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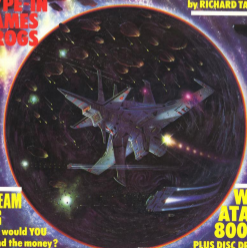
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U.S. GIANTS TARGET SPECTRUM



WETCAM-OUT, there are plenty of games going at your Sinclair Spectrum. Moving ahead of them is James of the stack-titled video game market, there of the world's biggest video game companies are now looking for their next.

AT THE British Toy and Hobby Fair held in London earlier this year, Nigel Atari, Activision and Parker all announced Spectrum versions of their top selling titles which will be available in the coming months.

Parker talked several eyes over by displaying ROM cartridge versions of their games which the comparatively new Sinclair Interface 2 — they follow around 250,000 units will be in use during 1984. Atari and Activision have opted for that standard cassette based software.

As of going to press the situation looks like that Atari are first off the mark with Spectrum editions of Pac-Man, Galaxian and My Pac-Man, while Activision are very close. Each recently priced at hefty prices top of £74.95 and £75 remains to



So both if the numbers will pay such a high price for the copyright, "Himal" versions of games that have already featured hundreds of millions in the existing software market (See "World Of AtariSoft" elsewhere.)

Parker has opted Atari's *Star Wars*, *Jeopardy*, *Star Wars* and *Cliffhanger* as their initial offerings for the Spectrum. All will be on cartridges which will plug into the telephone.

Only Activision are keeping tight-lipped about their first Spectrum titles. Big X space title that their most include the commonly successful *Pac-Man*, *Star Wars* and *Kalidos*. Again, no pricing as yet for the cassette format software.

**WHO WANTS
TO BE A
MILLIONAIRE?
(WE DO!)**



"There's a good guarantee that the winner could enter the millionaire class." So said Mark Elliot, the brains behind the mega-big International Video Game of the Year competition which has been running since earlier this year.

Not small-scale operation this, the competition is open to anyone who can program a home computer game in over 20 different countries around the world. The winning game will be marketed throughout the non-polluted world through various software houses and for mass micros. Not only that but the winner will be announced in a big TV spectacular which will be produced by Mark [agent of the stars] McCormack's International Management Group, who are also responsible for the "Superstars" TV series. "The programme will be a celebration of micros and games," said Mark Elliot. "We hope it will become an annual event — like 'Mas World'."

In addition to getting his (or her) mug on TV the winner will get \$100,000 (around £21,400) in cash plus 10 per cent of world sales of the winning game. Who isn't quite in the million earner class from that game alone. Mark is confident that the winner will clear the big 1M from subsequent games.

As if writing deals are still being made with leading software houses and other interested parties. The competition itself closes on May 31st as you've still got time to enter that Porsche and choose what goes with it, wear it.

HANDS OFF ATARISOFT

Having finally woken up to the fact that there are a lot of different home micros about, Glen Atari is rethinking into the software giant's growing senior software is good.

Through its more AtariSoft division it's negotiating Spectrum, BBC, Maxwell, Commodore and IBM, VIC 20 and TI99-4A, machines with special packages for many of its arcade competitors Pac-Man, Galaxian, Centipede, Snakey King, Galaxian, etc.

On top of this the release of the first AtariSoft titles, Atari have intensified their efforts to stop people tipping off the release.

Most of the big software houses have been intimidated by letters, in very clear terms, usually which specify AtariSoft or AtariSoft titles by AtariSoft. AtariSoft (Activision) claimed that they will fight legal actions to stop anyone who... includes the name, AtariSoft or AtariSoft, of any of their properties. Since this generally affects about 80 per cent of the most popular software it is certainly affects about 80 per cent of the software market you've heard was an underappreciated which our major software houses only heard was to include. "It's not just the one company the biggest" (smaller software houses, on the other hand, who did not receive the letters were forced to say, "What's that about?")

HOW MANY MACHINES MAKE SENSE?

Around a quarter of a million. That's the headcount figure believed to underpin Impulse's £1.5 million game company Parker before they consider transferring any of their games to a portable computer.

Parker is especially building on a "bunch" of British and Americans, started on, no doubt, by the fact that the headcount British youth spent £200 million on games software during 1983.

BIBBY GOES SOFT

British television viewers learning games software onto up to 4 million homes in Britain that are currently hooked into the Spectrum's cable TV service through a new service called Glaxian. The £20-30 a week multiple channel service is being set up by Glaxian will get a Spectrum which will be a significant increase in the number of homes which will get Glaxian, line of which will be increased from many of the most viewers will get Glaxian.

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100% machine-code, Super Graphics and Super Graphics captures all the action and the excitement of the most copied arcade classic. PENGY's frozen world has been raised by the dreaded Sne-Bee—the only way out is to escape them with the Ice Blocks. Full of the original fun, lots, bonus levels, leading tracks, funny keyboard (most owners: AMP SPEC TRUM



SUPER CHARGE YOUR STACK

100% machine-code, Super Graphics and Super Graphics captures all the action and the excitement of the most copied arcade classic. SUPER CHARGE YOUR STACK is a fast-paced, action-packed game that will test your reflexes and your ability to stack blocks. Full of the original fun, lots, bonus levels, leading tracks, funny keyboard (most owners: AMP SPEC TRUM



TOTAL ANNIHILATION

100% machine-code, Super Graphics and Super Graphics captures all the action and the excitement of the most copied arcade classic. TOTAL ANNIHILATION is a fast-paced, action-packed game that will test your reflexes and your ability to annihilate enemies. Full of the original fun, lots, bonus levels, leading tracks, funny keyboard (most owners: AMP SPEC TRUM



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GET HOT — TAKE THE TABLETS

Graphic users are going to replace keyboards as the input device of 2004, since the mouse is a touch input.

Although the screen is the focus in Alan's March Turkey trade show (see p. 1), West Coast consultant Steve Krasny, who presents a CD-ROM supporting it at present.

Consequently, Sun Microsystems' Automotive System, also set later in the year (available in the UK from Consumer Electronics), is expected to be listing a whole catalogue of WDM cards to help from painting

40th. The use of Consumer Electronics is sure of one thing, especially if Commodore is going to replace the current most games. You can track objects across the playability of much older and faster character cards.

IMAGINE NO POSSESSIONS...

(We wonder if he can)

EIGHT MILLION pounds. That's what Unipack-based software developer Imagine Computers has, according to co-founder and CEO Dan Gardner Mike Miller.

"Imagine is just a firm," he told EW. "It has assets. You don't see the front of some game on shelves in the store. We're making a fortune. My only problem is finding my share."

A 1994-95 success for the British firm has been the commission — from mighty Apple — to design the connectivity of the newly launched Macintosh computer. In addition, Imagine have installed Macintosh for a single 6000-series machine to be built by A. Color and possibly launched later this year at a price roughly

half of the Apple's price. Another for a video technology engineer, the company has plans for a cheap laser video peripheral — again, software supported by somebody else.

In business spending the money, Imagine are also working, fast, says Miller. Another 35 will be due to be added shortly — though not programmers. Better engineers than the so-called "A team" — as an all — plus the in-house Apple file — can handle all that time of work.

How deep he, personally, spent his share of the falling in, four years ago? "The reality was, my business had been 1,500 jobs. You can see the success of 100 each." □

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10 INPUT INFO
20 GET CASH

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LETTER FROM HUNGRY

By our editor, Commodore

WE SURE are about to see my Cube of Rubik. Now — are you ready for Words? Let's start!

We bring, however. Let's see your Player? If roughly equivalent to your Chess? If you want competitors to observe computer games writing about. Small problem here, as due to the difficulty of the new design of COMECON, the new Pack and all, we want this conversion games in all of the games programs computer of only one. (Commodore) know really (only) American month ago but they can't reach back of your own here as their own from late. Games. The 100 Day Commodore event.

Finally, 1994 ideas come flooding in anyway as they're in. Events as if from the front. Beyond of course, we just bring what all. (Commodore) help.

New British companies Microsoft and Oracle taking processing from Center the Cal and (Commodore) to give a whole much money. Real British suggestion that it was of (Commodore) is being implemented from here followed by (Commodore) to be followed by. Party we want to see your thing! But as you try in that, could be one from now.

GARBAGE IN, GARBAGE OUT

SOME PEOPLE will do anything to get even deeper, which former editor of Jeff Minter has released a new game with 1440x1024-style format getting shot by the central character? Answers on a postcard to *Interviewer* Minter ... The above just the latest in a series of results in the latest column of (Commodore) ... Just when the British Software appears the (Commodore) drive? (Commodore) ... The Shadow leaves all, for he

walks by night.

