No.3

BIG V

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85p

JUNE 1984

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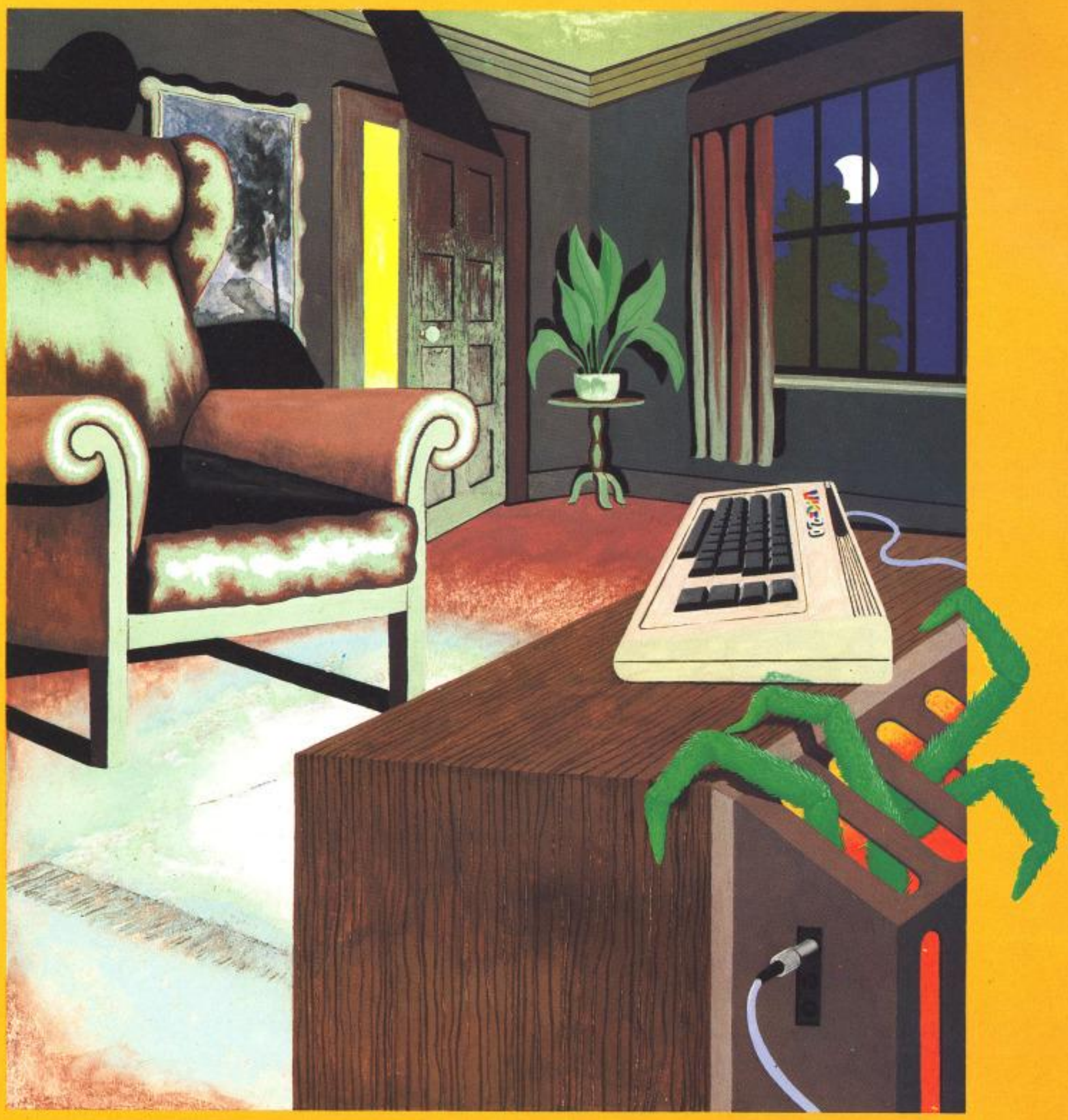
MODEM LIVING

WE ASK (AND ANSWER) THE 68000 QUESTION

ATARI 800XL REVIEW

Audiogenic Vic-20 Games....



...never turn your back on them.

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IN THE NAME OF THE LAW

By the time you read this the Video Recordings Bill will be on the verge of becoming law (see page 3). The main thrust of the Bill is directed against video 'nasties', with which this mag, thankfully, has little to do. What does concern us is that, almost as an afterthought, computer software has been rowed in — as if a program made up of bits and bytes, and a sordid piece of filmic tripe, are one and the same thing.

It's not yet clear how this will affect professional writers of games software. One thing's for sure: it will only take one demented Whitehouse-figure to claim that this or that computer game (not much scope for 'obscene' spreadsheets) is either 'obscene' or 'likely to deprave and corrupt' and a bust could follow.

It's probably too late for second thoughts; so we'll just have to hope that the Courts will have more sense than Graham Bright, MP.

Not difficult, on present form.

TONY TYLER

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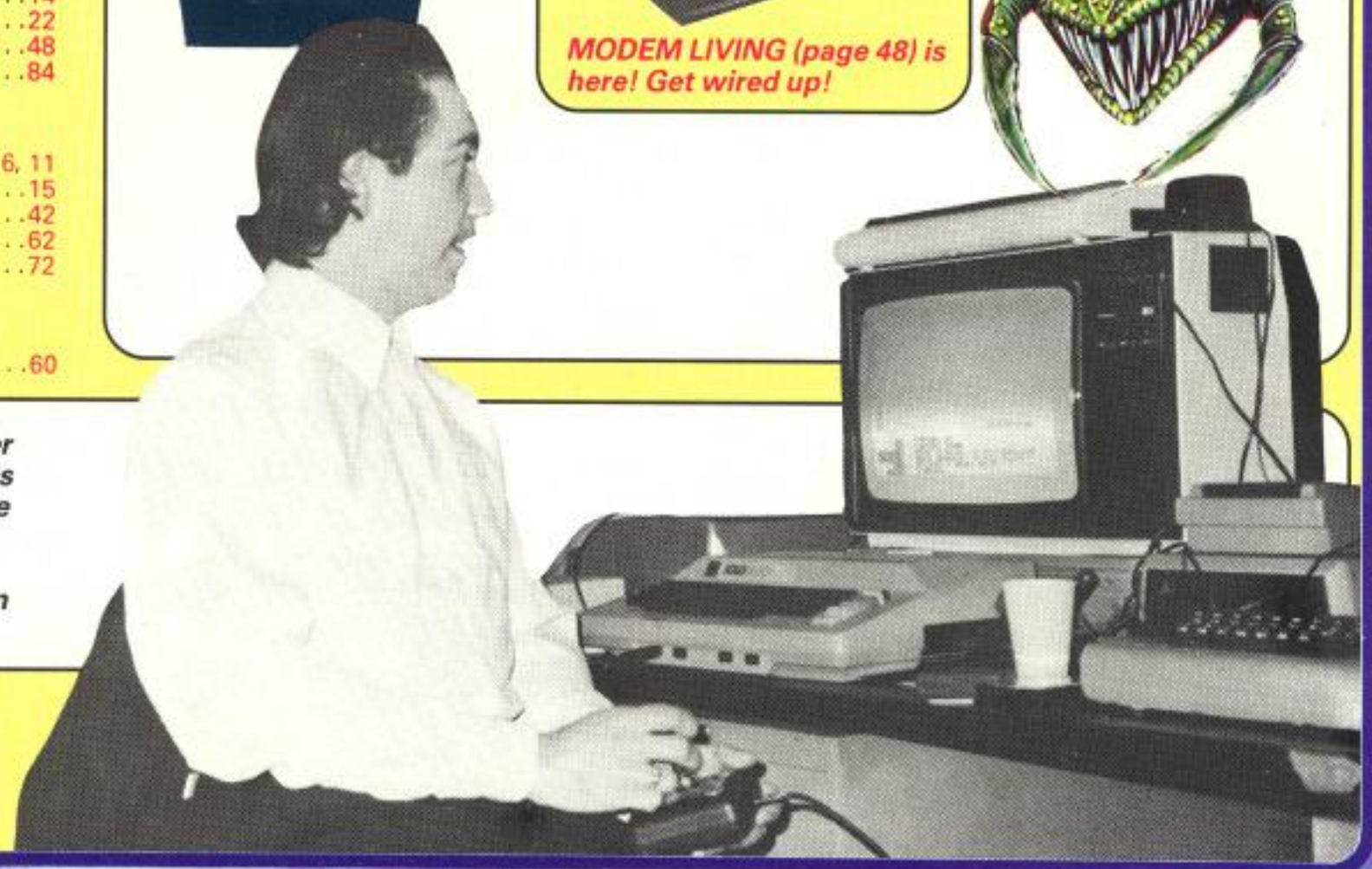
COMPETITION

Win A Battlezone Arcade 60

This month's Big Kompetition (page 60-61) prize is a real Atari Battlezone Arcade machine — the game that brought vector graphics, real tank steering and panoramic feel to armoured warfare. There's never been anything like it.

MODEM LIVING (page 48) is here! Get wired up!



PETE SHELLEY (right) is the former leader of the New Wave Romantics The Buzzcocks — and probably the most computered-up of all pop stars. Read his review of computing music-writing progs on page 66.

FRONT COVER: Global Handshake by Ron Embleton

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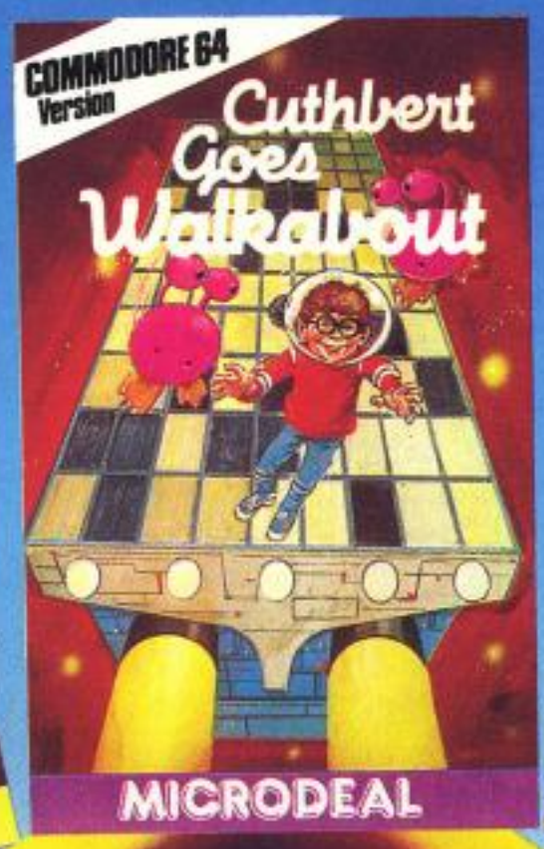
NOW AT LAST!

Cuthbert

ON THE

Commodore 64



Yes at last those fantastic top selling games for the Dragon are now available for your Commodore 64. Avoid those Marauding Moronians in "Cuthbert Goes Walkabout". Fight for survival in "Cuthbert in the Jungle"or plunder the Moronians planet in "Cuthbert in Space". These great games are a "must" for your software collection.

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CENSORSHIP:

Are You Ready For Software Nasties?

SOFTWARE AUTHORS may soon have to submit their progs to scrutiny by an Official Censor — if a Parliamentary Bill goes through as expected next month.

This is happening because of provisions in MP Graham Bright's Video Recordings Bill, designed to deal with so-called Video Nasties. Bright's Bill makes no distinction whatever between computer programs and movies on video.

"I incorporated the software clauses in the Bill," he told BIG K, "as a result of some obscene videos imported by a Clacton company last year." Reminded that the said videogames were never actually prosecuted for obscenity — and that they had been cleared by HM Customs — he said: "That's as may be. Just don't let anybody else try it all the same!"

The Tory MP was also apparently unaware that computer programs can be transmitted in written form ("I'll have to look into this"), but reluctantly conceded that his Bill has made no provision for this at all.

So, if you've a penchant for writing naughty software, pass it along as a BASIC listing. BIG K fancies that some interesting legal arguments might present themselves were a program listing — itself containing no actual obscenities — to be prosecuted for Filth. In the meantime, we're looking forward to seeing the Censor spending his days tapping in all those listing (in Commodore BASIC?) the mischievous might submit for "approval" when the Bright Bill becomes the Gloom Act. Be a way of stitching up the system, wouldn't it?

A further disturbing note: the Video Recordings Bill treats Sex and Violence as equally to be deplored. What about the violence involved in offing lots of little green men in spaceships? Will that apply? We'll keep you posted ...

TARRANT RIDES AGAIN

YOU RAVED about *Tiswas*, you rioted about *OTT*, now revel in Chris Tarrant again as he presents *The World's Greatest Computer Games*, a new video cassette for sale or rent from TVC Video. Twenty of the most well-known computer games *(Manic Miner, Valhalla, et al)* are showcased in 30 minutes. Chummy Chris and his friendly rugby shirt make the whole thing very cosy. TVC hope to make a series out of this title and have Volume 2 already in production (without Tarrant as yet). Check your local video dealer for Chris' computer cassette.

What's the Password Brothers?

HACKERS WITH line-busting skills may soon find themselves being approached by shady-looking types in pinstripe trousers offering sums of money in exchange for their talents. This is because as of August 1 the Labour Party is renting itself a piece of Micronet with a view to using the database's facilities to communicate between various party HQ's.

"We're a lot more with-it than the other parties," claimed a Labour Party HQ spokesperson. "They would say that,w ouldn't they?" scoffed an SDP-Liberal lady, who went on to confess that although the Alliance would dearly like to try something of the same sort, the lack of centralisation might hamper things.

Over at Smith Square the Tories are already moderately computered-up, with a mainframe or two handling pinstripe data on a secure landline. No opportunities here for a little constructive sabotage.

The piece of Micronet the Brothers have rented is, of course, locked and secure. Sure it is. Meanwhile Labour have no fears that Tory hackers will bust into BrotherNet (or whatever it's called) and lay a few eggs or acquire interesting data (all of which would be illegal under new Tory proposals which have Labour backing).

"The Tories haven't got anybody clever enough to do that" scoffed the Labour man. Probably true. But they've got money, haven't they?

USE YOUR IMAGINATION...

... and think up some network names that the political parties might adopt if they were all to go on-net. NO POLITICAL PARTY EXCLUDED! (But don't go over the top — keep it printable.)

CASH FOR THE BEST — THE BIN FOR THE REST!

MORE NEWS PAGE 6

IN NEXT MONTH'S BIG K . . .

MERSEY BEAT: Imagine Software have the highest profile of any successful games company in the UK. They also operate from the country's most notoriously derelict metropolis. We check out their style.

CONFESSIONS OF A COMPUTER SNOB: Unrepentant prose from a loathsome elitist.

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SPECTIPEDE
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GNASHER
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(For 48K Spectrum only)
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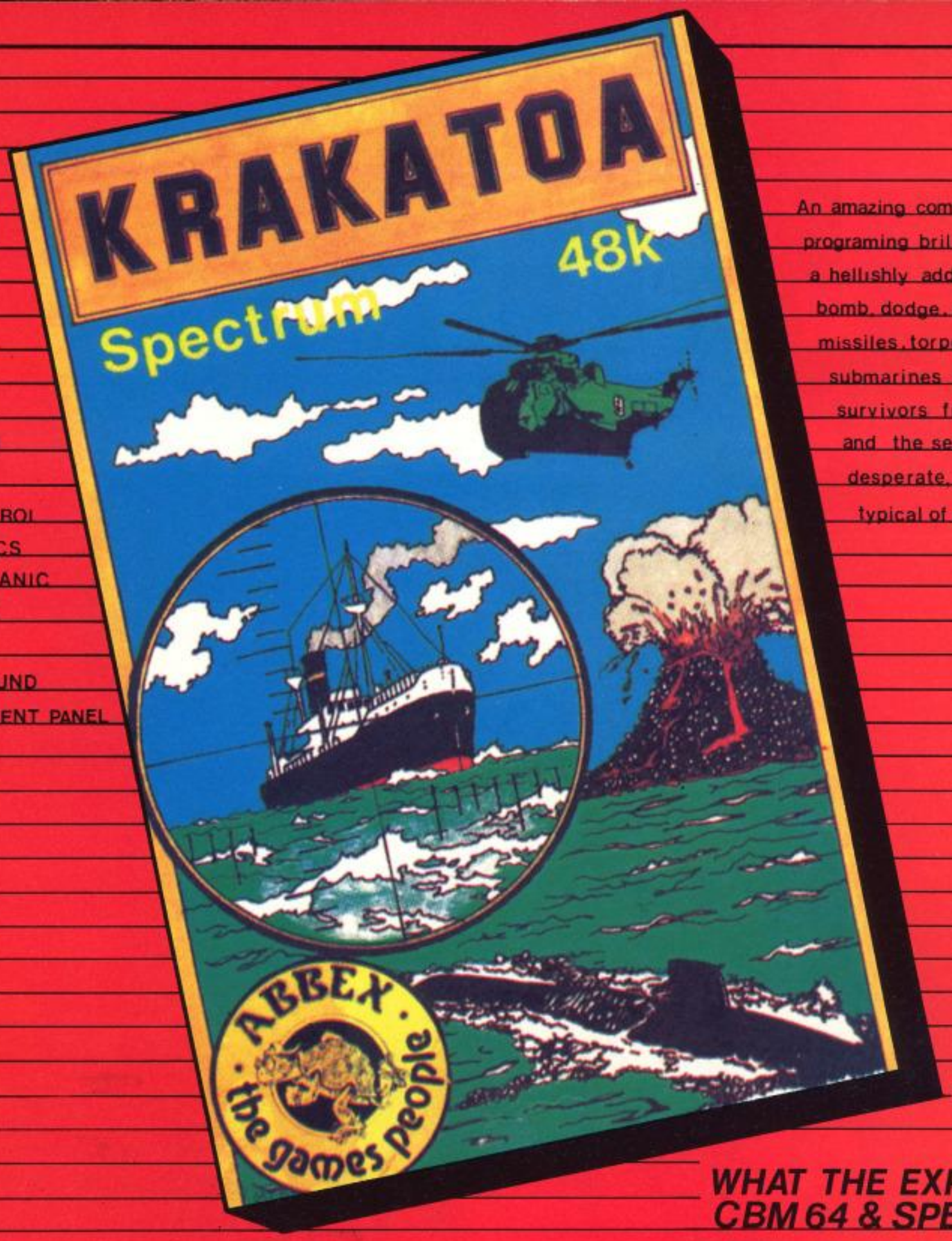

FEATURES

- DEMO PROGRAM
- RADAR
- DAMAGE CONTROL
- GREAT GRAPHICS
- MAC THE MECHANIC
- DELAY OPTION
- HI SCORE
- FABULOUS SOUND
- FULL INSTRUMENT PANEL
- ETC

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WHAT THE EXPERTS SAY
CBM 64 & SPECTRUM 48K

Its wealth of detail is amazing. One of the busiest games for a long time. The graphics are really excellent, well drawn and animated. A complicated, demanding game which I can't see losing its appeal for a long time. Krakatoa is both addictive and hard to play. It takes ages to get any good and the scope for getting better scores each time is enormous — very good, highly recommended. Game of the month.
"Crash Micro"

An amazing piece of programming, a great program. A year ago we would not have believed it was possible to do this.
"Software Supermarket

The only review said "Speech is effective and must be at the limit of spectrum capabilities, graphics are excellent and animation superb. A combination of graphics, adventure maze and chase games makes this an unusual, fascinating and addictive program which must rank among the spectrum classics.

Value for money	*100%*
Graphics	*100%*
Overall score	*100%*
	H.C.W.
Home Computing Weekly	

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FOR BBC

By R. WATFORD

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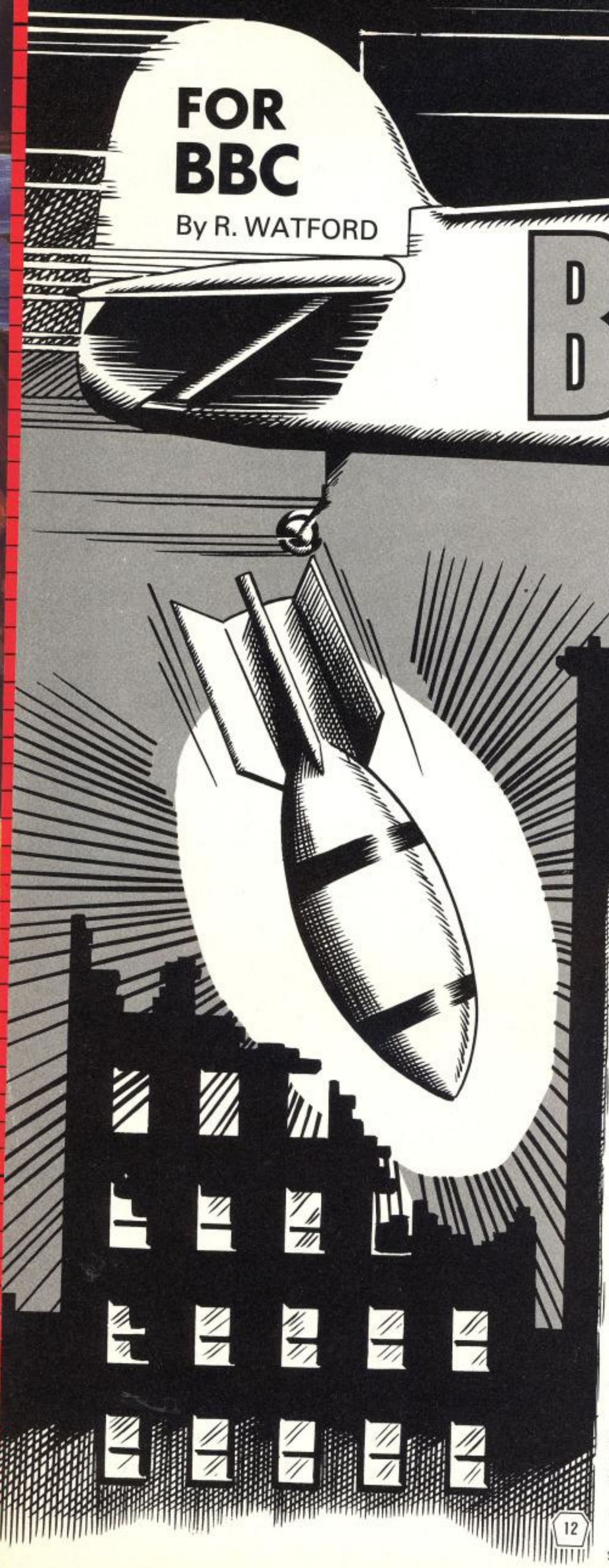

```
  100REM          NEW YORK
  110REM
  120REM        R. WATFORD
  130REM          13/3/84
  140REM
  150REM
  160ONERRORGOTO480
  170MODE2:VDU23;8202;0;0;0;:GCOL0,1:Z%=
0:DIMB%(19):ENVELOPE1,10,-1,0,0,255,0,0,
126,0,0,0,126,0:ENVELOPE2,1,-1,1,-1,1,2,
1,30,-10,-1,-30,126,126:*FX4,1
  180VDU23,255,0,102,102,0,0,102,102,0:V
DU23,254,124,124,56,56,124,124,56,16:VDU
23,253,240,160,160,184,255,248,0,0
  190VDU23,252,240,162,162,186,255,250,2
,2:VDU23,251,1,64,96,115,127,127,32,0
  200CL$=CHR$(8)+CHR$(8)+"   ":B$="  "+CHR
$(8)+CHR$(10)+CHR$(254):C$=CHR$(255):P$=
CHR$(8)+CHR$(8)+"  "+CHR$(251)+CHR$(252):
P1$=CHR$(8)+CHR$(8)+"  "+CHR$(251)+CHR$(2
53)
  210DEMO=FALSE:COLOUR1:COLOUR134:CLS:SC
%=0:D%=50:PRINTTAB(3,10)"PLAY NEW YORK"'
''"Press a key or FIRE"
  220NOW=TIME+300:REPEATUNTIL(INKEY(0)<>
-1OR(ADVAL(0)AND3)ORTIME>NOW):CLS
  230IFTIME>NOW DEMO=TRUE:PROCTUNE
  240FLAG=FALSE:B%(0)=31:B%(19)=31:W%=0:
COLOUR7:COLOUR128:FORI%=1TO18:B%(I%)=RND
(5)+18:FORH%=B%(I%)TO30:PRINTTAB(I%,H%)C
$:NEXT:NEXT
  250COLOUR133:PRINTTAB(0,31)SPC(19);TAB
(0,0)SPC(60);
  260COLOUR1:COLOUR134:SOUND0,-15,3,255:
SOUND1,-5,1,255
```

BIG charts

SP = Spectrum, AC = Acorn, 64 = Commodore 64, key V20 = Vic 20, 81 = ZX 81, DR = Dragon 32, OR = Oric-1

TOP 30 GAMES (Retail)

				SP	AC	64	V20	81	DR	OR	Price
(5)	CHEQUERED FLAG	Psion		*							£6.95
(1)	MANIC MINER	Bug-Byte		*		*					£7.95
(3)	ATIC ATAC	Ultimate		*							£5.50
(20)	FIGHTER PILOT	Digital Integration		*							£7.95
(9)	SCUBA DIVE	Durell		*		*				*	£6.95
(4)	LUNAR JETMAN	Ultimate		*							£5.50
(11)	ANT ATTACK	Quicksilva		*							£6.95
(6)	FLIGHT SIMULATION	Psion		*							£7.95
(2)	HUNCHBACK	Ocean		*		*					£6.90
(10)	SPACE SHUTTLE	Microdeal		*	*	*				*	£8.00
(17)	JET PACK	Ultimate		*			*				£5.50
(7)	STONKERS	Imagine		*							£5.50
(8)	POOL	CDS		*							£5.95
(—)	JET SET WILLY	Software Projects		*							£5.95
(—)	BLUE THUNDER	Richard Wilcox		*							£5.95
(—)	POGO	Ocean		*							£6.50
(—)	WHEELIE	Microsphere		*							£5.95
(—)	BUGABOO	Quicksilva		*		*					£7.95
(21)	THE HOBBIT	Melbourne		*	*	*				*	£14.95
(12)	MR WIMPY	Ocean		*		*			*		£6.90
(14)	DEATH CHASE	Micromega		*							£6.95
(—)	CHINESE JUGGLER	Ocean				*					£6.90
(15)	THE ALCHEMIST	Imagine		*							£5.50
(26)	HORACE GOES SKIING	Psion/Melbourne		*		*					£6.95
(24)	CRAZY KONG	Interceptor				*	*				£6.95
(13)	KONG	Ocean		*							£5.90
(—)	FRED	Quicksilva		*							£6.95
(—)	THE SNOWMAN	Quicksilva		*							£6.95
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(—)	HORACE AND THE SPIDER	Psion/Melbourne		*							£5.95

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VIDEO GAMES (Dedicated Consoles)

1	(1)	POLE POSITION (Atari)
2	(2)	SUPER COBRA (Parker)
3	(16)	SPACE SHUTTLE (Activision)
4	(3)	POPEYE (Parker)
5	(4)	ENDURO (Activision)
6	(6)	Q-BERT (Parker)
7	(13)	DEATH STAR BATTLE (Parker)
8	(—)	MARIO BROTHERS (Atari)
9	(5)	DIG DUG (Atari)
10	(8)	MOON PATROL (Atari)
11	(12)	FROGGER (Parker)
12	(10)	BATTLE ZONE (Atari)
13	(—)	SNOOPY Vs THE RED BARON (Atari)
14	(14)	DONKEY KONG (CBS/Coleco)
15	(18)	PITFALL (Activision)
16	(11)	RIVER RAID (Activision)
17	(7)	TUTANKHAM (Parker)
18	(8)	BIG BIRD EGG CATCH (Atari)
19	(9)	GALAXIAN (Atari)
21	(15)	JUNGLE HUNT (Atari)
21	(—)	PAC-MAN (Atari)
22	(—)	SMURFS (CBS/Coleco)
23	(20)	KANGAROO (Atari)
24	(17)	COOKIE MONSTER MUNCH (Atari)
25	(—)	MS. PAC-MAN (Atari)
26	(—)	SORCERER'S APPRENTICE (Atari)
27	(—)	CENTIPEDE (Atari)
28	(—)	DECATHLON (Activision)
29	(—)	SPACE INVADERS (Atari)
30	(—)	ROBOT TANK (Activision)

