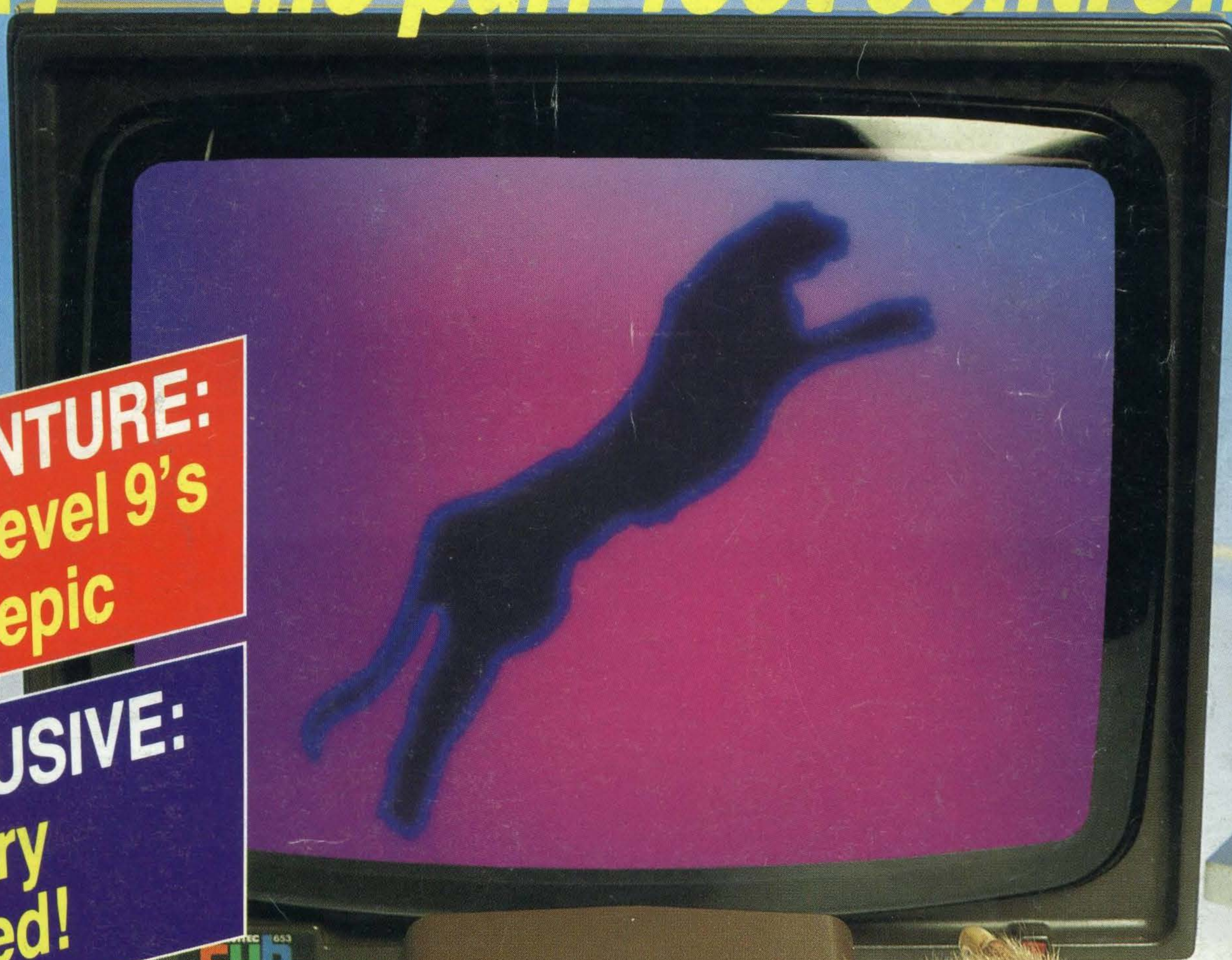


MSX **COMPUTING**

CAT — the purr-fect controller

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latest epic

EXCLUSIVE:
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 MICROSOFT EXTENDED
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"WOW. WITH A
 SPECIFICATION LIST
 LIKE THAT.
 NO WONDER YOU'VE
 GOT A 64K MEMORY."

You'd expect one of the best-selling home computers in Japan to have a specification list as big as its memory.

But the Toshiba HX10 doesn't just limit itself to that.

It was developed along with other Japanese home computers to operate

on one language: MSX. You can swap programs, games, cassettes, even peripherals like disk drives, printers, and joysticks: they're all compatible with every other MSX computer.

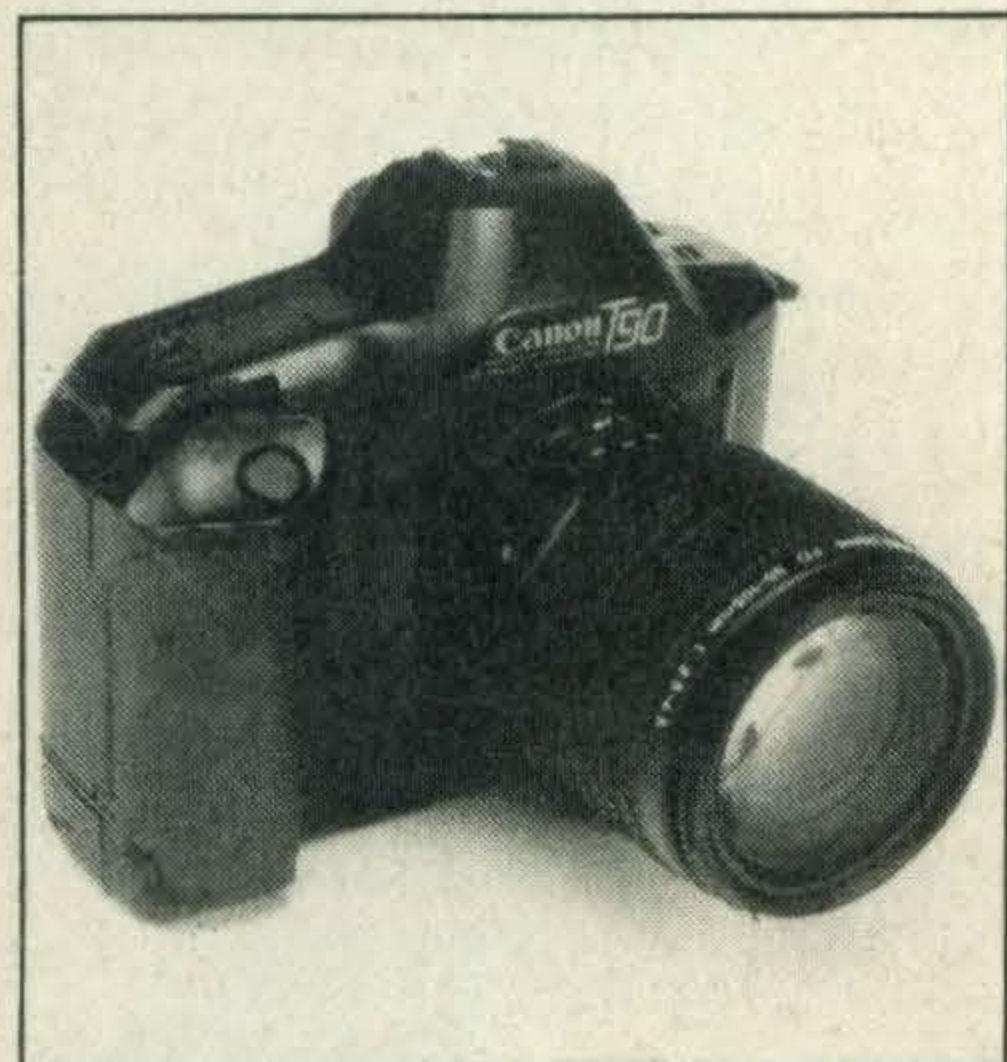
All of which makes MSX the system of the future.

So if you want a computer that won't be obsolete in a few years, buy an MSX. If you want one of the best-selling MSX computers in Japan, buy a Toshiba HX10.

TOSHIBA **MSX**

REGULARS

4 NEWS. Start here for all the latest on the next Konami cart, Spectravideo's robotic arm, plus information on hardware, new companies and the first camera to interface with an MSX micro.



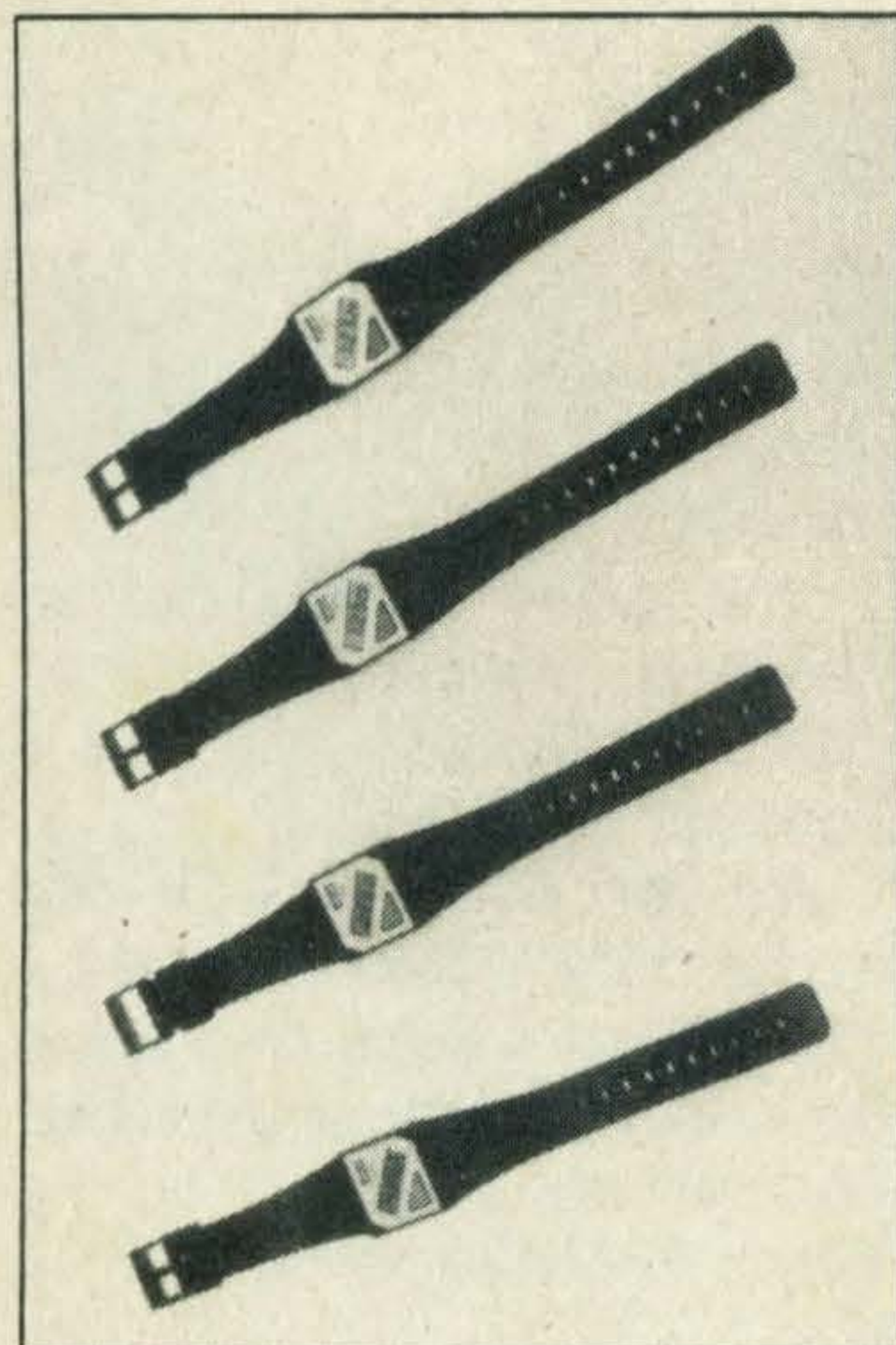
12 POSTBAG. Your chance to criticise or praise — or impart a few words of wisdom. *MSX Computing* is your magazine so drop us a line and let us hear what you've got to say.

27 READER INFO. Check out the features and reviews you may have missed and make sure you don't miss your next copy by taking out a new subscription now.

62 HIGH SCORES. Catch up on the very latest megascores from our trigger-happy, joystick-juggling, alien-zapping readers. Can you better them?

FEATURES

14 BASIC COURSE. Our regular columnist Tim Markes shows you how to display your output to its best advantage with tips and words of advice on PRINT layout.

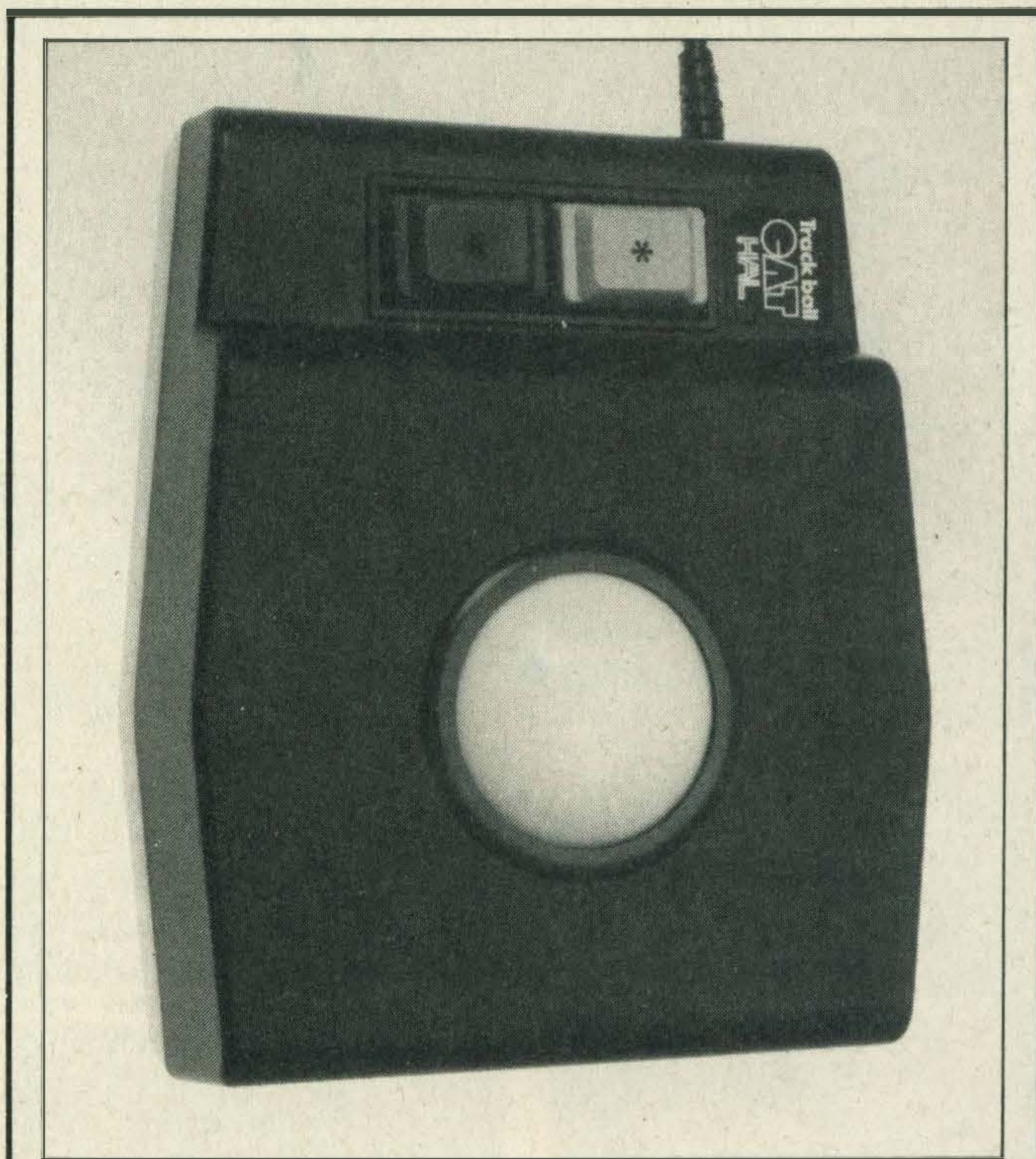


21 COMPETITION. Win yourself a chance to get behind the wheel of *Road Fighter*, our

MSX COMPUTING

February/March 1986

Editor: Hazel James **Assistant Editor:** Julia Alexander **Art Editor:** Richard Grill **Photography:** Philip Habib, Matthew Barnes **Publisher:** Gareth Renowden **Publishing Director:** Eric Verdon-Roe **Advertising Manager:** Neil Alldritt **Advertising Executive:** Jo Murray **Production Manager:** Julia Cox



22 THE CAT. Our cover feature this month is a review of the CAT, a sophisticated input device just arrived from Japan.

Looking like an upside down mouse, the CAT can be used with games, graphics and word processing packages alike.

We tried it out with two specially designed cartridges plus several games carts lying around the office — with some interesting results.

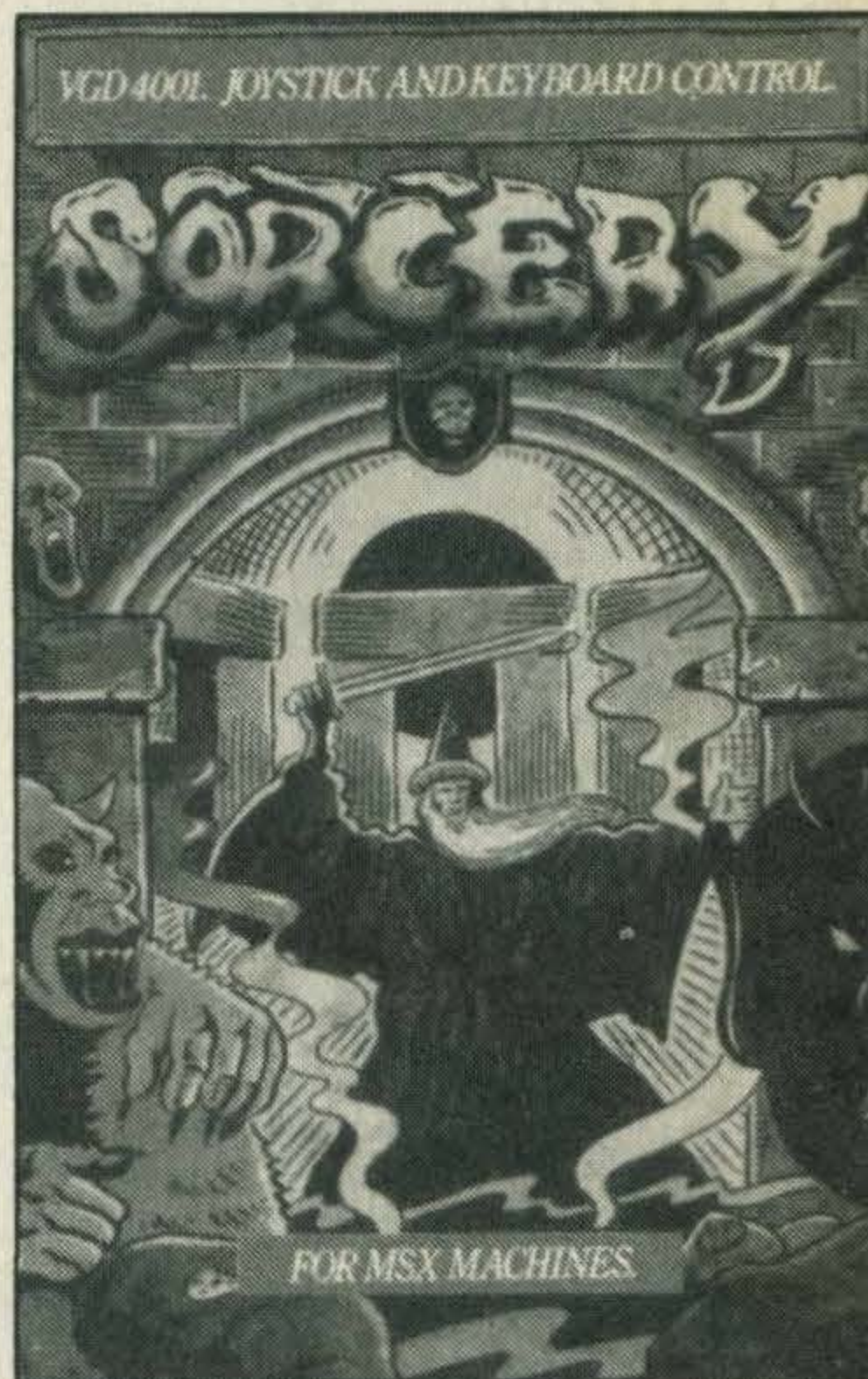
It is easy to operate and fun to use and one of the most versatile computer controllers available for MSX. We found lots of uses for the CAT, so why not read for yourself how you can use it within your own MSX system.

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game of the year for 1985. Plus — there's four exclusive digital wrist-watches up for grabs, too!

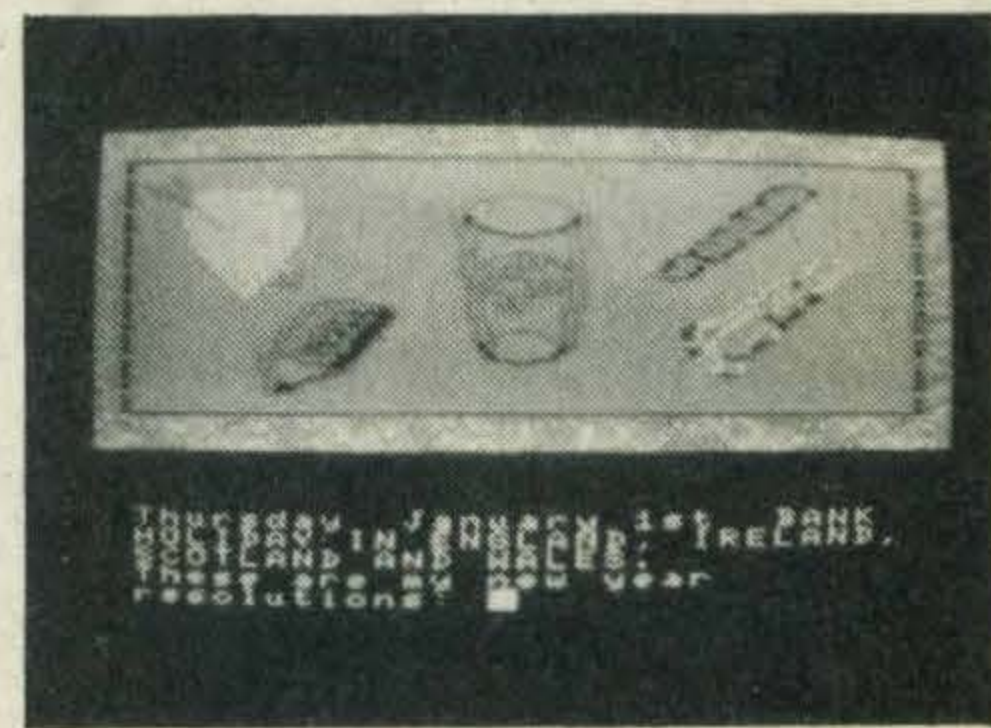
32 ADVENTURE QUEST. Our intrepid adventurer, Mike Gerard, introduces the latest epic adventure from Level 9, *The Worm in Paradise*. He's also managed to drag himself away from *The Worm* for long enough to answer this month's crop of readers' problems.

DEPTS



34 GAMES. Find your way around *Sorcery* and rescue all the sorcerers with our exclusive complete may of Virgin's popular game.

REVIEWS



18 PRINTOUT. Six more books this month including an MSX introductory text, a couple of general interest titles on word processing and how to de-bug your own programs.

37 SOFTWARE SCENE. We've 11 pages of software reviews this issue, including *Yie Ar Kung Fu II* and *The Secret Diary of Adrian Mole*.

LISTINGS

52. Look out keyboards — here we come with 10 pages of listings to key into your micro — they're all tried, tested and ready to go.

Philips cables

Computer users after a bargain can claim a free computer cable when they buy any Philips colour monitor.

Philips' marketing manager Steve Paul claims the offer is aimed at 'stimulating and promoting interest in home and personal computer sales'.

Computer cables normally cost between £4 and £12 so taking advantage of the Philips promotion could save you a bit.

To claim your free cable all you have to do is complete the pre-paid reply card that's in the box and supply details of the make and model number of your computer and monitor. Philips will arrange to have your cable despatched within 24 hours.

But you'll have to hurry, the offer only lasts until the end of March, 1986.

For further details contact Philips on 01-689 2166.



Success for Toshiba

MSX has really taken off judging by the number of micros that have been sold over Christmas.

Toshiba alone has sold an estimated 50,000 machines and the company reckons that it now has some 70,000 machines in the UK.

John Benningsen, Toshiba's assistant managing director, estimates that the total number of MSX micros sold is over 100,000. He adds, 'The success of the HX-10 can be attributed to our aggressive marketing and the decision to sell through carefully selected outlets.'

During the latter half of 1985 Toshiba set up a number of MSX centres through its dealer network to sell its range of MSX products.

There's good news on the HX-22 front, too; the company is already shipping a second batch of these micros. The HX-22's features include 128K of memory, a built-in word processor and an RS232C interface. It costs £149.99 and is available from any Toshiba MSX centre.

Yamaha upgrade

Yamaha is gearing up for a May launch of its mark two version of the CX-5M MSX micro.

As yet price details have not been finalised but give to you an idea Yamaha's product sales specialist Jim Corbett hints that it's unlikely to be under £400.

The new machine will have 128K RAM, improved graphics facilities and a more powerful sound generator. This is the SFG05, which will allow you to create split keyboard sounds and layered sounds as if you were using a professional synthesiser.

There's also good news for existing CX-5M owners whose budgets can't run to buying a load of new kit. Yamaha will be launching the SFG05 as a separate plug-in sound unit so that, although you can't take advantage of the extra memory, you can upgrade your micro's synthesiser capabilities. This will cost £95.

Corbett also tells us that due to high Christmas sales Yamaha has completely sold out of existing CX-5M micros and won't be re-stocking because of the arrival of the new machines.

'We were hoping that stocks would last until May when we launch the new machine, but the demand has been so great we ran out of stock four months ahead of schedule,' he tells us.

Ultimate in 3-D

Alien 8, the much awaited arcade adventure from Ultimate, has finally been released.

The game is available on cassette, costs £9.95 and incorporates the very latest in 3-D computer graphics.

As the title suggests the action takes place on board a space craft. Your task is to restore all cryogenic life support systems and knock out the aliens that have penetrated the ship.

Ultimate has another title in the pipeline called *Nightshade* but as yet a launch date hasn't been decided upon.

Spectravideo up in arms

Now you can amaze your friends and stun the neighbours with Spectravideo's latest peripheral for your MSX computer.

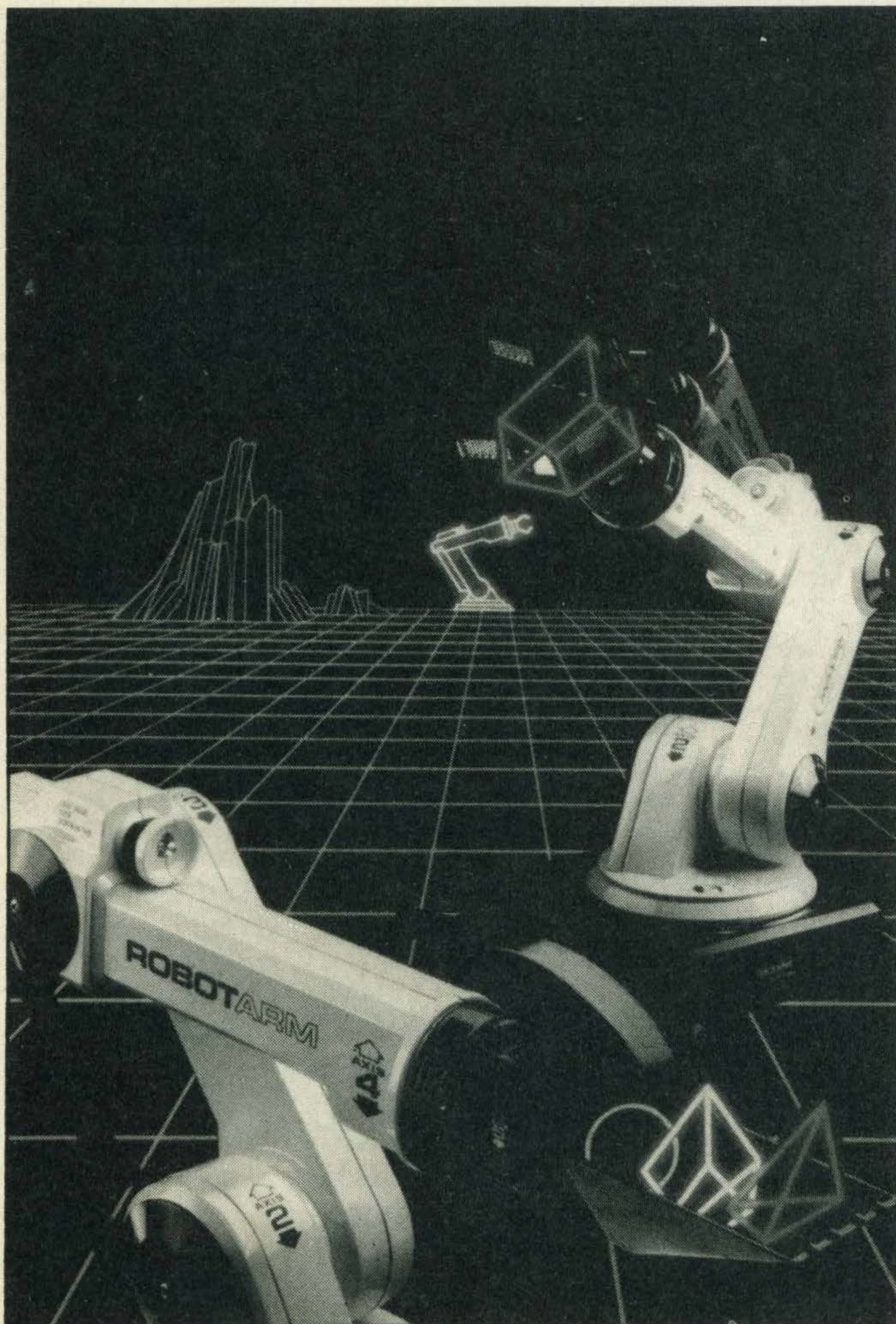
It is a robotic arm called, surprisingly enough, Robot Arm. It's from the Quickshot stable, a company well known by game fanatics for its range of joysticks.

The arm is approximately two feet high and costs £39.95. It works by simply being plugged into the joystick port of your MSX via a special interface unit and is controlled by a program called Rogo.

Although the arm is really an up-market toy it is capable of picking up paper clips and scooping up rubbers or other small objects.

Spectravideo's Keith Newman tells us that the arm is controlled by using two joysticks and that it is designed to give youngsters an insight into robotics and programming.

He also adds that anyone with basic programming skills could write their own program for the arm.

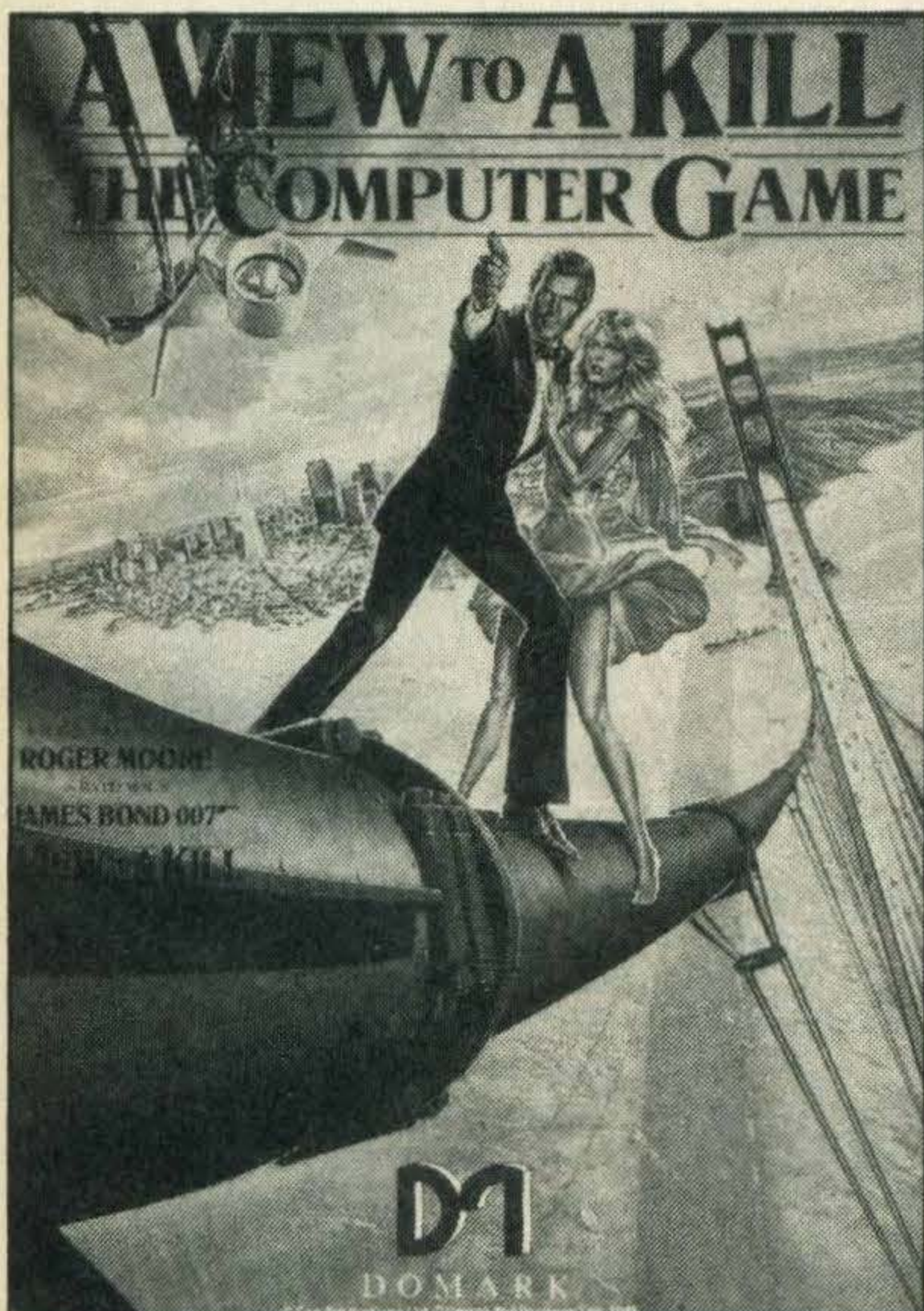


The Robot arm — the latest add-on from Spectravideo

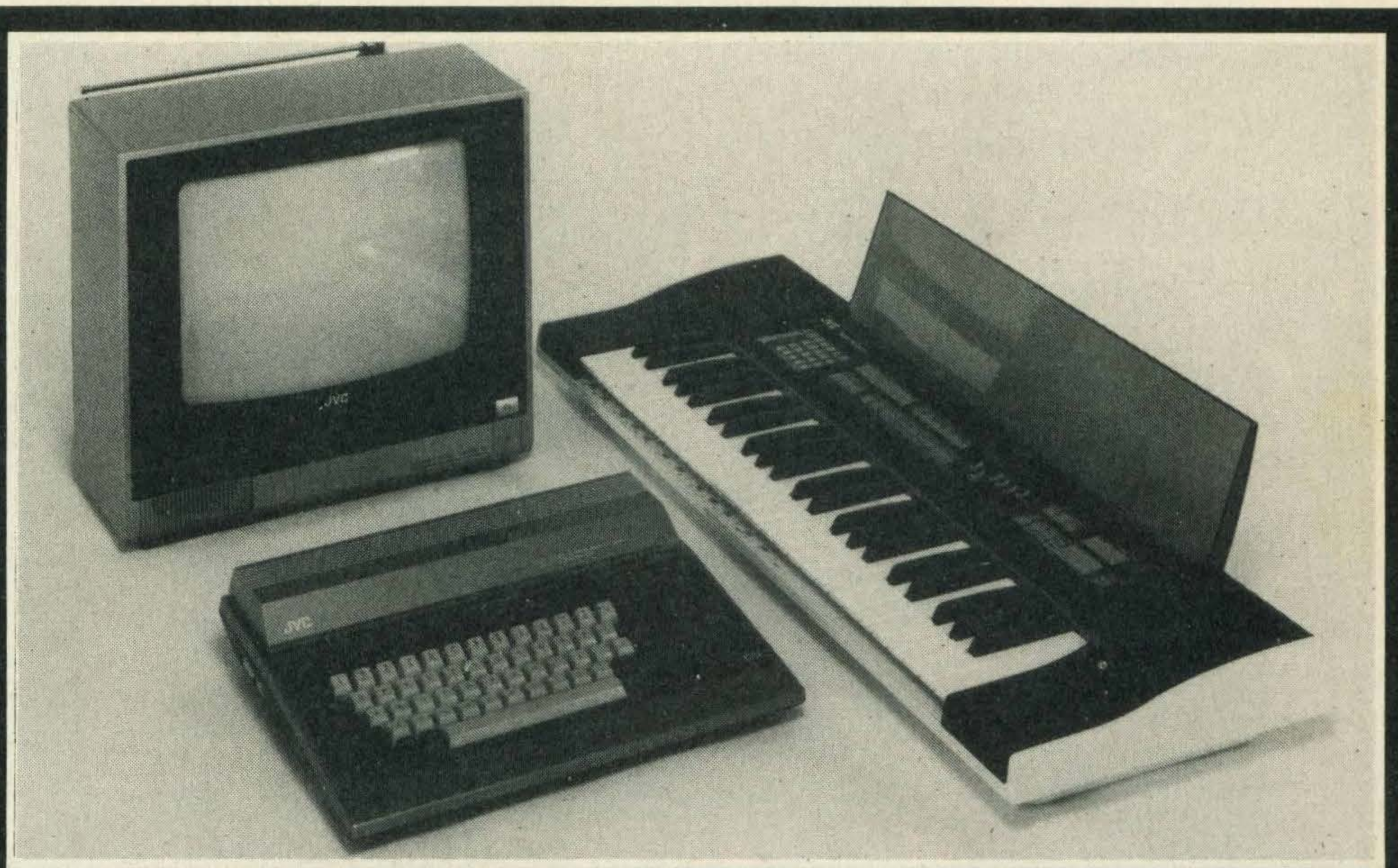
Licence to kill

Fans of the James Bond movie *A View to a Kill* might like to know that for the price of a stamp Domark will send you a 007 colour poster — absolutely free!

All you have to do is write in, enclosing your name and address, to Domark, Poster Offer, 204 Worples Road, London SW20 8PN.



Get your posters here



JVC gets into the groove

In the October/November issue of *MSX Computing* we told you about JVC's impending plans to market a MIDI interface and software for MSX.

The good news is that the MIDI Studio Performer pack, as it will be called, is now released and available for £169.

The pack consists of an interface that plugs into your cartridge port and the Studio Performer program.

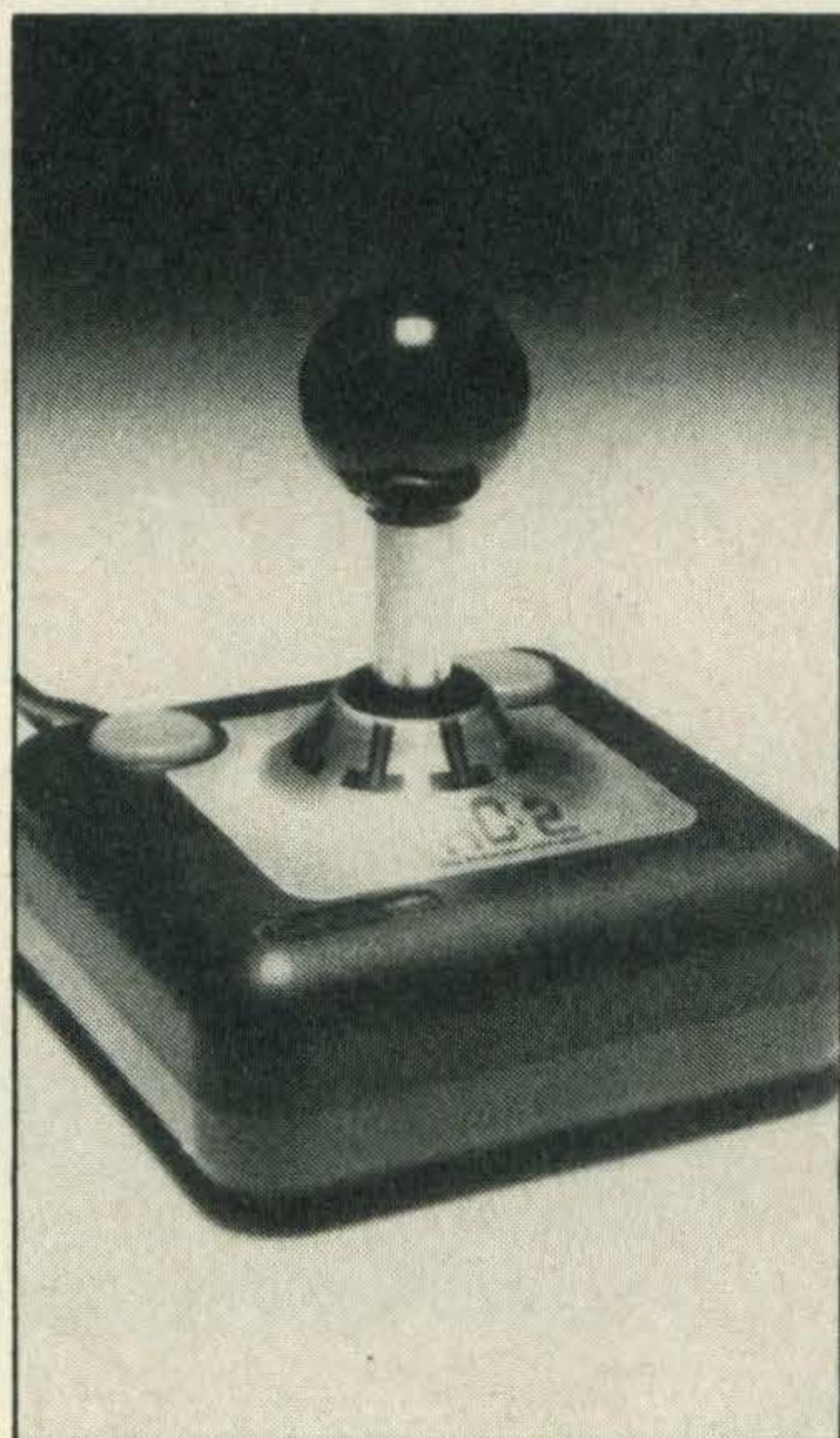
JVC's Peter Glass says the idea behind the pack is to integrate computers with

electronic instruments. He adds, 'With the MIDI Studio Performer pack, a musical keyboard and your MSX micro connected together you have an eight-track digital recorder. In other words, you've got the capabilities of a multi-track synthesiser at your fingertips'.

JVC hopes to launch further MIDI software packs. Future additions could include a composer, editing and computer-generated graphics packages. Further information on 01-450 3282.



Slik Stick



Tac-2



Star Fighter

Joysticks in a flash for Lightning

Lightning has struck a deal to promote and distribute the Suncom range of joysticks.

Initially the company will be selling the already popular Slik Stik, Starfighter and TAC-2

joysticks which can easily be used with MSX micros.

Lightning will also be selling Suncom's latest release, the new TAC-3 joystick, which has a pistol grip, top handle fire

button and two base firing buttons.

The TAC-3 is aimed at serious gamers and will retail for around £12.99. More information on 01-969 8344.

Three new titles from Aackosoft

Aackosoft has lined up two action packed fighter plane titles and a database for release in the next few weeks.

The first to be released will be its *Aackopresto* database package which will be available on floppy disk or cassette for £39.95.

Hot on the heels of this release, Aackosoft is launching two more titles — aimed more at the games end of the market. These will be *Jet Bomber* at £6.95 and *Jet Fighter* for £7.95. Both will be on cassette.

Jet Fighter is a flight simulator which has the unusual distinction of being designed to be used with two MSX micros linked up via the joystick ports. So now you can blast your best friend out of the skies — all in good fun, of course! Watch this space for more details.

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See our software listings on page 64

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Ease the strain

Young micro games addicts can now cut out damaging screen glare with Bolle's latest anti-glare specs.

At £20 the junior specs aren't cheap but, Bolle claims, they're not only shatter-proof but they also cut out blue-violet light which is believed to be a primary cause of eye strain.

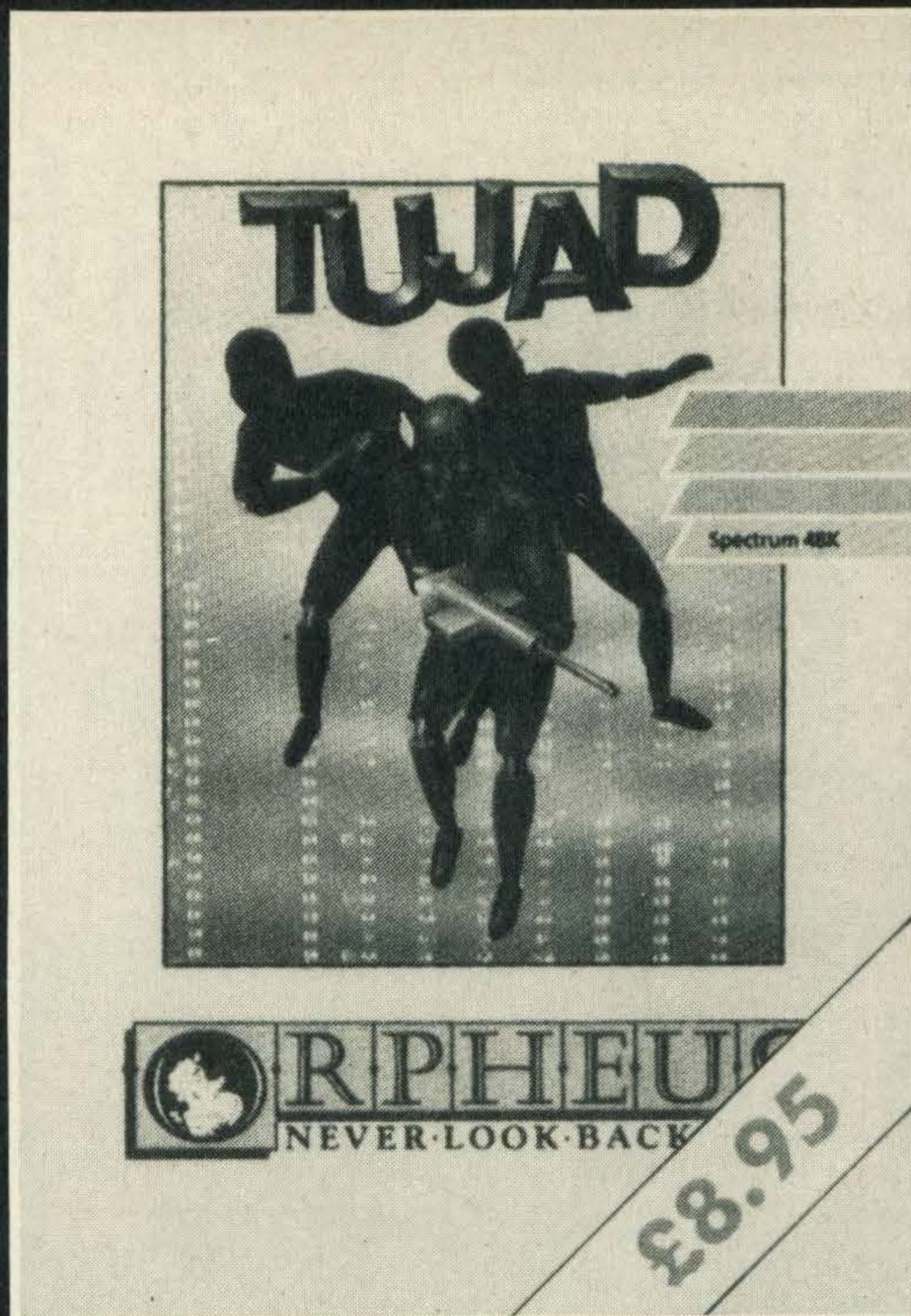
The junior specs can be bought direct from Bolle UK at Brunel Close, Ebblake Industrial Estate, Verwood, Wimborne, Dorset. Or you can telephone (0202) 824535 for more details.

It's a goal

Sports titles seem to be very popular with gamers at the moment, and Anirog is planning to launch a soccer game to keep their enthusiasm going.

Called *Five-a-side*, the game has two teams battling it out to score as many goals as possible — just like the real thing!

Anirog hasn't yet decided on a release date but the price is expected to be around £5.95. Watch out for a review in an upcoming issue.