Now it can be told deep: one of the directors of Voyager Software is Roy Butler, participation of the Family Butler, which includes notable-looking Minter, of Imagine fame ... and what sort of company has now taken seriously in writing round "just say" to check out the nature of operating reviews before sending more software out?

Answers editors may be, then

again, may not be interested to know that (Commodore) and new version of (Commodore) was designed and coded by three designers and coded by three designers, wizards of the binary digits, wizards of Ultimate ... Speaking of Ultimate, don't be really surprised to see a 64 version of (Commodore) soon available ...

Overall City: Software's (Commodore) (The Best) Langford seems to be that a new version from him will contain 64 levels of play, will contain 64 levels of play, will contain 64 levels of play, will contain 64 levels of play, will contain 64 levels of play.

H2 ...

Norris McWhirter writes: Yes, hey, what our young friend says is perfectly true; if Langford pulls it off, he will beat Minter, though mention should be made here of a little-known Canadian developer who is alleged to have renewed the original Super Pangloss for no less than 250 levels, (Commodore) (Commodore) ... Yes, yes, Norris, thank you ...

THE SHADOW

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64

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Betch'a can't play just one . . .

Flying Feathers

In this highly original game you are the gamekeeper on the lake trying to stop greedy eagles taking all the fish. Two different methods with 4 skill levels each are available for your shot gun. Specially scored music with freeze frame ability, and for the technically minded 10 sprites (yes, that's right, there are only 8 on the 64). High scores kept. All machine code.



Bumping Buggies

Thrills and spills is what you'll get in this highly addictive motor racing game. You'll be driving over some pretty hazardous terrain having to cope with holes, islands, rock formations and, not least, other cars which are intent on making you crash. Luckily you can vary your speed and line and you have one ace up your sleeve - when you maintain a sufficient speed you can jump over obstacles to help you out of trouble. The track gets progressively more difficult with 22 different patterns and you have to cope with driving conditions in the four seasons of the year. Like most bubble bus classics, Bumping Buggies has its own specially scored music and is in machine code.



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The first to find it wins! You can play by yourself or in teams against the computer, or against other players. There are difficulty levels one included to suit young and old alike!



BOMBO 64

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This best-selling game for the VIC 20 is now available on the 64! Featuring the most intelligent and devious monsters you have ever tried to avoid, the Bombo, this game is a real spatial awareness Abuse Man, the handsome, sophisticated baddie, sports sophisticated features from the different levels.

But don't trust it Bombo, or the word!

Put it all up as usual written for the 64 and corresponded (VIC). The Lunar city of Epsilon is under attack from the ships of the Jovian empire. Their marines landing will reduce your city to a pile of rubble, unless you can hold them off. You are the commander of the sole laser defence base. Your mission - hold out for as long as possible.

You can cut retreat in the great Inter Galactic Four Seasons Death Race. You must tackle the Spring, Summer, Autumn and Winter seasons with the objective of reaching as many other stars as possible all the time. The opposition is numerous, including the indestructible but slow Limb Cars, the tricky Deathmobiles and many other Demon Drivers. You have one advantage - your car can fly for a limited distance, allowing you to avoid hazards if you're quick enough! All this and more makes Burnin' Rubber the car race of the century!

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BURNIN' RUBBER



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1

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3

PENGWYN

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This month's free gift makes a nice departure in reader quality. Instead of serving you up yet another dose of Ploger or King — or some other periodicalite — the May 8 Free Disc provides what amounts to a do-it-yourself course in advanced game graphics — particularly moving graphics, firing motions for Flight Simulator is complete (without music) and circle fills. DAVID BULL explains how to use the disc.

AFTER THE alien spaceship has crashed the battles of the world with its devastating laserbolt bolts of brass ... and you have (assembled) circles in front of your eyes ... and the TV screen doesn't look quite as bright as it should ... what next?

Whether you are the proud owner of a Simula Superstar or a BBC micro computer you have a wealth of information/graphics available in these programs. First use the BOTTLE program and see how the alien invaders move to quickly and smoothly across the screen; we join from the bottom (angle) and fly down the wall and out to the ground. Find out how you can draw smoothly round circles quickly with the 'CIRCLE' program. 'WORLDVIEW' even gives you the first part of your very first Flight Simulator program! And it's all done in BASIC too ... no fancy machine code to write you out!

LIST the programs on the screen or on a printer if you have one to see how the various animation effects are achieved. Use these simple graphics codes to speed up your own programs or even turn the alien spaceship into a spaceship that flies to you.

Listing it all up

The System Software programmers have cleverly incorporated the major animation techniques used by BBC programs into this fast-moving program. These include moving USER DEFINED GRAPHICS characters around the screen, the spaceship is made out of six character blocks and the battles and wall are made up of several more characters. Finally the window contains the computer screen the screen shows ordinary text. On the BBC microcomputer these special characters are defined using the ASCII 23 character (from 260-282). On the Spectrum you can define by POKING numbers into special memory locations (line 1000,1100).

HOW TO USE YOUR FREE DISC

Each of the three Defined Graphics Characters can do its own thing. For example, the 'CIRCLE' program will go to line 2000, change the character to 'C', and then go to line 2001. The 'WORLDVIEW' program will go to line 2002, change the character to 'W', and then go to line 2003. The 'BOTTLE' program will go to line 2004, change the character to 'B', and then go to line 2005. The 'CIRCLE' program will go to line 2006, change the character to 'C', and then go to line 2007. The 'WORLDVIEW' program will go to line 2008, change the character to 'W', and then go to line 2009. The 'BOTTLE' program will go to line 2010, change the character to 'B', and then go to line 2011.

Now you noticed that the spaceship is POKED with quite another set of characters. When the ship is moved across the screen by a small amount (about eight to 10) less than the next character, the ship will appear to move. So if you POKED the character 'C' into line 2006, you can POKED the character 'D' into line 2007, and so on.

The filling battles cannot be moved in the same way as the spaceship because they 'bigger' (the characters are larger and they must NOT Wipe OUT THE BRICK WALL). So the program use another interesting technique called 'filling' (filling in) or 'filling out'. Don't give up yet, it is not as difficult as it sounds, it simply means that if you POKED the same thing TRICE in the same PLACE, using the special sets of POKING, then the background will appear to move. Amazing isn't it but you can see from the computer files at the back how for the BBC microcomputer allows us to POKED into the SPECIAL status lines 410, the characters from the POKED OVER command which does the same thing (lines 3000-3020). Remember that the battle is POKED TRICE in exactly the same position and it stays the same size (unless it is moved further down the wall).



Use the disc as **NOT** a floppy-disk. It runs on any recorder. You must play the disc and record its contents. Use direct track on to contents. Then load the cassette into your Spectrum or BBC computer in the normal way. Instructions for loading can also be found on the disc itself. LIST the programs to see the working.

One of the most useful tips for BBC/DTH animation is the use of these blanking to prevent flickering of the moving object. This point is quite often ignored even in commercial programs. The TV screen is refreshed every 1/50th of a second and it is important to plot the BRICK WALL coded graphics in the program. In the POKING of the character 'C' into line 2006, you can POKED the character 'D' into line 2007. The 'BOTTLE' program will go to line 2010, change the character to 'B', and then go to line 2011.

TILTING

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100 DIM A(100)
110 DIM B(100)
120 DIM C(100)
130 DIM D(100)
140 DIM E(100)
150 DIM F(100)
160 DIM G(100)
170 DIM H(100)
180 DIM I(100)
190 DIM J(100)
200 DIM K(100)
210 DIM L(100)
220 DIM M(100)
230 DIM N(100)
240 DIM O(100)
250 DIM P(100)
260 DIM Q(100)
270 DIM R(100)
280 DIM S(100)
290 DIM T(100)
300 DIM U(100)
310 DIM V(100)
320 DIM W(100)
330 DIM X(100)
340 DIM Y(100)
350 DIM Z(100)
360 DIM AA(100)
370 DIM AB(100)
380 DIM AC(100)
390 DIM AD(100)
400 DIM AE(100)
410 DIM AF(100)
420 DIM AG(100)
430 DIM AH(100)
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CIRCLE