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FLYING FEATHERS (Bubble Bus
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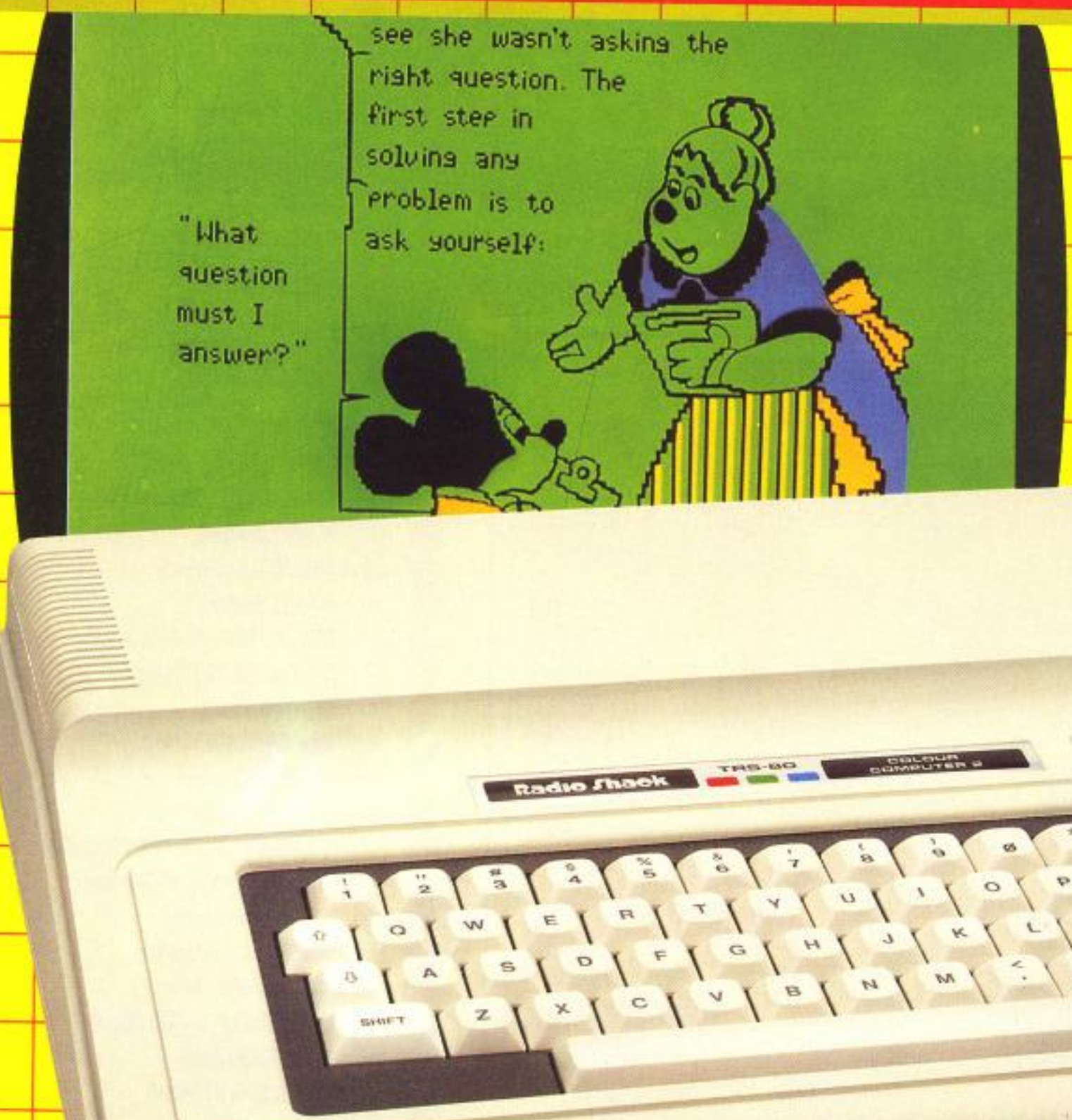

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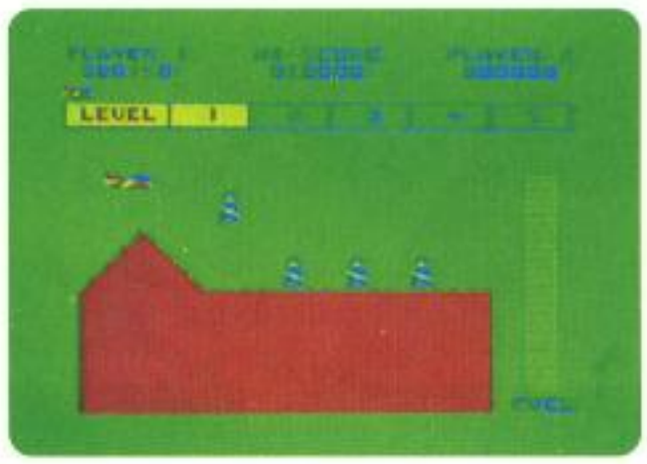

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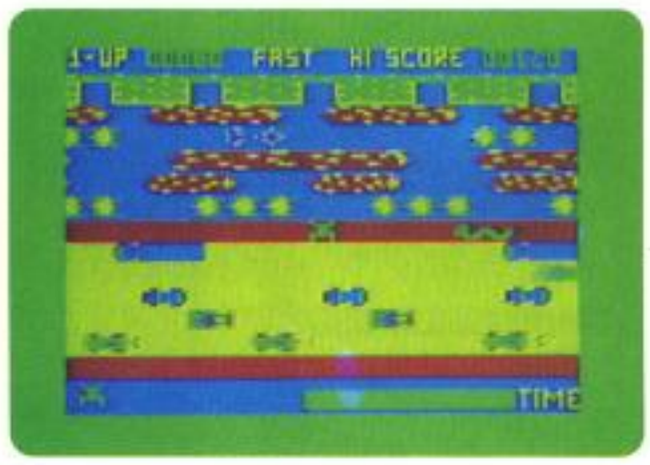
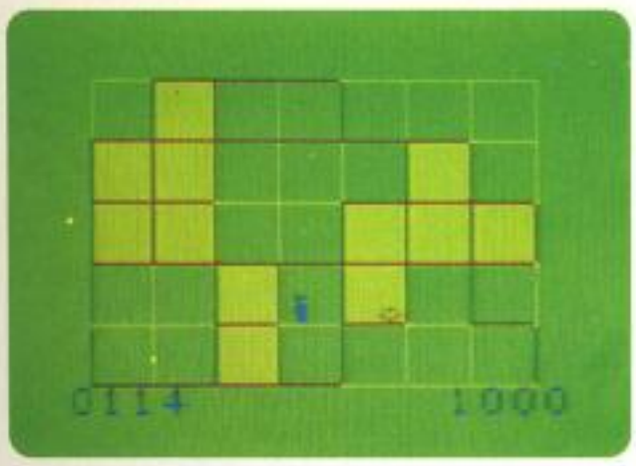


C

A **CRAZY PAINTER.** A high-speed arcade action game! Try your hand at painting the floor! Sounds easy? Yes, if the dogs, moths, caterpillars, boys, balloons etc. don't keep walking over the paint! Eight levels of difficulty. The catchy tunes played while you paint will have you "singing while you work". Keyboard or joystick controls. **26-7305**

B **SKRAMBLE.** Your mission is to penetrate the enemy's system and destroy their H.Q.. You will start with three spacefighters equipped with repeating cannon and twin bomb launcher. If you succeed in evading the elaborate defences, you will arrive at the core where flying becomes more difficult. Keyboard or joystick control. **26-7306**

C **FROGGER.** The popular arcade game for the Tandy Colour Computer. Safely manoeuvre the frog to its home within the time allocated. Cross the highway without getting run over and cross the river without falling in. Avoid the traffic, snakes, crocodiles and diving turtles. For one or two players. Joysticks optional. **26-7304**



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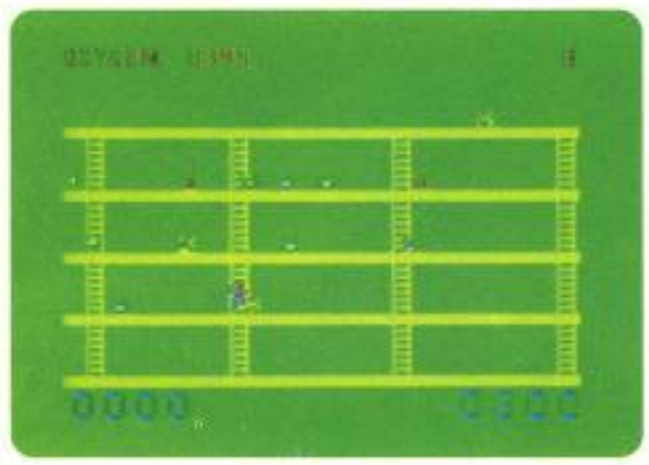

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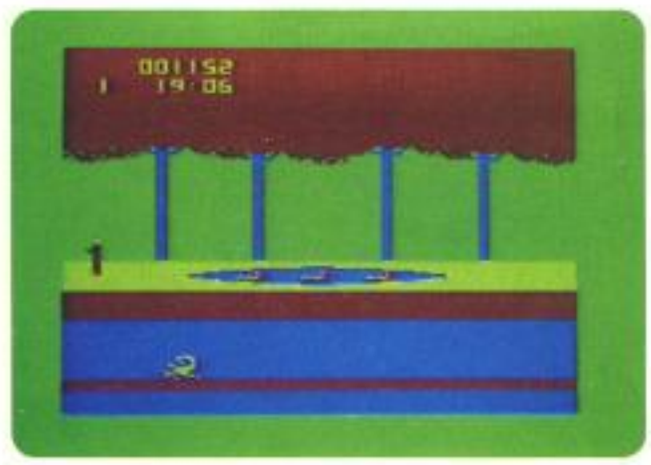

F

D **CUTHBERT GOES WALKABOUT.** Cuthbert must turn the lights of the lunar landing pad on by walking across the switches before the invading Moronians get him. Watch him do his victory dance before he tackles the next "pad" and another, larger, set of invaders. Superb colour graphics with music. Keyboard or joystick control. **26-7302**

E **CUTHBERT GOES DIGGING.** Cuthbert is guarding the site for a new launch pad. However the Moronians are still determined to get him! One touch and Cuthbert is electrocuted. The only way he can kill them is to trap them in a hole and hit them with his insulated hammer before they escape. Keyboard or joystick control. **26-7303**

F **CUTHBERT IN THE JUNGLE.** A high speed arcade action game with full colour graphics! Cuthbert failed to overcome the Moronians so he has been sent to the jungle! He must fight his way out collecting treasures, jumping pits and swinging over alligators whilst being aware of the killer scorpion. One joystick required. **26-7301**

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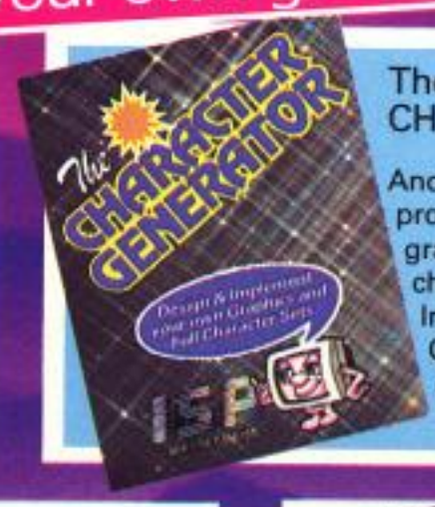

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C

DAWSON? SELL!

INTERESTING ATTEMPT to style a board game for the Spectrum. In City you get to chomp on a stogie and play property developer with land hungry for urban decay.

Starting with a bank balance of some £200,000 you must develop a city (what else?) and try and make a million. This isn't too easy as the computer quickly assumes the guise of a rival company and callously attempts to sabotage your constructions.

It's a deceptively complex game. You can erect a variety of buildings such as banks, shops and factories all of which effect the relative values of each other. This necessitates much strategic planning. F'rinstance the property value of your spanking new apartment block can be severly shaken should your cunning opponent build a smelly old pub directly opposite. Decidedly snobby don't you think?

Each months rents are calculated, overdrafts totalled and profits assessed. There's provision for up to 4 players and a jail routine for the more shady developers. I've always found the desire for micro board games somewhat curious but this attempt works surprisingly well. The game is both original and demanding. I wonder if they'll do a board version... — S.K.

RIDE DAT DISC

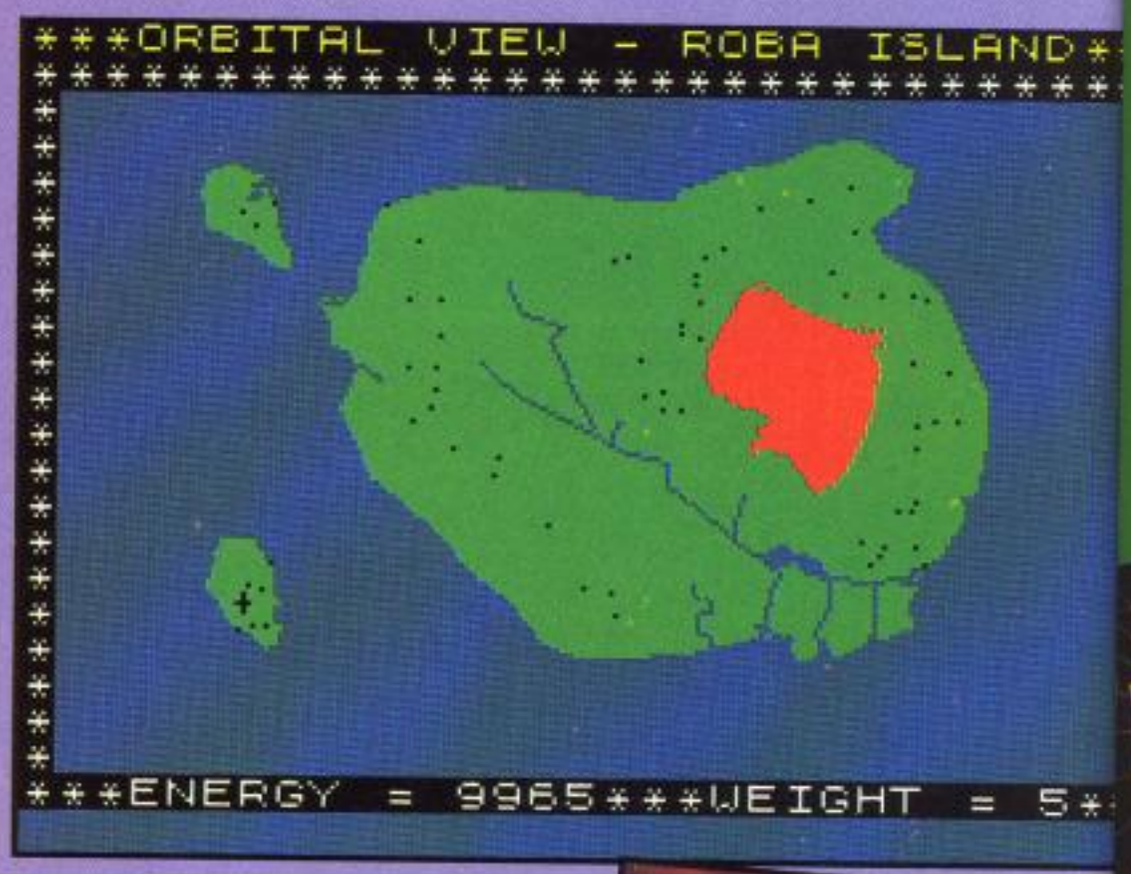
THE DIMINUTIVE Q*Bert's triangular stomping ground is the latest locale for Automata's ubiquitous hero, the Piman. Yep, the little horror is busy causing trouble for the hapless Bert as he hops merrily about, carelessly colouring the great Pyramid of Pi.

The gameplay is, of course, pretty familiar stuff. However, it's set apart from other Spectrum Q*Bert clones by some truly splendid graphics. Bert has been skilfully drawn and his army of assailants are smoothly animated. Alongside Pi-nose you'll have to contend with the Bouncing Ball brothers, Sid the snake and Jas and Col (the authors?).

As you might imagine the pyramid soon becomes mighty crowded.

By way of a breather you can hop Bert onto one of two spinning discs which'll return him to the peak of the pyramid. This provides the most spectacular graphic routine in the game. Bert spins, in full perspective, majestically through the air. It's genuinely impressive. At the end of each bash you're given your score over a drink in the Automata bar, a nice finishing touch. Written in machine code (unusual for Automata) the game offers quality arcade thrills. Hardly original, I know, but certainly entertaining. — **S.K.**

Game: PI-BALLED
Maker: AUTOMATA UK LTD
Machine: SPECTRUM 48K
Format: cassette
Price: £6.00
Rating: KK



TURBO BREAKOUT

*THOSE WHO'VE considered Atari's **Super Breakout** the last word in bat and ball games would do well to check out this visually striking variation from Starpath. The massive memory of the Starpath Supercharger has enabled a number of artistic changes to be made. The humble bat has been transformed into a hi-res juggler and his balls (sic) are now red hot.*

*Like other **Breakouts** there's room for 1 to 4 players (no big deal there) but here you're given five neat game variations, including the frantic **Cascade** which features no fewer than five cavities, each with their own eager-to-escape ball, and the frustratingly difficult **Migrating Blocks** which boast a ridiculously efficient self-repairing wall. When you miss a ball, which is quite frequent considering you can have up to seven onscreen at the same time, a long purple crook snakes on from stage left and drags your man off by the throat.*

*It's all very nicely done. However, my curvy **Breakout** connoisseur reckons that despite all these visual niceties the games remain pretty easy-peasy as there's no variation of ball speed. An astute observation I think. Even so the smart audio visuals and competitive price make **Fireball** a notable entry in the fave old game stakes. — S.K.*

Game: FIREBALL
Maker: Starpath Corp.
Machine: Atari VCS with Starpath Supercharger
Format: Cassette
Price: £9.95
Rating: KK

DROID YAWN

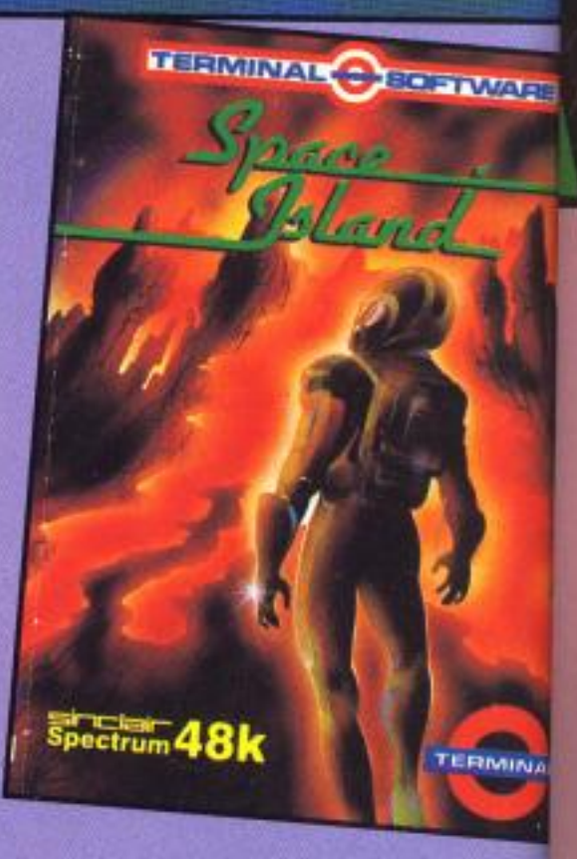
UNEXCITING 'graphic adventure' (I'm growing slowly to hate that term) set upon the crudely etched planet of Zyro. Apparently one of your patrolling survey ships has been downed by a mysterious salvo of alien laser fire. Miraculously, though, an android has survived this attack, and he now stands amid the wreckage of the craft awaiting further instructions.

With what transpires to be a particularly limited vocabulary you must try and guide the little tin man about the surface of the planet and attempt to solve the riddle of the hostile blast.

The subsequent action (I use the term loosely) is then enacted across a static map with your android artfully represented as a white punctuation mark. Just nudge your marker around the planet and react to the messages displayed.

Yawnsville dad.

As you might imagine I found the thing exceptionally tedious. Progress is slow and the graphic display barely warrants a mention. — **S.K.**



Game: SPACE ISLAND
Maker: TERMINAL SOFTWARE
Machine: 48K ZX SPECTRUM
Format: cassette
Price: £6.95
Rating: None

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SOFTWARE

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Game: CITY
Maker: TERMINAL SOFTWARE
Machine: SPECTRUM 48K
Format: cassette
Price: £6.95
Rating: KK

HERE THEY COME AGAIN

I suppose it was inevitable. The Electron is a new micro on the scene and so a ripe new market for all the familiar game themes that have already saturated the older and more established machines.

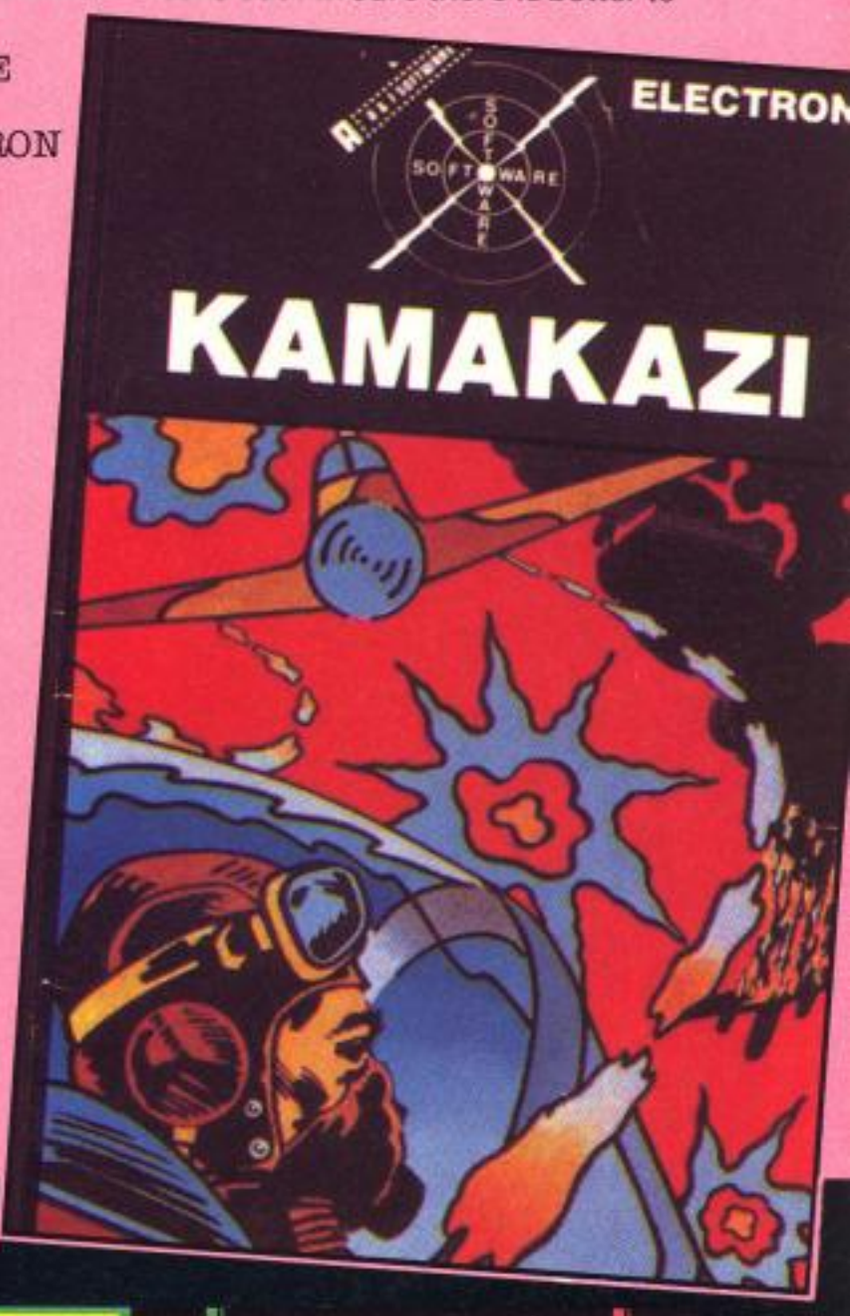
That said, *Kamikaze* is an early entry in the *'Galaxian* clone' area for the Electron. The space scenario has been replaced by a more 'down to Earth' setting. Shapes approximating planes and helicopters dive at a seagoing firing base. Other than that, play is virtually identical to *Galaxian*.

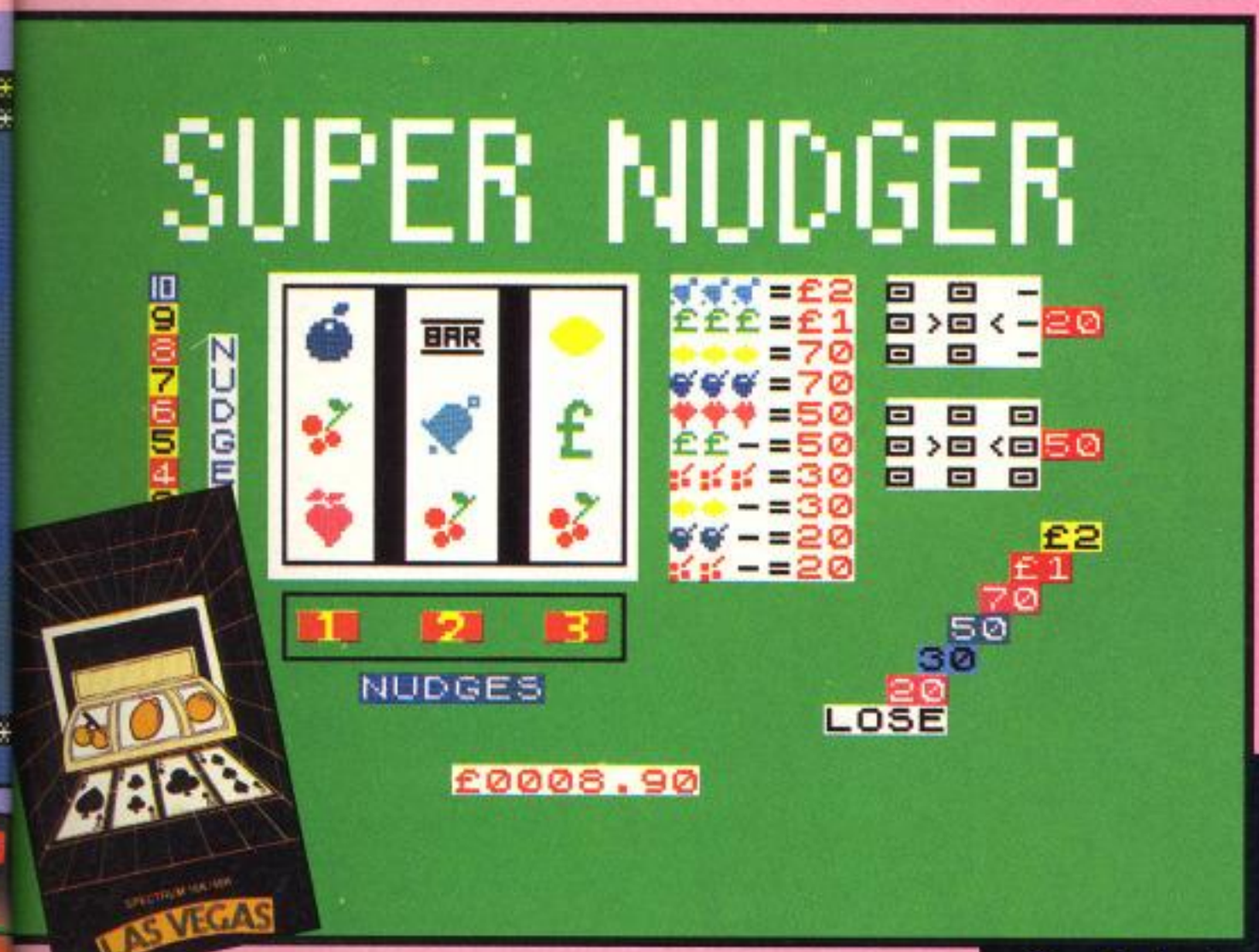
The action is reasonably fast even on the slowest of the two speeds. Graphics are average and sound is poor. It must be the first time I've come across a gun base that explodes silently!

Control is adequate with two choices of keyboard layout (oh for a joystick option on the Electron!). Instructions are sparse but there is a good high score table that rates you from Novice to 'Superman'.

An OK game for the arcade freaks but I'm sure there is better to come. — **R.B.**

Game: KAMIKAZE
Maker: A&F
Machine: ELECTRON
Format: cassette
Price: £7.90
Rating: K





YOU LOSE, PAL

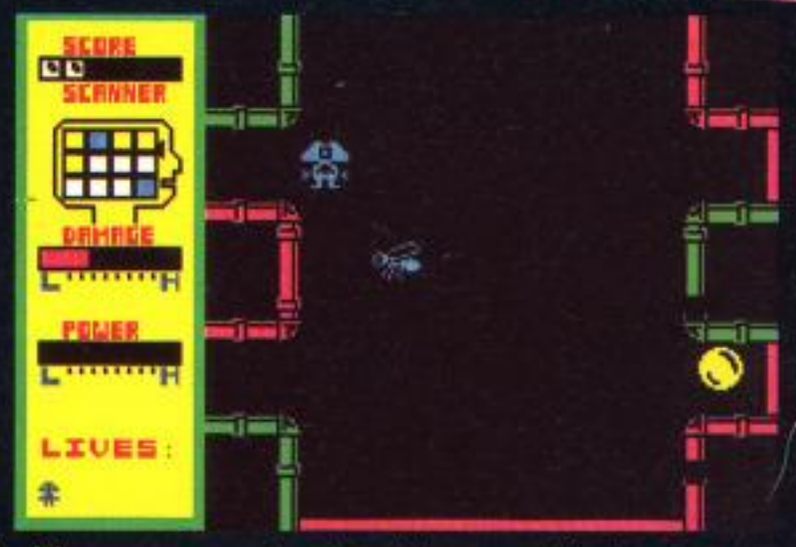
Hmm, THIS is interesting: an emasculated slice of vice for out-of-pocket gamblers. Or, to be more precise, a low key double bill featuring that indefatigable old pub dog, the fruit machine and a version of the popular card game, Blackjack.

The former boasts all the features you'd expect from a quality Fruit such as nudge, hold and gamble but it's cursed with a cluttered screen layout and some poor animation. Those all-important reels refuse to scroll the way reels should. They merely change in flickering sequence. It's far too crude a display to really satiate the discerning punter.