Two goodies in the pipeline from Orpheus

We've great news for fans of the popular TV series, *The Young Ones* — Orpheus is releasing it as a computer game for MSX.

The game, which costs £7.95, features all the infamous characters including Rik Mayall and will be released later this month.

Also in the pipeline is a title called *Tujad*, an arcade adventure which involves a supercomputer that upsets the orbit of a reactor circling the earth. Your task is to find the fault and save the galaxy!

Tujad is already available for the Spectrum but the MSX version is still in the production stages. According to Orpheus's Paul Kaufman the game should be on sale in late February for around £8.95.

Stop that mains-borne interference — put a plug in it!

If your MSX is prone to interference from your electricity supply, LCR Components may be able to solve your problem.

The company has designed a special plug called simply The Plug which it claims will filter out mains-borne interference.

The Plug costs £16 and looks like an ordinary 13-amp plug.

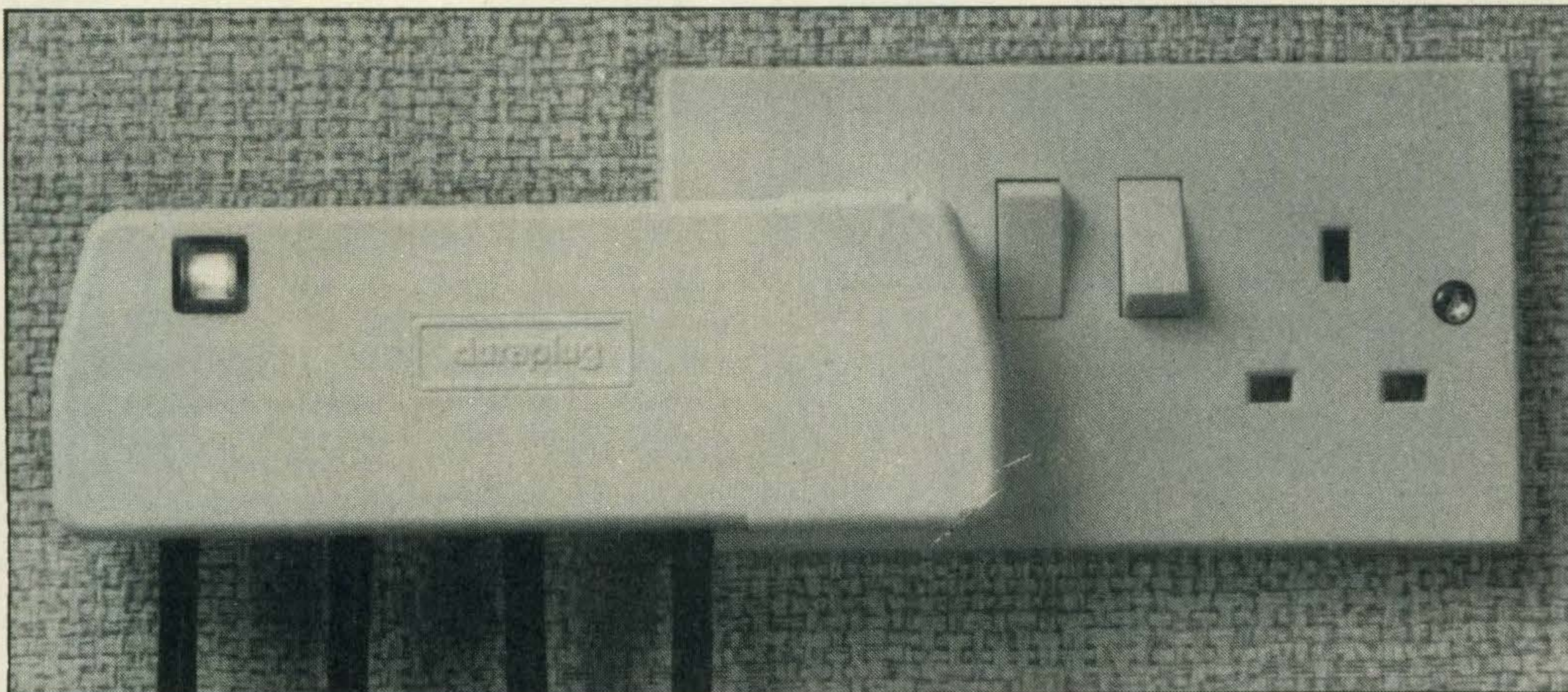


Keep that current clean with *The Plug* from LCR Components

However, it's twice the size, and connects to your micro in the normal way — and plugs into any three square pin socket.

It was originally designed for use with medical equipment but the company points out that computer equipment is just as prone to interference.

In our experience, not too many home computer users have problems with their electricity supply but if you do then LCR's plug could be just the job. The Plug is available from most electrical dealers. Further details can be obtained from LCR Components, Woodfield Works, Tredegar, Gwent NP2 4BH.



Link up all your computer gear to one socket with the MultiLine plug

The end of spaghetti as we know it?

Are you fed up with wires and plugs running all over your desk?

If you are then Duraplug might have just the solution. The company has designed a four-in-one 13-amp plug called MultiLine.

The MultiLine has been designed for hi-fi and computing enthusiasts who have lots of wire and adapters and wouldn't mind a neater and smaller alternative.

Up to four appliances can be connected to the MultiLine

which means that you no longer have to bother with cumbersome adapters for your micro, printer, monitor and data recorder.

For further details contact Duraplug Electricals on (0843) 68771.

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THE WORM IN PARADISE

Level 9 have spent 12 months enhancing their adventure system with world-beating features for the coming years and **THE WORM IN PARADISE** is the first game to use this new system.

"The Austin 4 haven't just produced, in **THE WORM IN PARADISE**, a new title — they've created a whole new ball game in adventure technology ... The latest title offers a 1000-word vocabulary, the most sophisticated parser ever incorporated in a cassette-based adventure, and the refinement of multitasking ... You'd have to spend an evening with a Roget's Thesaurus to come up with enough superlatives to do justice to **THE WORM IN PARADISE**; it not only offers stunning (albeit at times disturbing) originality in the overworked realm of science fiction but also embodies state-of-the-art programming techniques which will allow you effortlessly to give reign to your powers of creative deduction"
— Commodore User

"An excellent adventure, atmospheric, devious and full of the ingredients that have established Level 9 as probably the best English adventure writing house to-date."
— Computer Trade Weekly



"I will describe this game in 3 words: Sheer unadulterated brilliance. Rarely have I played such a wonderful, enthralling adventure ... The puzzles are entertaining, tough and logical. The storyline is immaculate, in its originality, concept, and application. This game incorporates Level 9's new parser which has to be used to be believed. Complex, and multiple input commands are understood, and the game is extremely user-friendly. In short, mortgage your computer, and get a copy. Immediately!"
— The Adventurers Club Dossier

An AMTIX ACCOLADE. "The game is very good in terms of interaction ... fascinatingly original and clever. OVERALL 91%
— Amtix

"probably the company's best adventure so far"
— Microscope

"YOUR SINCLAIR MEGAGAME 9/10"
— Your Sinclair

"The final big difference over previous games is the size of the vocabulary. You can LOOK, of course, but you can also LISTEN and even SMELL ... Level 9 claim that the program will understand over 1000 words ... about five times as much as most other present-day cassette adventures. ... out of this world" AA Rating 87%
— Amstrad Action

THE WORM IN PARADISE is available on 6 micros. All versions with the exception of the BBC have more than 200 pictures.

(Our list of games for other micros — ENTERPRISE, LYNX, MEMOTECH, NASCOM, ORIC1 is available on request — please send SAE.)

Please send me a **FREE FULL COLOUR POSTER** with more details of Level 9 adventures on the back. I enclose a stamped, self-addressed envelope about 9" by 6".*

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* Adventurers outside the UK should send a Eurocheque or bankers draft for £10.95 for the game, or an international reply coupon for the poster.

Level 9 Computing, P.O. Box 39, Weston-super-Mare, Avon BS24 9UR

Modem

If you're after a modem for your MSX it could be worth your while looking at Miracle Technology's WS2000 which has just been reduced.

Instead of £149.44 the WS2000 now costs £125, a saving of £24.

Miracle's sales and marketing manager David Baxter says the price reduction has been made possible by the popular success to date of the product.

He goes on to say, 'Demand for the product means high volume production and these economies of scale mean savings which we can pass on to the customer'.

5-star service

MSX software dealers seem to be springing up all over the place and the latest is in Northamptonshire.

Called Five Star the company has been in business for just over a year selling software for other micros but has just entered the MSX arena in response to the high demand for software.

Five Star can be located at 55 Gold Street, Northampton, Northants. Tel: (0604) 250218.



A new angle on the MSX phenomenon

The Japanese weren't kidding when they said that MSX's applications would go far beyond games-playing and controlling your hi-fi. The latest application is photography.

Canon has developed the first SLR camera that can be plugged into your MSX micro.

The camera, called the T90, can be connected to your MSX via a special interface unit called a DMB (that stands for

Data Memory Bank).

With this unit you can then store up to 16 types of exposure control data, store it on tape or disk and run off a hard copy from your printer.

Canon's Geoff Thorn tells us that the camera is geared towards the 'Professional photographer or the very keen amateur and this is reflected in the price!

The camera alone costs £399 and the interface unit £99.

Konami does it again

Cartridge fans will be delighted to hear that Konami is planning to launch a sequel to its very popular *Hyper Sports* carts.

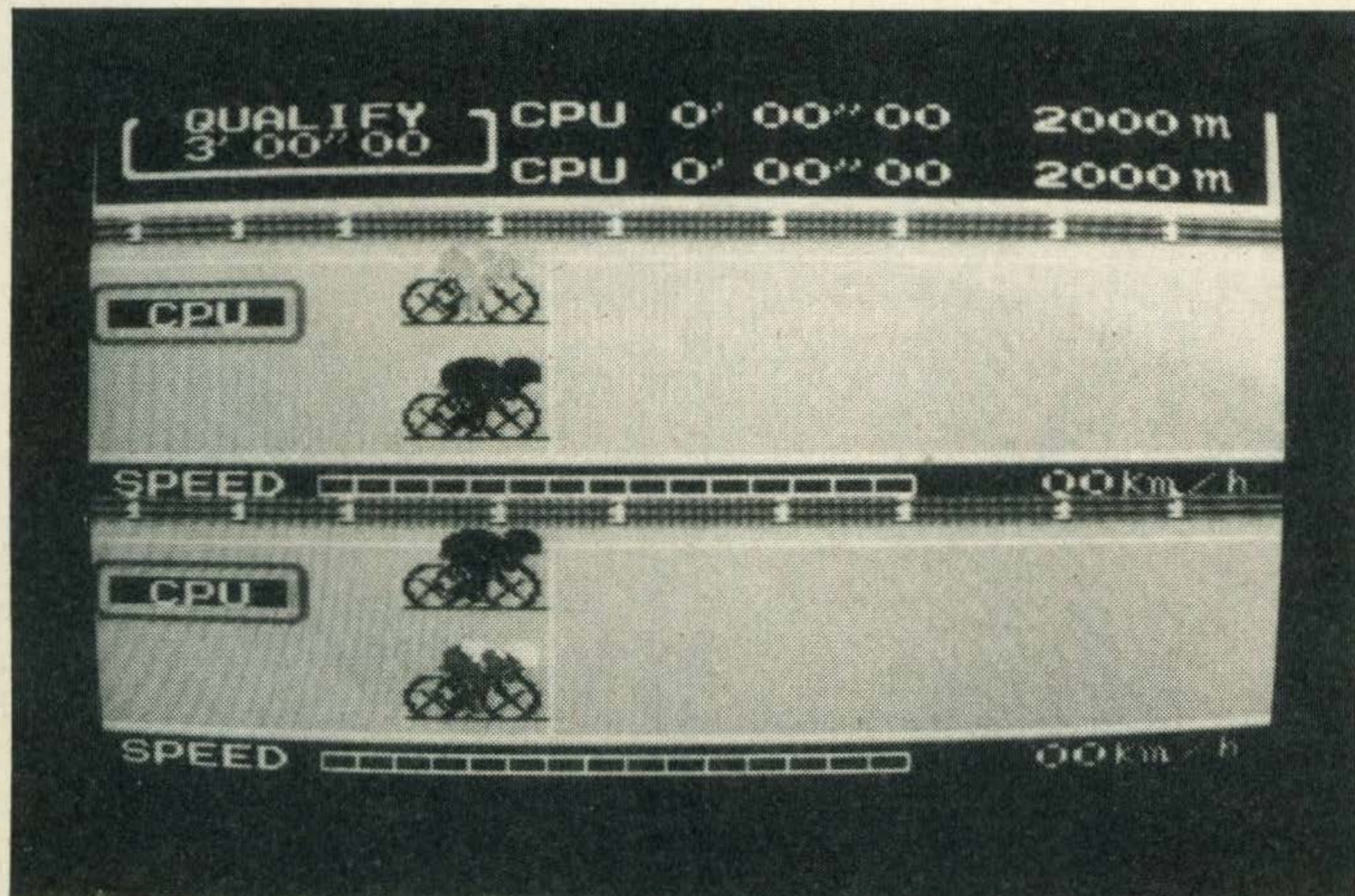
The latest addition is *Hyper Sports III*, which will cost £14.95.

Like the previous titles you have four stages to get through which include cycling, triple

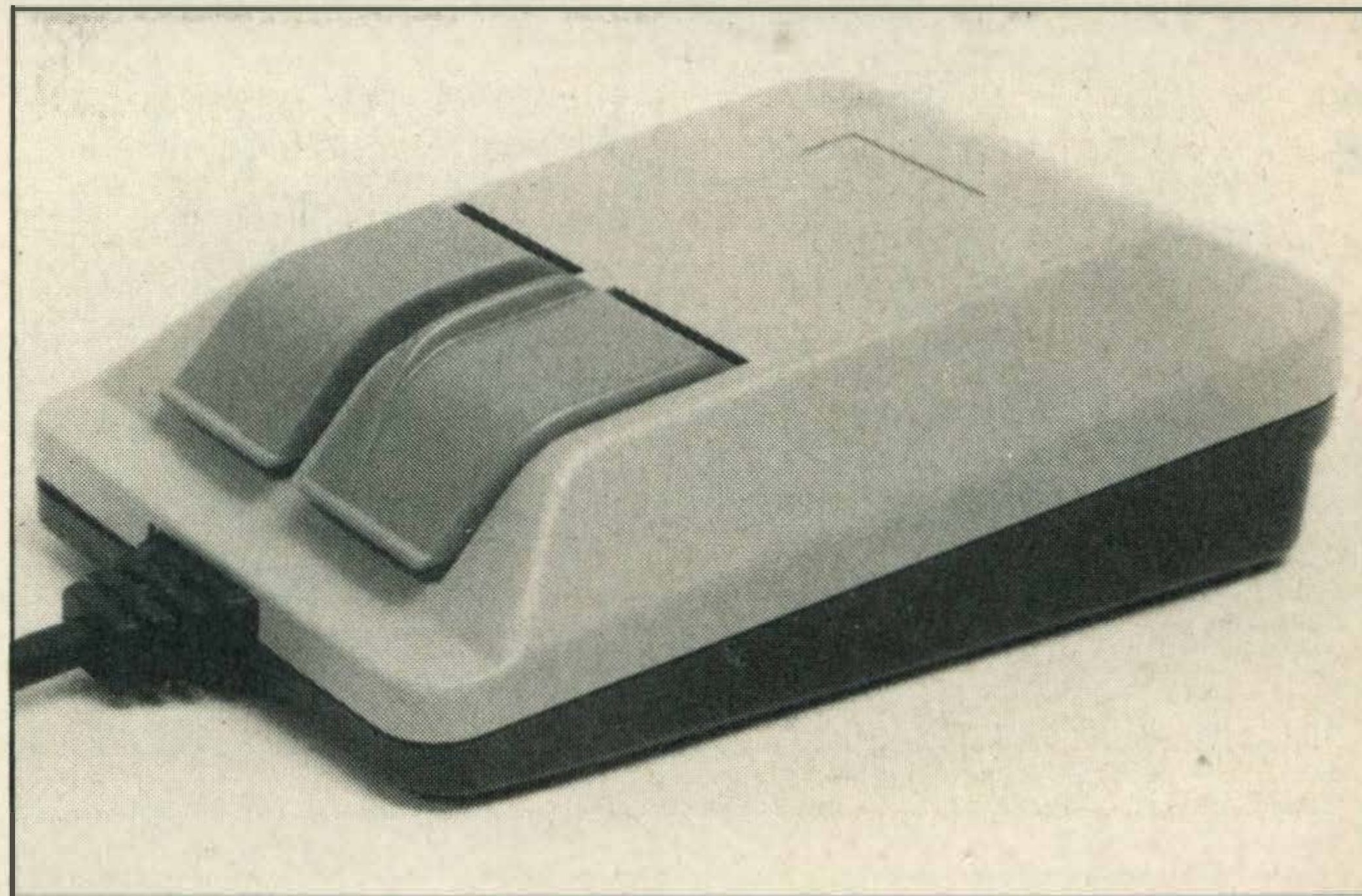
jump, curling and pole vault.

We've managed to get our hands on a pre-release copy and, like Konami's other carts, the graphics are superb.

No release date has been decided upon yet but a spokesman says March is a possibility. So watch out for our review in a future issue!



A screen shot from soon-to-be-released *Hyper Sports III*



A mouse is on its way to the three lucky winners below

Wigmore House's mouse competition winners

Entries arrived by the box-load for our mouse competition in the December/January issue of *MSX Computing*.

The aim of the competition was to list the features of the Wigmore House mouse and decide in which order of import-

ance they should be placed.

The correct order of importance is E,D,B,A,C,F and the lucky winners are James Fraser from Caithness, Martin Jeffs from East London and Miss E Astley from Preston. Congratulations!

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MSXC/2/86

Decisions, decisions...

I am writing to ask if you could help me make a decision. I would like to purchase a database program.

I've seen three packages, *Aackobase* (£45), Kuma's *Database* (£19.95) and MST's *Database* (£12.95).

Alternatively I could write my own, but as I have only just bought my Sony Hit Bit I have no knowledge of basic programming. What would you recommend?

C J Gillard
Milton Keynes

What can we say? If you have only just bought an MSX and have no previous programming experience your best bet is to either go on a crash course or invest in some off-the-shelf software!

Card queries

I would like to say how much I enjoy your magazine and hope you keep up the high standard.

Quite recently I have read the articles about the new credit size games cards: *Becards* from Hudson Soft and the *Astron Soft Card* from Electric.

What I would like to know is do I need an adapter from both of these companies for the cards or are they all standard?

T A Morgan
Tyne and Wear

We contacted Electric Software with your query and talked to the company's programming engineer, Giles Nunn.

Giles tells us that there is



no set standard for *Becards* and *Soft Cards*. He also went on to say that the two cards are totally different in design and that you will need separate adapters.

Electric Software's adapter costs £7.95 and Hudson Soft's adapter costs £14.95.

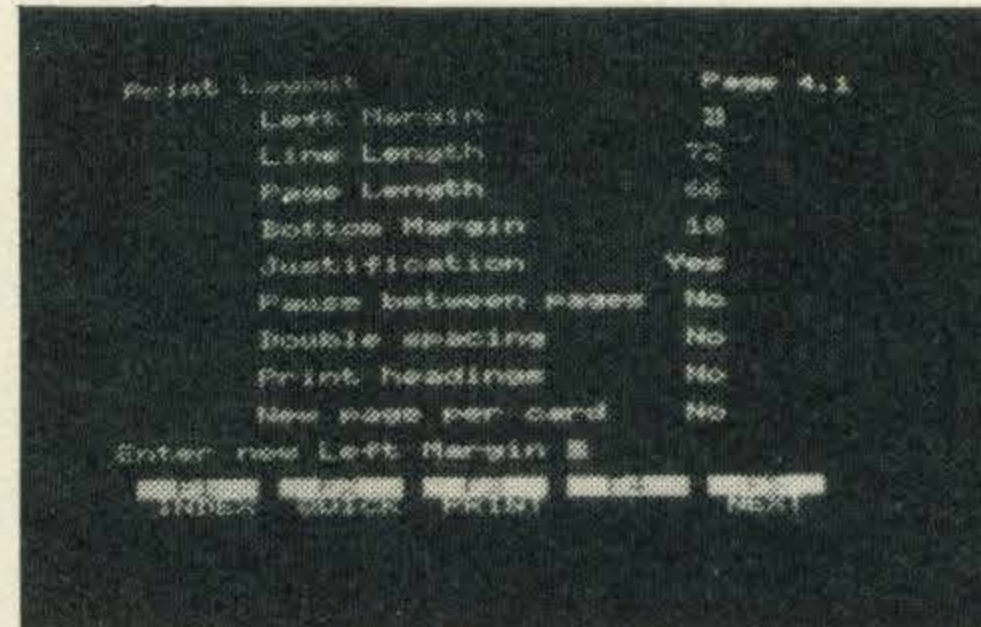
More business software, please!

Last December I purchased a Sony MSX micro and have found it to be 100 per cent reliable.

However, I have now decided that it is time to expand my system and buy a disk drive. However, the problem is that the Sony disk drive costs £350! For the same price I could buy an Amstrad 664 with a built-in disk drive.

The dilemma is that there seems to be a wealth of games software and very little busi-

ness software as manufacturers obviously don't think it is important.



A screen shot from *Aakotext*

I simply require a word processor (more powerful than *Tasword*), a database, spreadsheet and some form of statistical package. Can you help me at all?

N Carrick
Anglesey

Disk drives aren't cheap and all tend to cost around the £300 mark.

As is the case with any new machine, initially there is always a plethora of games software.

But the good news is that this is changing as more and more manufacturers are realising that good quality business software is required.

There are many good word processor packages on the market like Kuma's *Wdpro* (£29.95), Silversoft's *Aakotext* (£39.10) and *Computermates' Word Processor* (£4.99). As for databases you're spoilt for choice — *Computermates*, Kuma, MST and Silversoft have packages with prices from £12.95-£30.

Our advice is to shop around and go for the word processor that best suits your requirements and your pocket.

In short supply?

I recently bought a Sanyo MSX micro and I am now having a lot of difficulty in finding software for it.

I'm sure I'm not the only one to have problems, please could you tell me where I can buy MSX software.

Paul Fawcett
West Yorkshire

Over the months we have received a lot of letters from MSX owners who are having problems tracking down software.

There are a number of software houses that advertise in *MSX Computing* who can supply a fairly varied selection of titles.

Otherwise, we recommend that you contact *Nemesis* which is a nationwide distributor at 2 Iffley Road, Hammersmith, London W6 0PA, telephone: 01-741 2299 for details of your nearest stockist.

Alternatively there is a company called *Tavistock Hi-Fi*, 21 The Broadway, Bedford MK40 2TL, telephone: Bedford (0234) 56323 which can supply software on a mail order basis.

Software adapters

Reading through all your issues of *MSX Computing* I notice that when you're talking about 64K machines you mention that MSX BASIC uses 36K leaving 28K for the user's programs.

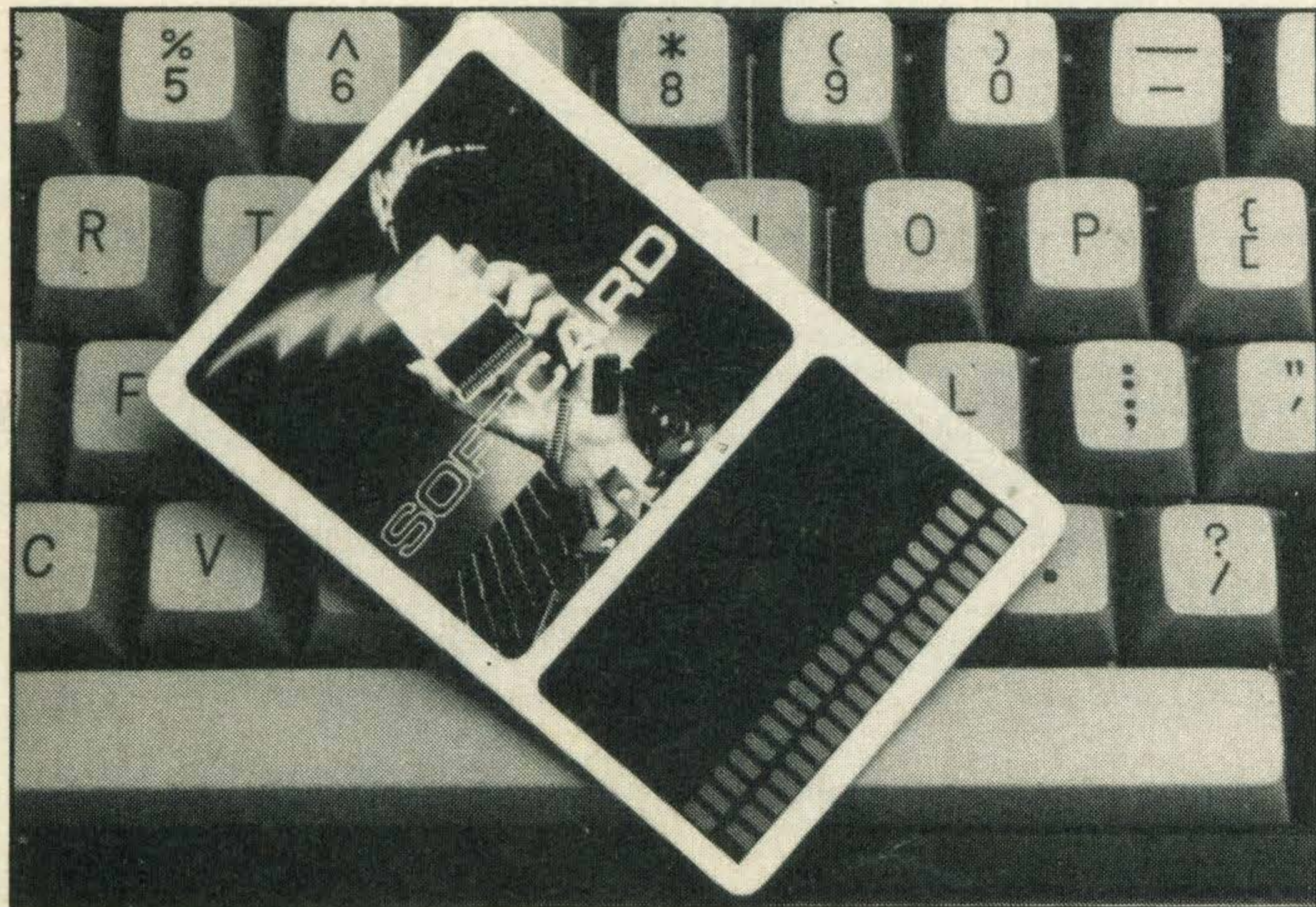
So, is it correct to say that a 64K MSX has 32K ROM, 16K video chip, 36K BASIC RAM and 28K user RAM?

Also it has been demonstrated on the Mitsubishi MSX2 that MSX 1 software is compatible. In your opinion do you think that a cartridge adapter will be produced to enable MSX 2 software to run on present MSX 1 machines?

J Gregg
West Midlands

The answer to your first question is yes, you're absolutely right.

In answer to your second question as far as we know



The Astron Soft Card looks very similar to a credit card



MSX manufacturers are not bringing out separate software for MSX 2 machines.

There's no need to have a special adapter, all software be it disk, cassette or cartridge will run without modification on future MSX systems after all that's what compatibility is all about.

Also manufacturers will be building future MSX systems so that they will accommodate the current range of printers, joysticks and other peripherals.

Expanding the system

I don't know if you are into hardware, but if you are then this might be of interest.

A simple decoder that I've added (... yes I've poked around inside ...) to my Sony Hit Bit.

Sixteen leds now adorn the top of my Hit Bit, they indicate which pages are active in what slot. Quite spectacular during disk access!

I can't take all the glory — the original design was by an engineer at Sony (UK) ... (who shall remain nameless), to assist in fault finding.

P.J. Clark
Catford

We're very impressed! Thanks for sending us the diagram of your decoder, unfortunately lack of space permits us from printing it.

If any other readers have designed any useful or interesting gadgets or software for their micros we'd love to hear from you.

Subscriptions

In the October/November issue of *MSX Computing* you said that you would be alternating with *What MSX?* on a monthly basis.

What happens to our subscriptions? Will I be sent *MSX Computing* one month and *What MSX?* the next?

Mark Allen
County Down

As you are probably aware, when you take out a subscription it normally lasts for one year and you receive 12 issues of the magazine.

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.

As *MSX Computing* is now bi-monthly you will receive a copy every other month, and will continue to do so until you have received 12 issues.

Unfortunately you will not receive copies of our sister magazine *What MSX?* unless you take out a further subscription as it costs a few pence more.

We know it's confusing but don't worry, you'll get 12 issues of *MSX Computing* ... honest!

Free memory

I have recently purchased a Toshiba MSX HX-10 micro. Please could you help me with a few queries.

How can I access all the 64K RAM, on power up I only have 29K?

Do you know of any MSX computer clubs in the Chester and Merseyside areas?

Congratulations on a brilliant magazine, keep up the good work.

M O'Donnell
Ellesmere Port



Accessing all of the RAM on MSX micros can be a bit tricky

All 64K MSX micros give you just over 28815 bytes of free memory on power up, in other words, 29K.

If you want to access the 'mission' 34K RAM you'll need to have a sound understanding of both the operation of your hardware and of Z80 machine code.

To get you started we recommend that you read the Penfolds' book called *An Introduction to Z80 Machine Code* (£2.25 from Babani Publishing) and Kuma's title called *Starting Machine Code on the MSX* by G.P. Ridley (£7.95).

As for MSX clubs, the nearest one to you is MSX'r, 161 Nunts Lane, Holbrook, Coventry, CV6 4GJ. Telephone: Coventry 662864.

Compatibility problems

I placed an order with Mastertronic for a copy of its game *Finders Keepers*. I have since had a letter saying that: 'Mitsubishi, Sanyo and certain other MSX machines are not entirely

compatible, we are currently revising the program so that it runs on all MSX machines.'

Have you any knowledge of incompatibility between MSX computers aside from memory size? Are there any other problems I can expect from software or hardware add-ons?

Norman Duff
London N19

We have come across some incompatibility between MSX micros; for example, the Sanyo lightpen doesn't work with the Toshiba MSX.

A spokesman for the company tells us that's because it was designed with the Sanyo machines in mind and not those from other manufacturers.

But having said that we tested it with the Goldstar and Mitsubishi without any problems.

As you rightly say, apart from memory size we've come across no other problems. But if any of our other readers have, we'd be interested to hear about them.



Finders Keepers — a smash hit!

Praise for Mastertronic

I would like to congratulate Mastertronic for the speed of its mail order service which only took four working days to reach me.

Also the price of the company's software is only £1.99 and the game that I received, *Finders Keepers*, is one of the best cassette based games that I have seen.

S J Sinclair
Essex

It's always nice to hear from satisfied customers!

We think *Finders Keepers* is a great game too and extremely excellent value for money.

Also, judging by the number of letters we receive it's a firm favourite with our readers!

DATA DESIGN

Attractive presentation is easy — with a little bit of BASIC programming know-how

Good presentation always impresses people — just look at *MSX Computing!* If you want to crack the technique of displaying your output on the screen in the best way, read on for this month's tips of PRINT layout.

Suppose you want to lay some text out in an attractive manner on the printed page using an ordinary typewriter, for example. How would you begin?

Unless you want to make rather a mess of the exercise it's essential to establish how the characters 'map' onto the page — how many characters across and how many lines down. So let's first remind ourselves what the MSX screen map looks like.

There are four different modes of screen display (numbered 0-3) on your MSX, which are selected using the SCREEN command. The normal PRINT instruction can be used only with screen mode 0 (SCREEN 0) or mode 1 (SCREEN 1).

When you switch on the computer, the screen will automatically display in mode 0, which has 24 rows (numbered 0-23) of 40 characters (numbered 0-39) each. This means that you can now PRINT characters anywhere on a 24 x 40 'matrix' doesn't it?

Well you might imagine so, but in fact there are a couple of factors which initially restrict the available mode 0 PRINTing space to 37 x 23 characters.

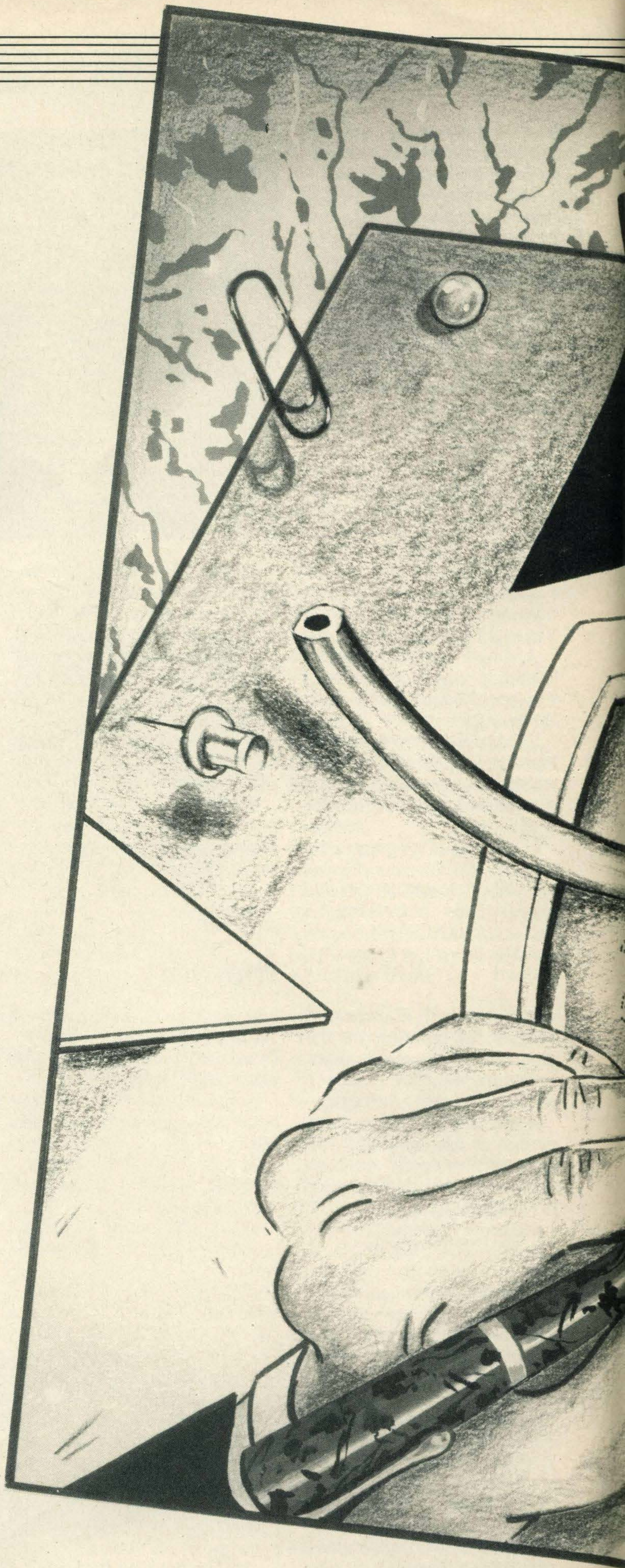
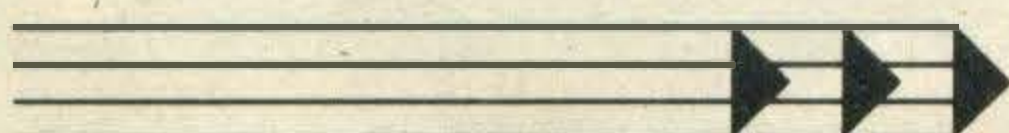
The first restriction you can see clearly on your screen — it is the bottom line (23) display of the initial function key settings.

To eliminate this and gain an extra row of PRINT space in the process, type KEYOFF. You can reinstate the display using KEYON — both instructions can be used within a program too.

The second restriction reminds us of an MSX facility. This is the ability to make the PRINT area narrower than that normally available. Using the instruction WIDTH, we can cut down the width of the display area from its screen maximum to a minimum of one character. The default value of WIDTH for SCREEN 0 is actually 37 (rather than 40). To PRINT up to the full 40 character display, type WIDTH 40 — which will also clear the screen.

If you are using an ordinary TV rather than a computer monitor, you will find that the first few characters on the left hand side are now almost off the screen — hence the default of 37! Return to a more practical display using WIDTH 37.

The maximum display area of SCREEN 1 is 32 x 24 characters (the character is made up of 8 x 8 pixels rather than the 6 x 8 on SCREEN 0). The default WIDTH on SCREEN 1 is 29 — but for the rest of this article we will be assuming SCREEN 0 working which has 192 more character





1. TAKE THE SECTION B
CUT INTO FOUR PARTS
LIFT TO RIGHT
LIFT ONTO PART ONE
JOIN AT PART A AND
TWO

positions to play with.

Having established for SCREEN 0 a practical PRINT display area of 37 x 24 characters, how do we locate characters on the screen in the required position?

Since MSX BASIC is a friendly language, you won't be surprised to be reminded that we use the keyword LOCATE. Furthermore, the co-ordinate system matches the natural (Western rather than Chinese) reading pattern also — across from left to right and down the screen.

To PRINT text from a point which is 18 characters from the left and 12 lines down from the top of the screen, for example, we would first use the instruction LOCATE 18,12 to locate the cursor at that point.

LOCATE 18,12: PRINT "X"

will display 'X' in the centre screen. It is not essential to include both 'across' and 'down' values with LOCATE. By omitting the redundant parameter, you can just step across, or down, the screen. LOCATE does actually have a useful optional third parameter. LOCATE,,0 will switch the cursor off and LOCATE ,,1 will restore it. Try it now!

Spaced out

A normal PRINT instruction implies the equivalent of a typewriter 'carriage return + line feed'. The next PRINT display will appear at the beginning of the next line, unless you specifically (re)LOCATE it elsewhere. But you can suppress this 'beginning of next line' effect by adding a semi-colon (;) at the end of the item you are trying to PRINT.

Perhaps the simplest way to space out items which are to be printed on the same line is to use (you've guessed it) the keyword SPC — like this for example:

```
PRINT "Col1";SPC(4);"Col2"
Col1 Col2
```

The semi-colon separators are not strictly necessary here, but the structure is easier to 'read' if they are included. SPC can only be used with PRINT; another way of achieving the above is to use SPACE\$ to build up a 'Column Heading' string composed of a number of elements, like this:

'The co-ordinate system matches the natural reading pattern — from left to right and down the page'

```
H1$="Col1"+SPACE$(4)+
"Col2"Ok
PRINT H1$
Col1 Col2
```

Both SPC and SPACE\$ are used mainly to space-fill between character strings — or sometimes to clear a line or 'field' on the screen. Perhaps a more common requirement, however, is to display text or numbers in a specific 'column'.

The MSX BASIC keyword TAB is used with PRINT in much the same way as the TABulate facility on a mechanical typewriter. TAB will direct PRINTing to start at a particular character position across the screen. So, returning to the problems of printing column headings, the result could also be achieved using TAB — like this:

```
PRINT "Col1";TAB(8);"Col2"
Col1 Col2
```

Using TAB(8) within the PRINT statement is clearly much quicker than the equally valid LOCATE 8:PRINT "Col2" of course. Naturally you can use several TABs in one PRINT statement; notice, though, that you cannot TAB backwards or overwrite text.

There is an even simpler default tabbing facility, which can be very useful, particularly if you are concerned with only two columns of information. Most readers will be aware of this:

```
PRINT "Amount",-76.52
Amount          -76.52
Ok
```

Items are separated by commas, and you can have several in one PRINT statement, which will be automatically displayed in 14 character fields — including, for numbers, one sign character. Since there is room for only two such fields or 'zones' on the screen, every other item will appear on the screen starting at character position 14.

We now know how to locate the cursor to begin the display, move down the screen using the built-in 'carriage return',

which can be suppressed with a terminating semi-colon, move anywhere vertically or horizontally with (re)locate and across the screen with TAB or comma, space-filling as we go with SPC or SPACE\$. This sounds quite sufficient for layout purposes — is it? Well, take a look at this:

```
PRINT,56,,632.5,,0.371
                    56.7
                    632.5
                    .371
```

Now if that column of figures was part of a financial presentation, the recipient would not be very impressed. Although the amounts are in the same column, they all have a different format and are thus tricky to read — the result just looks messy. What's the solution?

There is an extension to the PRINT command which enables what is being printed to be laid out USING a specified format. Experiment with the following to check out the facility:

```
PRINT USING "###.##";4;
6.572 4.0 6.6
```

Each number is forced (if necessary 'rounded up') into the format specified by the character string "###.##". Other useful formats will force a sterling (£) sign into a particular position and optionally include asterisks * as a security measure (needed when printing cheques, for example):

```
PRINT USING "£**###.##";
25.5 £**25.50
or
PRINT USING "***£###.##";
25.5 **£25.50
```

In practice, you would normally set up different formats as variables and reference the relevant variables when you feel like USING them. There are various other formatting options which you should find in your manual — there's even one to print only the first character of a string "!" useful for listing initials.

Now we can format numerical information on the screen even when the values are not accurately known — but how do

we present text (character strings), the LENGTH of which is unknown, in the best position? Use LEN, the MSX friendly character counter, of course! Try this rather tortuous statement, which will automatically display any text you INPUT in the centre of the screen:

```
INPUT T$:
PRINT TAB((37-LEN(T$))/2);
T$
```

Remember to watch your parentheses — particularly now the cold weather is with us!

Finally, here is a short program which incorporates many of the PRINT layout facilities we have looked at in this article. You can input a screen title of your choice and then up to 12 Description, Qty, Unit Cost entries. Enter TOTAL at any point to get the group total.

Next stop Financial Director maybe!?

```
05 REM Print Layout £1
10 CLS
20 INPUT "Heading";H$
30 LH=LEN(H$)
40 H1$="DESC":H2$="QTY"
50 H3$="£COST":H4$="AMOUNT"
60 F1$="###.##":F2$="###.##"
70 F3$="£**###.##"
80 DIM D$(11):DIM A(11,2)
90 CLS:LOCATE,0
100 PRINT TAB((37-LH)/2)H$
110 PRINT TAB(2)H1$;TAB(10);H2$;
120 PRINT TAB(16)H3$;TAB(26);H4$
130 C=0:T=0:KEYOFF
140 LOCATE 3,20
150 INPUT "Description";D$(C)
160 IF D$(C)="TOTAL" THEN
260
170 PRINT "Qty,Unit Cost PLEASE!"
180 INPUT A(C,0),A(C,1)
190 A(C,2)=A(C,0)*A(C,1)
200 T=T+A(C,2)
210 LOCATE,3+C:PRINT TAB(2)D$(C);
220 PRINT TAB(10)USING F1$;A(C,0);
230 PRINT TAB(16)USING F2$;A(C,1);
240 PRINT TAB(26)USING F2$;A(C,2)
250 C=C+1:GOTO 140
260 LOCATE 2,4+C:PRINT "TOTAL";
270 PRINT TAB(26)USING F3$;T
280 END
```


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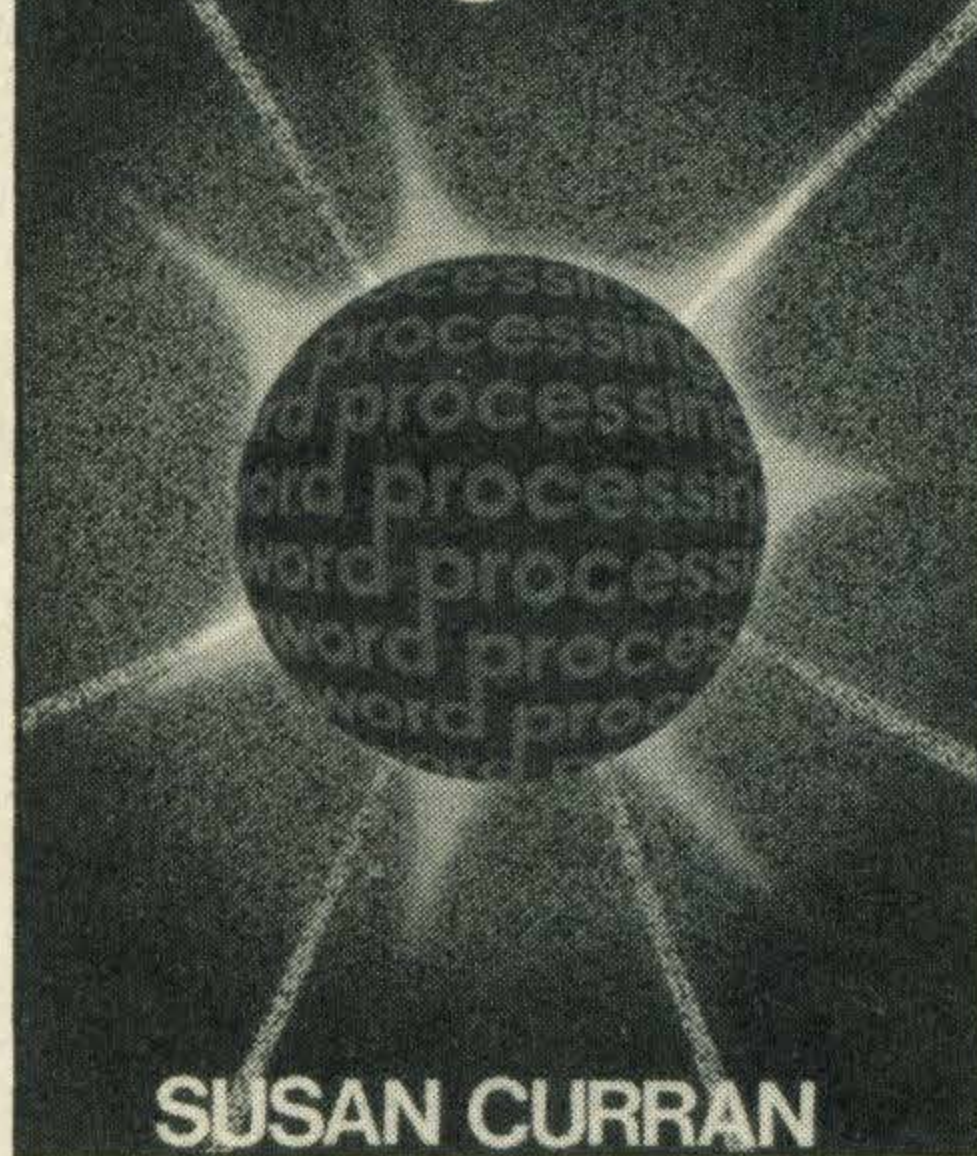
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Word Processing for Beginners



Word Processing for Beginners

by Susan Curran

Granada Publishing £5.95

Susan Curran is probably familiar to readers as the co-author of *The Penguin Computing Book* and the author of *Get More From The Epson Printer*.

As more and more MSX owners are using their micros for word processing we thought it was high time we reviewed Susan Curran's latest title *Word Processing for Beginners*.

The book kicks off with the usual introductory blurb where Ms Curran states that her aim isn't to run through every word processing system under the sun but simply to look at those which range from the 'Sticking-plaster-and-hope level up to professional quality that can cope with heavy workloads'.

She goes on to add that anyone who uses a typewriter can make use of a word processing system.

There are 12 chapters in all, which not only cover the various word processing packages available for most of the popular home micros including MSX, but also give a run down on the different micros available and letter quality printers.

Chapter seven is probably the most useful for newcomers to word processing as Ms Curran highlights the differences between some of the most widely used packages like *Tasword* and *Wordstar*. By the end of the chapter you should know exactly what you want from a package and be confident enough to tackle your local dealer.

The eighth chapter runs through some of the most common word processing terms and functions. This is followed by a review of word processing programs and in particular *Wordstar*, one of the most popular packages.

Finally, Ms Curran suggests how you should go about setting up a system; organising your files and making back-up copies in case the original goes astray.

After reading Ms Curran's tips and advice my typewriter is now going to be relegated to the store room!

PRINT OUT

Ideas For MSX

by Ken Zetie

Kuma £6.95

With a title like *Ideas For MSX* you'd expect a book to be brimming with interesting and inspirational ideas that you can put to practical use.

Yet, despite the fact that this book contains over 40 listings, many of them are games and old hat ones at that.

There's the usual lunar lander-type game, hangman and a maze. But there is a slightly different listing called the Post Office Game where you are given a code of four numbers and the idea is to crack it in the shortest time possible . . . not as easy as it sounds!

A selection of utility programs is also provided, including an intelligence test, a screen dump (could be useful) and a character definer (definitely useful).

One of the most interesting programs is the machine code monitor designed to make the entry of machine code a 'slightly less painful operation that it normally is', according to the author.