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210 DIM L(100)
220 DIM M(100)
230 DIM N(100)
240 DIM O(100)
250 DIM P(100)
260 DIM Q(100)
270 DIM R(100)
280 DIM S(100)
290 DIM T(100)
300 DIM U(100)
310 DIM V(100)
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520 DIM AQ(100)
530 DIM AR(100)
540 DIM AS(100)
550 DIM AT(100)
560 DIM AU(100)
570 DIM AV(100)
580 DIM AW(100)
590 DIM AX(100)
600 DIM AY(100)
610 DIM AZ(100)
620 DIM BAA(100)
630 DIM BAB(100)
640 DIM BAC(100)
650 DIM BAD(100)
660 DIM BAE(100)
670 DIM BAF(100)
680 DIM BAG(100)
690 DIM BAH(100)
700 DIM BAI(100)
710 DIM BAJ(100)
720 DIM BAK(100)
730 DIM BAL(100)
740 DIM BAM(100)
750 DIM BAN(100)
760 DIM BAO(100)
770 DIM BAP(100)
780 DIM BAQ(100)
790 DIM BAR(100)
800 DIM BAS(100)
810 DIM BAT(100)
820 DIM BAU(100)
830 DIM BAV(100)
840 DIM BAW(100)
850 DIM BAX(100)
860 DIM BAY(100)
870 DIM BAZ(100)
880 DIM BBA(100)
890 DIM BBA(100)
900 DIM BBA(100)
910 DIM BBA(100)
920 DIM BBA(100)
930 DIM BBA(100)
940 DIM BBA(100)
950 DIM BBA(100)
960 DIM BBA(100)
970 DIM BBA(100)
980 DIM BBA(100)
990 DIM BBA(100)
1000 DIM BBA(100)

```



Tyburn

ILLUSTRATION
BRANDWALLAND

```
2 REM BY ALAN MOOD
3 REM TO CHANGE THE WORDS JUST
4 REM INSERT THEM AS LINES OF DATA
5 REM WORDS CAN BE UP TO 30 LETTERS
10 DIM B(1),M(1),N(1),O(1),P(1),Q(1)
11 N1=0:N2=0:N3=0:N4=0
20 DATA WISE,RAISED,DRINK,STRIKE
25 DATA CURE,SLIKE,PURE,PICTURE
30 DATA CAPTURE,DEFEND,OYING,LIVING
35 DATA DREAD,DEAR,JOHNSON,PAID
40 DATA BUILT,BUILD,BUILDING,CONTENT
45 DATA BATTLE,BATTLE,CATTLE,TIGNED
50 DATA KATE,FLAME,FRAME,SCORPE
55 DATA RAYD,ROAD,DEARD,BALLOON
60 DATA CAT,ROAD,DEARD,BALLOON
65 DATA BUTTER,SPoon,FOOD,PILLON
70 DATA LAST
75 UNL:READ M(1) IF M(1)="" THEN GOTO
80
90 RESTORE:REM COUNTS THE NUMBER OF
WORDS IN DATA
100 M="":M=M(1)+M(2)+M(3)+M(4)+M(5)
101 REM N IS REQUIRED: CHANGES TO
SUBTRACT THE FIRST LETTER CAUSES AN
ERROR
110 PRINT:GOTO 1
120 B=PEEK(1280)+PEEK(1241)+254+4
125 POKE B-1,71
130 POKE B-2,71:POKE B-3,7
```

"You have been brought before this court suspected of terminal illiteracy and as a result are going to H.C.G. hallie, unless you can convince the bench that you can spell good."

"First, spell your own name..."

"Pass."

"Haul away, me hearties..."



for
ATARI 400/800

T SWG P O E I F

T ree

by ALAN WOOD

```

140 FOR H=0 TO 24:FOR V=0:UNTIL 4
150 POKE H+23,00:POKE
H+24,PEEK(H+0)+POKE H+27,PEEK(H+1)
160 NEXT H:GOTO 4,10,2
180 REM 110 TO 140 SETS UP DISPLAY
170 POKE H7,2:POSITION 2,0:7
M1=""M2=""
170 POKE H7,1:POSITION 0,3:7
M4="LETTERS"
200 POSITION 2,4:7 M5="NEXT"
204 REM SELECT RANDOM WORD FROM BATH
210 FOR I=1 TO INT(66/100*H)
220 READ M4:NEXT 1
221 FOR J=0 TO LEN(M4):POSITION 11+I,0:7
M41=""M42=""
230 M41=J:0:0:0:0:0:0
240 REM REMOVE SPACE KEYBOARD INPUTS
250 POKE H4,255
260 IF PEEK(H4)=255 THEN 300
270 OPEN #1,#0,0,"R":GET
M1,M2=CHR$(PEEK#1):CLOSE #1:REM WORDS LIST
KEY PRESSED
280 FOR I=1 TO LEN(M1):IF I=LEN(M1)
THEN
M1=M1+V-1:REM CLEAR BATH:11=H+V+1:GOTO
224:REM THEN IS OUT OF B4
291 NEXT V
302 GOTO 300
304 M4=M5
310 M4+1:IF I=0 THEN M4=M5+4
340 POKE H7,1:POSITION 0,0:7 M4=M5
350 POKE H7,2
355 ON
360 FOR I=1 TO LEN(M4):IF I=LEN(M4)
THEN POSITION 11+I,0:7 M41=PEEK#1
370 NEXT I
374 REM CHECK IF WORD IS COMPLETE
375 IF P=LEN(M4) THEN 1600
380 IF P=0 THEN 300
410 FOR I=0 TO 255:GOTO 0,100+I,10,15
420 NEXT I:GOTO 0,0,0,0
420 POKE H7,3:M4=M1
430 ON P GOTO

```

