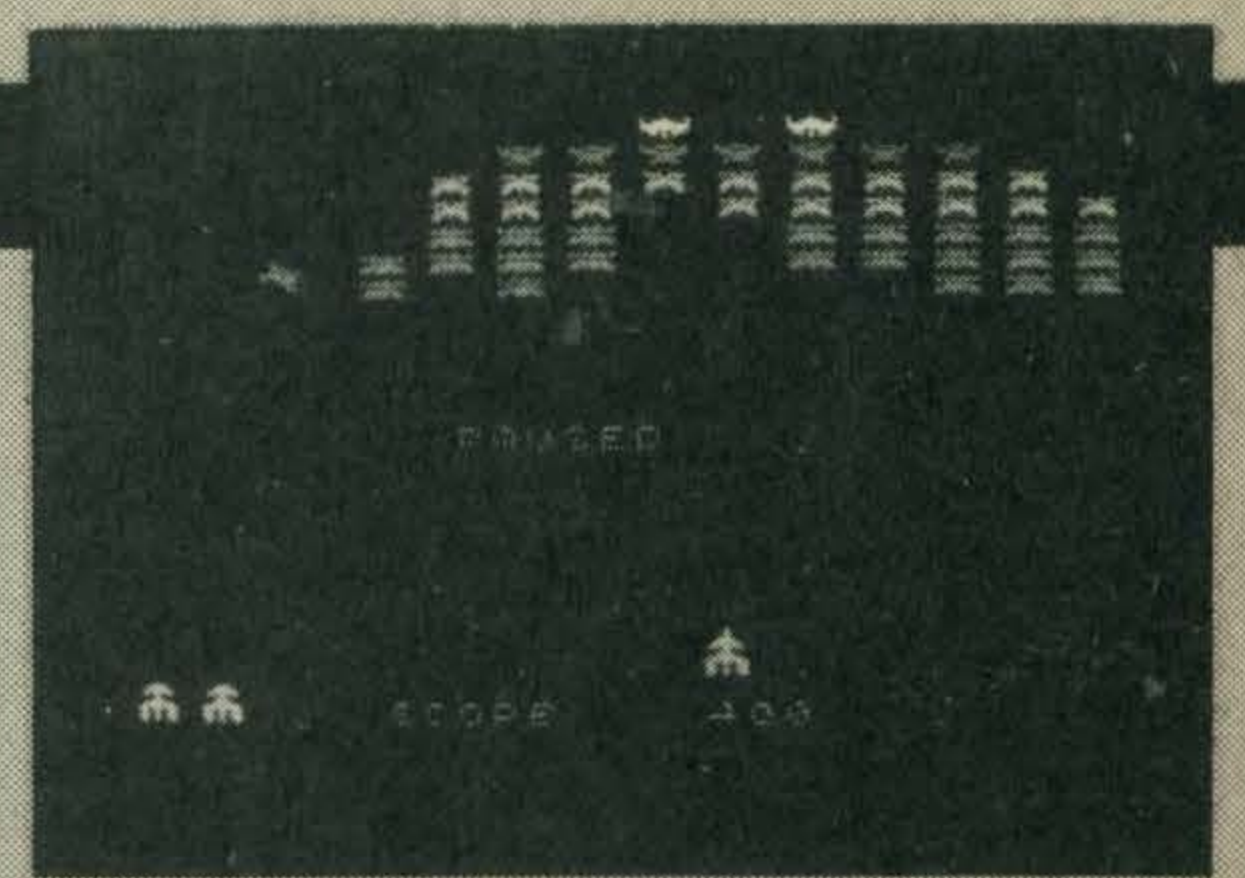
The graphics are good — the best we've seen for most types of this game — and there's plenty of colour to stimulate the eyes.

Sound too is good and very realistic but does tend to grate on the eardrums after any great length of time.

There aren't many games available for under a fiver that are worth buying let alone playing! However Aackosoft seems to have come up with a selection of low cost titles with good graphics and sound effects and at a price that many youngsters will be able to afford.

On the whole we enjoyed playing *Boom!* and reckon it'll be very popular, a few more hours at this and we could become dedicated invader players.

Again like *Frogger* this is a classic game that has kept many a gamer glued to his micro. At £1.99 it's hardly going to break the bank and will no doubt provide endless hours of fun for invaders fans and could be well worth adding to your collection.



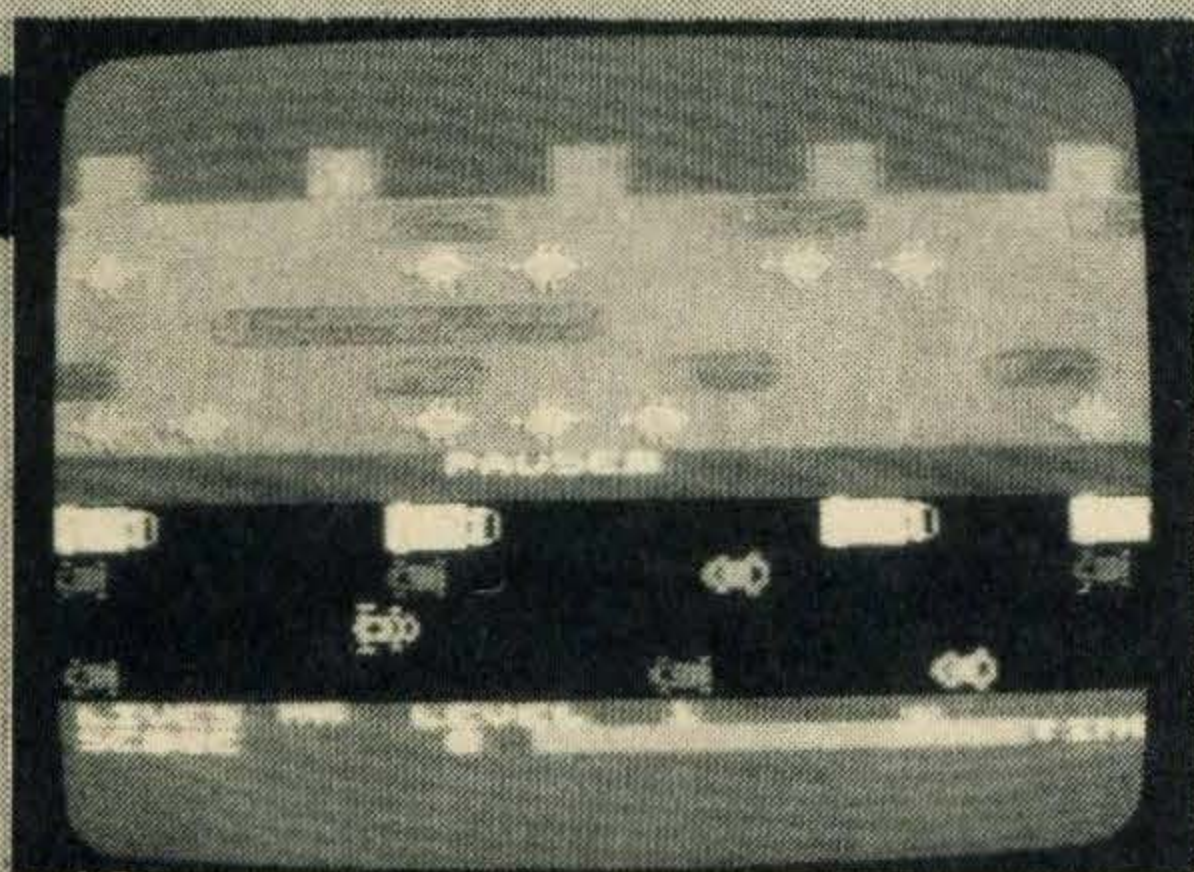
SUPPLIER: Nemesis
01-741 2299
TYPE: Arcade
FORMAT: Cassette

GRAPHICS ★ ★

SOUND ★ ★

VALUE ★ ★ ★

VERDICT ★ ★



SUPPLIER: Nemesis
01-741 2299
TYPE: Arcade
FORMAT: Cassette

GRAPHICS ★ ★

SOUND ★ ★ ★

VALUE ★ ★ ★

VERDICT ★ ★

HOPPER

£1.99

Hopper is one of the few cheap games around that offers reasonable graphics and is fun to play.

It's the latest in a spate of budget priced titles from the Dutch software house Aakosoft and is being marketed in the UK by Nemesis.

Hopper is probably very familiar to arcade buffs as it is a re-hashed version of that old chestnut *Frogger*.

The cassette cover describes it as a classic which is an understatement as like *Boulderdash* it's the sort of title that won't age and will never lose its appeal.

The game casts you as a frog and your task is to leap across a busy road onto a grassy bank and then across a fast flowing river.

Sounds easy doesn't it but we can assure you it isn't!

As we said before the road is very busy and as you leap across you have to take care and avoid the juggernauts and racing cars that come hurtling towards you. Get hit by one of them and you meet a sticky end.

Once you reach the grassy bank there's time for a quick breather and a quick scout around.

Getting across the river is no easy task as you have to leap across turtles and logs. The

logs are no problem, but the turtles sink when you least expect them to!

Across the river, cut out of the bank are five hollows and yes you've guessed it you have to leap into each hollow to score points. But, not all the hollows are empty! Occasionally a purple fly will occupy one of the hollows, leap into it and your score substantially increases.

However, you have to be quick as the fly only remains in the hollow for about five seconds, miss him and you miss your bonus.

If you manage to get through the first level (we did but it took a lot of practice) you are confronted with the same scenario but the traffic moves at a much quicker pace and the river is infested with crocodiles as are some of the hollows. Jumping in to a hollow which is occupied by a crock is certain death so watch out!

We didn't manage to get onto the next level but we're still trying.

The graphics aren't exceptional but bright and the sound is very similar to a frog leaping.

Other than that we think *Hopper* is a great game, we certainly had a lot of fun playing it, and it's good value at only £1.99. This is one title we recommend you to buy.

KICK IT!

£1.99

Life is very hectic for Sexy Sue (that's you believe it or not), she has to move quickly across stepping stones and defuse time bombs before they explode.

If she doesn't manage to defuse them she will be blown up . . . which isn't a pretty sight. And if Sue steps off the stones she will sink into oblivion.

What can we say except that as far as games go this one sure is different!

The screen is a mass of stones occasionally broken up by green wheels which boost your score if you step across them.

And like all good games there are plenty of obstacles and dangers to watch out for in the shape of 'leering old men' and 'bowler-hatted flashers', no we're not kidding that's exactly what happens!

While Sue or rather Sue's legs are trying to defuse the bombs you must avoid the leering gents who try to entice you away and dodge the bowler-hatted flashers.

If Sue runs into the flashers or the leering men she loses a life and as this game has a speech facility she also lets out a spine chilling scream which came as a shock to us as we didn't expect such a high pitched female voice, and it attracted several onlookers.

The leering old men cannot be moved but

you can scroll them by pressing the spacebar or fire button whilst moving left or right. But you have no control over the bowler-hatted flashers they move totally independently.

Level one brings you one flasher, level two two flashers and so on up to a maximum of four.

There is also a pause facility so if you get stuck you can at least stop for a while and have a quick re-think.