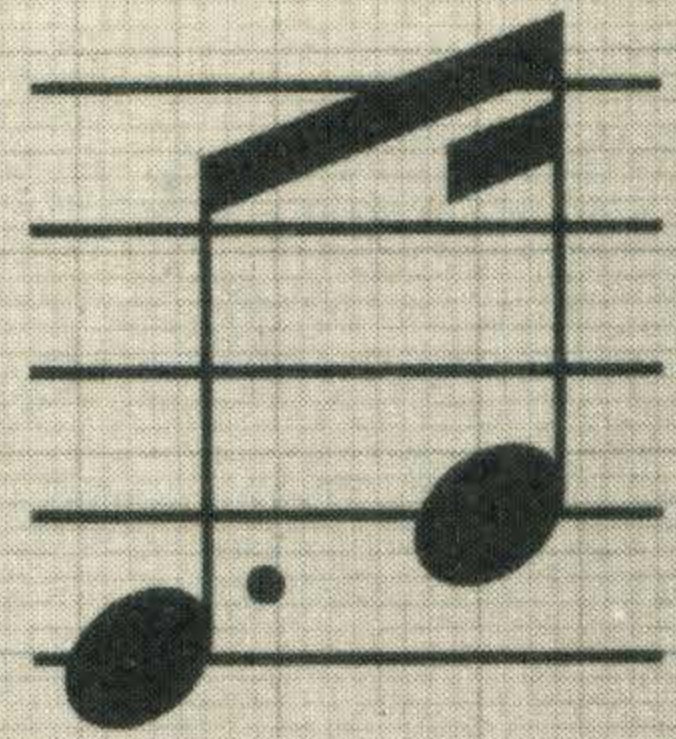
At £6.95 the title is expensive as there are quite a few typographical errors including a page printed back to front that can only be deciphered by holding it in front of a mirror! We can only hope that the listings themselves have been checked more thoroughly than the typography.

If you are a beginner it's best to stick to an introductory MSX text. If you are more experienced then you're probably capable of writing programs just as good as these.



Computer Music Projects

R. A. PENFOLD



Computer Music Projects

By R A Penfold

Babani Books £2.95

Despite the fact that, in true Babani style, this title is wafer thin and incredibly cheap at £2.95, it's packed with a wealth of information on the various ways in which you can use your microcomputer to create electronic music.

Although this book isn't specifically about MSX it's still worth a read as it's a general guide for all the different types of home computers and should give the aspiring music buff plenty of ideas.

The author claims to have kept the jargon to a minimum but I had quite a few problems distinguishing the difference between audio digitizers and polyphonic sequencing (sounds rather painful). But as my musical capabilities don't extend much further than playing the recorder many moons ago, it's not really surprising!

However, for those of you who are musically inclined you'll know exactly what Penfold is talking about and will soon be creating melodic masterpieces.

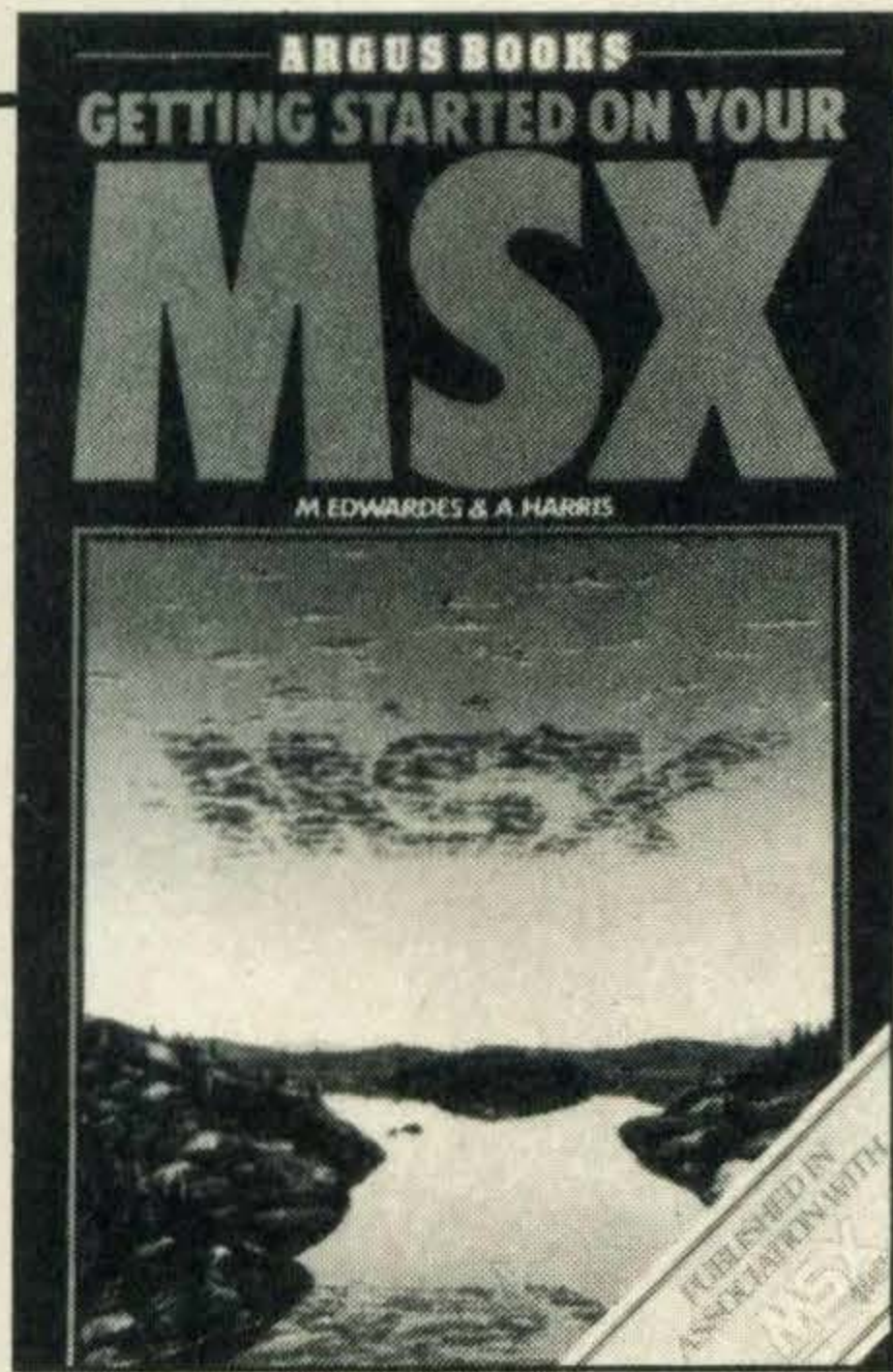
The book is split up into four chapters each of which is again divided up under sub headings which introduce the various topics which include sequencing, envelope shaping and MIDI interfacing.

Also throughout the book the author uses small BASIC programs to illustrate the different sounds you can get out of your micro, although I'm not exactly sure why he calls them 'projects'.

This is one of the first music-specific titles that we've come across at *MSX Computing* and having read it from cover to cover (with the aid of a good dictionary) we were impressed.

Having said that to be fair to the author there is a warning in the introduction that the title is geared towards the computer literate who has some musical experience, in other words it's not really intended for the complete beginner.

If that description sounds a little like yourself, then it could be well worth your while parting with the £2.95 for a handy little introductory title.



Getting Started on Your MSX

by M Edwards & A Harris
Argus Books £6.95

I am always very dubious of books that claim to be able to tell you all that you need to know to get started with your computer.

So it was with a rather cynical eye that the pages of *Getting Started on Your MSX* were leafed through.

The book starts right at the beginning from unpacking the box for the first time and connecting everything up.

Having sorted out all the connections you are then given a quick potted history of MSX which isn't essential reading but interesting and shouldn't take you too long to get through.

The meaty material isn't presented until the third chapter where variables and strings are introduced and the authors provide plenty of examples to illustrate them.

This is followed by a chapter that defines what a program is and how to write one. It is at this point that learning to program gets interesting as the authors have adopted a novel approach. The programming examples they use are the first steps towards the development of an arcade game.

As you progress through the text the listing for the game is gradually built up as each new command is introduced. Once you reach the end of the book you'll not only have learnt how to program but will have a listing ready to type straight into your micro and play.

Other features such as sound, graphics, sprites and data files are also covered including printers and how to use them.

The authors even discuss the strengths and weaknesses of BASIC (it isn't the only language without faults or shortcomings) and they give you a small taste of machine code programming.

For an introductory text this title is crammed with information, hints and tips and without doubt contains more than many other so-called introductory texts that cost a lot more.

At £6.95 *Getting Started on Your MSX* isn't cheap but it comes highly recommended.

A varied selection of books this month, including two MSX specific and four general titles. Reviewed here by Julia Alexander

How to Get Your Computer Programs Running

by J W Penfold
Babani Books £2.50

If you are a newcomer to programming and haven't yet mastered the art of de-bugging your programming masterpieces, this latest title from the Babani stable should help.

The author, J W Penfold, tends to write exclusively for Babani Books and specialises in titles concerned with programming and needless to say he knows his stuff!

How to Get Your Computer Programs Running is divided up into four concisely written chapters. The first chapter starts off by explaining what errors are and runs through the difference between syntax errors (a word error) and program structure errors which occur, for example, when GOTO statements are used incorrectly.

The second chapter examines how you can detect the errors in other people's programs and the common mistakes to look out for in listings from magazines.

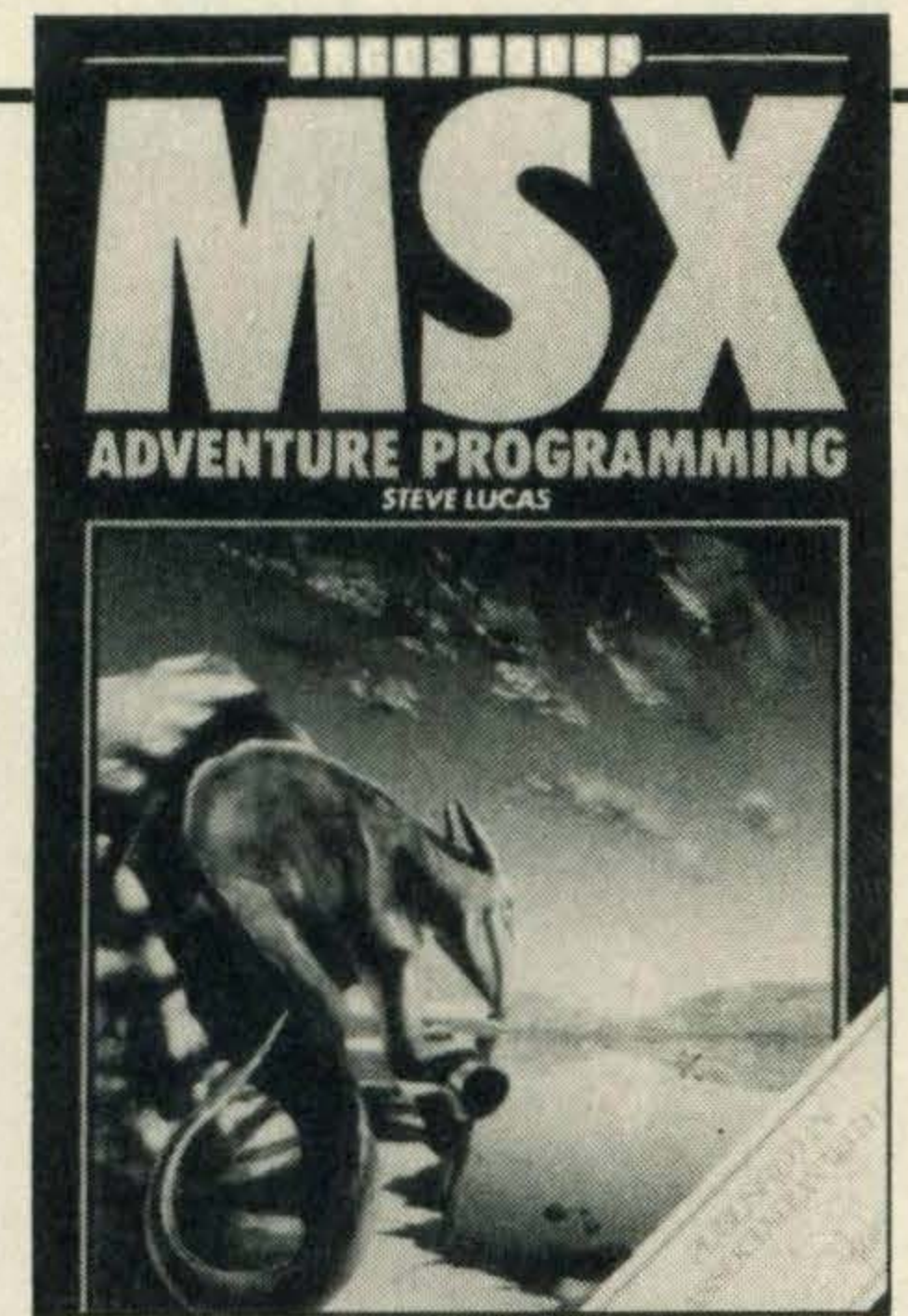
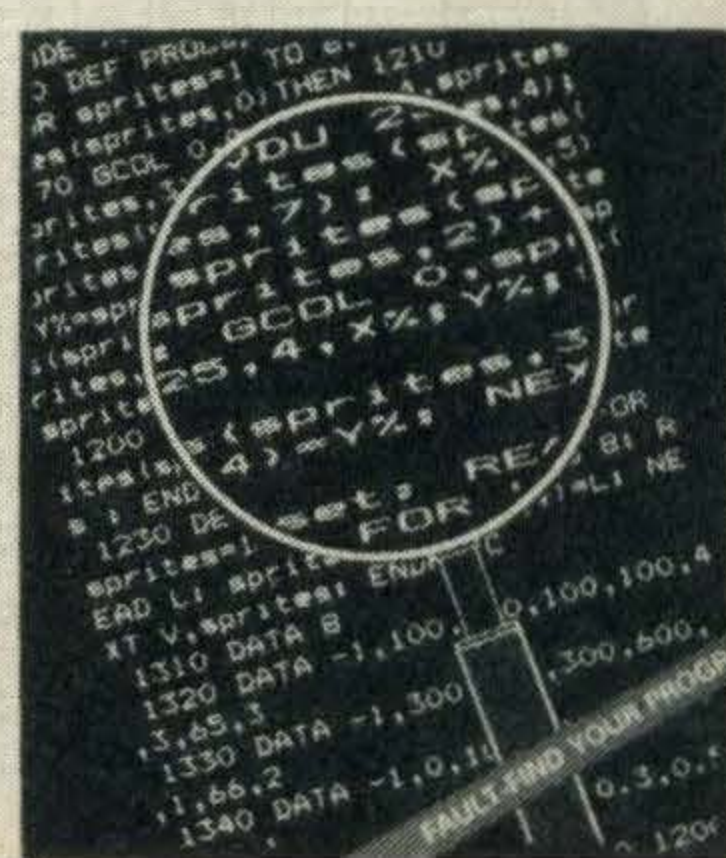
The most useful chapter is the third one which is concerned with the structure of programs. Apparently the most common errors many programmers make is the omission of the line which completes a loop.

The omission as such does not cause an error but the computer will 'remember' that it started a loop, and since it has no way of knowing where the loop ends it cannot report an error if the loop end is missing!

At £2.50 this title is excellent value for money. Highly recommended.

How to Get Your Computer Programs Running

J. W. PENFOLD



MSX Adventure Programming

by Steve Lucas
Argus Books £7.95

Adventure playing is fast becoming a popular past-time among MSX micro owners, judging by the response we receive to the *MSX Computing Adventure Column*.

So, it's not surprising that adventure books are now starting to appear and one of the first titles comes from Steve Lucas, who claims that he wrote the book because most computer users eventually reach a point where the novelty of alien zapping rapidly starts to wane and attention turns to adventure playing.

He's got a valid point judging by the frequency that Level 9's adventures are loaded up in our office!

However, this title doesn't just contain listings of adventures ready to type in, it actually explains how to write an adventure of your own.

The book is split into two sections. The first explains how to develop a plot and translate it into a map so that you have a good idea of where and when to site your locations and where to leave any implements you intend to include such as planks of wood or candles.

Steve Lucas then explains how to tackle the programming and translate your game into DATA statements and write routines to deal with such features as 'Drop rope' and 'Climb ladder'.

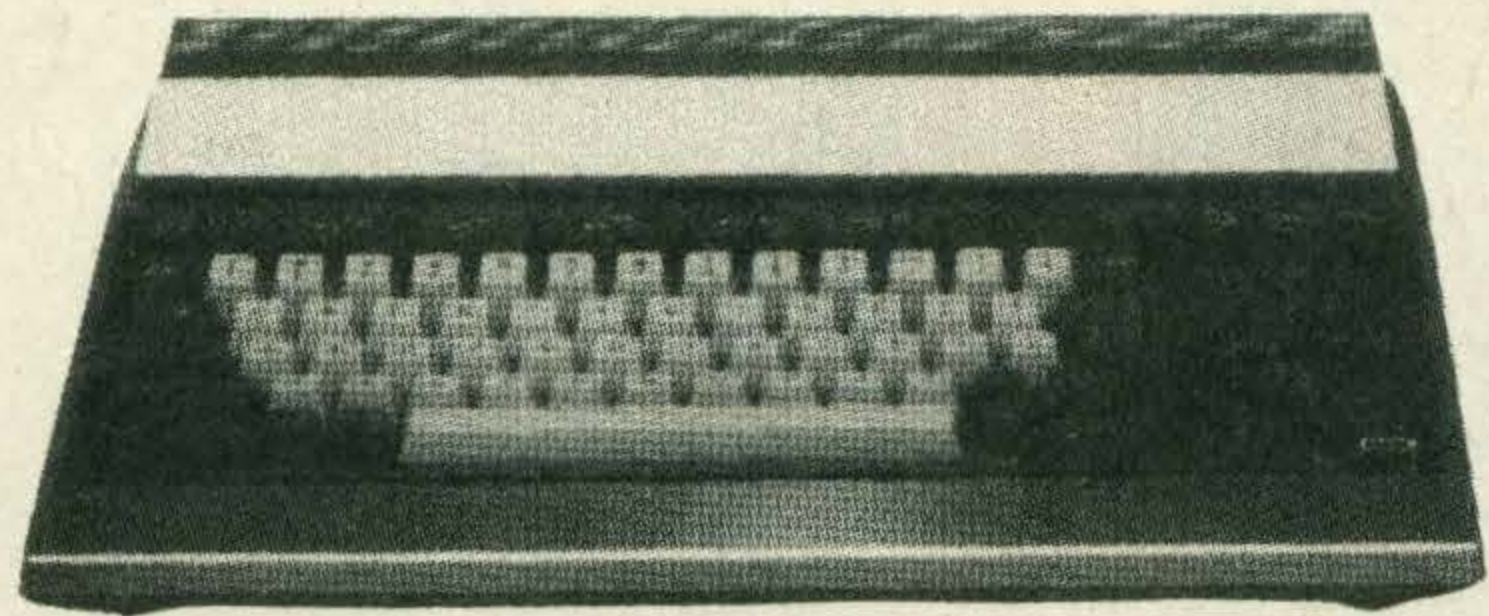
While all this is going on the author develops a full blown adventure program in the background so that by the end of the book you'll not only be able to write your own adventures but key in the one that Steve uses to illustrate the various features.

The second part of the book shows you how to incorporate graphics into your adventure and how to spruce up your game with realistic sound effects.

I'm not an adventure freak but found this title a good read and it has renewed my interest.

So if you're sick to death of alien bashing and want to escape from reality try reading this book.

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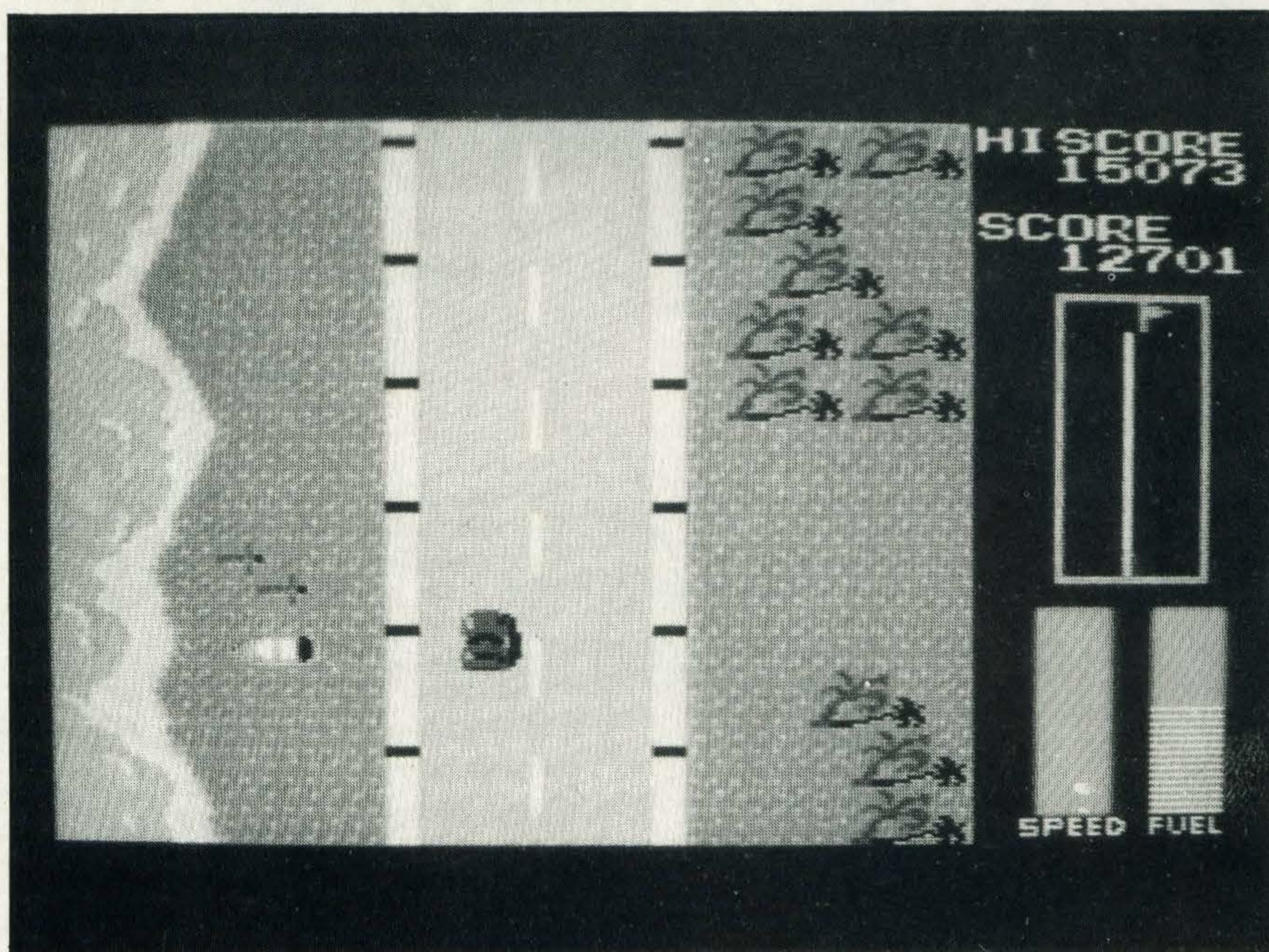
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COMPETITION

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Win a chance to get behind the wheel of Konami's Road Fighter – and win an exclusive digital wristwatch



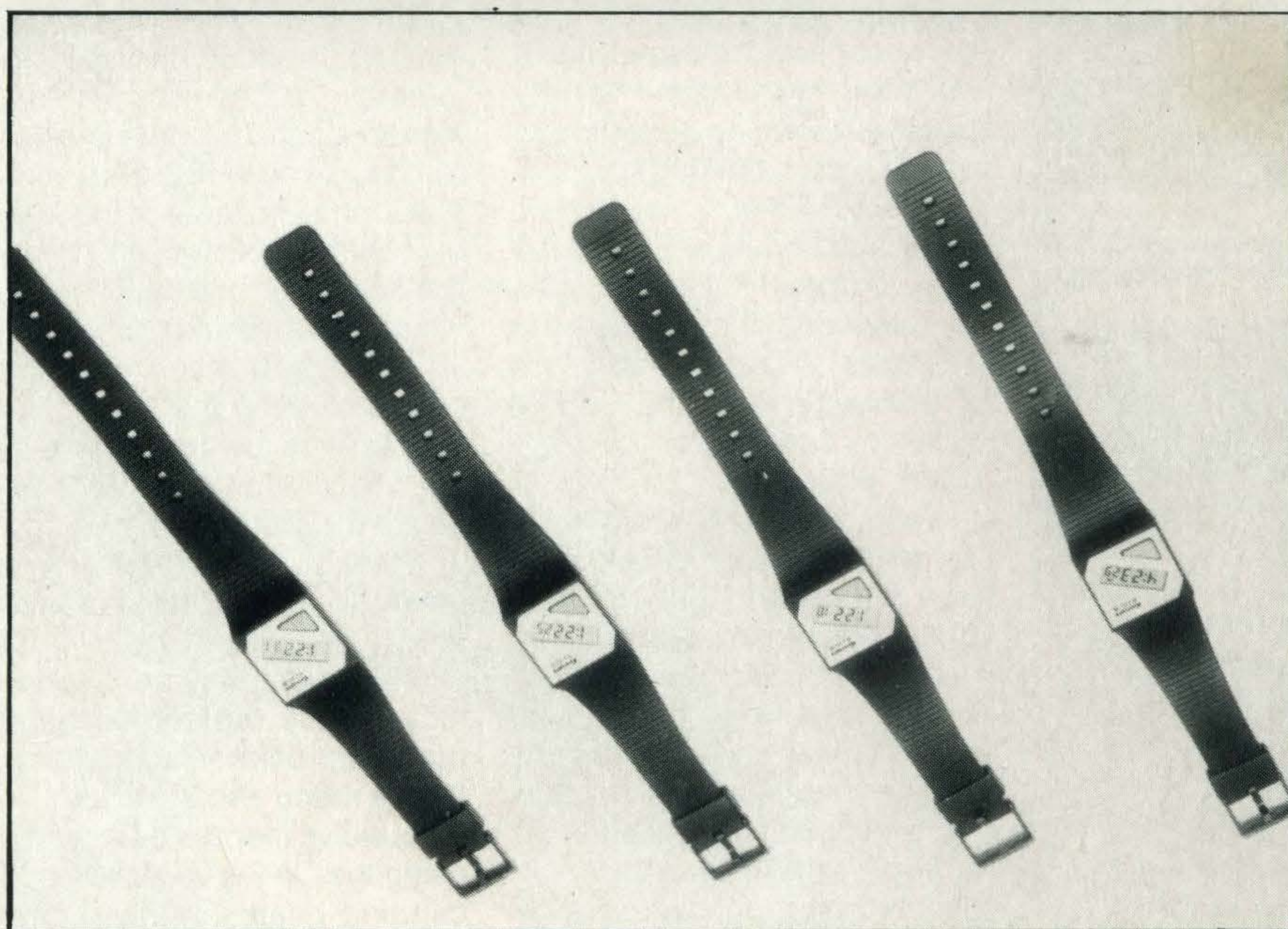
If you've always considered yourself the Stirling Moss of your neighbourhood, here's your chance to see just how good you really are.

We're giving away a copy of *Road Fighter* to the 10 winners in this month's great competition. This is the game which we voted 'game of the year' in the last issue. But that's not all! The first four winning entries will also receive a fantastic Konami digital wristwatch.

All you have to do is tell us which countries the following Formula 1 racing drivers come from:

1. Niki Lauda
2. Alain Prost
3. Nigel Mansell
4. Keke Rosberg
5. Nelson Piquet
6. Riccardo Patrese
7. Ayrton Senna
8. Patrick Tambay

Answers on the back of a postcard, please, addressed to Konami Competition, *MSX Computing*, 38-42 Hampton Road, Teddington, Middx TW11 0JE, to



reach us no later than Monday, 17th March. Good luck!

RULES

1. The judges' decision is final and no correspondence will be entered into.
2. No employees of Haymarket Publishing or Konami or their families may enter.
3. The winners' names will appear in the next issue of *MSX Computing*.

PURR-FECT CONTROL!

Get your paws on a cat, and bring a new dimension to programming and gameplay



MUE, one of several packages to be developed for the CAT.

During the past few weeks we've spent a lot of time playing with a cat. You may be surprised to know that it isn't the four-legged variety but the latest input device to arrive here from Japan.

The HTC-001 track-ball, otherwise known simply as the CAT, is from HAL Laboratories in Tokyo and is available from Nemesis Distribution for £79.95 with either the *Eddy II* graphics cartridge or the *MUE* Music Editor.

To look at, the CAT is a very simple and unsophisticated device. It is square-shaped with a brown and cream base and has a tough plastic casing. In the centre is a large plastic ball which rotates and to the left of it are two large square-shaped red and cream control buttons.

The designers obviously concentrated on performance and reliability rather than looks as the CAT isn't nearly as appealing to the eye as Wigmore House's MS2000 mouse.

Yet, despite its appearance and bulky design, the CAT does the job it's been designed for very well — and it's simple to use, too.

To operate the CAT all you have to do is make sure it is plugged into the second joystick port of your micro and rotate the ball with your hand. Like the lightpen, mouse and Marconi's RB2 tracker ball, the CAT provides you with precise

X-Y cursor control on your TV or monitor screen.

But how does the CAT actually work? Basically, its internal mechanism is designed along the same lines as the mouse and RB2. The ball is suspended on three points, two of which are set on freely rotating axes set at right angles. What all this means is that when you use the CAT and rotate the ball to position the cursor the movements are transferred to an optical timing device set inside the unit.

These signals are then translated via phototransistors and electrical pulses onto your screen where they are used to either guide the cursor round the screen or for selecting items from a menu already listed.

As we've mentioned already, using the CAT is very easy and certainly beats fiddling around with the cursor control keys! Just a quick flick with the finger and the cursor speeds across the screen. For ultra-quick movements, spinning the ball is all that's required.

However, we found that it does take time to get used to the 'wobbly' feel of the ball and a couple of times we found ourselves using it upside down which explains why the cursor kept moving to the top of the screen instead of the bottom! But, as with most things, practice makes perfect.

Of course, without software

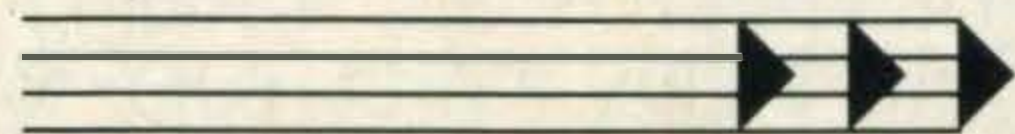
the CAT can't really do much at all. Fortunately Nemesis is selling it with the choice of two cartridge-based software packages. So for your £79.95 you can have either music or graphics software to complement your CAT. Both of the cartridges can also be bought separately for £24.95.

Both of the cartridges are probably familiar to you as they have been reviewed separately in previous issues of *MSX Computing*, but this is the first time they've been used with the CAT.

HAL's Music Editor, called *MUE* for short, is a program aimed at music buffs who are keen to write and compose music with their MSX.

When the cartridge is first plugged in you are provided with a rendition of Bach's *Fugue* which is designed to give you a rough idea of the software's full musical potential. With eight menus at your disposal you can write a score for each of the three music channels, so it's possible to compose anything from a simple ditty to a full-blown symphony.

What's more, if you're not entirely satisfied with your masterpiece you can change the tempo, move a few crotchets and quavers around or completely erase the entire score



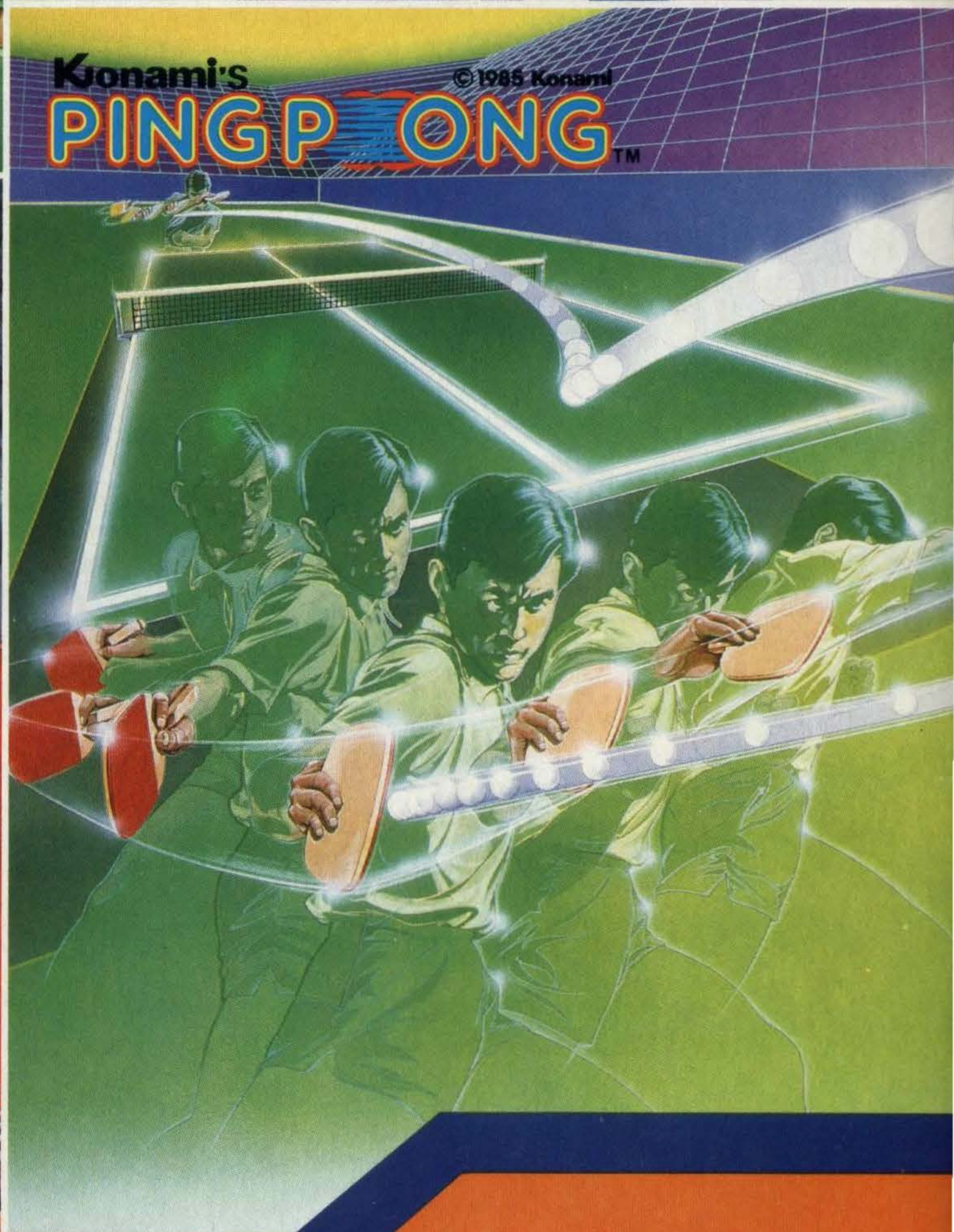
CAT



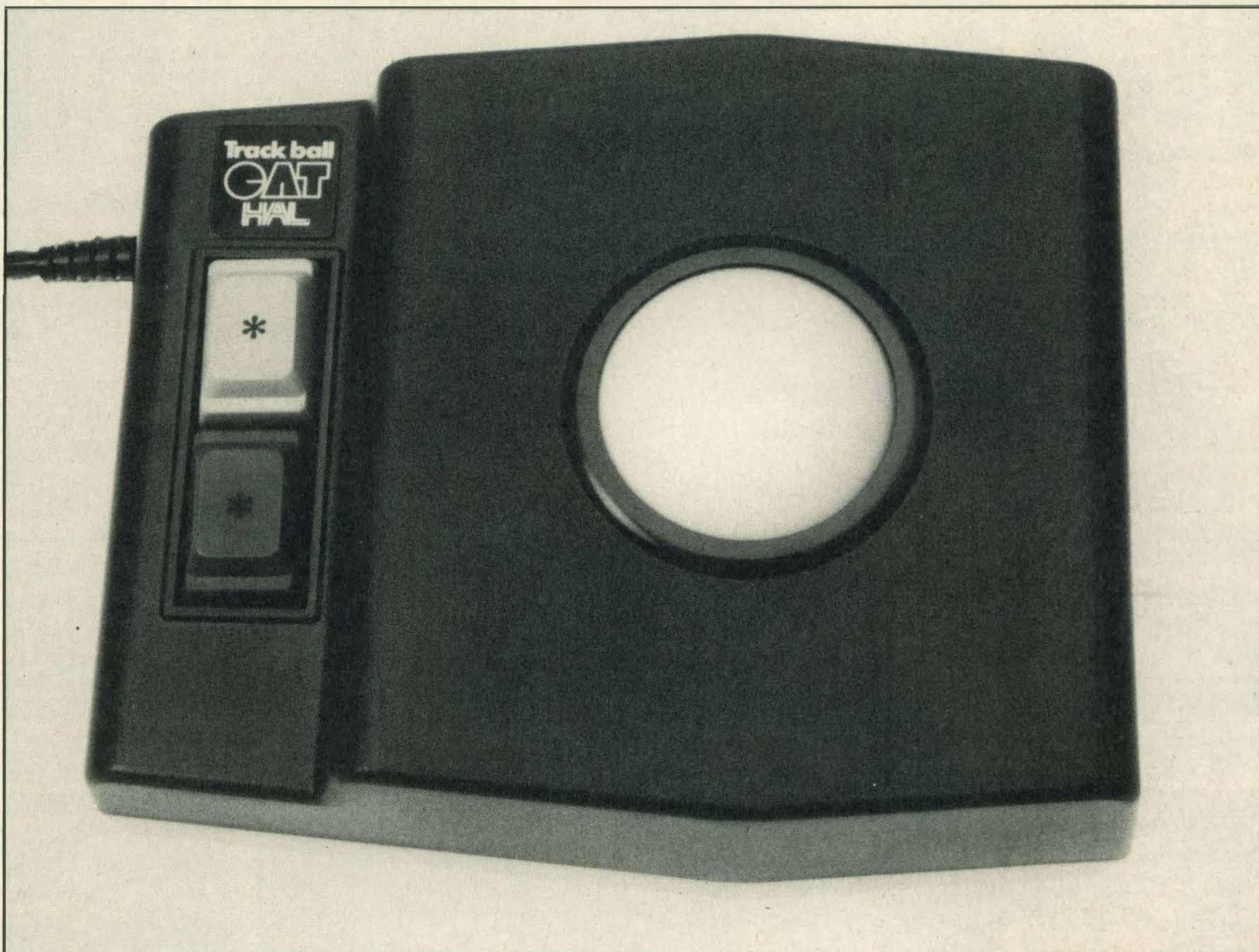
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and start afresh.

Using the CAT with this package is a doddle. Moving the notes and inserting additional ones is so much easier than using a joystick or the cursor control keys — which can be awkward when you're rapidly trying to compose a melody.

Editing your composition is also an easy operation. For example, to move a crotchet or a sharp, position it over the correct stave by rolling the ball with your finger. When it's in position press the red control button and the notes or notation marks will drop into place — simple!

Having tried the CAT with MUE, we then tried it out with the graphics cartridge.

Eddy II contains all the

necessary equipment for turning your screen into an artist's canvas. It provides you with a range of tools that includes pencils, brushes, erasers, colours and compasses.

Using *Eddy II* with the CAT is child's play. When the program is inserted into your micro a menu appears on the screen. Just roll the ball until the cursor points to the function you wish to use, press the red control button and away you go.

With a few simple movements you can draw many different shapes in a variety of colours, design patterns, draw diagrams and save your creations to disk or cassette. All this can be done with the roll of a ball and the press of a button.

The CAT can also be used with HAL's games cartridges

that bear a 'CAT' symbol. It even seems to work with other carts too — we had success with a variety of games from different suppliers. If you're likely to be playing a fast-action arcade game, though, we recommend using a standard joystick designed for continual use. The CAT's control buttons aren't really designed to be used repeatedly for rapid firing over long, sweat-soaked periods of time.

Bearing in mind that we have tried many other peripherals, we were still very impressed with the CAT's quality, flexibility and precision control. And, like the mouse and tracker ball, we feel that this type of device is far superior to the likes of lightpens, graphics tablets and joysticks.

It doesn't cause the arm fatigue that lightpen users suffer, nor does your arm block part of the screen when it is in use. The other advantage is that, unlike the graph pad, it doesn't take up too much desk space either.

But perhaps the biggest plus is that the CAT is very sensitive and so easy to control — so much so that it is almost a natural extension to your hand.

At £79.95 the CAT is by no means cheap, and software for it is limited at the moment. But, as the user base grows, we're sure that more software will appear as it has done in Japan and the CAT's versatility and usefulness will increase. Who knows, maybe one day it will totally replace the functions of the cursor keys in word processing, lightpens in CAD/CAM design and joysticks in positional control, ie controlling and directing robots.

It can also be an ideal tool for young children to use as they don't need to read or recognise shapes that a keyboard demands. And it can be beneficial for disabled or handicapped people who can't quite manage a keyboard.

The CAT's potential is only limited by the skill and imagination of its user and we're sure there's plenty more applications to which it would be ideally suited. And if you are a competent programmer you could even write your own software for it.

We couldn't put the CAT down and we think that in time it will be recognised as one of the most versatile MSX peripherals yet.

SPECIFICATIONS

Length: 125mm (4.76in)
 Width: 60mm (2.27in)
 Height: 60mm (2.27in)
 Weight: 490gms
 Ball: 23mm
 Supplier: Nemesis
 Distribution Ltd, 2 Iffley
 Road, Hammersmith,
 London W6 0PA.
 Telephone: 01-741 2299

SOFTWARE

HM-002 Fruit Search
 HM-006 Space Maze
 Attack
 HM-010 Super Billiards
 HM-011 'MUE'
 HM-013 Space Trouble
 HM-014 Eddy II
 HM-016 Hole In One
 (all available from
 Nemesis)

MSX WARNING

SOFTWARE SHORTAGE THROUGHOUT UK

Despite MSX recently being the largest selling machine in the UK MSX Software has been very difficult to obtain in most areas (in some areas — impossible).

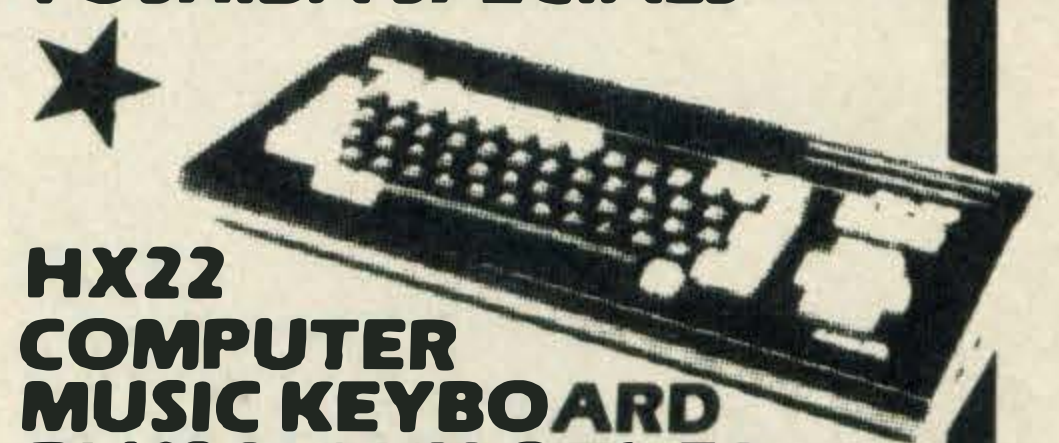
WE ARE NOW ABLE TO OFFER A COMPREHENSIVE RANGE DIRECT TO THE PUBLIC TRADE ENQUIRIES WELCOME We also wholesale software for all other machines — Commodore/Spectrum etc. — MSX orders can be mixed in with orders from our full range for next day delivery.