```

500,600,700,800,900,0000,1100,1200,1300,
1400,1500,1600,1440,1450,1500
500 COLOR 3:PLOT 35,10:DRAWTO 35,23:GOTO
300
600 COLOR 3:PLOT 35,10:DRAWTO 28,10:GOTO
300
700 COLOR 3:PLOT 31,10:DRAWTO 35,14:GOTO
300
800 COLOR 2:PLOT 28,11:GOTO 300
900 COLOR 1:PLOT 27,12:DRAWTO
29,12:DRAWTO 29,13:DRAWTO 27,13:PLOT
29,14:GOTO 300
1000 COLOR 3:PLOT 26,23:DRAWTO
26,25:PLOT 27,13:DRAWTO 27,25:PLOT
28,15:DRAWTO 28,30:PLOT 29,15:DRAWTO
29,20
1100 PLOT 30,15:DRAWTO 30,20
1200 GOTO 300
1300 COLOR 2:PLOT 26,19:DRAWTO
30,19:PLOT 26,20:DRAWTO 30,20:DRAWTO
30,22:COLOR 1:PLOT 30,23:PLOT 30,23:GOTO
300
1400 COLOR 2:PLOT 26,20:PLOT 26,22:COLOR
1:PLOT 34,23:PLOT 25,23:GOTO 300
1500 COLOR 3:PLOT 25,18:PLOT
24,15:DRAWTO 24,17:COLOR 1:PLOT
24,20:GOTO 300
1600 COLOR 3:PLOT 31,18:PLOT
32,15:DRAWTO 32,17:COLOR 1:PLOT 32,20
1700 POKE H7,2:POSITION 2,1:7 M1=""M2=""
M41=LEN(M4)-LEN(M1):IF M41=0 THEN
LEN(M4)=LEN(M1):GOTO 1700
1800 GOTO 1700
1800 POKE H7,2:POSITION 1,1:7 M41=""M2=""
M41=LEN(M4)-LEN(M41)
1900 IF M41=0 THEN M41=LEN(M4)-1
1700 POSITION 0,2:7 M41=""M2=""M41=""
M41=""
1710 POKE H7,1:POSITION 0,3:7 M41=""
M41=""
1720 POSITION 2,4:7 M41=""M41=""
1730 POKE H7,3:COLOR 2:PLOT 4,10:DRAWTO
4,23:PLOT 15,10:DRAWTO 15,23
1740 IF LEN(M4) THEN COLOR 3:PLOT
4,23:DRAWTO 4,24:LEN
1750 IF M41=0 THEN COLOR 3:PLOT
4,23:DRAWTO 4,24-M41
1770 REM WAIT FOR START KEY
1800 IF PEEK(H27)=15 THEN 1800
1820 RETURN
1840 REM CLEAR SCREEN START AGAIN
1890 ? " ":GOTO 100
2000 REM #40000 FOR CONNECT NUMBER
2000 FOR I=1 TO 100:GOTO 0,1,10,1:NEXT
I
2020 P=P+1:GOTO 0,0,0,0:RETURN
3000 MIN(MIN+1):POKE H7,3:COLOR
3:PLOT 0,0,23:DRAWTO 0,0,23-MIN
5010 IF M41=0 THEN M41=LEN(M4)-1
3020 RETURN
4000 LEN(M4)-1:POKE H7,3:COLOR 3

```



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Dragon Dungeon



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charts

SP = Spectrum, AD = Amstrad, C4 = Commodore 64,

key

VHS = VHS, BT = ZX BT, DS = Dragon 32, OF = Only 1

TOP 30 GAMES

			SP	AD	C4	BT	DS	OF	Price
1	ATIC ATTACK	Ultimate	*	*	*	*	*	*	£5.90
2	LUNAR JETMAN	Ultimate	*	*	*	*	*	*	£5.90
3	PYRAMID	Fantasy	*	*	*	*	*	*	£5.90
4	ANT ATTACK	Quixotic	*	*	*	*	*	*	£6.95
5	SHOOKER	Visions	*	*	*	*	*	*	£6.95
6	VALHALLA	Legend	*	*	*	*	*	*	£14.95
7	KONG	Coast	*	*	*	*	*	*	£5.90
8	CONQUERED FLAG	Psion	*	*	*	*	*	*	£6.95
9	SPLAT!	Incentive	*	*	*	*	*	*	£5.90
10	THE ROBBIT	Melbourne	*	*	*	*	*	*	£14.95
11	MANIC MINER	Subsys	*	*	*	*	*	*	£5.95
12	DEATH CHASE	Microsigma	*	*	*	*	*	*	£6.95
13	MR WIMPY	Coast	*	*	*	*	*	*	£6.90
14	THE ALCHEMIST	Imagine	*	*	*	*	*	*	£5.90
15	HUNCHBACK	Coast	*	*	*	*	*	*	£6.90
16	FLIGHT SIMULATION	Psion	*	*	*	*	*	*	£7.95
17	POOL	ODS	*	*	*	*	*	*	£6.95
18	ARCADE	Imagine	*	*	*	*	*	*	£6.90
19	PENETRATOR	Melbourne	*	*	*	*	*	*	£6.95
20	HUNTER KILLER	Protek	*	*	*	*	*	*	£7.05
21	JET PAK	Ultimate	*	*	*	*	*	*	£6.90
22	FALCON PATROL	Virgin	*	*	*	*	*	*	£7.00
23	METAGALACTIC LLAMAS	Umansoft	*	*	*	*	*	*	£6.00
24	3D TIME TRIP	Auriga	*	*	*	*	*	*	£7.00
25	MOONBUGGY	Auriga	*	*	*	*	*	*	£7.00
26	CRAZY KING	Interceptor	*	*	*	*	*	*	£7.00
27	HONRAE AND THE SPIDERS	Psion/Melbourne	*	*	*	*	*	*	£6.95
28	INTERNATIONAL FOOTBALL	Commodore	*	*	*	*	*	*	£5.95
29	HOVER BOYER	Umansoft	*	*	*	*	*	*	£7.50
30	CHINA MINER	Interceptor	*	*	*	*	*	*	£7.00

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VIDEO GAMES

- 1 POLI POSITION (Star)
- 2 B-BERT (Parlor)
- 3 FLYING (Image)
- 4 BATTLE ZONE (Star)
- 5 GALAXIAN (Star)
- 6 TUTANKHAM (Parlor)
- 7 RIVER RAGE (Activision)
- 8 DESATRON (Activision)
- 9 JUNGLE HUNT (Star)
- 10 SIRCELYN'S APPRENTICE (Star)
- 11 ENIGMA (Activision)
- 12 ROBOT TANK (Activision)
- 13 DIE BUS (Star)
- 14 PROMIC (Star)
- 15 FLAME ATTACK (Activision)
- 16 PITALL (Activision)
- 17 CRYPTIC (Star)
- 18 KIRKLAND (Star)
- 19 MIGHTY BOP (ODS/Coast)
- 20 WILSON OF WOOD (ODS/Coast)
- 21 TROGGER (Parlor)
- 22 PIC MAN (Star)
- 23 CONRY KING (ODS/Coast)
- 24 MS PIC MAN (Star)
- 25 STAR WARS: JEDI ADVENT (Parlor)
- 26 VANGUARD (Star)
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- 28 GING (Activision)
- 29 SEA QUEST (Activision)
- 30 SOLAR STORM (Image)

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HALLS OF THE THINGS (Crystal)

LUNAR RESCUE (Umansoft)
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ATARISOFT™



THE CLASH

Summer is a-comin' in, the Special Relationship is down to resounds with the hoarse shrieks of rival hardware salesmen. Americans have different ideas about the requirements of a computer and lets you, the punter, decide for yourself.



The Commodore Adam is the all-singing, all-dancing, all-in-one machine that came this Spring from the US company that brought you the world's most advanced videogame system. How good is it?

Actually, it seems as if it's technically very good indeed, as well as being excellent value for money (though on this, more below). 600K RAM is nothing to sniff at, you also get a daisy-wheel printer, built-in word processing, and of course instant access (provided you're willing to part) to the comprehensive library of Commodore's own Adam game cartridges. It looks pretty flash, too, with its detachable, sculptured keyboard, and the multi-k strategy floppy disk package. All for around \$1000-1200. Seems like good to be had.

Then again, the actual price has crept up somewhat from last summer, when Commodore introduced the Adam system. Secondly, it's not as all sure that their aim of the first Market will correspond with the advanced potential US sale into Adam is currently the best selling and price system in the US. At all. Consider: in America the Adam is being sold as a "family system" — the acceptable image being that of Mom, Paw, Gramps,

Jim and Junior all headed round the proverbial-looking system, screaming with glee as each plant flickers. Is that going to happen, too? After all, the basic Commodore system is heavily games-based — and arcade games at that. Yet at the same time the Adam offers an efficient but painless, (and 40-roll) word processor. What single games do you know who will need both the Flashtron processor and game disk (or 11, when family friends) do you know who are well worth looking to the market that they will get simultaneously for what this offering does at two weeks depends much of the market at once?

Yes, it's an offshoot system. But at \$700-odd quid? For that you can get a QL plus a 16K expansion box, or an Adam plus a disc drive plus a 16K expansion, or any other combination of the above. Yet it comes with all the CDS about, undoubtedly will function without hangups, can be bought off the shelf (no real order processing), and is an all-in-one package that you may well be able to persuade the Parents to dump up on (as a part of the cost for... Remember you want a printer, it seems like a good buy...)

Certainly CDS hope you will think so.

The Adam Complete (not including monitor). Yes, but can it make papers? And if not, why not?



CLASS OF 84



down the Tube as usual and around the land the atmosphere salern promoting their wares. It seems as if Brits and menif computer gamers. **BIG K** takes a look at the line-up

Reports: TONY TYLER, ANDY GREEN



SCROLL ON, IT'S A NEW ROM!

THE NEW 48K Eric II ROM is in a stylish modern black and red plastic case of the same dimensions as the original Eric II. In fact the two halves are almost exactly the same, but a better keyboard and a new BASIC ROM on the Atmos. When software that runs on the Eric II will run on the Atmos, although changes in way the Atmos reads tapes means that BASIC programs sometimes won't auto-run upon loading — but save for programs that use Auto running as copy protection ...

Apart from the full travel QWERTY keyboard and the new colours the Atmos appears identical to the Eric II from the outside. The same interfaces come out the back: 16 sockets, ROM monitor, cassette port, printer port, expansion port and power socket, and there is still the famous built-in loudspeaker, albeit a little quieter than the explosive Eric II sound system. This also comes an important 'top' on the early Eric II ...

when the space is filled with tape much current on load means the screen 'shutters' fully, rendering it unusable.

The new BASIC ROM that Eric have developed — V1.1 instead of the V1.0 used in the Eric II — succeeds in squashing many bugs and has several new commands, including a VERIFY extension to the LOAD command which checks that what you've just saved matches what's currently in memory. STORE and RECALL, which let you save and read variables and strings to tape, and the Boolean algebra commands AND OR and NOT.

Speed-up

The new cassette handling routine now prints up the Bioscan currently loaded together with the letter B or C (for Basic or machine Code). This together with the ability to save individual variables to tape is a vast improvement.

The best thing about the new Basic is the speed-up scrolling. On the Eric II, scrolling was furiously slow, giving the whole computer a very unprofessional appearance. The new scrolling routine is very slick.

The original Eric II manual has been variously described by Eric personnel as 'a joke', 'planning sound' and 'this, I'm sorry about that'. I am pleased to report that the new Atmos manual has improved dramatically — in fact, it's one of the best I've seen for a long time.

Things missing that ought to have been included are a built-in assembler (to SBC, a joystick port and a 'reset' switch accessible without turning the machine over).

The Eric II graphics were stopped off when it first came out ... and, not to say, the Atmos is little better. Although so the Atmos Demo Tape shows, two colour graphics are easy to implement and give a resolution of 340 by 500. Eight colour displays are a real hassle and in some cases might be impossible to implement. That said, clever programming can still give some very good graphics.