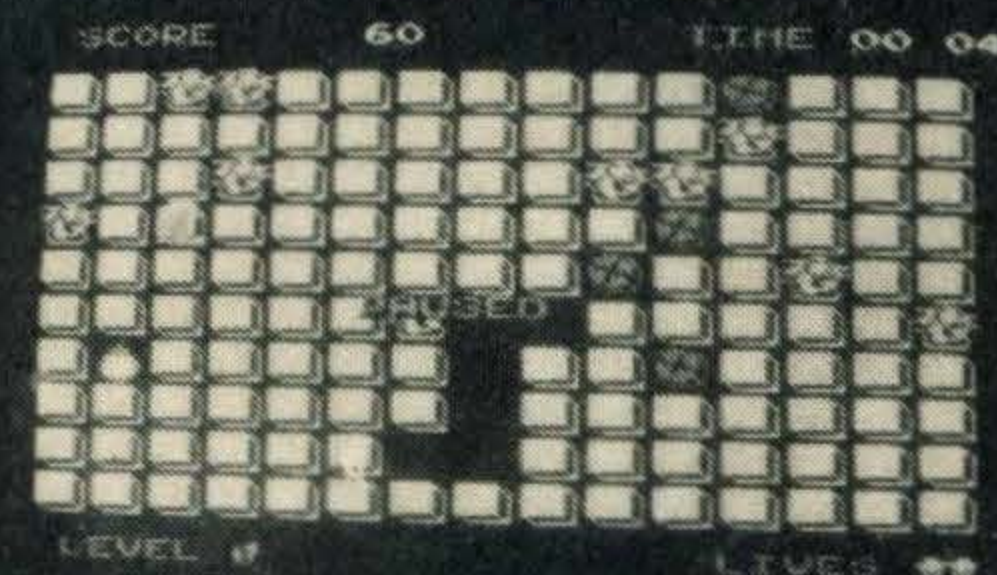
The game can be played using either a joystick or the cursor control keys, we found it easier to use the latter.

Kick It! is not a new game as the concept has been used many times before but the idea of using flasher and leering men is new. We are not entirely sure whether this title is suitable for young children with very impressionable minds.

But having said that we enjoyed playing the game and the sound effects are amusing to say the least.

The graphics in this game are far from brilliant but what more can you expect for the low cost price of £2.99.

If you enjoy playing games that demand skill and nerve *Kick It!* should appeal but be warned you need a warped sense of humour to enjoy it to the full.



SUPPLIER: Nemesis
01-741 2299
TYPE: Arcade
FORMAT: Cassette

GRAPHICS ★ ★ ★

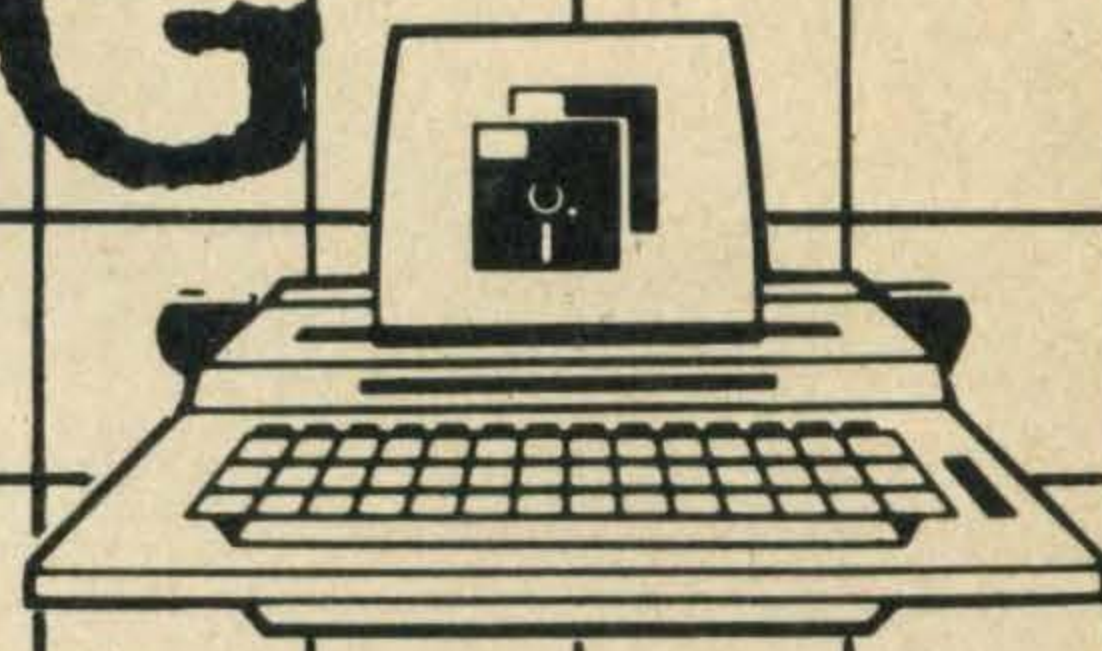
SOUND ★ ★ ★

VALUE ★ ★ ★

VERDICT ★ ★ ★

GET TYPING

Feel like doing it yourself? Get your teeth into our readers' programs



LETTER PUZZLE

W M Stam

This game from W.M. Stam in Holland is a version of the sliding-block puzzle in which you have to put the letters A to O into the right order.

Program structure

| | |
|-----------|---|
| 100-180 | Introduction and tune |
| 190-620 | Set up routine |
| 630-650 | Routine to empty input buffer |
| 660-740 | Input |
| 750-1220 | Routines to move the letters |
| 1230-1270 | Number of moves |
| 1280-1330 | Check if game is completed |
| 1340-1780 | Input high score: another game: end of game |
| 1790-1960 | Routine to removed letters from the screen |
| 1970-2140 | Explosion, etc |
| 2160-2190 | Data lines (instructions) |
| 2200-2350 | Data lines (characters) |
| 2360-2490 | Tune |

Main variables

| | |
|-----|--|
| Z | Number of moves |
| BS | Best score |
| R-S | Variables to locate the letters(array a and b) |
| R\$ | String for instructions |
| W\$ | Inputs for three initials |

```

10 REM *****
20 REM *
30 REM *   LETTERPUZZLE
40 REM *
50 REM *   W.M.STAM.
60 REM *
70 REM *   ARNHEM 1985.
80 REM *
90 REM *****
100 SCREEN0:KEYOFF
110 LOCATE13,0:PRINT"LETTERPUZZLE"
120 LOCATE0,3
130 REM **** INSTRUCTIONS *****
140 READA$
150 IFA$="XXX"THEN180
160 PRINTA$:PRINT:GOTO140
170 REM ***** TUNE *****
180 GOSUB2360
190 REM *** SETTING UP THE GRID ***
200 SCREEN2,3,0
210 COLOR10,10,1:CLS
220 OPEN"GRP:"FOROUTPUTAS#1
230 COLOR 1:DRAW"BM24,180":PRINT#1,"W

```

```

AIT A MOMENT"
240 DIMA(4,4):DIMB(4,4)
250 Z=0:BS=0
260 RESTORE2210
270 FORJ=1TO15
280 S$=""
290 FORI=1TO32
300 READR$
310 S$=S$+CHR$(VAL("&H"+R$))
320 NEXTI
330 SPRITE$(J)=S$
340 NEXTJ
350 FORQ=1TO7000:NEXT
360 FORI=0TO13:SOUNDI,0:NEXT
370 LINE(0,0)-(255,3),4,BF
380 LINE(0,189)-(255,191),4,BF
390 LINE(24,5)-(180,165),6,BF
400 LINE(32,13)-(175,155),10,BF
410 LINE(184,5)-(249,165),1,BF
420 LINE(185,7)-(247,163),5,BF
430 COLOR1:PSET(190,15):PRINT#1,"MOVE
S:"
440 PSET(190,85):PRINT#1,"BEST"
450 PSET(190,95):PRINT#1,"SCORE:"
460 COLOR 15
470 DRAW"BM200,35":PRINT#1,Z
480 DRAW"BM200,115":PRINT#1,BS
490 J=0
500 FORI=1TO4:FORK=1TO4
510 X=1+INT(RND(-TIME)*5)*35
520 Y=15+INT(RND(1)*4)*35
530 IFX<35THEN510
540 IFY<15THEN520
550 IFPOINT(X,Y+1)=4THEN510
560 IFJ=16THEN540ELSEPUTSPRITEJ+1,(X,
Y),4,J+1
570 FORN%=1TO150STEP15:SOUND7,140:SOU
ND8,15:SOUND13,10:SOUND0,N%:NEXT:SOUN
D8,0
580 PSET(X,Y+1),4
590 R=X\35:S=Y\35:J=J+1:A(R,S)=J
600 NEXT:NEXT
610 LINE(18,180)-(140,188),10,BF
620 LINE(34,13)-(142,122),10,BF
630 REM *** INPUTBUFFER EMPTY ***
640 DEFUSR1=342
650 U=USR1(0)
660 REM ***** INPUT *****
670 R$=INKEY$
680 IFR$=""THEN670
690 W=ASC(R$)
700 IFW=30THENGOSUB750
710 IFW=28THENGOSUB870
720 IFW=31THENGOSUB990

```

```

730 IFW=29THENGOSUB1110
740 GOTO1280
750 REM ***** MOVE UP *****
760 IFY+35>140THENBEEP:GOTO670
770 Y=Y+35
780 R=X\35:S=Y\35
790 FORL=1TO35STEP1
800 PUTSPRITEA(R,S),(X,Y-L),4,A(R,S)
810 NEXTL
820 SOUND7,142:SOUND8,15:SOUND0,75:SO
UND8,0
830 A(R,S-1)=A(R,S)
840 J=A(R,S-1):B(R,S-1)=J
850 GOSUB1230
860 RETURN
870 REM ***** MOVE RIGHT *****
880 IFX-35<35THENBEEP:GOTO670
890 X=X-35
900 R=X\35:S=Y\35
910 FORL=1TO35STEP1
920 PUTSPRITEA(R,S),(X+L,Y),4,A(R,S)
930 NEXTL
940 SOUND7,142:SOUND8,15:SOUND0,75:SO
UND8,0
950 A(R+1,S)=A(R,S)
960 J=A(R+1,S):B(R+1,S)=J
970 GOSUB1230
980 RETURN
990 REM ***** MOVE DOWN *****
1000 IFY-35<15THENBEEP:GOTO670
1010 Y=Y-35
1020 R=X\35:S=Y\35
1030 FORL=1TO35STEP1
1040 PUTSPRITEA(R,S),(X,Y+L),4,A(R,S)
1050 NEXTL
1060 SOUND7,140:SOUND8,15:SOUND0,75:S
OUND8,0
1070 A(R,S+1)=A(R,S)
1080 J=A(R,S+1):B(R,S+1)=J
1090 GOSUB1230
1100 RETURN
1110 REM ***** MOVE LEFT *****
1120 IFX+35>175THENBEEP:GOTO670
1130 X=X+35
1140 R=X\35:S=Y\35
1150 FORL=1TO35STEP1
1160 PUTSPRITEA(R,S),(X-L,Y),4,A(R,S)
1170 NEXTL
1180 SOUND7,140:SOUND8,15:SOUND0,75:S
OUND8,0
1190 A(R-1,S)=A(R,S)
1200 J=A(R-1,S):B(R-1,S)=J
1210 GOSUB1230
1220 RETURN
1230 REM ***** COUNTER *****
1240 LINE(195,34)-(240,45),5,BF
1250 Z=Z+1
1260 DRAW"BM200,35":COLOR 15:PRINT#1,
Z
1270 RETURN
1280 REM ***** READY ? *****
1290 FORZZ=1TO4:IFB(ZZ,0)=ZZTHENNEXTZ
ZZELSE670
1300 FORZZ=1TO4:IFB(ZZ,1)=ZZ+4THENNEX
TZZELSE670
1310 FORZZ=1TO4:IFB(ZZ,2)=ZZ+8THENNEX
TZZELSE670
1320 FORZZ=1TO3:IFB(ZZ,3)=ZZ+12THENNE