The Blackjack program is marginally more interesting. As with Pontoon (or 21), the idea is to break the bank with a five card trick. The game's a doddle to play and the visuals are quite neat, with the 'puter speedily unveiling your hand as you bravely twist. Unfortunately, though, there's no option to alter the stakes. A 10p wager is mandatory — not much help for us strategic players. Not that it would have made much difference anyway as I'm sure the deck was rigged. Those smarmy 'You Bust!' proclamations were far too frequent to be kosher. Still I guess it's cheaper than a Greyhound to Vegas... — **S.K.**

Game: LAS VEGAS
Maker: TEMPTATION SOFTWARE
Machine: SPECTRUM 48K
Format: cassette
Price: £5.95
Rating: K

Quick, Nurse — the Screens!



A FANTASTIC droid voyage, no less! In this new offering from Softek you become a miniscule brain surgeon incarcerated within the bug-ridden bonce of a not-so-super-robot. These bugs are busy sabotaging the poor ol' droid by ripping up his plumbing. As resident micro surgeon you must skate around the 12 sectors of the damaged droid and clean up the mess.

You'll need to repel the bugs with your stun balls and repair the dripping pipes before cumulative damage causes the poor old thing to collapse into an undignified pile of nuts and bolts.

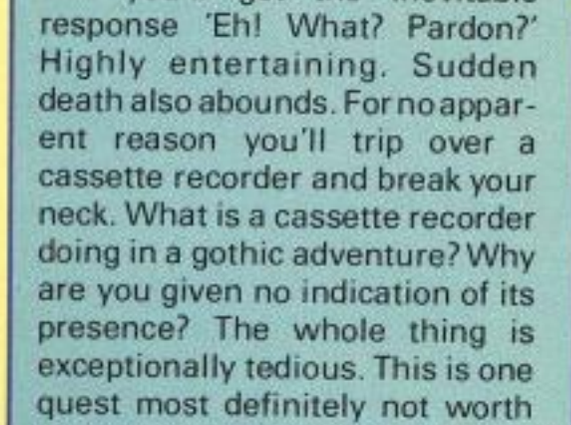
Then, if you get the damage level down to around 12%, you're transported to another dodgy robot. Some reward, huh?

The concept behind ***Microbot*** *is refreshingly novel; unfortunately it's rather shafted by some sluggish gameplay. Your little micro surgeon can only trundle about in first gear and consequently the ensuing bug-battles are somewhat unexciting. A shame. Still the graphics are very good indeed and there's a wonderful selection of bugs to avoid. —* **S.K.**

Game: MICROBOT
Maker: SOFTEK
Machine: SPECTRUM 48K
Format: cassette
Price: £5.95
Rating: KK

CASTLE HASSLE

Uninspiring text adventure that dares you to venture into a dark old castle in search of the legendary Staff of Gomora. The program boasts 120 locations but whether you'll feel inclined to visit them all after your initial tentative steps across the drawbridge is another matter. I mean, there are so many faults with this that it almost becomes depressing listing them. A text adventure stands or falls by its literacy. Locations should be clearly described and messages interesting. After all the more evocative the text the more enjoyable the adventure's likely to become. Unfortunately 'Location: An allure' is not my idea of an elaborate description, but it's typical of *Castle Adventure*. Not only is the text brief but it's peppered with meaningless architectural jargon. I mean, what's an Allure for God's sake? (Sounds like a loose woman.) Even worse, you are unable to act in any satisfactory way within the program. Try something interesting and you'll get the inevitable response 'Eh! What? Pardon?' Highly entertaining. Sudden death also abounds. For no apparent reason you'll trip over a cassette recorder and break your neck. What is a cassette recorder doing in a gothic adventure? Why are you given no indication of its presence? The whole thing is exceptionally tedious. This is one quest most definitely not worth girding your loins for. An Allure! Pshaw . . . — **S.K.**

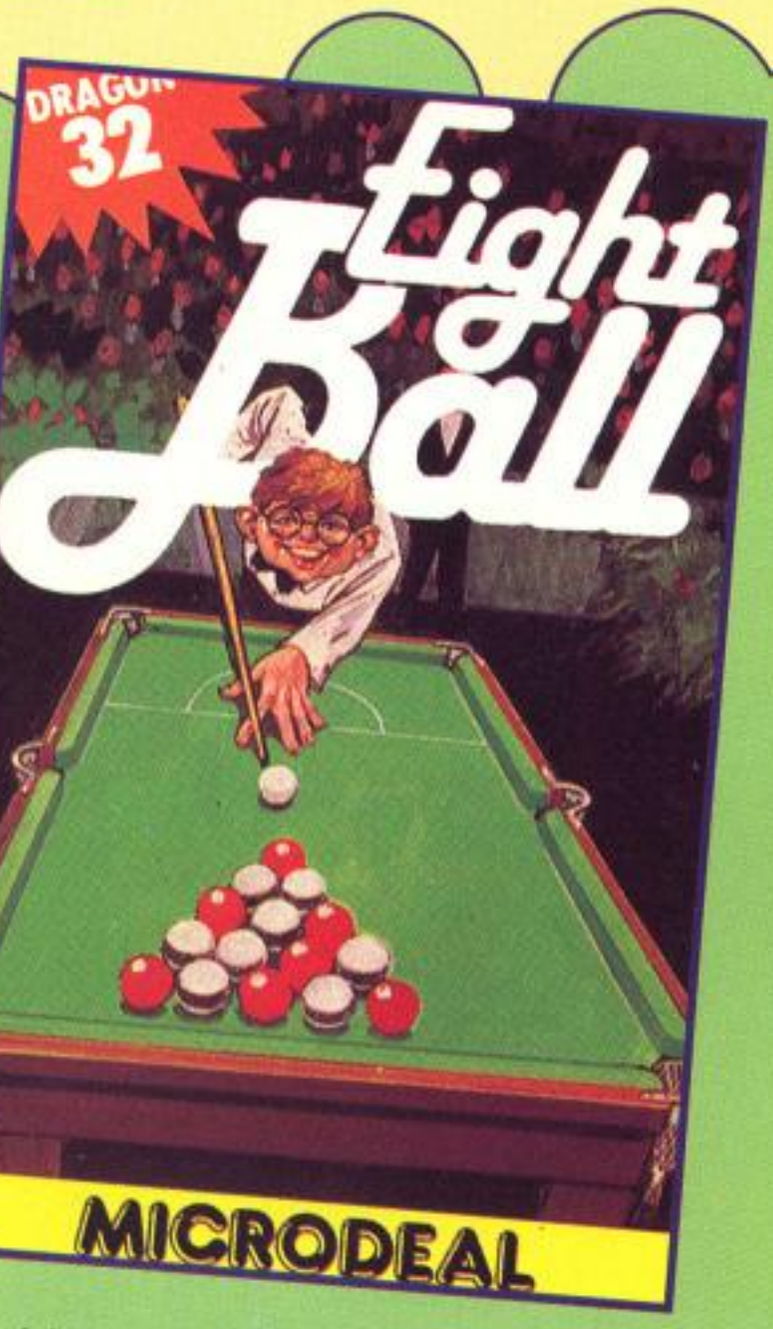


Game: CASTLE ADVENTURE
Maker: VIRGIN GAMES
Machine: DRAGON 32
Format: cassette
Price: £6.95
Rating: none

Hackers Against the Bomb

Interesting strategy game that has you donning the somewhat perilous guise of a bomb disposal officer. As is your luck you've been called to defuse one of those old wartime devices that are dug up with such alarming regularity. Even worse it's not one that you've seen before and so you'll require all your skill and ingenuity to defuse it. Hairy stuff! Just choose the correct items from your toolkit and decide what course to take. The program enables you to view the unexploded device from three angles before choosing from a menu of actions. Will you lift the bomb upright with the hydraulic jack or clout it with the copper hammer? Nerves of steel are a necessity. Should you manage to make any headway at all a help routine becomes available to guide you through the trickiest moments. I most certainly will not be taking up bomb disposal work full time. Almost every move I made resulted in a loud raspberry which rather symbolically denoted my premature end. Still for those of a methodical (not to mention suicidal) nature this might well provide amusement. — **S.K.**

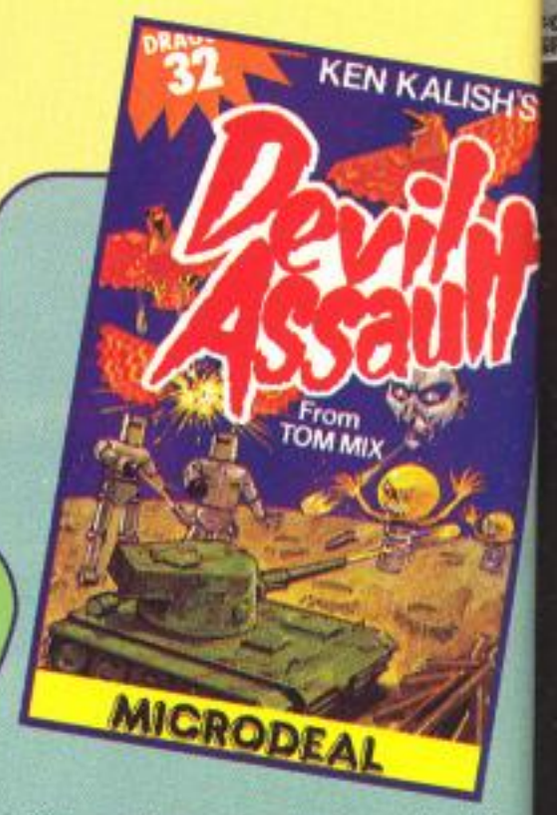
Game: UXB
Maker: VIRGIN GAMES
Machine: DRAGON 32
Format: cassette
Price: £6.95
Rating: KK



Perhaps one of the more curious game adaptations for the home micro is that of Pool. Decidedly non-violent with nary an alien to be seen, this pot-bellied perennial works surprisingly well. The pace is relaxed, lightning reflexes are most definitely unnecessary, and the skill level pleasantly high. The rules are also refreshingly simple. Just pot all your colours and sink the eight ball before your opponent. Incidentally you will actually have to collar an opponent as this Pool has no computer player option. The actual game is cleverly simulated. Once you've selected the angle of your shot using the joystick, a cue ball is displayed at the top of the screen along with a power-bar indicator. This enables you to select not only the strength of your strike, but the amount of spin that you want to put on the ball. Master this and you're well on your way to becoming a top hustler.

Although visually less exciting than some of the versions around for the Spectrum this features convincing sound effects and super smooth movement. My only real gripe is with its failure to display a score during play. Most of the usual Pool rules apply and I dare say regular players will find this a welcome supplement to their usual fix. — **S.K.**

Game: EIGHT BALL
Maker: MICRODEAL
Machine: DRAGON 32
Format: cassette
Price: £8.00
Rating: KK



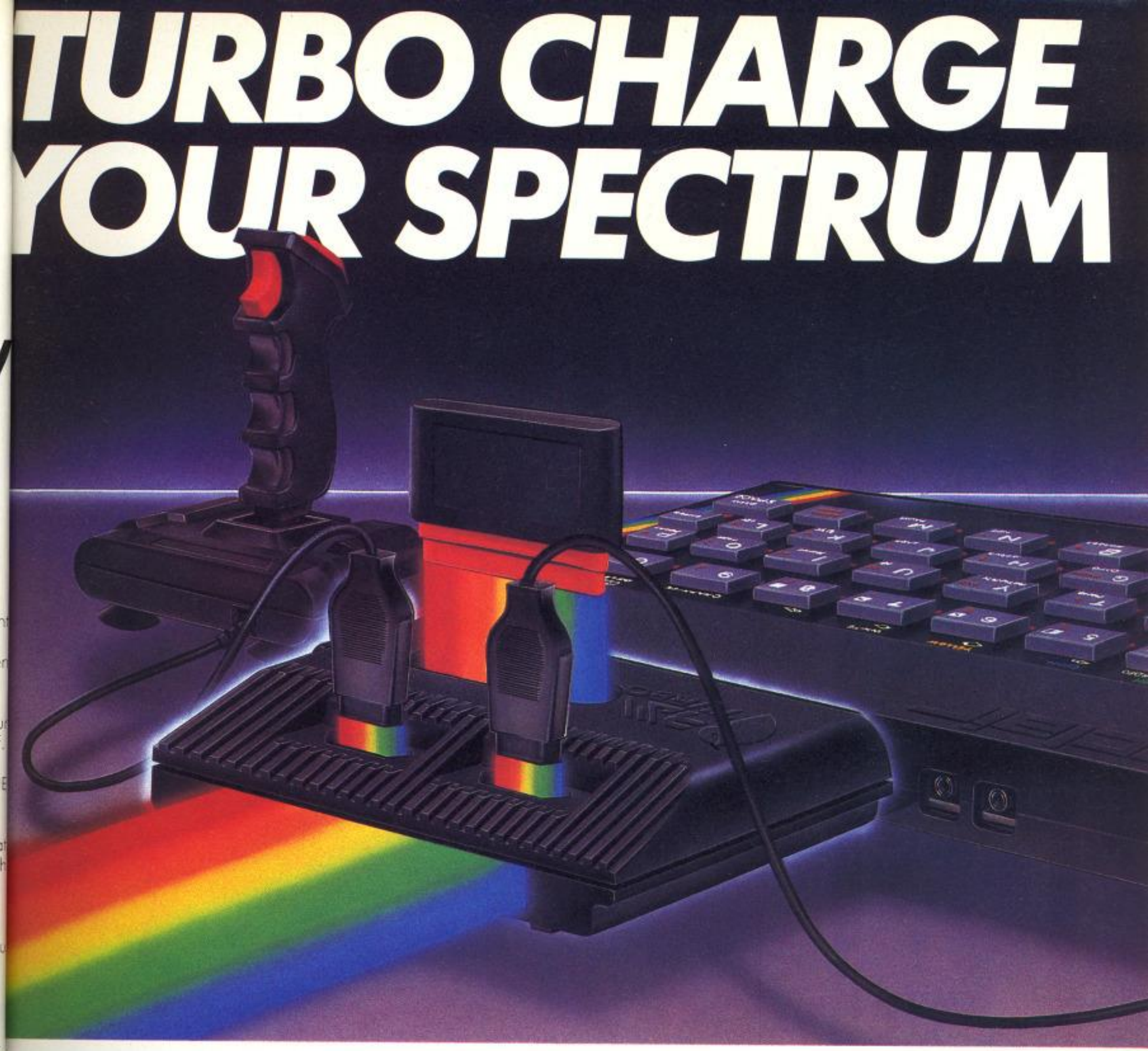
Yet another winner from the dazzling digits of Ken Kalish, who almost singlehandedly has elevated the standard of Dragon software to arcade stature. This latest release features all of his usual trademarks — exceptional hi-res graphics, exciting sound and invigorating gameplay.

There are three screens to survive. The first features manic vampire bats who drop bombs and divide into two if hit by your laser fire. Knock one of these smaller bats out and its twin will come screaming down to ram you. It's rather like a turbo-charged *Demon Attack* only less forgiving. Clear two screens of these and you'll be rewarded with a robot attack! Little tin-plated terrors stomp down the centre of the screen disgorging death and destruction at every turn.

There are five skill levels to play. Should you be foolhardy enough to risk the upper levels there's a fair chance that you'll meet old Nick himself (hence the title). True to form he'll wreak havoc with a brimstone bombardment that'll rip up your starbase something rotten. *Devil Assault* is a feast of a game for those with an itchy trigger-finger. It's superbly executed and breathtakingly smooth. — **S.K.**

Game: DEVIL ASSAULT
Maker: MICRODEAL
Machine: DRAGON 32
Format: cassette
Price: £8.00
Rating: KKK

TURBO CHARGE YOUR SPECTRUM



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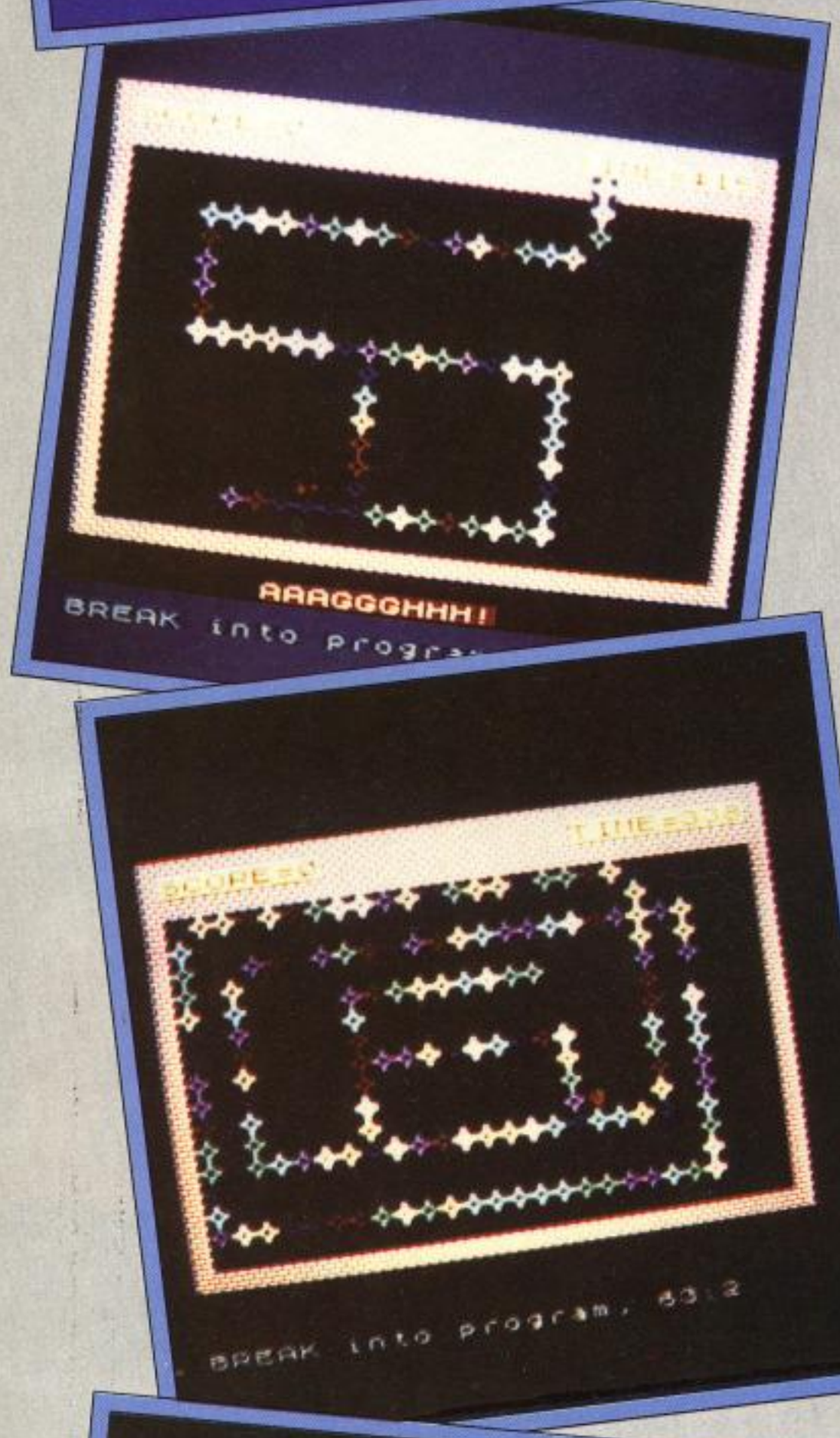
By STEVEN BARCLAY for SPECTRUM

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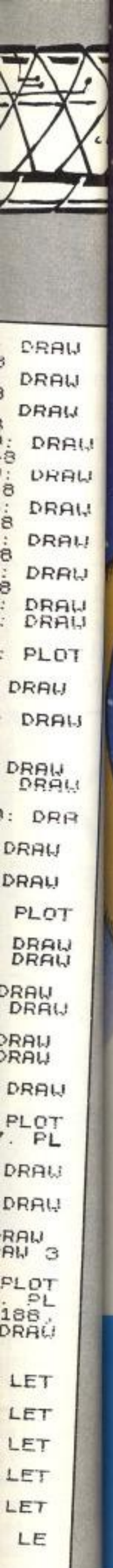
  2 CLS : LET sc=0
  3 GO SUB 300
  4 PAPER 0: BORDER 0: CLS
 10 LET a=10: LET b=10
 20 PRINT AT 10,8; INK 4; PAPER
 1; FLASH 1;"PREPARE TO DIE!": F
OR O=1 TO 5: FOR F=1 TO 5: BEEP
1/20,F: NEXT F: NEXT O: CLS
 21 LET T=500
 30 PRINT AT 2,2; INK 2; PAPER
7;"▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒"
 31 PRINT AT 19,2; INK 2; PAPER
7;"▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒
"
 32 PRINT AT 0,2; INK 2; PAPER
7;"▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒"
 33 PRINT AT 1,2; INK 2; PAPER
7;"▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒"
 34 LET M=19: FOR F=2 TO 10: PR
INT AT F,29; PAPER 7; INK 2;"▒"
 35 PRINT AT F,2; INK 2; PAPER
7;"▒": BEEP 1/25,F
 36 PRINT AT M,29; PAPER 7; INK
 2;"▒"
 37 PRINT AT M,2; INK 2; PAPER
7;"▒": BEEP 1/25,F: LET M=M-1: N
EXT F
 40 LET q=INT (RND*16+2)+1
 41 LET w=INT (RND*25+2)+1
 42 LET S=INT (RND*10)+1
 43 IF S=1 THEN LET 0$="◓": LET
 INK=4
 44 IF S=2 THEN LET 0$="▼": LET
 INK=6
 45 IF S=3 THEN LET 0$="◥": LET
 INK=5
 46 IF S=4 THEN LET 0$="◭": LET
 INK=2
 47 GO SUB 6000
 48 LET move=1
 49 PRINT AT 1,2; PAPER 7; INK
2;"▒"; INK 2; PAPER 6;"SCORE=";s
c; PRINT AT 1,29; PAPER 7; INK 2
;"▒": BEEP 1/5,5: BEEP 1/5,5: BE
EP 1/5,5: BEEP 1/7,7: BEEP 1/7,7
: BEEP 1/7,10: BEEP 1/5,5
 50 IF INKEY$="P" OR INKEY$="p"
THEN LET move=1
 51 IF INKEY$="L" OR INKEY$="l"
THEN LET move=2
 52 IF INKEY$="Z" OR INKEY$="z"
THEN LET move=3
 54 IF INKEY$="X" OR INKEY$="x"
THEN LET move=4
 60 IF move=1 THEN LET a=a-1
 61 IF move=2 THEN LET a=a+1
 62 IF move=3 THEN LET b=b-1
 63 IF move=4 THEN LET b=b+1
 71 PRINT AT a,b; INK INT (RND*
7)+1;"✥"
 75 PRINT AT 1,21; INK 2; PAPER
 6;"TIME=";T; PAPER 7; INK 2;"▒"
 80 PRINT AT q,w; INK INK;0$
 81 IF a=q AND b=w THEN LET sc=
sc+100: BEEP .09,50: BEEP .09,40
: BEEP .09,30: BEEP .15,50: FOR
f=3 TO 16: BEEP 1/100,10: BEEP .
01,-25: PRINT AT f,3; PAPER 0;"
                              ": NEXT
 f: GO TO 40
 90 IF a=2 OR a=19 OR b=2 OR b=
29 THEN GO TO 200
 95 LET T=T-1
 96 IF T<0 THEN GO TO 1000
100 GO TO 50
200 PRINT AT 21,10; INK 6; PAPE
R 2;"AAAGGGHHH!": FOR f=-20 TO 3
0: BORDER 1: BEEP 1/80,f: BORDER
 5: BEEP 1/120,f: BORDER 0: BEEP
 1/150,f: NEXT f
202 FOR F=0 TO 22: LET A=USR 32
80: BEEP 1/50,F: NEXT F
205 BORDER 1: FOR F=1 TO 20: PA
PER 6: CLS : PAPER 2: CLS : NEXT
 F: PAPER 0: CLS : LET j=INT (RN
D*6)+1
210 PRINT AT 8,3; PAPER 1; INK
6;"YOU HAVE FRIED YOURSELF!!!"
220 LET a=INT (RND*150)+1: LET
b=INT (RND*150)+1
230 INK j: PLOT 0,0: DRAW a,b
231 PLOT 255,0: DRAW -a,b
```



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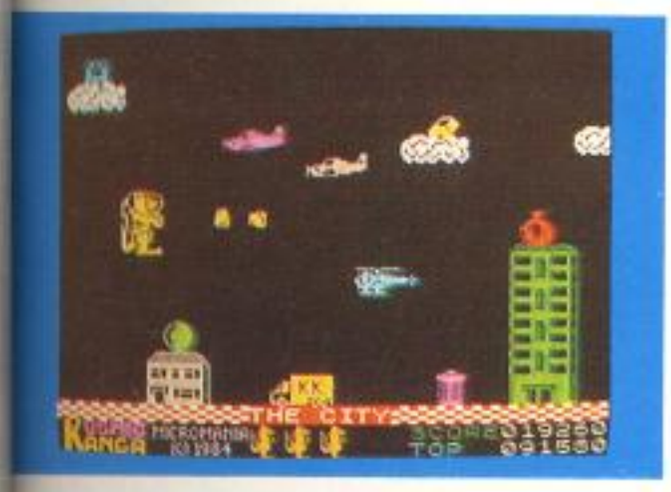

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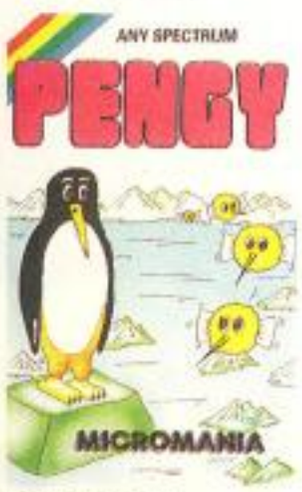

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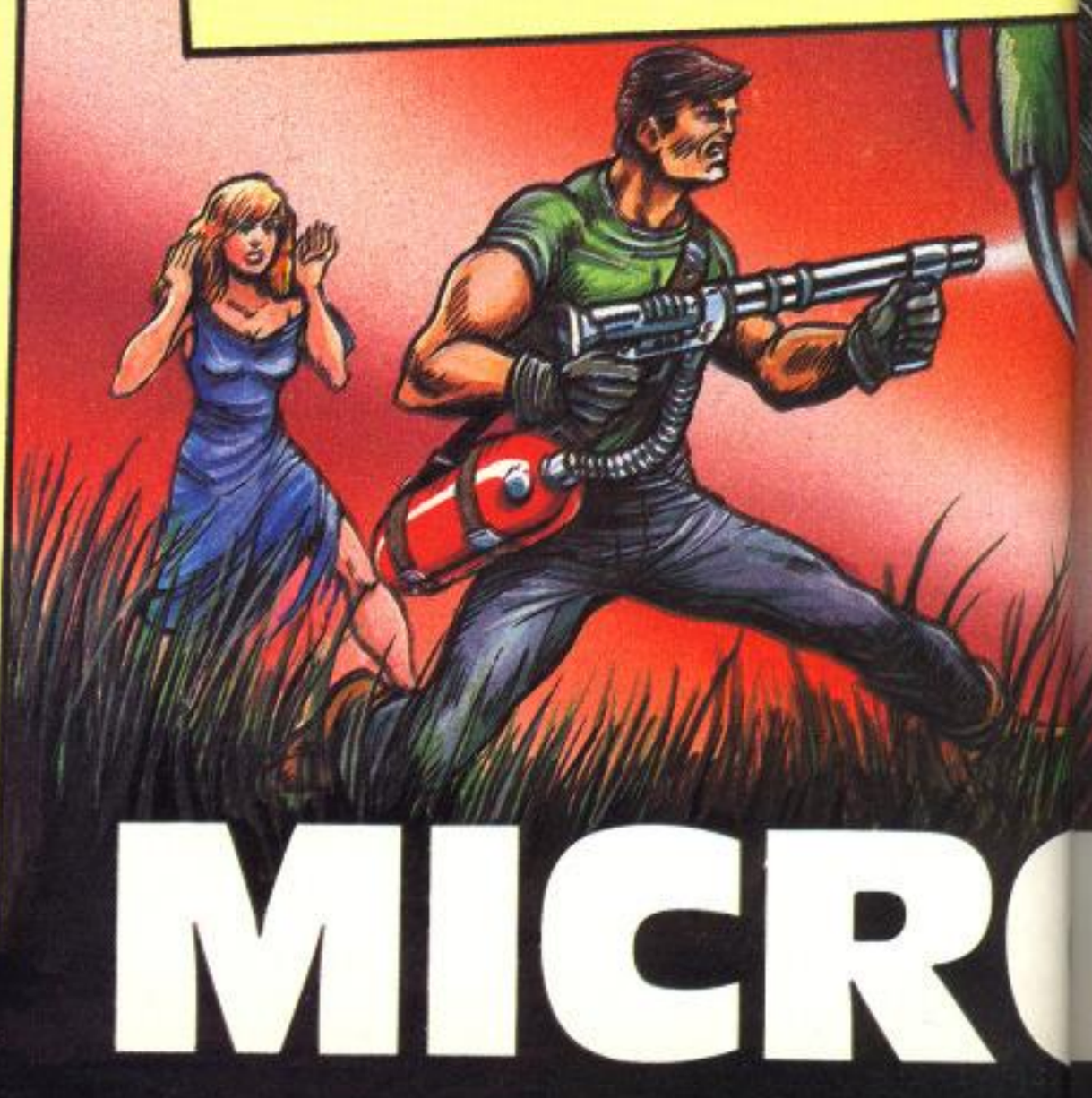
```
   3*LOAD"data"1D00
   4FORI=&B00T0&BFF:?I=16:NEXT
   5*KEYOFORA%=0T0&FF:A%?&C00=A%?&2F00:
NEXT:FORA%=0TO &C53 STEP4:A%!&E00=A%!&30
00:NEXT:F.A%=0T04400:A%?&1B00=A%?&1D00:N
.:PAGE=&1B00!MOLD!MVDU6!MRUN!M
   6VDU21
   7*FX138,0,128
   8END
```