Atmos is to be expected chiefly include an Atmos disc drive (which we've seen, and it is very very nice using 3.5in. minidisks and being made in Britain — although not expected to be soon).



THE CLASS OF 84

DETACHABLE THIS, INFRA-RED THAT

The IBM PC Junior — unofficially known hitherto as the Personal — represents Big Blue's much-tariffed stab at the "lower" (i.e. games freaks) end of the market. IBM, since their entry into the pc market with the now defunctive (and pricey) PC (junior), have come to dominate the \$2,000-plus end of the market; you can scarcely get a personal computer off the ground in the USA these days without identifying it as IBM-compatible. What does this mean for the PC Junior?

Again, like the Coleco Adam, here we have a stab at the junior who is thought to have more than \$200 to spend — and who might spend it. This seems to be a phenomenon of the US market — the idea that the Com 64's steep price (which is now such small beer) that the next generation of customers will willingly splash out another monkey or two on a machine that really adds nothing to what you can already buy except an infra-red keyboard (and of course the deservedly lauded IBM after-sales service).

Infra-red? This means you can sit twenty feet away from your TV and still tap away. But if the twenty feet can you beat your TV screen? Much screen has already been expended on this question elsewhere. Another kink in the unbroken keyboard (the idea being that you buy one key with various bits of software). Will so potentially break it to be prepared to splash out \$200 over the odds for the luxury of a wireless feature (the detachable keyboard) plus the IBM name? Your guess is as good as ours.

As for games, maybe the US IBM specialists have stopped a requested producers staff for the Junior, with the first card being prepared by the recent Las Vegas CES show. Admittedly they're good cards — but is this what we really need on this stage of the game?



PRICES:

More than £500

Coleco Adam
(USA)

IBM PC Junior
(USA)

£300-500

Sinclair QL (GBR)

Under £300

Atari 800XL (USA)
Elan (GBR)
Amos (GBR)

FIRST IN — LAST OUT?

May we begin writing off more times than Freddie Laker, but can it weigh in with a cheap product at an affordable price. Besides, Atari's a name of magic.

What if we're like the people who brought you the world's first (and only) three-wire — good intelligence system? Why the XL range of course, including the 800-8000 range. And the way Atari is looking — ATX (the expandable to 64K 800XL, through the 8000 XL) built on, to the new and 128K XL, with two built in this class. Currently on sale, the Atari 800XL.

Assemble, it's an 8000 wrapped up with a clear, standardised case and you're only one ROM (optional) away from a 128K special when you consider that unlike the 800XL and even better 8000, this means that the world's most generous and flash also can go along to power for the jacking limit. And if he said, it's jacking-out.



BEWARE OF THE BLACK REVOLUTIONARY

It's a fairly safe bet that once all the shouting has died away, the answer will remain of the opinion that the Sinclair QL is an exciting and revolutionary machine.

Consider the statistics: 128K RAM. The 88000 32-bit (nearly) processor. Sleek black looks. Microdiscs as standard. And the price — which, at £299, is obviously pitched against the Acorn BBC machine. (This, despite its excellence and apparently unlimited expandability, is going to have to work a whole lot harder than now on.)

The QL is still — at time of writing — so new that it's not easy to predict exactly who will do what with it. 128K seems to argue a facility for giant adventure games — and with adventures now coming into their own as they are, so much would seem to be an accolade.

Its graphics abilities would also seem on paper to be superb, though again we have to say we haven't seen them. In this connection, at least one major British software company we know has sent all its employed programmers on a 68000 Assembler course. This processor certainly seems to be the state of the art, and the chip to get involved with over the next two years (goodbye Z80? Arrivederci 68012?). Yet Uncle Clive has hedged some of his bets. The looks of the QL appear to indicate a long period up first on Clive's part to get in amongst all that small-business-user money. Whereas the extraordinary price makes the machine within the reach — just — of games players. It's probably safe to say that Sinclair have chosen a unique machine at the market and are waiting to see which way it will lean.

Against it: slowish microcative technology, the sluggish Sinclair mail-order system and the fact that Motorola are currently rejecting 98% of all 68008 chips coming off-a-ole assembly lines, making the second-mentioned even more of a problem.

For its outstanding value, unlimited possibilities in practically every sphere.



The 80091's system can be viewed as the ultimate of its price-range: a 88012 processor, 128K RAM and 07148 chips giving you state-of-the-art graphics abilities and up to 256 — count 'em — colours. An 88000 gives you the fastest of its kind (so slow), i.e., shadow processing, for most long-haul. And if that were lacking, you could still play some computer, that might be enough to make you come over all-thrilled. And they cost 1. They've recently chosen to act as a game test, and have launched 4 projects to cater for the wealth of software writing talent presently to be found on the 68K. Good! For there — along among the QL plans!

And the goals of the new machines are very similar to the goals of the 68000... what's new with that? And computers can only stand if it's new with a new look, and it's still around to come into production.

Our feeling is that, despite the apparent attractions of the QL, and the Big Number of the 88012 PC, it's a bit of a pity that the QL 80091, which will keep the Stars and Stripes flying in most British houses after all the shouting is over and all the promises have been met.

They were the first in — they may just be the last too.

CAN YOU HEAR ME?

Without a doubt the most excitingly styled machine to come on the market so far is the all-British QL.

Style, you say, is QL — what else can it do?

How about 64K standard memory (actually 62K usable RAM) — best that Commodore? How about stereo sound? Best that everybody. Stereo being perhaps the most neglected of all computer facilities today, it's safe to say that by providing stereo, Sinclair have taken the games possibilities up more than a notch. Another factor: the built-in joystick (a facility shared by Spectravideo), which does away with the peripherals in no uncertain terms.

An 8200 unit is also priced well within the reach of the Recreational Computer. Half the price of a QL (QL, no if the memory, too, but like all the new breed the QL is expandable). At all events it cuts the Commodore and the Electron to pieces — on paper. We should point out that at time of writing we have 1 slot spare on a single 68K card, so there remains room for modification of this and all other views expressed above. But the looks of the thing are enough to make a head start — or better — make the QL look like a brickbat. And the stereo sound facility — perhaps the long-neglected dimension of games writing — not to mention other applications, such as music-making will have come into its own.

One is with. And hear to.



WIN AN ATARI 800XL PLUS DISC DRIVE!

FREE TO ENTER

RULES

There is no entry fee and each entry must be made on a separate stamp supplied from Atari U.S. and must list the entrant's name, age and address.

All accepted entries will be assigned, and the first prize will be awarded to the entrant who, in the opinion of the judges, has shown the greatest skill and judgment in selecting the most apt or creative answers for the ten questions. Remaining prizes will be awarded to the ten next best answers, an amount that may vary from one prize. All prizes must be accepted or refused — there can be no alternative awards, cash or substitute.

In the event of a tie for first prize, those tying will take part in a special drawing conducted to determine each winner's winning entry.

Entries arriving after the closing date will not be considered, and no responsibility can be accepted for entries lost, or delayed in the post or otherwise. Any entries received incomplete, illegible, recalled or otherwise not properly sealed, will be treated as invalid and entries will be disqualified.

The competition is open to all residents in Great Britain, Northern Ireland, Eire, the Channel Islands and Isle of Man, other than employees (and their families) of BIC Microsystems Ltd., Atari Corporation and companies of Atari U.S.

Decisions of the judges, and of the Editor in all other matters affecting the competition, will be final. No correspondence will be entered into. Entries require acceptance of the rules on the back and legally binding.

Prizes will be mailed and the result will be published in a later issue of *BYTE*.

The 800XL is the latest in the supporting of Atari computers to be released in the UK. It boasts an incredible 64K RAM, built-in good looks, a HELP key — and a great joy stick in the largest games library in existence. Atari's graphics modes allow you to address a palette of 256 colours — just like any other computer offers you such a facility.

The 1550 Atari Disc Drive is the perfect complement to the 800XL. With low, streamlined looks, near silent operation and dual-density capability, it offers the most advanced performance available.

To win an 800XL plus 1550 Disc Drive, just complete the questionnaire below to the best of your knowledge and ability.