```

```

XTZZELSE670
1330 SOUND7,140:SOUND4,1:SOUND8,15:FO
RI=1TO255:SOUND13,1:SOUND0,I:NEXT:SOU
ND8,15:FORI=255TO1STEP-1:SOUND0,I:NEX
T:SOUND8,0
1340 REM *INPUT NAME FOR HIGH SCORE *
1350 IF BS=0ORZ<BSTHEN1360 ELSE 1510
1360 LINE(190,130)-(236,147),1,BF
1370 LINE(194,132)-(230,145),10,BF
1380 COLOR1
1390 DRAW"BM24,180":PRINT#1,"TYPE 3 L
ETTERS OF YOUR NAME"
1400 W#=INPUT$(3)
1410 FORW=1TO3
1420 COLOR4
1430 DRAW"BM202,135"
1440 PRINT#1,LEFT$(W#,W):SOUND0,1:SOU
ND1,1:SOUND2,1:SOUND7,140:SOUND8,16:S
OUND12,75:SOUND13,0:FORQ=1TO400:NEXT:
NEXT
1450 FORI=0TO13:SOUNDI,0:NEXT
1460 LINE(24,180)-(252,188),10,BF
1470 REM
1480 LINE(200,115)-(240,125),5,BF
1490 COLOR1
1500 DRAW"BM200,115":PRINT#1,Z:BS=Z
1510 LINE(24,180)-(200,188),10,BF
1520 COLOR1:DRAW"BM24,180":PRINT#1,"D
O YOU WANT ANOTHER GAME Y/N"
1530 K#=INKEY$:IFK#=""THEN1530
1540 IFK#="Y"ORK#="y"THEN1680
1550 IF K#="N"ORK#="n"THEN1570
1560 IFK#<>"N"ANDK#<>"y"ANDK#<>"n"AND
K#<>"Y"THEN1530
1570 REM **** END OF GAME ****
1580 LINE(24,180)-(250,188),10,BF
1590 GOSUB1970:GOSUB1790
1600 COLOR1
1610 FORI=1TO3
1620 DRAW"BM37,100":PRINT#1,"*** GOOD
BYE ***"
1630 FORQ=1TO500:NEXT
1640 LINE(67,100)-(140,120),10,BF
1650 FORQ=1TO500:NEXT
1660 NEXTI
1670 GOTO 2150
1680 REM *** ANOTHER GAME ***
1690 LINE(24,180)-(255,188),10,BF
1700 LINE(200,35)-(240,60),5,BF
1710 Z=0:ZZ=0
1720 COLOR 15
1730 DRAW"BM200,35":PRINT#1,Z
1740 ERASEA,B
1750 DIMA(4,4),B(4,4)
1760 GOSUB1970:GOSUB1790
1770 COLOR1:DRAW"BM24,180":PRINT#1,"W
AIT A MOMENT"
1780 GOTO490
1790 FORX=35TO-32STEP-4:PUTSPRITE1,(X
,15),4,1:NEXT
1800 GOSUB2080:FORY=15TO-32STEP-4:PUT
SPRITE4,(140,Y),4,4:NEXT
1810 GOSUB2080:FORY=15TO-32STEP-4:PUT
SPRITE3,(105,Y),4,3:NEXT
1820 GOSUB2080:FORX=70TO-32STEP-4:PUT
SPRITE2,(X,15),4,2:NEXT
1830 GOSUB2080:FORY=50TO-32STEP-4:PUT
SPRITE8,(140,Y),4,8:NEXT
1840 GOSUB2080:FORX=35TO-32STEP-4:PUT

```

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SPRITE5, (X, 50), 4, 5: NEXT
1850 GOSUB2080: FOR Y=50 TO 32 STEP 4: PUT
SPRITE7, (105, Y), 4, 7: NEXT
1860 GOSUB2080: FOR X=70 TO 32 STEP 4: PUT
SPRITE6, (X, 50), 4, 6: NEXT
1870 GOSUB2080: FOR Y=85 TO 32 STEP 4: PUT
SPRITE11, (105, Y), 4, 11: NEXT
1880 GOSUB2080: FOR X=35 TO 32 STEP 4: PUT
SPRITE9, (X, 85), 4, 9: NEXT
1890 GOSUB2080: FOR Y=85 TO 32 STEP 4: PUT
SPRITE10, (70, Y), 4, 10: NEXT
1900 GOSUB2080: FOR X=140 TO 32 STEP 4: PU
TSPRITE12, (X, 85), 4, 12: NEXT
1910 GOSUB2080: FOR Y=120 TO 32 STEP 4: PU
TSPRITE15, (105, Y), 4, 15: NEXT
1920 GOSUB2080: FOR Y=120 TO 32 STEP 4: PU
TSPRITE13, (35, Y), 4, 13: NEXT
1930 GOSUB2080: FOR X=70 TO 32 STEP 4: PUT
SPRITE14, (X, 120), 4, 14: NEXT
1940 GOSUB2080
1950 RETURN
1960 GOTO490
1970 REM *****
1980 SOUND7, 183
1990 SOUND8, 16
2000 SOUND6, 28
2010 FORM%=220 TO 1 STEP -1
2020 SOUND0, M%
2030 SOUND13, 1
2040 SOUND12, 100
2050 NEXT
2060 FORM=1 TO 1500: NEXT
2070 SOUND8, 0: RETURN
2080 REM *****
2090 SOUND7, 140
2100 SOUND8, 15
2110 FORM%=1 TO 250 STEP 3
2120 SOUND0, M%
2130 NEXT
2140 SOUND8, 0: RETURN
2150 SCREEN0: COLOR 15, 4, 4: END
2160 REM *** INSTRUCTIONS ***
2170 DATA The game is rather simple.
2180 DATA Your job is to get the lett
ers, A - O in the right order with the
, blank spot at the right corner of , t
he bottomline. Sometimes the compu-, te
r needs a little time to put all, the
letters on the screen., You can move t
he letters with the, cursor-keys.
2190 DATA (music 'SMILE' by CHARLES C
HAPLIN), XXX
2200 REM **** CHARACTERS ****
2210 DATA FF, FF, FC, F8, F9, F3, F3, F0, E0,
E7, E7, CF, CF, CF, FF, FF, FF, FF, 3F, 1F, 9F, C
F, CF, 0F, 07, E7, E7, F3, F3, F3, FF, FF
2220 DATA FF, FF, E0, E0, E7, E7, E7, E0, E0,
E7, E7, E7, E0, E0, FF, FF, FF, FF, 3F, 1F, 8F, C
F, 8F, 1F, 0F, C7, E7, C7, 0F, 1F, FF, FF
2230 DATA FF, FF, F8, F0, E7, CF, CF, CF, CF,
CF, CF, CF, E0, F0, FF, FF, FF, FF, 3F, 1F, CF, C
F, FF, FF, FF, FF, CF, CF, 1F, 3F, FF, FF
2240 DATA FF, FF, C0, C0, CF, CF, CF, CF, CF,
CF, CF, CF, C0, C0, FF, FF, FF, FF, 1F, 0F, CF, E
7, E7, E7, E7, E7, E7, E7, 0F, 1F, FF, FF
2250 DATA FF, FF, C0, C0, CF, CF, CF, C0, C0,
CF, CF, CF, C0, C0, FF, FF, FF, FF, 07, 07, FF, F
F, FF, 7F, 7F, FF, FF, FF, 07, 07, FF, FF
2260 DATA FF, FF, C0, C0, CF, CF, CF, C0, C0,
CF, CF, CF, CF, CF, FF, FF, FF, FF, 07, 07, FF, F

```

```

F, FF, 7F, 7F, FF, FF, FF, FF, FF, FF, FF, FF
2270 DATA FF, FF, F0, F0, E7, CF, CF, CF, CF,
CF, CF, CF, E0, F0, FF, FF, FF, FF, 1F, 0F, E7, E
7, FF, FF, 87, 87, CF, CF, 1F, 3F, FF, FF
2280 DATA FF, FF, CF, CF, CF, CF, CF, CF, C0, C0,
CF, CF, CF, CF, CF, FF, FF, FF, FF, E7, E7, E7, E
7, E7, 07, 07, E7, E7, E7, E7, E7, FF, FF
2290 DATA FF, FF, F8, F8, FE, FE, FE, FE, FE,
FE, FE, FE, F8, F8, FF, FF, FF, FF, 1F, 1F, 7F, 7
F, 7F, 7F, 7F, 7F, 7F, 7F, 1F, 1F, FF, FF
2300 DATA FF, FF, F0, F0, FF, FF, FF, FF, FF,
FF, FF, F3, F0, F8, FF, FF, FF, FF, 0F, 0F, CF, C
F, CF, CF, CF, CF, CF, CF, 0F, 1F, FF, FF
2310 DATA FF, FF, CF, CF, CE, CC, C9, C3, C3,
C9, CC, CE, CF, CF, FF, FF, FF, FF, 9F, 3F, 7F, F
F, FF, FF, FF, FF, FF, 7F, 3F, 9F, FF, FF
2320 DATA FF, FF, F3, F3, F3, F3, F3, F3, F3,
F3, F3, F3, F0, F0, FF, FF, FF, FF, FF, FF, FF, F
F, FF, FF, FF, FF, FF, FF, 0F, 0F, FF, FF
2330 DATA FF, FF, C7, C3, C9, CC, CE, CE, CF,
CF, CF, CF, CF, CF, FF, FF, FF, FF, E3, C3, 93, 3
3, 73, 73, F3, F3, F3, F3, F3, F3, FF, FF
2340 DATA FF, FF, CF, C7, C3, C1, C0, CC, CE,
CF, CF, CF, CF, CF, FF, FF, FF, FF, F3, F3, F3, F
3, F3, 73, 33, 13, 83, C3, E3, F3, FF, FF
2350 DATA FF, FF, F8, F0, E7, CF, CF, CF, CF,
CF, CF, E7, F0, F8, FF, FF, FF, FF, 1F, 0F, E7, F
3, F3, F3, F3, F3, F3, E7, 0F, 1F, FF, FF
2360 REM ***** TUNE *****
2370 PLAY"t60", "t60", "t60"
2380 PLAY"o414b-o518cdco4b-agl4a18b-o
5c", "o414df18agfe-14f18ga", "r8o318fb-
fr8o2b-o3e-o2b-r8o3fb-f"
2390 PLAY"t60", "t60", "t60"
2400 PLAY"o418b-agf14g18ab-14g18ab-o5
14c18de-", "o414f18e-f12fee-", "o2r818b
-o3e-o2b-r8o314d.r8d-.r8c."
2410 PLAY"o414bo518cd14e-18fgfe-dcl4e
-18fg-", "o414f18abo512co414go518co4ao
514c18de-", "o218co3go214gr8o318gcgr8g
cgr8e-a-e-"
2420 PLAY"o518fe-dcl4d18e-de-dco4b-14
o5c.18o4g", "o518dco4b-a-14b-o518co4b-
o5co4b-agl4e-.18g", "r8o318e-a-e-r8fb-
gr8dgd8g14c"
2430 PLAY"o512d14b-18o6cdco5b-ag", "o4
12g-o514d.18fagfe-", "o212fo2116b-o3fb
-do414fo2116e-b-o3e-g14g"
2440 PLAY"o514a18b-o6co5b-agf14g18ab-
", "o512f14fd-12d-", "o2116b-o3fb-do414
fo2116e-b-o3e-go414e-o2r8o318fb-f"
2450 PLAY"o514g18ab-o614c18de-o514bo6
18cd14e-18fg", "o512d-14e-18fg14df12g"
, "r8o318eger8gbb-r8d14gr818go414c"
2460 PLAY"o618fe-dcr8e-fg-fe-dco514d1
8e-d", "o618dco5bar8o6cde-dco5b-a-14b-
18cb-", "o312cr8o318e-14a-12a-r818fb-f
"
2470 PLAY"o518e-dco4b-o514c.o418go518
dr814d", "o518co4b-ab-12e-18g-r814g-",
"o212gcr818fr8f"
2480 PLAY"o412b-b-", "o412dd", "o312ff"
2490 RETURN

```

MISSILE ATTACK by Neil Ross

From Neil Ross in Aberdeenshire comes this version of an old arcade favourite. Your city is under attack from outer space, and your only hope of survival is to shoot down the incoming missiles before they wipe you out. Use the cursor keys or joystick 1 to move the sights, and the space bar or fire button to fire. If you manage to destroy all the missiles on one level you are awarded a bonus and moved up to the next level. The REM lines can be omitted as no GOTO or GOSUB statements use them.