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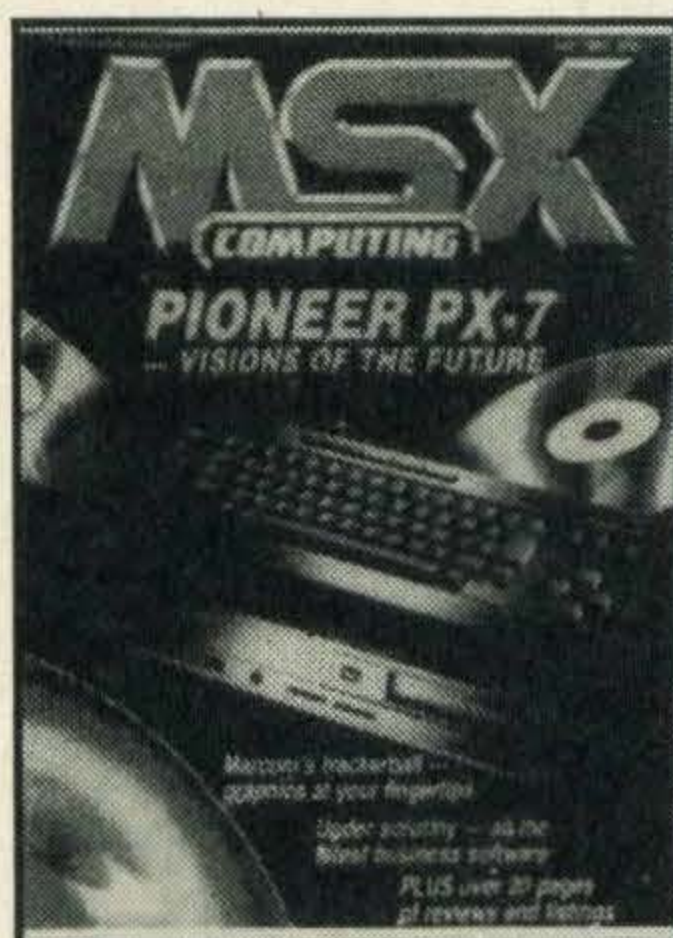
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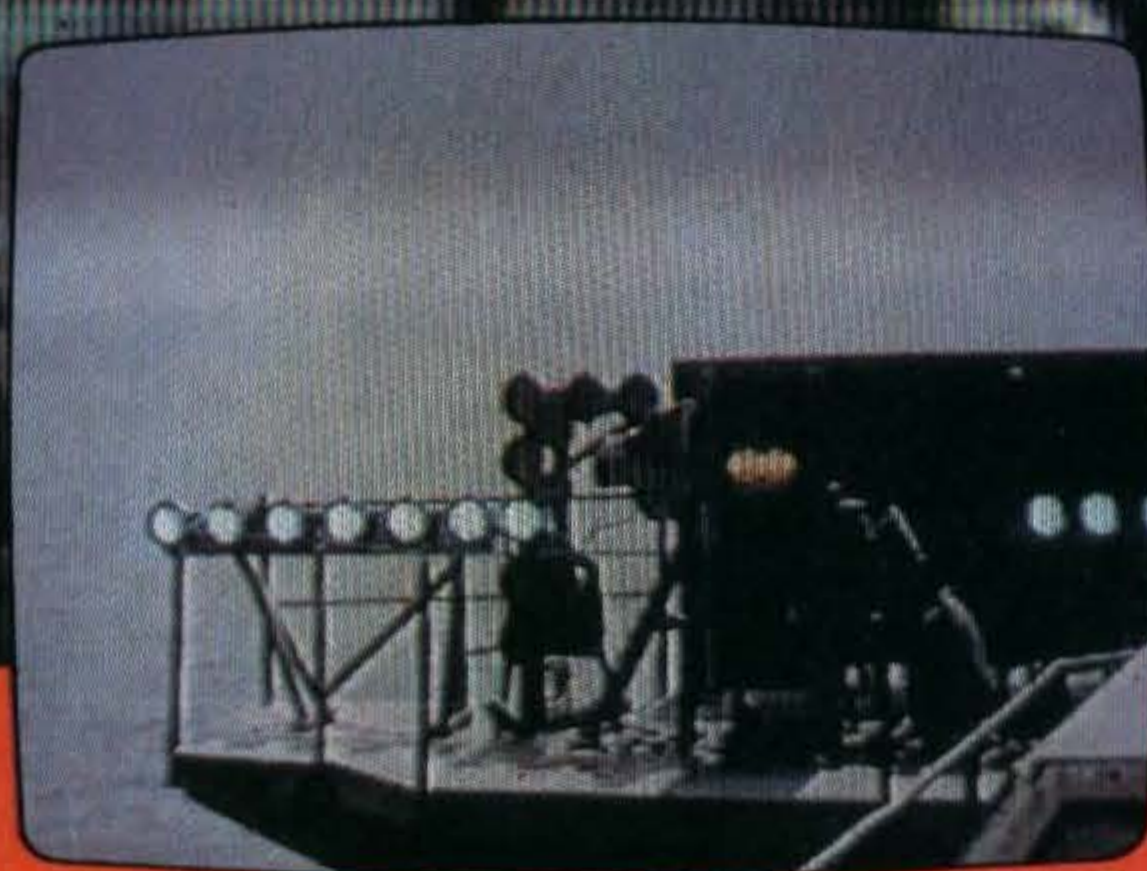
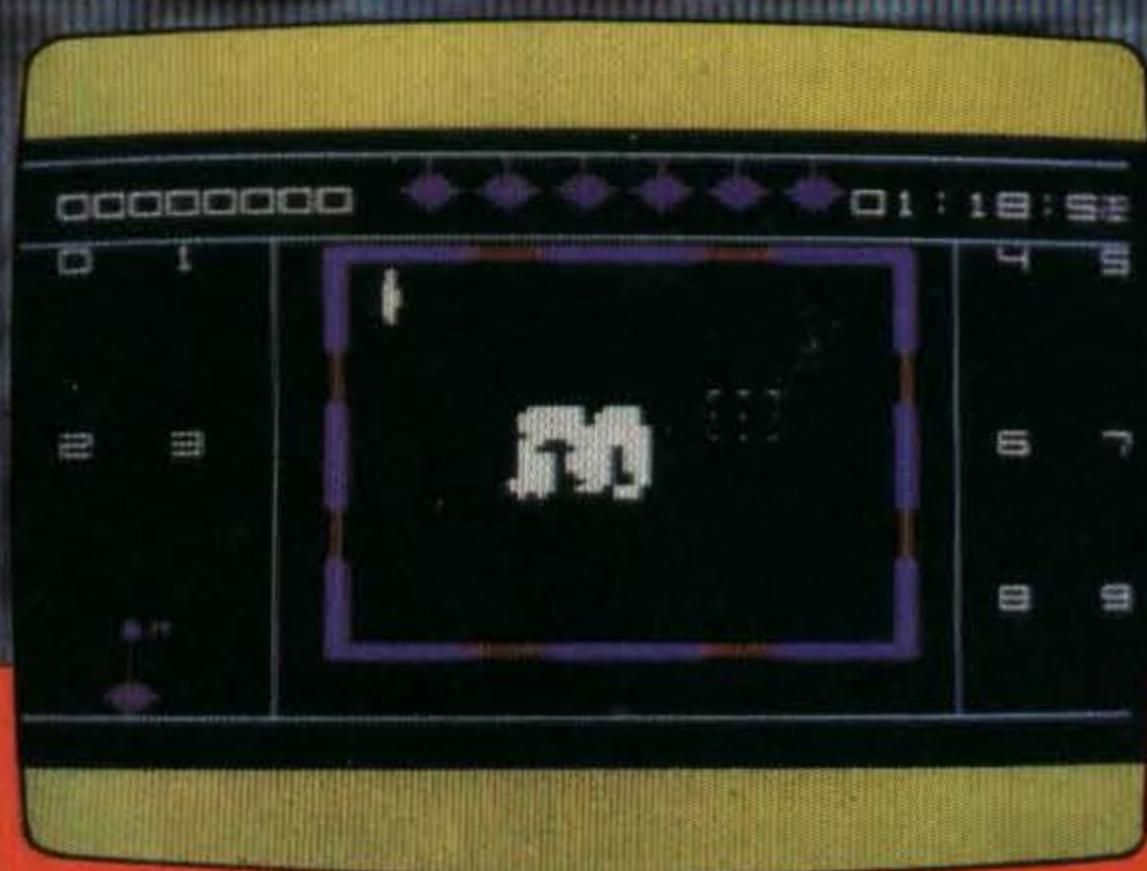
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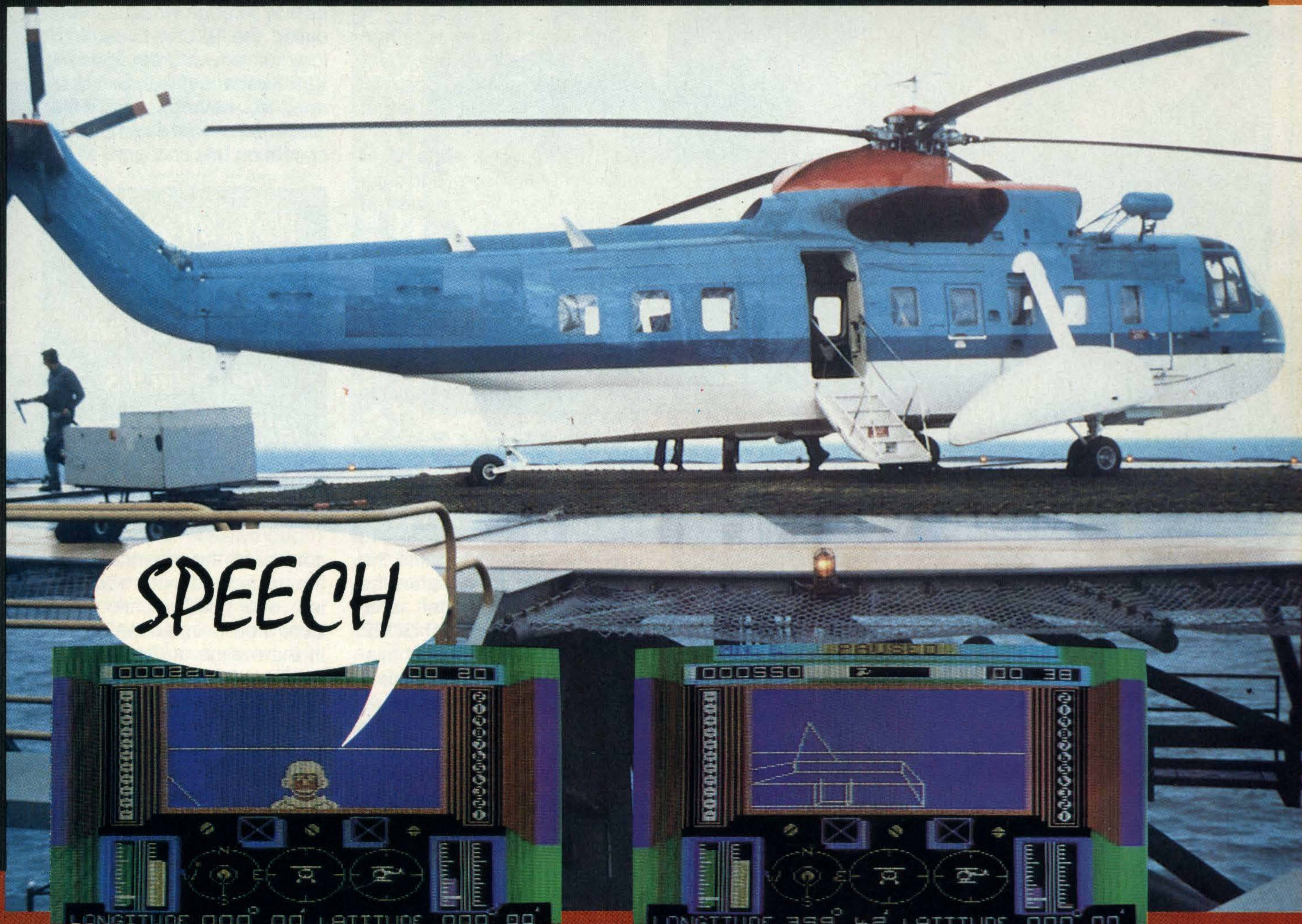
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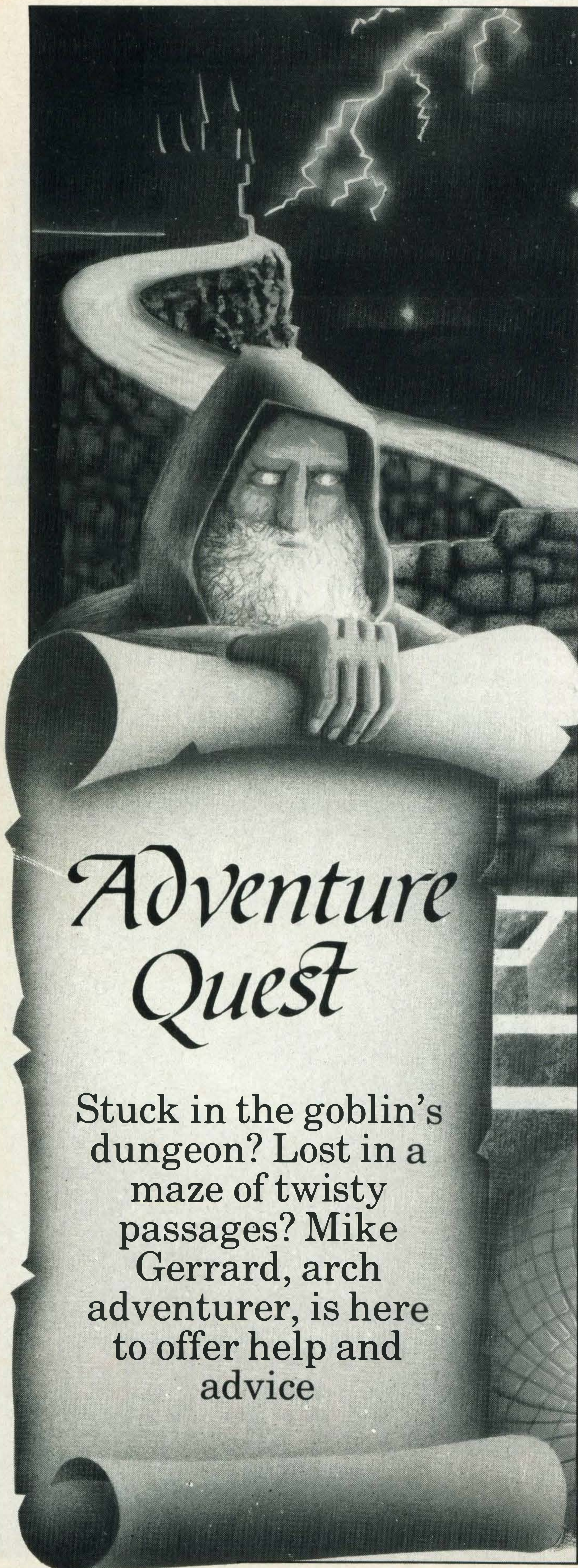
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Adventure Quest

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

Let's start with a few readers' letters this month, before getting onto the major event for adventure lovers, the release of Level 9's *The Worm in Paradise*, the final part of the trilogy which began with *Snowball* and moved on through *Return to Eden*. It's Level 9's best ever release, in my book, but more of that later.

First letter is from Jonathan Foskett of Pwllheli, also concerning a Level 9 title, *Colossal Adventure*. Jonathan can't get past the hissing green snake in the Hall of Mist soon after entering the underground cave network. Tried hissing back at him, Jonathan? No, that doesn't work very well, does it? What you have to do is, reading backwards: DRIBH TIWE KANS NETH GIRF. That means you have to solve an earlier problem, and if you can't manage that then you'll have to write again.

Still with Level 9, this time *Return to Eden*, and Steven Cheung (I think) of Cleethorpes asks how he can get down the cliff in that game. Well, Steven, you have to bear in mind the nature of the plant-life on the surface of the planet, and: STOOH S-ARA PEMO SDEE NUOY, and that's not a misspelling, just typical of the puns in many of the Level 9 titles.

In return for his help, Steven has given me some clues to pass on to other readers. I think it's a good idea to do as much of this as possible in the column as it does seem that most MSX owners are new to computers and also therefore new to adventures, needing plenty of help to get them going. If you'd rather not read the clues or solutions then you don't have to, of course, and that's why they're printed backwards. In *Red Moon*, then, Steven says if you can't get through the small door: MOOR HSUM ATAE. If you can't hold the sword: ONAC LOVE HTDN UORA KOOL. And if you can't get the coins: TENG AMAD NIF.

One reader I wasn't able to help was Kevin Walsh of Clashganny, Portlaw, Co Waterford, Eire, who is playing Lothlorien's *Special Operations* and cannot get past the guard at the compound gate. Can anyone

out there help him on that one?

I reckon we're all going to be needing to help each other on Level 9's latest, *The Worm in Paradise*, which has just been released at £9.95 and has kept me enthralled since I first got hold of a copy. Even if you haven't played any of them (and why haven't you?) most readers will probably be aware that Level 9 has been working its way through what has been called the Silicon Dream Trilogy of adventures featuring Kim Kimberley. But, you don't need to have played either *Snowball* or *Return to Eden* to start in on this final part, which

'We're all going to be needing to help each other on Level 9's latest, The Worm in Paradise'

continues the science fiction theme in an adventure containing over 200 locations, all illustrated — in fact we're back in the realms of thousands of locations thanks to the return of the dreaded colour codes. I was hoping we'd seen the last of these in *Snowball*. No such luck!

Worm in Paradise takes place on the planet Eden some 100 years or so after the time of the first two adventures, and the planet has certainly changed. All you know when the game begins is that you are a resident of the megapolis called Enoch — beyond that you remember nothing. So you just have to investigate the adventure to try to find out what's going on and whether you should be doing anything about it. I think it's fairly safe to assume that you should be doing something, like maybe saving the world should you get the chance. Points aren't scored for unearthing treasures, just for exploring the city and sorting out the problems you might encounter. As yet I'm just rated a Player, though I think I should at least try to

make the next grade, that of Adventurer.

To do that I'll have to figure out what's going on. The game opens with you in the north west corner of a paradise garden . . . so if this is paradise, where's the worm? Ah-ha, in the centre of the garden stands a tree containing an apple. Can you reach the apple? No, not without a little assistance, but when you do so the temptation to bite into it is obviously very great indeed. First time round I resisted, and after wandering round the garden and finding not much else of interest apart from a locked door, I suddenly woke up. Yes folks, it was all a dream, and here I was in an alcove wearing a dream-inducing visor to prove it!

Before giving you some indication of what happens in that part of the game, back to the garden and a different course of events should you choose to bite the apple. I don't think it will spoil the game for anyone if I describe a little of this, too, as the apple is the first thing you find and you're obviously going to try biting it as well as not biting it. Sink your teeth into it, though, and that's where the worm makes its debut, falling out of the apple, writhing on the ground, growing and growing and finally smashing its way out of the garden through one of the walls. Very biblical indeed.

Follow the worm into another bunch of slightly maze-like locations . . . and you soon wake up again. Not before discovering, though, that there's a

'We're back in the realms of thousands of locations thanks to the dreaded colour codes'

snoozing behemoth with a loose scale on its skin, a scale you can't reach. Not yet, anyway. The worm has hot-footed it, or whatever is the wormy equivalent, and if you wake the behemoth it naturally follows

The Worm in Paradise



Level 9 Computing

you, intent on mischief. Can you dodge it before you wake up? Is there a way out across the ravine? I'll leave that up to you to find out, but there's a lovely problem in there, the solution of which requires you to time things to perfection.

If and when you wake up, you discover not only the visor but that you are also wearing the familiar tradclads, a not-so-familiar plastic collar, and a decidedly unfamiliar tattoo, which is well worth examining. Out of the alcove and you're in a central area with more alcoves all around you, all of which you can dream in with different and intriguing results. How many clues are there in the different dreams?

Through a plastic tunnel to a north-south corridor, and off here are several interesting locations, including a plastic casino containing a one-armed bandit. More pun and games from Level 9 here—but can you win at the games? I think it's rigged, myself. In a pet shop close by you'll discover a loveable dagget, and elsewhere a less loveable cup of good old lentil custard.

It's best not to take too many items as the Enoch bobbies are pretty hot stuff when it comes to citizens carrying unauthorised objects, and on-the-spot fines are in force. If you can't pay the fines you may be whisked off to the body bank, where poor humble workers like you can raise a bit of cash by handing over some of your organs for use by the privileged classes.

The Enoch health system is one that provides the greatest good for the greatest number at minimum cost, but if you're part of the minority who have expensive illnesses then that's bad news for you.

I could carry on describing the game for pages more, but that would leave you nothing to discover for yourselves, though what I can tell you is that Level 9's Austin family has devised an even-better adventure program than before. Not just for the content, although that indeed is excellent, but for the comprehensive nature of their new programming techniques.

For a start the program is multi-tasking. You still have the WORDS or PICTURES option, to switch the graphics off and on

again, but for the first time I've never resorted to WORDS only as the program is designed so that the text and graphics are actually running totally separately.

When you arrive in a location the picture starts drawing at the top of the screen, but you can still enter commands underneath, and if you leave that location the picture stops drawing at whichever point it had reached, and the graphics for the next location start appearing.

This doesn't seem to slow the processing of the text down too noticeably, and for me seems the perfect answer to the text v. graphics argument.

The program also allows you to type ahead, which is not a revolutionary step, but the commands are no longer the familiar Level 9 two-word inputs, instead they can be fairly lengthy such as GET APPLE, GO NORTH, BITE APPLE THEN GO SOUTH AND WAIT.

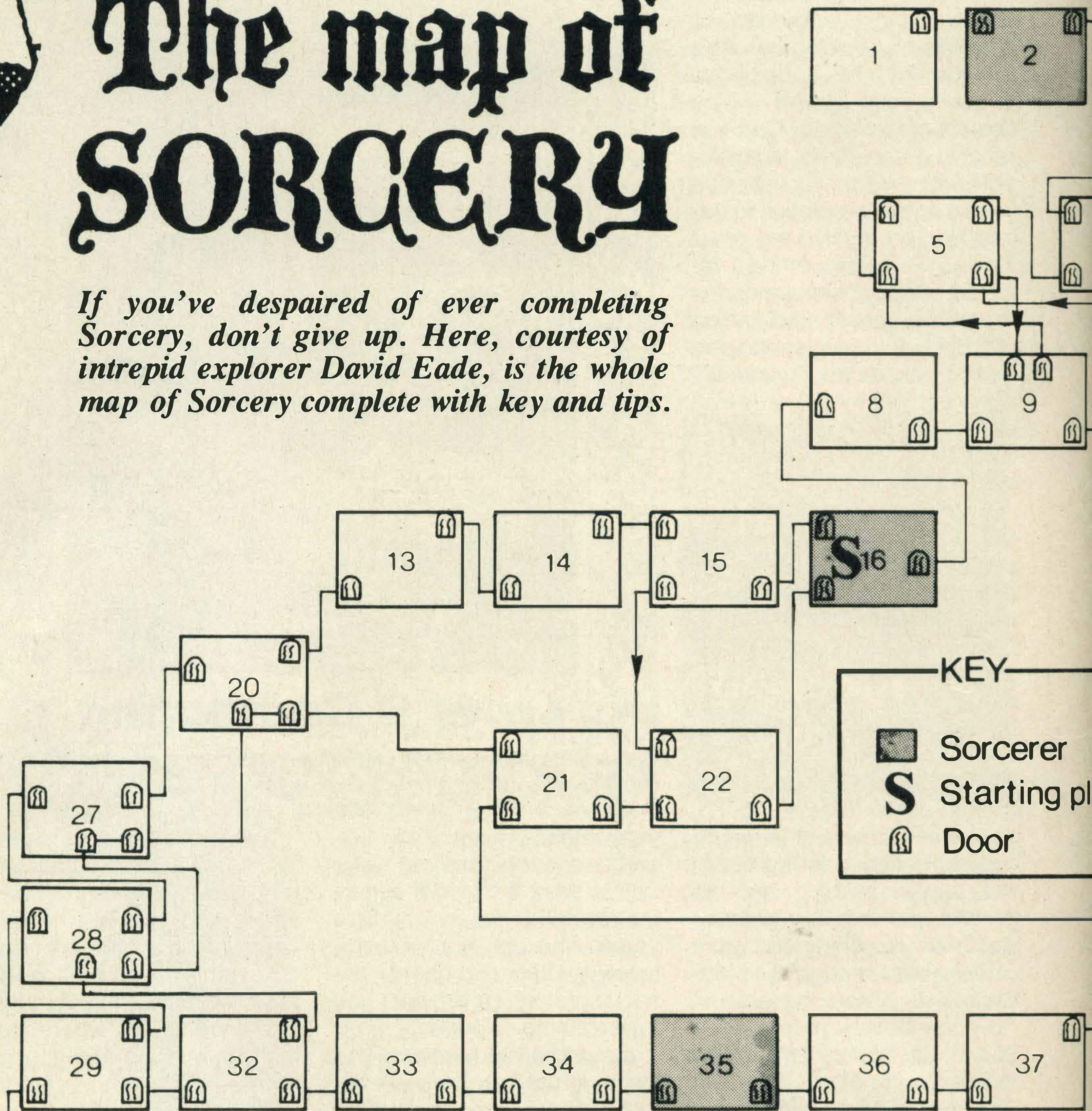
'If you can't pay the fines you may be whisked off to the body bank to raise a bit of cash'

This has been familiar in other adventures for a while, but what Level 9 has done is improve the game's vocabulary recognition so that it understands over 1000 words, which is probably more than I do. If you try to use a word which may be in a location description but is not in the usable vocabulary then you'll be told that the word is there just for background atmosphere, which saves you from trying to climb things that can't be climbed and opening things that can't be opened.

A wonderful game all round, so wonderful that I seem to have devoted almost the entire column to it, but no apologies for that because, as I said at the start, it's the best adventure to come from Level 9.

The map of SORCERY

If you've despaired of ever completing Sorcery, don't give up. Here, courtesy of intrepid explorer David Eade, is the whole map of Sorcery complete with key and tips.

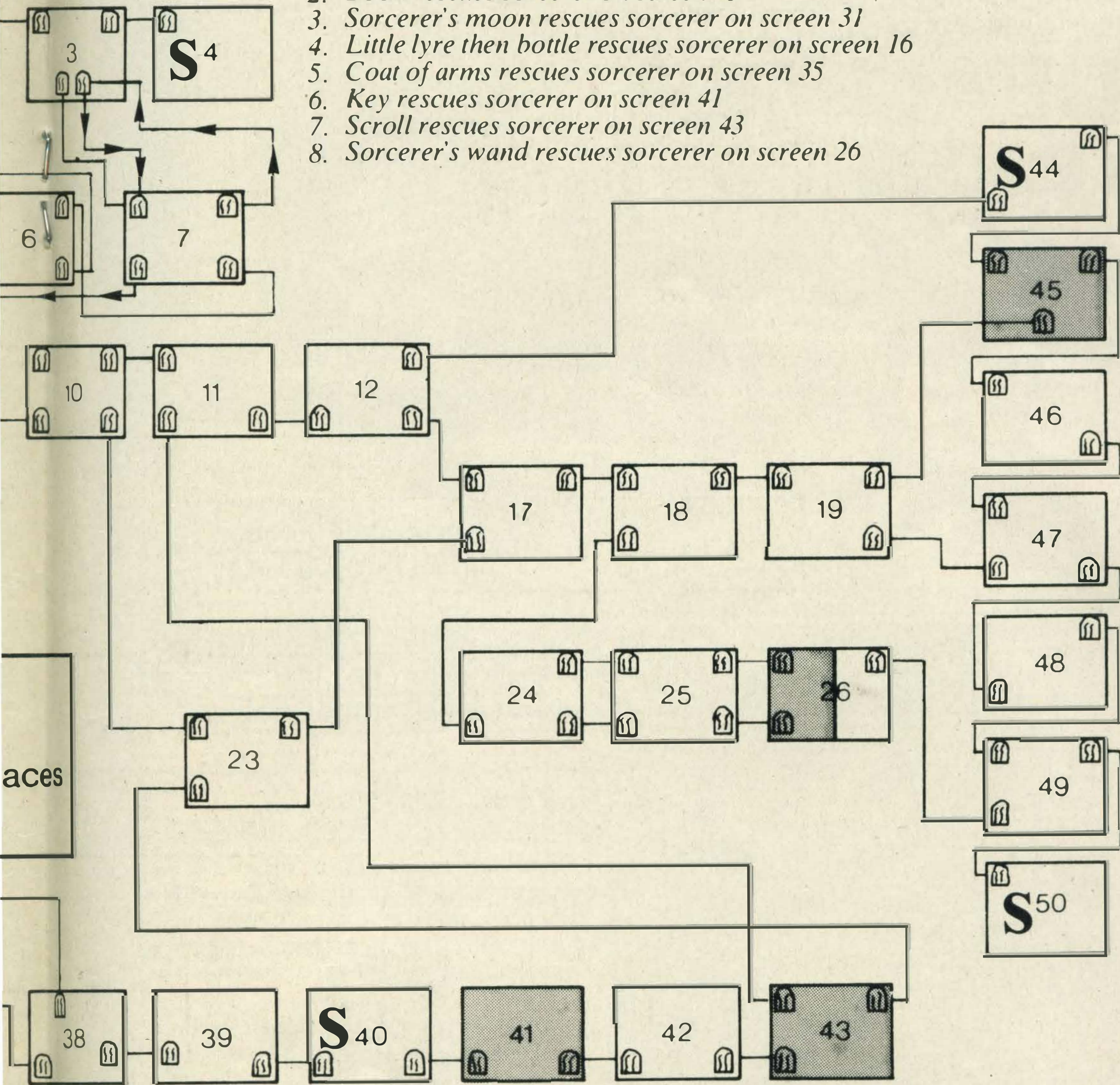


1. The Fountain of life
2. Where angels fear to go
3. Heavenly Palace
4. Close to Eternity
5. Dreamworld
6. Never Never Land
7. Cuckoo Land
8. Beyond the falls
9. Under the waterfalls
10. The meadows
11. The meadows
12. The West garden
13. West of the castle
14. West wing of the castle
15. Above the castle
16. East of the castle
17. The backroom

18. The grand room
19. Entrance to the mansion
20. Top of the hill
21. The dark dungeon
22. The torture chamber
23. Wine cellar
24. The cellar
25. The cellar
26. The cellar
27. Middle of the hill
28. Bottom of the hill
29. Close to stonehenge
30. Close to stonehenge
31. Stonehenge
32. The secret entrance to . . .
33. The tunnels
34. The tunnels
- 35.
- 36.
- 37.
- 38.
- 39.
- 40.
- 41.
- 42.
- 43.
- 44.
- 45.
- 46.
- 47.
- 48.
- 49.
- 50.

Tips on Sorcerers

1. Little lyre rescues sorcerer on screen 2
2. Book rescues sorcerer on screen 45
3. Sorcerer's moon rescues sorcerer on screen 31
4. Little lyre then bottle rescues sorcerer on screen 16
5. Coat of arms rescues sorcerer on screen 35
6. Key rescues sorcerer on screen 41
7. Scroll rescues sorcerer on screen 43
8. Sorcerer's wand rescues sorcerer on screen 26



- The outer chamber
- The tunnels
- Central chamber
- Stringroom
- The tunnels
- The resting place
- The hideout
- Tunnel entrance
- Behind the cellar
- Above the mansion
- Above the mansion
- Above the mansion
- The east garden
- The wastelands
- The village
- The woods

Energy Pots

31, 4, 37, 38, 23, 25, 48, 2, 6, 15 Watch out, some kill!

Other tips

- Use scroll or chesspiece in 7
- Use scroll in 5
- Large bottle gets Golden Cup in 29
- Use this cup in 32
- Use bottle in 35
- Crown gets Coat of arms and bottle gets lyre in 38
- Use scroll in 10
- Use padlock to get gold in 23
- Use gold in 18 to get sorcerer's wand
- Use lyre in 21
- Use bottle in 48
- Use wine cup in 19
- Use fleur de Lys in 47

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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 RALLY £14.95

Man and machine merge to form an exciting and powerful racing force in Konami's *Hyper Rally*, undoubtedly one of the best MSX games produced for 1986.

Hyper Rally incorporates 13 stages, each one differing from the one before. The inclusion of a variety of scenarios and racing conditions, including ice, is quite a challenge.

Familiarising yourself with the car's controls before you start is most important because otherwise you'll get yourself into some sticky situations on the race track.

Using either a joystick or keyboard, you are in charge of a smart red rally car and have the following controls at your disposal; steering either left or right, two gears — high and low, an accelerator and a brake.

A green landscape complete with mountains in the far distance makes up the scenario on the first level. Information such as your score, car speed, gear, fuel meter and the stage time runs across the screen top.

At each rally stage you are given a target to complete, for instance if you start off at pole position 380 you need to reach pole position 350 by passing 30 cars before you can qualify for the second stage.

The road in each stage features bends and straights where you can really build up speed. You need to be pretty nippy when trying to dodge the other cars because if you bump into one, your car loses a lot of fuel.



Running out of fuel causes your car to grind to a halt.

On the second stage, you pass through an inky black tunnel lit up by rows of red lights. Icy wastes feature in the third stage making driving a nightmare.

The fourth stage is similar except that it is dusk and a beautiful red glow lights up the sky. Even the snow atop the mountains has a pinkish glow. Night time falls on the next rally stage and the cats' eyes are the only way of telling where the road is!

After the sixth stage in which the cars pretend to cross over the lanes and then don't — very devious — you move into a storm complete with forks of lightning.

As usual, Konami has used superb sound and graphics in its game. The noise of the car accelerating and decelerating is totally realistic and the screen scrolls so smoothly that you really feel you're there.

SUPPLIER: Konami
01-429 2446
TYPE: Simulation
FORMAT: Cartridge

GRAPHICS ★ ★ ★

SOUND ★ ★ ★

VALUE ★ ★ ★

VERDICT ★ ★ ★

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It's out with your choppers once again as you attempt to operate a helicopter rescue service in among the oil rigs of the North Sea.

It's a pretty bleak place, and it's a pity the wire-frame graphics of the view outside the helicopter don't match up to the detail of the instrumentation and the excellence of the sound, but they don't so that's that.

We haven't yet worked out how the men you're rescuing from out of the sea manage to get in there in the first place, continually falling in right in the middle of nowhere, but yours is not to reason why, yours is to get out there and rescue them.

For this you need at least one joystick, or preferably two, though you can use the cursor keys in place of the second joystick if you like.

One of the joysticks is used to control the increase/decrease of the throttle, and moving the nose left and right, while the other takes care of moving the nose up and down and rolling left and right.

You begin by having to take off from a rig, and though the instructions are pretty comprehensive about flying helicopters in general, they don't actually tell you how best to take off. Not that that takes too long to work out.

Once you're up in the air a little man

miraculously pops his head up in front of the instrument panel and tells you the bearing of the first of the men you have to rescue. This is printed out for you at the top of the screen, though it annoyingly disappears from time to time.

Your own current position is given at the foot of the screen, and another minor irritation is that the latitude and longitude here is reversed so you go cross-eyed comparing figures.

For an overall view of where you are you press 'M' for a map, and you also get a different (side-on) view when you're doing your rescue act.

Rescuing a man is done by hovering steadily and lowering a rope, which requires a pretty sure hand on the joystick. Minor irritations apart, this is a first-class program for those who maybe find the full aeroplane flight simulators just a little too complex to cope with.

Graphics are simple, though seagulls and passing boats do their best to add to the reality, but the sound is great, especially the messages relayed by the friendly little man who pops up in your chopper. Nowadays, £9.95 is a fairly typical price for MSX software, which is still slightly expensive, but you certainly get a good program for your money.



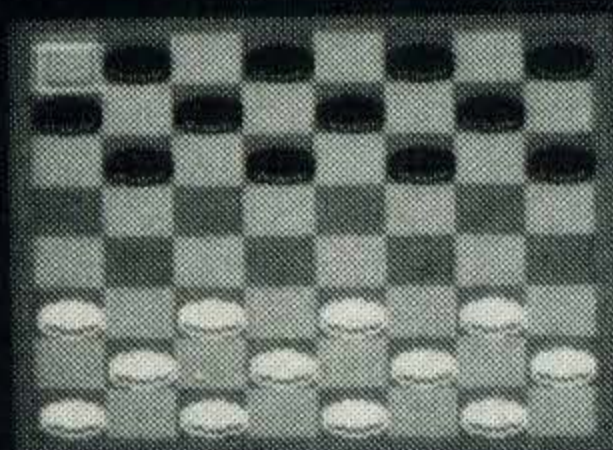
SUPPLIER: Nemesis
01-741 2299
TYPE: Simulation
FORMAT: Cartridge

GRAPHICS ★★

SOUND ★★★

VALUE ★★

VERDICT ★★★



Black - From which square?

SUPPLIER: Orpheus
(0767) 51481
TYPE: Board games
FORMAT: Cassette

MSX BOARD GAMES 1

£4.95

Rather a contrast to Orpheus's arcade adventure, *Elidon*, which was one of our fave raves in a recent issue, and this compilation of three old favourites at least has the virtue of being economic, even if it is pretty average — and we wouldn't have thought darts was altogether regarded as a board game, either.

The tape begins with a version of draughts, about which there's nothing much to say except that you only get one level of play, and the computer seemed to us pretty easy to beat on that.

Alternatively you can have a two-player game, as the second program, *Triversi*, offers a variation on Othello/Reversi allowing three people to play as well as the usual two.

The third player gets to be green, which makes a change from black and white. In fact it's quite an interesting change to a traditional game.

If you're not familiar with Othello/Reversi-type games, players take it in turns to place counters on a board (usually larger than the 8 x 8 offered here), which must connect up to one of the pieces already on the board, and which must also reverse at least one of your opponent's pieces — pieces are therefore reversed when they're caught in between any two pieces of an opposing

colour.

There are five skill levels in this one, from an instant response to a 'Let's go and make a coffee while we're waiting' response. At least you should find something to suit your level of play, though the large graphics are rather unattractive.

Darts isn't the most obvious of games to convert for the computer, but that doesn't stop programmers trying.

This attempt has novelty value for a while, but that soon wears off. You can play on your own or against an opponent, though not against the computer.

There are also two types of game, 301-up or 501-up. Each dart is aimed, basically, by trying to line up your x and y co-ordinates. A marker moves left and right across the bottom of the screen first of all, and you try to stop this in the place that you want it, then a marker moves up and down, and when you stop this the dart hits the board at the point where the two markers cross.

It's really nothing to do with the real thing, then, but amusing enough for a while, although hitting the right scores has more to do with luck than judgement.

Three games for under a fiver is at least value for money, but for twice the price you could get something that's ten times as exciting.

GRAPHICS ★★

SOUND ★

VALUE ★★

VERDICT ★

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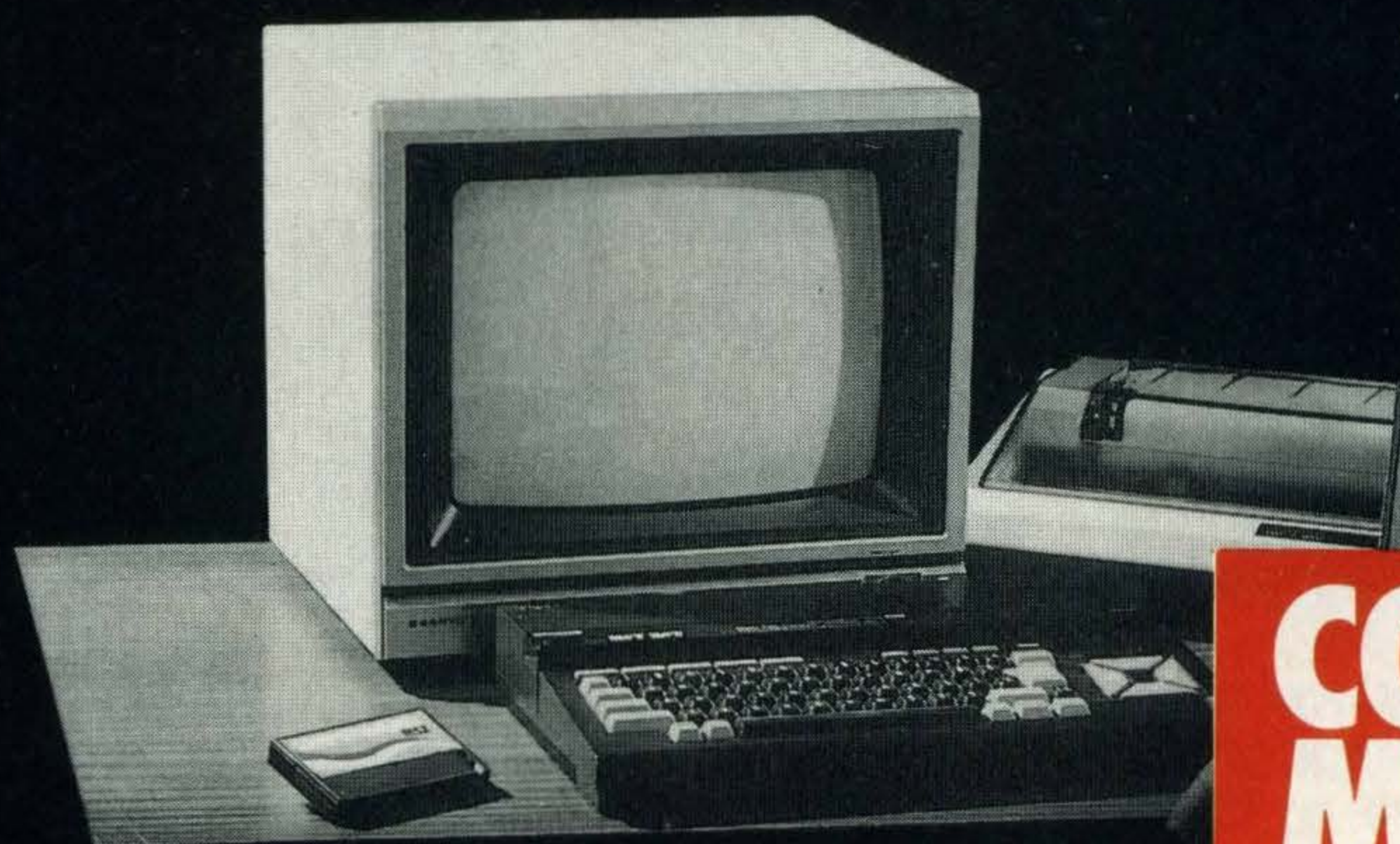
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KONAMI'S BOXING

£14.95

It seems Konami can do no wrong with its sports simulations, and *Boxing* is the latest in a long line of excellent cartridges from its sports stable.

It works a little like the martial arts games that have been so popular in the arcades and on home micros over the last few months, in that two opponents square up to each other and each has a range of punches that can be used according to the joystick or keyboard movement selected.

The graphics are everything we've come to expect, with a side-on view of a ring against a backdrop of cheering fans.

The fighters are reasonably detailed, complete with shadows, and they have a particularly nifty line in footwork, although nothing like as nifty as the referee who appears from nowhere whenever there's any counting out to be done!

There are two game levels, for beginners and veterans, and in each you can either play against the computer or try beating up your best friend. Any combination of keyboard and joystick can be used, though we can imagine some future battling for keyboard supremacy if no joysticks are available!

You have nine types of movement at your disposal, and on the joystick these correspond to the four compass points, with and

without the fire-button depressed, and the fire-button alone used for a jab.

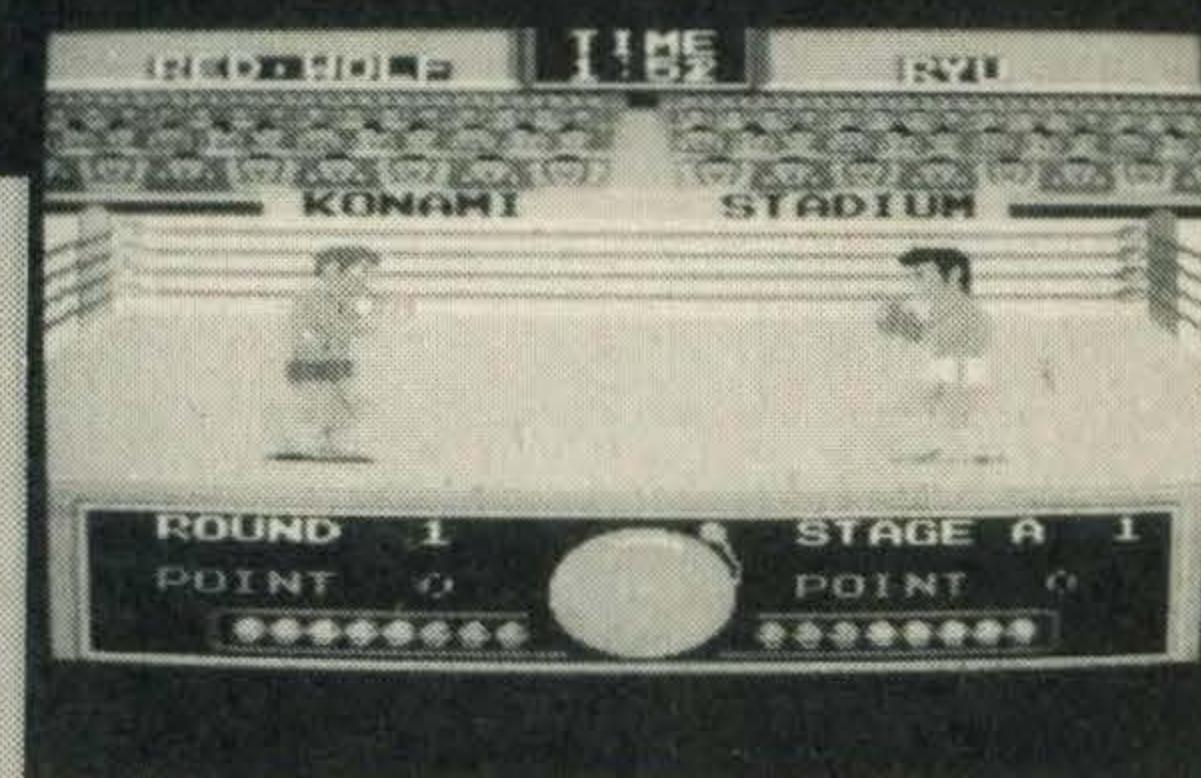
You can have uppercuts or a bit of bobbing and weaving, and you're certainly going to need a great deal of that if you are daring — or silly — enough to try to take on an opponent like the hulking M.B. Alli at the veteran level.

How well you're doing for stamina is recorded on a row of boxing gloves at the foot of the screen, which gradually disappear as your opponent batters away at you, and which look unpleasantly like a row of grinning skulls.

Your computer opponent is pretty tough, even on the beginners level, and it's some time before you can actually get the right combination of movements to get the result that you want, rather than just thumping away and hoping for the best . . . or hoping for the bell.

If you can survive three rounds, the referee will make his points decision, and as with all these Konami games it's little touches like the shouts from the crowd, the authentic 'ding' of the bell and the whistling sound of a near-miss that make all the difference.

Konami's Boxing definitely knocks the stuffing out of most of the rest of this month's games software.



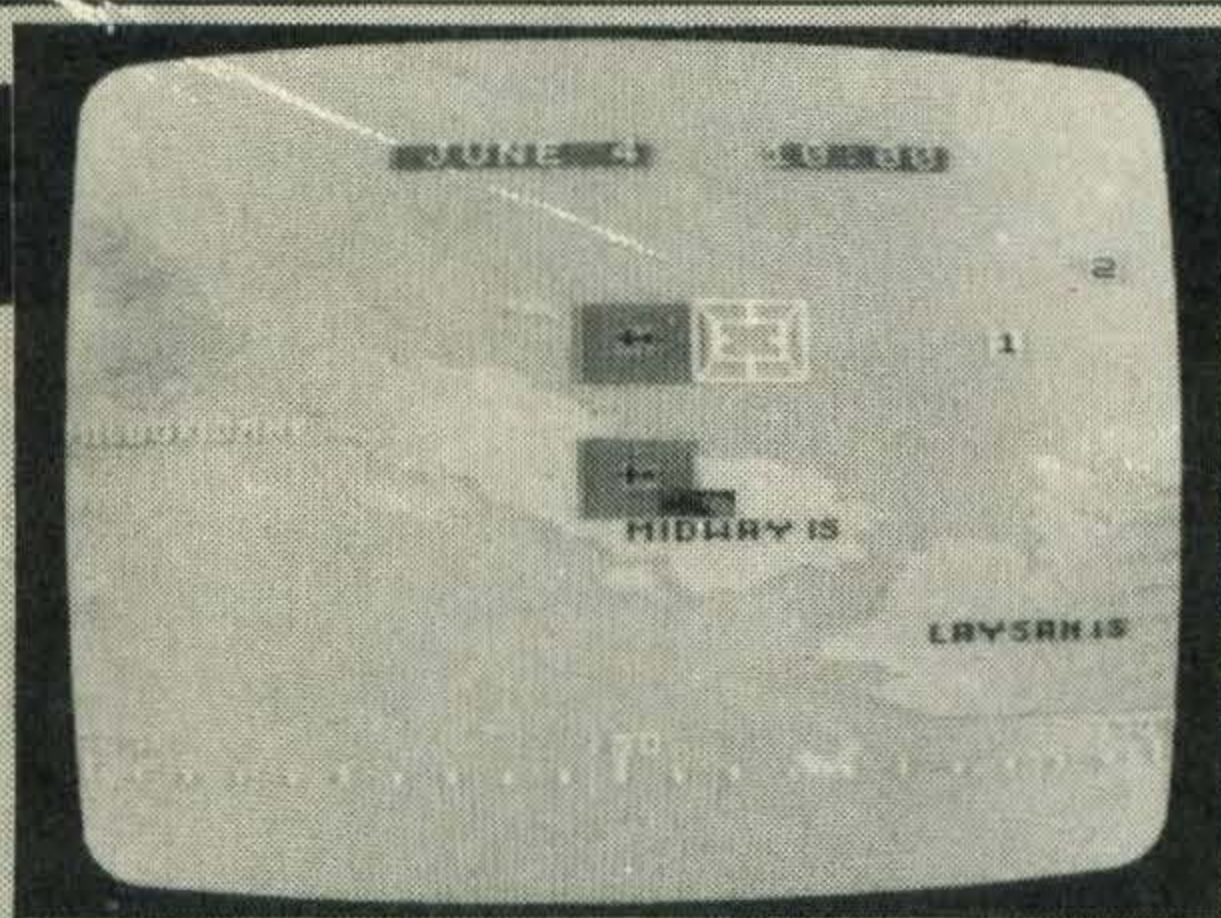
SUPPLIER: Konami
01-429 2446
TYPE: Simulation
FORMAT: Cartridge

GRAPHICS ★★

SOUND ★★

VALUE ★★

VERDICT ★★



SUPPLIER: PSS
(0203) 667556
TYPE: War game
FORMAT: Cassette

BATTLE FOR MIDWAY

£9.95

Battle for Midway isn't the kind of game you can load up and instantly blast away at whatever takes your fancy, this is wargaming, and it's a very serious business indeed.

It's June 1942 and six months after the Japanese attacked Pearl Harbour. They now have their sights set on Midway Island in the mid-Pacific, and it's the turning point in the war for control of that ocean. You take command of the US Pacific fleets, though quite how your MSX will regard its task of blasting the Japanese out of the skies I'm not sure.

Regardless of the dubious taste of turning any real life-or-death war situation into a computer game, PSS does at least do them thoroughly for those who enjoy that kind of thing, and this one offers you three game levels and six game speeds within each of those levels.

Control is keyboard or joystick, and your main screen is obviously a map of Midway Island and surrounding areas. From this you can press the 1-6 keys to summon up the strengths of the various forces involved, and instructions to your individual forces are given by moving a sight around the screen and pressing the fire-button when it is positioned over the unit you're interested in. This allows you to do things like launching

aircraft from ships, or returning them there when fuel gets low, or simply moving the unit to wherever you like . . . although moving ships over land sometimes proves to be a bit tricky.

From time to time there will be attacks by the fiendish Japs, and again you move the sight to fire back on the ships or planes to prevent them depleting your own precious forces.

The sound and graphics on these occasional battles are pretty poor when compared to an explosive arcade game, and the map is nothing to write home about, with simple outlines and numbers representing the various forces.

Wargaming enthusiasts won't worry too much about the niceties of graphics, however, and there's plenty of strategic thinking demanded of you if you're to ensure a Yankee victory.

The easy level stacks the odds in your favour while you learn the game, level two is the normal game, and level three checks whether you can still win even with the odds against you.

There's also a SAVE option if it takes you longer than one session to conquer the Japanese. Not for everyone, then, particularly pacifists, but a good example of its kind, nevertheless.

GRAPHICS ★

SOUND ★

VALUE ★★

VERDICT ★★

SPRITE DESIGNER

£5.50

For a five-pound program Anglosoft has produced a remarkably comprehensive and easy-to-use piece of software, allowing you to design sprites in either a 16x16 or 8x8 grid, or redefine your character set on an 8x8 grid.

All the choices can be used with either joystick or keyboard options, and the comprehensive instructions include a couple of programs for loading in your own character sets on either SCREEN 0 or SCREEN 1.

It's the versatility of *Sprite Designer* that will be of most interest to prospective users, however, and Anglosoft uses the now seemingly obligatory icons as part of its design screen.

Top left sees the familiar grid, where you move the cursor around to fill or erase the squares to make up your sprite, this being displayed normal-size at the foot of the screen so you can see how your artistic endeavours are doing.

To the right of the grid is the colour palette allowing you to set your foreground and background colour options, though these are displayed only on the small sprite, not on the enlarged grid. Pressing 'C' takes you to the colour palette, 'S' to the sprite designer grid, and 'I' to the ten icons at the right of the screen.