Prizes up will receive prizes of Atari/Soft games — which run on most popular micro's.

HOW TO ENTER

Below are ten fun-but-difficult questions about computers with 25000 life points. Three points or more, simply denote which of these most aptly or accurately answers that question — A, B or C.

Write the key letters of your chosen answers in an — in the spaces on your entry coupon, mark under the question number. For example, if you consider "an acronym of Attractive American Retail Investment" to mean "a term for talking off a surfboard" you would write "A" in the first space, and so on for the rest.

Complete the coupon with your own full name and address, and post in a sealed envelope to: **BIC SYSTEMS COMPETITION, 54-55, STURLEY ROAD, BURNLEY, LANCASHIRE, BB10 3JY.** To arrive not later than **Thursday 27th May, 1984**

THESE ARE THE QUESTIONS

- The word Atari is ...
 - the Japanese equivalent for Checkmate in the game Go
 - an acronym of Attractive American Retail Investment
 - a term for talking off a surfboard
- Pressing the 'Help' Key on an Atari XL computer will get ...
 - the fire brigade!
 - a list of the operating system commands
 - whatever the HELP key is programmed to produce
- ATARI was founded by ...
 - Casper Weinberger
 - Nolan Bushnell
 - Steven Jobs
- ATARI is a wholly-owned subsidiary of ...
 - Warner Communications
 - Paramount Pictures
 - The Wall Street Journal

- Silicon Valley is in ...
 - Southern California
 - Arizona
 - Northern California
- Disc Drives are better than cassette due to ...
 - faster loading time
 - greater reliability
 - random access
- BASIC is favoured for most home micros because ...
 - it is already widely understood
 - it is easy to learn
 - it is under constant development
- Good games design depends on ...
 - multi-colour screen mixes
 - high resolution graphics
 - imagination
- Which of the following did NOT start life as an arcade game ...
 - Pac-Man
 - Star Raiders
 - Defender
- How many different colours can an ATARI home computer display on screen ...
 - 256
 - 128
 - 18

IMPORTANT

Please complete, stamp and — in the return side back of this envelope — the key letters of your ten answers in the spaces on your entry stamp. They appear on your completed response. YOUR ENTRY MUST BE POSTED BY 27th May 1984 AT 12.00 Noon. Do not include any correspondence or other matter with this coupon.

ENTRY COUPON

BIG K/ATARI COMPETITION

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In entering this competition, I agree to abide by the rules and to accept the published result as final and legally binding.

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Age if under 18 years

1984

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CATALOGUE



On the trail of the Hobbit Habit...

The Hobbit series in the usual Malibu House cardboard package together with a slipbook copy of the book by J.R.R. Tolkien. It is the only real Tolkien environment the Orc program bears high resolution pictures that are "animated" when you visit certain locations in the adventure. Over the past few years of successful Hobbit's have been released by Malibu House for various computers. However, due to lack of memory space the BBC version doesn't contain any graphics.

Graphics are only two-color on Oric, while the 8-color picture on the Spectrum. The story's a detour from the book's route, and the graphics are very nice to look at. I won't spoil the fun by describing the game play, but

will anyway to let you understand from the book what an experience.

Talking of the plot, the much vaunted Amazonian edge there — which supposedly lets women and people interact with you "physically" and verbally — turns out to be a disappointment. There's a vocabulary for example, consisting of telling you to turn on or bring down a valve you're being seduced by to eat and enjoy at last.

The HOBBIT — on any title — is a significant advance over earlier adventures written in BASIC, but it doesn't win my opinion, since none any of the BBC Oric series. For Oric, the graphics are very good, and I guess even at £14.95 the program is worth checking out. — A.G.

Game: THE HOBBIT
Makes: MALIBU HOUSE
Code:
Machine: Oric-1
Format: cassette
Price: £14.95
Rating: 3/5



THREE TIMES A LOSER

Incomprehensible graphic adventures from the same team that brought you Beyond the Colossal Moon, a larded down maze game. Like most this is, exceptionally unfairly. A shame really as the scenario seems almost interesting though it's almost in the realm of Masque. With your finger-pointing and word-pouring you can't win the combat level before taking a long walk for the Eye of Barrow. It's well and good you might think. But that's why the game is almost insupportable. You're only given the vocabulary of combat words to play with and the graphics themselves are boring. I couldn't make

out what was meant to be happening most of the time. I mean, what would you make of a screen that reported only a small rectangle? It looked like a disintegrated 16 bit. So various adventures are advised to steer well clear of this supposed thing. I've had more interesting at Cybermorphogenesis. — E.A.

Game: ADVENTURE TRILOGY
Makes: DRAKON DATA LTD
Machine: DRAGON 32
Format: cassette
Price: £7.95
Rating: 1/5

Reviewed by: Richard Burt, Paul Amball, Tony Tyler, Steve Killion, Andy Green, David Cross

LAUGH? I Nearly Died.

House of Death is a non-graphic adventure game set in an alien world. Some minor details, a location brimming with possibilities. Naturally, it's a test of nerve as well as logic. Walkway up the stairs, you are told that they are particularly rocky at this point. GO UP and you go up — but by coming down again with any answers from the ground floor... The treasure chestkeys are out of the way. As you find your way out,

why about making a trade with and a narrow path, climbing a corpse and a cake man? 'E or 'e, you had the author's sense of humor would have been well used on Game For A Laugh. But there is a note about this weakness though I have got to find a use for the labels and the extra aspects of the adventure make it all more distracting. What the dialogue can be considered that for a 48K game House of Death

offers the maximum entertainment for only price, as a lot of horror movies, in that some of the details are chosen from the general store of adventure writers, and there still remains a great horror game to be written. — P.B.

Game: HOUSE OF DEATH
Makes: TANSOFT
Machine: Oric-1
Format: cassette
Price: £4.95
Rating: 3/5

Crazy Balls

- IC** — Could Be Better
- KICK** — Could Be Worse
- SCORE** — Unsurpassable



SOFTWARE PROJECTS

THIS BLIMP IS A WIMP

The funny and spooky of Crazy Balls. Nightsworth, Flyer Supreme, and his trusty old KC blimp are taking... the balloons of a blimp... if these two gentlemen I could find no sign, not of the churches and no-year spers' they were supposed to fly over though they might appear in the higher levels of the game. All I could find was a little ratcheting green balloon in a gray laboratory. Surely the trip of this or any other blimp.

The first — should you decide to accept it — is to guide the balloon (one of said many) through the maze (really) levels with any of the surfaces. The air (though) — from by the back — cause the balloon (special) to be able to get power to the ground.

This task is made more hazardous by the blimp's wrapping, making it a larger target, and various maddening things which inhabit each of the 28 levels. There are even magnets to pull the balloon of course and targets to aim for which can net you a few points.

Crazy Balloons does little to set its stage. The colors are pretty, the sound is minimal and the game play rarely ebbs above mildly irritating.

As for Crazy Nights and his pal — they probably opted for the used in light stimulation program. — **J.B.**

Game: CRAZY BALLS
Maker: SOFTWARE PROJECTS
Platforms: DOS/MS-DOS
Manufacturer: COSMOS/COMDEX 94
Price: \$17.95
Rating: K

DONNER UND METRO



LET'S FACE IT, any alarm blaring to invade it with these days are not a big problem! Fast action games like **Donner und Metro** seem to be spawning a whole new wave of faster-paced things with realistic sound-effects. But there is change of the lower behavior and we'll have no problems!

While we can't **Donner und Metro** is good practice of looking over what's going on. **Donner und Metro** are dominating on the city in a cloudy night that driving parts of the city each time one lands. You have a normal life that is visible against with one mission only... More atmospheric moves.

At the same time the game does limited with all the action taking place on one screen and with no scrolling. However, with 2D action scenes and the different types of things there's plenty to keep you busy. Some atmospheric (but) the sound is really in from the side of high and low level releasing how to play to follow what's going on.

A previous CD-ROM to start with it's a little bit of a surprise for a game to start with something for the inevitable "no win" condition. **Donner und Metro** is a strategy and tactical game for the computer.

While **Donner und Metro** and several good for the computer, starts with all the other games about the side of the world. On the other hand, if playing it can be very easy to see the world. ... — **J.B.**

Game: DONNER UND METRO
Maker: PDS
Platforms: DOS/MS-DOS/94
Format: CD-ROM
Price: \$17.95
Rating: K

MONSTERS & MAGIC