```

10 REM ***Missile Attack***
20 REM ****By Neil Ross****
30 KEYOFF:DEFINT A-Z:COLOR 14,1,1
40 OPEN"grp:"AS#1
50 HI=1000
60 DIM Q(50),W(50),DR(50),K(50)
70 GOSUB 1010:REM instructions
80 SC=0:N=6:HT=0:AH=0:YM=2:PM=3
90 GOSUB 120:REM draw screen
100 GOSUB 300:REM set up
110 GOSUB 460:REM game
120 SCREEN 2,0
130 FOR I=1 TO 255
140 H=INT(RND(1)*10)+10
150 LINE(I,159)-(I,159-H),4
160 NEXT I
170 RESTORE 220
180 B$=""
190 FOR I=1 TO 8:READ A$:A=VAL("&b"+A$):B
$=B$+CHR$(A):NEXT I
200 SPRITE$(0)=B$
210 RETURN
220 DATA 00001000
230 DATA 00001000
240 DATA 00001000
250 DATA 01110111
260 DATA 00001000
270 DATA 00001000
280 DATA 00001000
290 DATA 00000000
300 P=RND(-TIME)
310 LINE(120,139)-(137,149),1,BF
320 DRAW"c3bm123,149e5f5110"
330 PAINT(128,146),3
340 BL=N+5
350 FOR I=1 TO 8:R=(I*4)+16:PRESET(R,16
2):PRINT#1,CHR$(217):NEXT
360 FOR I=1 TO N:K(I)=1:Q(I)=INT(RND(1)*
235)+12:W(I)=0:PSET(Q(I),W(I)),11:G=I
NT(RND(1)*2):IF G=0 THEN DR(I)=1:NEXT ELS
EDR(I)=-1:NEXT
370 X=128:Y=80
380 PUTSPRITE 0,(X,Y),14,0
390 COLOR 12
400 DRAW"bm12,182":PRINT#1,"Score=";S
C
410 COLOR 11
420 DRAW"bm120,182":PRINT#1,"High=";H
I
430 RN=0
440 RETURN
450 REM start game
460 ONSTRIG GOSUB 1070,1070
470 STRIG(C)ON
480 ONINTERVAL=5 GOSUB 570
490 INTERVAL ON

```

```

500 REM main loop
510 RG=INT(RND(1)*50)
520 IFRG<2 AND RE=0 THEN GOSUB 780
530 IF RE=1 THEN GOSUB 810
540 IF RE=0 THEN GOSUB 890
550 GOTO 510
560 REM move cross
570 S=STICK(C)
580 IFS=0 THEN RETURN
590 IFS=1 THEN Y=Y-PM:GOSUB 690:GOTO 670
600 IFS=2 THEN X=X+PM:Y=Y-PM:GOSUB 690:G
OSUB 710:GOTO 670
610 IFS=3 THEN X=X+PM:GOSUB 710:GOTO 670
620 IFS=4 THEN X=X+PM:Y=Y+PM:GOSUB 710:G
OSUB 730:GOTO 670
630 IFS=5 THEN Y=Y+PM:GOSUB 730:GOTO 670
640 IFS=6 THEN X=X-PM:Y=Y+PM:GOSUB 750:G
OSUB 730:GOTO 670
650 IFS=7 THEN X=X-PM:GOSUB 750:GOTO 670
660 IFS=8 THEN X=X-PM:Y=Y-PM:GOSUB 750:G
OSUB 690
670 PUTSPRITE 0,(X,Y),14,0
680 RETURN
690 IF Y<0 THEN Y=0
700 RETURN
710 IF X>246 THEN X=246
720 RETURN
730 IF Y>120 THEN Y=120
740 RETURN
750 IF X<10 THEN X=10
760 RETURN
770 REM rogue set up
780 RN=RN+1:IF RN>4 THEN RETURN
790 RE=1:RM=PM+2:RX=INT(RND(1)*200)+2
7:RY=0:PSET(RX,RY),12:RETURN
800 REM move rogue
810 BEEP:RY=RY+RM:IF RY>138 THEN GOSUB 86
0
820 RD=INT(RND(1)*2):IF RD=0 AND RX>12 TH
EN RX=RX-1 ELSE IF RX<250 THEN RX=RX+1
830 IF RE=1 THEN PSET(RX,RY),12
840 RETURN
850 REM rogue hit city
860 GOSUB 1410:FOR I=1 TO 10:CIRCLE(RX,RY
),I,INT(RND(1)*14)-2:NEXT I
870 RE=0:HT=HT+1
880 FOR I=1 TO 10:CIRCLE(RX,RY),I,1:NEXT
890 BEEP
900 IF AG=1 AND AH=N THEN GOTO 1460
910 RETURN
920 REM move missile
930 A=INT(RND(1)*N)+1
940 IF K(A)=0 THEN GOTO 930
950 IF X<130 OR X>253 THEN GOTO 980
960 Z=INT(RND(1)*10)
970 IF Z<1 THEN DR(A)=DR(A)*-1
980 V=Q(A):Z=W(A)
990 W(A)=W(A)+YM
1000 IF W(A)>138 THEN GOTO 1300:REM hit c
ity
1010 IF K(A)=0 THEN RETURN
1020 Q(A)=Q(A)+DR(A)
1030 IF Q(A)<120 OR Q(A)>254 THEN DR(A)=DR(
A)*-1
1040 LINE(V,Z)-(Q(A),W(A)),11
1050 RETURN
1060 REM fire
1070 IF BL=0 THEN PLAY"m50v15t.255o7s8f":
RETURN
1080 G=X:H=Y

```

```

1090 PLAY"s14m1000f"
1100 LINE(128,143)-(G+4,H+3),13
1110 FORI=1TO7:CIRCLE(G+4,H+3),I,9:NEXTI
1120 IFRE=1ANDPOINT(RX,RY)=9THENRE=0
1130 FORI=1TON:IFK(I)=0THENGOTO1150
1140 IFPOINT(Q(I),W(I))=9THENGOSUB1230
1150 NEXTI
1160 FORI=1TO7:CIRCLE(G+4,H+3),I,1:NEXT
1170 LINE(128,143)-(G+4,H+3),1
1180 BL=BL-1
1190 J=((BL+1)*4)+16:LINE(J,162)-(J+6,170),1,BF
1200 IFAH=NANDRE=0THENFORI=1TO500:NEXT:GOTO1460
1210 RETURN
1220 REM hit missile
1230 K(I)=0:SC=SC+N:AH=AH+1:IFAH=NTHENAG=1
1240 LINE(60,182)-(119,190),1,BF
1250 INTERVALOFF
1260 DRAW"bm60,182":PRINT#1,SC
1270 INTERVALON
1280 RETURN
1290 REM hit city
1300 K(A)=0
1310 GOSUB1410
1320 FORI=1TO10:CIRCLE(Q(A),W(A)),I,6:NEXTI
1330 HT=HT+1
1340 AH=AH+1
1350 FORI=1TO10:CIRCLE(Q(A),W(A)),I,1:NEXTI
1360 FORI=1TO500:NEXT
1370 BEEP
1380 IFAH=NTHENGOTO1460
1390 RETURN
1400 REM explosion sound
1410 SOUND0,0:SOUND1,5:SOUND2,0:SOUND3,13:SOUND4,255:SOUND5,15:SOUND6,30:SOUND7,0:SOUND8,16:SOUND9,16:SOUND10,16:SOUND11,0:SOUND12,5:SOUND13,0
1420 FORI=0TO30:NEXT
1430 SOUND12,56:SOUND13,0
1440 RETURN
1450 REM finished level
1460 STRIG(C)OFF:INTERVALOFF
1470 PUTSPRITE0,(X,Y),0,0
1480 LINE(0,0)-(255,139),1,BF
1490 LINE(60,182)-(119,190),1,BF
1500 COLOR3
1510 DRAW"bm60,30":PRINT#1,"Hits on city=";HT
1520 IFHT>4THENGOTO1650
1530 COLOR9
1540 DRAW"bm80,50":PRINT#1,"BONUS=";(N*10)+(BL*20)
1550 SC=SC+(N*10)+(BL*20)
1560 COLOR13
1570 DRAW"bm80,65":PRINT#1,"Score=";SC
1580 PLAY"16t255s0m10000o4ecccecccffeedr6r6r6ffeedr6r6r6ggffeeddcr6r6r6",
16t255v12o5cegecegeceo4bo5do4ao5cecco4bo5do4ao5cecco4ao5cecco4bo5dcegec"
1590 FORI=1TO8000:NEXT
1600 N=N+1:AH=0:AG=0

```

```

1610 IFN/3=INT(N/3)THENYM=YM+1:PM=PM+1
1620 LINE(0,0)-(255,139),1,BF
1630 GOTO100
1640 REM dead
1650 GOSUB1410:FORI=1TO30:CIRCLE(128,145),I,INT(RND(1)*14)+2:NEXTI
1660 FORI=1TO30:CIRCLE(128,145),I,1:NEXT
1670 BEEP
1680 COLOR6
1690 DRAW"bm75,150":PRINT#1,"GAME OVER"
1700 DRAW"bm80,65":PRINT#1,"Score=";SC
1710 IFSC>HITHENCOLOR7:DRAW"bm60,75":PRINT#1,"A new high score!":HI=SC
1720 LINE(160,182)-(250,190),1,BF
1730 DRAW"bm160,182":PRINT#1,HI
1740 PLAY"t220v15o5c2c4o4a8a#8o5c4f4e4c4c4c4o4a8a#8o5c4f4e4c4c4f4a8g8f4c4d4d8c8d4o4g4g4a4a#4o5c4o4a4f.."
1750 COLOR10
1760 DRAW"bm20,100":PRINT#1,"Press SPACE or FIRE to start"
1770 IFSTRIG(0)THENC=0:GOTO80
1780 IFSTRIG(1)THENC=1:GOTO80
1790 GOTO1770
1800 REM instructions
1810 SCREEN0,,0
1820 FORI=22TO0STEP-1
1830 LOCATE10,I:PRINTCHR$(175);"Missile Attack";CHR$(174)
1840 LOCATE10,I+1:PRINT"
1850 NEXTI
1860 LOCATE1,3
1870 PRINT"Your city is being attacked by "
1880 PRINT"aliens, who are dropping missiles on"
1890 PRINT"it. You must use your laser to dest-"
1900 PRINT"roy the missiles."
1910 PRINT:PRINT" Use the cursor keys or joystick to"
1920 PRINT"position the sights and then press"
1930 PRINT"the space bar or fire button to "
1940 PRINT"shoot."
1950 PRINT:PRINT" You have a limited amount of lasers"
1960 PRINT"and it only takes five hits to "
1970 PRINT"destroy the city."
1980 PRINT:PRINT" Beware of rogue missiles. These are"
1990 PRINT"very fast. A siren warns of falling"
2000 PRINT"rogues."
2010 LOCATE3,21:PRINT"Press SPACE or FIRE to play"
2020 IFSTRIG(0)THENC=0:GOTO2050
2030 IFSTRIG(1)THENC=1:GOTO2050
2040 GOTO2020
2050 PLAY"t250s9m10000o4c3f8g8a4a4g4a#4a4c4o3a#4o4a8f8g4o3a#4a4o4e4f."
2060 RETURN

```


TANK BOMBER

by Grant Soanes

Another shorter listing for those with tired fingers. Bombing the tanks out of existence might be easy at first, but the more you succeed the faster they start to roll. An efficient program which is a good example of basic sprite programming.