```
   2MODE2:DIMN$(7),hs$(7)
   5!&D52=&30303030:?&D56=48:!&D58=&303
03030:?&D5C=48
   6ENVELOPE 3,1,8,2,-4,10,5,10,30,-2,0
,-1,126,0
   7ENVELOPE 4,1,14,11,6,1,3,4,40,-1,0,
-1,126,0
   13ENVELOPE 1,1,-10,-20,-20,12,12,12,1
2,10,-1,-1,126,0
   14ENVELOPE 2,130,9,-5,-20,2,2,2,126,-
1,-10,-50,126,120
   20VDU23;8202;0;0;0;19,1,2,0;0,19,7,1,
0;0,19,14,3,0;0,19,11,0,0;0,19,3,6,0;0,1
9,4,15,0;0,19,2,1,0;0,19,10,2,0;0,19,12,
7,0;0,19,15,7,0;0,19,13,4,0;0,19,6,7,0;0
,19,13,4,0;0,19,9,5,0;0
   30FORI=0T07:N$(I)="--------":hs$(I)="
000000":NEXT
   40*FX4,1
   42*FX11,0
   44*FX13,6
   50PROCmac:?&82=0
   55PROCtitle:CLS
   60GCOL0,11:MOVE16,64:DRAW16,960:DRAW1
263,960:DRAW1263,64
   65GCOL0,7:MOVE0,0:DRAW0,64:PLOT85,127
9,0:PLOT85,1279,64:FORI=0T03:GCOL0,14:MO
VE0,I*16:DRAW1279,I*16:FORJ=0T01400STEP6
4:MOVEJ-I*32,I*16:DRAWJ-I*32,I*16+16:NEX
T:NEXT
   120GCOL0,7:MOVE0,980:DRAW1279,980:COLO
UR15:PRINT" M i c r o p e d e "
   125CALLiv:COLOUR9:PRINTCHR$30''"SCORE"
;TAB(18);"HI"TAB(14,3);:CALLhs:PRINTCHR$
8;
   150CALL ba:CALLps:CALLdm:CALLsu:CALLbo
:CALLdl:CALLpg:FORI=90T050STEP-10:SOUND1
,4,I,5:NEXT:CALLpg1
   160FORJ=1T03000:NEXT:PROChk:GOTO55
 1000DEFPROCmac:ob=&FFF4:z=&E00
 1020FOR I=0T02 STEP 2
 1030bo=z+&D9:di=z+&14B:bc=z+&219:mo=z+&
2ED:co=z+&317:fi=z+&36F:ba=z+&92
 1040sk=z+&4A1:hs=z+&4BF:ad=z+&4D2:rnd=z
+&4E6:st=z+&4F7:up=z+&50F:up3=z+&525:ce=
z+&531
 1050sn=z+&5B7:ps=z+&5F6:sc0=z+&637:ms=z
+&65D:wa=z+&685:mv=z+&69C:im=z+&6D4:mi=z
+&704
 1100RESTORE8000:FORJ=1T08:READa:REPEAT:
P%=z+a:IFJ=1[OPTI:JSRst:]
 1110IFJ=2[OPTI:JSRz:]
 1120IFJ=3[OPTI:JSRbo:]
 1130IFJ=4[OPTI:JSRrnd:]
 1140IFJ=5[OPTI:JSRad:]
 1150IFJ=6[OPTI:JSRba:]
 1160IFJ=7[OPTI:JSRps:]
 1170IFJ=8[OPTI:JSRup3:]
 1180READa:UNTILa=0:NEXT
 1200P%=z+&3C8:[OPTI:JSRup:]
 1210P%=z+&3D5:[OPTI:JSRsc0:]
 1220P%=z+&3E7:[OPTI:JMPce:]
 1230P%=z+&3EE:[OPTI:JMPce:]
 1280P%=z+&49D:[OPTI:JSRoi:]
 1330P%=z+&579:[OPTI:JSRaq:]
 1420P%=z+&6A3:[OPTI:JSRco:]
 1425P%=z+&6AA:[OPTI:JSRmo:]
 1440P%=z+&6CD:[OPTI:JSRsc0:]
 1445P%=z+&6D0:[OPTI:JSRce:]
 1470P%=z+&71B:[OPTI:JSRim:]:P%=z+&727:[
OPTI:JSRim:]
 1490P%=z+&78A:[OPTI:JSRim:]
 1500oj=z+&79F:dt=z+&8F6:dm=z+&927
 1600P%=z+&987:[OPTI:JSRms:]
 1605dl=z+&9A6:lg=z+&9E7
 1620P%=z+&A7C:[OPTI:JSRdl:]:P%=z+&A8C:[
OPTI:JSRdl:]
 1630si=z+&AA6:P%=z+&AAB:[OPTI:JSRmi:]
 1640FORJ=&668T0&681STEP25:P%=z+J:[OPTI:
JSRay:]:NEXT
 1650su=z+&AC6:cs=z+&AF0:P%=z+&AF8:[OPTI
:JSRww:]:P%=z+&B25:[OPTI:JSRdm:]:ay=z+&B
3F:iv=z+&B4C:cd=z+&BE7:ww=z+&BFB
 1655P%=z+&C02:[OPTI:JSRsu:]
 1660pg1=z+&C30:P%=&1A54:[OPTI
 1900.baf LDA£0:STA&70:LDA£19:JSRob:JSRb
a:JSRbc:JSRdi:LDA£1:STA&70:LDA£0:STA&D30
+16:JSRba:JSRlg:RTS
 2000.ag RTS
 3000.pg JSRsn:JSRdt:JSRbaf:JSRfi:JSRcs:
JSRsk:JSRmv:JSRfi:JSRsn:JSRdt:JSRfi:JSRc
s:JSRwa:JSRsi
 3010JSRcd:LDA&D6B:BEQpg
 3020RTS
 6999]:NEXT:ENDPROC
 7000DEFPROCtitle
 7002*FX21,0
 7003CALLiv
 7005GOTO7180
 7010CLS:COLOUR14:COLOUR130:PRINT'" M I
C R O P E D E ":COLOUR128:CALLiv:CALLsu:
?&70=0:CALLbo
 7020COLOUR9:PRINT'"author - Tim Miller"
 7030COLOUR3:VDU5:MOVE176,814:PRINT"copy
right  (C)":MOVE176,776:PRINT"T.M.MILLER
 1984":VDU 4:PRINT''
 7035GCOL0,3:MOVE164,732:DRAW164,828:DRA
W1132,828:DRAW1132,732:DRAW164,732
 7040COLOUR7:PRINT''"    A leakage of"
 7045PRINT"  radiation has"'"  caused
strange"
 7050COLOUR15:PRINT"     mutations":COL
OUR7:PRINT" in your garden !"
 7060COLOUR1:PRINT'"  You must guard"'
  your garden wall"
 7070PRINT" by firing pesticide"
```



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```
 7080COLOUR3:PRINT"          CONTROLS"':GCOL
0,3:MOVE400,310:DRAW864,310
 7085COLOUR7
 7090PRINT"cursor [L]  ---  LEFT"
 7100PRINT"cursor [R]  ---  RIGHT";
 7110PRINT"A           ---------  UP"
 7120PRINT"Z           ---------  DOWN"
 7125PRINT"SHIFT       ---------  FIRE"
 7127COLOUR15:PRINT'"Press SPACE to STAR
T";
 7130GCOL0,11:MOVE0,0:DRAW0,1024:DRAW127
9,1024:DRAW1279,0:DRAW0,0
 7135FORJ=1TO80:IFINKEY(3)=32J=99:NEXT:E
NDPROC
 7136NEXT
 7140FORI=0TO180:CALLmv:IFINKEY(1)=32 I=
230:NEXT:ENDPROC
 7150NEXT
 7180COLOUR3:PRINTCHR$12'"     Points tab
le"':COLOUR9
 7190PRINT"
 7200PRINT"      ..... 10 pts"'
 7205COLOUR1:PRINT"hump";:COLOUR9:PRINT"
 .... 100pts"'
 7210PRINT"      ..... 150pts"'
 7230?&80=160:?&81=&37:CALLms
 7240?&78=160:?&79=&3C:CALLps
 7250?&80=160:?&81=&46:CALLim
 7260GCOL0,3:MOVE0,670:DRAW1279,670
 7300COLOUR3:PRINT"   Hi Score table":CO
LOUR9:PRINT
 7310FORI=7TO0STEP-1:PRINTN$(I);TAB(8)"
... "hs$(I)':NEXT
 7320COLOUR15:PRINTTAB(0,30)"Press SPACE
 to START";
 7400FORJ=1TO200:IFINKEY(3)=32J=2000:NEX
T:ENDPROC
 7410NEXT:GOTO7010
 7500DEFPROChk
 7510J=0
 7520FORK=0TO4:V=VAL(MID$(hs$(J),(K+1),1
))+48
 7530IFK?&D52<=V GOTO7540
 7534K=5:NEXT:IFJ=7 GOTO7560
 7536J=J+1:GOTO7520
 7540IFK?&D52<V K=5
 7550NEXT:IFJ=0 ENDPROC
 7555J=J-1
 7560CLS:COLOUR3:PRINTCHR$30''"Your scor
e was":CALLsk
 7565COLOUR9:PRINT''''"You are on the"'
"Hi Score table"
 7570COLOUR14:PRINT''''"TYPE your NAME
"
 7571*FX21,0
 75721NPUT'"THEN press RETURN"''$&B00
 7580FORI=0 TO J-1:hs$(I)=hs$(I+1):N$(I)
=N$(I+1):NEXT
 7590?&B0B=13:N$(J)=$&B00
 7600hs$(J)="":FORK=0TO4:hs$(J)=hs$(J)+C
HR$(K?&D52):NEXT:hs$(J)=hs$(J)+"0":GOTO5
5
 7999ENDPROC
 8000DATA &3B,&4E,&61,0
 8010DATA&B48,&B0,&D5,&11D,&624,&6E3,&70
0,0
 8020DATA&3F5,&49A,&564,&573,&6A0,&6B5,&
B0D,0
 8030DATA&42F,&72A,&747,&751,&78D,&7F1,&
7FB,&890,&8B2,&936,&963,&96A,&C38,&C42,0
 8040DATA&5AE,&B09,&B10,&8A7,&85C,0
 8050DATA&9CA,&A15,&A9F,0
 8060DATA&5C7,&5D6,&5F2,0
 8070DATA&3A7,&549,&6CA,0
```

RIPEDE

by TIM MILLER

No 2 ADVANCED DUNGEONS AND DRAGONS MATTEL

THE VERY first contact of any sort I had with "computer" was some time ago now, when a friend lent me an Intellivision system with a few random cartridges.

It was late; and outside the windows of my small rustic dwelling the wind howled fitfully. Onscreen a small determined figure stalked manfully through a labyrinth of endless branching corridors, bow in hand. All was silence save for my own increased breathing and the occasional faraway rumble of a sleeping Dragon — and, of course, the wind.

A bat appeared, flapping repulsively around my head. Maddened, I shot it. Two arrows left. Another bat appeared. I fled, precipitately — straight into the lair of a giant rat, which made for me, squeaking wickedly. Fumbling in fear, I shot that too — but not before my little man had turned red with his own gore, having taken a severe wound from the oversized and malign rodent.

The Giant Snake got me just around the next corner. Hissing like a Fury, it came at me with terrifying speed. One arrow — my last — had no effect. I fled. Too late. In my terror, I messed up my exit . . . and the serpent was on me.

A ferocious grunting . . . a convulsive struggle . . . and what was left of my (vicarious) mortal soul went up in a coil of steam.

Shuddering with tension, I set out with a new expedition member. Surely he could make the Cloudy Mountain, claim the two lost halves of the Crown of Kings, and declare himself The Winner?

He didn't. Nor did his one remaining pal.

I eventually got to bed at 4 a.m., having totally failed to crack *Advanced Dungeons and Dragons* on any level, even the easiest.

If this was the standard of video games, I told myself, I was going to enjoy this new diversion. Alas, it wasn't (though I came to enjoy the diversion anyway). In fact, as I soon realised — and was later to have confirmed by personal experience (as well as others' opinions) — this particular game cartridge, crafted by some anonymous Mattel keyboard slave for the Intellivision machine, was, and remains, in a class of its own.

For the uninitiated, the game places a three-man expedition at the far side of a Middle-earth-like map — different every time — made up of mountains (both passable and impassable), forests, rivers and fortress walls. The mission of the team is quite simply to cross the landscape from left to right, reach the fabled Cloudy Mountain, enter it, and find the halves of the Lost Crown.

To do this you steer your team towards suitable mountains, taking the obstacles as they come and choosing your own route. If a mountain is enterable (i.e. crossable) it will change colour; if not, it won't, and you have to find some other way.

Once inside the mountain the screen changes with a nerve-stiffening 'whoosh'. You are inside the tunnel system, armed with three (count 'em) arrows and your wits. The adventurer stays screen centre, while the labyrinth scrolls omnidirectionally. As he advances, the tunnels light up and stay lit (so you can tell where you've been before). Your object is to find one of the tools (axe, boat, key) which you will need to complete the journey; you can find more arrows in a quiver. You will also need to find the way out (a ladder).

Preventing you from carrying out these reasonable tasks are bats, spiders, giant rats, giant snakes, blobs, demons and dragons. They are all extremely nasty.

Bats flap and make you panic but can otherwise cause you little harm. Shoot these only when you have a generous surplus of arrows. Spiders crawl slowly and are easily avoided, though if they touch you they will claim an arrow for each contact. Blobs move very slowly indeed, and can — must — be avoided, since one touch is instant death and they cannot be shot. Rats can be offed with one arrow — but snakes, demons and dragons take two (winged dragons, which appear only in the last mountain, take three). They also move extremely fast and will chase you. Ever tried shooting while running? Can't be done. You must flee, find suitable terrain (long straight corridors are ideal), plant your feet, aim carefully, and let the beastie have it as it charges. Keep your nerve and don't be ashamed to run for it.

Additional touches emerge as you get into the game. Monsters will wake and make some noise or other if they are onscreen (whether visible or not), thus allowing you to deduce where they must be lurking. Monsters will pursue you for a surprisingly long way, necessitating absolute sureness of touch with the disc, since these corridors twist and turn a lot; a hangup when some foul creature is closing fast, bellowing, is certain death. And, on the more difficult levels of play (there are four), even when you run for it the Things run faster than you. On 'Hero' level Dragons and Demons and Snakes, in particular, attack with such devastating speed that it become absolutely essential to have a good suss on where they are before advacing. Then shoot into the dark.

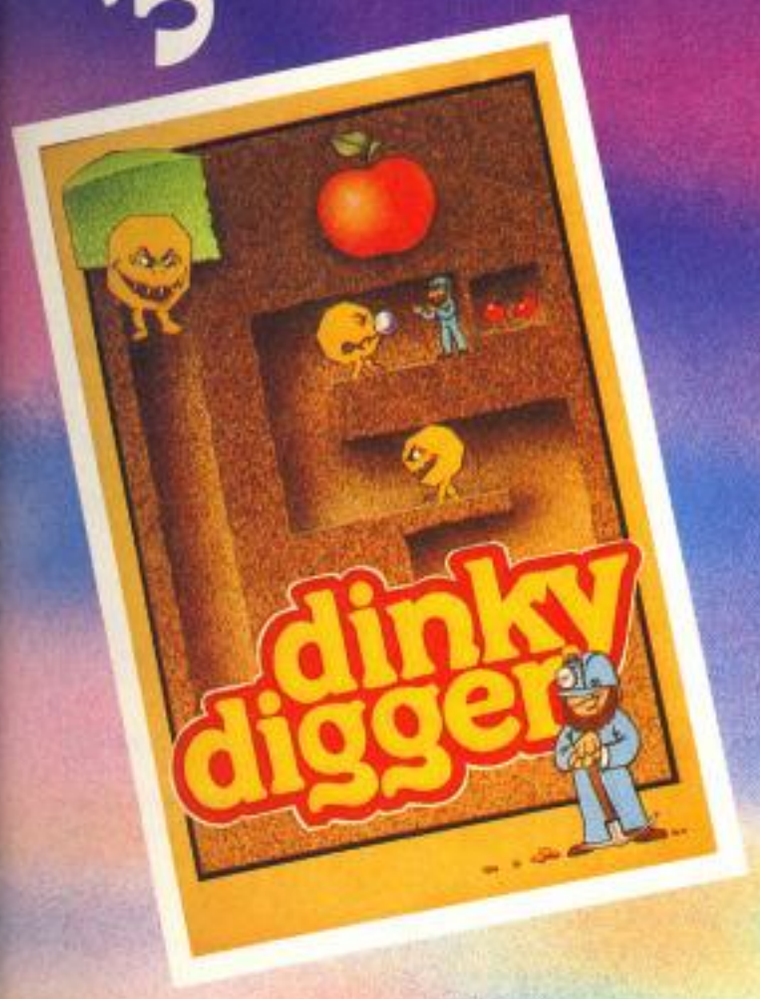
But when you finally do cross all the mountain barriers and reunite the two halves of the Crown . . . then there's an immense feeling of satisfaction, considerably enhanced by a vast, reverberating chime of solemn celebration which almost outdoes the famous long-distance chord at the end of the Beatles' *A Day In The Life*.

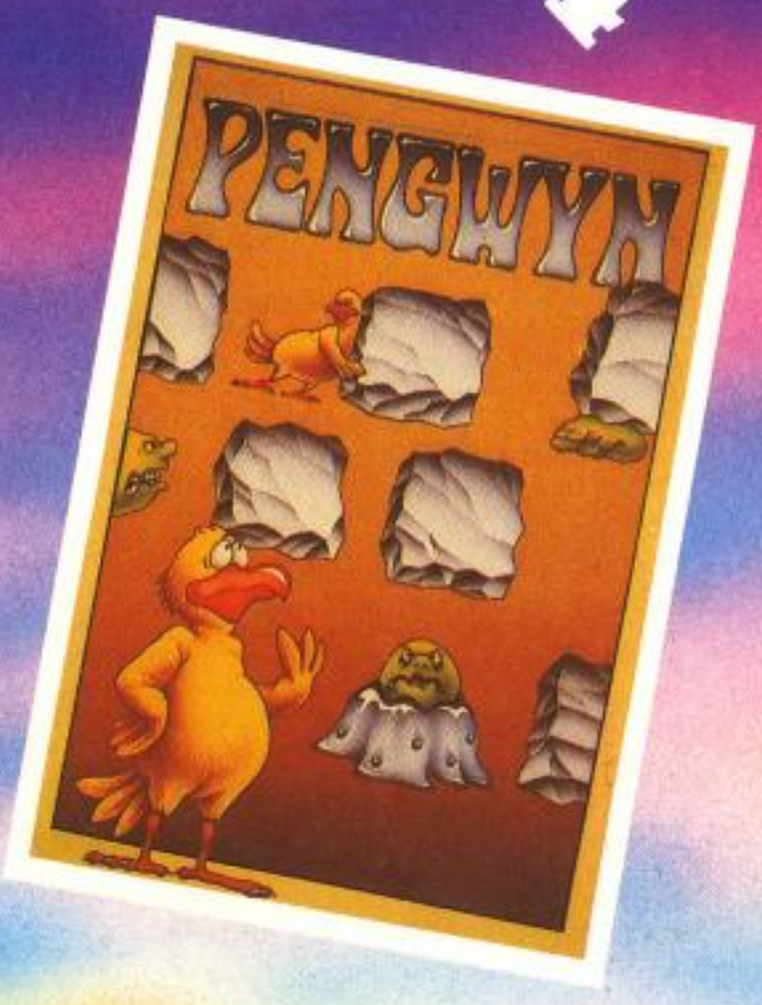
Advanced Dungeons and Dragons is an eerie, astonishing game, a piece of programming wizardry and an absolutely superb example of overall game design (not at all the same thing). In the heydey of Intellivision's fortunes in the US (say, a year ago) it was rarely out of the ROM charts; over here, its virtues are known only to Intellivison owners (I remain one of these, for the sake of this game alone).

Unfortunately this situation is not now likely to change. More's the pity. The system has been overtaken by events and by technology — and fashion — but it remains a very good video game system indeed; not so much on account of the hardware (which, the disc apart, is excellent), but for the remarkably high standard of the software. And of the latter, few I think will argue if I claim premier all-time place for the Jewel in Mattel's Crown.

TONY TYLER

3 from POSTERN for '84





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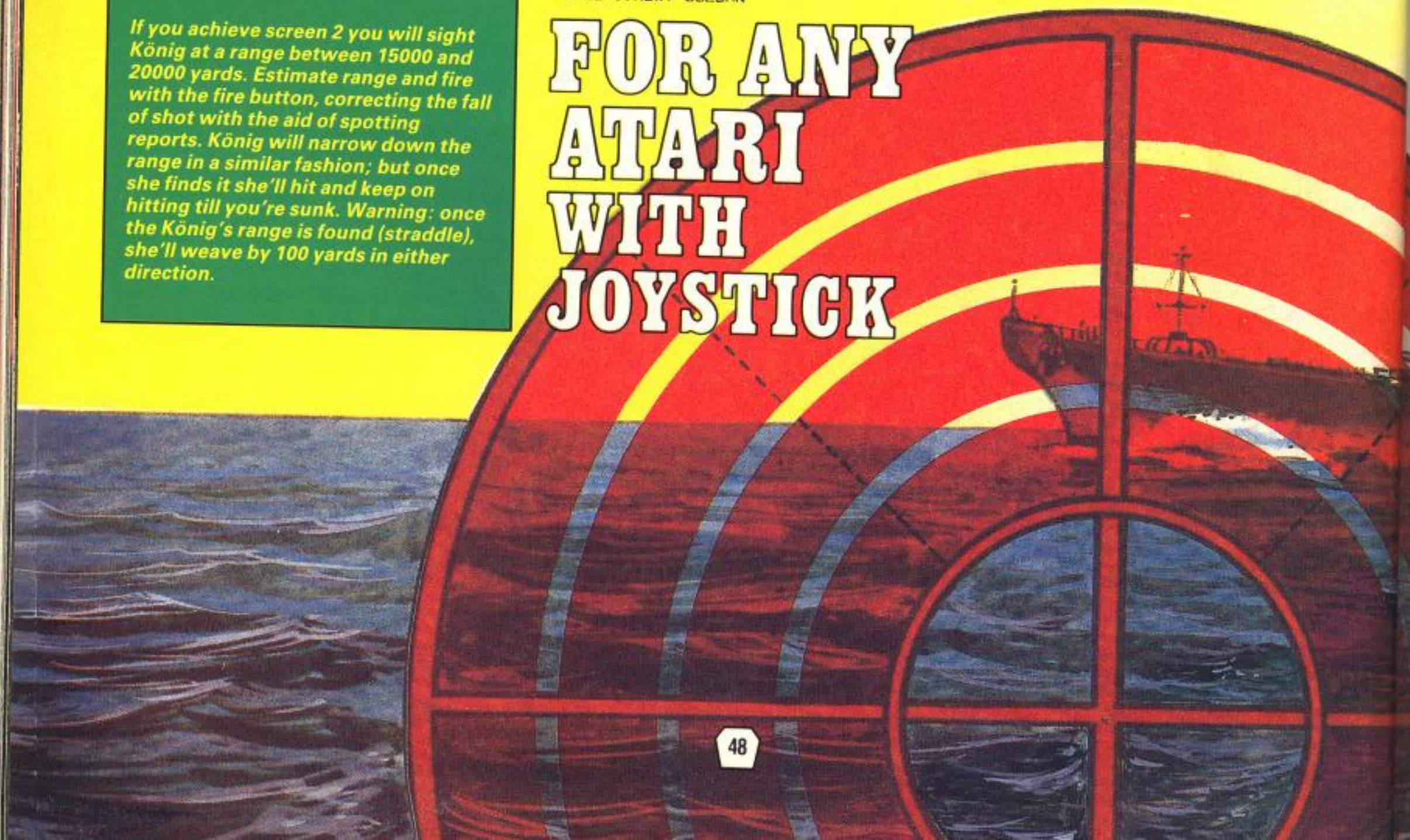
```
  5 REM *********MAIN BODY PROGRAM****
 10 GOSUB 8000
 15 DIM T$(25):DIM F$(25):DIM Y$(1)
 17 DIM LONG(2):DIM LAT(2):DIM COURSE$
(4):MOVE=0:SEARCH=0:TONE=150
 20 GOSUB 9000
 100 EST=INT(RND(0)*50)+150:RANGE=INT(R
ND(0)*50)+150
 105 GOSUB 1000
 106 GOSUB 1055:GOSUB 5050:GOSUB 1095
 110 GOSUB  5000
 120 IF EST>RANGE THEN GOSUB 5300:GOSUB
 5210:FRITZ=FRITZ+1:GOSUB 5340:GOSUB 536
0:GOTO 106
 130 IF EST<RANGE THEN GOSUB 5090:GOSUB
 5500:GOSUB 5210:GOSUB 5360:GOTO 106
 140 GOSUB 5090:GOSUB 5300:GOSUB 11000:
GOSUB 5340:GOSUB 5500:GOSUB 5210:GOSUB 5
360
 160 GOTO 106
 450 END
 999 REM ***SCREEN 2 COMBAT***********
1000 GRAPHICS 7+POKE 752,1:SOUND 3,250,
2,1
1005 SHIP=80:HORIZ=50:FRITZ=0
1010 POKE 708,12:POKE 709,2:POKE 710,0
1020 COLOR 1:PLOT 159,50:DRAWTO 0,51:DR
AWTO 0,0:POSITION 0,50:POKE 765,1:XIO 18
,#6,0,0,"S:"
1030 COLOR 3:PLOT SHIP,HORIZ
1040 PLOT 159,95:DRAWTO 159,51:DRAWTO 0
,51:POSITION 0,95:POKE 765,3:XIO 18,#6,0
,0,"S:"
1050 ? "ß";"   ENEMY IN SIGHT!":FOR DE=
1 TO 250:NEXT:DE:RETURN
1055 POKE 709,0:? "   ESTIMATE RANGE"
1060 ? "  (IN 000'S of yards)"
1070 INPUT GUESS:BASE=50
1080 ? "ß":IF GUESS>200 THEN ? "RANGE T
OO GREAT FOR YOUR GUNS!":GOTO 1070
1090 ? "RANGE ESTIMATED AT ";GUESS;"00
YARDS":FOR DE=1 TO 250:NEXT DE:RETURN
1095 IF FRITZ=0 THEN PRINT "ENEMY IS FI
RING!": FOR DE=1 TO 350:NEXT DE
1110 : IF STRIG(0)=0 THEN RETURN
1120 : GOTO 1110
4999 REM *******OPENING FIRE*******
5000 ? "ß":POKE 708,254:POKE709,254:POK
E 710,254:REM *GUNFLASH*
5010 FOR DE=1 TO 20:NEXT DE:POKE 708,12
:POKE 709,2:POKE 710,10:REM **RESTORE CO
LOURS***
5020 FOR VOL=15 TO 0 STEP -1:SOUND 0,50
,0,VOL:SOUND 1,47,0,VOL:SOUND 2,67,0,VOL
5030 FOR DE=1 TO 25:NEXT DE:NEXT VOL
5040 FOR DE=1 TO 500:NEXT DE:RETURN
5050 REM*******ENEMY FIRES:***********
5060 ? "ß":POKE 708,254:FOR DE=1 TO 15:
NEXT DE:POKE 708,12:POIKE 709,254:COLOR
2:PLOT SHIP,HORIZ
5070 FOR DE=1 TO 200:NEXT DE:POKE 709,2
:COLOR 3:PLOT SHIP,HORIZ
5080 RETURN
5085 REM******SHELL SPLASHES RISE******
5090 SPLASH=INT(RND(0)*65)+5:SPOUT=INT(
RND(0)*65)+85:SPRAY=SPLASH
5100 POKE 709,14:FOR COLUMN=1 TO 14
5110 ? "ß":COLOR 2:PLOT SPOUT,BASE+10
5120 FOR DE=1 TO 5:BASE-1:NEXT COLUMN
5130 PLOT SPLASH,BASE+34:DRAWTO SPLASH,
BASE-22
5140 PLOT SPLASH +4,BASE+34:DRAWTO SPLA
SH+4,BASE-22:PLOT SPLASH+3,BASE+35:DRAWT
O SPLASH+3 BASE-25
5150 PLOT SPLASH+1,BASE+35:DRAWTO SPLAS
H+1,BASE-25
5160 PLOT SPLASH+2,BASE+35:DRAWTO SPLAS
H+2,BASE-29
5161 RETURN
5199 REM ********ENEMY SALVO********
5200 MARK=0
5210 IF EST<RANGE-7 THEN EST=EST+10:RET
URN
5220 IF EST>RANGE+7 THEN EST=EST-10:RET
URN
5230 IF EST<=RANGE+7 AND EST>RANGE THEN
 EST=EST-1:RETURN
5240 IF EST>=RANGE-7 AND EST<RANGE THEN
 EST=EST+1:RETURN
5250 IF EST=RANGE THEN MARK=MARK+1:GOS
UB 6000:RETURN
5299 REM ******INCOMING SHELLS SFX*****
5300 FOR PITCH=30 TO 55 STEP 1:SOUND 0,
PITCH,8,13:SOUND 1,PITCH+7,10,10:SOUND 2
,PITCH-6,4,14
5310 FOR DE=1 TO 4:NEXT DE:NEXT PITCH
5320 SOUND 0,0,0,0:SOUND 1,0,0,0,:SOUND
2,0,0,0:RETURN
5330 REM********EXPLOSION**************
5340 FOR VOL=15 TO 1 STEP -1:SOUND 0,50
,0,VOL:SOUND 2,53,0,VOL: FOR DE-1 TO 10:
NEXT DE
5350 NEXT VOL:SOUND 0,0,0,0:SOUND 1,0,0
,0:SOUND 2,0,0,0:RETURN
5359 REM ******REPORT SHOOT***********
5360 POKE 709,0
5362 IF GUESS<RANGE THEN ? "ß";"RANGE "
;GUESS;"00 TOO SHORT!":RETURN
5365 IF GUESS>RANGE THEN ? "ß";"RANGE "
;GUESS;"00 TOO GREAT!":RETURN
5370 IF GUESS=RANGE THEN ? "ß";"STRADDL
E!":GOSUB 5380:HIT=HIT+1:GOSUB 6000:RETU
RN
5379 REM********ENEMY WEAVES**********
5380 CHASE=INT(RND(0)*2)+1:FOR DE=1 TO
500:NEXT DE
5390 IF CHASE=2 THEN RANGE=RANGE+1
5400 IF CHASE=3 THEN RANGE=RANGE-1
5410 RETURN
5499 REM ****ERASE SPLASHES**********
5500 FOR DE=1 TO 60:NEXT DE
5505 FOR COLUMN=1 TO 6
5510 COLOR 1:PLOT SPOUT,BASE+9:DRAWTO S
POUT+1,BASE+9:FOR DE=1 TO 9:NEXT DE:BASE
=BASE+1:NEXT COLUMN
5520 FOR COLUMN=1 TO 10
5530 COLOR 3:PLOT SPOUT,BASE+9:DRAWTO S
POUT+1,BASE+9:FOR DE=1 TO 9:NEXT DE:BASE
=BASE+1:NEXT COLUMN
5535 FOR COLUMN=1 TO 25
5540 COLOR 1:PLOT SPLASH,BASE-45:DRAWTO
 SPLASH+4,BASE-45
5550 BASE-BASE+1:FOR DE=1 TO 5:NEXT DE
5560 NEXT COLUMN
5570 COLOR 2:PLOT SPRAY,BASE-70:PLOT SP
RAY+2,BASE-68:PLOT SPRAY+3,BASE-63:PLOT
SPRAY+4,BASE-66
5580 PLOT SPRAY+2,BASE-60:PLOT SPRAY+3,
BASE-58:PLOT SPRAY,BASE-57:PLOT SPRAY+3,
BASE-38
5585 PLOT SPRAY,BASE-50:PLOT SPRAY+2,BA
SE-53:PLOT SPRAY+4,BASE-51
5587 PLOT SPRAY+2,BASE-45:PLOT SPRAY+4,
BASE-43:PLOT SPRAY,BASE-39
5590 FOR COLUMN=1TO 20
5600 COLOR 1:PLOT SPLASH,BASE-45:DRAWTO
 SPLASH+4,BASE-45
5610 FOR DE=1 TO 5:NEXT DE:BASE=BASE+1
5620 NEXT COLUMN
5630 BASE=50:FOR ERASE=1 TO 21
5640 COLOR 1:PLOT SPLASH,BASE-43:DRAWTO
 SPLASH+4,BASE-43
5650 COLOR 3:PLOT SPLASH,BASE+1:DRAWTO
SPLASH+4,BASE+1
5660 BASE=BASE+1
5680 NEXT ERASE:POKE 709,2:RETURN
5999 REM ********HIT RESULTS***********
6000 POKE 709,2
6010 IF MARK>=1 THEN READ P$:?"ß";"YOU
HAVE BEEN ";P$
6020  IF HIT>=1 THEN READ T$:?"ß";"THE
ENEMY HAS BEEN ";T$
6030 IF T$="SUNK!" THEN GOTO 12000
6040 IF P$="SUNK!" THEN GOTO 15000
6050 DATA HIT,HIT,DAMAGED,SLIGHTLY DAMA
GED,BADLY DAMAGED,SET ON FIRE,SEVERELY D
AMAGED
6060 DATA SUNK!,SUNK!
6070 FOR DE=1 TO 500:NEXT DE:?"ß":RETUR
N
7999 REM ********TITLE SCREEN**********
8000 GRAPHICS 18:POKE 712,134:POKE 708,
0:POKE 710,14
8010 POSITION 7,2:?#6;"HUNT"
8020 POSITION 7,4:?#6;"THE"
8030 POSITION 7,6:?#6;"RAIDER"
8040 FOR DE=1 TO 400:NEXT DE
```