Not so much an adventure as Dungeons and Dragons with cheap. These familiar with the board games will recognize the format. Before you can set off and wander the **Monsters and Magic** your character must be created. Various values are assigned to strength, constitution and the like, and then the points will give green allocated. His points represent the amount of damage your character can withstand. You can't be killed and you'll have to select weapons from your arsenal and have the computer calculate on your level. Survival being down to the number of hit points remaining and the amount of damage dealt by the dice. Obviously the higher your points the more you can take you're likely to survive. It's a hard and boring formula.

Being entirely the computer, you'll be given a menu of possible actions: Fight, go on, rest, search or purchase supplies. The screen then details the consequences of your actions. Action levels will delight in the knowledge that there are little-less species of nasty to conquer and there's a branching provision for both short and extended exploration. Some might prefer the role playing element to the hard tactical adventure. For me it had only limited appeal. I prefer brain-benders along the line of **Procedural**. — **J.K.**

Game: MONSTERS AND MAGIC
Maker: DRAGON DATA LTD
Platforms: DOS/MS-DOS
Format: CD-ROM
Price: \$17.95
Rating: K

FIGHTER PILOT

THE SHOOTING
 AND THE ACTION



Tired of flying your shiny little F-16? How about a more realistic fighter pilot? Ready for something with a bit more realism? How about an F16 Eagle? Well, you can't actually get behind the controls, but this might just suit you the program, go. No questions asked.

Fighter Pilot is nothing short of state-of-the-art stuff for the Spectrum. A really impressive movement control is displayed along the lower portion of the screen with a full 3D effect—look as you bring up the rest of the display. Ray-traced and wireframe graphics are rendered in excellent 3D graphics.

The 3D effect (also used in many other games) with shooting and falling displays, showing up those support airplanes, real odds of some other airplanes, is really impressive. The 'feel' of being at the controls of a real plane.

So what can I do? Pretty much everything short of actually dodging any weapons of life. It's a real surprise for this game and the graphics and the sound are really good. It's a real surprise for this game and the graphics and the sound are really good.

So what can I do? Pretty much everything short of actually dodging any weapons of life. It's a real surprise for this game and the graphics and the sound are really good. It's a real surprise for this game and the graphics and the sound are really good.

So what can I do? Pretty much everything short of actually dodging any weapons of life. It's a real surprise for this game and the graphics and the sound are really good. It's a real surprise for this game and the graphics and the sound are really good.

Name: FIGHTER PILOT
Makes: TETRA
Price: \$29.95
Rating: KKK

HO HUM

Good thinking game that takes you from getting information and then to the action. The object is to move the camera around with moving the joystick to reach an object. It's a puzzle. Should you manage to register and then a little yellow cube will come down and carry you to a new level. The graphics, despite a few 3D scenes, are very primitive. Certainly the atmosphere that which comes with the game (despite your own avatars) is, indeed, the difficulty option allows you to play either James Bond or Nick Frost, but the classic lookers are like a good idea. It's a puzzle game. Probably a better game to play than a puzzle game. It's a puzzle game. Probably a better game to play than a puzzle game.

Name: SHAFT
Makes: TETRA
Price: \$29.95
Rating: KKK

Extremely difficult puzzle in **Shaft 2** — basically a very pretty 3D puzzle game where you're in a 3D environment and you're trying to reach your objective in a 3D world.

Excellent puzzle game in **Shaft 2** — basically a very pretty 3D puzzle game where you're in a 3D environment and you're trying to reach your objective in a 3D world.

Name: SHAFT 2
Makes: TETRA
Price: \$29.95
Rating: KKK



AIRSTRIKE 2



THESE BOOTS WERE MADE FOR ZONGING

How can you defend this one, but there are the guy running the game inside a man. It's a puzzle game. It's a puzzle game. It's a puzzle game.

How can you defend this one, but there are the guy running the game inside a man. It's a puzzle game. It's a puzzle game. It's a puzzle game.



So what can I do? Pretty much everything short of actually dodging any weapons of life. It's a real surprise for this game and the graphics and the sound are really good. It's a real surprise for this game and the graphics and the sound are really good.

Name: KRYSTALS OF ZONG
Makes: TETRA
Price: \$29.95
Rating: KKK



SCROLLING TO OBLIVION

It begins with descriptive tales. Several months later in predictable fashion and fuel-churns around the Pan-Mer shorts. It was almost less flying you can make up a healthy storm... which is just as well considering the dialogue in them. The first example is the first computer of the scene about stars. The first example is that it's available before the main "set up" is taken over than it is available before the main feature. The action here up to the end of the scene.

Always been one of my favorites games of mine, this. The Defender like speed associated with a definite ability to range to generate further is just incredible. There are always new strategies to try as you forge on with the action. Having ruled out the ground forces you'll have to use the air system. Here you'll encounter UFOs, and up the screen system. Here you'll encounter UFOs, and up the screen system. Here you'll encounter UFOs, and up the screen system. Here you'll encounter UFOs, and up the screen system.

Then comes what is the real test, a ball of fire which can lead to avoid and impossible to destroy. I've got to survive here and on here! I mean the fire that which I've seen of the last several months. While the computer than Pan-Mer, but for the Spectral this remains a real improvement for the classic game. The graphics are colorful, the scrolling smooth and the challenge quite pleasantly high. Are there any bug to your friends via Shell of Earth and there are options for keyboard or joystick control. Can you beat the system? — S.K.

Game: **DEFENDER**
 Maker: **MICROBALL**
 Machine: **TRISON 26**
 Platform: cassette
 Price: **\$8.00**
 Rating: **CCC**



Steal the eggs, avoid the lizard

There's a hard job back in the Stone Age. The dinosaurs were chilly, the women were tough (I think I've got that the right way around) and breakfast just wasn't worth rising for. All that running around and grunting. Shucks!

They need an the help they deserve. I mean, look at Ugh, he'd be the best without us. In this refreshing twist on an old theme, you have to guide Ugh up a hillside to collect an arsenal of Pterodactyl eggs (I'm assuming and serve with mammoth meat). Naturally the Pterodactyls are from happy about this and will try to persuade the caveman with a shower of rocks.

Should you manage to liberate more than your fair share of adults, the lizards will visit the aid of an obese Tyrannosaurus Rex who'll come wobbling from the shrubbery with a massive stone. A joystick really comes into its own here, as you're chased up and down the screen. The dinosaur's movements can be put paid to with carefully thrown spears, but this requires much practice. I spent a great deal of the time aimlessly throwing my spears into the bush and running carelessly into the arms of the dinosaur. Most annoying.

Wonderful things have been coaxed from the Walk video's graphics and the sound is great, I particularly liked the dull crunch when you're hit by a falling rock!

There are progressive levels of difficulty (presumably the Tyrannosaurus becomes more toxic by the screen) and enough on-screen hints to keep you busy for weeks. Go for it! — S.K.

Game: **UGH**
 Maker: **ACTIVISION**
 Machine: **TRISON 26**
 Platform: cassette
 Price: **\$5.95**
 Rating: **CCC**

SILVER SOFT



South Georgia Captured Again!

If you like arctic conditions in the comfort of your own home, then Freez Bees could be for you.

Percy the Penguin, stalwart of the ice cap, has his territory invaded by Snowbees and after choosing the ideal ice blocks they lay their eggs deep within them. The eggs hatch out and the young Snowbees chase poor Percy in a determined effort to kill him.

Percy is not too pleased by these Snowbees first invading his territory and then trying to kill him, so he takes creative action by either destroying the ice blocks before the eggs hatch out, or laying them in the poisonous fumes, which he has identified, and laying them. If he fails to kill them within a certain period of time and he has not destroyed the eggs within all of the ice blocks, more hatch out and his job becomes even harder.

In one of SilverSoft's best games for quite a while, good graphics and sound plotting make this an enjoyable and original program which, whether you use keyboard or joystick, should keep you amused for some time.

Game: **FREEZ BEES**
 Maker: **SILVERSOFT**
 Machine: **TRISON 26**
 Platform: cassette
 Price: **\$5.95**
 Rating: **CCC**



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ORIC 48K



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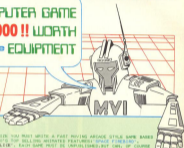