```

1 *****
2 * Tank Bomber *
3 *      by      *
4 * Grant Soanes *
5 *****
10 OPEN"grp:"AS#1
20 A=RND(-TIME)
30 KEYOFF
40 SCREEN1,0,0:COLOR6,1,1:CLS
50 WIDTH28:LOCATE12,4:PRINT"TANK"
60 LOCATE11,6:PRINT"BOMBER"
70 LOCATE13,9:PRINT"by"
80 LOCATE8,11:PRINT"Grant Soanes"
90 LOCATE8,20:PRINT"Press 'ENTER'"
100 IFINKEY#<>CHR$(13)THEN100
110 GOSUB970
120 CLS:LOCATE8,0:PRINT"INSTRUCTIONS"
130 PRINT:PRINT"Score as many points
    as possible by bombing the ta
nks that are driving across the
desert."
140 PRINT" If one of them reaches the
    side then the game ends. Use the
left and right cursor keys to co
ntrol your plane at the top of the
screen."
150 PRINT" Use the spacebar to drop a
    bomb. If you hit a tank then you
will score 10 points."
160 PRINT" When all 3 tanks are bombe
danother 3 will appear travelli
ng faster."
170 LOCATE8,20:PRINT"Press 'ENTER'"
180 IFINKEY#<>CHR$(13)THEN180
190 GOSUB970
200 CLS
210 LOCATE 2,4:PRINT"Press 1..Keyboa
rd game"
220 LOCATE 9,5:PRINT"2..Joystick game
"
230 A#=INKEY#
240 IFA#="1"THENC0=0:GOTO270
250 IFA#="2"THENC0=1:GOTO270
260 GOTO230
270 GOSUB970:SCREEN2,0,0:COLOR 1,7,1:
CLS
280 PRESET(8,0):PRINT#1,"Score 0"
290 FORI=0TO5:A#=""
300 FORJ=1TO8:READB:A#=A#+CHR$(B):NEX
TJ
310 SPRITE$(I)=A#:NEXTI
320 DATA 13,25,127,255,24,12,6,0,176,
152,254,255,24,48,96,0,12,126,12,127,
255,0,42,0
330 DATA 0,0,0,0,36,60,24,24,0,0,40,1
8,8,32,0,0,0,18,69,52,2,88,10,32

```

```

340 DRAW"bm0,56;c1;m40,60;m50,61;m80,
55;m120,58;m140,54;m144,60;m170,58;m2
00,59;m220,56;m255,60;m255,80;1255;m0
,56":PAINT(1,57),1,1
350 LINE(0,81)-(255,191),11,BF
360 S=0:SC=0:SP=.5:T=3:X=50:D=1:B=0
370 FORI=3TO5:TD(I)=0:TX(I)=INT(RND(1
)*80)+160:NEXT
380 TY(3)=100:TY(4)=140:TY(5)=170
390 GOSUB540
400 IFTD(T)=0 THEN PUTSPRITE T,(TX(T)
,TY(T)),T,2:TX(T)=TX(T)-SP
410 T=T+1:IFT=6THENT=3
420 Q=STICK(C0):IFQ=0THEN450
430 IFQ=7ANDX>8THENX=X-1:D=0
440 IFQ=3ANDX<240THENX=X+1:D=1
450 GOSUB540
460 IFSTRIG(C0)ANDB=0THENGOSUB560
470 IFB=1THENPUTSPRITE1,(BX,BY),2,3:B
Y=BY+2
480 IFBY=180THENB=0:PUTSPRITE1,(0,0)
,0,3
490 IFB=1THENGOSUB570
500 FORI=3TO5:IFTX(I)<10THENGOTO780.
510 NEXT
520 GOTO400
530 GOTO530
540 PUTSPRITE0,(X,16),15,D
550 RETURN
560 GOSUB970:B=1:BX=X:BY=24:RETURN
570 IFBY>90ANDBY<100ANDTD(3)=0THEN610
580 IFBY>130ANDBY<140ANDTD(4)=0THEN62
0
590 IFBY>160ANDBY<170ANDTD(5)=0THEN63
0
600 RETURN
610 H=3:GOTO640
620 H=4:GOTO640
630 H=5
640 IF BX>TX(H)-8ANDBX<TX(H)+12THEN65
0 ELSE RETURN
650 PUTSPRITEH,(0,0),0,2
660 PUTSPRITE2,(TX(H),TY(H)),6,4
670 GOSUB820
680 FORI=1TO50:NEXT:PUTSPRITE2,(TX(H)
,TY(H)),6,5
690 FORI=1TO50:NEXT:PUTSPRITE2,(TX(H)
,TY(H)),6,4
700 FORI=1TO50:NEXT:PUTSPRITE2,(0,0)
,0,4
710 B=0:PUTSPRITE1,(0,0),0,3
720 SC=SC+10:GOSUB750:TD(H)=1
730 S=S+1:IFS=3THENSP=SP+.25:S=0:GOTO
370
740 RETURN
750 LINE(56,0)-(96,8),7,BF
760 PRESET(56,0):PRINT#1,SC
770 RETURN
780 PSET(92,100),11:PRINT#1,"GAME OVE
R"
790 PRESET(76,120):PRINT#1,"Press 'EN
TER'"
800 IFINKEY#<>CHR$(13)THEN800
810 RUN

```

```

820 SOUND 0,0
830 SOUND 1,6
840 SOUND 2,0
850 SOUND 3,12
860 SOUND 4,240
870 SOUND 5,15
880 SOUND 6,30
890 SOUND 7,0
900 SOUND 8,16
910 SOUND 9,16
920 SOUND 10,16
930 SOUND 11,255
940 SOUND 12,16
950 SOUND 13,1
960 RETURN
    
```

```

970 SOUND0,0
980 SOUND1,0
990 SOUND2,0
1000 SOUND3,0
1010 SOUND4,0
1020 SOUND5,0
1030 SOUND6,3
1040 SOUND7,0
1050 SOUND8,16
1060 SOUND9,16
1070 SOUND10,16
1080 SOUND11,255
1090 SOUND12,32
1100 SOUND13,0
1110 RETURN
    