PROGRAM NOTES

If you achieve screen 2 you will sight König at a range between 15000 and 20000 yards. Estimate range and fire with the fire button, correcting the fall of shot with the aid of spotting reports. König will narrow down the range in a similar fashion; but once she finds it she'll hit and keep on hitting till you're sunk. Warning: once the König's range is found (straddle), she'll weave by 100 yards in either direction.

HUNT

FOR ANY ATARI WITH JOYSTICK



```
 8050 POSITION 1,10:?#6;"PRESS START TO
PLAY"
 8060 IF PEEK(53279)=6 THEN RETURN
 8070 GOTO 8060
 9000 REM *******HIDE AND SEEK*********
 9100 GRAPHICS 3:POKE 752,1:POKE 712,134
:POKE 712,134
 9110 POKE 708,0:REM ENEMY SHIP COLOUR
 9120 POKE 709,14:REM YOUR SHIP COLOUR
 9140 LONG(1)=INT(RND(0)*39):LAT(1)=INT(
RND(0)*19):LONG(2)=INT(RND(0)*39):LAT(2)
=INT(RND(0)*19)
 9145 IF MOVE=0 OR MOVE=5 THEN HIDE=1:MO
VE=0:SEARCH=SEARCH+1:?"CATALINA SIGHTS E
NEMY!":GOTO 9149
 9146 HIDE=3
 9149 IF SEARCH=6 THEN GOSUB 20000:CLR:R
UN
 9150 COLOR HIDE:PLOT LONG(1),LAT(1):COL
OR 2:PLOT LONG(2),LAT(2)
 9160 ?"COURSE?(N,NE,E,S,SW,SE,W,NW or N
ONE)"
 9170 INPUT COURSE$
 9190 IF COURSE$="N" THEN GOSUB 9290:LAT
(2)=LAT(2)-1:GOTO 9310
 9200 IF COURSE$="NE" THEN GOSUB 9290:LA
T(2)=LAT(2)-1:LONG(2)=LONG(2)+1:GOTO 931
0
 9210 IF COURSE$="E" THEN GOSUB 9290:LON
G(2)=LOG(2)+1:GOTO 9310
 9220 IF COURSE$="SE" THEN GOSUB 9290:LO
NG(2)=LONG(2)+1:LATR(2)=LAT(2)+1:GOTO 93
10
 9230 IF COURSE$="S" THEN GOSUB 9290:LAT
(2)=LAT(2)+1:GOTO 9310
 9240 IF COURSE$="SW" THEN GOSUB 9290:LA
T(2)=LAT(2)+1:LONG(2)=LONG(2)-1:GOTO 931
0
 9250 IF COURSE$="W" THEN GOSUB 9290:LON
G(2)=LONG(2)-1:GOTO 9310
 9260 IF COURSE$="NW" THEN GOSUB 9290:LO
NG(2)=LONG(2)-1:LAT(2)=LAT(2)-1:GOTO 931
0
 9270 IF COURSE$="NONE" THEN GOTO 9310
 9280 GOTO 9170
 9290 COLOR 3:PLOT LONG(1),LAT(1):PLOT L
ONG(2),LAT(2):FOR DE=1 TO 200:NEXT DE:?"
"
 9300 SOUND 0,TONE,10,4:FOR DE=1 TO 100:
NEXT DE:SOUND 0,0,0,0:TONE=TONE-5:RETURN
 9310 HUN=INT(RND(0)*9)+1
 9320 IF LONG(1)=39 THEN LONG(1)=38
 9330 IF LONG(1)=0 THEN LONG(1)=1
 9340 IF LAT(1)=19 THEN LAT(1)=18
 9350 IF LAT(1)=0 THEN LAT(1)=1
 9355 IF LONG(2)<0 OR LONG(2)>39 OR LAT(
2)<0 OR LAT(2)>19 THEN ?"";"ILLEGAL MOV
E!":GOTO 9170
 9360 IF HUN=2 THEN LAT(1)=LAT(1)+1
 9370 IF HUN=3 THEN LAT(1)=LAT(1)-1
 9380 IF HUN=4 THEN LONG(1)=LONG(1)+1
 9390 IF HUN=5 THEN LONG(1)LONG(1)-1
 9400 IF HUN=6 THEN LONG(1)=LONG(1)-1:LA
T(1)=LAT(1)-1
 9410 IF HUN=7 THEN LONG(1)=LONG(1)-1:LA
T(1)=LAT(1)+1
 9420 IF HUN=8 THEN LONG(1)=LONG(1)+1:LA
T(1)=LAT(1)+1
 9430 IF HUN=9 THEN LONG(1)=LONG(1):LAT(
1)=LAT(1)+1
 9440 IF LONG(1)>=LONG(2)-1 AND LONG(1)<
=LONG(2)+1 THEN GOTO 9450
 9445 GOTO 9460
 9450 IF LAT(1)>=LAT(2)-1 AND LAT(1)<=LA
T(2)+1 THEN GOTO 9500
 9460 MOVE=MOVE+1:GOTO 9145
 9500 COLOR 1:PLOT LONG(1),LAT(1):COLOR
2:PLOT LONG(2),LAT(2):?"";"CONTACT!":FO
R DE=1 TO 500:NEXT DE:RETURN
10999 REM*******CLOBBERED!*************
11000 POKE 708,0:POKE 709,0:POKE 710,0:?
"":FOR DE=1 TO 10:NEXT DE:POKE 708,254:
POKE 709,254
11010 FOR DE=1 TO 10:NEXT DE:POKE 708,12
:POKE 709,14:POKE 710,10
11020 RETURN
11999 REM *****ENEMY BLOWS UP**********
12000 COLOR 1:PLOT SHIP,HORIZ
12010 POKE 709,254:COLOR 2:PLOT SHIP,HOR
IZ
12020 FOR DE=1 TO 200:NEXT DE
12025 FOR FLAME=1 TO 3
12030 HORIZ=HORIZ-1
12040 PLOT SHIP,HORIZ
12050 FOR DE=1 TO 100:NEXT DE:NEXT FLAME
12055 COLOR 1:PLOT SHIP,HORIZ+3:FOR DE=1
 TO 200:NEXT DE
12057 PLOT SHIP-1,HORIZ+3
12058 PLOT SHIP+1,HORIZ+3
12060 PLOT SHIP,HORIZ+2:FOR DE=1 TO 50:N
EXT DE
12070 PLOT SHIP,HORIZ+1:FOR DE=1 TO 50:N
EXT DE
12080 PLOT SHIP,HORIZ:FOR DE=1 TO 50:NEX
T DE
12085 FOR SMOKE=1 TO 10
12090 COLOR 3:PLOT SHIP,HORIZ-3
12100 FOR DE=1 TO 25:NEXT DE
12110 COLOR 1:PLOT SHIP,HORIZ-3
12120 HORIZ=HORIZ-1:NEXT SMOKE
12130 POKE 709,2
12140 SOUND 1,250,0,1:SOUND2,249,0,1
12150 FOR DE=1 TO 350:NEXT DE
12160 SOUND 1,0,0,0:SOUND 2,0,0,0:SOUND
 3,0,0,0
12170 ?"";"THE ENEMY HAS BLOWN UP!"
12180 ?"YOU HAVE SUCCEEDED IN PRESERVING
";"THE SEAWAYS OF THE EMPIRE"
12190 FOR DE=1 TO 400:NEXT DE
12200 ?"";"JOLLY WELL DONE!"
12210 GOSUB 20030:CLR:RUN
14999 REM*******SINKING****************
15000 GRAPHICS 19:POKE 708,0:POKE 709,15
2:POKE 710,152:POKE 752,1
15010 SOUND 3,20,0,4
15020 FOR DE=1 TO 450:NEXT DE
15030 HORIZ=0:VERT=23
15040 COLOR 2:FOR LOOP=1 TO 12
15050 PLOT HORIZ,VERT:DRAWTO HORIZ+39,VE
RT:FOR DE=1 TO 75:NEXT DE:VERT=VERT-1
15060 PLOT HORIZ+39,VERT:DRAWTO HORIZ,VE
RT
15070 VERT=VERT-1:FOR DE=1 TO 40:NEXT DE
15075 NEXT LOOP:SOUND 0,0,0,0
15080 GRAPHICS 0:POKE 752,1:POKE 710,152
:POKE 712,152:POKE 709,14
15090 FOR DE=1 TO 200:NEXT DE:?"":?:?:?
:?"YOUR SHIP WAS REPORTED LOST TODAY,"
15100 ?:?"AFTER BLOWING UP AND SINKING":
?:?"AS A RESULT OF GUNFIRE"
15110 FOR DE=1 TO 500:NEXT DE
15120 ?:?:?"REQUIESCAT IN PACE"
15130 GOSUB 20030:CLR:RUN
15140 END
19999 REM *****OUT OF FUEL*************
20000 ?"";"YOU ARE RUNNING OUT OF FUEL"
:?"AND MUST RETURN TO BASE"
20010 FOR DE=1 TO 500:NEXT DE:?"";"BAD
LUCK!"
20020 FOR DE=1 TO 450:NEXT DE:?"";"ESPE
CIALLY ABOUT THE COURT MARTIAL!"
20030 FOR DE=1 TO 500:NEXT DE:?"";"ANOT
HER GAME? (y/n)"
20040 INPUT Y$
20050 IF Y$="Y" THEN RETURN
20060 END
```

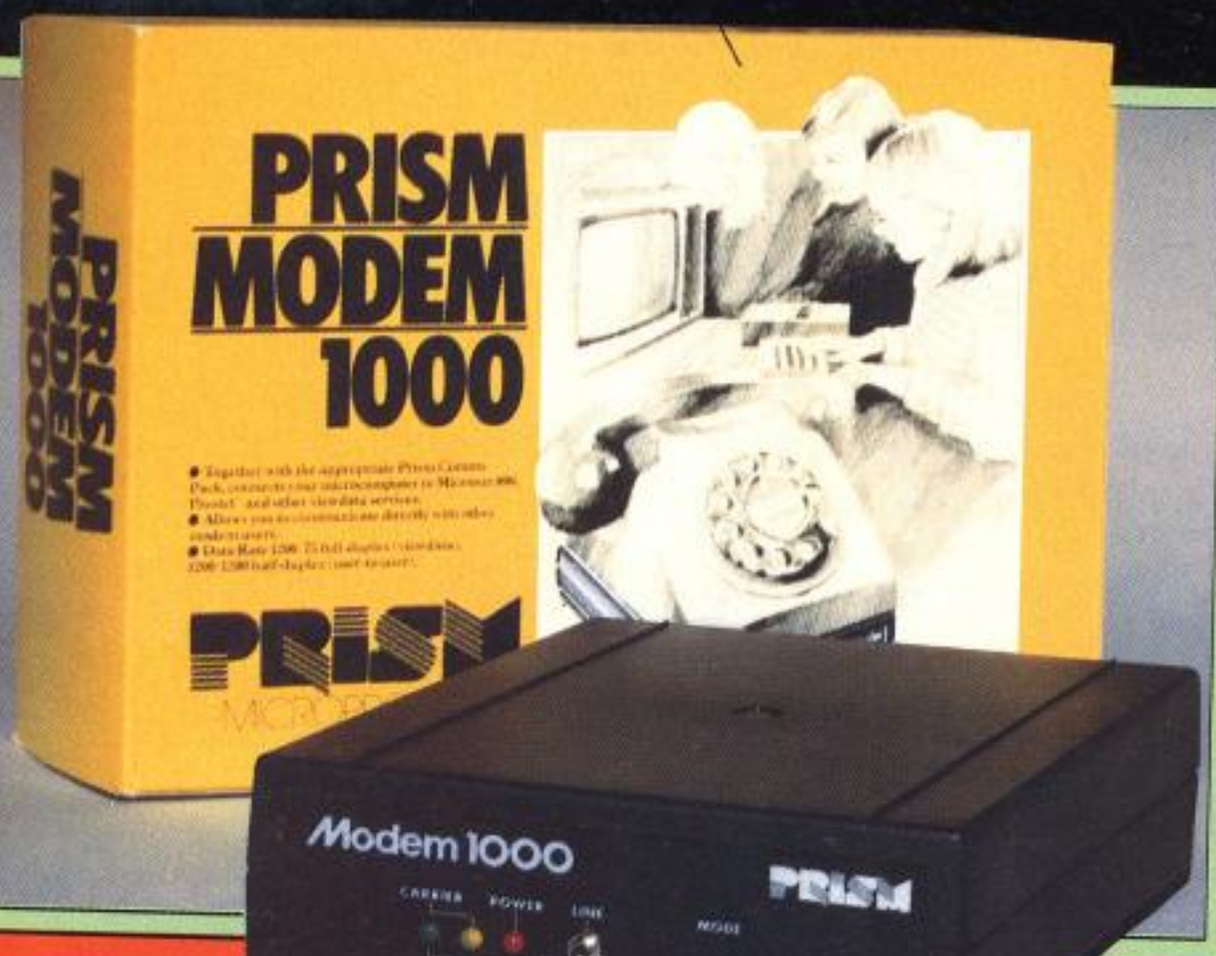
THE RAIDER!

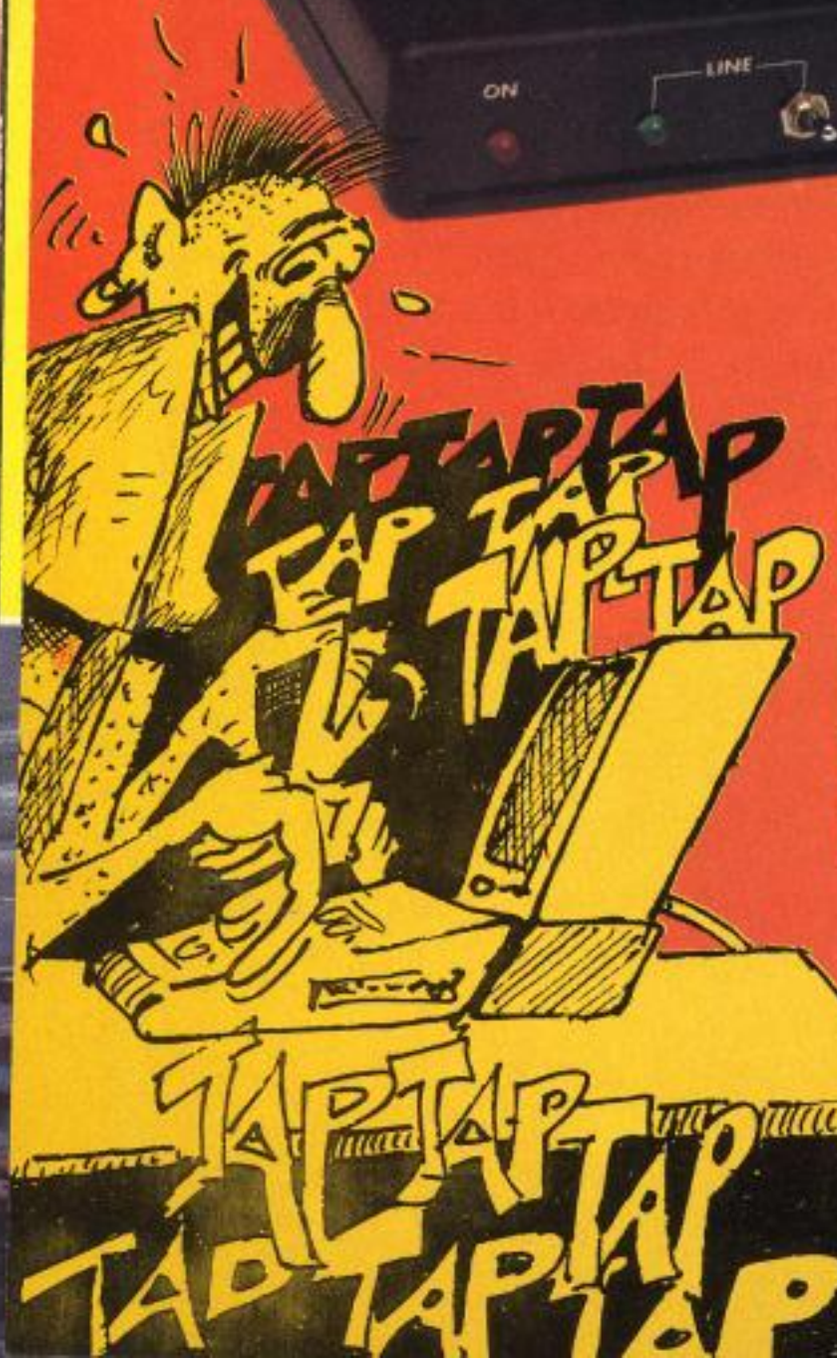
by NAUTICUS

The year is 1941. You are the commanding officer of an elderly battlecruiser homeward bound after a US refit. Suddenly you receive a signal: the new and deadly German battleship König is loose on the convoy routes. With limited fuel, and occasional help from a Catalina flying-boat, you must search the stormy North Atlantic, find the raider, and sink her with gunfire — or be sunk yourself!

TRIED & TESTED BIG K GAMES

MODEM LIVING MODEM LIVING MODEM LIVI





THOSE SHIFTING

What is a Modem and how does it differ from a cheeseburger? Is 'Acoustic Coupling' something rude done at high volume? **RICHIE NEWMAN** steers us through the Telecommunications jungle . . .

BECOME A MICRO trendy! Communicate! It's the latest craze (we're told) and everybody's doing it — so get out there and do it too.

What for? You may well ask. With who? Why? And — more to the point — what's in it for me? Or slightly more positive — how?

How? OK, you just connect your micro to the phone line by using a modem. Simple. Well, almost simple. The truth is that there are several different types of modem at several different types of price. The price, in fact, can vary from around £50 to well over £200, so it's worth working out first exactly what you aim to do with the modem (within reason) and how much you can afford (or alternatively, who you can touch for the cost).

The word 'modem' is an abbreviation of modulator/demodulator. The gadget itself translates the signals coming out of the micro, (which are digital) into analogue signals, which then travel serially down the phone wires and back again. So by using the telephone network, a modem and your micro, you get to communicate with other micro users, as well as vast databases

OSE

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WHISPERING WIRES...

held on mainframe computers.

There are two basic types: acoustic and direct-connect. Acoustic modems have tended, to date, to be cheaper than the direct-connect variety. They are shaped into rubber or plastic sockets into which you jam your telephone handset ear and mouth pieces. A word of warning here — if you have a Trimphone, a Mickey Mouse phone, or any other weird telephonic instrument, then your chances of successfully stuffing the handset into an acoustic modem are pretty slight — or more accurately, impossible. So, you have to have a standard British Telecom issue phone, called a series 700, for a kickoff. But other than that, any micro with an RS232 or equivalent serial interface port is on its way. (If your micro doesn't have an interface as standard, fear not, the gap has been spotted and plenty of sterling can be made by manufacturing and selling interfaces for the likes of the Dragon or Spectrum).

There is a wide variety of acoustic modems on the market which, despite varying considerably in price, don't necessarily vary equally considerably in quality. Among the more expensive (and some say the best) are the A211 and AJ311 from Anderson Jacobson. The

A211, cost £229, has rotating rubber cups (!) which can be moved into different positions to accommodate different shaped handsets (still no Trimphones though), as well as allowing both full-duplex (which means that two-way communication is possible simultaneously) and half-duplex (where you can only communicate in one direction at a time). The AJ311 costs £279 and comes with extra features, including something called 'echo' which tones down unwanted noise on the line.

Thereby hangs another tale. One of the major problems for acoustic modems is noise, whether it's on line, or simply in the room you happen to be in (so don't sit in the kitchen with the washing machine on or near anyone who's taken to drilling holes in the plasterwork). Noise, unfortunately, interfaces with the signal transmission, and you can end up with considerable amounts of garbage on your screen.

At the lower end, cost wise, of the acoustic market, modems include the Networking Interface from Prism Technology Holdings at £60.10 and the build-it-yourself acoustic kit from Maplin Electronics, at £50.

Variations in price, however, are not the only difference between modems. No, sir. There is also such a thing as a baud rate — the frequency at which messages are transmitted — the higher the frequency, the faster the transmission. There are two most commonly used rates: 1200/75, which means information is sent at 75 baud and received at 1200 baud; and the 300/300 rate (work it out for yourself). The former is the one used by Prestel to communicate with its enormous database, while the latter is most commonly used to communicate from one micro to another, or to the evergrowing number of micro bulletin boards around the country. So, for instance, the Networking Interface, which has a baud rate of 1200/75, is great for getting into Prestel and its attendant services like Micronet 800 or Viewfax 258 — but no use at all if you want access to other micro enthusiasts, via the bulletin boards. Whereas the 300/300 baud kit from Maplin presents you with the problem in reverse. On top of that, once you've built your modem from a kit, you have to trot off and get it approved by British Telecom — because if you don't, chickadeess you're breaking the law. (This is to make sure that the correct signals are sent down the lines, otherwise it could be pretty dangerous).

These regulations, baud rates and duplex modes also apply to direct-connect modems. In their case, they are connected directly to the phone wire, usually via a jack socket which BT has to install for you (cost around £25-£28 —they don't take kindly to people hard-wiring their kit into BT lines). Direct connect modems tend to be more expensive than their acoustic counterparts, though the price of everything connected with the micro market is dropping so fast that who knows what will have happened by the time this is published? Direct connectors do, however, have the distinct advantage that they don't suffer from noise interference as they are plugged directly into the lines.

Scicon has just zapped into the market with its Buzzbox (they probably took months to come up with that name) which for £69.50, gives you direct connect on 300/300 baud. (You'll have to cough up an extra £9.50 for a mains adapter if you don't just want to run it off the batteries, though.) Prism pops up again in the direct connect market with a range of modems, including the VTX5000, at £99.95 (specifically designed for Spectrum) and the Modem 1000 at £69.95 inc vat (for a number of other micros). The Prism direct connect modems, like the acoustic, operate at 1200/75 for access to Prestel and other private viewdata services. The modems do have a switch which allows you to change from 1200/75 full

duplex to 1200/1200 half duplex to communicate direct user to user — but, so far, Prism haven't come up with the software to allow you to do this.

So now you've got your modem and your software and it's all suitably approved. But in buying it you'll have had to decide what you want

to access with it. So it might be best to read this article in reverse, 'cos here's the 'what's in it for me' section.

There's Prestel, for one. A vast database that was looking pretty shaky till the micro boom livened things up a bit. As well as its own information — covering most things from airport flight departures and arrival-times to prices on the stock exchange — a number of 'Information Providers' also offer their wares on Prestel. These include Micronet 800 which offers telesoftware (both free and charged) which can be downloaded from the screen into your micro, its own mailbox for exchange of messages (beware, they are censored) and an electronic magazine on the computer industry. For micro users, it's actually a pretty good service, though it will cost you £32 a year to subscribe to Micronet, plus £5 a quarter for Prestel. (Plus the phone bill). There is also Viewfax 258, an open database which offers software, and views and news on the micro scene, and is the home of the infamous MicroGnome who is no respector of anything.

Now for the 300/300 baud lot, which really means bulletin boards. They are all free and provide a forum for messages and notices, often of particular interest to the micro hobbyist covering kits for sale, programming hints, general tips, personal messages and libraries of free softare. Bulletin boards are not just limited to the UK. As most of Europe uses the same telephone frequency standards set down by the Consultative Committee for International Telegraph and Telephone (CCITT — but I still had to explain), bulletin boards in Sweden, for instance, are at your disposal.

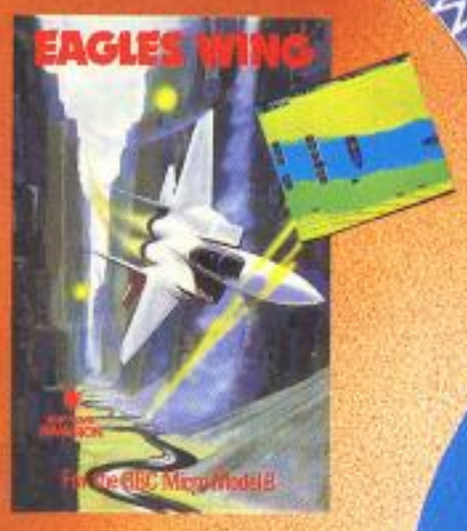
The USA however, is no good.