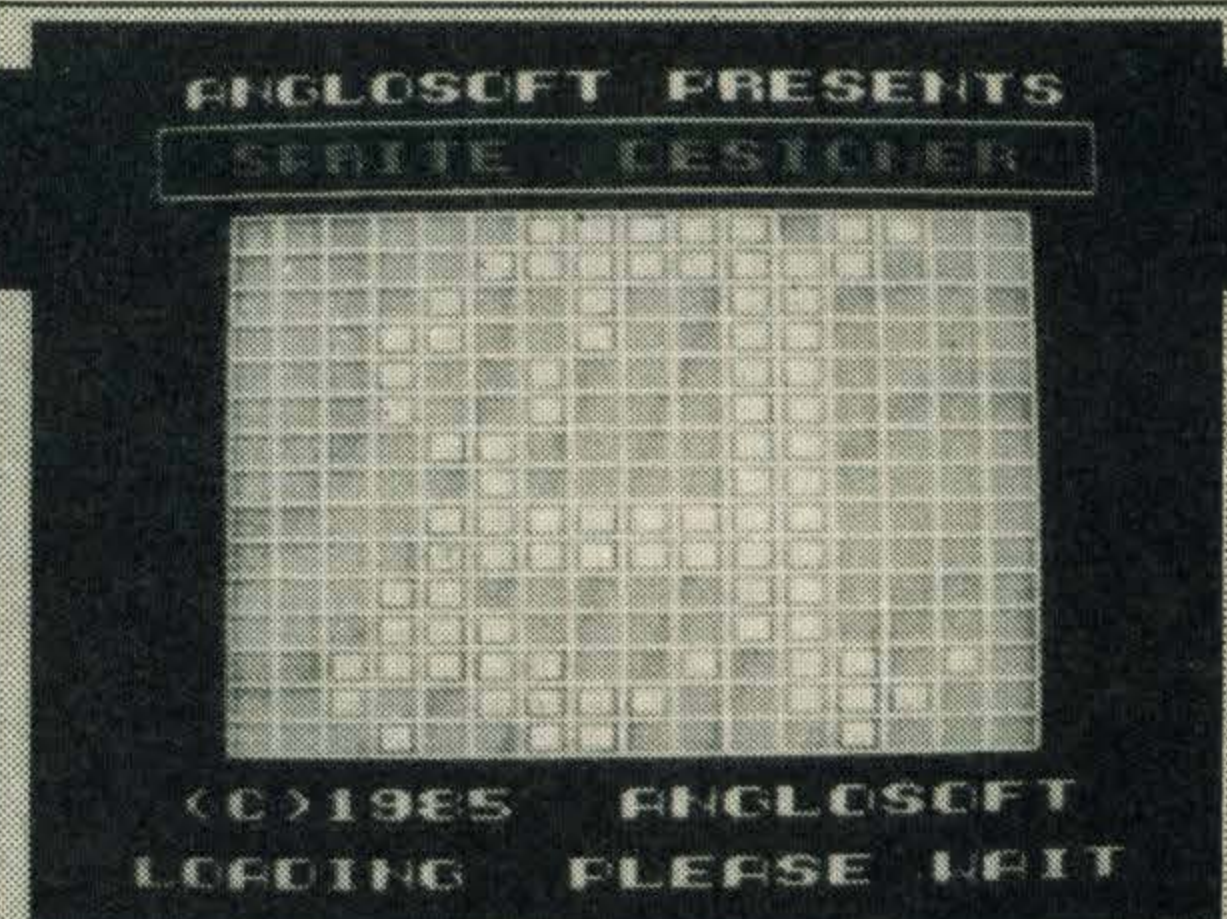
The icons are easy to interpret, with an initial bit of help from the instructions. One allows you to inspect the various sprites in the file you're working on (up to 254 of 8x8 and 62 of 16x16), and another to copy one sprite into another sprite number — useful if you want the same shape but with, for instance, different colours or with one or two minor alterations.

Mirror images and rotations are also straightforward options, as is a reversal of a sprite's colours.

The program also has an overlay option, allowing you to allocate a plane to a sprite to decide which passes in front of which, with 12 on screen at any one time provided there are no more than four on any one line.

The best feature is the animation option, which should test whether you've really got the makings of another Walt Disney or not. In any one sequence of sprite movements you can create ten frames in each of five directions (four directions plus stationary), and these can incorporate four planes of priority movement for passing before and behind other sprites.

With sprites and data saveable to tape or printable as hex, decimal or binary numbers, this sprite designer should be a terrific boon to many MSX programmers sprightly or otherwise.



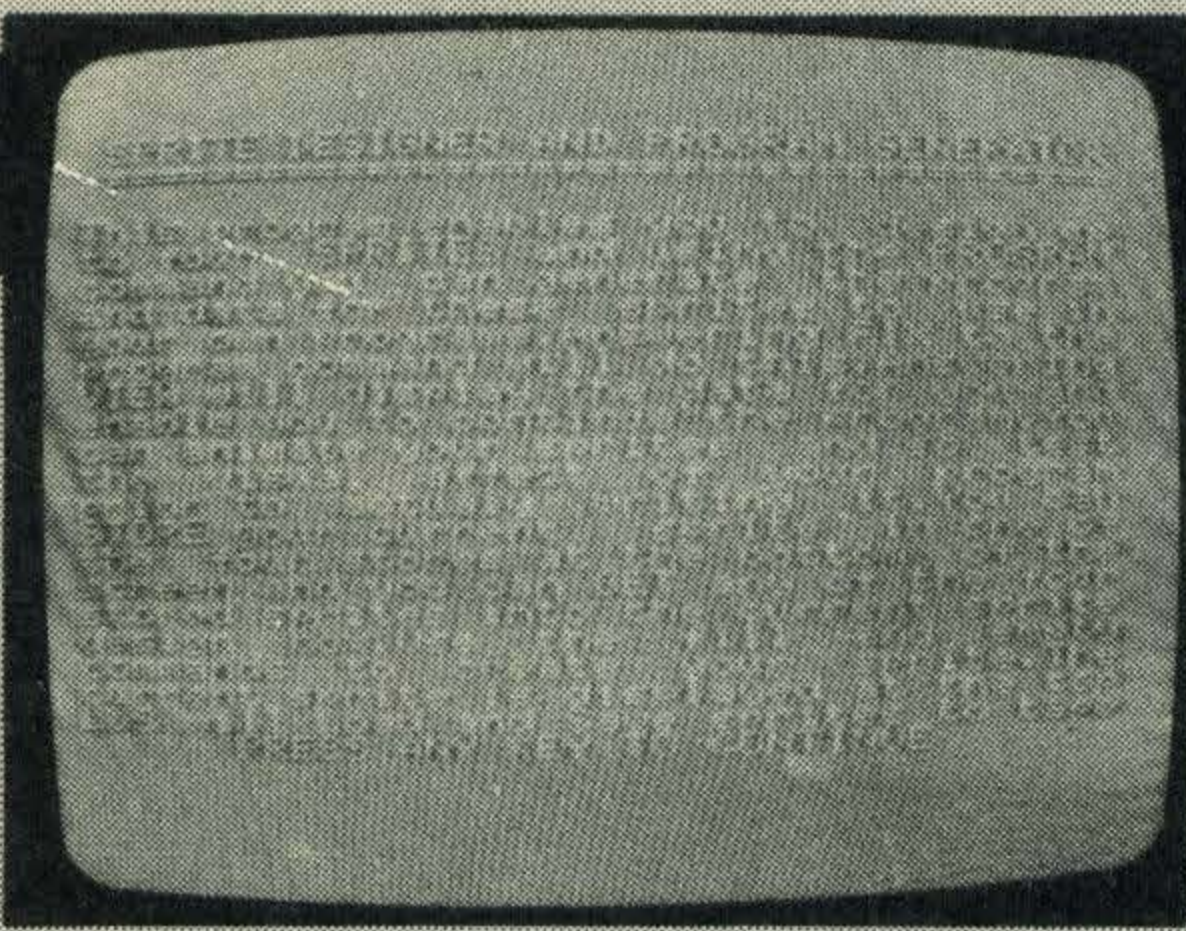
SUPPLIER: Anglosoft
(0203) 56221
TYPE: Utility
FORMAT: Cassette

GRAPHICS N/A

SOUND N/A

VALUE ★ ★ ★

VERDICT ★ ★ ★



SUPPLIER: Panacea
(0702) 333476
TYPE: Utility
FORMAT: Cassette

SPRITE GENERATOR

£5.95

If Anglosoft's *Sprite Designer*, also reviewed on this page, is an example of how to do it, Panacea's *Sprite Generator* is an example of how not to.

The first major drawback you notice is the lack of an instruction booklet, with only a couple of paragraphs of information printed on the cassette insert.

You're given a further screen of information once the game has loaded, but you have no way of getting back to refer to that again unless you stop the program and run it once more. This is just not enough documentation for a utility package of this type.

You can design and store only four sprites at a time, these being 16 x 16, though if you want to alter the sprite numbers or their shapes then the cassette tells you how to alter various lines in the program.

We would have thought it the programmer's job to incorporate these options as part of the program, instead of leaving the user to do it for him or herself.

The square in which you design your sprite takes up most of the main screen, although it isn't grid referenced, with a small-scale sprite at the top right-hand corner.

Beneath that is a list of the command options, such as to fill or empty a block, rotate a sprite by 90 degrees, store and

retrieve a sprite, inverse the fill/empty blocks, start afresh, change the cursor colour and several others.

As well as saving and loading data, of course, there's an animation option, though here you have to follow the command prompts and hope for the best. That's because the way that the animation works is not explained at all — not even in the opening screen of information.

You're asked to input a number of moves, from two to nine, but not told what this means, nor how the delay factor of 0-9 works. It's easy enough to work this out from experimentation, but this does show a lack of thought on behalf of the programmer for the user.

The 'program' option is a helpful inclusion, as this lists the sprite details as DATA statements and allows you to inspect these on the screen and then fix them into memory as program lines with a short basic routine to generate the sprites.

Unfortunately, though, this completely removes *Sprite Generator* from memory, so you'll have to load it again to create and save another four sprites. We wouldn't describe this as a terribly efficient way of working, and *Sprite Generator* is even more expensive than Anglosoft's superior *Sprite Designer* program.

GRAPHICS N/A

SOUND N/A

VERDICT ★

VALUE ★

MUSIX

£14.95

As it originates in Holland, it perhaps shouldn't be too much of a surprise to discover that this music utility for 16K + MSX machines works on the basis of the hurdy-gurdy or street-organ.

Though, if you spotted such an instrument in the Dutch streets, it probably wouldn't be accompanied by a drummer as charming as Cas, the bald moustachio'd virtuoso who sits at the top right hand side of the screen and bashes out one of his ten pre-set rhythms or one of your own masterful devising.

The quality of the sound produced by *Musix* is excellent, as you can witness if you load in the *Bolero* sample that comes as part of the package. We have to tell you, though, that you're going to have to be bit of a Ravel at your MSX keyboard yourself if you're to produce anything of similar standard as the program isn't the simplest one around to use.

At the top of the screen you're presented with part of a piano keyboard, covering two octaves, which you can move up or down by one or two octaves at a time to get the full range.

You use the left and right cursor keys (or a joystick) to move a small hand to the note that you want, and by selecting this using INS it's marked on your sheet of hurdy-gurdy

music on the screen.

You can have up to three notes on one line, and you move the sheet music forward or back a note at a time using the up and down arrow keys.

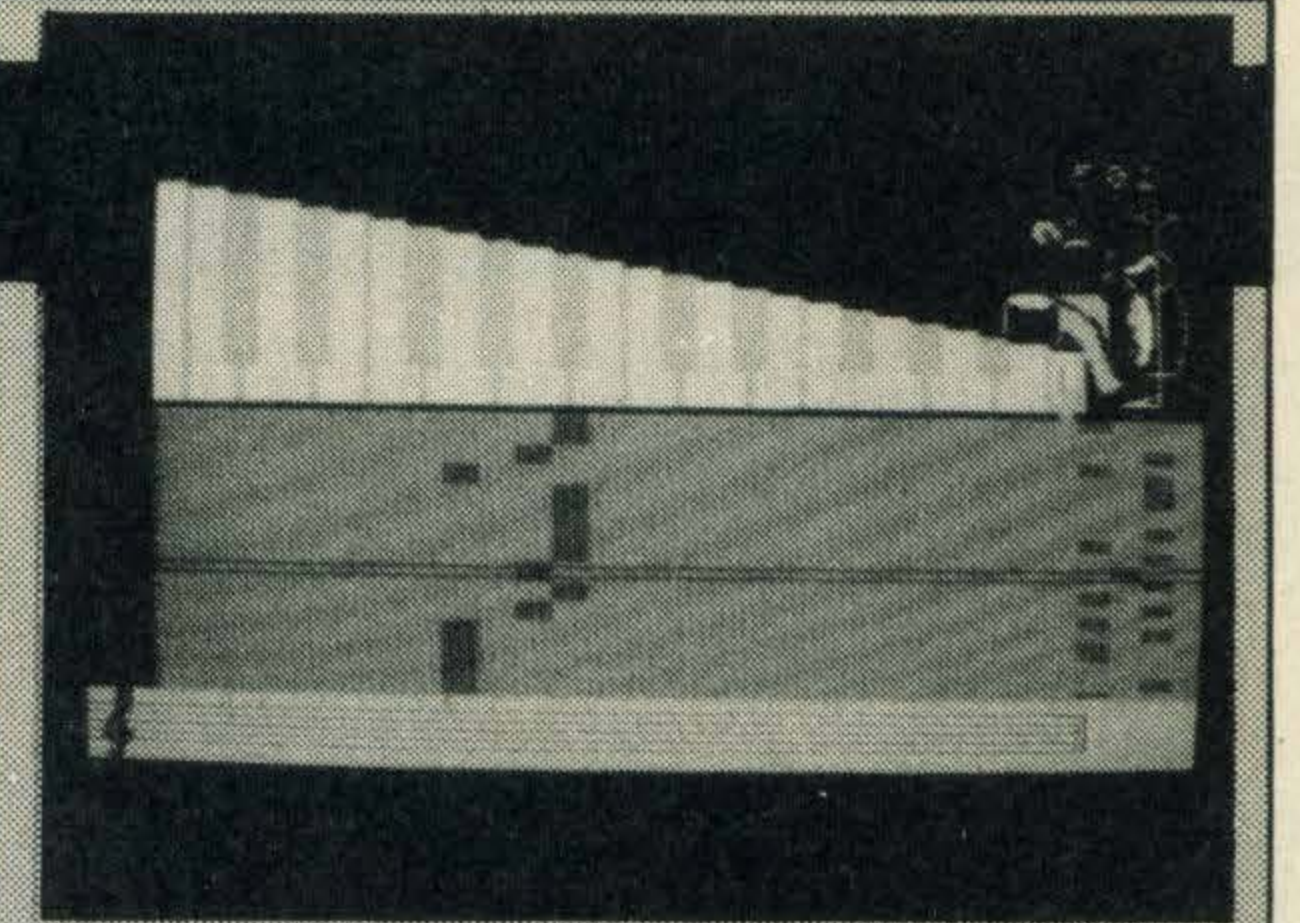
The marker hand can be moved on to Cas's drum kit to enable you to select a beat from his three drums and cymbals — or you could insert one of his ready-made rhythms, from reggae to waltz, and weave your music around that. The drum track and music can be edited, inserted or deleted completely separately.

Musix is a very versatile package, but if you have no musical knowledge it's going to be rather laborious for you to try to construct a tune one note at a time. It's a pity there aren't any type-in samples in the manual which would have helped.

If you can read and play music a little, however, then you can turn the computer keyboard into a piano keyboard (which also has 20 drum sounds available) and play a piece for yourself while using the 'Synchronise' feature.

This particular facility records the notes onto the sheet music as you go, allowing you to edit, save and play back your masterpiece later.

Excellent, if you've got the patience and knowledge required.



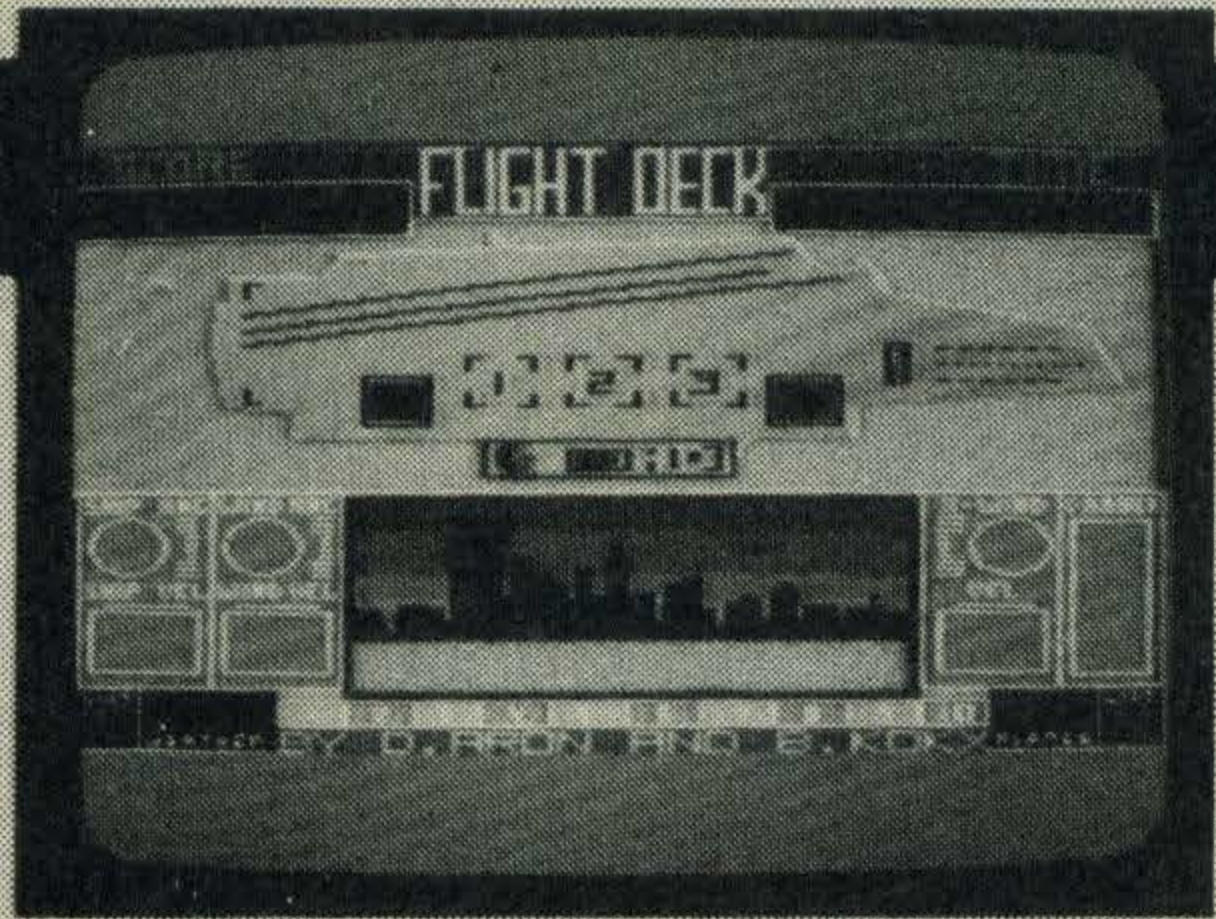
SUPPLIER: Nemesis
01-741 2299
TYPE: Music utility
FORMAT: Cassette

GRAPHICS ★ ★

SOUND ★ ★ ★

VALUE ★ ★

VERDICT ★ ★ ★



FLIGHT DECK

£9.95

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

Do you consider yourself to be indispensable? Well you are now, in fact HMS Indispensable, an aircraft carrier which is charged with the task of mapping out the island stronghold of a terrorist group and destroying their base.

This is a three-screen game, the first screen showing the carrier itself, the others being a map of the general area and a map of the island itself.

You switch between these using the f1, f2 and f3 keys, with a voice announcing 'carrier', 'map' or 'island' as you change. Sound is limited but quite good, and the same could be said for the graphics, though the loading screen is, as they say, definitely top notch.

On the first screen you need to check the position of both the carrier and the wind, which must be blowing in line with the deck of the aircraft carrier.

This is extremely important, as we launched our first batch of planes only to discover that the ship was facing away from the island and the planes were flying straight off the edge of the map. Not terribly clever!

Planes are brought up from below decks, lined up, and launching is fairly straightforward. It's achieved by keeping two bars showing ideal height and actual height more or less in line.

The planes then appear on the map screen, and here you control a cross-hair sight controlled by the joystick to set their course for the island itself. Nothing too exciting there.

Planes will eventually appear on the map screen, you hope, and here you take control again in a similar way and must fly them around the island, which is blank at first but gradually fills in with details as your planes cross over it.

Naturally, though, it's not that simple — there are enemy planes which patrol the island and will blast you out of the sky given half a chance, so you have to avoid those and fire back at them when you've got a free moment.

The planes that you control only have a limited amount of fuel, which is indicated clearly on the screen, and so have to be returned to the carrier periodically for refuelling. Control is by a combination of keyboard and joystick.

While there's quite enough going on in *Flight Deck* to keep you occupied, it seems to us to lack the absorption of a strategy game and the excitement of a straight arcade game.

Flight deck is a package worth looking at, though, as it could still have appeal for many would-be fighter pilots.

GRAPHICS ★ ★

SOUND ★ ★

VALUE ★ ★

VERDICT ★ ★

THE SECRET DIARY OF ADRIAN MOLE £9.95

The ultimate accolade for young Moley is that he and his exploits have been turned into a computer game at last. It's the kind of game that will delight fans though is hard for a reviewer to classify.

This is not an adventure, despite the fact that adventure software house Level 9 did the programming, and in fact is more of a family fun game as you try to play your way through a year in the traumatic life of our beloved hero.

The top half of the screen is given over to graphics, which are colourful though hardly stunning, and these help illustrate the passages from Adrian's diaries which themselves are displayed in the text area in the bottom half.

Many of the sections will be familiar to those who've read the two Adrian books, but there are plenty of new bits too. These have been added by programmer Pete Austin, and it's to his credit that unless you're totally familiar with every word of Adrian's jottings you'll be hard pushed to see the join.

The aim of the game is to make Adrian as popular as possible, particularly with the beloved Pandora, of course, though those with a malicious streak might try the opposite approach and see how low a score they can make.

The game begins on January 1st, with a list of Adrian's resolutions: no more will he squeeze those wretched spots. By January 3rd he's already reading *Big and Bouncy* and measuring his 'thing'.

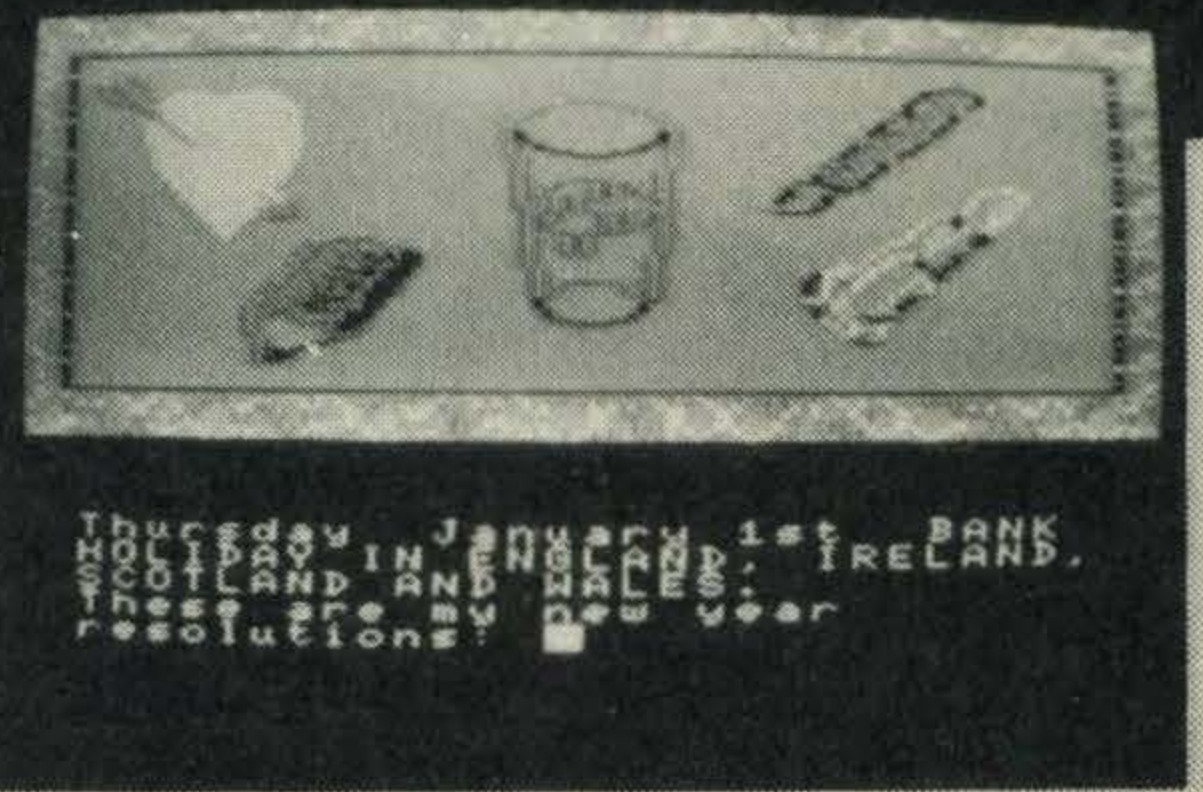
Until January 15th comes round, the player is merely reading through the pages of Adrian's diary, but then you have to start making decisions: who do you show your latest poem to, should you tell Pandora her eyes are the same colour as your dog's, and so on.

Every week you're told your current score, and the game divides up into two parts to cover the entire year in Adrian's life. You can save your progress to tape at any time, as with the majority of conventional adventure games.

If you're a Mole addict then you'll probably enjoy playing this game a few times, trying different responses to see what the results are.

However, it's difficult trying to read the scrolling text just seven or eight lines at a time and once you're familiar with the alternatives it's unlikely you'll want to continue to play it.

Two cheers for Mosaic and Level 9 in producing something a bit different, but unfortunately it's not quite a complete success.



SUPPLIER: Mosaic
01-226 0828
TYPE: Simulation
FORMAT: Cassette

GRAPHICS ★★

SOUND N/A

VALUE ★★

VERDICT ★★



SUPPLIER: Konami
01-429 2446
TYPE: Simulation
FORMAT: Cartridge

SOCCER

£14.95

Football isn't the easiest game to computerise, but Konami has managed to reproduce much of the game's excitement and style in its recently released cartridge game *Soccer*.

All the action takes place on a football pitch too big to fit onto the screen. This necessitates the use of a scrolling picture on-screen. You view the match from one side looking down onto the players. A crowd surrounds three sides of the pitch.

Before starting the game you have to choose the team name and its colours — red, white, black, blue or purple. There is a choice of five skill levels, with the fifth level being extremely quick. Here the ball moves much faster, as do the players, and it is generally much more difficult to keep control of the ball. If you're new to the game, try using the slowest level first.

Half time separates the players and a clock times each half. At the start of the game both teams run onto the pitch and stand around the pitch centre. Your team kicks off.

As the ball moves up the field, a blue arrow indicates which team player you are controlling. To move the control from one player to another, you simply have to press either the space bar or joystick fire button.

Many of the football rules are brought into

play in this game. For instance, kicking the ball off the edge of the pitch is automatically a throw in or a corner. If it's your advantage, a player will automatically take the ball for the throw in, but you can control which player he chucks it at. Similarly, you can control which player the goalkeeper throws the ball at.

Offside rules apply to single player games at level three or higher, and to double-player games at all levels.

Two types of kick are available — a shot and a pass kick. Use the latter when you are trying to move the ball up the field. Tackling opposition players is great fun as you can do some spectacular sliding kicks.

The winner is, of course, the team to score most goals in the game. If it's a draw, the game is decided by penalty kicks. On screen, you see the goal mouth from the players angle and, as in the real game, it is a competition between your player and the goalkeeper.

The graphics in Konami's *Soccer* are a bit erratic. Players occasionally disappear and then unexpectedly reappear and it isn't uncommon to see just a head running along the pitch — very distracting!

At £14.95, *Soccer* is great value for a cartridge and is the best football simulation we've seen for MSX micros — it sets standards that are going to be hard to beat.

GRAPHICS ★★

SOUND ★★★

VALUE ★★★

VERDICT ★★★

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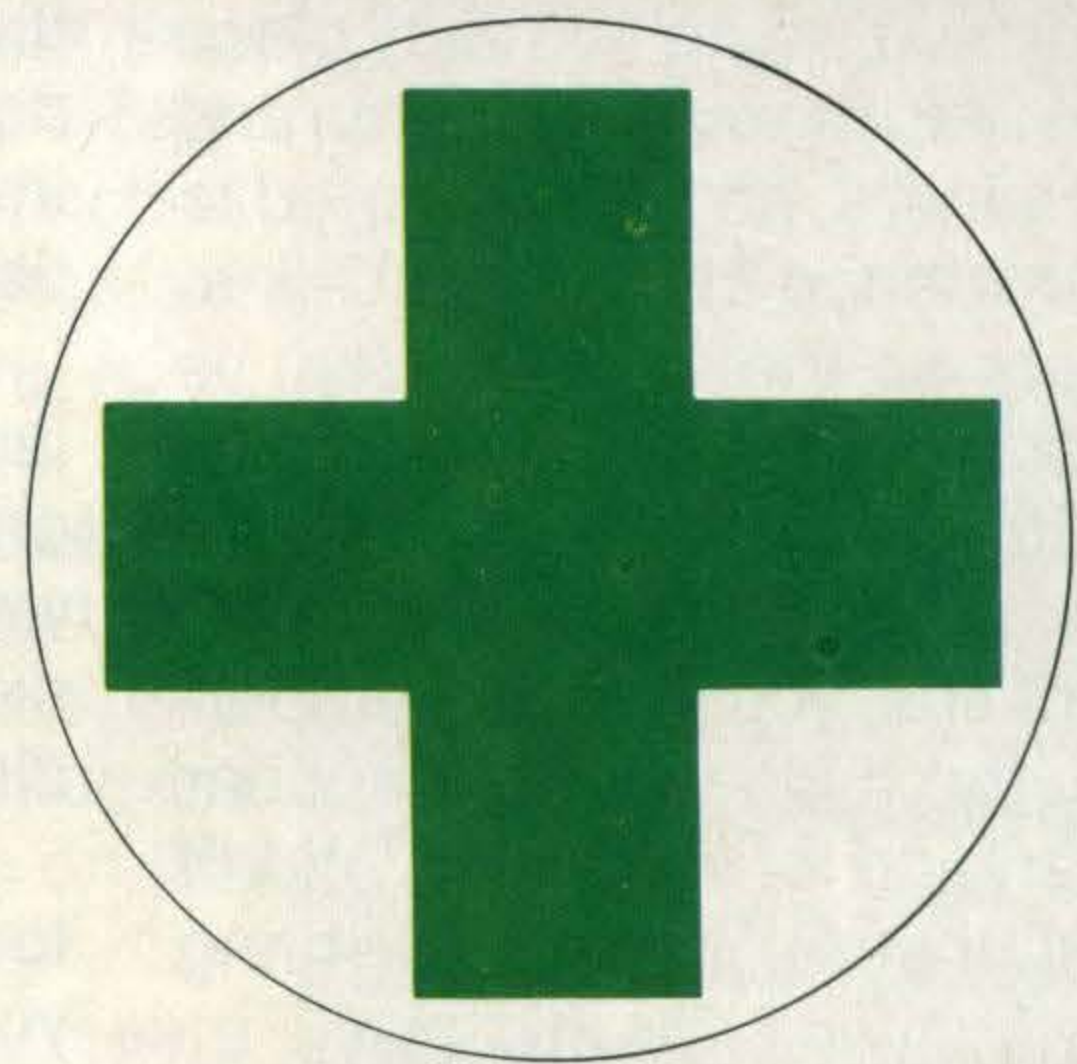
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YIE AR KUNG FU 2

£14.95

Bouncing midgets, masked men and deadly women wielding fans—it's all happening in *Yie Ar Kung Fu 2*, Konami's sequel to its first *Kung Fu* game.

Just 20 years ago, Lee, master of the martial arts, managed to wipe out the entire Chop Suey gang, or so he thought. One member of the gang, Yen Pei, managed to survive.

Yen Pei now calls himself Yie Gah Emperor and, believe us, he's a nasty piece of work. With the help of seven warlords and their evil little retainers, he has managed to extend his evil influence throughout China. Lee Young, son of the original Lee, is despatched to sort out the emperor.

Against an attractive backdrop of a lake complete with picturesque fishermen's boats and mountains, you meet the emperor's henchmen, the midgets. They appear from all angles and go for your head, midriff and ankles. To kill them off, you need to bring Lee's incredible fighting skills into play.

These include a vertical jump, a huge jump with a flying side kick, straight punch, a squat, a high and a low kick. You can use either a joystick, keyboard or even both.

Occasionally, the midgets fly at you in formations of three. If you kill all three, you not only earn extra points, but you also get an Oo-Long leaf. You get a new supply of

energy every time five leaves are amassed.

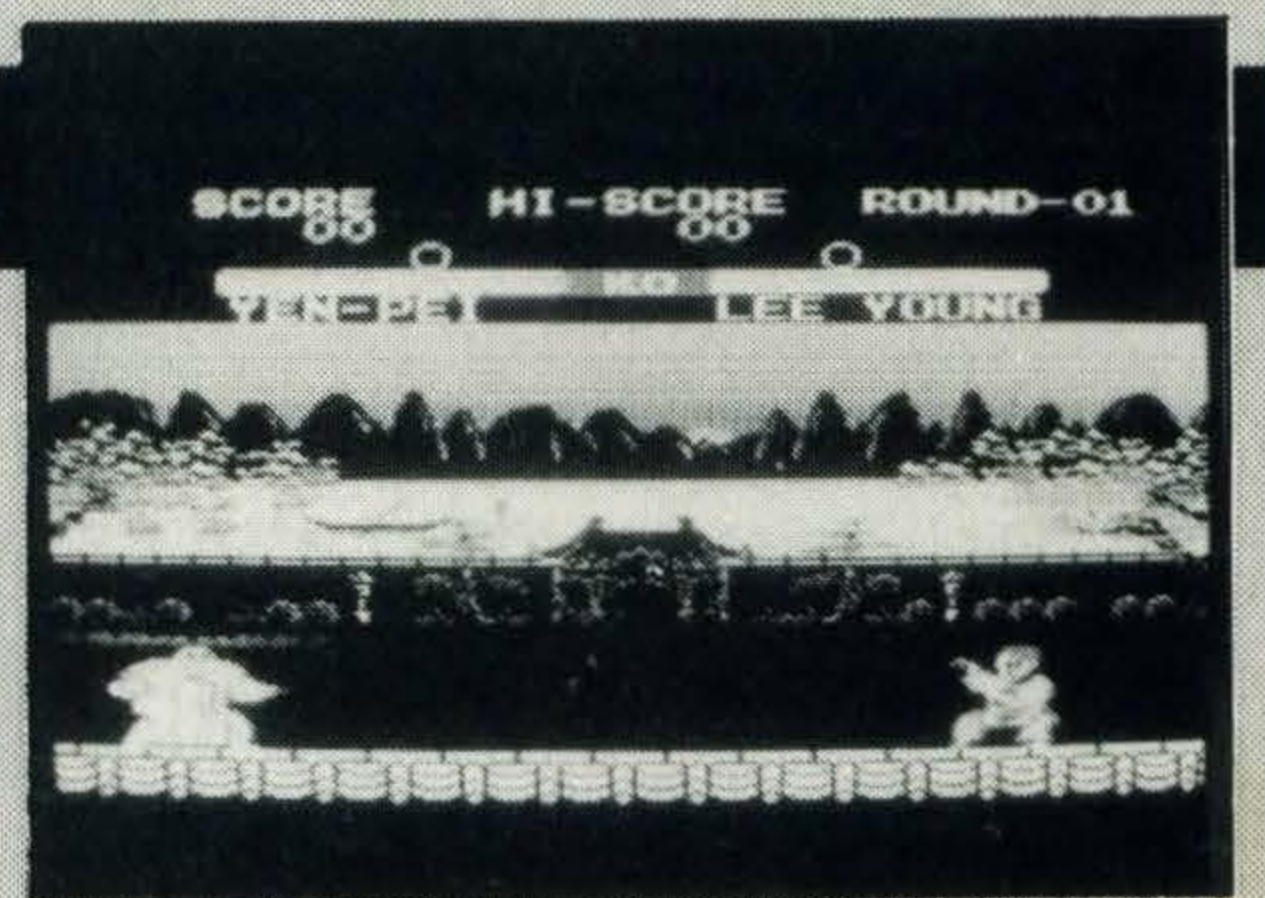
On the first level, Iron Pigtail is waiting. A few screens have to be crossed before you reach him, giving you enough time to kill off a few midgets. Fighting Pigtail is tricky. If he hits you, energy from your energy quotient is lost; if you hit him he loses energy. Obviously the loser is the one to lose all his energy first.

Iron Pigtail's long hair packs a punch as he swings it round, but if you manage to grab the bowl of chow mein noodles which drops down onto the scene, you are made invincible for a few seconds — then is the time to get a few kicks in.

On level two you come up against the fan lady. She chucks fans at you, but they are no ordinary fans and fly at your body. She wears a long purple dress, but this doesn't stop her aiming a well-timed kick in your direction.

Poison Gas Warrior, complete with tattoos, is your next assailant and to fight him you move into a cave. If one of his gas balls hits you, you are immobilised for a few seconds. On level four, a Mask Man throws a mask around. Grenades, boomerangs and swords make up the remainder of weapons on the other levels.

Konami makes great arcade games and this program is faultless. What more can we say?



SUPPLIER: Konami
01-429 2446
TYPE: Arcade
FORMAT: Cartridge

GRAPHICS ★ ★ ★

SOUND ★ ★ ★

VALUE ★ ★ ★

VERDICT ★ ★ ★



SUPPLIER: Astrocalc
(0442) 51809
TYPE: Astrology
prediction
FORMAT: Cassette

GRAPHICS N/A

SOUND N/A

VALUE ★ ★

VERDICT ★ ★

INTRODUCTION TO ASTROLOGY

£11.50

It might seem strange for a subject like astrology, that's a few thousand years old, to find a place on the home micro, but much of the work in drawing up a person's birth chart is mathematical and this can be done more quickly and probably more error-free by a computer.

The complicated tables and charts that have to be consulted mean that the calculations for a typical birth chart will take even a quick astrologer at least 20 minutes. The computer can cut this down to about 20/30 seconds.

Astrocalc provides a range of programs that could set back the serious astrologer by up to a hundred pounds, and for machines from the Spectrum to the Apple, but this beginner's package is meant as an introduction to the subject for anyone who's seriously interested in astrology.

This is not the kind of program that asks what star sign you are and then proceeds to tell you that August is a good month for travel arrangements, but will help you to prepare a basic birth chart and also learn how to recognise which qualities are associated with which planets.

There are two programs you can select from the main menu, both of them fully documented in a brief but helpful booklet, and you also receive a longer *Introduction to*

Astrology booklet as well.

The first program asks you to input the date and time of a person's birth (GMT), and also the place, by latitude and longitude. It will then list for you the positions of the planets at the time and place of birth. This can be printed out if you wish, and the booklet advises you on some simple interpretations of character traits and so on indicated by the chart. You are reminded that the information should be as accurate as possible with regard to the time and place of the subject's birth.

The second program helps to install a bit of basic knowledge into you by teaching you the qualities associated with each of the signs of the Zodiac.

There are two self-testing programs asking you to link a sign with a particular quality, or vice-versa, and this should drum into the user the beginnings of the much wider knowledge needed to start the serious interpretation of a person's birth chart.

We checked the program with an astrology student who confirmed that the testing nature of the program helped to drum in information that was difficult to sit down and memorise by yourself. We also did a sample chart just to prove that the computer produced the same results as the human, in a fraction of the time.

SOUND GENERATOR**£5.95**

An unusual utility program, this, and once you've seen it you wonder why there aren't more around. There are plenty of sprite generators and music creation programs, so why not one which allows you to experiment with the sound effects that your MSX computer is capable of producing? And not only experiment, but be given a note of the data for each sound therefore allowing you to incorporate it into your own programs.

The program's a little tricky to review as it came with limited instructions, but it's to be hoped Panacea will produce slightly more detailed information than it has for its *Sprite Generator* program, to which this is infinitely superior.

The main drawback to reviewing with so few instructions is that we were unable to discover how to switch off any continuous sounds that we managed to create! You use the F1 key to play the sound once you've set the various parameters, but nothing short of stopping the program would stop some of the sounds from whining on for all eternity.

The sounds are designed on a simple screen, around which you move a little man by using the cursor keys, setting different levels for the different options.

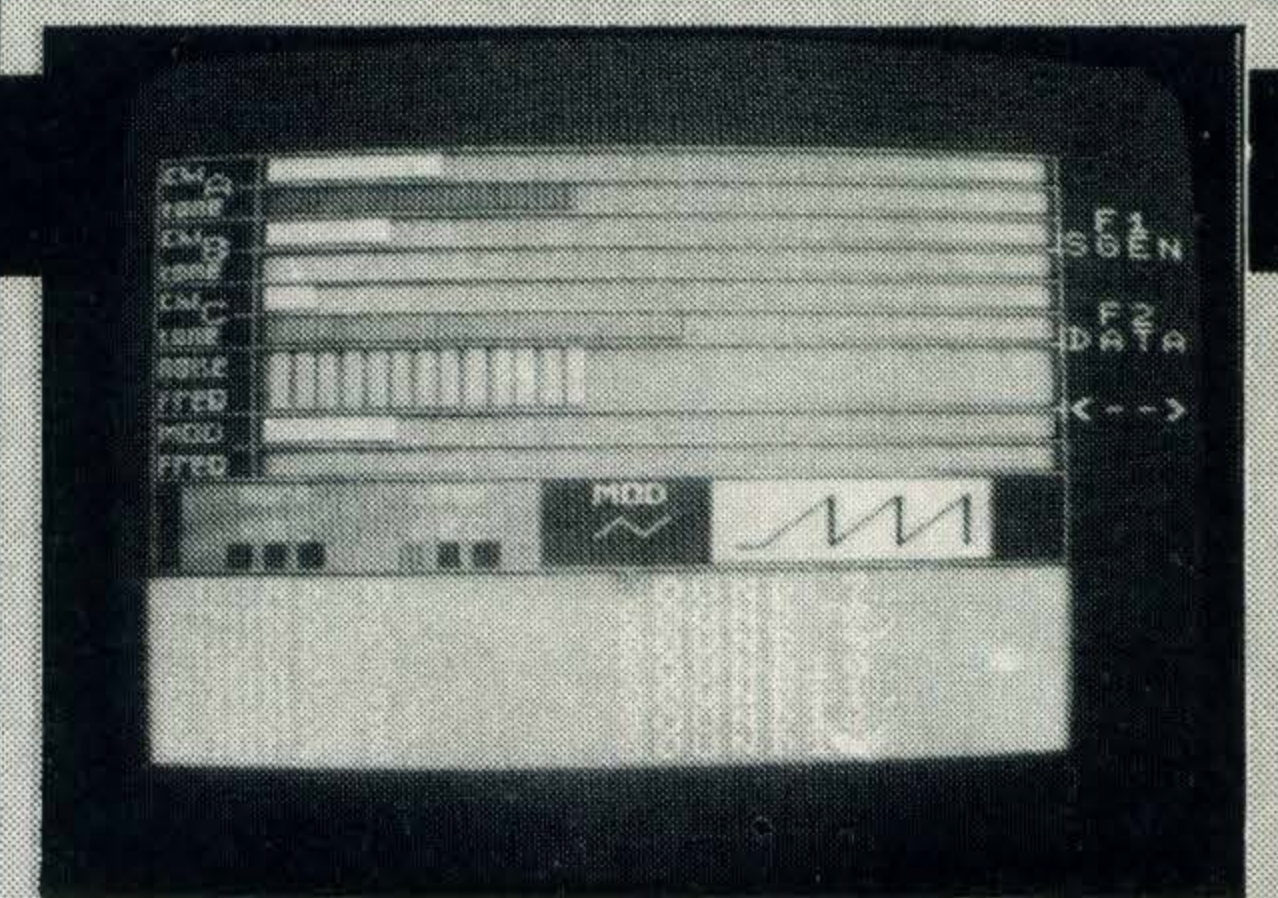
The f1 key plays the sound created, and the f2 key displays the data for each of the 14 sound registers, which you'll have to note

down if you want to duplicate the sound in your own program. A pity there no option to have these printed out, or to have the sound and data saved to create your own library of possible sound effects. A program to do that shouldn't be too difficult to create, though.

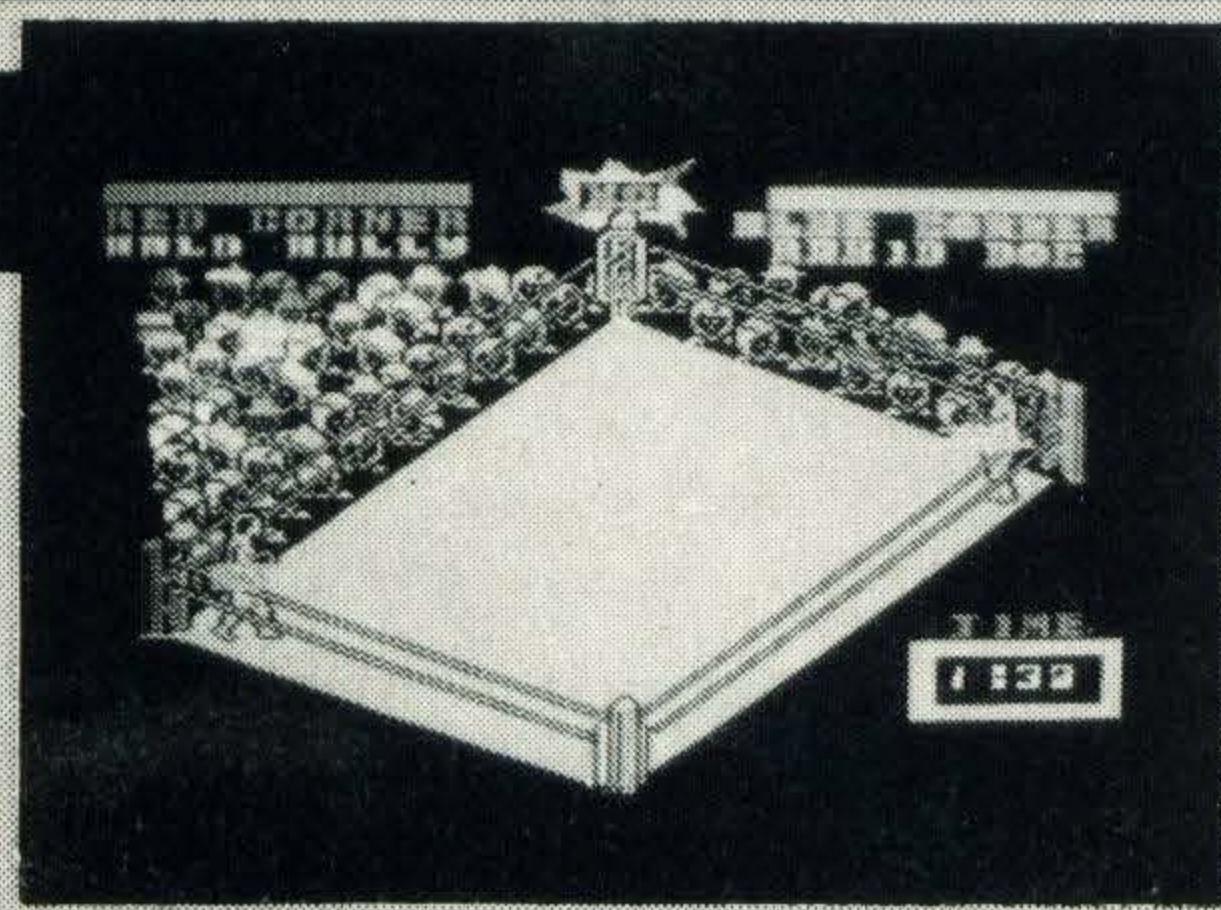
Sound Generator should be useful to programmer and non-programmer alike. If you find it hard to understand the effects of setting different numbers in the different registers, you can simply experiment and note down which numbers produce which sounds. These can range from high-pitched siren sounds to explosions to rumblings like a giant with indigestion. If you are fairly familiar with the SOUND command, then you can still try increasing and decreasing the fine and coarse pitch tuning for the three channels, as well as the volume levels, and the eight different envelope types (which are displayed as mini-diagrams for you on the screen).

One drawback is that you can only create one sound at a time. Just as a Sprite generator allows you to work on many different sprites, so this program could be improved to allow you to store data for several sounds, and play them back in sequence.

A limited program, but a useful utility to have around.



SUPPLIER: Panacea
(0702) 333476
TYPE: Utility
FORMAT: Cassette

GRAPHICS N/A**SOUND ★ ★****VALUE ★ ★****VERDICT ★ ★**

SUPPLIER: Alligata
(0742) 755796
TYPE: Simulation
FORMAT: Cassette

3D KNOCKOUT**£7.95**

It's unfortunate for Alligata that its boxing simulation comes out at the same time as Konami's cartridge, as a direct comparison shows there's really no competition — Konami takes it by a knock-out.