```

IF IT RUNS, WE WANT TO SEE IT!

This action-packed section will appear in every issue of *MSX Computing*, crammed full of games and utility listings for MSX micros. Each program is listed straight on to a printer from a working version.

As you grow more familiar with your micro, and become confident that you can produce a game or program of interest to all our readers, why not send it in? But we have to insist on tape or 3.5 inch disk copies, as we haven't the time to type in programs ourselves.

Your covering letter should include instructions on how to use or play the program, as well as a brief description of any interesting programming techniques and a list of the main variables.

We will, of course, pay for any listings we print, exactly how much depending on the quality of the program — NOT the length! As a rough guide, you can expect between £10 and £50, with anything up to £100 for a really exceptional program. Programs which, for any reason, we are not interested in using are returned immediately.

Entering your listings

Most of the (fortunately few) complaints we get about listings can be traced to incorrect typing of the program. So it's worth making a few points about how to enter listings, and problems to watch out for.

Sometimes you will see a row of letters or other characters in a PRINT statement. This happens when the program, as supplied, contains graphics characters

which our printer doesn't recognise. If the particular character is important then we'll tell you what it should be in the introduction to the program.

When a program crashes, you will often get an error message which refers to a particular line number. But this isn't always as useful as it sounds because it may not be that line which contains the fault. For example, the line may contain a READ command, but the program will crash because of a lack of DATA for this line to READ. The fault actually lies in the DATA statement.

For this reason you must take particular care over DATA entries. Some programs can contain a couple of hundred numbers and strings in DATA lines. Miss out just one item, or one comma, and the program will fail through DATA starvation.

Make sure you are entering exactly what is shown in the listing. Don't type a zero when it should be the letter O, or a small l when it should be the number one.

REM statements can usually be omitted, which saves time and effort. But they do help to explain what is going on. That's handy when you come back to a program after a break and want to make some changes. And watch out for GOTOs. If one of these commands directs the program to a REM line which you've omitted, the program will crash.

If, in the end, you still can't get the program to work, then let us know. But PLEASE WRITE, don't telephone. It's virtually impossible to de-bug a program over the phone, and the intricacies of a program are usually known only to the original programmer, who is never around to answer your questions!

Advertisers Index

| | |
|------------------------------|-------|
| A | |
| Aackosoft | 38 |
| Alligata Software | 36 |
| Arcksoft | 13 |
| B | |
| Bullocks Hi-Fi & Video | 13 |
| C | |
| Computermates..... | 24 |
| Computerware..... | 35 |
| D. & D. Computers..... | 36 |
| Digital Music Systems..... | 10 |
| D.L. Chittenden | 13 |
| F | |
| Faculty Enterprises..... | 56 |
| Five Star | 9 |
| H | |
| Hi Voltage..... | 49 |
| J | |
| Jothan Software | 49 |
| K | |
| Knights | 35 |
| Kuma Computers | IBC |
| M | |
| Max | 56 |
| Micro Technology | IFC |
| N | |
| Nemesis | 40 |
| Ness | 36 |
| P | |
| P&H Electronics | 26/27 |
| Peaksoft | 49 |
| Pioneer..... | 21 |
| S | |
| Shoyo | 35 |
| Software Guide..... | 64/65 |
| Style Software | 6 |
| Sudbury Micro | 56 |
| T | |
| T an' T | 10 |
| Tavistock Hi-Fi..... | 16/17 |
| U | |
| Ultimate | OBC |
| Unitsoft | 45 |

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One of the ways we keep a check on the advertising that appears in the press, on posters and in the cinema is by responding to consumers' complaints.

Any complaint sent to us is considered carefully and, if there's a case to answer, a full investigation is made.