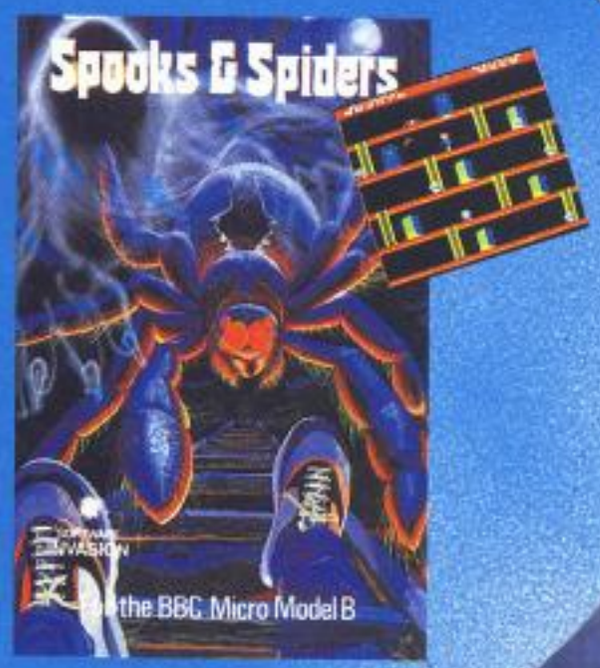
Let me re-phrase that. You can't access US bulletin boards because they use different frequencies.

Clear now?

SOFTWARE INVASION...

Let excitement invade your home computer! Travel to Alpha Centauri. Enter the Vortex. Command the ground missiles, or join the shoot-out at the O.K. Corral!





GUNSMOKE

...the movement of the saloon-bar door was all the warning he needed! At the speed of light his hand moved toward his holster, while a sixth sense warned him of the upper floor window... 3D ACTION, SOUND EFFECTS, BEAUTIFUL GRAPHICS BBC MODEL B £7.95 CASSETTE £11.95 DISK

3D BOMB ALLEY

... the continued thunder of the hissing ground missiles had long now deafened him - unless he had some of those bombers down, the fleet, in the smell stretch of water was a sitting duck... 3D ACTION, SOUND EFFECTS, BEAUTIFUL GRAPHICS BBC MODEL B £7.95 CASSETTE £11.95 DISK

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... he punched the key, and the control monitor filled with the picture of bug-eyed wasps attacking from their volcanic nest; decisively he dived to the left and his laser gun burst into action... 3D ACTION, EXPLOSIVE SOUND EFFECTS BBC MODEL B £7.95 CASSETTE £11.95 DISK

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NEW!

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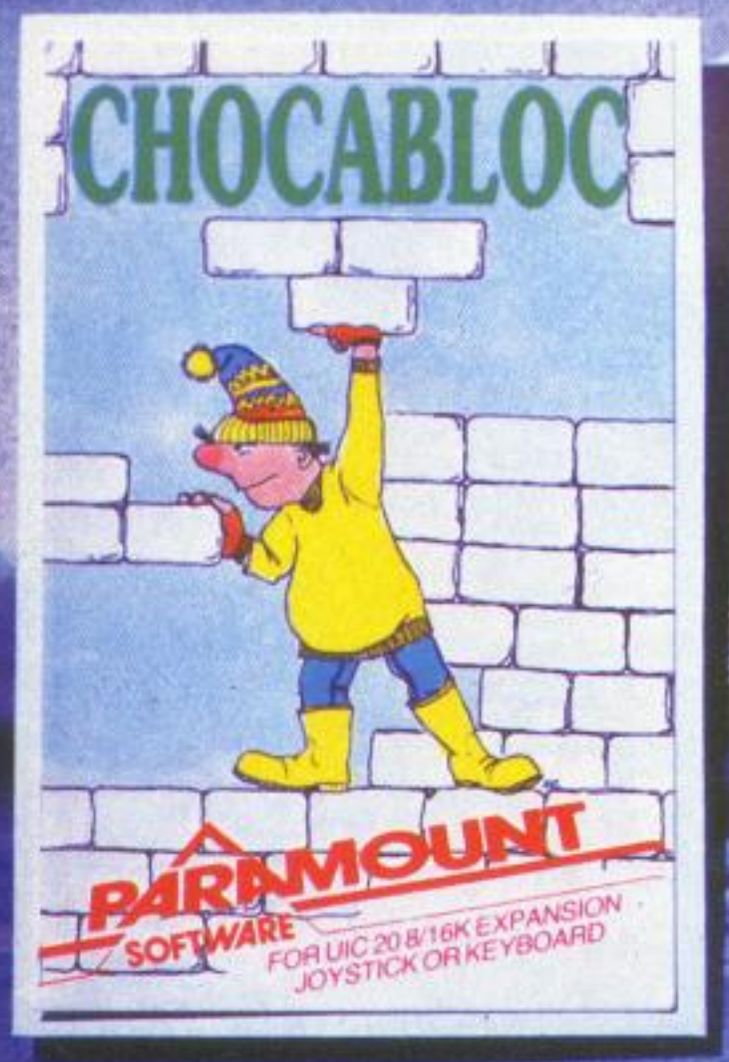

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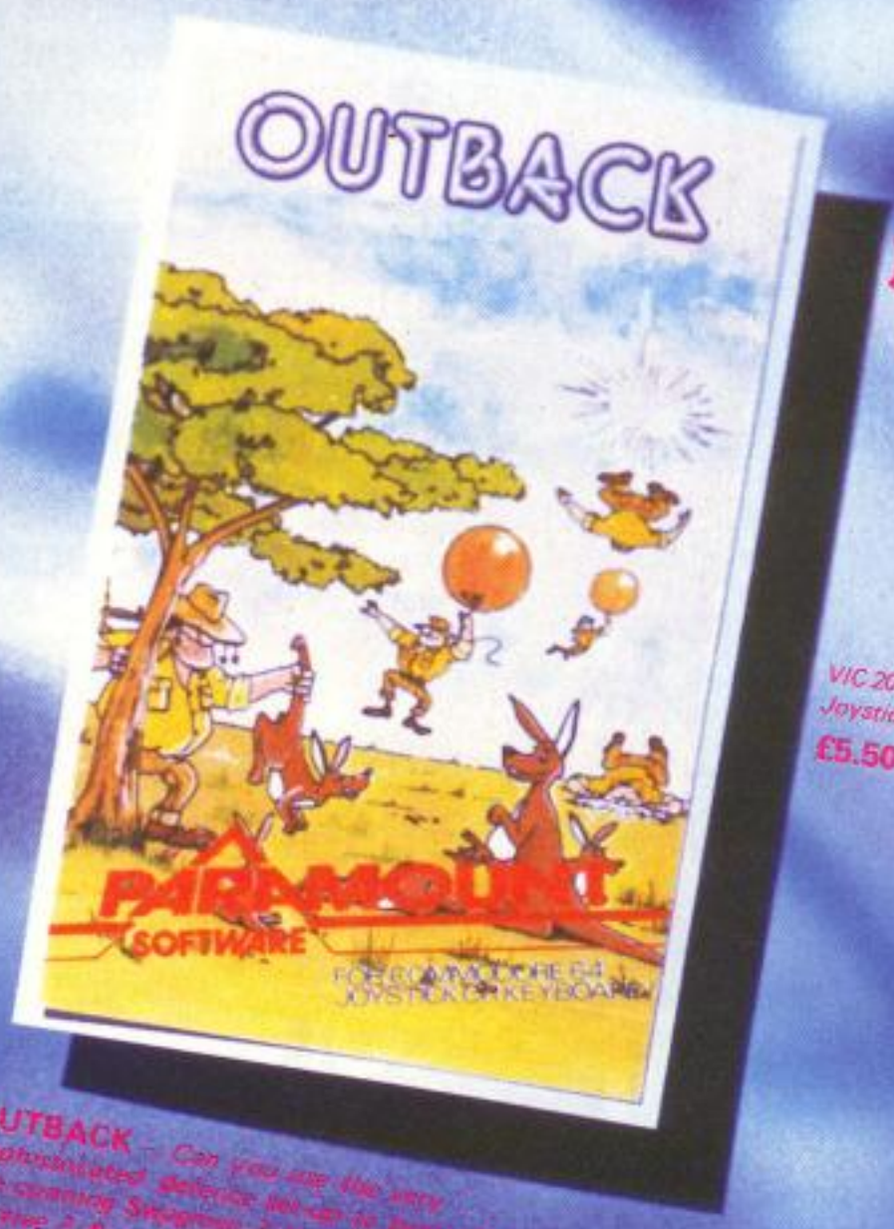

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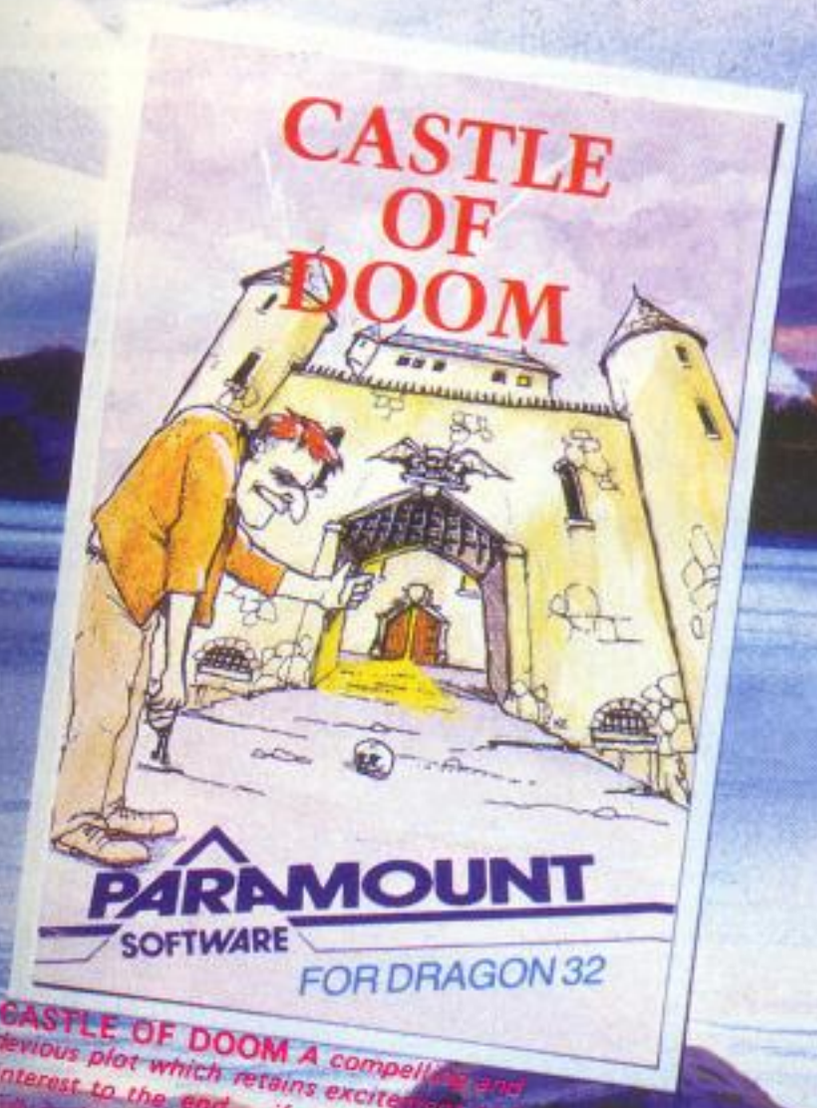

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But be warned: these vampire bats know a good meal when they see one. And our friend with the scythe has had years of experience . . .

So don't play unless you're ready to play the game for real. Because you'll find there's one sure thing about CheetahSoft: Soft we're not.

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CheetahSoft

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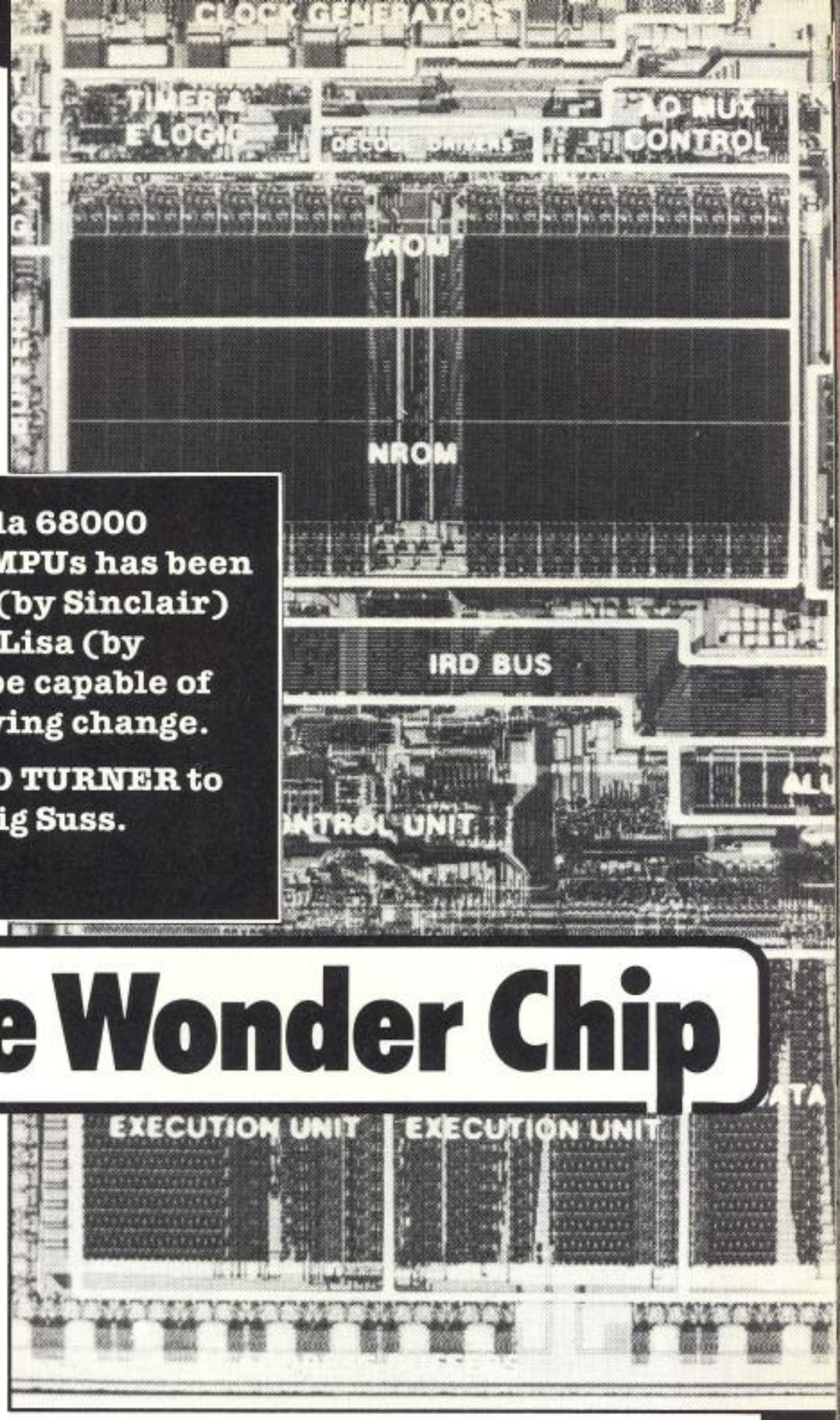
A Big Hi to the Wonder Chip

The mighty Motorola 68000 series of multi-bit MPUs has been selected for the QL (by Sinclair) and the MacIntosh/Lisa (by Apple). It's said to be capable of anything except giving change.

We asked BERNARD TURNER to give this chip the Big Suss.

He likes it.



This is It. The Motorola 68000 chip. Blown up big.

IF SILICON chips could choose their Microprocessor Unit (MPU) they would probably vote for the Motorola MC68000 — as has Sir Clive Sinclair. *And* Steve Jobs. *And* his people at Apple in their latest machines (Sinclair's QL has the 68008, a member of the general 68000 family).

Why is there all this sudden interest in the 68000?

Firstly it is not a *sudden* interest. The 68000 has been around for some time; it is only now that machines are leaving the drawing boards to reach the adverts (I haven't got my QL yet!) which means that it is only a short time (Real Time, not Sinclair Time) before I can get my grubby big hands on those beautiful 'double' eight registers and accelerate into the corners of possibilities now made available by the MC68000's flexible addressing modes.

You may realise by now that this writer thinks a lot of the 68000. You're dead right — but I also realise that it is not the MPU to end all MPU's

At this point a brief survey of the wonder chip is in order.

The 68000 is a MPU that contains the following registers:-

8 Data Registers (all 32 bits wide) Named D0 to D7

9 Address Registers (all 32 bits wide) Named A0 to A7

1 Program Counter (PC) (32 bits wide)

1 Processor Status Word (PSW, 16 Bits wide).

You may be wondering what happened to the stack pointer — don't worry, it's Address register 7 (A7). The 68000 has in fact TWO stack pointers; one of them is called the Supervisor Stack Pointer (SSP); the other one is the User Stack Pointer (USP). 'Very nice' (you say), 'but why two?

Deviates

You'll very often find that all machines that can be truly called Computers run two programs at the same time. One of them is normally 'your' program; the other is the Operating System.It is therefore a good idea to keep these programs' stacks separate to minimise error possibilities.

In the 68000 the two stack pointers (USP and SSP) *are* separate. Both can be accessed when in the Supervisor Mode — but only the USP can be accessed in the User Mode. The Supervisor Mode is signified by the 'S' bit being set in the PSW. (In User Mode the 'S' bit is clear). The difference is that in Supervisor Mode you are allowed to execute all of the 68000's instructions; whereas in User Mode there are a few instructions that are privileged (mainly those that are possible means of entering Supervisor Mode!). So the only method of entry into Supervisor Mode is through what are known as 'Exceptions'.

Computers

Exceptions, in the case of the 68000, are those occasions when the processor deviates from its normal processing, e.g. interrupts, Errors (hardware and software such as bus errors or a divide-by-zero.).

Don't ever try to divide-by-zero.

The 68000 allocates the first kilobyte of memory to 'Exception Vectors', i.e. memory locations that contain pointers to addresses that are themselves the start of routines to handle the Exceptions that have occurred. (Still with me?) This allows you to program your main problem without having to worry too much about problems such as butter overflow and addresses wildly out of range.

The 68000's instruction set is probably the best this writer has seen in any micro. The object codes (what the micro actually runs on) have been well exceptionally thought out in terms of compactness. Versatility and ease of use are other virtues. Coming from the 6502 side I can appreciate its simple yet convenient and powerful approach to this business of mode addressing, allowing complex data structures to be implemented. From its Program Counter Relative Addressing Mode it is dead easy to construct code that is relocatable (a boon that many 8-bitters would fancy) so that they could load and execute programs anywhere in memory that they wanted, possibly having two or more programs simultaneously resident in memory ready to run.

Attention

Talking of memory . . . the 68000's address range is 16 Megabytes, which is 8 MegaWords (a word equalling 2 bytes). This range could be increased by future microComputer designers (NOT MicroProcessor Designer) if he designs his Micro with attention to the processor's state as indicated by the Function control pins (FC0-2). The 68008 has only a 1 Megabyte range — its main difference from the 68000 (apart from being physically smaller and having an 8-bit data bus as opposed to the 68000's 16-bit bus).

Still with me?

Sure you are.

Many people these days are arguing about whether one particular 68-thou MPU is 8-16- or 32-bits. For my money the 68008 is a true 16-bit processor mainly because of its linear address range (similar to an 8-bits 64k range).

In future articles I will be tackling the 68000 from a programmer's point of view.

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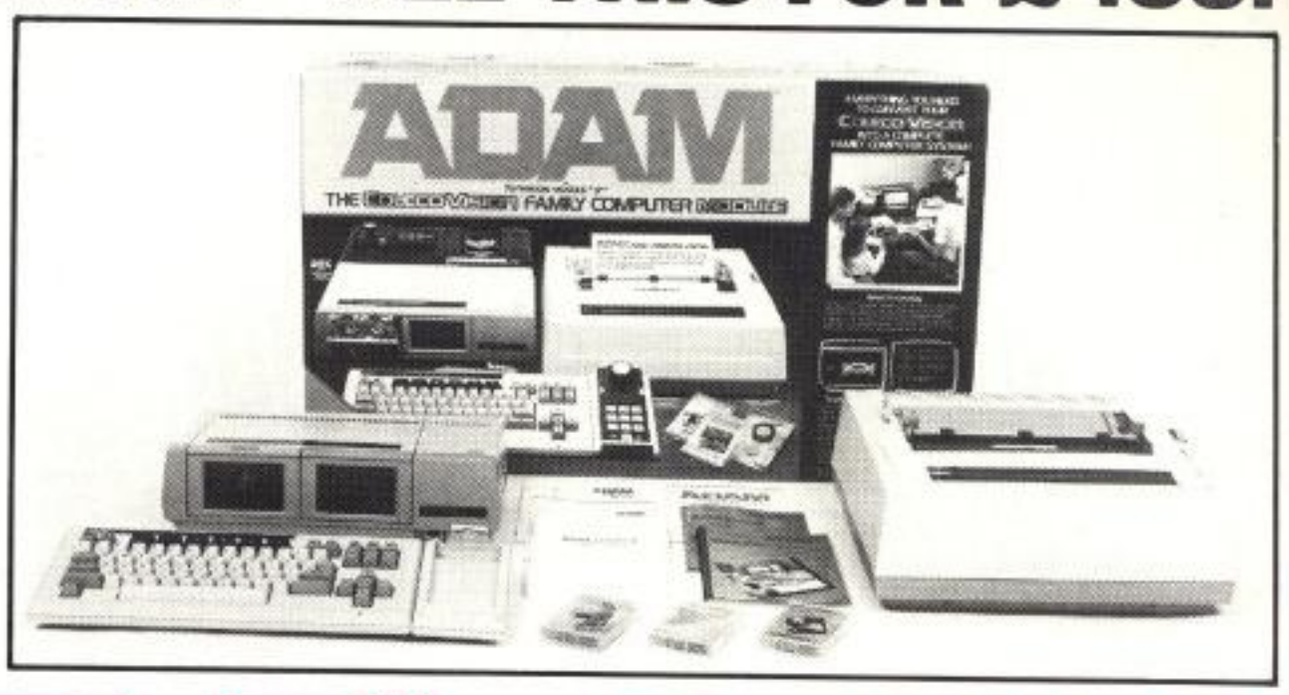

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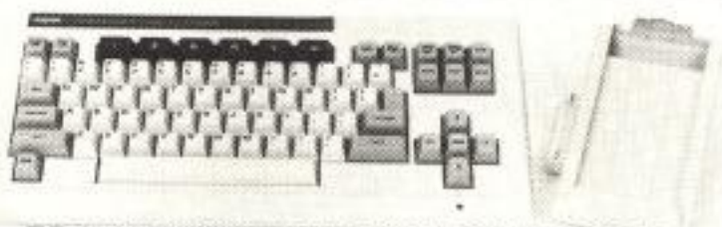

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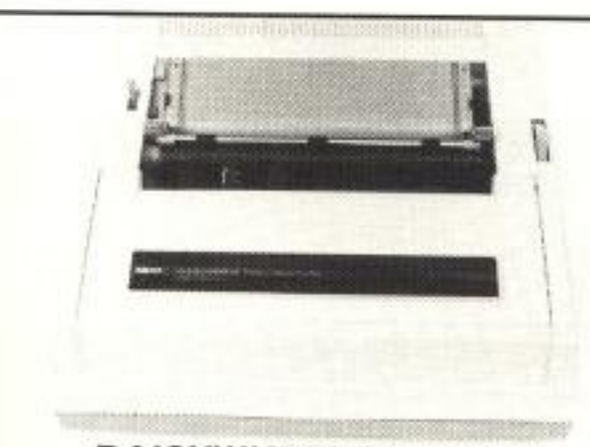

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COLECOVISION GAMES CONSOLE

QUITE SIMPLY - VALUE FOR MONEY!

If you're looking for real value in a computer system, one which can handle anything from serious Word Processing to enhanced Colecovision style video games such as Buck Rogers, look no further. The Coleco Adam is here with a package which will make you wonder if you're dreaming when we tell you about it. A price breakthrough in computer systems, Adam is comprised of an 80K RAM memory console with a built-in 256K digital data drive; a professional quality, stepped and sculptured 75 key full-stroke keyboard; a letter quality daisywheel printer and a full word processing program built into the Console. Two additional pieces of software, Smart BASIC and also 'Buck Rogers - Planet of Zoom' (the ultimate in advanced video games), are included as well as a blank digital data pack. Adam can be used with any domestic colour Television set.*

MEMORY CONSOLE/DATA DRIVE: *The heart of the Adam system is the 40K ROM and 64K RAM memory console which combines with the 32K ROM and 16K RAM in Colecovision to give you a total of 72K ROM (including 24K cartridge ROM) and 80K RAM (expandable to 144K). Built into the memory console is a digital data drive which accepts Adam's digital data packs, a fast and reliable mass storage medium that is capable of storing 256K of information, that's about 250 pages of double spaced text! The console is also designed to accomodate a second optional digital data drive.*

FULL STROKE KEYBOARD: The Adam keyboard has been designed as a professional quality keyboard that combines ease of use with an impressive array of features. It is stepped and sculptured for maximum efficiency and has 75 full stroke keys which include 6 colour coded Smart Keys which are redefined for each new application; 10 command keys which are dedicated to the word processing function, and 5 cursor control keys for easy positioning of the cursor at any point on the screen. You can attach a Colecovision controller to the keyboard to function as a numeric keypad for easy data entry. It can also be held like a calculator, a feature which makes working with numbers particularly easy. The joystick part of the hand controller can be used in the same way as the cursor control keys, to move the cursor around the screen.

LETTER QUALITY PRINTER: The Smart Writer letter quality daisywheel printer is a bi-directional 80 column printer which prints at a rate of 120 words per minute. It uses standard interchangeable daisywheels, so a variety of typestyles are available. The printer has a 9.5 inch wide carriage for either single sheets or continuous fan fold paper and uses standard carbon ribbons. It is comparable to many printers which cost as much as the total Adam package. The printer can be used either with the Adam's Smart Writer word processing program or as a stand alone electronic typewriter.

BUILT-IN WORD PROCESSOR: Adam comes with Smart Writer word processing built-in. This program is so easy to use that you only have to turn the power on and the word processor is on line and ready to go. Detailed instruction books are not necessary as the Computer guides you step by step, working from a series of Menu commands. It enables you to type in text, then completely edit or revise it with the touch of a few keys. Changes are readily made and a series of queries from the computer confirm your intentions, so that you can continuously double check your work as you type.

COMPATIBILITY WITH COLECOVISION: By using high speed interactive microprocessors in each of the modules, the Coleco Adam is designed to take additional advantage of both the 32K ROM and 16K RAM memory capability in the Colecovision. If you do not already own a Colecovision Console (£99 inc VAT), then you will need to purchase this when you initially purchase your Adam Computer package (£499 inc VAT), making a total purchase price of (£598 inc VAT).

WHAT IS COLECOVISION: Colecovision is one of the worlds most powerful video game systems, capable of displaying arcade quality colour graphics of incredible quality on a standard Colour TV set. The console (see picture bottom left) accepts 24K ROM cartridges such as Turbo and Zaxxon and is supplied with the popular Donkey Kong cartridge and a pair of joystick controllers. Colecovision has a range of licenced arcade hits available such as: Gorf, Carnival, Cosmic Avenger, Mouse Trap, Ladybug, Venture, Smurf, Pepper II, Space Panic, Looping, Space Fury, Mr Do, Time Pilot, Wizard of Wor and many others. So there you have it, Adam plus Colecovision the unbeatable combination. Send the coupon below for your FREE copy of our 12 page Colour brochure giving details on the complete Adam system.