Alligata's game has the same basic idea, with one- or two-player options and control of the boxer's punches by keyboard or joystick control, but its attempt to put the fight into a 3-D perspective is probably where most of the problems lie.

Where Konami's takes a sideways view and needs just two controls to move the player left-right, Alligata's looks down from one corner of the ring and your fighter can move in any direction.

There's obviously a great deal of terrific programming involved in making the two boxers circle around each other, in front and behind, and also in allowing for the different perspectives needed on the various punches at your disposal. The trouble is that the end result all looks rather unconvincing. The punches are delivered in a fairly lukewarm manner, and as the graphics are smaller there's much less difference between the punches — a jab is much like an uppercut in this version. Nor are things helped by the way the colours in various places spill over their borders — any boxer knocked out almost seems to part company with his

shorts!

Alligata does offer you a few extra options, allowing you not only eight levels of opponent (from Mad Joe to Big Yin), but also the chance to input your own name and choose whether to have the 'Grogginess factor' on or off. This can slow you down when fighting, if you elect to have your grogginess calculated, and so is a way of having two difficulty levels for each opponent.

Your stamina is indicated at the top of the screen, and can be replenished between rounds. Winning is either by knockout or who wins more of the eight two-minute rounds — quite a lengthy contest, that.

The sound effects on *3D Boxing* aren't a patch on the Konami effort, making your MSX sound like little more than a Spectrum — what an insult! We're not forgetting that a cartridge will cost you twice the price of a cassette, but if you're keen to get a boxing simulation then you'd really be better advised to dig deep into your pockets. Putting these two in the ring is like matching Frank Bruno with Ronnie Corbett, and though in one way it's unfair to compare a cassette with a cartridge at twice the price, if you do want a boxing simulation you might be advised to dig deeper into your pocket and get the better option.

GRAPHICS ★ ★**SOUND ★****VALUE ★ ★****VERDICT ★**



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SUPERBOWL

£2.99

Some sports can be notoriously hard to simulate on a micro. How, for instance, do you cope with 11-a-side, all-action American football? Well, maybe the answer is that you shouldn't even try.

Superbowl is confusingly organised, with poor graphics of flickering players who appear and disappear constantly. Even the occasional messages are done in text that's nigh-on impossible to read, making you feel that the game's been produced by someone who's never actually sat down and played it. Not true, I know, but it certainly looks that way.

Bad game design begins with the fact that some of the instructions which you need are not given in the accompanying notes but only on an introductory screen which gives way to a demonstration mode.

If you miss the opening screen or forget the combination of *two* keys needed to exit the demo you're well and truly stuck and have to reload from scratch.

The game is further confusing in that the whole play can be a kind of demonstration mode.

It isn't you against the micro or you against another opponent, but you can control either team at any point. The game plays in demo mode till you touch the joystick or keyboard to take over, and will go back to demo mode if

you yourself make no moves for a while. Very strange.

The rules of American football are better explained than how to play the actual game. You take control of whichever team of players happens to be flashing at the time, so to speak, and the joystick or cursor keys can be used to select a defensive or offensive movement from a menu of options you're given when appropriate.

We all know how solid American footballers are, built like brick . . . erm, buildings, but these players look about as solid as ghosts.

They really do disappear completely as you move them round the pitch, which makes the game very disconcerting to watch. Also disconcerting is the fact that you control several players so they all start running in the same direction at the same time, not to mention the way the computer takes over if you don't happen to be doing anything at a particular moment.

There's also a laborious wait if you do get a touchdown while all the players slowly make their way to behind the line. The sound effects are pretty dismal, too.

This is certainly budget stuff from Budgie Software, and fans of the excellent *The Refrigerator* are likely to give it a very cool reception.



SUPPLIER: Budgie Software
(0742) 755796
TYPE: Simulation
FORMAT: Cassette

GRAPHICS ★

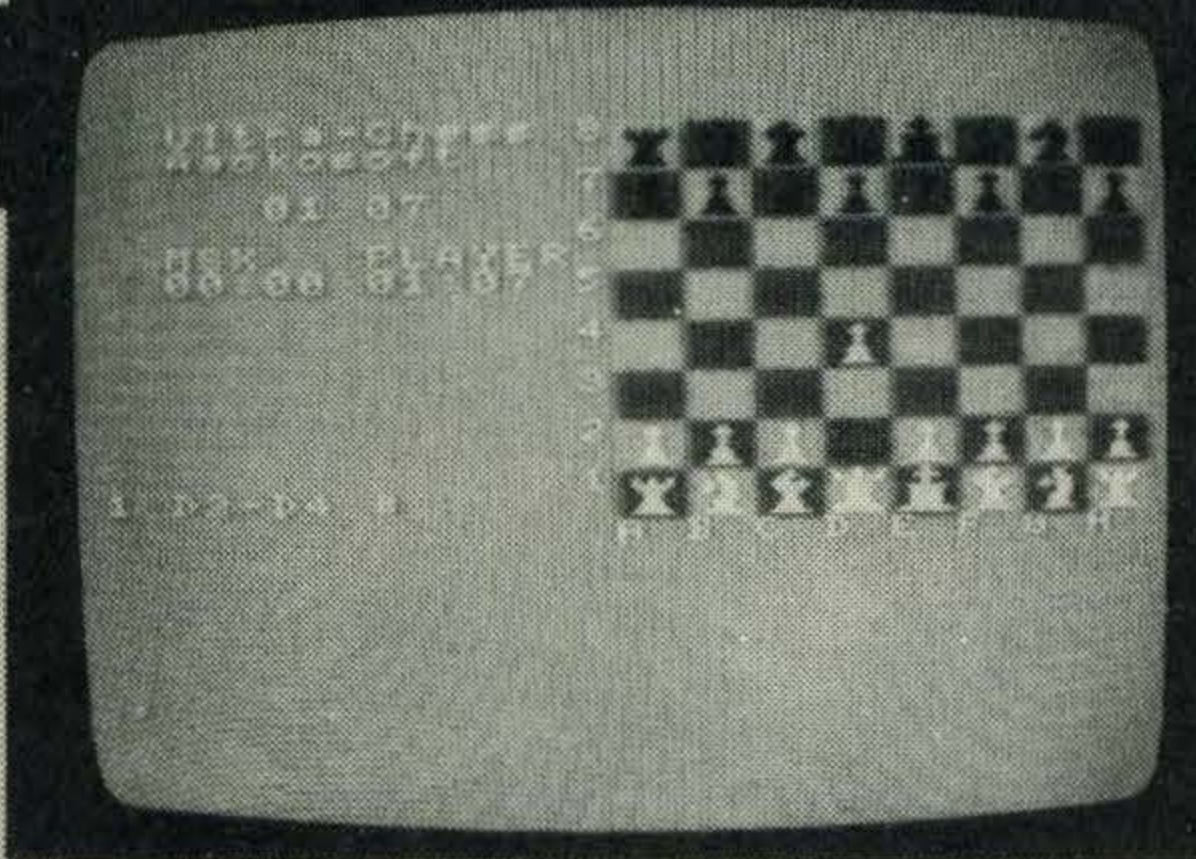
SOUND ★

VALUE ★

VERDICT ★

ULTRA CHESS

£14.95



SUPPLIER: Nemesis
01-741 2299
TYPE: Board game
FORMAT: Cassette

GRAPHICS ★ ★

SOUND N/A

VALUE ★ ★

VERDICT ★ ★

This is an expensive chess program but a comprehensive one, written specifically for the MSX rather than converted from some other machine.

The board is reasonably clearly set out, with the pieces perfectly identifiable, and you do at least have the option of changing the colours of both the black and white pieces and the black and white squares. You can even have blue playing blue on blue squares, if you want an extremely tricky game.

Sound has been rated as not applicable, though you do get a definite 'beep' to indicate when a key-press has registered and a move been made, which is really all you really want.

Instead of offering you various skill levels, when you load up the program you're asked to state the computer's allowed response time in seconds, although if you get fed up of waiting you can force it to make a move by pressing the space bar.

This is a far better method than discovering that if you choose the hardest option you have a 30-minute wait while the computer decides its opening move — and that's certainly no exaggeration, we have seen it for ourselves!

There's no two-player option, which is a sensible exclusion as it allows for a more comprehensive program — anyway if two of

you want to play, what's wrong with a real board?

All the recognised moves are catered for, and the computer will advise you on a move if you ask it nicely, and provided it's finished its own thinking (it's obviously no fool). You can take back the last move if you like, and also save the current game as well as printing out the screen or listing the moves made so far on either the screen or on the printer.

An 'Analysis' option allows you to set up the board in any way you like, and as well as putting any piece on any square you will be asked whether certain pieces (kings and rooks) have been moved or not.

Initially when setting up the board you will be asked to set a time limit on the first move to be made, but if you like you can then retain the board and go back to set a different time limit to see if it makes any difference to the outcome.

If you have a book of some of the famous chess games of the past, you can use this facility to see how the program compares with some of the Grand Masters.

Being no Grand Masters ourselves, it's hard to say just how tough an opponent *Ultra Chess* provides you with. However it certainly can't be faulted on the features it contains and that bodes well for the overall game.

A VIEW TO A KILL

£10.99

Bond on other machines offered three games incorporated into *A View to a Kill*, but MSX users get only two, making him not so much a 007 as a 004.66 recurring. Mind you, if the missing one's anything like the two included, we should be thankful for small mercies.

Even the arrangement of the games on the cassette is poor. First program is a title screen and menu, and this allows you to load either the first game, 'The Mine', or the second game, 'City Hall'.

If you load up the first game, though, there's no way you can quit if you get tired. Instead, you have to switch off, rewind the tape, load the menu program (which is quite lengthy for what it contains) then fast forward to where the second game starts on the tape. Even doing this I found I had to make several attempts to get the second game to even load.

After the promising way the Bond theme plays at the start of the games, it's disappointing to find 'The Mine' is totally silent in play.

Your matchstick Bond figure would stand no chance against an Oddjob or even a Bob-a-Jobber as you use a joystick to move him round a network of underground passages in an effort to try to prevent a nuclear bomb being detonated.

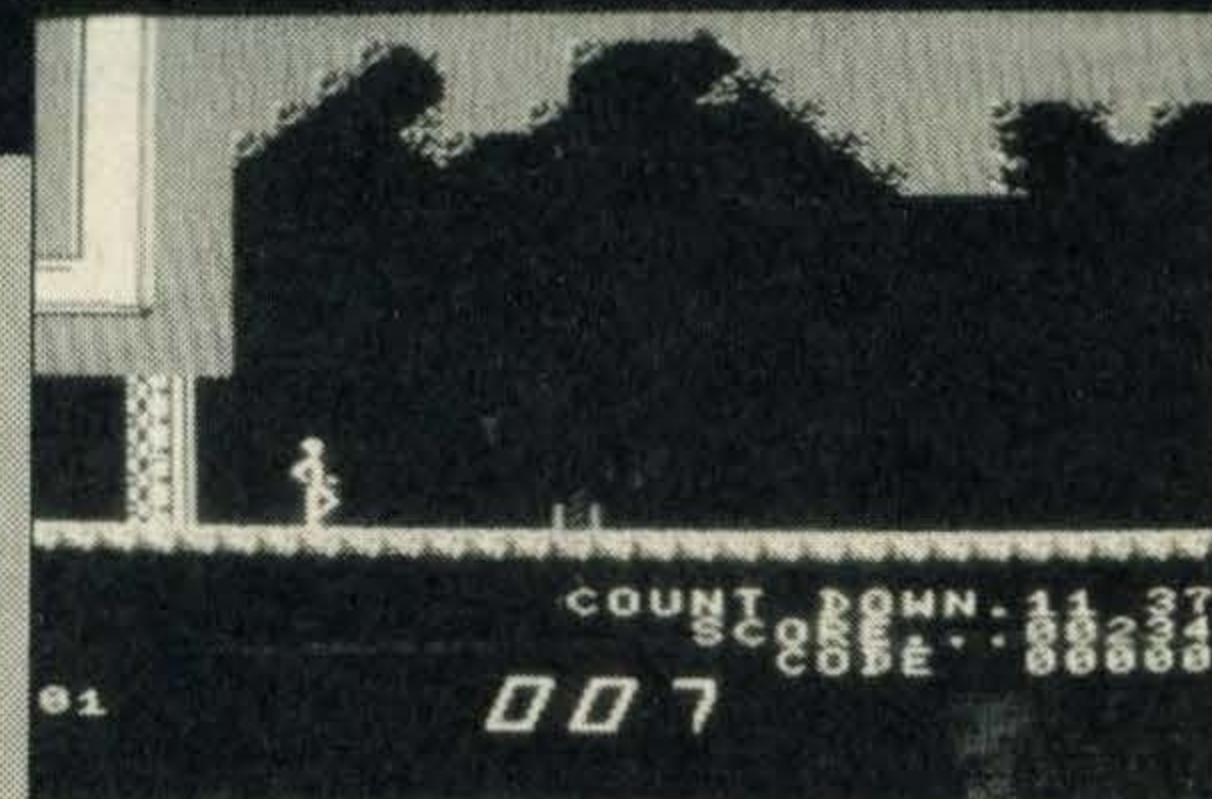
The background graphics are also as poor as the main figure, and quite a waste of space when you consider what the MSX is capable of. For a game priced well above the average for a cassette — £10.99 — Domark really could have done much better in that respect.

As you jump across gaps and fall down chasms, you will come across various objects, and your instructions to pick up, drop, use and so on are given via the joystick through an options menu that appears at the foot of the screen. This is irritating to operate, particularly as response to the joystick seems to be poor.

Following on from that is 'City Hall', which uses the same type of 'Duck Shoot' menu of options, this time to rescue Bond and friend Stacey from a burning building in San Francisco.

You run your matchstick figure (silent again) through poorly drawn rooms picking up and using poorly drawn objects like keys, bullets and buckets of water.

Typical of the sloppy approach is that the only advice you're given on controls is that 'All games may be joystick operated'. You can use the keyboard, but it's up to you to find out which keys do what. On the other hand, you can save your money and buy the book or see the film.



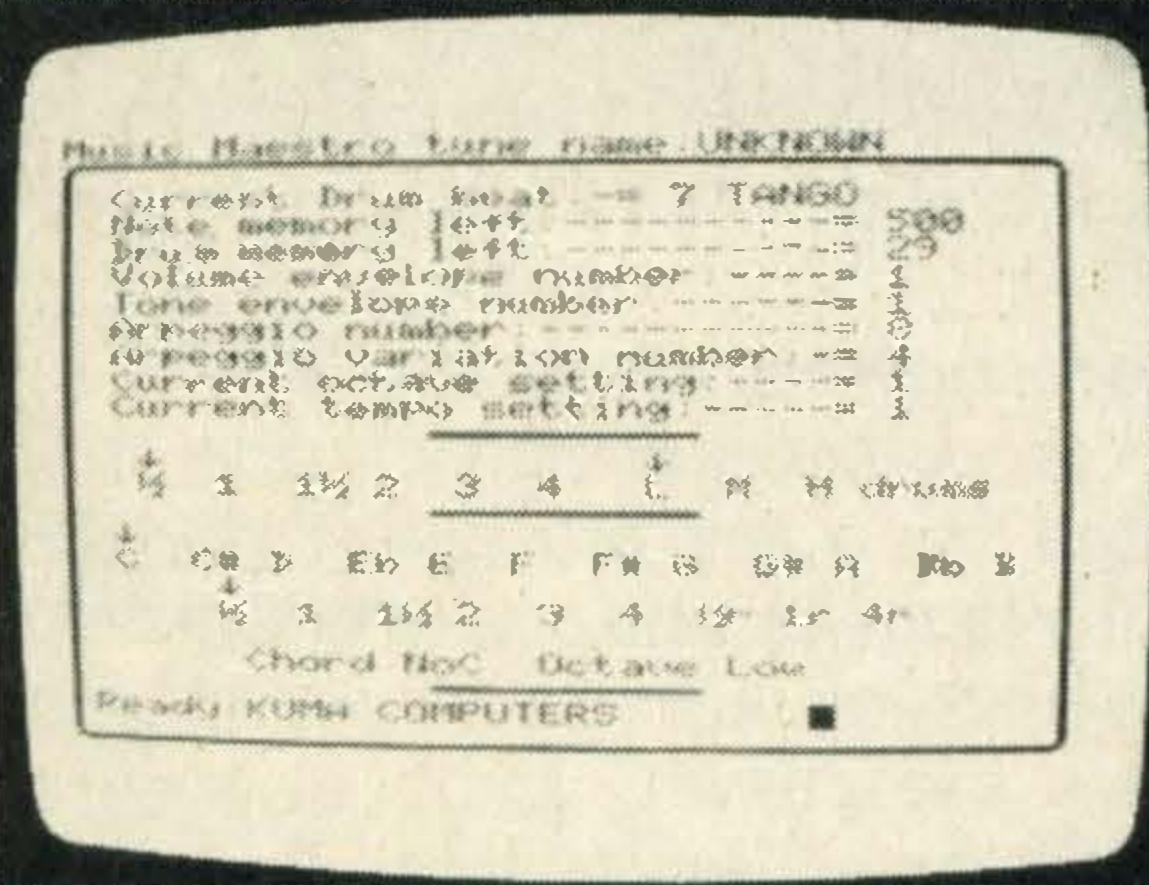
SUPPLIER: Domark
01-947 5624
TYPE: Arcade/adventure
FORMAT: Cassette

GRAPHICS ★

SOUND ★

VALUE ★

VERDICT ★



SUPPLIER: Kuma
(07357) 4335
TYPE: Music utility
FORMAT: Cassette

MUSIC MAESTRO

£9.95

Another MSX music-maker, this time from Kuma, and straight away you're left to your own devices. This is because, apart from the first nine notes of *Beautiful Dreamer*, there are no sample tunes on the tape or even to type in for yourself. Musical knowledge obligatory, then, if you're to be able to transcribe notes from sheet music to this utility.

As with *Musix*, also reviewed this month, you're provided with a range of in-built drum rhythms, ten of them, or you can construct your own.

This isn't half as friendly as *Musix*, because the drum notes are limited to low, medium and high, and ranging from half a beat to four beats. There's no crashing cymbals, and no option to turn your microcomputer into a keyboard to try out the sounds before going on to enter them into a tune program.

The notes, which make a kind of electronic piano sound, are also limited to that range for length, so if you want anything longer than four beats you'll have no choice but to put up with a slight pause in the middle.

You also only have a range of three octaves in which to work, and entering a tune is quite a laborious process, using various keys to move arrows around on the screen

till you've got the note, chord, beat and octave set you require, then pressing RETURN.

The drums and main tune can be played independently or together, but they have to be edited separately, which could lead to a lot of trial and error work in attempting to combine them.

What *Music Maestro* does have are eight accompanying arpeggios, each having a three, four, six or eight note strum, but this feature is somewhat marred by the fact that you can only control them by having them on or off.

There's no volume control, and the arpeggios do tend to swamp the main tune so that you're hard pushed to tell what's being played. *Music Maestro* also provides you with three tempo settings, and five envelope settings to play around with.

Playing about with all of these produces a range of sound effects which some of you might find useful, though they're obviously limited to variations on that electronic piano sound.

As you'd expect, you can save your compositions to tape, and considering the effort involved in putting them together you'll certainly need to. For a few pounds extra, however, *Musix* will give you much more music.

GRAPHICS N/A

SOUND ★★

VALUE ★★

VERDICT ★★

BRIDGE

£8.95

Brush up your bridge with this program from Kuma. It's just as well the usual temptation to call it a bridge tutor has been resisted as it's rather too limited to claim that it actually tutors you.

However, what it does do is enable you to bid for and play a straightforward hand, and also replay the same hand if you wish. When you first load up the program you can select from a range of response times, from instant to lethargic!

You always play South, and on the opening bidding screen your cards are displayed along with a note of who has dealt and the distribution of your cards across the suits in case you're incapable of counting that up for yourself.

Your bids are simply entered as 1D, 2S or whatever, or by pressing the space bar for no bid. Once the bidding is completed the computer screen switches to a display showing the relevant hand(s), and play then commences.

The computer will play cards automatically when it can, e.g. if there's a singleton or for the final hand, and will also automatically enter the suit you have to play from, if you have cards in that suit. So all you have to enter yourself is the number of the card to play. A very sensible approach to the design of the program.

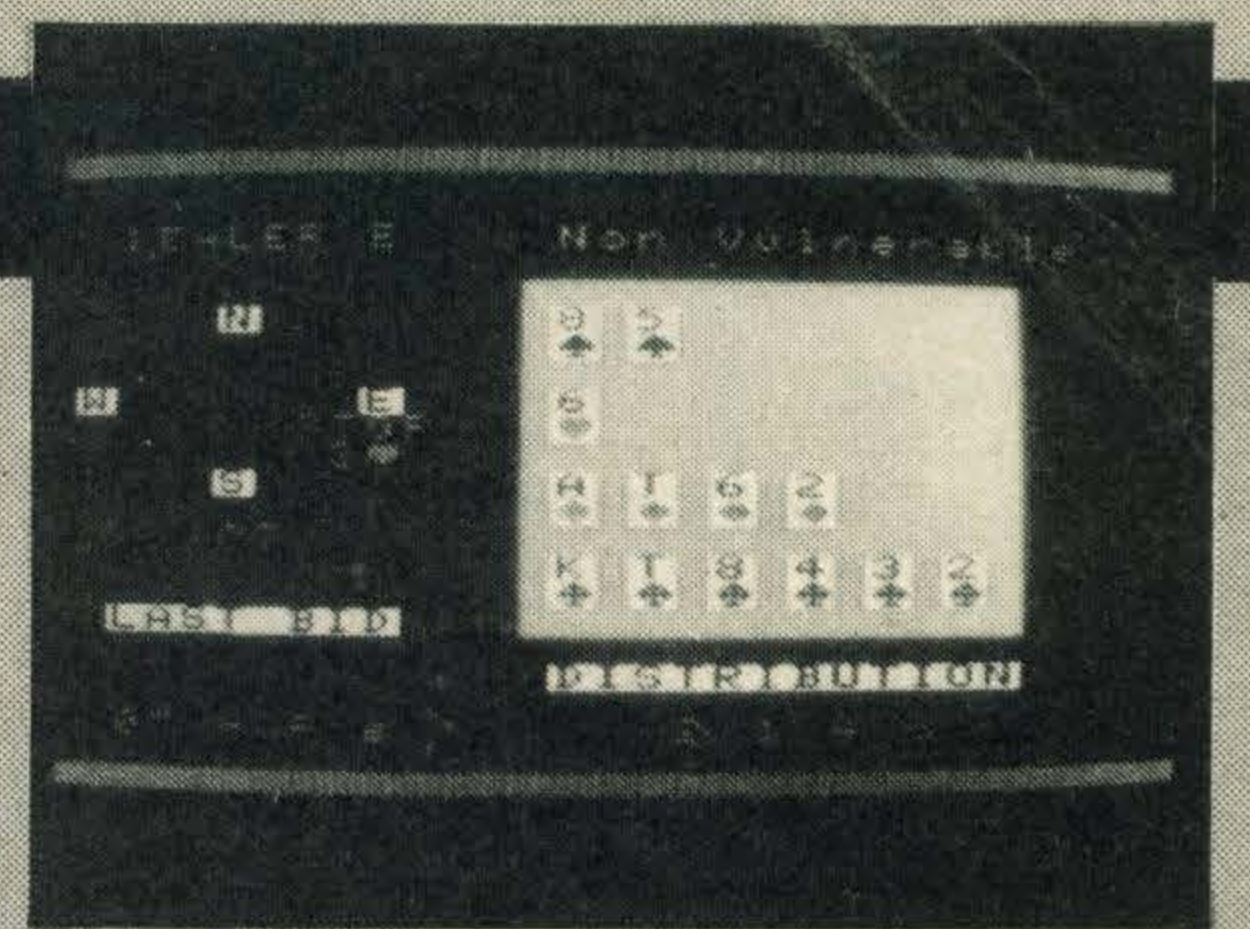
Simple but adequate is the best way to describe the graphics, and the only sound is the usual key-press click to let you know that something has registered.

The instructions are detailed enough, and inform the knowledgeable that the hand is bid according to the Acol system, with Blackwood, Stayman and strong two-club conventions included. Take-out doubles are also supported, according to the blurb enclosed with the cassette.

Though *Bridge* is adequate as it stands, it could really do a lot more. While you can play the same hand over again if you wish, you can't set up a hand to see how it would play — dealing the cards is always totally at random.

If you want to let the computer make a bid or play a card for you, pressing the space bar will get it to do that. But, it's noticeable that if you allow the computer to bid all four hands and then play every card, the contracts it makes sometimes prove to be disastrous. Somehow one doesn't expect this of an all-knowing computer!

Bridge is a little on the pricey side for what it does, but if you need an ever-willing partner who never argues with you, or are keen to try to improve your play in the privacy of your own home, then at least it's a well-designed program.



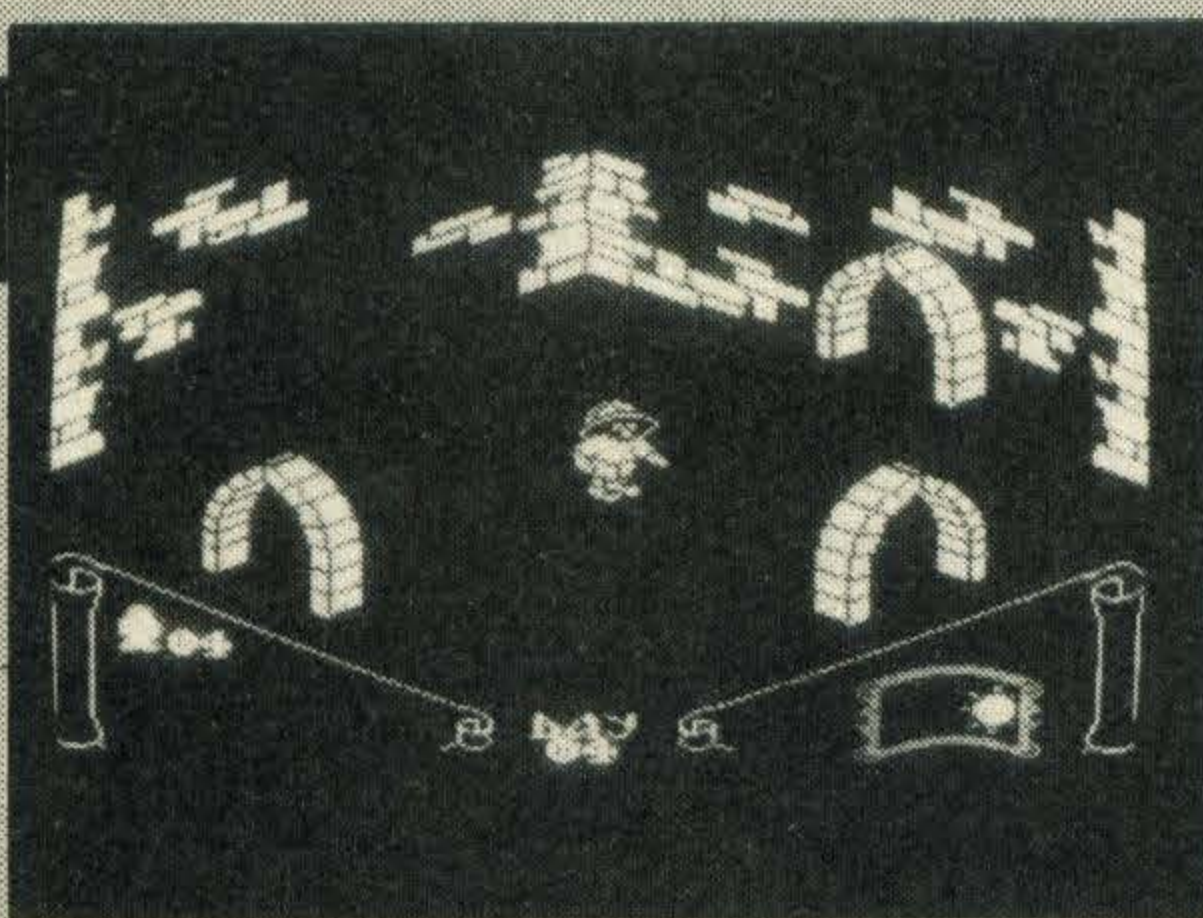
SUPPLIER: Kuma
(07357) 4335
TYPE: Simulation
FORMAT: Cassette

GRAPHICS ★★

SOUND N/A

VALUE ★★

VERDICT ★★



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

KNIGHT LORE

£9.95

If you enjoyed playing Virgin's *Sorcery* then we can guarantee that Ultimate's *Knight Lore* will also appeal.

The game is very similar in design to *Sorcery* but the graphics are better as the software generates and maintains a realistic three-dimensional background.

You are cast as a humble mortal who turns into a werewolf when the sun goes down. The only way to solve your plight is by seeking out the wizard Melkhior who's hidden away in the depths of the castle *Knight Lore*.

Your quest has to be completed within 40 days and 40 nights otherwise — like the *Incredible Hulk* — you are doomed to live a double life.

It sounds easy doesn't it, but like *Sorcery* it requires a lot of initiative and careful planning.

Inside the castle you are confronted by dimly lit torches that light up the stone walls. Many of the tunnels and rooms are filled not only with various treasures but also hideous goblins and crystalline Merkyls encapsulated by the wizard, to be freed upon his death.

But their demise isn't your problem, as you have to manoeuvre your way through the labyrinth of traps and tests that Melkhior has set to keep out all but the most

persistent of unwanted guests who seek an audience with him.

Scattered throughout the castle are various objects such as shoes, potion bottles, crystal balls and diamonds which need to be collected to go into the wizard's cauldron. In return he will give you the magic potion that will stop you turning into the dreaded werewolf.

Many of the objects are easy to pick up, whereas others are tucked away in places. Some even merge into the murky background, so you'll need to keep your eyes peeled.

You'll also need to watch out for ghosts that look like blobs of wobbly jelly; bump into one of these and you lose one of your four lives.

Throughout the game a counter at the bottom of the screen keeps you informed of how many days have passed and how many you have left. To the right of the counter is a window through which you can see the sun set and rise. The graphics are excellent, so much so that as in real life, you can hide behind walls or tuck yourself into dark corners. The sound, although not brilliant, adds to the atmosphere.

At £9.95 the game is fairly highly-priced but it's the sort of title that rapidly becomes addictive.

GRAPHICS ★★

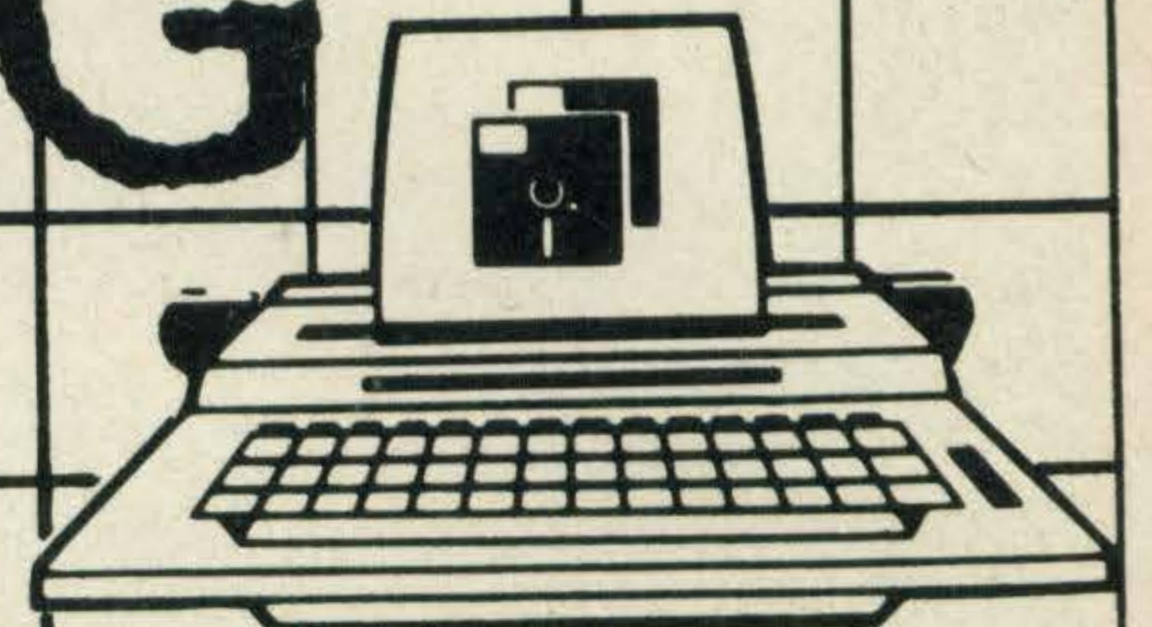
SOUND ★

VALUE ★★

VERDICT ★★

GET TYPING

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



LANDER by M A Shelton

Landing space craft is a firm favourite with many of *MSX Computing's* readers who send in listings. This one appealed to us particularly because it contains some very interesting programming techniques. The space craft is very detailed and also shows thruster rockets in all directions.

The author includes full instructions and guarantees a surprise in store when your fuel runs out!

```

10 REM *** LANDER ***
20 REM *** BY M. A. SHELTON ***
40 REM *** SET SCREEN AND KEYS ***
50 X=10:Y=10:P=10:SC=7:SP=10:TN=1:FL=
15:FF=0:PS=0
60 GOSUB 2030
70 FORI=1TO80:A=INT(RND(1)*225):B=INT
(RND(1)*196):C=INT(RND(1)*15)
80 IF POINT(A,B)=8 OR POINT(A,B)=12 O
R POINT(A,B)=13 OR POINT(A,B)=10 THEN
I=I-1:NEXT
90 IF C=8 OR C=10 OR C=12 OR C=13 THE
N I=I-1:NEXT
100 PSET(A,B),C:NEXT
110 STRIG(SI) ON
120 FORI=1TO32:READA:R$=R$+CHR$(A):NE
XTI:SPRITE$(0)=R$
130 SPRITE$(1)=STRING$(6,CHR$(255))
140 SPRITE$(2)=CHR$(28)+CHR$(62)+CHR$
(65)+CHR$(129)+CHR$(129)+CHR$(65)+CHR
$(62)+CHR$(28)
150 SPRITE$(3)=CHR$(0)+CHR$(0)+CHR$(6
2)+CHR$(126)+CHR$(126)+CHR$(62)+CHR$(
0)+CHR$(0)
160 FORI=1TO8:READA:C$=C$+CHR$(A):NEX
TI:SPRITE$(4)=C$
170 FORI=1TO8:READA:D$=D$+CHR$(A):NEX
TI:SPRITE$(5)=D$
180 FORI=1TO8:READA:E$=E$+CHR$(A):NEX
TI:SPRITE$(6)=E$
190 FORI=1TO8:READA:F$=F$+CHR$(A):NEX
TI:SPRITE$(7)=F$
200 FORI=1TO8:READA:G$=G$+CHR$(A):NEX
TI:SPRITE$(8)=G$
210 FORI=1TO5:READA:H$=H$+CHR$(A):NEX
TI:SPRITE$(10)=H$
220 FORI=1TO5:READA:J$=J$+CHR$(A):NEX
TI:SPRITE$(9)=J$

```

```

230 FORI=1TO5:READA:K$=K$+CHR$(A):NEX
TI:SPRITE$(11)=K$
240 FORI=1TO5:READA:M$=M$+CHR$(A):NEX
TI:SPRITE$(12)=M$
250 SPRITE$(14)=STRING$(2,CHR$(255))
260 FORI=1TO32:READA:AA$=AA$+CHR$(A):
NEXT:SPRITE$(16)=AA$
270 FORI=1TO8:READA:BB$=BB$+CHR$(A):N
EXT:SPRITE$(17)=BB$
280 FORI=1TO8:READA:CC$=CC$+CHR$(A):N
EXT:SPRITE$(18)=CC$
290 FORI=1TO8:READA:DD$=DD$+CHR$(A):N
EXT:SPRITE$(19)=DD$
300 FORI=1TO8:READA:EE$=EE$+CHR$(A):N
EXT:SPRITE$(20)=EE$
310 FORI=1TO8:READA:FF$=FF$+CHR$(A):N
EXT:SPRITE$(21)=FF$
320 LINE(240,5)-(248,185),13,BF
330 LINE(231,5)-(239,185),4,BF
340 LINE(231,81)-(239,81),1
350 LINE(231,108)-(239,108),1
360 REM *** LANDING PADS ***
370 COLOR8,1,1
380 LINE(30,50)-(70,50)
390 LINE(70,50)-(80,140)
400 LINE(80,140)-(50,140)
410 LINE(50,140)-(50,180)
420 LINE(50,180)-(80,180)
430 LINE(80,180)-(160,100)
440 LINE(160,100)-(160,130)
450 LINE(160,130)-(190,130)
460 LINE(190,130)-(190,170)
470 LINE(190,170)-(210,170)
480 LINE(210,170)-(210,196)
490 LINE(30,50)-(30,200)
500 PAINT(200,190),8
510 LINE(30,50)-(70,47),12,BF
520 LINE(50,180)-(79,177),13,BF
530 LINE(160,130)-(190,127),10,BF
540 ON STRIG GOSUB 970
550 OPEN "grp:" FOR OUTPUT AS #1:PRES
ET(219,2):PRINT#1,"-"
560 PRESET(210,75):PRINT#1,"SL"
570 PRESET(210,102):PRINT#1,"FL"
580 PRESET(219,180):PRINT#1,"+"
590 LINE(30,184)-(105,192),12,BF
600 LINE(105,184)-(180,192),1,BF
610 LINE(180,184)-(210,192),12,BF
620 COLOR15:PRESET(40,184),15:PRINT#1
,"Score = "
630 SOUND6,20:SOUND8,8:SOUND7,3
640 PRESET(130,185):PRINT#1,"000"
650 D=STICK(SI)
660 ON D GOSUB 870,880,890,900,910,92
0,930,940

```



```

670 PUT SPRITE0,(X,Y),10
680 IF POINT(X+2,Y)=8 OR POINT(X+17,Y
)=8 OR POINT(X,Y+16)=8 OR POINT(X+16,
Y+16)=8 THEN 1520
690 IF POINT(X,Y+16)=10 OR POINT(X+16
,Y+16)=10 THEN GOTO 1780
700 IF POINT(X,Y+16)=12 OR POINT(X+16
,Y+16)=12 THEN GOTO 1780
710 IF POINT(X,Y+16)=13 OR POINT(X+16
,Y+16)=13 THEN GOTO 1780
720 PUT SPRITE1,(241,P),SC
730 PUT SPRITE14,(231,SP),6
740 IF Y>170 THEN:Y=Y-1:GOTO 670
750 IF Y<10 THEN Y=Y+1:GOTO 670
760 IF X>180 THEN X=X-1::GOTO 670
770 IF X<10 THEN X=10:X=X+1:GOTO 670
780 IF P > 60 THEN SC= 12
790 IF P > 120 THEN SC= 6
800 IF P > 180 THEN PRESET(80,70):COL
OR13:PRINT#1," Out Of Fuel":GOSUB 267
0:COLOR10,12,12:CLS:SCREEN0:RUN
810 IF SP<6 OR SP >180 THEN SP=10
820 Y=Y+1:X=X+1:P=P+.03:SP=SP+5
830 IF SP> 180 THEN SP=10
840 GOTO 650
850 END
860 REM *** KEY SUBROUTINES ***
870 Y=Y-2:P=P+.3:SP=SP-6:GOTO 1120
880 Y=Y-2:P=P+.5:X=X+1:SP=SP-7:GOTO 1
160
890 X=X+1:P=P+.3:SP=SP-6:GOTO 1100
900 Y=Y+2:P=P+.5:X=X+1:SP=SP-7:GOTO 1
280
910 Y=Y+2:P=P+.3:SP=SP+5:RETURN 670
920 X=X-2:P=P+.5:Y=Y+1:SP=SP-7:GOTO 1
240
930 X=X-2:P=P+.3:SP=SP-6:GOTO 1080
940 X=X-2:P=P+.5:Y=Y-2:SP=SP-7:GOTO 1
200
950 END
960 REM *** THRUST ROUTINE ***
970 P=P+3:Y=Y-4:SP=SP-20
980 IF Y < 5 THEN Y=Y+4
990 IF P>60 THEN SC=12
1000 IF P>120 THEN SC=6
1010 IF P>180 THEN RETURN 800
1020 PUT SPRITE1,(241,P),SC
1030 PUT SPRITE6,(X+3,Y+18),4:PUT SPR
ITE 7,(X+3,Y+18),8:PUT SPRITE 8,(X+3,
Y+18),10
1040 GOSUB2810
1050 PUT SPRITE6,(X+3,Y+18),1:PUT SPR
ITE 7,(X+3,Y+18),1:PUT SPRITE 8,(X+3,
Y+18),1
1060 SOUND8,8:RETURN 670
1070 REM *** SPRITE FLAMES ***
1080 PUT SPRITE2,(X+16,Y+3),4:PUT SPR
ITE3,(X+16,Y+3),6:GOSUB2810:PUT SPRIT
E2,(X+16,Y+3),1:PUT SPRITE 3,(X+16,Y+
3),1
1090 SOUND8,8:RETURN 670
1100 PUT SPRITE4,(X-10,Y+3),4:PUT SPR
ITE5,(X-10,Y+3),6:GOSUB2810:PUT SPRIT
E4,(X-10,Y+3),1:PUT SPRITE 5,(X-10,Y+
3),1
1110 SOUND8,8:RETURN 670
1120 PUT SPRITE6,(X+3,Y+18),4:PUT SPR

```

```

ITE 7,(X+3,Y+18),8:PUT SPRITE 8,(X+3,
Y+18),10
1130 GOSUB2810
1140 PUT SPRITE6,(X+3,Y+18),1:PUT SPR
ITE 7,(X+3,Y+18),1:PUT SPRITE 8,(X+3,
Y+18),1
1150 SOUND8,8:RETURN 670
1160 PUT SPRITE9,(X-9,Y+10),4
1170 GOSUB2810
1180 PUT SPRITE9,(X-9,Y+10),1
1190 SOUND8,8:RETURN 670
1200 PUT SPRITE 10,(X+10,Y+7),4
1210 GOSUB2810
1220 PUT SPRITE 10,(X+10,Y+7),1
1230 SOUND8,8:RETURN 670
1240 PUT SPRITE11,(X+12,Y-2),4
1250 GOSUB2810
1260 PUT SPRITE11,(X+12,Y-2),1
1270 SOUND8,8:RETURN 670
1280 PUT SPRITE12,(X-3,Y-4) 4
1290 GOSUB2810
1300 PUT SPRITE12,(X-3,Y-4),1
1310 SOUND8,8:RETURN 670
1320 END
1330 DATA0,0,15,31,49,49,49,31,15,31,
63,35,39,47,32,248,120,64,240,248,140
,140,140,248,240,248,252,196,228,244,
4,31
1340 DATA0,60,194,1,1,194,60,0
1350 DATA0,0,60,254,254,60,0,0
1360 DATA129,129,129,65,34,20,8,0,102
,102,102,54,28,8,0,0,24,24,24,8,0,0,0
,0
1370 DATA56,28,14,7,3
1380 DATA3,7,14,28,56
1390 DATA3,7,14,28,56
1400 DATA56,28,14,7,3
1410 DATA0,1,7,24,48,48,19,6
1420 DATA52,20,38,54,74,76,40,236
1430 DATA192,239,255,0,213,255,16,0
1440 DATA220,188,194,103,96,163,115,2
6
1450 DATA135,58,121,8,19,28,28,8
1460 DATA26,204,240,26,199,32,31,0
1470 DATA44,54,34,227,135,3,226,60
1480 DATA34,70,104,76,36,50,66,100
1490 DATA0,240,254,6,3,67,243,19
1500 END
1510 REM *** EXPLOSION ROUTINE ***
1520 TN=TN+1:FL=FL+20:GOSUB2310
1530 IF TN > 3 THEN 1540
1540 SOUND0,0:SOUND1,5
1550 SOUND2,0:SOUND3,13
1560 SOUND4,255:SOUND5,15
1570 PUT SPRITE16,(X,Y),5
1580 PUT SPRITE17,(X,Y+16),5
1590 PUT SPRITE18,(X+8,Y+16),5
1600 PUT SPRITE19,(X+16,Y+16),5
1610 PUT SPRITE20,(X+16,Y+8),5
1620 PUT SPRITE21,(X+16,Y),5
1630 SOUND6,30:SOUND7,0
1640 SOUND8,16:SOUND9,16
1650 SOUND10,16:SOUND11,0
1660 SOUND12,5:SOUND13,0
1670 FORX=0TO30
1680 SOUND12,56:SOUND13,0
1690 PUT SPRITE0,(X,Y),1

```


LISTINGS

```
1700 FORT=1TO2000:NEXTT:PUT SPRITE15,
(X,208)
1710 IF TN>3 THEN SCREEN0:COLOR15,1,1
:CLS:RUN
1720 IFP>179 AND SC=6 THEN PUT SPRITE
14,(241,P),SC:FORT=1TO100:NEXTT:COLOR
15,1,1:CLS:RUN
1730 X=10:Y=10:P=P+FL/4
1740 IF P> 179 THEN RUN
1750 GOTO 650
1760 REM *** Landing Routine ***
1770 REM *** Check Fuel ***
1780 IF P > 180 THEN COLOR15,1,1:RUN
1790 REM *** Check Speed ***
1800 IF SP <81 OR SP> 105 THEN 1520
1810 REM *** Check Pad's position ***
1820 IF POINT(X,Y+16)=10 AND POINT(X+
16,Y+16)=10 THEN FF=30:GOTO 1870
1830 IF POINT(X,Y+16)=12 AND POINT(X+
16,Y+16)=12 THEN FF=15:GOTO 1870
1840 IF POINT(X,Y+16)=13 AND POINT(X+
16,Y+16)=13 THEN FF=45:GOTO 1870
1850 REM *** Score Fuel Points ***
1860 GOTO 1520
1870 NF=(104-SP)*FF
1880 GOSUB 2520:PS=PS+NF/2
1890 PRESET(120,185):PRINT#1,INT(PS)
1900 IF NF<50 THEN NF= 25
1910 FORF= 1 TO INT(NF/10)
1920 IFP < 180 THEN SC=6
1930 IFP < 120 THEN SC=12
1940 IFP < 60 THEN SC=7
1950 PUT SPRITE1,(241,P-1),SC:P=P-1
1960 IF P <= 12 THEN P=10:SP=10:X=10:
Y=10:GOTO 650
1970 BEEP:NEXTF
1980 X=10:Y=10:SP=10
1990 REM *** Check Fuel ***
2000 PUT SPRITE14,(231,SP),6
2010 GOTO 650
2020 REM *** Instructions ***
2030 COLOR10,12,12:CLS
2040 KEY OFF
2050 LOCATE9,6:N=7
2060 PRINT"*****"
2070 FORI=1TO10
2080 LOCATE9,N:N=N+1
2090 PRINT"*"
2100 NEXT
2110 LOCATE9,N:PRINT"*****"
****"
2120 LOCATE14,9:PRINT"Moon Lander"
2130 LOCATE12,11:PRINT"Copy-Right 198
5"
2140 LOCATE12,13:PRINT"By M.A.Shelton
"
2150 LOCATE8,21:PRINT"Press Any Key T
o Start"
2160 A$=INKEY$
2170 IF A$="" THEN 2160
2180 CLS
2190 LOCATE 10,9:PRINT"1.= Cursor Key
pad"
2200 LOCATE 10,11:PRINT"2.= Joystick"
2210 LOCATE10,13:PRINT"3.= Instructio
ns"
2220 LOCATE 10,15:PRINT"Space Bar.= T
```

```
hrust"
2230 B$=INKEY$
2240 IF B$ = "1" THEN 2280
2250 IF B$ = "2" THEN 2290
2260 IF B$ = "3" THEN 2340
<> "3" THEN 2230
2280 SI=VAL(B$)-1:GOTO 2300
2290 SI=VAL(B$)-1:GOTO 2300
2300 SCREEN2,2:COLOR15,1,1:CLS:RESTOR
E:RETURN
2310 PUT SPRITE15,(X,255)
2320 RETURN
2330 REM *** Instructions ***
2340 COLOR15,3,3:CLS
2350 PRINT" You are the Commander of
a Lunar Module attempting a landin
g on the surface of an unknown Plan
et.":PRINT
2360 PRINT" Using the cursor keys or
Joystick, land the lunar module on t
he colouredlanding pads.":PRINT
2370 PRINT" Fuel is indicated by the
far right guage, and landing speed b
y the left indicator. Running out of
fuel will result in the destruction
of your lunar Module.":PRINT
2380 PRINT" SL, indicates a slow, saf
e landing scoring maximum fuel bonus
points. FL, indicates a fast landing
scoring minimum fuel bonus points.
Landing anywhere outside these zon
es also results in the destruction
of the lunar module."
2390 PRINT
2400 PRINT" Press any Key to Cont
inue."
2410 AB$=INKEY$
2420 IF AB$="" THEN 2410
2430 CLS
2440 PRINT" The Lunar Module must lan
d with bothfeet on the pad, and each
unsuccessful landing is pun
ished by a further loss of fuel.":PRI
NT
2450 PRINT" The spacebar provides ext
ra thrust, but burns fuel very quickl
y. You havethree Lunar Modules per ga
me, score as many points as possible
.":PRINT:PRINT:PRINT
2460 PRINT" Good Luck!!"
2470 PRINT:PRINT:PRINT:PRINT"
Press Any key To Play"
2480 AC$=INKEY$
2490 IF AC$="" THEN 2480
2500 COLOR10,12,12:GOTO 2180
2510 REM *** Erase Score ***
2520 FORI=0TO7
2530 D=PEEK(&H1BBF+(32*8)+I)
2540 VPOKE6008+I,D
2550 VPOKE 6016+I,D
2560 VPOKE 6024+I,D
2570 VPOKE 6032+I,D
2580 VPOKE 6040+I,D
2590 VPOKE 6048+I,D
2600 VPOKE 6056+I,D
2610 VPOKE 6064+I,D
```



```

2620 VPOKE 6072+I,D
2630 VPOKE 6080+I,D
2640 NEXT
2650 RETURN
2660 REM *** Move Ship No fuel ***
2670 FORI=6TO13
2680 READJ
2690 SOUNDI,J
2700 NEXTI
2710 DATA49,85,16,19,16,236,6,8
2720 AA=INT(RND(1)*10)
2730 IF AA>5 THEN AA=-AA
    
```

```

2740 PUT SPRITE0,(X+AA,Y)
2750 IF POINT(X+2,Y)=8 OR POINT(X+17,
Y)=8 OR POINT(X,Y+16)=8 OR POINT(X+16
,Y+16)=8 THEN SOUND8,0:SOUND9,0:SOUND
10,0:RETURN
2760 Y=Y+10
2770 IF Y>200 THEN RETURN
2780 FORT=1TO200:NEXTT
2790 GOTO 2720
2800 REM *** Burst Routine ***
2810 SOUND6,20 :SOUND8,13:SOUND7,3
2820 RETURN
    
```

EGBERT

by Reg Maudsley

As you've probably already realised, this is a version of the famous *Qbert*, and rather a good one at that. The task is to guide Egbert around the screen using either the cursor keys or a joystick. Egbert is found hanging around a pyramid-type maze. There are, in fact, a total of six different mazes. All you have to do is make Egbert hop around the maze, putting a dot on each square until all the squares are dotted. When that happens you can move on to the next, harder maze.