If you think you've got good reason to complain about an advertisement, send off for a copy of our free leaflet.

It will tell you all you need to know to help us process your complaint as quickly as possible.

The Advertising Standards Authority.

If an advertisement is wrong, we're here to put it right.

ASA Ltd, Dept 1 Brook House,
Torrington Place, London WC1E 7HN

This space is donated in the interests of high standards of advertising.

General advice to readers concerning advertisements

When replying to advertisements in this issue, you should note the following points:

1. Always clarify the exact nature of any guarantee being offered.
2. Never send cash — always a cheque, Postal or Money Order.
3. Insist on a written receipt.
4. Clearly state the equipment you seek, and detail any acceptable alternatives.
5. Request an immediate statement of how and when the goods are to be delivered and whether the delivery will be split.
6. Check by telephone the latest prices and availability of goods you are ordering.
7. Cases of non-supply or wrong supply of goods should initially be taken up directly and as soon as possible with the supplier.
8. Because of fluctuations in prices and discounts, it is advisable to ensure that you reply only to advertisements published in current issues.

Mail Order Protection Scheme (Limited Liability)

If you order goods from mail order advertisers in this magazine and pay by post in advance of delivery, this publication ('MSX Computing') will consider you for compensation if the advertiser should become insolvent or bankrupt, provided:

1. You have not received the goods or had your money returned; and
2. You write to the publisher of this publication ('MSX Computing') explaining the position not earlier than 28 days from the day you sent your order and not later than 2 months from that day.

Please do not wait until the last moment to inform us. When you write, we will tell you how to make your claim and what evidence of payment is required.

We guarantee to meet the claims from readers made in accordance with the above procedure as soon as possible after the advertiser has been declared bankrupt or insolvent up to a limit of £4,500 per annum for any one advertiser so affected and up to £13,500 p.a. in respect of all insolvent advertisers. Claims may be paid for higher amounts, or when the above procedure had not been complied with, at the decision of the publication ('MSX Computing') but we do not guarantee to do so in view of the need to set some limit to this commitment and to learn quickly of readers' difficulties.

This guarantee covers only advance payments sent in *direct* response to an advertisement in this magazine (not, for example, payments made in response to catalogues etc, received as a result of answering such advertisements). Classified advertisements are excluded.

Note: The sums referred to are annual amounts available for compensation and they will be divided equally amongst all valid claims received.

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| Artic Computing | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Ask | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
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| CRL | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Cable | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Century | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| D K Tronics | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Domark | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
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| Eclipse | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
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| Hisoft | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
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| Puddles | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
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| Toshiba | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Ultimate | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
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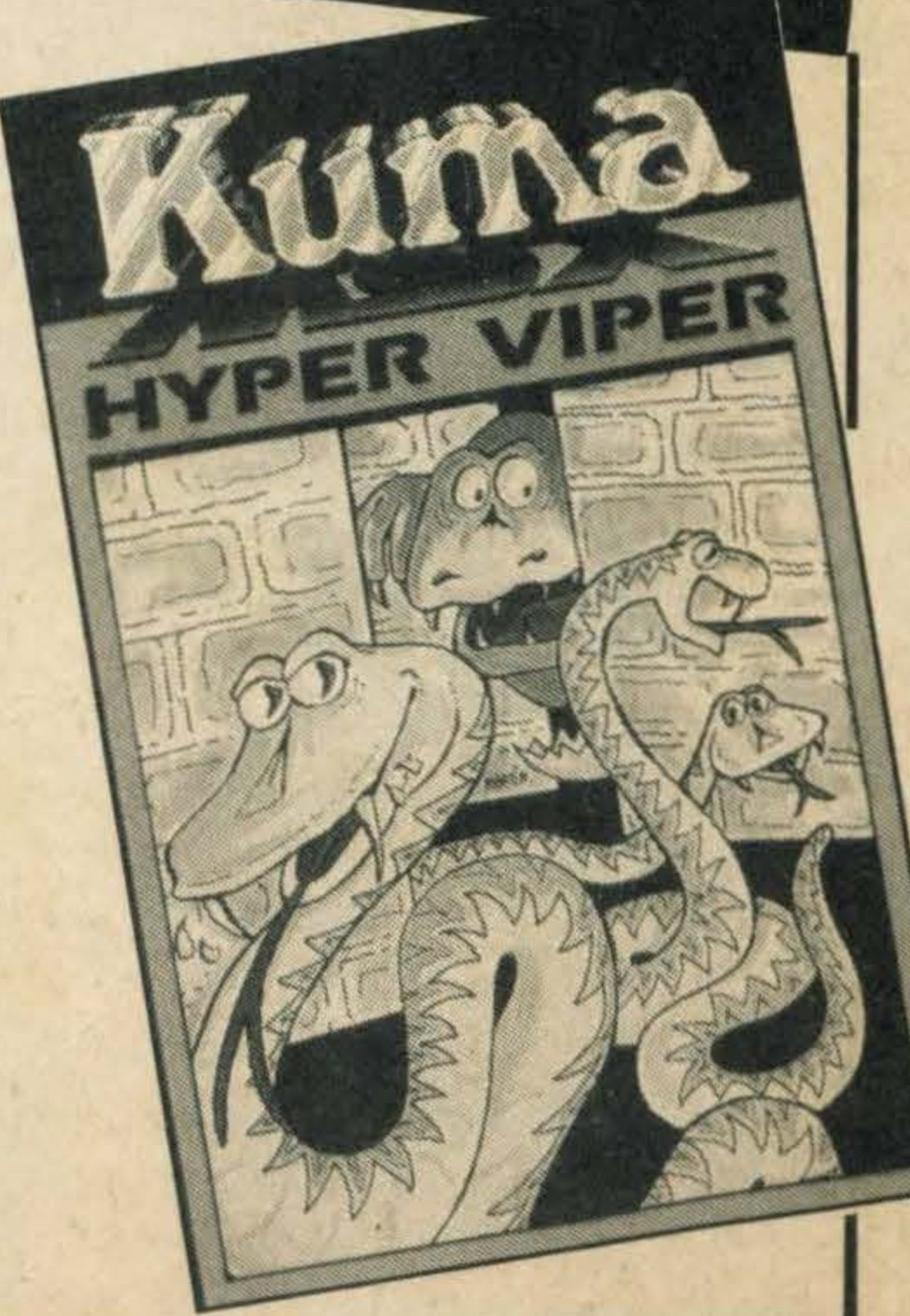