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```
  101EXT:E$="":CHR$(27):PAPER7:DIMN(52)
.PC(102):GOSUB9000:YW=10000:MW=10000
  20 PAPER2:INK0
  30 IF S=1 THEN GOSUB 9400:S=0:C=0
  40PRINTFRE(""):HIRES:PAPER2:CC=0:BET=
0:TB=0: TB$="": E$=" "+CHR$(27)
  50 IF MW<=0 THEN 10050
  60 EE$="you are": INK0: POKE 618.2:IF
 YW<=0 THEN 10050
  70 H=12:V=10:W$="Bank    ":GOSUB 4120:
 H=126:W$="Total bet    ":GOSUB 4120
  80 H=28:V=190: W$="Total=": GOSUB4120
: H=126:W$="Total bet    ":GOSUB 4120
  90 GOSUB 3440: CH=42:BK=1: GOSUB 6000
 100 X=15:Y=110:GOSUB 3000: GOSUB 1000
 110 X=X+42:GOSUB 3000
 120 IF T>21 THEN CLS: PRINT E$"L"E$"A
    ":EE$:" bust!":GOSUB 1200: GOTO 13
0
 130 IF CC=5 AND YT=0 THEN 2000
 140 IF CC=5 THEN T=21
 150 IF YT>0 THEN GOTO 180
 160 POKE618.3: GOSUB 1000:IF X$="N" TH
EN 2000
 170 POKE 618.2: GOTO 110
 180 IFT>17OR1A>17ORCC=5 THEN GOTO 200
 190 GOTO 110
 200 IFTA>T THEN T=TA
 210 CLS: GOSUB 12000: GOTO 30
1000 IF CC=1 THEN GOTO 1040
1010 CLS: PRINT "Do you want to select
another card?";
1020 GET X$: IFX$="N" THEN POKE 618.2:
RETURN
1030 IFX$<>"Y" THEN 1020
1040 PRINT:INPUT  "Input bet value or T
for twist"; BT$:IFBI="1"THEN RETURN
1050 BET = VAL (BT$): IF BET>YW THEN CL
S:THEN PRINT "You only have  "YW" left".
:GOTO 1040
 1060 IF BET<0 THEN PRINT "No minus quan
tities allowed." "CHR$(11):GOTO 1040
 1070 YW=YW-BET:TB=TB+BET:TB$=STR$(TB) :
 POKE 618,2:RETURN
 1200 IFTC=1 AND CC<>5 THEN YT=TZZ+1
 1210 IF (YT<T) OR T>21 AND YT>0) THEN P
RINT "You won't": YW=YW+TB+TB:MW=MW-TB:G
OTO 1230
 1220 PRINT "I won.":MW=MW+TB
 1230 IFT=21 AND A>0 AND CC=2 THEN S=1
 1240 T=0: YT=0: TA=0: TA$=:C1=0
 1250 GOSUB 3440
 1260 PRINT "Do you want another hand?":
: POKE 618,3
 1270 GETX$:IFX$="N" THEN 10100
 1280 IFX$<>"Y" THEN 1270
 1290 POKE 618,2: RETURN
 2000 CLS:PRINT "I will select my hand."
: POKE 618,2:IFCC=5 THEN C1=1
 2010 IFTA>T THEN T=TA
 2020 YT=T:IFT=21 AND TA>0 AND CC=2 THEN
 S=1
 2030 T=0:TA=0:CH=127:BK=0:EE$= "I am":
CC=0:TA$=""
 2040 GOSUB 6000
 2050 X=15: Y=20: GOSUB 3000: GOSUB 4000
 2060 GOTO 110
 3000 REM****GENERATE CARD VALUE****
 3010 C=C+1:CC=CC+1:IFC=53 THEN C=1
 3020 SU=INT((N(C)-1)/13)+1:IFSU<3 THEN
 CU=0ELSECO=1
 3030 N=N(C)-(13*(SU-1)):NN=N+48:SU=SU+9
0
 3040 IFNN=49 THEN NN=65
 3050 IFN=58 THEN NN=96:N=0
 3060 IFNN=59 THEN NN=74:N=10
 3070 IFNN=60 THEN NN=81:N=10
 3080 IFNN=61 THEN NN=75:N=10
 3130 T=T+N:T$=STR$(T):IFNN=65 OR T<0 TH
EN TA=T+10:IFTA>21 THEN TA=0:TA$= "
"
 3140IF TA>0 THEN TA$=STR$(TA):TA$=" or
"+RIGHT$(TA$,LEN(TA$)-1)
 3200REM**** GENERATE CARD ****
 3210CURSETX,Y,3:FILL70,1,23:CURSETX+30,
Y,3:FILL70,1,18
 3220CURSETX+3,Y+3,3:CHAR NN,0,1:CURSET
X+19,Y+64,3:CHAR SU,0,1
 3240CURSETX 5,Y,3:FILL70,1,0
 3300REM**** SELECT CARD DISPLAY ****
 3310IF (N>65)AND(NN>82)THENGOSUB4200:GO
TO3400
 3320IF N/2<>INT(N/2)THENXX=10:YY=35:GOS
UB4000
 3330IFN=2 ORN=3 ORN=8 OR N=9THENXX=10:Y
Y=22:GOSUB4000:YY=48:GOSUB4000
 3340IFN>5THENXX=3:YY=35:GOSUB4000:XX=10
:GOSUB4000
 3350IFN>3THENXX=3:YY=22:GOSUB4000:YY=48
:GOSUB4000
 3360IFN>3THENXX=18:GOSUB4000:YY=22:GOSU
B4000
 3370IFN=10THENXX=10:YY=12:GOSUB4000:YY=
25:GOSUB4000:YY=38:GOSUB4000
 3380IFN=10THENYY=51:GOSUB4000
 3400H=70:V=Y+80:W$=T$+TA$:GOSUB4100
 3410IFTB$=""ORYT>0THEN3430
 3420H=192:W$=TB$:GOSUB4100
 3430IFYT>0THENRETURN
 3440H=48:V=10:W$=STR$(MW):GOSUB4110
```

You're in Las Vegas. The lights are bright, the casinos inviting. A dark, seductive female asks you, "Blackjack, sir? Pontoon? 21?" You nod, awaiting the cards to be dealt. Instead you're handed an Oric-1. "There you go, sir. The program's listed below. Have a good day!"

for ORIC-1 and Atmos

```
 3450H=190:W$=STR$(YW):GOSUB4100
 3460RETURN
 3999REM**** DISPLAY CHARACTERS ****
 4000W$=RIGHT$(W$,LEN(W$) 1)
 4120CURSET H,V,3:FORI=1TOLEN(W$):CHAR12
7,0,0:CHARASC(MID$(W$,I,1)),0,1
 4130CURMOV6,0,3:NEXT:CHAR127,0,0:RETURN
 4200CURSETX+10,Y+14,3
 4210FORI=1TO62STEP2:DRAWPC(I),PC(I+1),1
:NEXT
 4220FORI=63TO102STEP2:CURSETX+PC(I),Y+P
C(I+1),1:NEXT
 4230RETURN
 6000REM **** GENERATE BANKERS CARD ****
 6010X=15:Y=20:FB=20
 6020CURSETX,Y,3:FILL70,1,FB:CURSETX+30,
Y,3:FILL70,1,18
 6030FORI=X+3TOX+15 STEP6:FORJ=Y+6TOY+54
STEP6
 6040CURSETI,J,3:CHARCH,0,BK
 6050NEXTJ:NEXTI
 6060X=X+42:IFX=99THENRETURN
 6070GOTO6020
 9000PRINTCHR$(12):PRINTCHR$(4)E$"N"E$"A
     **** PONTOOON ****"CHR$(4):INK4
 9010POKE618,2:PRINT:PRINT:PRINT" This p
rogram simulates the card"
 9020PRINT"game of PONTOON.":PRINI:PRINT
"  the computer will ask you to ";
 9030PRINT"first select the amount of mo
ney you wish to bet on the ";
 9040PRINT"first card, followed by a cho
ice of - "CHR$(10)"a) betting mo";
 9050PRINT"re money          or b) "E$"ET"
E$CHR$(8)"Dwisting"
 9060PRINT"on subsequent cards.":PRINT:P
RINT" The program will allow for";
 9070PRINT"access    high or low, and fi
ve card tricks."
```

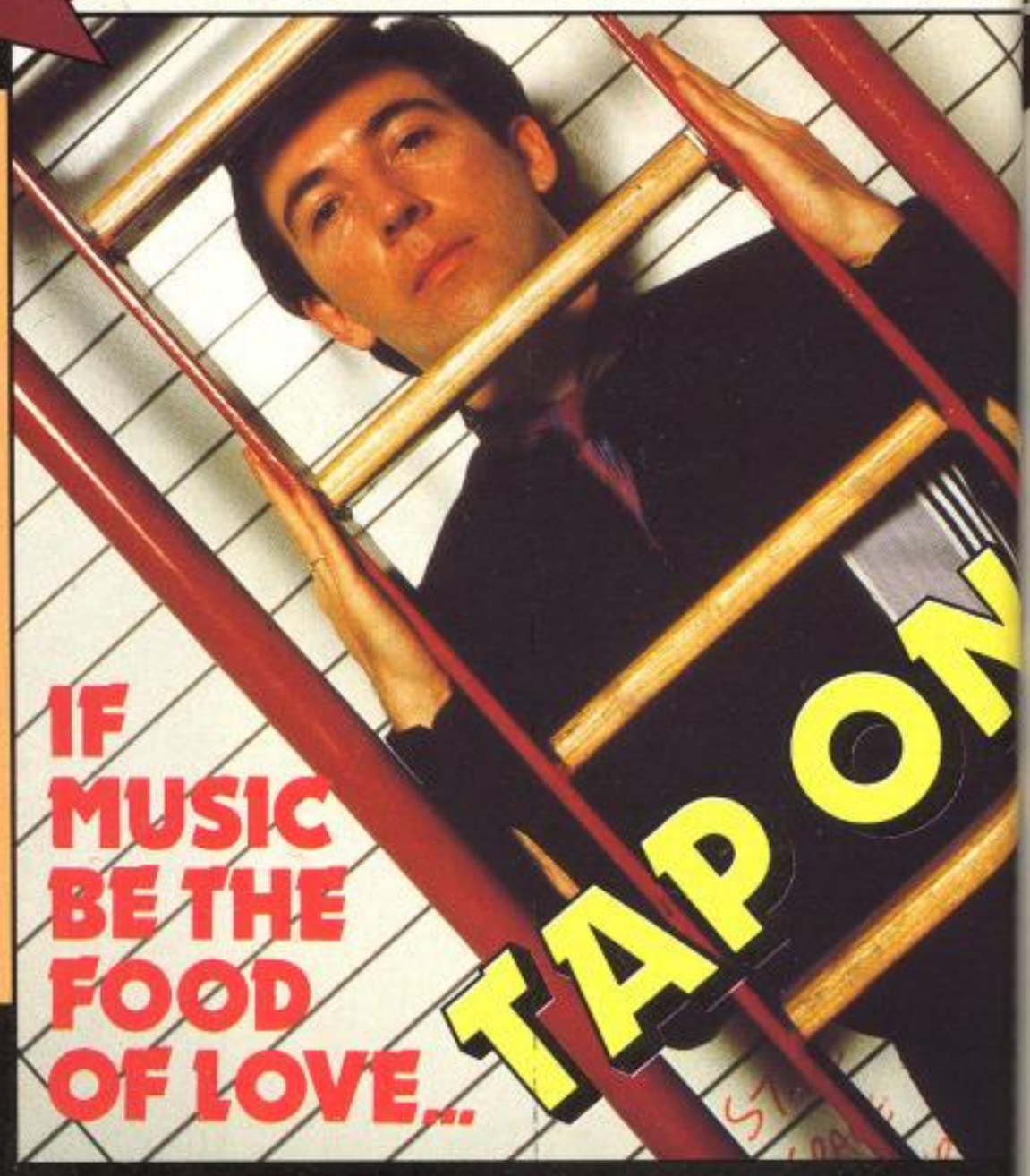
```
 90B0PRINT:PRINT"When responding to a qu
estion with a Yes or No, it is";
 9090PRINT"only necessary to press Y or
N.    All other keyboard"
 9100PRINT"inputs must be followed by on
e press of the RETURN key."
 9110PRINT:PRINTE$"A Press X for further
 explanation"
 9120PRINTE$"A     or Space Bar to start
game.":GOTO9300
 9130PRINTCHR$(12):PRINTCHR$(4)E$"N"E$"A
     ****PONTOON****"CHR$(4):INK4
 9140PRINT:PRINT:PRINT" The object of th
e game is to beat the bank by ";
 9150PRINT"achieving a higher score, up
to a maximum of 21 in each hand."
 9160PRINT:PRINT"You each start with a k
itty of     '10,000. The";
 9170PRINT" the computer is the Bank, an
d it does not 'see' your hand until"
 9180PRINT"his total is as close as 21 a
s he can get, without going"E$;
 9190PRINT"Abust!":PRINT:PRINT"    If a p
ontoon is dealt, ie a picture card";
 9200PRINT"or a ten with an ace, then th
e   pack will be reshuffled at ";
 9210PRINT"the end   of the hand, the di
splay will give two"
 9220PRINT:PRINT"With an ace in the hand
, the display will give two";
 9230PRINT"alternative rersults if the t
otals are below 22.  You may elect";
```

```
 9240PRINT"To draw another card if not t
he     higher of the two scores";
 9250PRINT"is recorded.":PRINT
 9260PRINTE$"APress Space Dar to start t
he game":GOTO10000
 9300REM **** CREATE CHARACTERS ****
 9310P=91
 9320FORI=0TO7:READDA:POKE46080+(P*8)+I,
DA:NEXT
 9330READP:IFP=0THEN9500
 9340GOTO9320
 9350DATA4,14,31,21,4,0,0,0,92
 9360DATA4,14,31,31,10,4,4,0,93
 9370DATA27,27,31,14,4,0,0,0,94
 9380DATA4,14,31,14,4,0,0,0,96
 9390DATA0,38,41,41,41,41,38,0,0
 9400REM ****SHUFFLE****
 9410TEXT:CLS:POKE616,10:PRINT:PRINT"
The cards must be reshuffled."
 9420PRINTSPC(10)"please wait."
 9430FORI=1TO52:N(I)=I:NEXT
 9440FORI=1TO52:D=INT(RND(1)*52)+1:DD=N(
I)
 9450N(I)=N(D):N(D)=DD:NEXT:C=0
 9460RETURN
 9500FORI=1TO102:READPC(I):NEXT:GOTO1000
0
 9510DATA1,1,1,-1,1,1,1,1,1,1,1,1,1,-1
 9520DATA2,-6,0,0,-2,0,10,6,0
 9530DATA0,-8,0,8,5,10,-16,0,5,-10
 9540DATA-5,10,5,10,6,0,5,-10,-5,10
 9550DATA0,10,-1,-1,-1,1,-1,-1,-1,1
 9560DATA-1,-1,-1,1,0,-12,0,9,6,0
 9570DATA11,19,14,19,12,20,11,22,12,22,1
3,22,14,22
 9580DATA12,27,12,29,12,31
 9590DATA13,37,13,39,13,41,12,46,13,46,1
4,46,15,46
 9600DATA14,48,12,49,15,59
```

```
10000GETX$:IFX$=" "THENGOSUB9400
10010IFX$<>"X"THEN10000
10020GOTO9130
10050TEXT:POKE616,10:PRINT:PRINT"
"EE$" SKINT!!"
10060PRINT:PRINT"  Please RE-RUN the pro
gram if you"
10070PRINT"want another game."
10100TEXT:END
```

Each month BIG K collars an expert in a particular field to review a selection of progs which claim to reproduce his line of work. This month: PETE SHELLEY

Reporter: RICHARD COOK



AS VOCALIST, guitarist and leader of Buzzcocks, Pete Shelley put a little romance into the attack of the New Wave which shook rock music in the mid-70s. His love songs channelled the power of punk into a form which laid groundwork for much of today's pop: beguiling music that was as fresh and energetic as any of the system-smashing ambitions of his contemporaries in The Jam and The Clash.

After the demise of Buzzcocks back in 1981, Pete embarked on a solo career which has taken quite a different track. His starry-eyed songs are now set to music made primarily through synthesisers and sequences that show one of the most imaginative approaches to instruments otherwise commonplace in today's charts.

And alongside this interest in new sounds Pete — along with a few others we know — developed a fascination with computers: the last track on his most recent LP was a program for Spectrum!

Pete started with a ZX81. Now he has two Spectrums, a Commodore 64 and a BBC 'B' as well. Although he's hard at work in the studios recording his third LP for Island Records, *Big K* asked him to take some time off to check out a handful of programs designed to help write, practice or maybe just fool around with music. Can a micro assist you in making fortune and infamy in the pop world? We set up the machines; Pete flexed his fingers; and here are the verdicts.

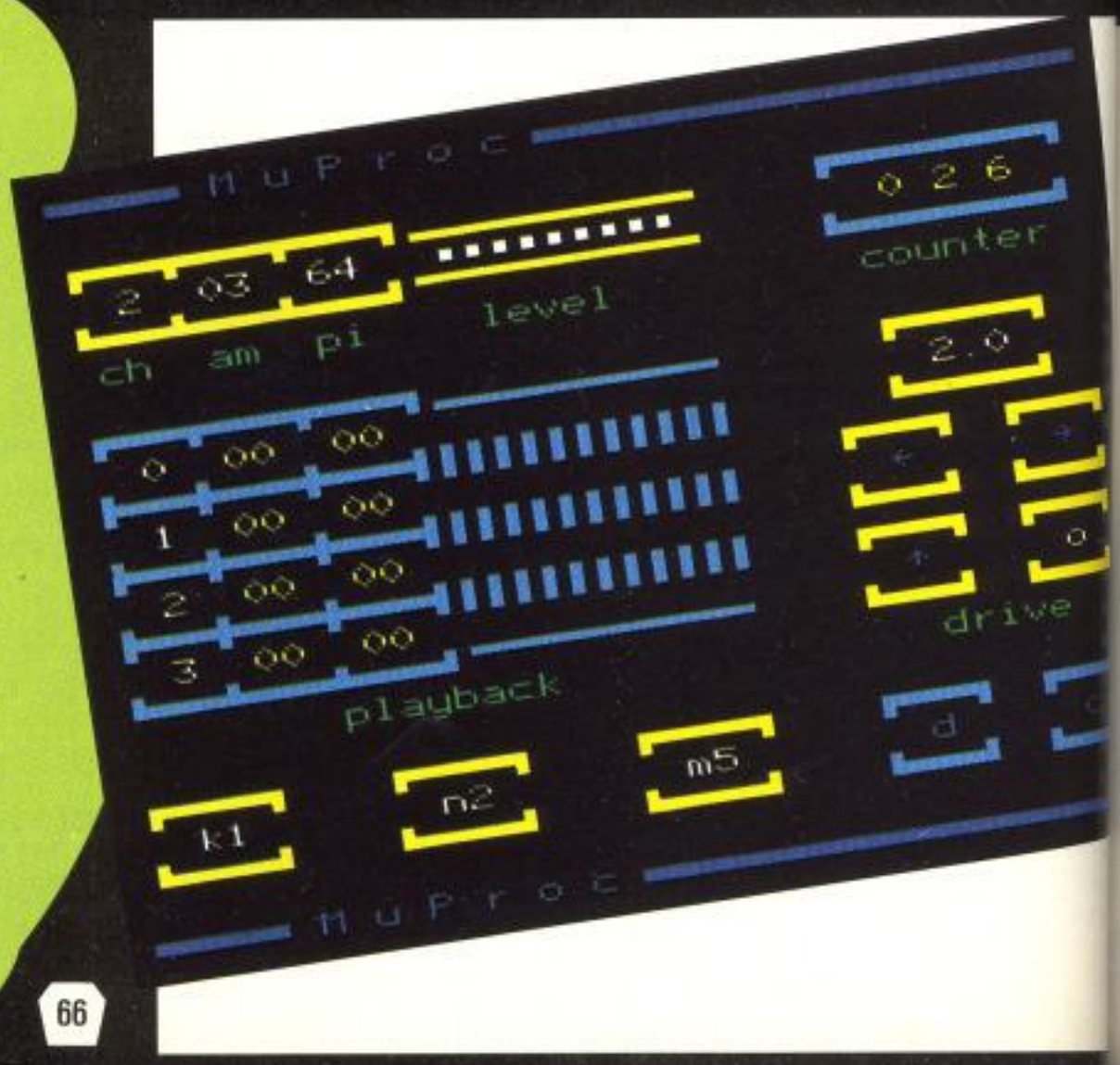
Putting notes in in real time is good — but then, you can't hear them simultaneously, which isn't so good

A rather complex program for writing music: it acts as a four-channel sequencer, can define up to 16 instruments and save and play pieces. It's menu-based, with a detailed editing function that permits notes to have different attack levels, durations and tonal qualities. A piece can be played right through or broken down into a verse structure. The display consists of a numerical layout that details the various facets of the music at it's being composed. There is an additional 'Auto-Composer' programme that generates tunes automatically with a minimum of user guidance.

"Well, I've been on it half an hour and not written a note yet! There seems to be lots of numbers on the screen, lists and lists . . . it doesn't look much like music. There's no stave anywhere, and it's pointless having a graphic capability if you're never going to do anything with it. The BBC has good sound channels which are difficult to program and something like this should make it a lot easier. The instructions are concise — in fact they read like a program themselves, you can't skip through them. It's good that you can put the notes in without playing them in real time but then you can't *hear* them as you're putting them in. It gets to be like a counting exercise, and tracing back faults at the end would take time.

"I think you'd have to know a bit about computers — typing in numbers — and a bit about music as well to get much out of it. I'd say on balance it's the best so far for someone who wanted a semi-professional aid to writing music."

Prog: BBC MUSIC SYNTHESISER
Maker: BUG-BYTE
Machine: BBC MODEL B
Format: cassette
Price: £9.50



Prog: ULTISYNTH
Maker: QUICKSILVA
Machine: COMMODORE 64
Format: cassette
Price: £14.95

S.I.D. Sound

A music-writing program which has features very similar to those detailed above, all neatly laid out in a very long and rather confusing manual. With effects like ring-modulation incorporated it seems designed to show off the capabilities of the micro's Sound Interface Device chip more than anything, and again there is no stave in the display — tunes are shown in graph forms.

"In the book it says it does a lot, and there are some interesting rhythms — one facility of the program lets you use the computer like a rhythm box. But it's very hard to get it all to work for you and it doesn't seem too useful as a tool. It doesn't do anything which I can't get but want from the other programs.

"It's difficult to write sound on computers, and in a way these are all filling in something that should be present on the computer anyway. Probably the ideal thing would be to have a program that converts the keyboard into a 'proper' keyboard, playing on line, watching the notes appear on screen as you play them and printing it out afterwards: and there's nothing here like that.

"It's interesting that they've all taken different approaches. The only one that really *teaches* you about music is the *Musicmaster*. But they should all be easier to use. It should be a fun thing, not something you have to plough through huge manuals to understand. You should be able to just pull the music out with your fingers!"

The Superior System

A very clear manual explains that this one will write 1, 2 or 3 part tunes which can be played or stored on the BBC. 16 pre-defined envelopes set up the sound characteristics for each note but these envelopes can be extensively modified; treble and bass staves are shown on the screen, and the cursor keys are used to select note positions. Tunes can be loaded from discs and there's a 256 note capacity for each.

"I should point out that I've been asked to write tunes for this program although I haven't actually written any yet. It's well laid out. It actually gives you a picture of the sound frequency you've chosen, though there's nothing very tutorial about it—it's aimed at people who know what they're about, as a serious tool. But your contact with it isn't too complex.

"You can approach it from whatever direction — as a computer user, musician or sound engineer — and I think it's very easy to understand. You can play back any part of a tune during the edit mode, very useful — the attitudes of the programme is to be helpful at all stages. To let you hear the tune build up. The machine gives you as much control as possible, and it's very good for getting the 'feel' of music. One drawback is that you can only see one line of music at a time even though you can hear as much of a piece as you want.

"It's certainly the best music program for the BBC, and the BBC is the best micro for this sort of thing. It's just a shame you can't write very long tunes on it."

Prog: MUSIC EDITOR
Maker: SYSTEM SOFTWARE
Machine: BBC MODEL B
Format: cassette/disc
Price: £9.00 (each)

KINDLY PAY ATTENTION CLASS!

A much simpler program: the rudiments of music theory are explained onscreen in either a stave or keyboard mode using step-by-step instructions on pitch, time etc. Tunes are then constructed, played and amended or stored as one wishes. There are no special FX to the program and the maximum length for a tune is 1000 notes.

"It's all there on the screen — you don't need to keep looking at the manual, which is good. Shame it's for a machine where the sound is so poor. I like it a lot — it's very good refresher stuff on all the things you forgot at school! It tells you what you need to know about notes or whatever and the way it teaches you about each part of putting music together is very clear. You can go straight to any part of the process so it's very user-friendly. Presentation is excellent and the display is very clear."

Prog: MUSICMASTER
Maker: SINCLAIR/ INCOGNITO SOFTWARE LTD
Machine: SPECTRUM 48K
Format: cassette
Price: £9.95

Some light relief. This is a strategy game that allows you to try and crack the charts by leading your own group. Monthly turns allow your band to write songs, play gigs, go on expensive tours, push your manager into fixing special deals and acquiring status symbols and — eventually — make a record. If you've avoided bankruptcy, corrupt management and the apathy of the fickle public in the meantime, that is. Three skill levels in what's basically a text game, though there is a chance of seeing the group play live!

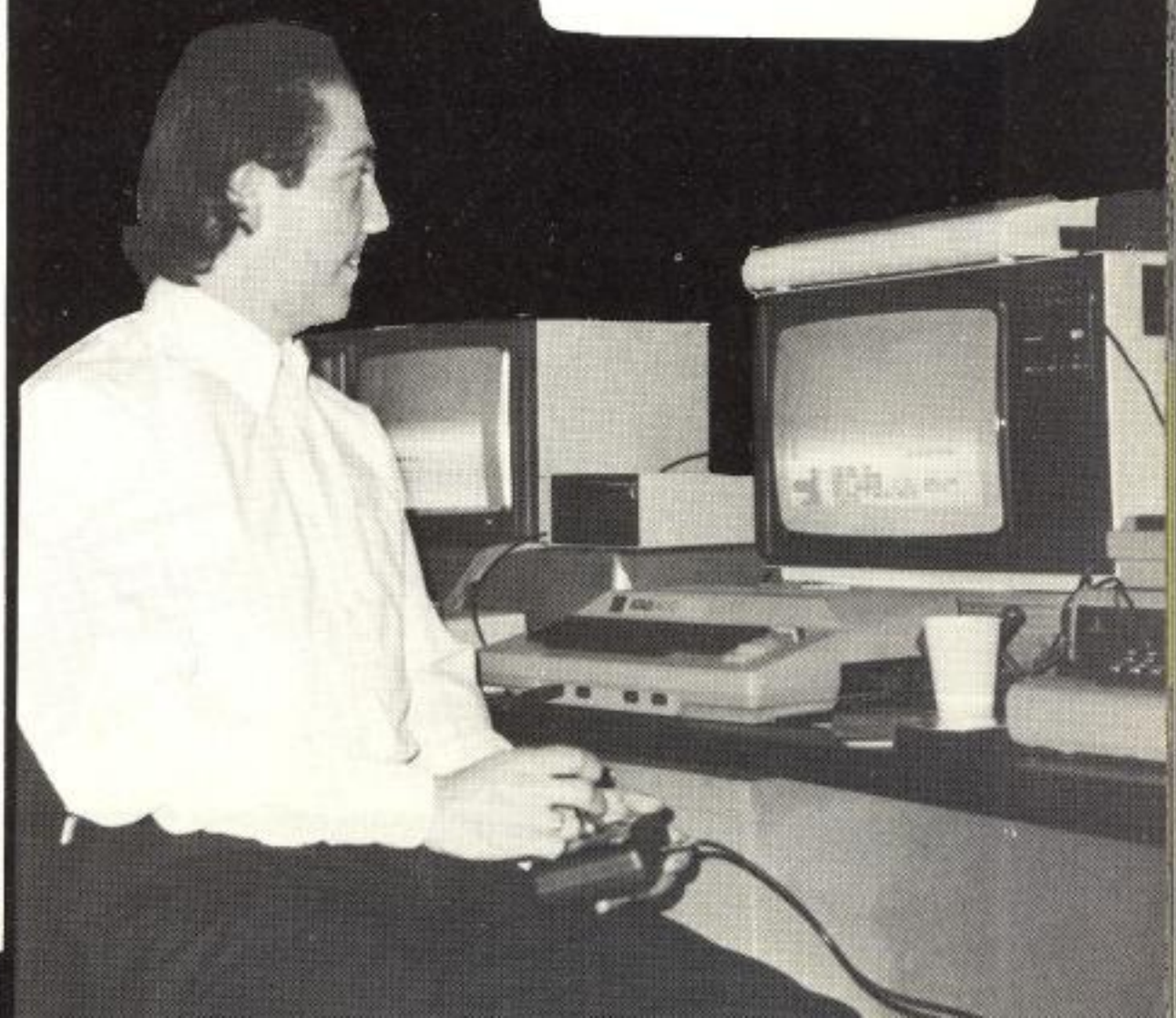
"A must for anybody who's ever picked up a guitar, I'd say! If there's a few of you playing it should be fun — I always find these games better when there's a few people gathered round calling out what to do. I like the pace of it — it moves fast enough to keep you interested. And it's not too easy either, even if the real thing is harder!"

Prog: IT'S ONLY ROCK'N'ROLL
Maker: K-TEL
Machine: SPECTRUM 48K/COMMODORE 64
Format: cassette
Price: £6.95

THE SHELLEY CHART

1. System Software's *Music Editor*
2. Spectrum Software's *Musicmaster*
3. Bug-Byte's *BBC Music Synthesizer*
4. Quicksilva's *BBC Music Processor*
5. Quicksilva's *Ultisynth*

SPECIAL MENTION (Light Relief Department) K-TEL'S It's Only Rock 'n Roll



A program **designed to make the computer operate as synthesiser, 4-track recorder and editing desk. It boasts 30 functions that work directly from the keyboard: 10 pre-defined pitch and amplitude envelopes offer a possible range of 100,000 envelopes, and four-channel recording can be simulated to enshrine tunes of up to 1,950 notes — more if the 'long-play' compressor facility is used. There's also a range of sound effects, a metronome facility and three ready-made files (Bach, Sousa and Xmas Carols). The basic graphic display is akin to a studio mixing desk layout.**

"The preset tunes just show off some flash envelopes. It never actually *shows* you what's playing. It sounds passable — as the kind of thing Walter Carlos would have dreamed of 20 years ago — but a lot of the effects sound like artificial warbles and tweets. For anyone who wanted to use the program as a tool for making music it's good in a sort of roundabout way without showing or telling you much about what you're doing. There's a heavy onus on the user.

"Not very useful for the professional musician, and for someone who wants to learn about making music it's not too clear — you don't see any dots or scales anywhere. It seems like there's a lot there, and it claims to produce complex music quickly and easily — but that can't be done with a keyboard operating in real time — and that seems to be all you *can* do with it. There's no visual record of the notes you've played. Good bit of programming but I think you have to be able to play to make it work for you. It's harder than a piano keyboard."

Prog: BBC MUSIC PROCESSOR
Maker: QUICKSILVA
Machine: BBC MODEL B
Format: cassette
Price: £14.95

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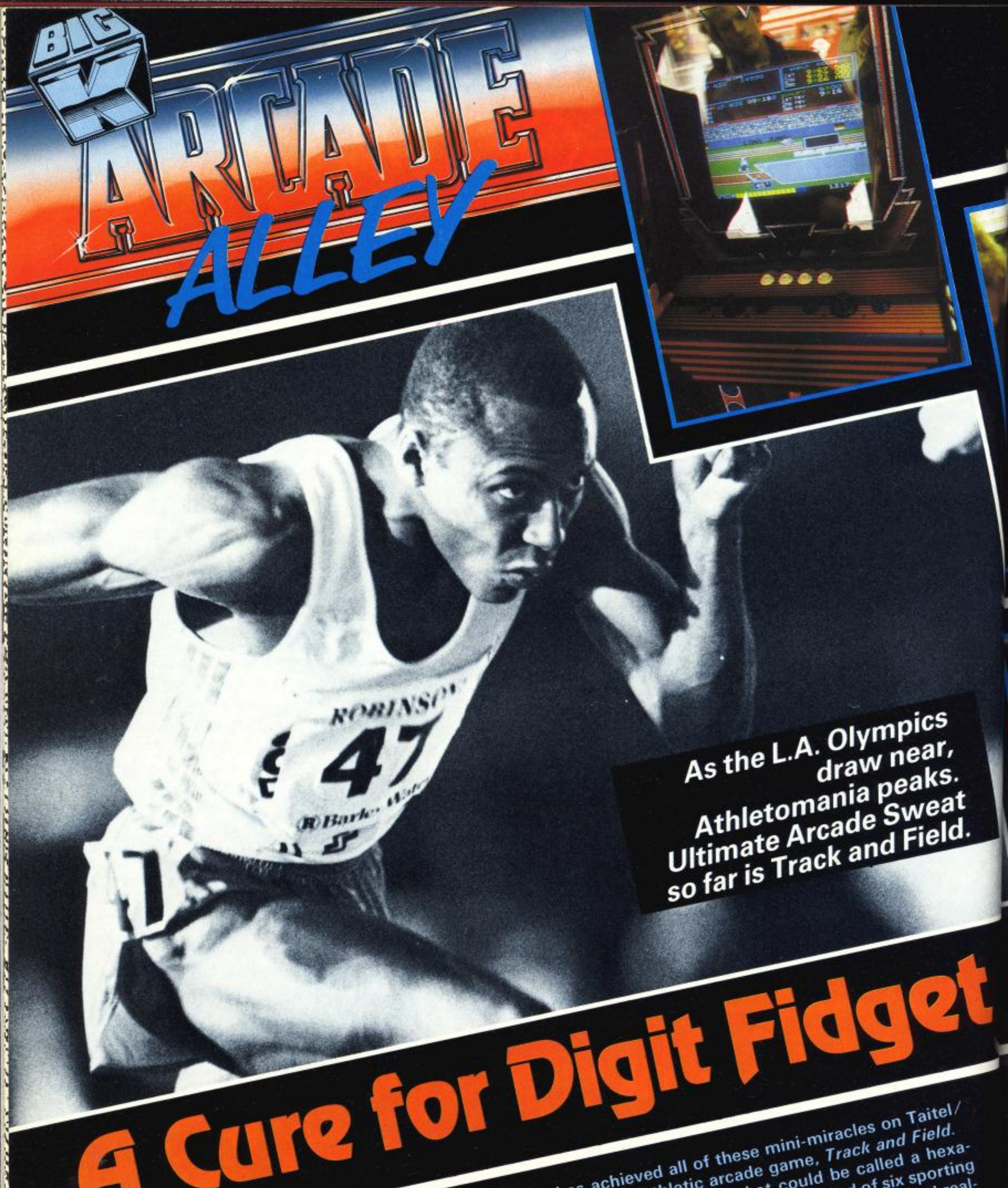

As the L.A. Olympics draw near, Athletomania peaks. Ultimate Arcade Sweat so far is Track and Field.

A Cure for Digit Fidget

STRANGE AS it may seem, a certain drunken friend of mine can now out-sprint the admirable Ade Mafi. He can also, after four or five pints of Foster's, flop better than Mr. Fosbury and part the hurdles faster than Ed Moses. Sadly though, you will not find him competing for the British Squad at this summer's L.A. Olympics. Nor will you find his startling feats recorded in the record books. For he has achieved all of these mini-miracles on Taitel/Konami's athletic arcade game, *Track and Field*.

Based loosely on what could be called a hexathlon, *Track and Field* is comprised of six sporting events, each surprising in their accuracy and realism. For twenty pence you get the chance to fight it out with up to four players (or the computer) for honours in the 100m sprint, and long-jump, the javelin, the hurdles, the hammer and the high-jump. Qualification for each round depends on your ability to satisfy the stipulated speed/height/distance set by the machine; in all events bar the sprint and the hurdles the player has three attempt

to qualify for the next heat. Of course none of this is as easy as first appears.

Points are awarded on merit in competition and bonuses come in the occasional form of a be-hatted figure with a 1,000pt. bill-board, or, if your javelin flies off-screen, in the shape of a speared pigeon (?).

But what puts *Track and Field* way above most games is the feeling that you are actually competing for something real (this is even more apparent when your opponent knocks your elbow during the 100m sprint). To play successfully you need a degree of dexterity and judgement that would confound the majority of RAF pilots. Your speed must be gauged exactly and your angle of take-off or release as close to the optimum as is humanly possible (and all this with your rivals blowing smoke in your face and stealing your scotch). If it wasn't for the game's addictive power I'd take a jump-jet to the Falklands anyday.

Still, the complexity of the actual game is nothing when compared to the abundance of animation that constitutes *Track and Field's* software program; referees shoot starting pistols (to the audible cry of 'ON YOUR MARKS, GET SET, BANG') and the hand-measure distances, crowds offer standing ovations to winners and seated silence to losers, athletes scratch their heads in bemusement at disqualification and salute with pride to their victories — and, if you finally reach the champions' plinth, you are awarded a gold medal and a nubile blonde to present it (complete with kiss). All that's missing are the free Anabolic Steroids.

Not ones to miss out on the game's obvious success, the International Athletes Club has arranged a national competition with the makers aimed at raising money for out poverty stricken Olympics team — and that is an incentive to play.

Track and Field? It's leading the pack by a mile!

DAVID DORRELL

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DEATH STAR INTERCEPTOR

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(Screen 1)

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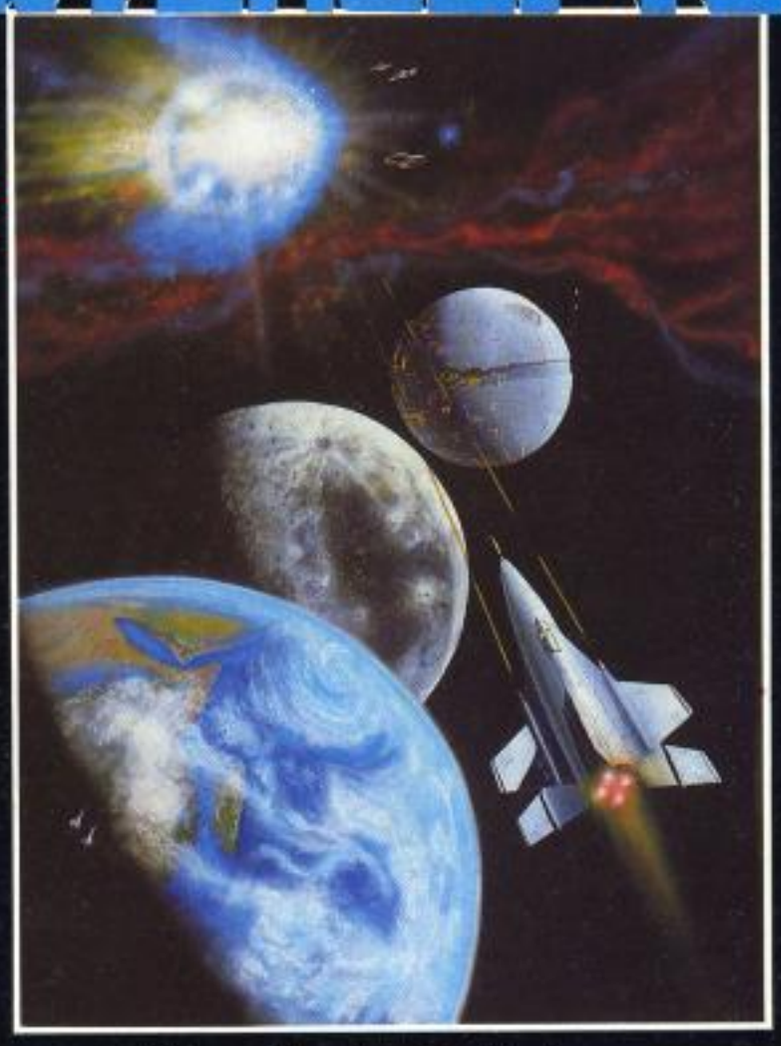

DURANIUM BARRIERS

(Screen 4)

APPROACH

(Screen 2)

INTERCEPT MISSILES

(Screen 6)

ENTRY

(Screen 3)

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(Screen 12)

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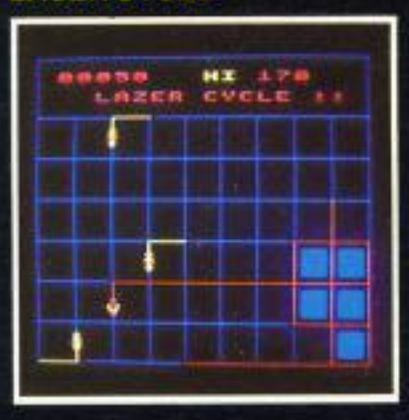

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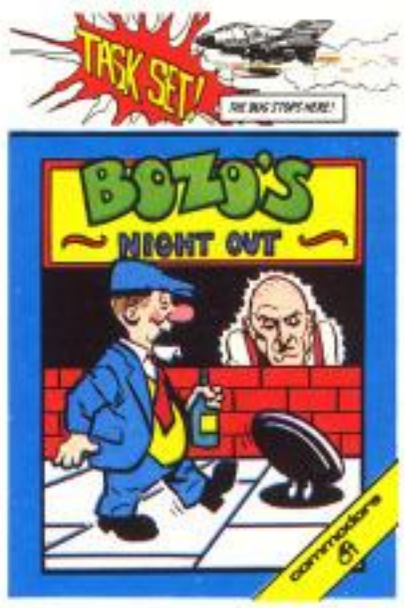

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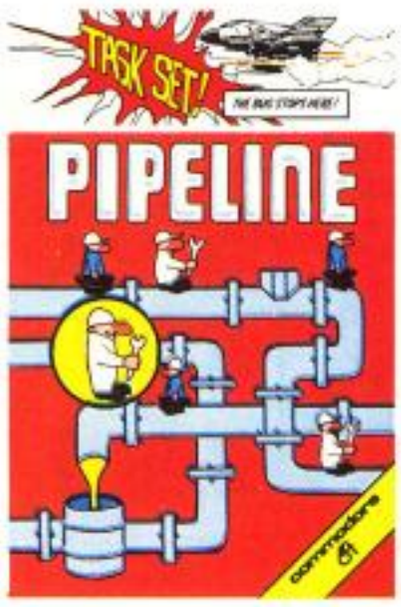

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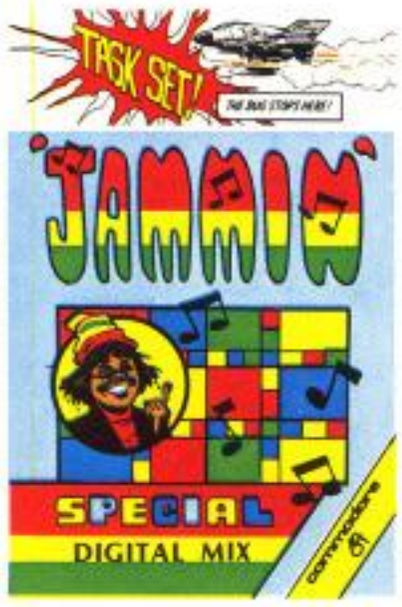

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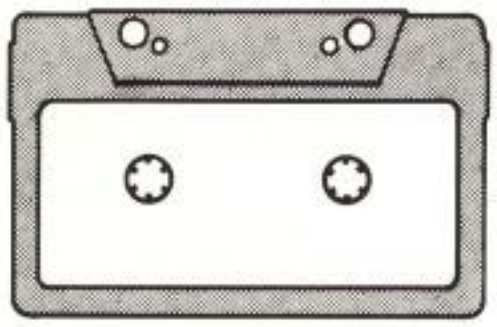

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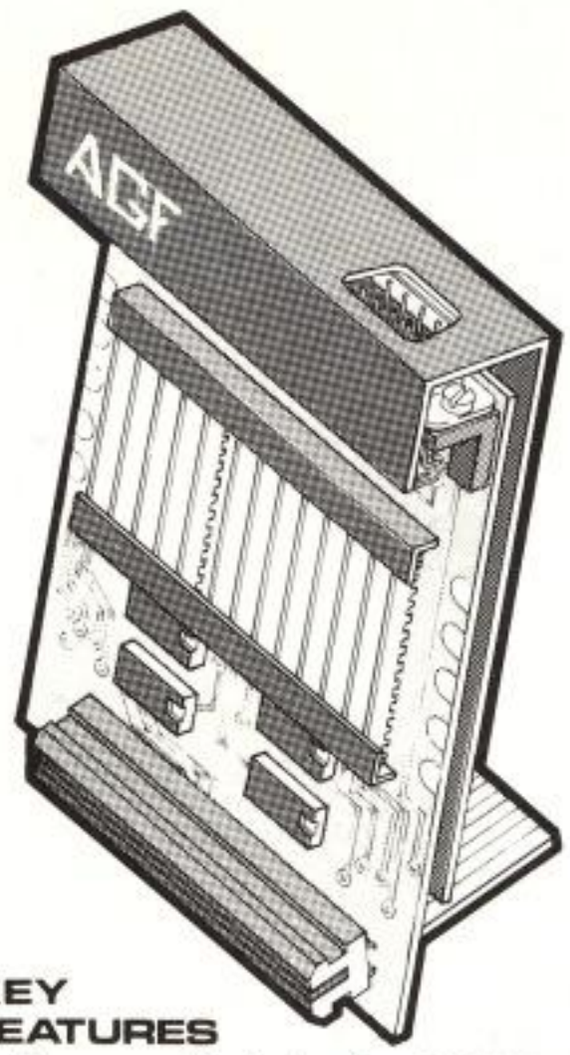

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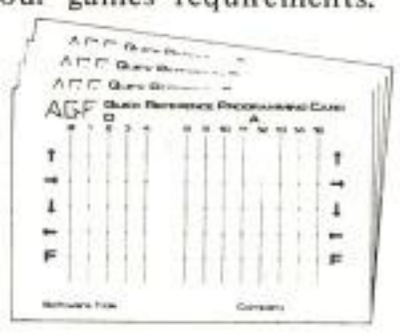

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for ORIC-1

by Kevin Freeman