But things don't all go your way. There is something else in the maze with you—a giant and particularly vicious marble. If this so much as touches Egbert he loses one of his three lives.

Main program variables

HI%	High score
SC%	Score
LE%	Level
A%	X co-ordinate of step
B%	Y co-ordinate of step
Q%	Stick
NU%	Number of steps
LA%	Level
LI%	Lives
FL	Flag (level)
CO%	Number of steps jumped on
D%	Direction of Egbert
TI%	Time interval
FA	Movement flag
X%	X axis of Egbert
Y%	Y axis of Egbert
O%	X axis of ball
P%	Y axis of ball

Program structure

10-130	Initialisation
140-320	Drawing of Egbert's sign
330-380	Printing titles
390-680	Drawing levels on introduction
690-790	Joystick/keyboard selection
800-1110	Screen definition
1120-1140	Printing spare men
1150-1220	Level definition
1230-1290	Interval and sprite trapping
1300-1350	Main loop
1360-1400	Egbert movement
1410-1430	Step filling
1440-1500	Ball movement
1510-1620	Completion of level
1630-1750	Dying routine
1760-1890	End routine
1900-2130	Sprite and maze data

```

10 REM *****
20 REM * EGG BERT *
30 REM * BY *
40 REM * ReaLM Soft *
50 REM *****
60 COLOR11,1,1
70 SCREEN2,2,0
80 OPEN"GRP:"AS#1
90 HI%=15
100 GOSUB1890
110 FL=1:SC%=0:LE%=1
120 PRESET(32,16)
130 COLOR6
140 DRAW"S4R24D8L16D8R16D8L16D8R24U32
R24D16L8U8L8D24R8U8R16U24R24D8R8U8R24
D8L16D8R16D8L16D8R24U32"
150 DRAW"R24D8R8D16L8D8R24U24L16U8R40
D8L16D32L32U8L8U8L8D16L40U8L8D8L24U8L
8D8L56U40"
160 PSET(120,24):DRAW"L16D8R16U8"
170 PSET(120,40):DRAW"L16D8R16U8"
180 PSET(128,32):DRAW"L8D8R8U8"
190 PSET(168,24):DRAW"R16D8L16U8"
200 COLOR6:PAINT(36,27)
210 PAINT(196,20)
220 PAINT(135,27)
230 PRESET(36,21):COLOR11
240 DRAW"R24D8L16D8R16D8L16D8R24U32R2
4D16L8U8L8D24R8U8R16U24R24D8R8U8R24D8
L16D8R16D8L16D8R24U32"
250 DRAW"R24D8R8D16L8D8R24U24L16U8R40
D8L16D32L32U8L8U8L8D16L40U8L8D8L24U8L
8D8L56U40"
260 PSET(124,28):DRAW"L16D8R16U8"
270 PSET(124,44):DRAW"L16D8R16U8"
280 PSET(132,36):DRAW"L8D8R8U8"
290 PSET(172,28):DRAW"R16D8L16U8"
300 COLOR11:PAINT(38,25)
310 PAINT(198,25)
320 PAINT(138,25)
330 COLOR7
340 PRESET(114,70):PRINT#1,"BY"
350 PRESET(84,80):PRINT#1,"ReaLM Soft
"
360 COLOR11
370 PRESET(60,100):PRINT#1,"SPACE = K
EYBOARD"
380 PRESET(60,110):PRINT#1,"FIRE = J
OYSTICK"
390 RESTORE2020:FORN%=1TO27
400 READA%,B%
410 PSET((A%/5.5)+5,(B%/9.5)+150),11
420 NEXTN%
430 PRESET(26,140):PRINT#1,"1"
    
```


LISTINGS

```
440 FORN%=1TO20
450 READA%,B%
460 PSET((A%/5.5)+45,(B%/9.5)+150),11
470 NEXTN%
480 PRESET(65,140):PRINT#1,"2"
490 FORN%=1TO22
500 READA%,B%
510 PSET((A%/5.5)+85,(B%/9.5)+150),11
520 NEXTN%
530 PRESET(106,140):PRINT#1,"3"
540 FORN%=1TO21
550 READA%,B%
560 PSET((A%/5.5)+125,(B%/9.5)+150),1
1
570 NEXTN%
580 PRESET(146,140):PRINT#1,"4"
590 FORN%=1TO22
600 READA%,B%
610 PSET((A%/5.5)+165,(B%/9.5)+150),1
1
620 NEXTN%
630 PRESET(186,140):PRINT#1,"5"
640 FORN%=1TO23
650 READA%,B%
660 PSET((A%/5.5)+205,(B%/9.5)+150),1
1
670 NEXTN%
680 PRESET(226,140):PRINT#1,"6"
690 IFSTRIG(0)=-1THEN720
700 IFSTRIG(1)=-1THEN760
710 GOTO690
720 PLAY"L32C"
730 Q%=0
740 CLS
750 GOTO800
760 PLAY"L32C"
770 Q%=1
780 CLS
790 GOTO800
800 NU%=27:RESTORE2020
810 CLS
820 FORN=0TO70:PSET(RND(1)*255,RND(1)
*190),14:NEXTN
830 FORN%=1TONU%
840 READA%,B%
850 LINE(A%,B%)-(A%+8,B%+4),11
860 LINE(A%+8,B%+4)-(A%,B%+8),11
870 LINE(A%,B%+8)-(A%-8,B%+4),11
880 LINE(A%-8,B%+4)-(A%,B%),11
890 PAINT(A%,B%+2),11
900 LINE(A%+1,B%+11)-(A%+1,B%+20),7
910 LINE(A%+1,B%+20)-(A%+8,B%+16),7
920 LINE(A%+8,B%+16)-(A%+8,B%+7),7
930 LINE(A%+8,B%+7)-(A%+1,B%+11),7
940 PAINT(A%+2,B%+11),7
950 LINE(A%-8,B%+7)-(A%-8,B%+16),7
960 LINE(A%-8,B%+16)-(A%-1,B%+20),7
970 LINE(A%-1,B%+20)-(A%-1,B%+11),7
980 LINE(A%-1,B%+11)-(A%-8,B%+7),7
990 PAINT(A%-7,B%+9),7
1000 NEXTN%
1010 COLOR7
1020 PRESET(38,0):PRINT#1,"SCORE"
1030 PRESET(180,0):PRINT#1,"LEVEL"
1040 PRESET(88,180):PRINT#1,"HIGH SC
ORE"
1050 COLOR11
1060 PRESET(54,10):PRINT#1,SC%
```

```
1070 PRESET(196,10):PRINT#1,LE%
1080 PRESET(112,170):PRINT#1,HI%
1090 IFFL=0THENRETURNELSEFL=0
1100 PUTSPRITE2,(15,30),4,1
1110 PUTSPRITE3,(35,30),4,1
1120 LA%=1:LI%=4:NU%=27
1130 SOUND7,255:SOUND8,10:SOUND0,8
1140 CO%=0
1150 IFLA%=2THENRESTORE2040:NU%=20:GO
SUB810
1160 IFLA%=3THENRESTORE2060:NU%=22:GO
SUB810
1170 IFLA%=4THENRESTORE2080:NU%=21:GO
SUB810
1180 IFLA%=5THENRESTORE2100:NU%=22:GO
SUB810
1190 IFLA%=6THENRESTORE2120:NU%=23:GO
SUB810
1200 IFLA%<5THENX%=120:Y%=134:O%=120:
P%=20
1210 IFLA%=5THENX%=131:Y%=115:O%=131:
P%=39
1220 IFLA%=6THENX%=142:Y%=115:O%=120:
P%=77
1230 PUTSPRITE5,(0%,P%-1),13,5
1240 D%=1
1250 TI%=55-(LE%*5)
1260 IFTI%<30THENTI%=30
1270 ONINTERVAL=TI%GOSUB1440
1280 ONSPRITEGOSUB1620
1290 INTERVALON:SPRITEON
1300 PUTSPRITELI%,(X%,Y%),4,D%
1310 IFPOINT(X%+12,Y%+14)=1THEN1620
1320 IFCO%=NU%THEN1510
1330 IFSTICK(Q%)<>0ANDFA=0THEN1360
1340 IFSTICK(Q%)=0THENFA=0
1350 GOTO1300
1360 IFSTICK(Q%)=2THENX%=X%+11:Y%=Y%-
19:D%=2:GOTO1410
1370 IFSTICK(Q%)=4THENX%=X%+11:Y%=Y%+
19:D%=1:GOTO1410
1380 IFSTICK(Q%)=6THENX%=X%-11:Y%=Y%+
19:D%=4:GOTO1410
1390 IFSTICK(Q%)=8THENX%=X%-11:Y%=Y%-
19:D%=3:GOTO1410
1400 GOTO1300
1410 INTERVALOFF:IFPOINT(X%+10,Y%+15)
=11THENCO%=CO%+1:COLOR1:PRESET(54,10)
:PRINT#1,SC%:SC%=SC%+1:COLOR11:PRESET
(54,10):PRINT#1,SC%
1420 PSET(X%+6,Y%+12),11:COLOR1:PRINT
#1,CHR$(249):INTERVALON
1430 FA=1:GOTO1300
1440 IFO%<X%ANDP%<Y%ANDPOINT(O%+19,P%
+31)=11THENSOUND7,254:O%=O%+11:P%=P%+
19:GOTO1480
1450 IFO%<X%ANDP%>Y%ANDPOINT(O%+19,P%
-7)=11THENSOUND7,254:O%=O%+11:P%=P%-1
9:GOTO1480
1460 IFO%>X%ANDP%>Y%ANDPOINT(O%-3,P%-
7)=11THENSOUND7,254:O%=O%-11:P%=P%-19
:GOTO1480
1470 IFO%>X%ANDP%<Y%ANDPOINT(O%-3,P%+
31)=11THENSOUND7,254:O%=O%-11:P%=P%+1
9
1480 SOUND7,255
1490 PUTSPRITE5,(0%,P%-1),13,5
1500 RETURN
1510 FORN=0TO100:NEXTN
```



```

1520 INTERVALOFF:SPRITEOFF:M=.02:SOUN
D9,10:SOUND7,253:N=Y%
1530 PUTSPRITELI%,(X%,N),4,D%
1540 M=M+.15:N=N-M
1550 IFN<-30THEN1570
1560 GOTO1530
1570 SOUND7,255
1580 LE%=LE%+1:LA%=LA%+1
1590 PUTSPRITE5,(50,120),1,5
1600 IFLA%>6THENLA%=1:GOSUB800
1610 GOTO1140
1620 FORN=0TO100:NEXTN
1630 INTERVALOFF:SPRITEOFF:M=.02:SOUN
D9,10:SOUND7,253:N=Y%
1640 PUTSPRITELI%,(X%,N),4,D%
1650 M=M+.15:N=N+M
1660 SOUND2,N+20
1670 IFN>228THEN1690
1680 GOTO1640
1690 SOUND7,255
1700 PUTSPRITE5,(120,9),13,5
1710 PUTSPRITELI%,(LI%*20,170),1,D%
1720 LI%=LI%-1
1730 IFLI%=1THEN1750
1740 GOTO1200
1750 SCREEN3:SOUND9,10:SOUND7,253:INT
ERVALOFF:SPRITEOFF
1760 FORN=1TO2
1770 FORM=15TO1STEP-1
1780 SOUND3,M*17
1790 COLORM
1800 PRESET(85,40):PRINT#1,"THE"
1810 PRESET(85,100):PRINT#1,"END"
1820 NEXTM
1830 NEXTN
1840 SOUND7,255
1850 SCREEN2,2,0
1860 IFSC%>HI%THENHI%=SC%
1870 FORN=1TO6:SOUNDN,0:NEXTN
1880 GOTO100
1890 RESTORE1970:FORN=1TO5
1900 FORM=1TO32
1910 READA$
1920 S$=S$+CHR$(VAL(A$))
1930 NEXTM
1940 SPRITE$(N)=S$:S$=""
1950 NEXTN
1960 RETURN
1970 DATA7,15,13,15,15,13,14,15,7,2,2
,2,2,2,1,0,224,240,176,240,240,176,11
2,240,224,64,64,64,64,64,32,144
1980 DATA7,15,13,15,15,13,14,15,7,2,2
,2,3,2,0,0,224,240,176,240,240,176,11
2,240,224,64,64,208,96,64,0,0
1990 DATA7,15,13,15,15,13,14,15,7,2,2
,11,6,2,0,0,224,240,176,240,240,176,1
12,240,224,64,64,64,192,64,0,0
2000 DATA7,15,13,15,15,13,14,15,7,2,2
,2,2,2,4,9,224,240,176,240,240,176,11
2,240,224,64,64,64,64,64,128,0
2010 DATA7,31,51,99,71,207,255,255,25
5,255,255,127,127,63,31,7,224,248,252
,254,254,255,255,255,255,255,255,254,
254,252,248,224
2020 DATA128,30,117,49,139,49,106,68,
128,68,150,68,95,87,117,87,139,87,161

```

```

,87,84,106,106,106,150,106,172,106
2030 DATA73,125,95,125,117,125,139,12
5,161,125,183,125,62,144,84,144,106,1
44,128,144,150,144,172,144,194,144
2040 DATA128,30,117,49,139,49,106,68,
150,68,95,87,161,87,84,106,172,106,73
,125,95,125,117,125,139,125
2050 DATA161,125,183,125,84,144,106,1
44,128,144,150,144,172,144
2060 DATA128,30,117,49,139,49,106,68,
150,68,95,87,161,87,84,106,172,106,73
,125,95,125,117,125,139,125
2070 DATA161,125,183,125,62,144,84,14
4,106,144,128,144,150,144,172,144,194
,144
2080 DATA128,30,117,49,139,49,84,68,1
06,68,150,68,172,68,73,87,95,87,161,8
7,183,87,84,106,106,106
2090 DATA128,106,150,106,172,106,95,1
25,117,125,139,125,161,125,128,144
2100 DATA117,11,161,11,84,30,106,30,1
28,30,150,30,172,30,194,30,95,49,139,
49,183,49,106,68,128,68,150,68,172,68
2110 DATA117,87,161,87,128,106,150,10
6,139,125,128,144,150,144
2120 DATA95,30,161,30,84,49,106,49,15
0,49,172,49,95,68,117,68,139,68,161,6
8,106,87,128,87,150,87,95,106,117,106
,139,106,161,106,84,125,106,125,150,1
25,172,125,95,144,161,144

```


LISTINGS

DEFUZE by Cliff Walters

Here you have to rush round the screen defusing bombs all over the place. It sounds simple but be warned. You have to defuse the bombs in the right order — and you mustn't cross your trail. Pretty tricky, especially on the higher levels.

```
10 REM ***** DEFUZE *****
20 REM * BY CLIFF WALTERS *
30 REM * FOR M.S.X COMPUTERS. *
40 REM *****
50 REM
60 SCREEN 1:KEYOFF:WIDTH 32
70 ON STOP GOSUB 1360:STOP ON
80 COLOR 12,15,15:VPOKE 8204,136
90 GOSUB 1020
100 DEFUSR0=&H156:DEFUSR1=&H90
110 DEFINT A-Z
120 DIM C(16),R(16)
130 GOSUB 790
140 N=RND(-TIME)
150 RESTORE 180
160 A$="":FOR X=1 TO 24:READ Y
170 A$=A$+CHR$(Y):NEXT X
180 DATA 240,241,242,8,8,8,10,243,32,
244,8,8,8,10,245,246,247,8,8,8,10,248
,232,250
190 GOSUB 1070
200 COLOR 1,11,11
210 CLS:U=USR0(0)
220 LOCATE 1,21:PRINT"ENTER SKILL LEV
EL (5 TO 9) ":
230 SK$=INPUT$(1):SK=VAL(SK$)
240 IF SK<5 OR SK>9 THEN 230
250 LOCATE 27,21:PRINT SK
260 FOR DL=1 TO 350:NEXT DL
270 CK=49:CL=255:LC=159:Z=6864
280 RESTORE 290:FOR I=1 TO 16:READ C(
I),R(I):NEXT I
290 DATA 13,11,4,4,21,17,7,16,9,5,23,
11,12,17,3,10,19,4,3,17,26,17,14,6,16
,16,8,11,25,5,18,10
300 CLS:COLOR 9,15,1
310 VPOKE 8193,127:VPOKE 8195,243
320 VPOKE 8218,127:VPOKE 8219,175
330 VPOKE 8220,31:VPOKE 8221,223
340 VPOKE 8222,95:VPOKE 8223,47
350 FOR I=0 TO 31:VPOKE 6176+I,28:VPO
KE 6880+I,28:NEXT I
360 FOR I=6208 TO 6880 STEP 32:VPOKE
I,28:VPOKE I+31,28:NEXT I
370 T=INT(RND(1)*(16-SK))
380 FOR RE=1 TO SK:T=T+1
390 LOCATE C(T),R(T):PRINT A$
400 LOCATE C(T)+1,R(T)+1:PRINTCHR$(48
+RE)
410 NEXT RE
420 ON INTERVAL=15 GOSUB 520:INTERVAL
ON
430 LOCATE 1,0:PRINT"THE NEXT BOMB TO
DEFUSE IS No";CHR$(CK)
440 V=VPEEK(Z):VPOKE Z,224:IF V=216 T
HEN 530
450 S=STICK(0):IF S=0 OR S=2 OR S=4 O
```

```
R S=6 OR S=8 THEN 450
460 W=32*(S=1)-(S=3)-32*(S=5)+(S=7):V
=VPEEK(Z+W)
470 VPOKE Z+W,224:VPOKE Z,216
480 Z=Z+W
490 IF V=232 THEN 610
500 IF V=28 OR V>215 THEN 530
510 FOR D=1 TO 15*SK:NEXT:GOTO 450
520 VPOKE 8198,CL:VPOKE 8199,CL:SWAP
CL,LC:RETURN
530 SOUND 0,0:SOUND 7,199:SOUND 8,16:
SOUND 12,25:SOUND 13,3
540 GOSUB 760:IF V=28 THEN 590 ELSE I
F V=216 THEN 600
550 LOCATE 5,5:PRINT"YOU RAN INTO A R
EACTOR"
560 LOCATE 12,7:PRINT"AND DIED"
570 LOCATE 2,21:PRINT"PRESS SPACE BAR
TO PLAY AGAIN"
580 IF NOT STRIG(0)THEN 580 ELSE CLS:
GOTO 200
590 LOCATE 6,5:PRINT"YOU RAN INTO THE
FENCE":GOTO 560
600 LOCATE 3,5:PRINT"YOU RAN INTO YOU
R OWN TRAIL":GOTO 560
610 IF VPEEK(Z-64)<>CK THEN 660
620 PLAY"T255L64O3C64O4C64O5C64O6C64"
630 VPOKE Z,32:VPOKE Z-64,15
640 CK=CK+1:IF CK=49+SK THEN VPOKE Z,
224:GOTO 690
650 FOR D=1 TO 350:NEXT D:Z=Z-128:GOT
O 430
660 GOSUB 710:FOR I=1 TO 20:COLOR ,RN
D(1)*14+2:FOR DL=1 TO 50:NEXT DL,I:GO
SUB 770
670 LOCATE 2,5:PRINT"YOU DEFUSED THEM
IN THE WRONG"
680 LOCATE 3,7:PRINT"ORDER AND THEY A
LL BLEW UP!":GOTO 570
690 GOSUB 760
700 LOCATE 1,5:PRINT"WELL DONE, YOU DE
FUSED THEM ALL":GOTO 570
710 FOR I=1 TO 20:VPOKE 8222,INT(RND(
1)*16)*16+15:FOR D=1 TO 50:NEXT D,I
720 FOR J=15 TO 0 STEP-1
730 SOUND 0,0:SOUND 1,J:SOUND 6,31:SO
UND 7,198
740 SOUND 8,16:SOUND 11,255:SOUND 12,
50:SOUND 13,3
750 NEXT J:RETURN
760 FOR DL=1 TO 1000:NEXT DL
770 INTERVAL OFF:S=USR1(0)
780 CLS:COLOR 1,11,11:RETURN
790 RESTORE 840
800 READ A:IF A=999 THEN 990
810 FOR B=0 TO 7:READ C
820 VPOKE A*8+B,C
830 NEXT B:GOTO 800
840 DATA 216,10,33,8,65,20,64,18,0
850 DATA 224,24,24,129,90,24,24,36,36
860 DATA 232,0,16,8,28,62,62,28,8
870 DATA 240,0,0,0,0,7,7,31,31
880 DATA 241,0,0,36,60,255,255,255,25
5
890 DATA 242,0,0,0,0,224,224,248,248
900 DATA 243,31,31,7,7,7,7,63,63
910 DATA 244,248,248,224,224,224,224,
252,252
920 DATA 245,63,63,127,127,127,35,35,
19
```



```

930 DATA 246,255,255,255,255,255,60,2
4,0
940 DATA 247,252,252,254,254,254,196,
196,200
950 DATA 248,19,11,11,7,7,3,15,255
960 DATA 250,200,208,208,224,224,192,
240,255
970 DATA 251,24,24,129,90,24,24,36,36
980 DATA 999
990 FOR A=49 TO 57:FOR B=0 TO 7
1000 VPOKE A*8+B,VPEEK(A*8+B)/2
1010 NEXT B,A:RETURN
1020 M$="DEFUZE"
1030 R=0:GOSUB 1300
1040 M$="*****"
1050 R=1:GOSUB 1300
1060 RETURN
1070 M$="DEFUSE THE BOMBS THAT ARE UN
DER"
1080 R=3:GOSUB 1300
1090 M$="THE NUCLEAR REACTORS"
1100 R=4:GOSUB 1300
1110 M$="THEY ARE ABOUT TO EXPLODE"
1120 R=6:GOSUB 1300
1130 M$="THEY MUST BE DEFUSED IN THE"

```

```

1140 R=8:GOSUB 1300
1150 M$="CORRECT ORDER BY MOVING UP"
1160 R=9:GOSUB 1300
1170 M$="BETWEEN THE REACTORS LEGS."
1180 R=10:GOSUB 1300
1190 M$="BEWARE OF THE RADIATION TRAI
L"
1200 R=13:GOSUB 1300
1210 M$="THAT YOU LEAVE BEHIND"
1220 R=14:GOSUB 1300
1230 M$="AND THE ELECTRIFIED FENCE"
1240 R=15:GOSUB 1300
1250 M$="USE THE CURSOR KEYS TO MOVE"
1260 R=18:GOSUB 1300
1270 M$="PRESS SPACE BAR TO PLAY"
1280 R=22:GOSUB 1300
1290 IF NOT STRIG(0)THEN 1290 ELSE RE
TURN
1300 C=15-LEN(M$)/2
1310 FOR I=1 TO LEN(M$)
1320 LOCATE C+I,R:PRINT CHR$(96)
1330 FOR D=1 TO 20:NEXT D
1340 LOCATE C+I,R:PRINT MID$(M$,I,1)
1350 NEXT I:RETURN
1360 INTERVAL OFF:SCREEN 0:COLOR 15,4
,4

```

PATIENCE by Cliff Walters

This is an extremely addictive version of that old chestnut of card games, Patience. The screen displays the traditional seven columns, each containing five cards, with the bottom card in each column turned right side up.

The top card in the pack is turned upwards, and you select which column you want to match it with. The card has to be either one more or one less than the upturned card on the bottom of your chosen column. If it is, the card disappears off the column and the next card is turned up. The card on the pack is removed to reveal your next playing card. In this way, you try to clear all the columns of cards off the screen.

If you're not successful, the computer tells you how many cards you have left in your hand and you're invited to try again.

```

10 REM ***** PATIENCE *****
20 REM VERSION BY CLIFF WALTERS
30 REM FOR M.S.X. COMPUTERS
40 REM *****
50 REM
60 CLEAR 500
70 ON STOP GOSUB 1010:STOP ON
80 SCREEN 0:WIDTH 40:KEYOFF
90 COLOR 1,11,11:N=RND(-TIME)
100 DEF USR0=&H156
110 DIM A$(52)
120 PRINTSPC(14)"INSTRUCTIONS",SPC(14)
)*****:PRINT:PRINT
130 PRINT"THE OBJECT OF THE GAME IS T
O REMOVE THE BOTTOM CARD FROM EACH CO
LUMN AND PLACE IT ON THE UPTURNED PI
LE IN THE CENTRE.":PRINT:PRINT
140 PRINT"EACH CARD MOVED MUST BE ONE

```

```

ABOVE OR ONE LESS THAN THE CARD CUR
RENTLY SHOWING.":PRINT:PRINT
150 PRINT"IF A MOVE IS NOT POSSIBLE T
HEN PRESS THE SPACE BAR TO DEAL A
NOTHER CARD.":PRINT:PRINT
160 PRINT:PRINT:PRINT:PRINT
170 PRINT " PRESS SPACE BAR TO STA
RT PLAYING"
180 IF NOT STRIG(0)THEN 180
190 SCREEN 1:WIDTH 32
200 CLS:LOCATE8,4:PRINT"COMPUTER PATI
ENCE":LOCATE 8,5:PRINT"*****
***"
210 BS=35:GOSUB 670:B$="abhi"
220 CLS:LOCATE12,18:PRINT"SHUFFLING"
230 C$="jklmnopqrstuv":L=0
240 FOR A=1 TO 13:FOR B=0 TO 39 STEP
13
250 A$(A+B)=" ":MID$(A$(A+B),1,1)=MI
D$(C$,A,1):NEXT B,A
260 FOR A=1 TO 13:FOR B=0 TO 3
270 MID$(A$(A+13*B),2,1)=MID$(B$,B+1,
1):NEXT B,A
280 FOR A=1 TO 52:B=INT(RND(1)*52)+1:
SWAP A$(A),A$(B):NEXT A
290 CLS:FOR A=1 TO 7
300 LOCATE A*4-1,0:PRINTA:NEXT A
310 FOR A=1 TO 28
320 LOCATE X(A),Y(A):PRINT CHR$(203)+
CHR$(204):LOCATE X(A),Y(A)+1:PRINT CH
R$(205)+CHR$(206):NEXT A
330 FOR A=29 TO 35
340 AA$=RIGHT$(A$(A),1)+LEFT$(A$(A),1
)
350 LOCATE X(A),Y(A):PRINTA$(A):LOCAT
E X(A),Y(A)+1:PRINTAA$:NEXT A
360 F=0:FOR Z=36 TO 52
370 C$=A$(Z):D$=RIGHT$(A$(Z),1)+LEFT$
(A$(Z),1)
380 IF Z=52 THEN LOCATE 5,19:PRINT"TH

```


LISTINGS

```

IS IS YOUR LAST CARD"
390 IF F=1 THEN 400 ELSE LOCATE 0,21:
PRINTSPC(64):F=0
400 LOCATE 15,15:PRINT C$:LOCATE 15,1
6:PRINTD$
410 U=USR0(0):LOCATE 1,21:PRINT "ENTE
R COLUMN TO TAKE CARD FROM":IF Z<52 T
HEN LOCATE 3,22:PRINT"OR PRESS SPACE
BAR TO DEAL";ELSE PRINT" OR PRESS E
TO END THE GAME";
420 Q$=INPUT$(1)
430 IF Q$=" " AND Z<52 THEN F=1:GOTO
470
440 IF Z=52 THEN IF Q$="E" OR Q$="e"
THEN 580
450 IF ASC(Q$)>55 OR ASC(Q$)<49 THEN
BEEP:GOTO 420
460 C=VAL(Q$):GOSUB 490:GOTO 400
470 NEXT Z
480 GOTO 580
490 C=28+C
500 IF MID$(A$(C),1,1)=" " THEN IF C>
7 THEN C=C-7:GOTO 500
510 A=ASC(MID$(A$(C),1,1)):B=A-105:D=
B
520 A=ASC(MID$(C$,1,1)):B=A-105
530 IF D<>B+1 AND D<>B-1 THEN LOCATE
0,21:PRINTSPC(64):LOCATE 3,21:PRINT"W
RONG COLUMN!! TRY AGAIN!":BEEP:FOR D
L=1 TO 350:NEXT DL:RETURN
540 C$=A$(C):D$=RIGHT$(A$(C),1)+LEFT$
(A$(C),1):A$(C)=" "
550 LOCATE X(C),Y(C):PRINT" ":LOCATE
X(C),Y(C)+1:PRINT" ":L=L+1:IF L=35
THEN BS=0:GOTO 580
560 IF Y(C)>3 THEN AA$=RIGHT$(A$(C-7)
,1)+LEFT$(A$(C-7),1):LOCATE X(C),Y(C)
-2:PRINT A$(C-7):LOCATE X(C),Y(C)-1:P
RINT AA$
570 RETURN
580 Q=35-L:LOCATE 0,17:PRINT SPC(192)
590 IF Q=0 THEN LOCATE 8,17:PRINT"***
WELL DONE***":GOTO 610
600 LOCATE 9,17:PRINTQ:"CARD";:IF Q>1
THEN PRINT "S LEFT" ELSE PRINT " LEF
T"
610 IF Q=35 THEN 620 ELSE IF Q<BS THE
N BS=Q:LOCATE 8,19:PRINT"A NEW BEST S
CORE":PLAY"T255L6403C6404C6405C6406C6
4":GOTO 630
620 LOCATE 8,19:PRINT"BEST SCORE IS "
:BS

```

```

630 IF Q<2 THEN 650 ELSE LOCATE 0,21:
PRINT"PRESS SPACE BAR TO SEE THE CARD
";:IF Q>3 THEN PRINT"S"
640 IF NOT STRIG(0)THEN 640 ELSE GOSU
B 980:BEEP
650 LOCATE 0,21:PRINT"PRESS SPACE BAR
FOR ANOTHER GAME"
660 IF NOT STRIG(0)THEN 660 ELSE 220
670 DIM X(35),Y(35)
680 FOR A=1 TO 5:FOR B=1 TO 7
690 X(7*(A-1)+B)=4*B-1
700 Y(7*(A-1)+B)=2*A+1
710 NEXT B,A
720 RESTORE:FOR A=0 TO 7
730 VPOKE 97*8+A,VPEEK(32+A)
740 VPOKE 98*8+A,VPEEK(24+A)
750 VPOKE 104*8+A,VPEEK(40+A)
760 VPOKE 105*8+A,VPEEK(48+A)
770 VPOKE 106*8+A,VPEEK(392+A)
780 VPOKE 107*8+A,VPEEK(400+A)
790 VPOKE 108*8+A,VPEEK(408+A)
800 VPOKE 109*8+A,VPEEK(416+A)
810 VPOKE 110*8+A,VPEEK(424+A)
820 VPOKE 111*8+A,VPEEK(432+A)
830 VPOKE 112*8+A,VPEEK(440+A)
840 VPOKE 113*8+A,VPEEK(448+A)
850 VPOKE 114*8+A,VPEEK(456+A)
860 VPOKE 116*8+A,VPEEK(592+A)
870 VPOKE 117*8+A,VPEEK(648+A)
880 VPOKE 118*8+A,VPEEK(600+A)
890 READ V:VPOKE 115*8+A,V
900 READ W:VPOKE 203*8+A,W
910 READ X:VPOKE 204*8+A,X
920 READ Y:VPOKE 205*8+A,Y
930 READ Z:VPOKE 206*8+A,Z
940 NEXT A
950 CL=8192:VPOKE CL+12,111:VPOKE CL+
13,31:VPOKE CL+14,31:VPOKE CL+25,79:V
POKE CL+31,176
960 RETURN
970 DATA 94,0,0,43,212,82,0,0,42,84,8
2,63,252,63,252,82,42,84,42,84,82,42,
84,42,84,82,63,252,63,252,94,42,84,0,
0,0,43,212,0,0
980 LOCATE 0,21:PRINTSPC(32):FOR B=1
TO 7:FOR A=28 TO 0 STEP -7
990 AA$=RIGHT$(A$(A+B),1)+LEFT$(A$(A+
B),1):FOR I=1 TO 10:NEXT I
1000 LOCATE X(A+B),Y(A+B):PRINTA$(A+B
):LOCATE X(A+B),Y(A+B)+1:PRINTAA$:NEX
T A,B:RETURN
1010 SCREEN 1:COLOR 15,4,4

```

AIRSHOOT by Paul Catchick

Bomb as many planes as possible in this action packed aeroplane game. Two aeroplanes fly across the screen and fly off in two different directions. Releasing a bomb from the top aeroplane onto the lower one, gains you points and stops it from rising to the top. Missing it loses you one of your bombs.

As soon as the enemy hits the top red line or you lose all three bombs, the game ends.

Main Program Variables

A&B Position of top plane **C&D** Position of bottom plane
BM Bomb **SC** Score
FT Speed **T&Y** Position bomb

```

10 '**AIRSHOOT**
15 '**by Paul Catchick**
20 COLOR15,1
30 SCREEN0
40 CLS:KEYOFF:WIDTH36:LOCATE12,2
50 PRINT"AIRSHOOT-MSX"
60 PRINT:PRINTTAB(10);"Key 'F1' to fi
re"
70 PRINTTAB(4);"Press 'SPACE' to begi
n play."
80 OPEN"GRP:"AS#1
90 GOTO610
100 A=20:B=10:C=240:D=160
110 STRIG(0)OFF
120 BM=3:SC=0:FT=1:PD=0
130 CLS

```



```

140 SCREEN2:COLOR1,7,7
150 SPRITE$(1)=CHR$(&H1)+CHR$(&H82)+C
HR$(&HC4)+CHR$(&HFE)+CHR$(&HFF)+CHR$(&H10)+CHR$(&H20)+CHR$(&H40)
160 SPRITE$(2)=CHR$(&H80)+CHR$(&H41)+
CHR$(&H23)+CHR$(&H7F)+CHR$(&HFF)+CHR$
(&H8)+CHR$(&H4)+CHR$(&H2)
170 SPRITE$(3)=CHR$(&H18)+CHR$(&H8)+C
HR$(&H3C)+CHR$(&H10)+CHR$(&H8)+CHR$(&
H10)+CHR$(&H8)+CHR$(&H10)
180 SPRITE$(4)=CHR$(&H18)+CHR$(&H3C)+
CHR$(&H5E)+CHR$(&HFD)+CHR$(&HFF)+CHR$
(&HDE)+CHR$(&HFE)+CHR$(&H7F)
190 M=0
200 SCREEN2
210 LINE(0,20)-(255,20),9
220 LINE(0,150)-(50,100),2:LINE(50,10
0)-(80,140),2
230 LINE(80,140)-(130,110),2:LINE(130
,110)-(180,150),2
240 LINE(180,150)-(210,110),2:LINE(21
0,110)-(255,130),2
250 PRESET(30,180):PRINT#1,"SCORE:"SC
:PRESET(150,180):PRINT#1,"BOMBS:"BM
260 ONSPRITEGOSUB490
270 SPRITEON
280 PUTSPRITE1,(A,B),1,1
290 PUTSPRITE2,(C,D),12,2
300 IFD<20THEN570
310 T=A+4:Y=16
320 IFBM=0THEN570
330 A=A+1
340 C=C-FT:M=M+1:IFM=20*FTTHEND=D-1:M

```

```

=0:PLAY"02L64S12E-"
350 ONKEYGOSUB380
360 KEY(1)ON
370 GOTO 280
380 PLAY"03s12a-"
390 BM=BM-1
400 KEY(1)OFF
410 PUTSPRITE3,(T,Y),14,3
420 Y=Y+1
430 GOSUB450
440 GOTO410
450 IFY>170THENY=170:GOTO 470
460 RETURN
470 PLAY"t255L4o1s14b-"
480 GOTO 200
490 PLAY"t255L4o6a#":SC=SC+10:BM=BM+1
500 C=240:D=D+3:PD=PD+1
510 IFPD=10THENFT=FT+1:PD=0
520 IFFT>4THENFT=4
530 IFD>160THEND=160
540 SPRITEOFF
550 PUTSPRITE4,(T,Y),9,4
560 RETURN470
570 PRESET(90,91):PRINT#1,"GAME OVER"
580 KEY(1)OFF
590 PLAY"t25514;o8df;o7df;o6df;o5df;o
4df;o3df;o2df;o1df"
600 PRESET(20,115):PRINT#1,"spacebar
for another game..."
610 ONSTRIGGOSUB640
620 STRIG(0)ON
630 GOTO 610
640 BEEP:RETURN100

```

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.