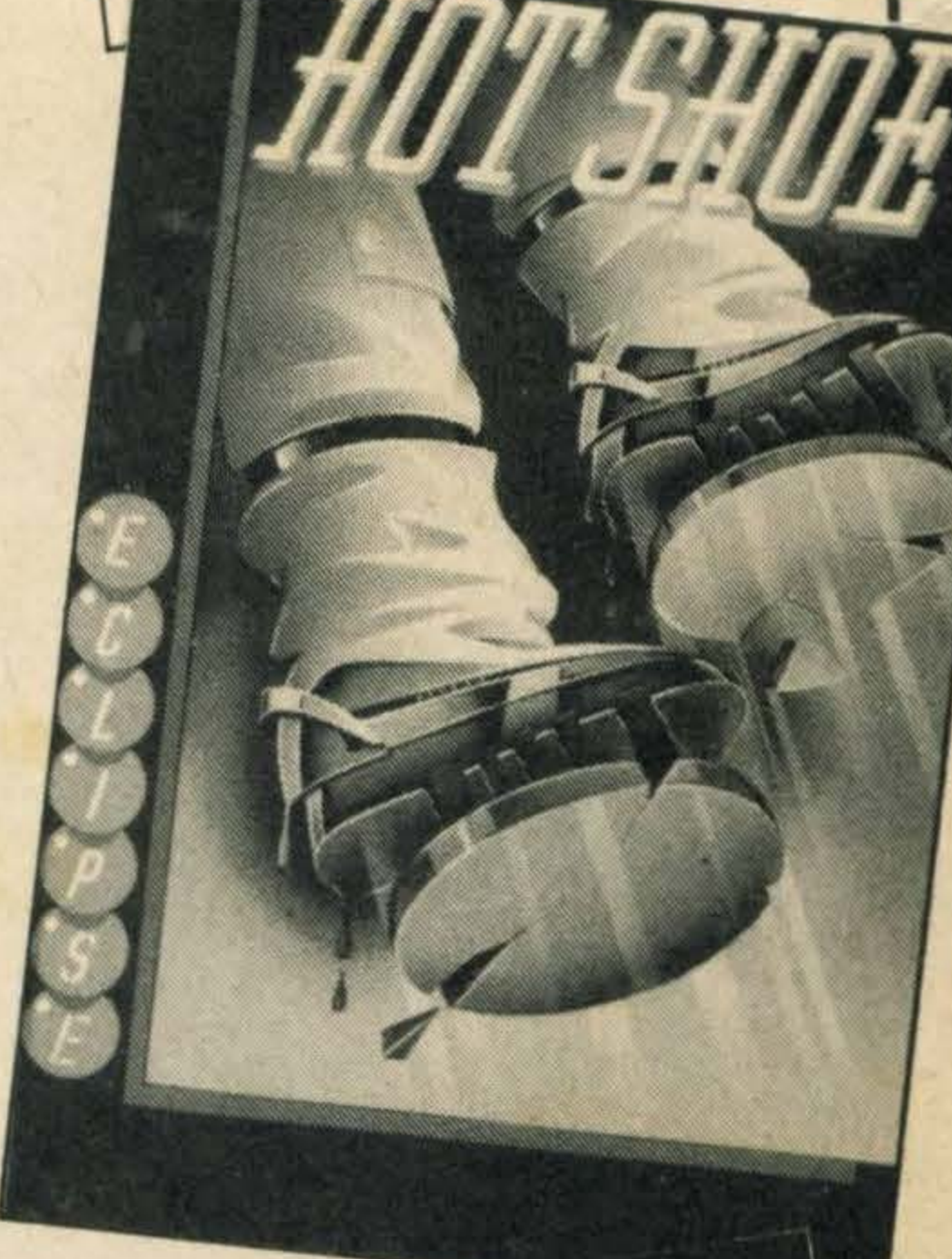
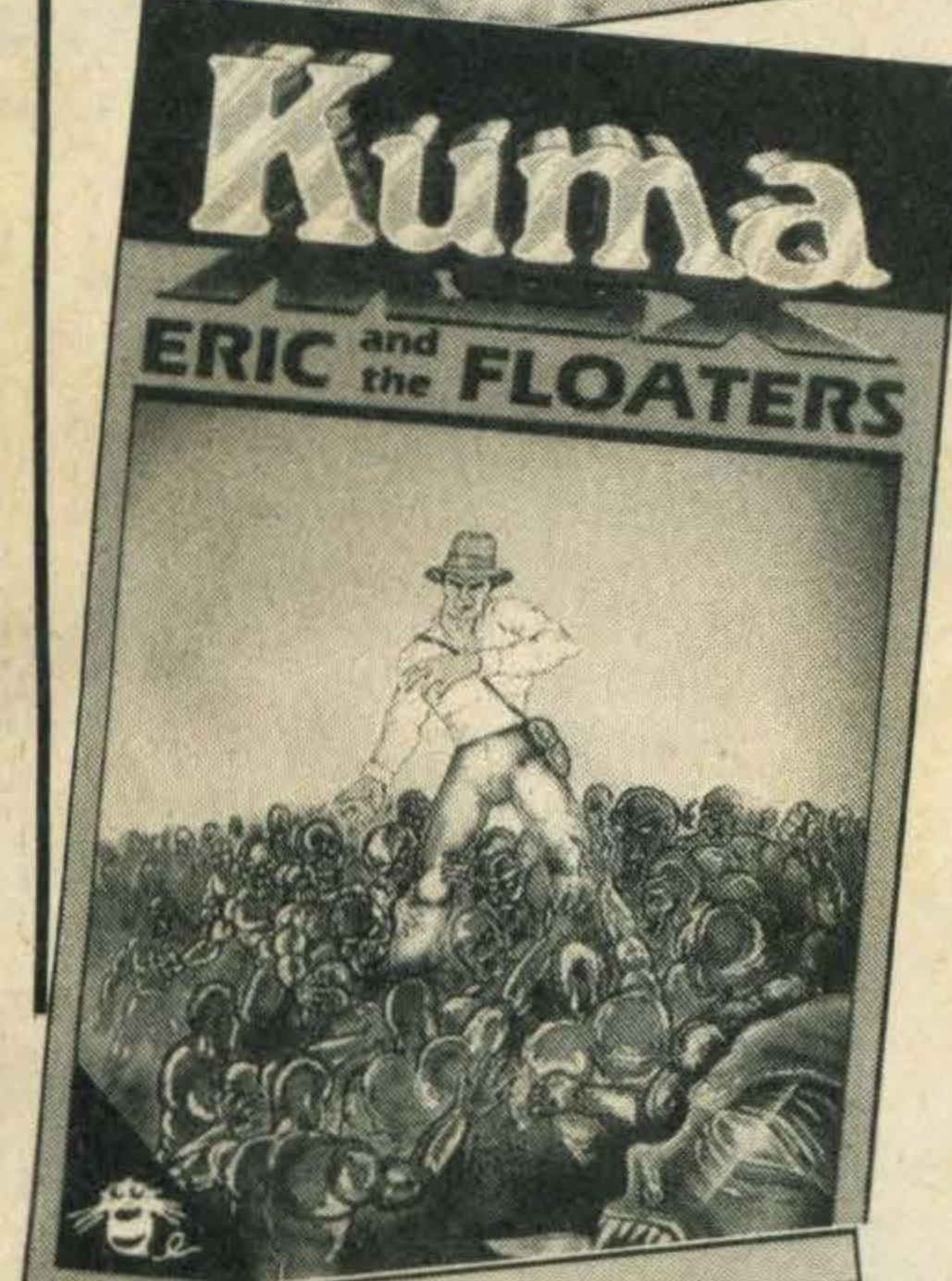
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| Game | Name | Score | Stage |
|-----------------------|---------------------------------|------------|-------|
| Antarctic Adventure | David McEwan (Lanarkshire) | 16,934,200 | |
| Athletic Land | Lisa Taylor (Nottingham) | 227,300 | |
| Barnstormer | Graham Dixon (Lincolnshire) | 279,955 | 12 |
| Battleship Clapton II | Nicholas Cole (Esher) | 95,750 | |
| Beamrider | Sean Baxter (Dyfed) | 133,380 | 25 |
| Blogger | David McEwan (Lanarkshire) | 1,975,000 | |
| Boom | Matthew Durkin (N. Yorks) | 51,000 | 11 |
| Boulderdash | Alan Jones (Streatham) | 59,848 | F/4 |
| Brian Jacks | Steve Lewis (Billericay) | 834 | 3 |
| Superstar Challenge | | | |
| Buck Rogers | Neil Macfall | 310,900 | 6 |
| Centipede | Michelle Drabwell (Essex) | 45,000 | 7 |
| Chiller | Simon Dobson (Devon) | 32,963 | |
| Choro Q | Scott Fielding (Truro) | 42,380 | |
| Chuckie Egg | Simon Davis (Halifax) | 432,950 | |
| Circus Charlie | Ian Bucklow (Workshop) | 1,198,460 | 105 |
| Comic Bakery | David Styles (Kent) | 209,790 | 22 |
| Decathlon | Neil Macfall | 12,920 | |
| Disk Warrior | MJ Wright (Enfield) | 266,750 | 4 |
| Eric and the Floaters | Sean Baxter (Dyfed) | 1,844,160 | |
| Finders Keepers | Paul Griffiths (Lincoln) | 16,000 | |
| Fire Rescue | Mark Lowles (Greenock) | 29,540 | |
| Ghostbusters | Laurence Burke (Ireland) | 999,900 | |
| Gridtrap | Ziam Mohammedd (Glasgow) | 263,360 | 18 |
| Hero | Dan Gavik (Denmark) | 187,575 | 19 |
| Hotshoe | Mark Cottrill (Solihull) | 7,630 | |
| Hunchback | David McEwan (Lanarkshire) | 2,700,000 | |
| Hyper Rally | Paul Graves (Caithness) | 217,832 | |
| Hyper Sports I | Mark Boselli (Kenton) | 2,050,800 | 51 |
| Hyper Sports II | L Henry (Battersea) | 500,000 | |
| Hyper Viper | Laurence Burke (Ireland) | 9,700 | |
| Jet Set Willy II | J Alexander (Richmond) | 108 | |
| Kings Valley | A Baker (London) | 1,004,300 | 68 |
| Knightlore | Robert Elliott (Belfast) | 96% | |
| Lazy Jones | Mark Sutton (Rayleigh) | 149,650 | |
| Les Flics | Matthew Binyon | 29,500 | |
| Manic Miner | Clive Marsh (Watford) | 42,470 | 29 |
| Maxima | Sean Mason (Ireland) | 193,960 | 112 |
| Monkey Academy | Jason Wopling (Essex) | 203,600 | |
| Mopiranger | Alan Sinclair (London) | 162,300 | 21 |
| Ninja | Edward Sibley (Caversham) | 3,486 | 4 |
| Oh No! | Valerie Wilkins | 38,010 | |
| Pinball | A Baker (London) | 1,240,680 | |
| Pitfall 2 | E C Davidson (Colchester) | 198,900 | |
| Polar Star | Neil Macfall | 100,710 | 4 |
| Pyramid Warp | Katie Smith (St Ives) | 67,670 | 6 |
| River Raid | Gary Pike (Glamorgan) | 62,750 | 37 |
| Road Fighter | Keiron Tweedy (Sheppey) | 487,323 | 36 |
| Roller Ball | A Baker (London) | 3,120,180 | |
| Sasa | Michael Thames (London) | 32,300 | |
| Shark Hunter | Alan Morrison (Huntly) | 15,746 | |
| Sky Jaguar | Arnfinnur Johsson (Iceland) | 689,190 | |
| Soccer | Steven Small (Cheltenham) | 8-0 | |
| Sorcery | Neil Hilton (Darwen) | 109,841 | 3 |
| Space Walk | J Corner (N. Yorks) | 695,000 | |
| Spooks and Ladders | Alison Beckham (Trowbridge) | 32,930 | 19 |
| Step Up | Stephen Lam (Orpington) | 14,000 | |
| Super Cobra | Ian West (Aylesbury) | 501,100 | 62 |
| Super Snake | Mark Sutton (Rayleigh) | 43,600 | |
| Tennis | Mark Drabwell (Essex) | 6-0 6-0 | |
| The Snowman | Mark Drabwell (Essex) | 30,030 | |
| Time Bandits | Christopher Rutherford (Hexham) | 9,240 | 7 |
| Time Pilot | Robin Emmons | 249,500 | 6 |
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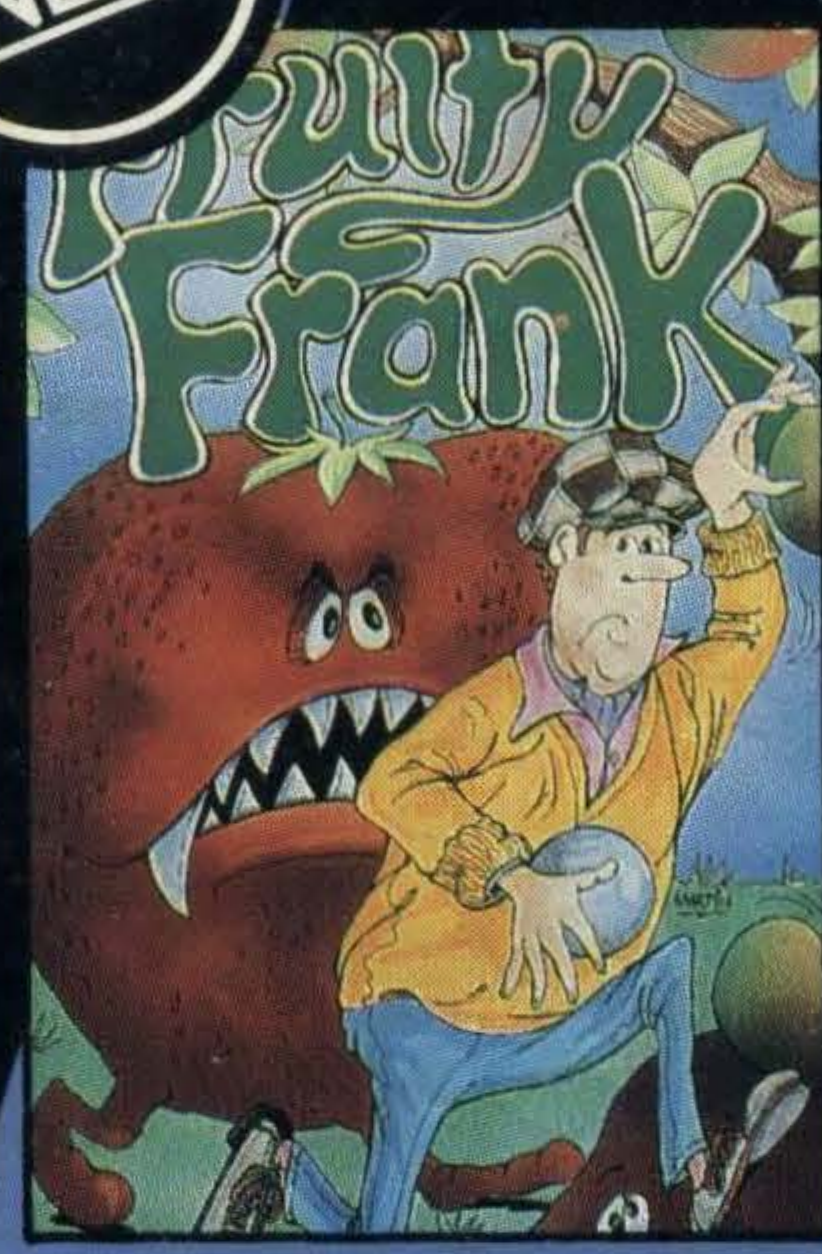


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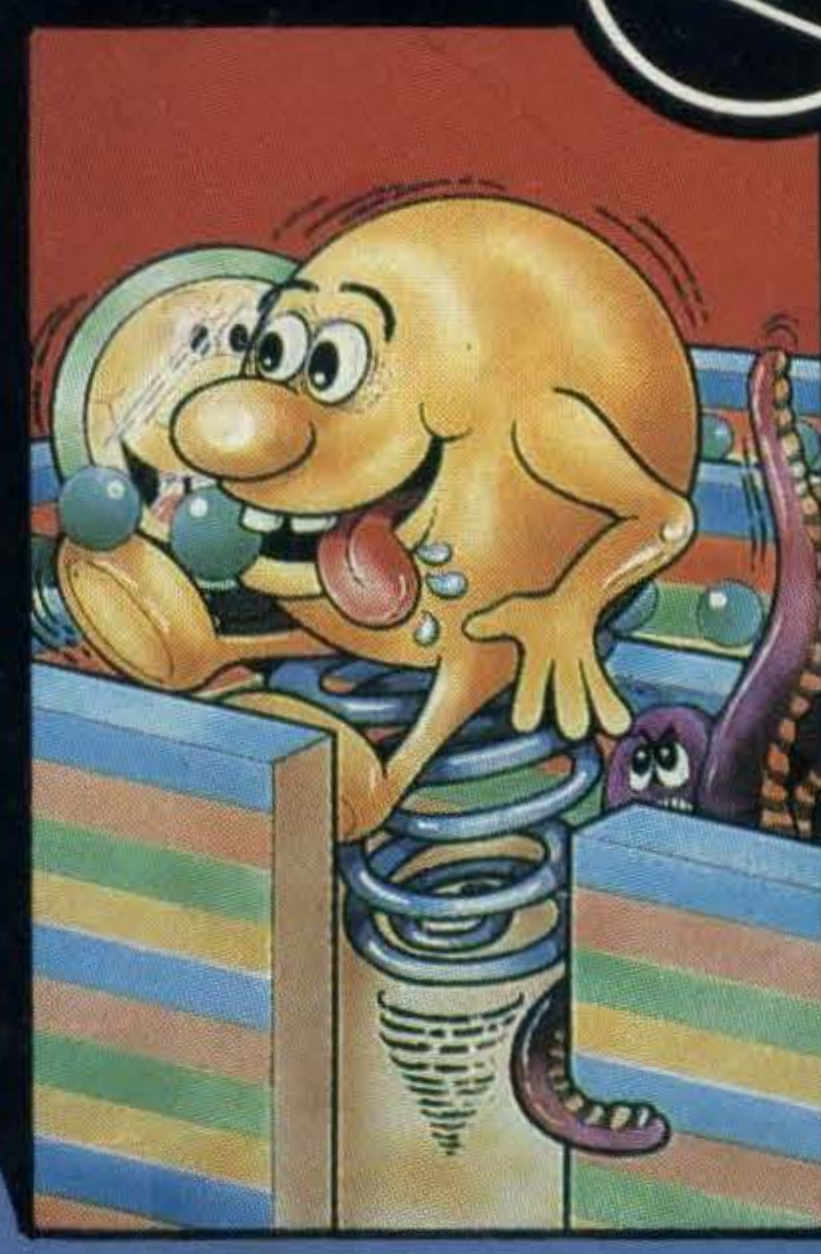


Spooks and Ladders



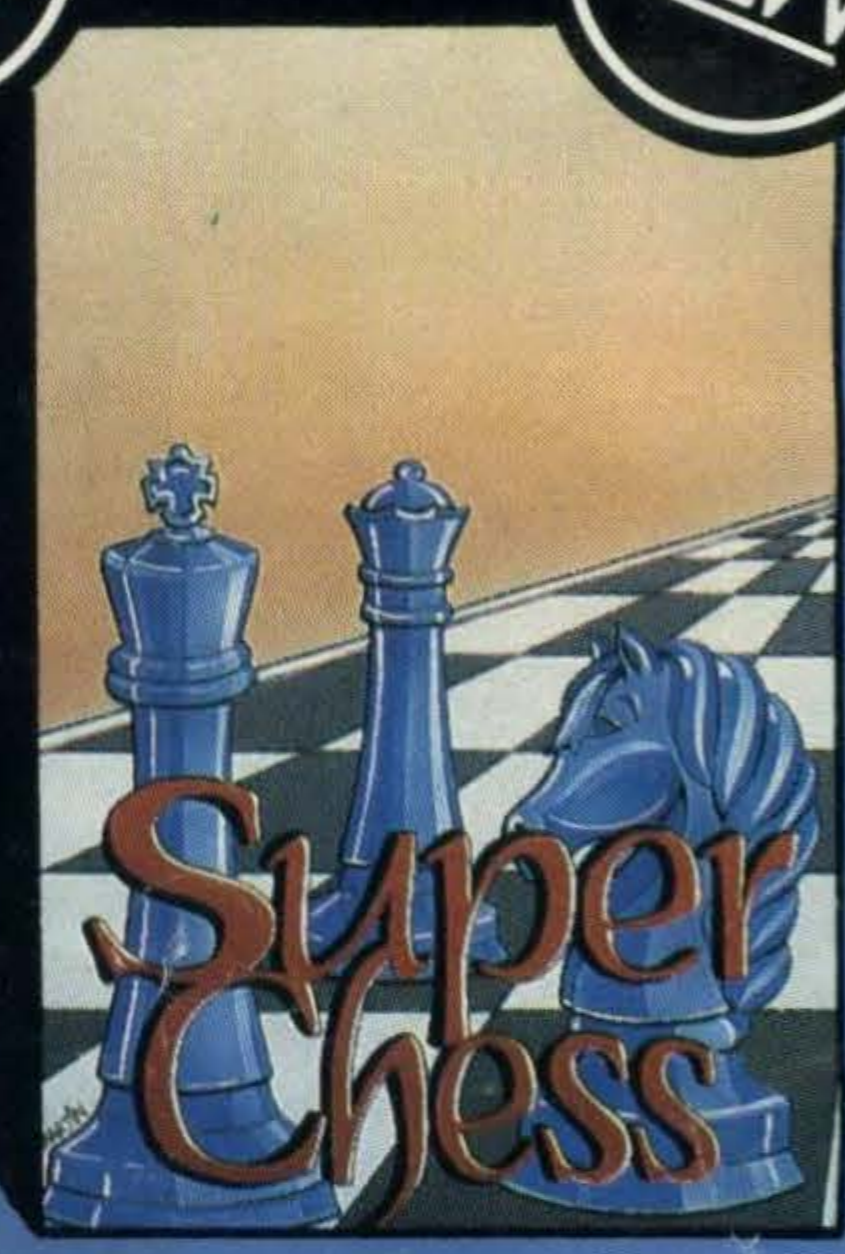
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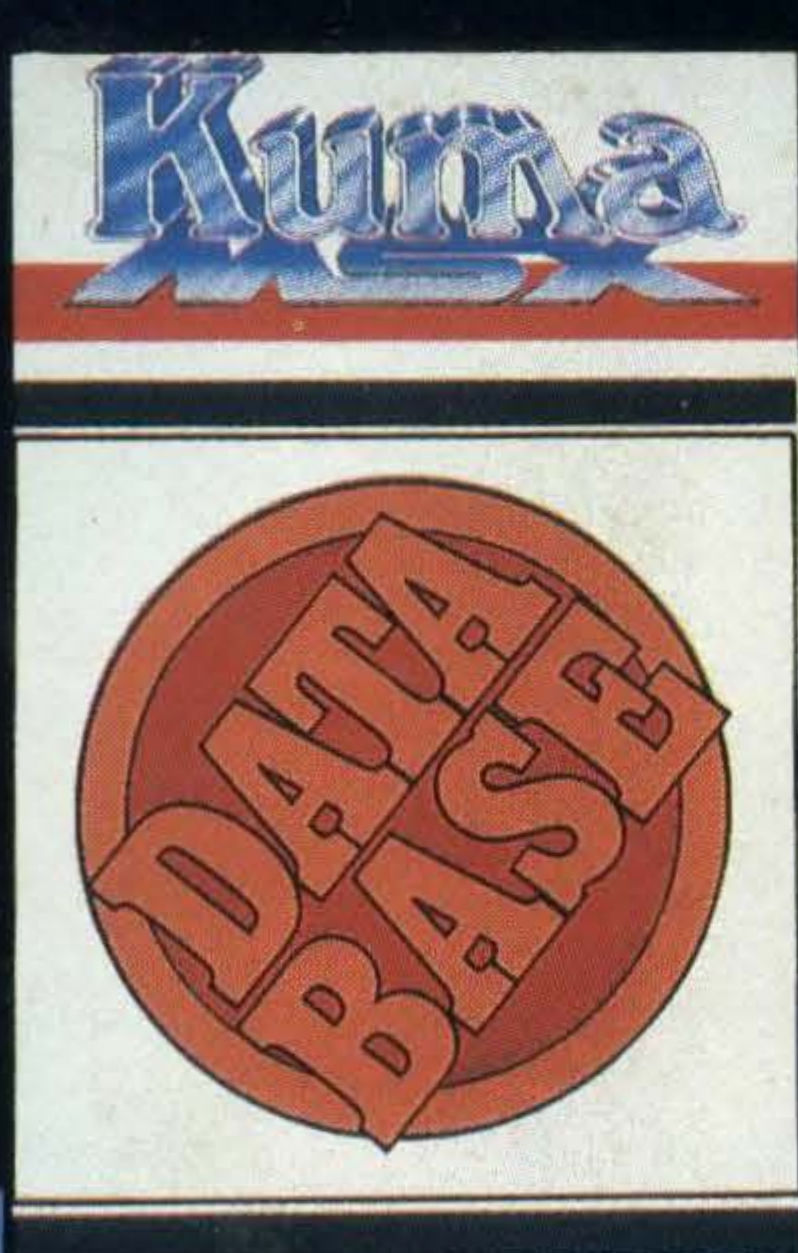
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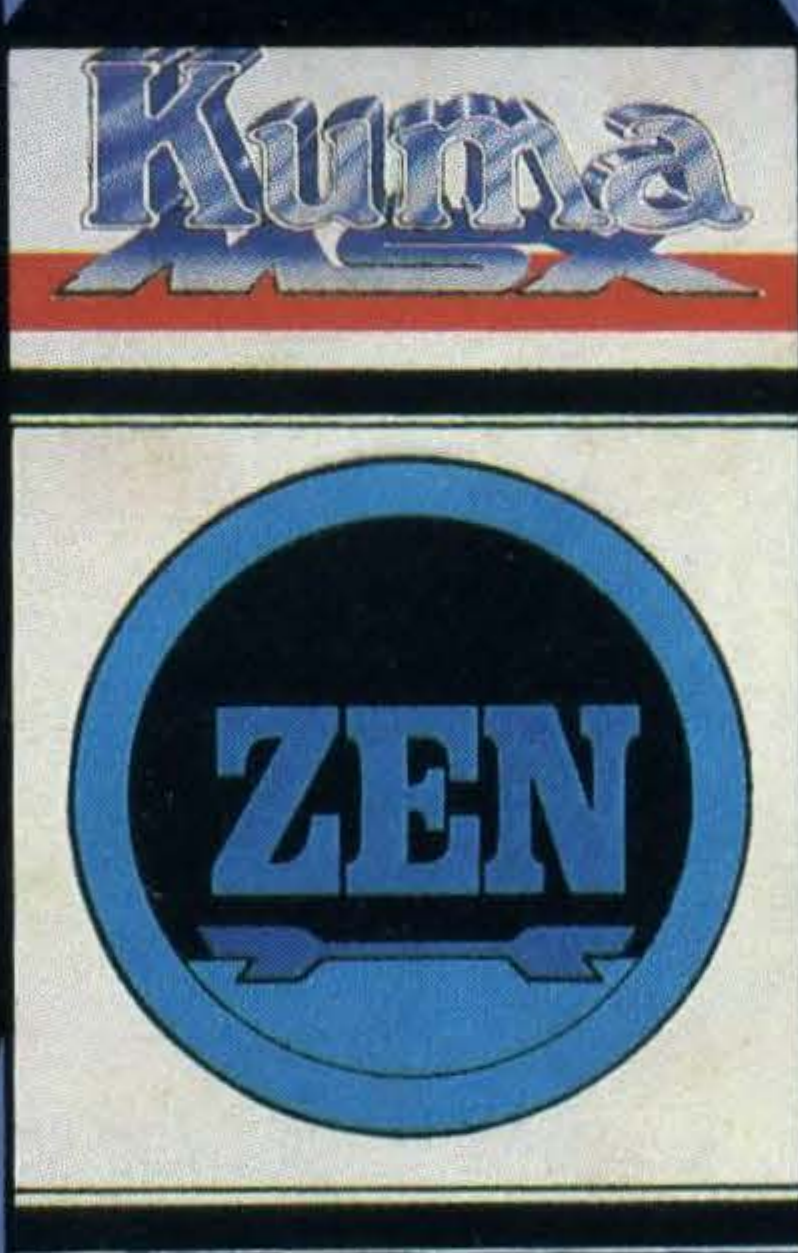
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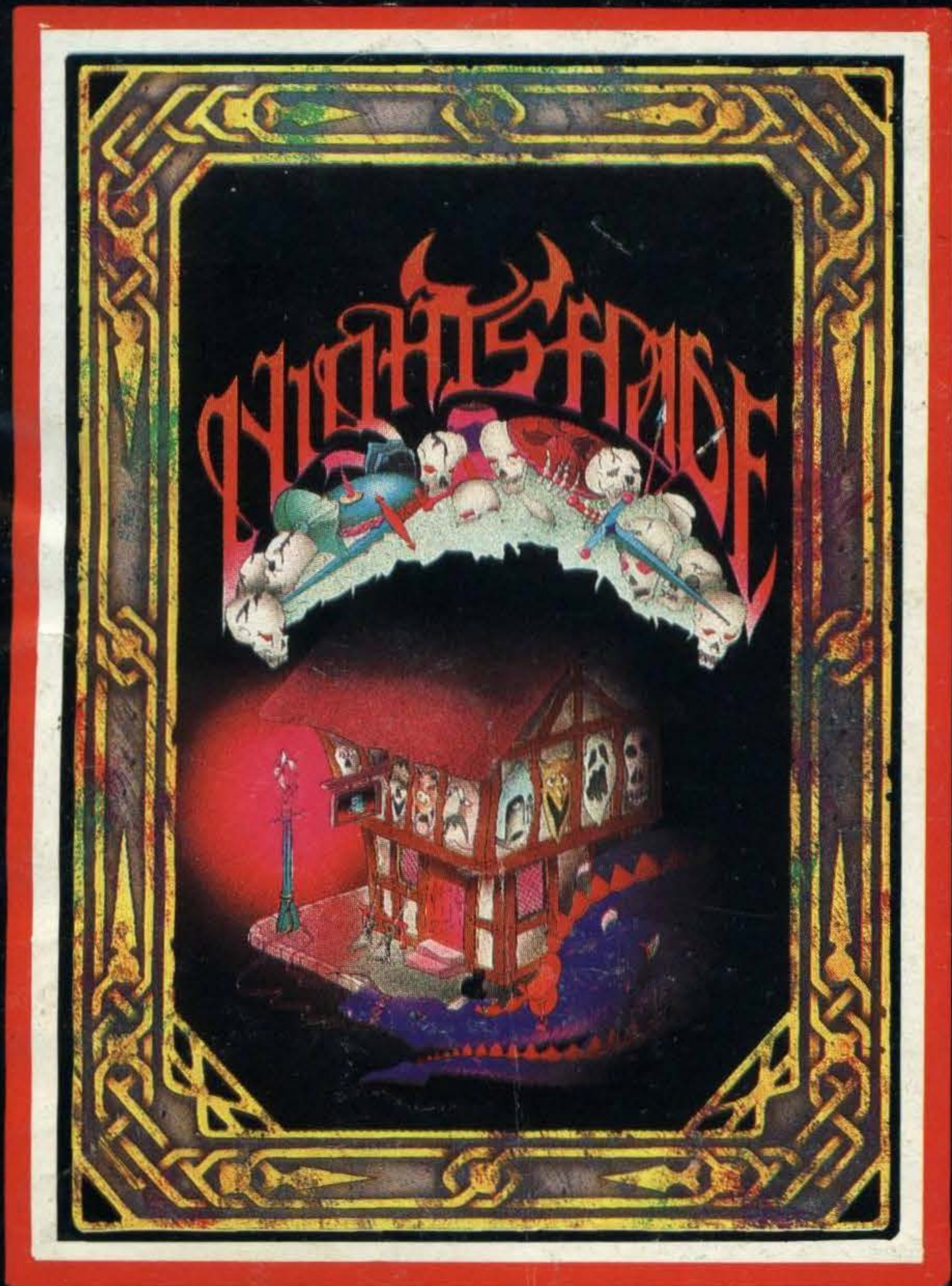
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