```
1 CLS
5 INK2:PAPER0:POKE618,10
10 GOSUB300:GOSUB4000
15 POKE48680,3
100 REM.....CONTROL
101 REPEAT
105 T=2:TT=2:R=0:Q$=KEY$
108 IFQ$=""THENGOTO150
110 IFQ$=" "THENGOSUB1000
115 IFQ$=","THENT=-1:TT=3:GOTO130
120 IFQ$="."THENT=3:TT=-1
125 A1$=LEFT$(A$,2):A2$=RIGHT$(A$,35)
128 A$=A2$+A1$:GOTO150
130 A1$=LEFT$(A$,35):A2$=RIGHT$(A$,2)
135 A$=A2$+A1$
150 GOSUB2000
175 PLOT30,2,RIGHT$("      "+STR$(HI),5)
180 PLOT10,2,RIGHT$("      "+STR$(SC),5)
185 PLOT10,4,RIGHT$("   "+STR$(SH),2)
190 A=FRE("")
200 UNTILSH=0
201 PLAY0,0,0,0:CLS
202 CLS:R=1
```

"I say, Corporal, there's some more of those nasty tank things hoving into sight. Be a good chap and traverse the old anti-tank gun in their direction, would you? When you've done that pop off a few shots at the bally things — but do be careful, we only have a few shells left. And, Corporal, keep the noise down. One has to have quiet during the cocktail hour."

TANK ATTACK!

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```
210 PLOT13,13,"GAME OVER"
220 PLOT2,20,"YOUR SCORE WAS:"
230 PLOT16,20,STR$(SC)
232 PLOT2,22,"PRESS 'Y' FOR ANOTHER GO"
234 Y$=KEY$
235 IFY$="Y"THENGOTO4015
236 GOTO234
240 END
300 PRINT:PRINT:PRINT
305 PRINTSPC(10);CHR$(4);CHR$(27)"NANTI
-TANK":PRINTCHR$(4)
310 PRINT:PRINT"KNOCK OUT AS MANY TANKS
 AS YOU CAN"
315 PRINT"WITH A LIMITED AMOUNT OF SHEL
LS"
318 PRINT"YOU CAN TRAVERSE TO THE RIGHT
":PRINT"OR LEFT"
320 PLOT12,15,"CONTROLS:"
330 PLOT12,18,"FIRE    (SPACE BAR)
335 PLOT12,20,"RIGHT   (.)"
340 PLOT12,22,"LEFT    (,)"
345 GOSUB5000
350 PLOT9,10,"PRESS SPACE BAR TO START"
360 W$=KEY$
365 IFW$=" "THENRETURN
370 GOTO360
1000 REM.......FIRING ROUTINE.....
1005 EXPLODE:WAIT3
1010 SOUND2,5,0:PLAY2,2,5,10
1015 FR=FR-5
1050 FORY=16TO14STEP-2
1070 PLOT17,Y,"(":GOSUB2000
1090 PLOT17,Y," ":NEXT
1250 FORY=9TO12STEP3
1270 PLOT17,Y,"!":GOSUB2000
1290 PLOT17,Y," ":NEXT
1350 FORY=13TO15
1370 PLOT17,Y,")":GOSUB2000
1390 PLOT17,Y," ":NEXT
1393 IFX<18ANDX>15THENGOSUB2500
1394 IFX1<18ANDX1>15THENGOSUB2550
1399 SOUND4,300,6:PLAY2,7,1,0
1400 PLOT17,16,"*"
1420 GOSUB2000
1430 PLOT17,16," "
1435 PLAY0,0,0,0
1495 SH=SH-1
1500 POP:GOTO150
2000 REM.......ENEMY TANK.....
2005 PLOT1,17,CHR$(2)+A$
2010 PLOTX,16,"    ":PLOTX1,16,"    "
2018 IFT1>360THENT1=2
2020 IFT1<2THENT1=360
2022 IFT1<20RT1>35THENGOTO2100
2023 SOUND6,3100,0:PLAY6,2,4,10
2025 X=T1
2030 POKE48680,3:PLOTX,16,"uvw"
2040 PLAY0,0,0,0
2100 T1=T1-1
2104 IFT2>360THENT2=2
2105 IFT2<2THENT2=360
2108 IFT2<20RT2>35THENGOTO2125
2109 SOUND6,3000,0:PLAY6,2,4,10
2110 X1=T2
2115 POKE48680,3:PLOTX1,16,"xyz"
2120 PLAY0,0,0,0
2125 T2=T2+TT
2200 RETURN
2500 REM.......HIT TARGET.....
2510 PLAY0,0,0,0:EXPLODE
2515 PLOTX,16,":*:":WAIT6
2520 T1=INT(RND(1)*300+40)
2522 PLOTX,16,"    "
2530 SC=SC+200+FR
2535 IFHI<SCTHENHI=SC
2540 X=1:FR=100
2549 RETURN
2550 PLAY0,0,0,0:EXPLODE
2555 PLOTX1,16,":*:":WAIT6
2560 T2=INT(RND(1)*150+150)
2575 PLOTX1,16,"    "
2580 SC=SC+200+FR
2585 IFHI<SCTHENHI=SC
2590 X1=1:FR=100
2599 RETURN
4000 REM.....SET VARIABLES.....
4010 HI=0
4015 SC=0:SH=50:FR=100:CLS
4020 A$="aaaaabaaaaabaaaaabaaaaabaaaaab
aaaaab"
4030 T1=INT(RND(1)*250+50)
4031 T(1)=INT(RND(1)*250+50)
4032 T2=INT(RND(1)*250+50)
4100 REM.....SET SCREEN.....
4101 CLS
4110 FORI=17TO26:PLOT1,I,2:NEXT
4150 POKE48121,1:POKE48201,5
4151 PLOT1,2,"SCORE  :"
4156 PLOT1,4,"SHELLS :"
4160 PLOT20,2,"HI-SCORE :"
4180 PLOT16,20,"hi"
4182 PLOT15,21,"aqjo"
4184 PLOT15,22,"bgkp"
4186 PLOT15,23,"cgkq"
4188 PLOT15,24,"dglr"
4190 PLOT15,25,"egms"
4192 PLOT15,26,"fgnt"
4235 FORI=48036TO48039:POKEI,32:NEXTI
4250 IFR=1THENGOTO100
4299 RETURN
5000 FORI=46856TO47087:READW:POKEI,W:NE
XT
5210 DATA0,0,0,1,1,1,1,1
5215 DATA1,1,1,3,3,3,3,3
5220 DATA3,3,3,7,7,7,7,7
5225 DATA7,7,7,15,15,15,15,15
5230 DATA15,15,15,15,31,31,31,31
5235 DATA31,31,31,31,63,63,63,63
5240 DATA63,63,63,63,63,63,63,63
5245 DATA0,0,3,3,15,31,31,63
5250 DATA0,0,48,48,28,30,30,31
5255 DATA31,31,31,31,31,31,31,31
5260 DATA15,15,15,15,15,15,15,15
5265 DATA7,7,7,7,7,7,7,7
5270 DATA3,3,3,3,3,3,3,3
5275 DATA1,1,1,1,1,33,57,63
5280 DATA0,0,0,32,32,32,32,32
5290 DATA32,32,32,48,48,48,48,48
5295 DATA48,48,48,56,56,56,56,56
5300 DATA56,56,56,60,60,60,60,60
5305 DATA60,60,60,60,62,62,62,62
5310 DATA62,62,62,62,63,63,63,63
5315 DATA0,63,0,0,3,15,15,7
5320 DATA7,63,15,31,63,63,63,63
5325 DATA32,60,56,48,62,63,63,62
5330 DATA1,15,7,3,31,63,63,31
5335 DATA56,63,60,62,63,63,63,63
5240 DATA63,63,63,63,63,63,63,63
5245 DATA0,0,3,3,15,31,31,63
5250 DATA0,0,48,48,28,30,30,31
5255 DATA31,31,31,31,31,31,31,31
5260 DATA15,15,15,15,15,15,15,15
5265 DATA7,7,7,7,7,7,7,7
5270 DATA3,3,3,3,3,3,3,3
5275 DATA1,1,1,1,1,33,57,63
5280 DATA0,0,0,32,32,32,32,32
5290 DATA32,32,32,48,48,48,48,48
5295 DATA48,48,48,56,56,56,56,56
5300 DATA56,56,56,60,60,60,60,60
5305 DATA60,60,60,60,62,62,62,62
5310 DATA62,62,62,62,63,63,63,63
5315 DATA0,63,0,0,3,15,15,7
5320 DATA7,63,15,31,63,63,63,63
5325 DATA32,60,56,48,62,63,63,62
5330 DATA1,15,7,3,31,63,63,31
5335 DATA56,63,60,62,63,63,63,63
5340 DATA0,63,0,0,48,60,60,56
5345 DATA30,30,63,63,63,30,30,0
5350 DATA0,12,30,30,12,0,0,0
5355 DATA0,0,8,28,8,0,0,0
5400 RETURN
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some
hings
chap
k gun
you?
off a
– but
a few
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quiet
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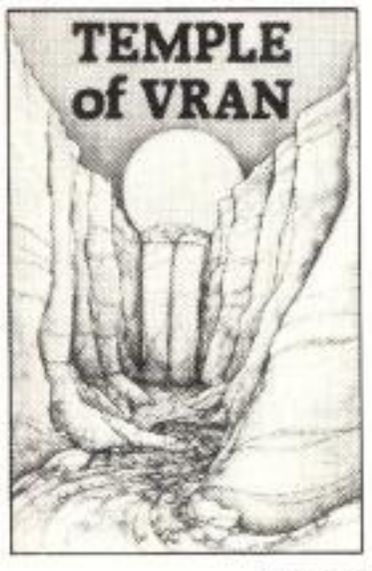

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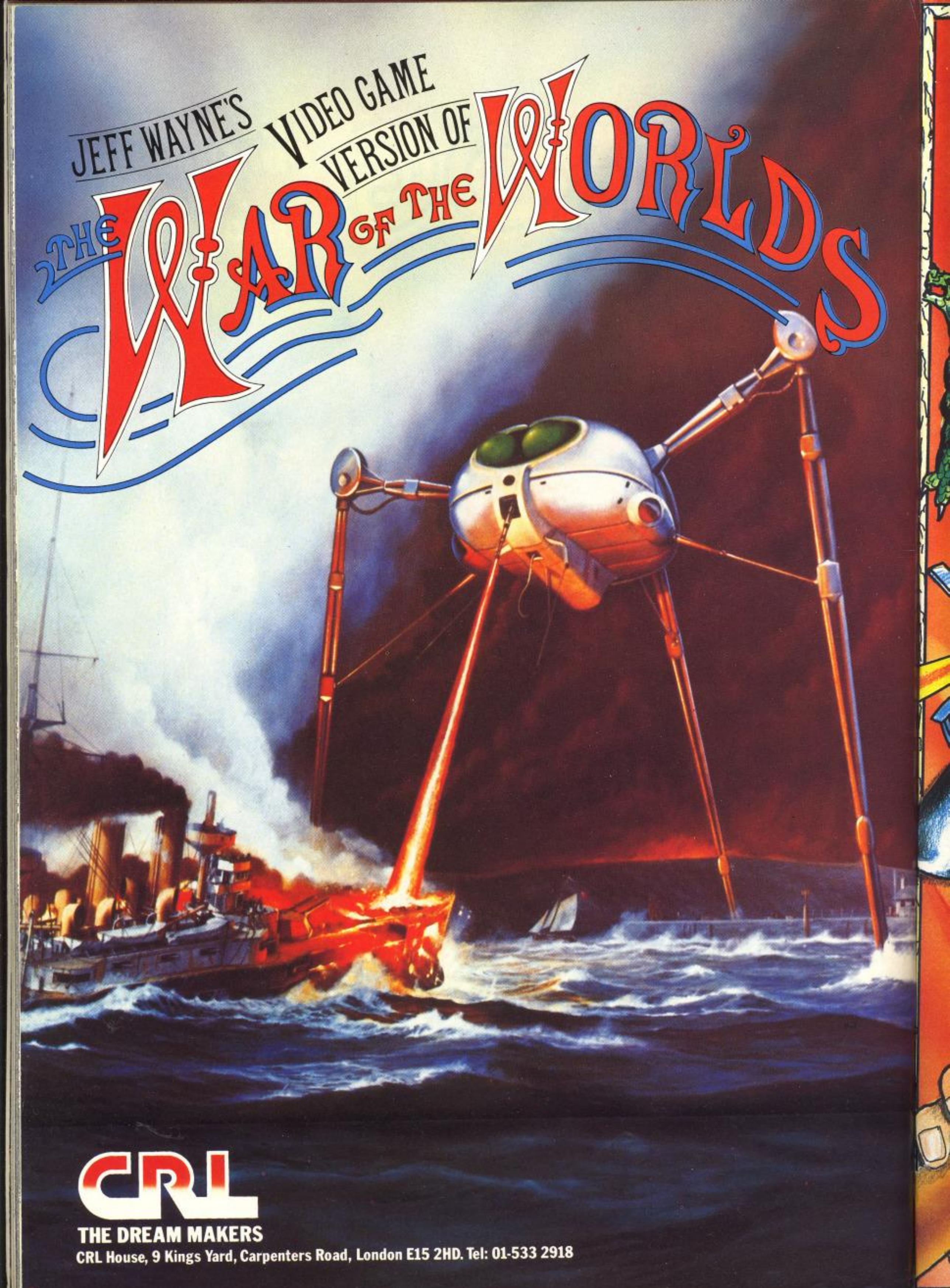

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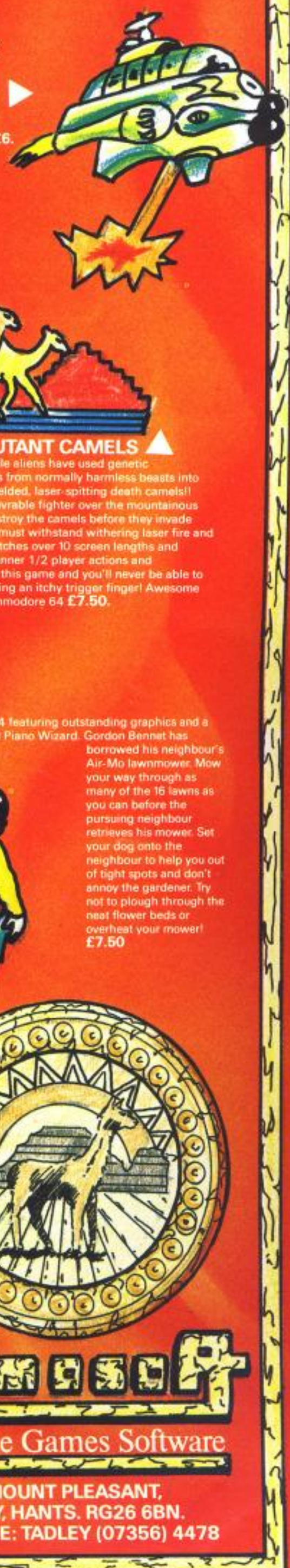

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