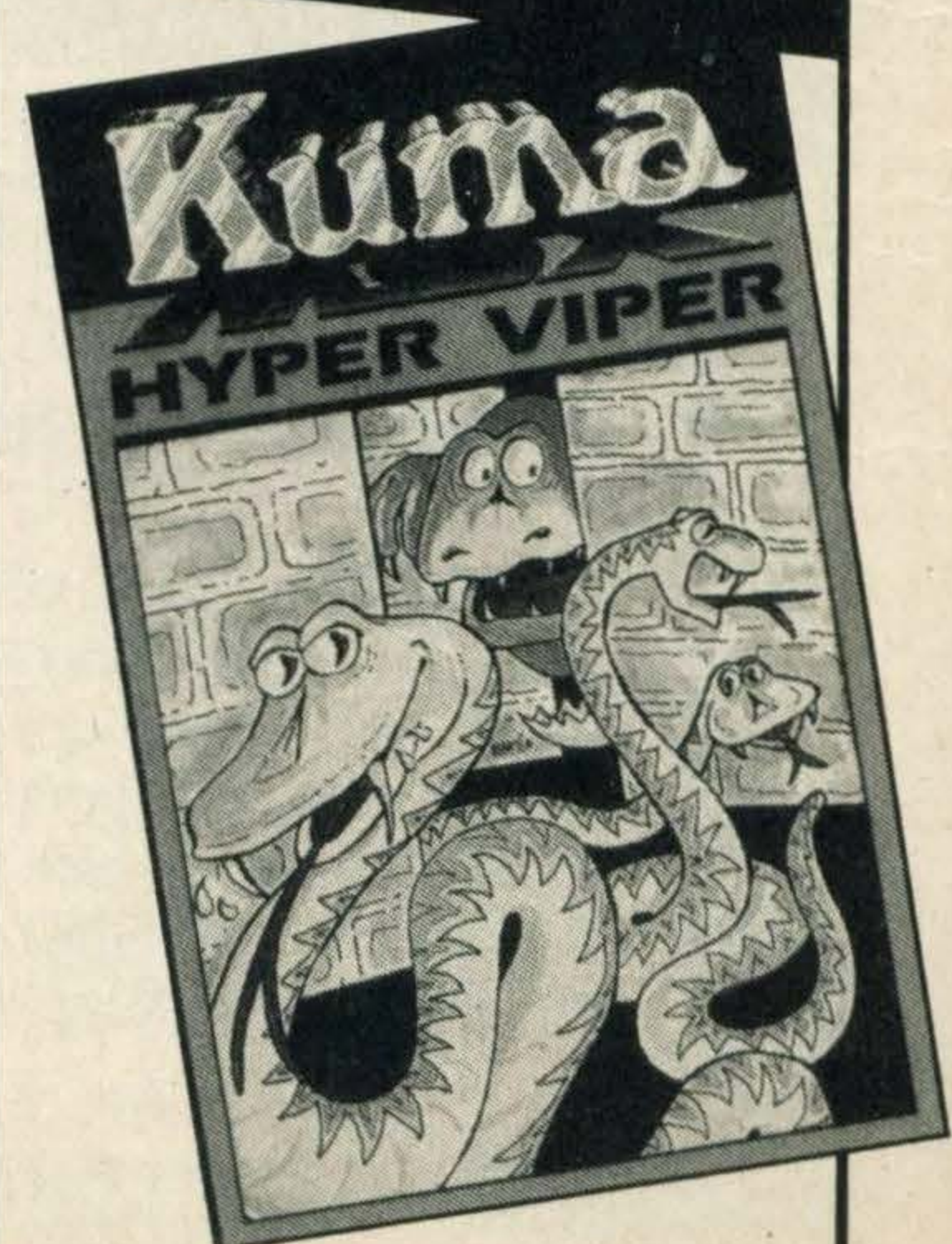
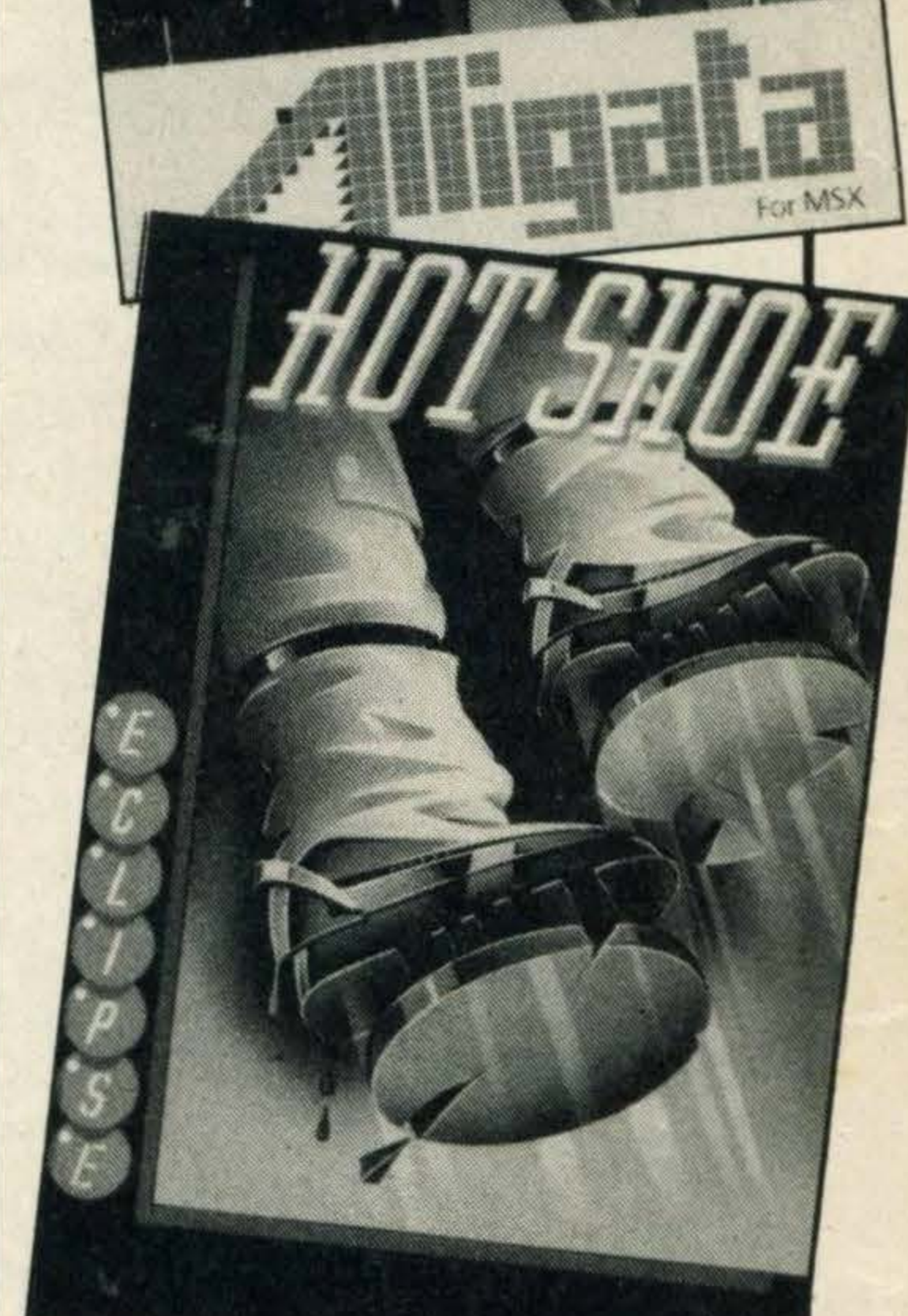
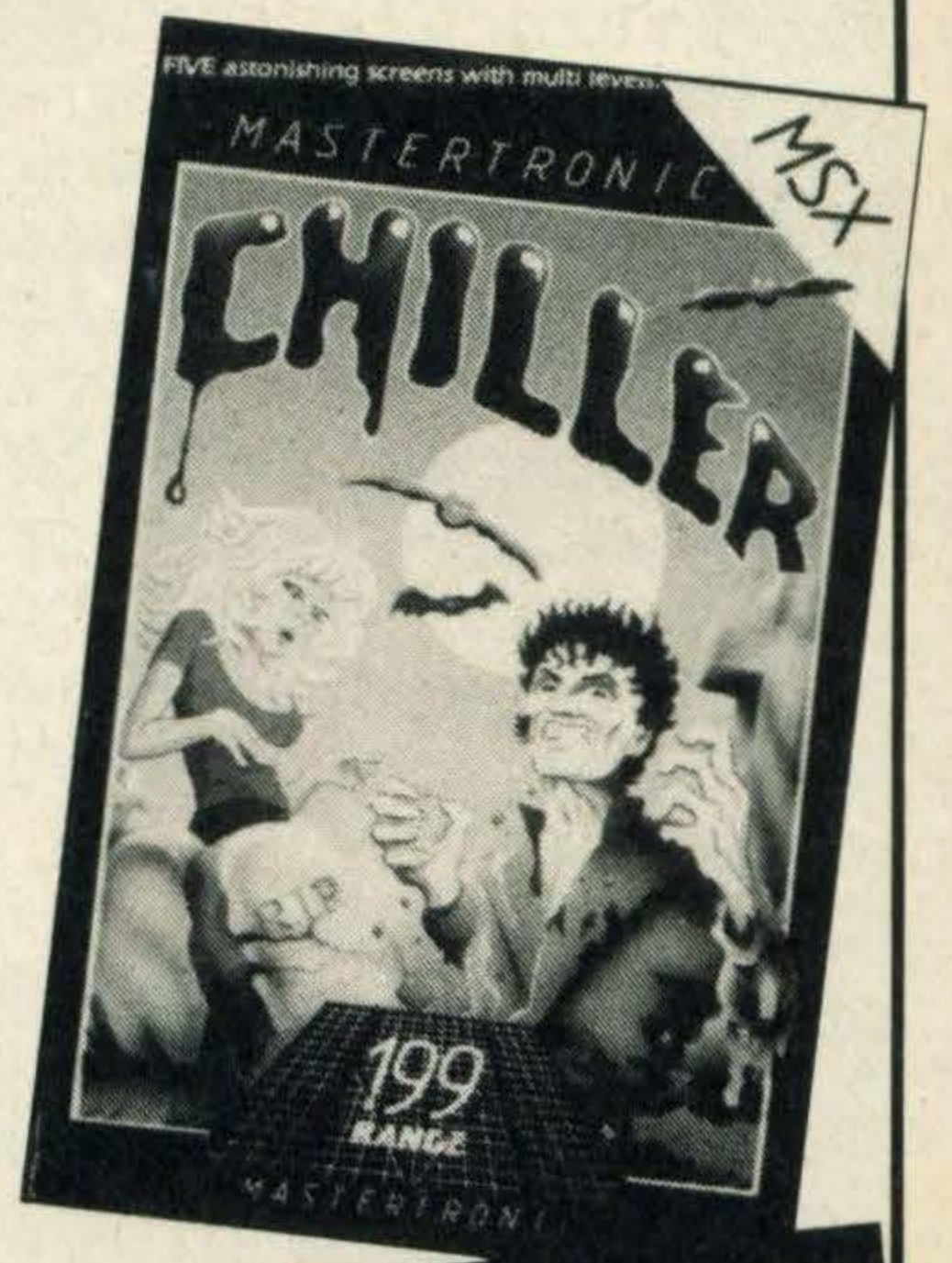
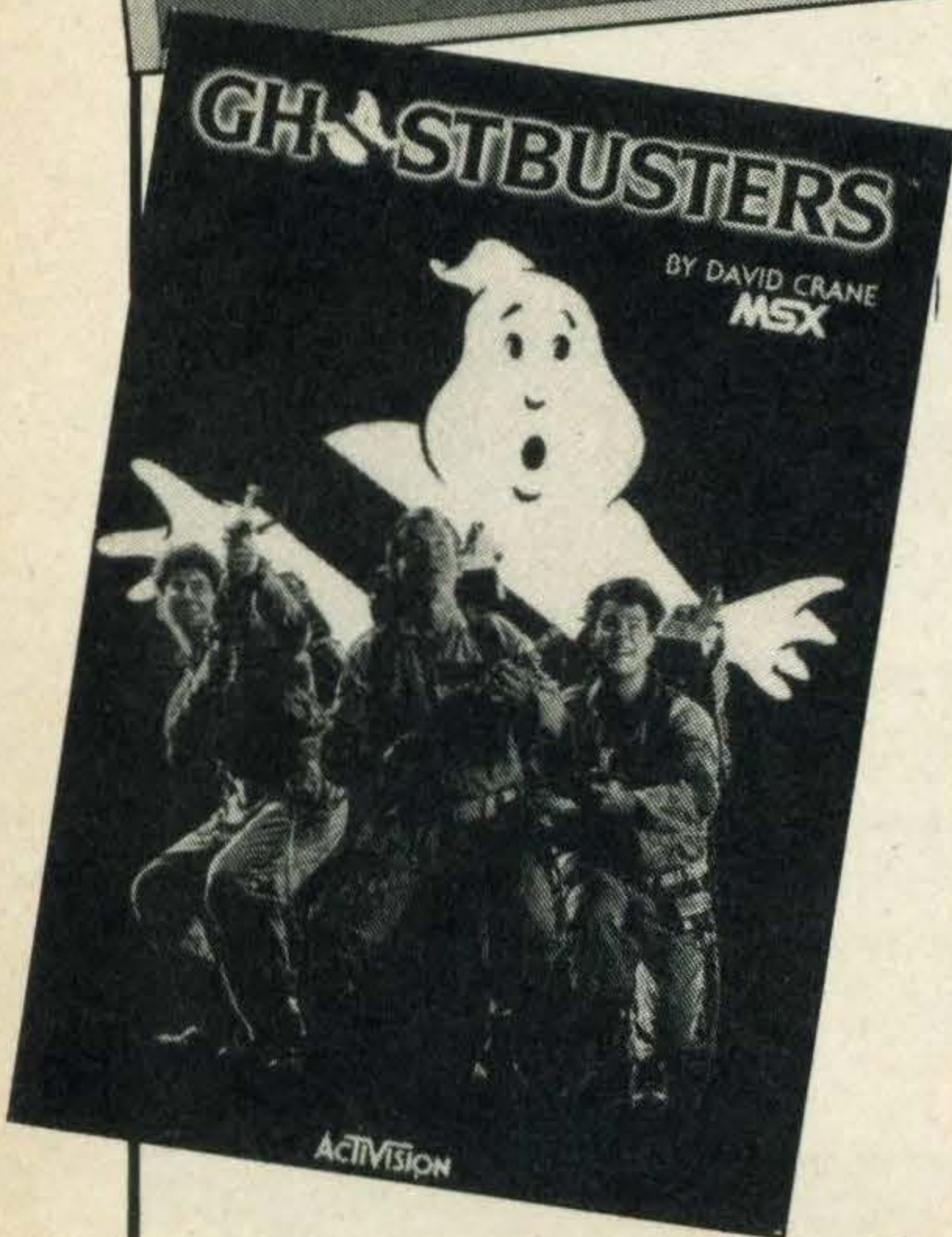
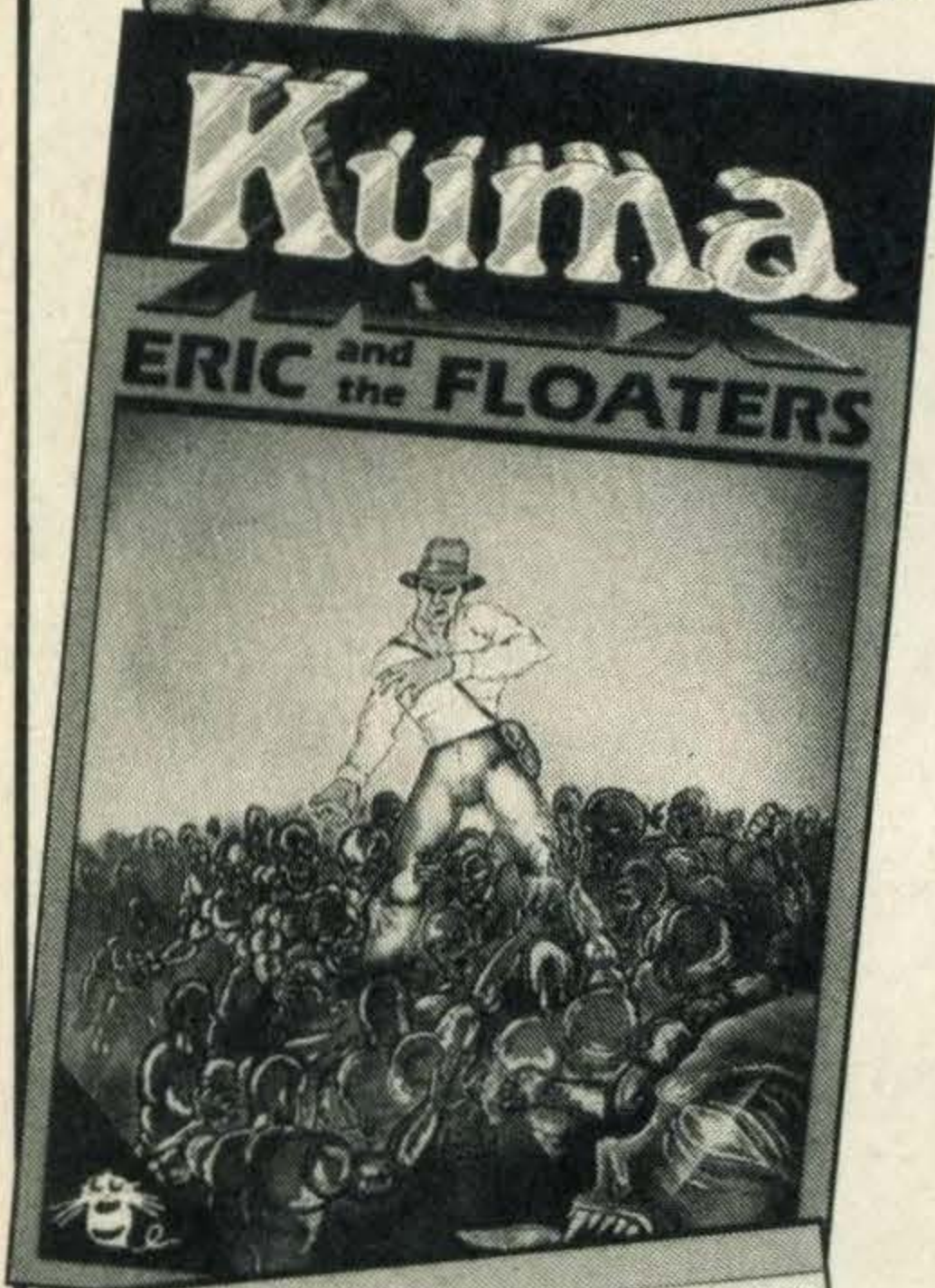
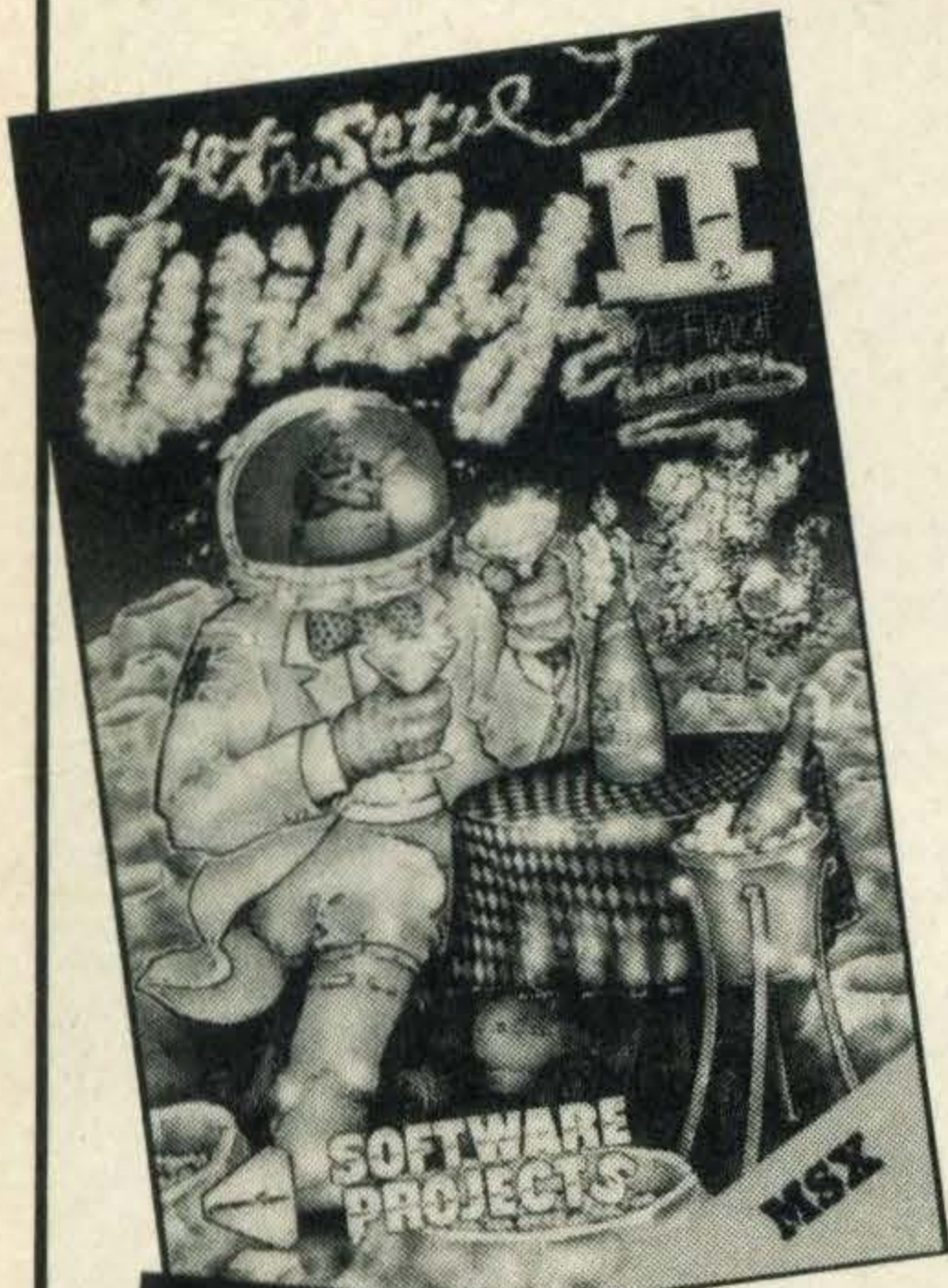
Make sure you are entering exactly what is shown in the listing. Don't type a zero when it should be the letter O, or a small I when it should be the number one.

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!

Send your high scores to: High Scores, MSX Computing, 38-42 Hampton Road, Teddington, Middlesex TW11 0JE

Game	Name	Score	Stage
Antarctic Adventure	David McEwan (Lanarkshire)	7,956,400	98
Battleship Clapton II	B Torrance (Lancashire)	91,450	
Beamrider	Joseph O'Connor (Eire)	95,420	22
Blogger	David McEwan (Lanarkshire)	350,170	315
Boulderdash	Jason Hunt (Leicester)	10,474	M
Brian Jacks	Christopher Rutherford	724	3
Superstar Challenge	(Hexham)		
Buck Rogers	Neil Macfall	310,900	6
Chiller	Simon Dobson (Devon)	32,963	
Choro Q	Neil MacFall	27,980	
Chuckie Egg	Stephen Byatt (Essex)	295,770	
Circus Charlie	Matthew Sands	512,570	45
	(Worcester Park)		
Comic Bakery	David Styles (Kent)	209,790	22
Decathlon	Neil MacFall	12,920	
Disk Warrior	M J Wright (Enfield)	266,750	4
Eric and the Floaters	Nigel Smithers	38,780	
	(East Sussex)		
Finders Keepers	Paul Griffiths (Lincoln)	16,000	
Fire Rescue	B Torrance (Lancashire)	12,080	
Ghostbusters	Laurence Burke (Ireland)	\$999,900	
Gridtrap	Dennis Cattel	187,400	10
	(Bridgend)		
Hot Shoe	Simon Dobson (Devon)	5,430	
Hunchback	David McEwan (Lanarkshire)	907,500	
Hyper Rally	Paul Graves (Caithness)	217,832	
Hyper Sports I	Mark Boselli (Kenton)	2,050,800	51
Hyper Sports II	Hugh McColgan (Glasgow)	499,830	
Hyper Viper	Laurence Burke (Ireland)	9,700	
Jet Set Willy II	Laurence Burke (Ireland)	103	
		objects	
Kings Valley	A Baker	1,004,300	14
	London		pyramids
Lazy Jones	Mark Sutton (Rayleigh)	149,650	
Le Mans	Jacob Poviah	42,530	8
	(West Yorkshire)		
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
Pinball	A Baker (London)	1,240,680	
Pitfall	David Speed (Dundee)	184,421	comp'd
Polar Star	Neil MacFall	100,710	4
Pyramid Warp	Clive Marsh (Watford)	49,270	
River Raid	Paul O'Sullivan	32,980	
	(Rotherham)		
Road Fighter	Keiron Tweedy	487,323	36
	(Isle of Sheppey)		
Roller Ball	A Baker (Stoke Newington)	3,120,180	
Sasa	Michael Thames (London)	32,300	
Shark Hunter	B Torrance Lancashire)	7,614	
Sky Jaguar	Colin Greenhough	146,200	15
	(Chesterfield)		
Soccer	Christopher Rutherford	4-0	3
	(Hexham)		
Sorcery	Paul O'Sullivan	27,600	
	(Rotherham)		
Spacewalk	Paul Lavoie (Crawley)	555,000	2
Super Cobra	David Styles (Erith)	59,210	10
Super Snake	Mark Sutton (Rayleigh)	43,600	
Tennis	Mark Drabwell (Essex)	6-0, 6-0	
The Snowman	Mark Drabwell (Essex)	30,030	
Time Pilot	Christopher Rutherford	9,240	7
	(Hexham)		
Time Pilot	Robin Emmons	249,500	6
Yie Ar Kung Fu	David McEwan (Lanarkshire)	9,443,100	734
Zaxxon	Sean Mason (Ireland)	572,900	

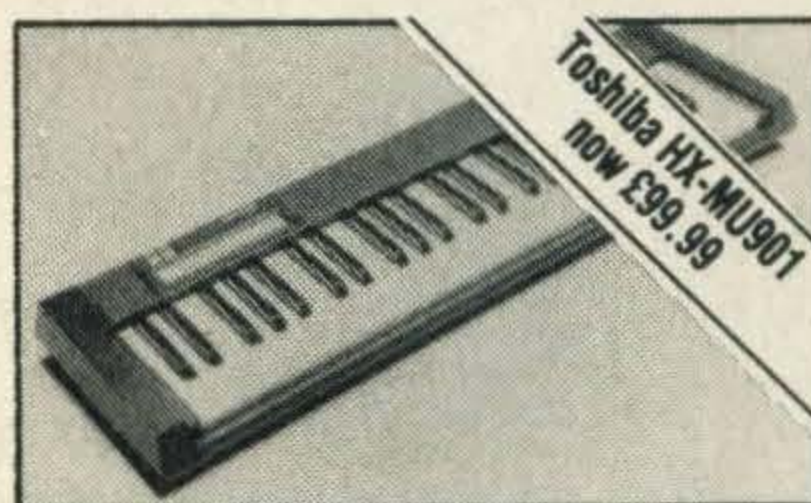


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1. Always clarify the exact nature of any guarantee being offered.
2. Never send cash — always a cheque, Postal or Money Order.
3. Insist on a written receipt.
4. Clearly state the equipment you seek, and detail any acceptable alternatives.
5. Request 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.

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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
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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.

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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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Aackosoft			•										•		
A+F Software	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Activision	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Alligata	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Amplesoft	•	•	•	•		•	•	•		•	•	•	•		
Anirog	•	•	•		•	•	•	•		•	•	•	•	•	•
Artic Computing	•	•	•		•		•		•	•	•	•	•		
Ask	•	•	•	•			•	•		•	•		•		
Broker Bound Software													•		
Bubble Bus	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CDS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Cheshire Cat Leisure				•					•				•		
Computer Mates	•	•	•		•	•	•	•	•	•	•	•	•		
CRL													•		
Cable								•					•		
Century			•				•	•					•		
D K Tronics		•	•	•		•	•	•	•	•	•	•	•		
Domark						•	•				•		•		
Electric Software	•	•	•	•	•	•	•	•	•	•	•		•	•	•
Eclipse	•	•			•	•	•	•	•	•	•		•		•
Global Software													•		
Hal Software					•	•	•	•	•	•	•		•		
Hisoft		•	•	•	•	•	•	•		•	•	•	•		•
Hudson Software			•		•	•	•	•		•	•		•		
Haresoft			•										•		
Icon Software			•			•		•		•	•		•		
Intelligent Software													•		
John Wiley Software	•				•		•					•	•		
Knights	•	•	•	•			•					•	•		•
Kuma Computers	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Konami	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Kemp Software				•				•			•		•		
Level 9 Computing	•	•	•	•	•	•	•	•	•	•	•	•	•		•
Live Wire						•	•	•				•	•		•
Llamasoft		•	•	•	•	•	•	•		•	•	•	•		
Longman Software			•			•		•			•	•	•		
Mastertronic Ltd		•	•	•	•			•		•	•	•	•		
M C Lothlorien			•	•				•	•	•	•	•	•		•
Mentor	•	•					•	•	•	•			•		
Megacycal Software	•	•	•	•			•	•		•	•		•		
Micro Aid								•		•	•		•		
Microcom		•	•	•			•		•	•	•		•		
Mirrorsoft	•	•	•	•	•		•	•	•	•	•	•	•		•
MPL													•		
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Martech		•	•	•	•		•		•	•	•	•	•		
MST Technology	•	•	•	•	•	•	•	•		•	•	•	•		
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Morwood	•	•	•	•	•	•	•	•	•	•	•	•	•		•
Ocean Software	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Orpheus Software	•	•	•	•		•	•	•	•	•	•	•	•		•
Odin Consumer Graphics													•		
Panasonic													•		•
Philips													•		
Puddles													•		
PSS	•	•	•	•	•	•	•	•	•	•	•	•	•		•
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Sanyo													•		
Silver Soft		•					•					•	•		
Software Projects	•	•			•	•	•	•	•	•	•		•	•	•
Sony						•	•	•	•	•	•		•		
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Ultimate									•				•		
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Aackosoft			●	●	●	●	●		●	●	●	●			●
A+F Software	●	●	●	●	●	●	●		●	●	●	●			●
Activision	●	●	●	●	●	●	●	●	●	●	●	●		●	●
Alligata	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Amplesoft	●	●	●	●	●	●	●		●	●	●	●			●
Anirog	●	●	●	●	●	●	●	●	●	●	●	●		●	●
Artic Computing	●	●	●	●	●	●	●		●	●	●	●		●	●
Ask	●	●	●	●	●	●	●	●	●	●	●	●			●
Broker Bound Software			●	●	●	●	●		●	●	●	●			●
Bubble Bus	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
CDS	●	●	●	●	●	●	●	●	●	●	●	●	●		●
Cheshire Cat Leisure			●												●
Computer Mates	●	●	●	●	●	●	●					●			●
CRL					●	●	●		●	●	●				●
Cable			●					●	●	●	●				●
Century			●		●	●	●		●	●	●				●
D K Tronics	●	●	●	●	●	●	●		●	●	●			●	●
Domark			●		●	●	●		●	●	●				●
Electric Software	●	●	●	●	●	●	●		●	●	●	●			●
Eclipse	●	●	●	●	●	●	●		●	●	●		●		●
Global Software			●		●	●	●		●	●	●				●
Hal Software			●	●	●	●	●		●	●	●	●			●
Hisoft	●		●	●	●	●	●	●	●	●	●				●
Hudson Software			●		●	●	●	●	●	●	●				●
Haresoft			●		●	●	●		●	●	●				●
Icon Software			●		●	●	●		●	●	●				●
Intelligent Software			●		●	●	●		●	●	●				●
John Wiley Software		●	●		●	●	●		●	●	●				●
Knights			●		●	●	●		●	●	●	●			●
Kuma Computers	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Konami	●	●	●	●	●	●	●	●	●	●	●	●		●	●
Kemp Software			●	●	●	●	●		●	●	●				●
Level 9 Computing	●	●	●	●	●	●	●	●	●	●	●	●			●
Live Wire			●		●	●	●	●	●	●	●				●
Llamasoft			●	●	●	●	●		●	●	●	●			●
Longman Software			●		●	●	●		●	●	●		●	●	●
Mastertronic Ltd		●	●		●	●	●		●	●	●		●	●	●
M C Lothlorien	●		●	●	●	●	●	●	●	●	●				●
Mentor		●	●	●	●	●	●		●	●	●	●			●
Megacycal Software	●	●	●	●	●	●	●		●	●	●	●			●
Micro Aid			●		●	●	●		●	●	●				●
Microcom	●	●	●	●	●	●	●		●	●	●				●
Mirrorsoft	●	●	●	●	●	●	●	●	●	●	●	●		●	●
MPL			●		●	●	●		●	●	●				●
Mr Micro Ltd	●	●	●	●	●	●	●	●	●	●	●	●			●
Martech		●	●	●	●	●	●	●	●	●	●				●
MST Technology		●	●	●	●	●	●		●	●	●	●			●
Melbourne House		●	●	●	●	●	●	●	●	●	●	●		●	●
Morwood	●	●	●	●	●	●	●		●	●	●	●			●
Ocean Software	●	●	●	●	●	●	●	●	●	●	●	●		●	●
Orpheus Software	●	●	●	●	●	●	●		●	●	●	●			●
Odin Consumer Graphics			●		●	●	●	●	●	●	●				●
Panasonic		●	●		●	●	●		●	●	●				●
Philips			●		●	●	●		●	●	●				●
Puddles			●		●	●	●		●	●	●				●
PSS	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Quicksilva	●	●	●	●	●	●	●	●	●	●	●	●		●	●
Ritror Music Software		●	●	●	●	●	●		●	●	●				●
Sanyo			●		●	●	●		●	●	●				●
Silver Soft			●	●	●	●	●		●	●	●				●
Software Projects	●	●	●	●	●	●	●	●	●	●	●	●		●	●
Sony		●			●	●	●		●	●	●			●	●
Statesoft			●	●	●	●	●		●	●	●	●			●
Stell	●	●	●	●	●	●	●		●	●	●	●			●
Shield	●	●	●	●	●	●	●		●	●	●	●			●
Tasman	●	●	●	●	●	●	●		●	●	●	●			●
Terminal	●	●	●	●	●	●	●		●	●	●	●			●
Toshiba	●	●	●	●	●	●	●		●	●	●	●		●	●
Ultimate			●		●	●	●		●	●	●				●
Virgin Games	●	●	●	●	●	●	●	●	●	●	●	●		●	●
Visions			●		●	●	●		●	●	●	●			●

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Alligata	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Amplesoft	●	●	●	●		●	●	●	●	●	●	●	●	●	●
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CRL	●	●	●	●		●	●	●	●	●	●	●	●	●	●
Cable	●	●	●	●		●	●	●	●	●	●	●	●	●	●
Century	●	●	●	●		●	●	●	●	●	●	●	●	●	●
D K Tronics	●	●	●	●		●	●	●	●	●	●	●	●	●	●
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Electric Software	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Eclipse	●	●	●	●		●	●	●	●	●	●	●	●	●	●
Global Software	●	●	●	●		●	●	●	●	●	●	●	●	●	●
Hal Software	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
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Hudson Software	●	●	●	●		●	●	●	●	●	●	●	●	●	●
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John Wiley Software	●	●	●	●		●	●	●	●	●	●	●	●	●	●
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Kuma Computers	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Konami	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Kemp Software	●	●	●	●		●	●	●	●	●	●	●	●	●	●
Level 9 Computing	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
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Mentor	●	●	●	●		●	●	●	●	●	●	●	●	●	●
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Melbourne House	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
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Ocean Software	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Orpheus Software	●	●	●	●		●	●	●	●	●	●	●	●	●	●
Odin Consumer Graphics	●	●	●	●		●	●	●	●	●	●	●	●	●	●
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PSS	●	●	●	●		●	●	●	●	●	●	●	●	●	●
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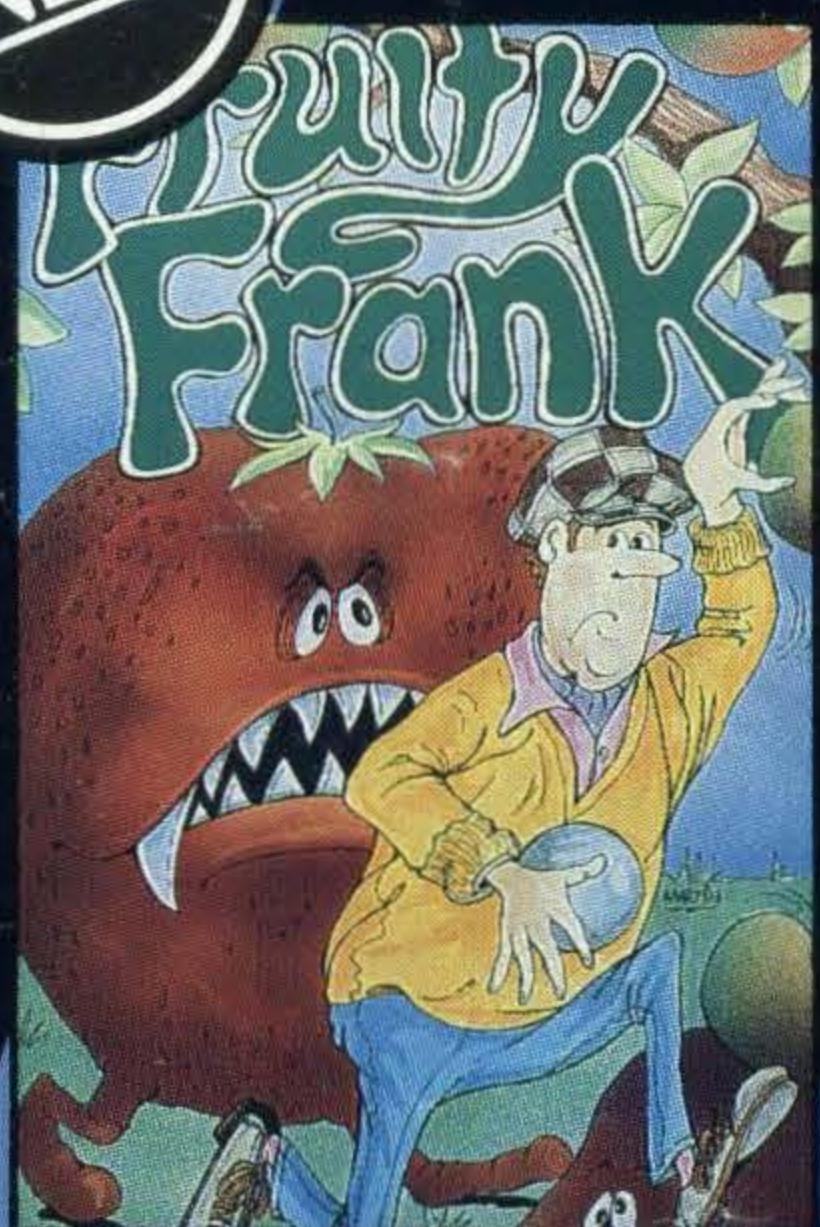
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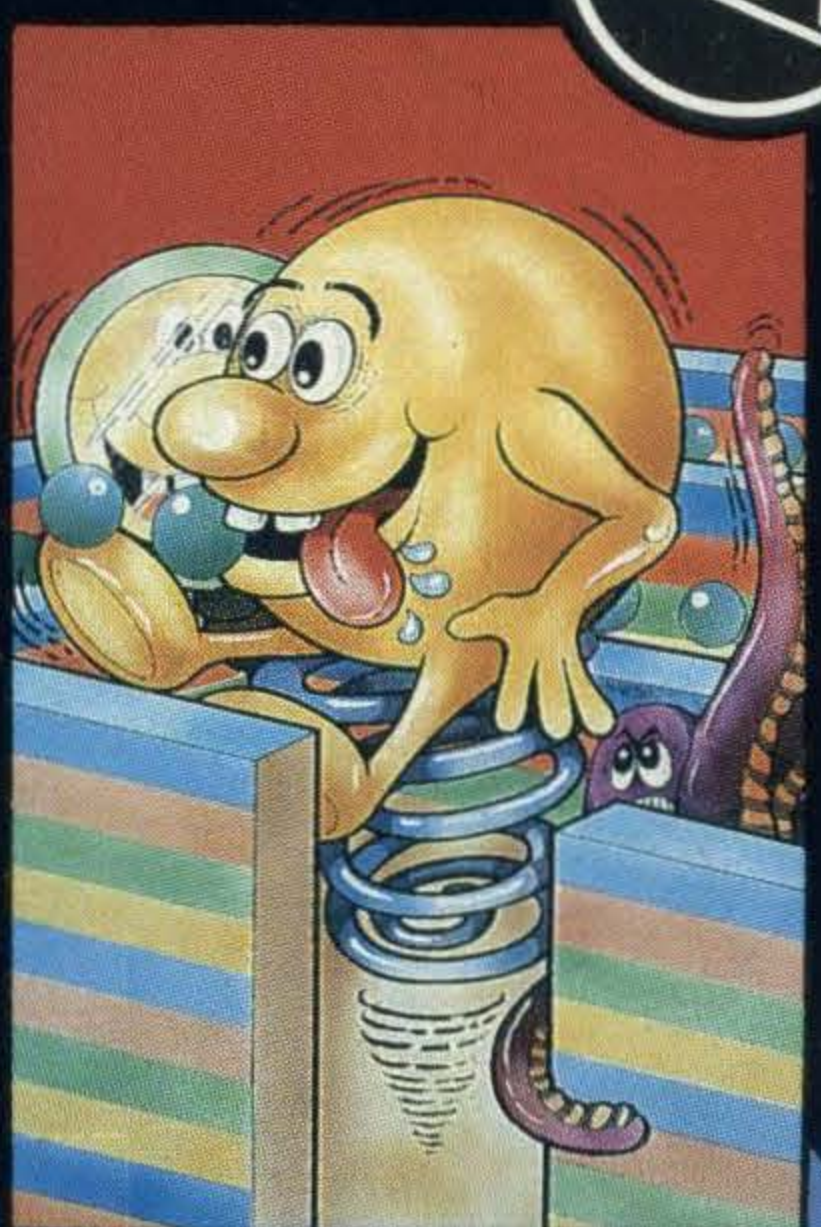
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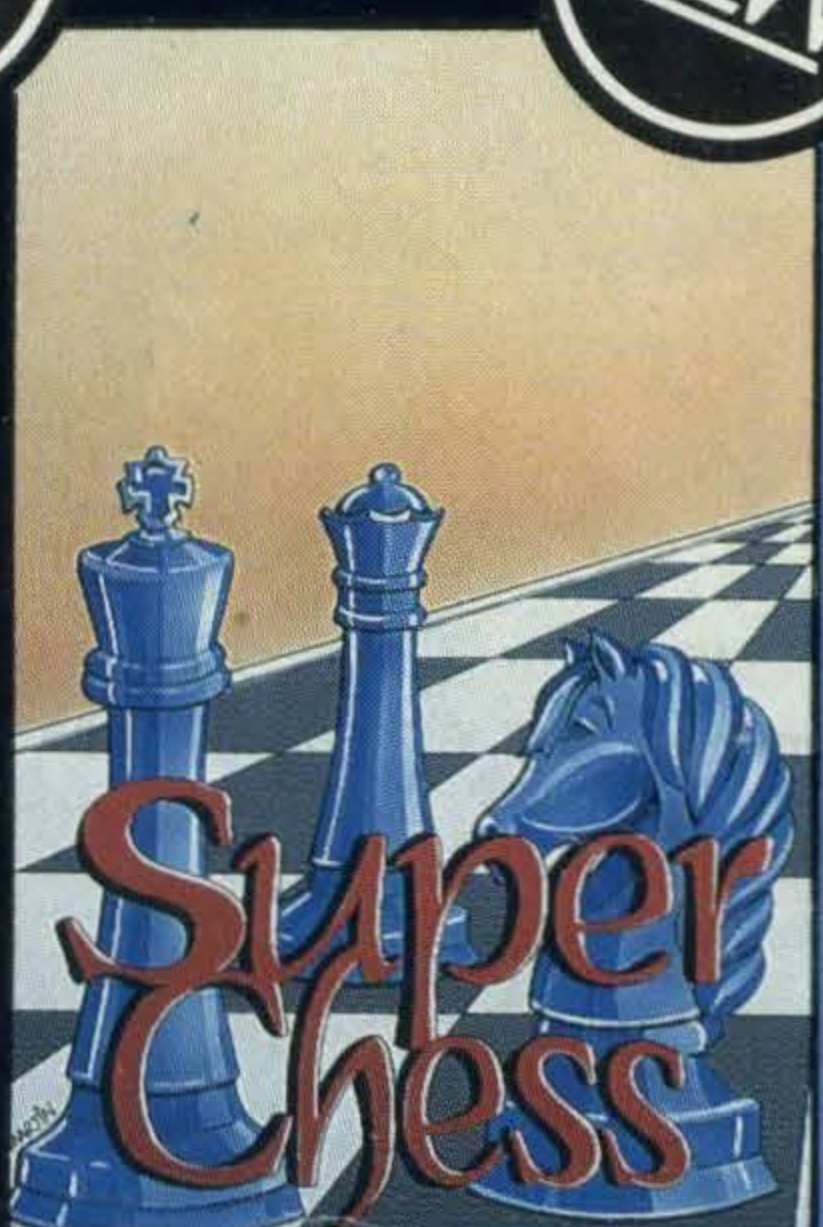
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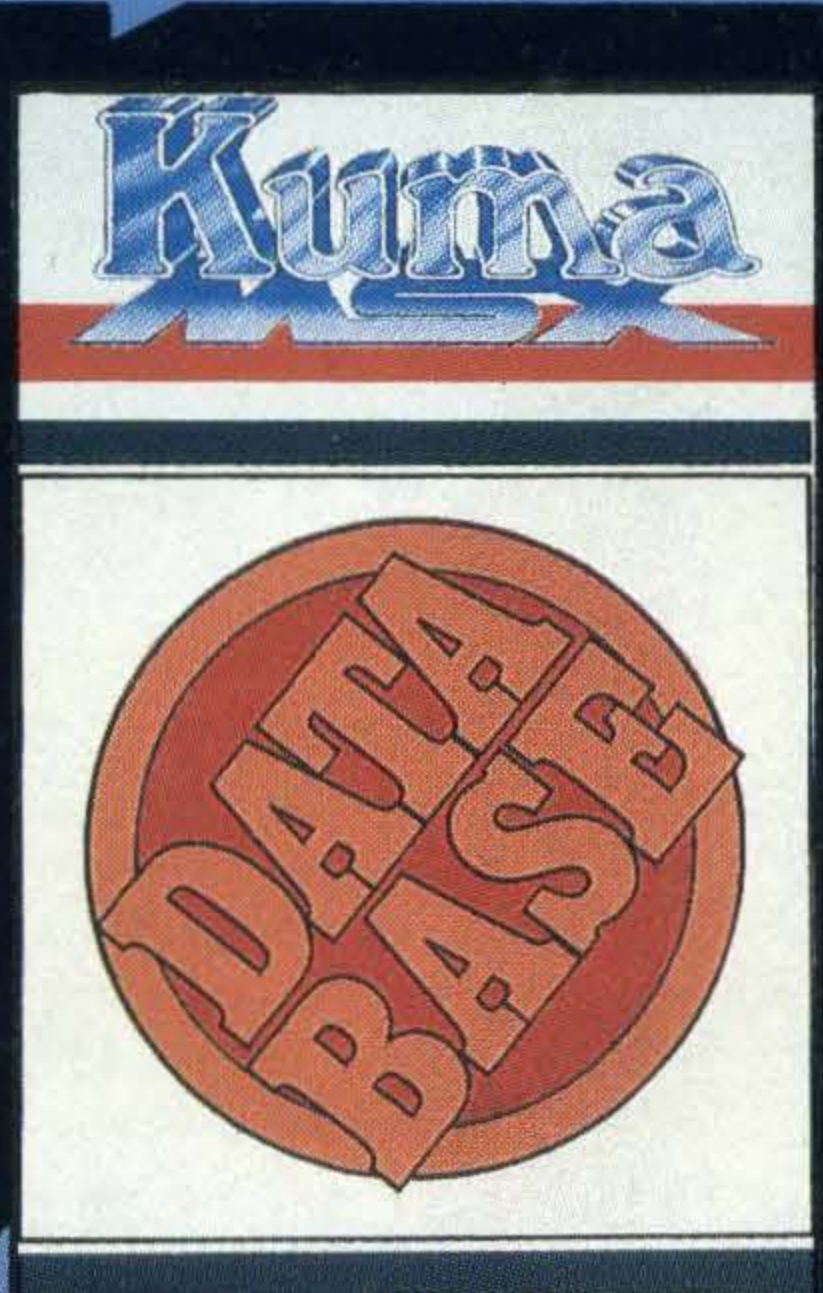
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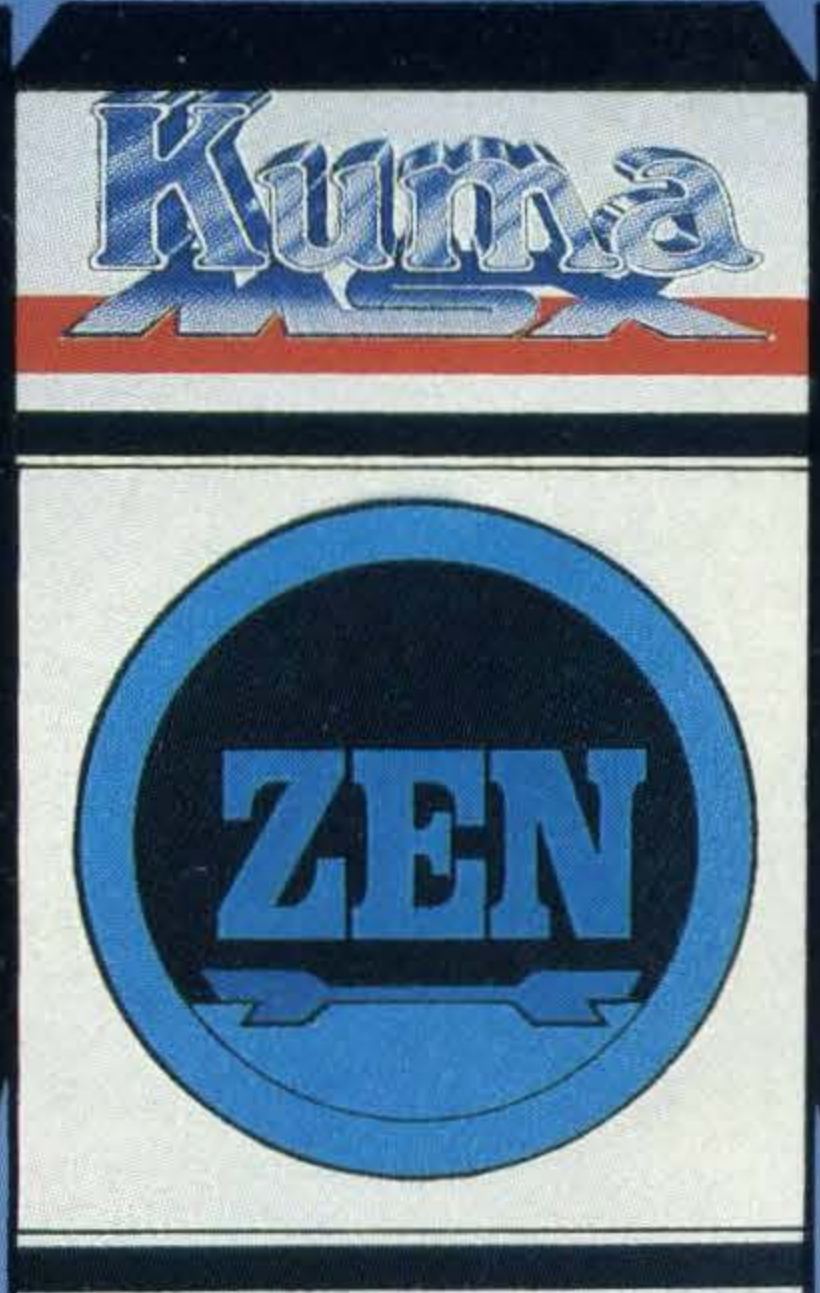
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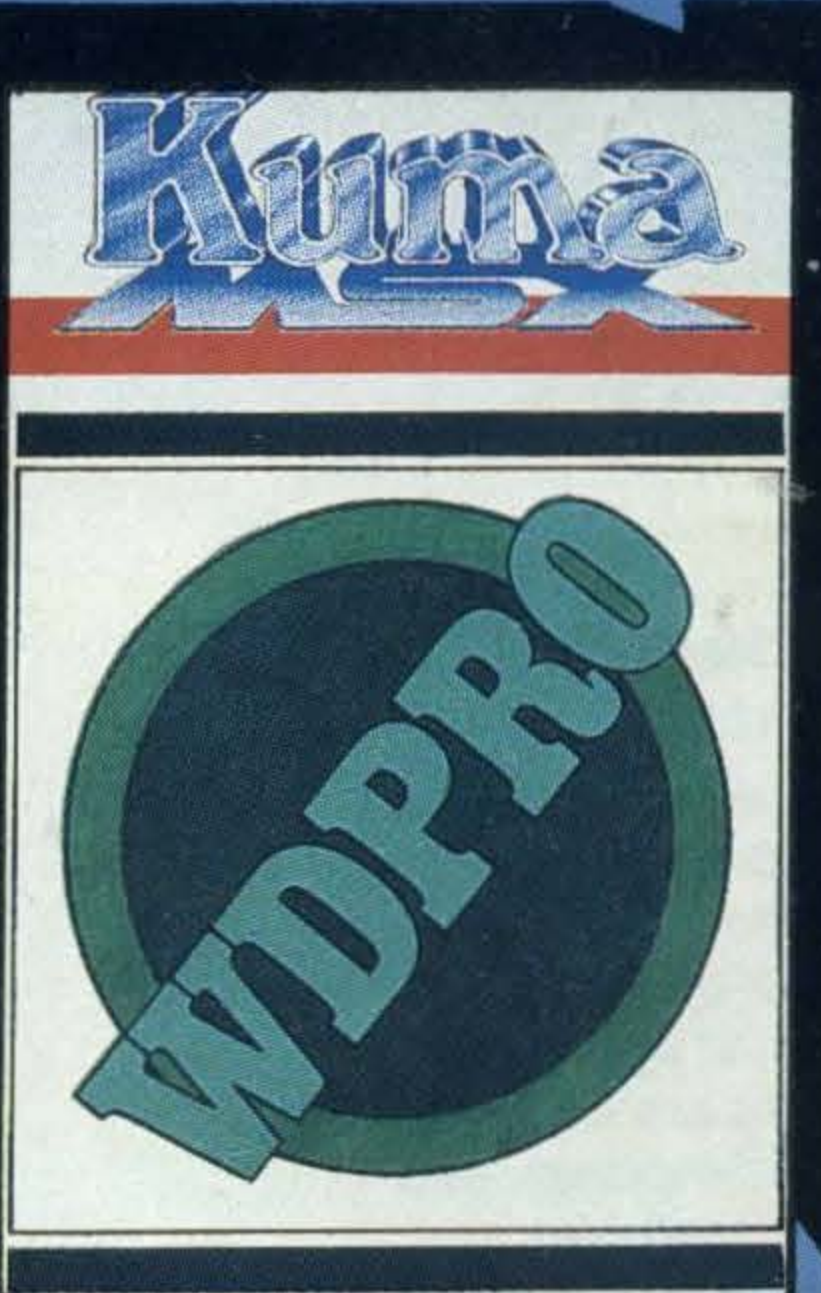
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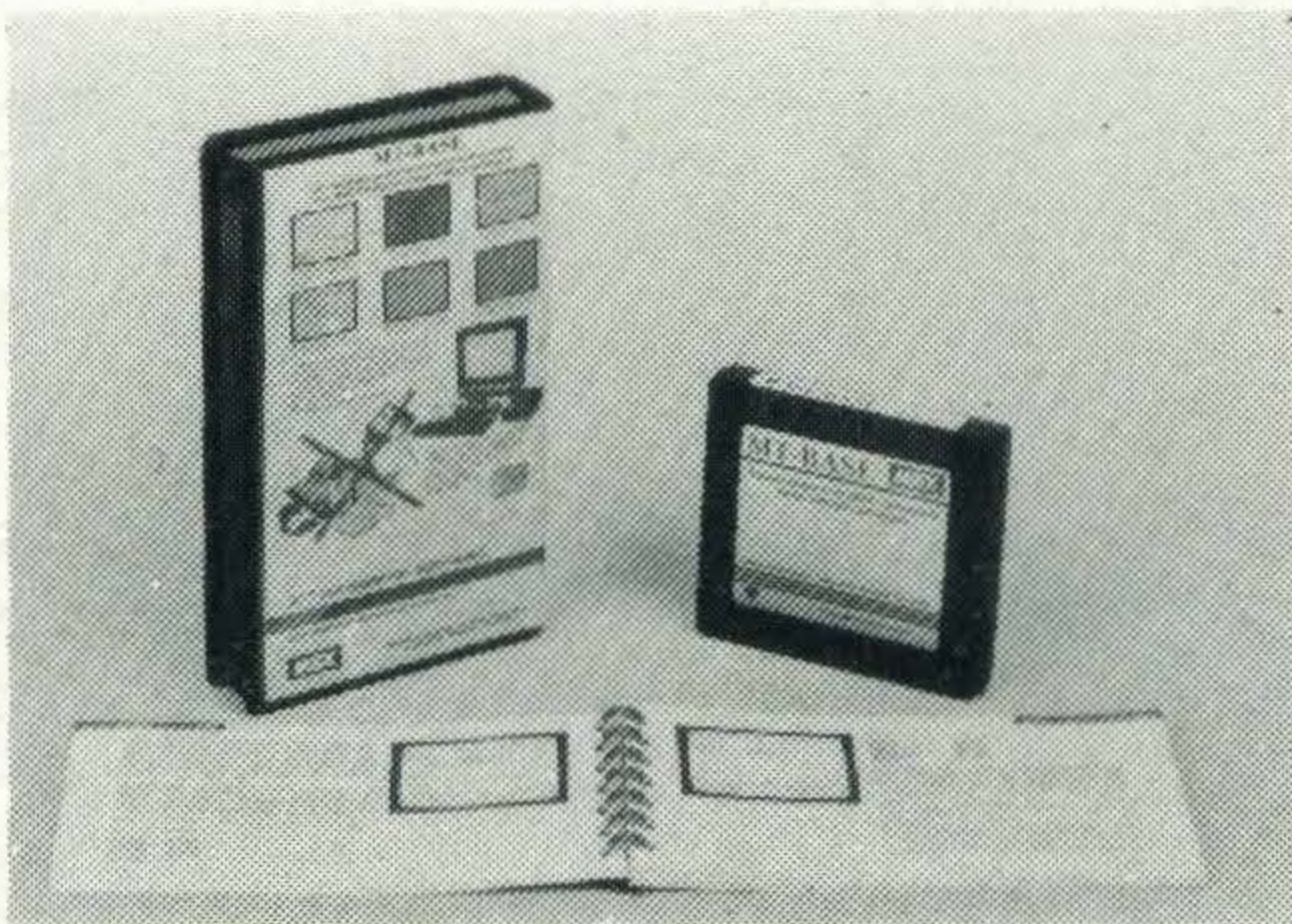
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Extensive manual

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