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TO WIN THIS EXCITING PRIZE YOU MUST WRITE A FAST MOVING ARCADE STYLE GAME BASED ON ONE OF MOUNTAIN VIDEO'S TOP SELLING ANIMATED FEATURE FILMS "SPACE FIGHTERS", "DRACULA" OR "TECHNO POLICE". EACH GAME MUST BE UNPUBLISHED, BUT CAN, OF COURSE BE AN ADAPTATION OF A GAME THAT YOU ALREADY HAVE DESIGNED - SPACE FIGHTERS LENDS ITSELF TO A GALAXIAN STYLE GAME, AND DRACULA IS ALREADY QUITE POPULAR WITH ADVENTURE PROGRAMMERS, WHILE TECHNO POLICE'S HIGH TECH TWIN SHOULD PROVIDE PLENTY OF SCOPE. SPECIAL CONSIDERATION WILL BE GIVEN TO GAMES THAT ARE BOTH ORIGINAL IN CONCEPT AND WELL RELATED TO THE TITLE. ALL THREE TITLES CASSETTES ARE WIDELY AVAILABLE THROUGH VIDEO LIBRARIES, AND COMPETITORS CAN ALSO OBTAIN FULL SYNOPSIS OF EACH PLOT FROM MOUNTAIN VIDEO AT THE ADDRESS BELOW. IN ADDITION TO THE EXCELLENT PRIZE MOUNTAIN WILL ARRANGE FOR THE MARKETING OF THE WINNING GAME EITHER DIRECTLY OR THROUGH A LEASING COMPUTER SOFTWARE HOUSE, WITH FULL RIGHTS TO THE CREATOR. ALL ENTRIES MUST BE ON CASSETTE, AND DESIGNED FOR ONE OF THE LEADING HOME VIDEO COMPUTER SYSTEMS. CLOSING DATE FOR ALL ENTRIES IS 1ST OF JUNE 1984. THE FINAL DECISION WILL BE MADE BY "BIG B" EDITOR JERRY TYLER AND PUBLISHED IN "BIG B".

ENTRIES SHOULD BE SENT TO:
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Please include S.A.S. for return of your entry.



PROGRAM EVERY MOUNTAIN

PROGRAMMERS out there eager to score a Commodore 64-plus peripheral can't leave their chairs — Mountain Video's animation specialists are organizing a competition with £1,000 worth of said equipment as the overall prize.

All the talented happen has to do is design a game program to complement any of Mountain's three top-selling animated cartoon videos: *Teachoo Police and Space Finbird*, two amazing sci-fi stories from the Land of the Rising Sun; and *Dracula*, an animated adaptation of a contemporary story featuring that well-known bloodsucker, star of stage, screen and video games.

Mountain Supreme David Grant assures Big K that his company will either market the prize-winning game themselves or arrange for its marketing — with full credit, royalties, etc. — for the lucky winner. Closing date for entries will be Monday May 21.

Entry forms available from: Judy Gogpard, Mountain Video (Special Projects), 43 New Oxford St., London WC1.



LUNAR TOUCHDOWN

by JONATHAN BULL
for COMMODORE 64



Mountain's DAVID GRANT: Will it be *Dracula*?

STORY BY JONATHAN BULL
ART BY JONATHAN BULL

1. The moon was a barren, lifeless planet, a desolate world of dust and shadow. It was a world that had been abandoned for centuries, a world that had been forgotten by all.

2. But now, a new world was being born on the moon. A world of science and technology, a world of progress and discovery.

3. The first lunar landing had been a triumph, a moment of glory for the human race. It was a moment that had changed the course of history, a moment that had shown the world that we were capable of reaching the stars.

4. But now, the moon was no longer just a distant planet. It was a home, a place where we could live, work, and explore. It was a place where we could build a new world, a world that was ours.

5. The moon was a world of endless possibilities, a world that was waiting for us. It was a world that was ours for the taking, a world that was ours to build.

6. The moon was a world of hope, a world that was full of potential. It was a world that was ours to explore, a world that was ours to discover.

7. The moon was a world of wonder, a world that was full of mystery. It was a world that was ours to unravel, a world that was ours to understand.

8. The moon was a world of beauty, a world that was full of light. It was a world that was ours to cherish, a world that was ours to love.

9. The moon was a world of peace, a world that was full of harmony. It was a world that was ours to enjoy, a world that was ours to share.

10. The moon was a world of love, a world that was full of compassion. It was a world that was ours to embrace, a world that was ours to protect.

11. The moon was a world of dreams, a world that was full of hope. It was a world that was ours to believe in, a world that was ours to strive for.

12. The moon was a world of possibilities, a world that was full of potential. It was a world that was ours to explore, a world that was ours to discover.

13. The moon was a world of wonder, a world that was full of mystery. It was a world that was ours to unravel, a world that was ours to understand.

14. The moon was a world of beauty, a world that was full of light. It was a world that was ours to cherish, a world that was ours to love.

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30. The moon was a world of possibilities, a world that was full of potential. It was a world that was ours to explore, a world that was ours to discover.



R N BULL RE 64

They came down out of space to answer the desperate call for rescue. Moments later they were on a family wreck and surrounded by a monster. One by one the giant ships engaged in to release their leader from the monster. The monster had to find a way to get to the humans — a show of course meant destruction. Many were destroyed in the attempt but were not through. Will you be following that path? Page in this amazing program will tell you if you've got The Right Touch.

THE RIGHT TOUCH... (The text in this column is extremely faint and largely illegible, appearing to be a list of names or a directory.)

(The text in this column is also extremely faint and largely illegible, continuing the list or directory.)



For any Sinclair
Spectrum

POKE

PUSH

CRASH

A **Ready, Aim, Fire!** strategy game for 2-4 players. Grab your bricks as they come down the chute and out-build your opponents by herding them in. Last one in plays Yasser Huges... can you do this job?

by Antony Trankar

H-BLOC

GAME NOTES

You must simply out-lead another player (brick with your own. Others are space-filler and will become solid if the player cannot be out-ranked. He will only die if he is surrounded by four other bricks. You can't die but round your wall, as desired.

You can play safe by putting your bricks near the edge of the wall or have a ring of bricks with a space on the center. The four in the ring can't be surrounded but can surround others.

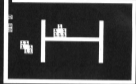
You can play a risky game by turning other players into squares which they think will surround you but actually surround them.

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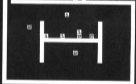
1 REM COPYRIGHT ©
2 REM YASSER HUGES
3 REM YASSER HUGES
4 REM 1984
5 REM BY YASSER HUGES
6 REM 1984
7 REM
8 REM THIS IS A STRATEGY GAME FOR 2-4 PLAYERS.
9 REM THE OBJECT IS TO BE THE LAST ONE IN.
10 REM THE LAST ONE IN PLAYS YASSER HUGES.
11 REM
12 REM YOU CAN PLAY SAFE BY PUTTING YOUR BRICKS
13 REM NEAR THE EDGE OF THE WALL OR HAVE A RING
14 REM OF BRICKS WITH A SPACE ON THE CENTER.
15 REM THE FOUR IN THE RING CAN'T BE SURROUNDED
16 REM BUT CAN SURROUND OTHERS.
17 REM
18 REM YOU CAN PLAY A RISKY GAME BY TURNING OTHER
19 REM PLAYERS INTO SQUARES WHICH THEY THINK WILL
20 REM SURROUND YOU BUT ACTUALLY SURROUND THEM.
21 REM
22 REM THE GAME IS PLAYED ON A 20x20 GRID.
23 REM THE BRICKS ARE PLACED ON THE GRID.
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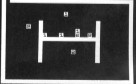
MOVE 10 _____ PLAYER 1 PLAYER 2 MOVE 11 _____ BRICKS KILLED.



MOVE 11 _____ PLAYER 1



MOVE 12 _____ PLAYER 1





HE WROTE ONE.

THE AMERICAN made his feelings pretty plain. In rock music, films, TV and now computer gaming, the spirit of New Britain is strong. Now Atari has chosen a hero for its first international award. Big K managed to beat down the factory-creating machine ...

JUSTIN WHITTAKER is a tall, bespectacled 18-year-old from Slough-based in Kent. He exhibits a calm self-assurance ("I decided that I'd write a hit game") and realistic attitude ("I wouldn't recommend that anyone else leaves school at 16 and starts writing software; they could be very disappointed") towards his work. All this is reflected in *The Lone Raider*, Justin's first game, a skilled blend of action, mathematics and good play values, utilizing the excellent sound and graphics capabilities of the Atari Home Computer.

Justin's computer interest began at school with computer studies, a subject he didn't feel he was doing as well as he should in. So he went out and bought a ZX81 to help. Through this he learnt programming and began writing his own programs straight away. He left school when he was 16 with a career as a programme fitter in his sights. But it wasn't that easy. A long period of fruitless interviews left him with a lot of spare time on his hands and, by his time, an Atari 800 to play with. It was then he decided to write his "hit game".

THE THEME'S THE THING

Weeks were spent thinking up ideas. "Eventually I came up with the idea of — instead of just having a game, which is pretty meaningless — to actually provide a theme, like space-raiding a factory. So I designed the first screen of the game around getting into the factory, the middle screen doing the walking and the last screen getting out again. I built the game round that."

Over a few months of off and on work passed before the game was complete. Justin then wrote to Atari's U.K. HQ telling them about the game and asking if he could show it to them.

Why Atari and not some British software house? "Because I had an Atari computer," was the simple reply. Oh.



A BRIT TAKES ON THE YANKS' GAME

THE LONE RAIDER



Atari agreed to see the game and Justin impressed up to their Slough offices to show it to them.

"They were struck by it the moment they see it," he says modestly. "Almost on the first day they said the would release it." At that time, like many others writing independently for the Atari, all Justin could hope for was his game to be put out by the Atari (Atari Programs Exchange), a service available only to Atari owners. Then a few weeks later came the surprising news that *The Lone Raider* was going out "mainline" with the rest of Atari's catalogue.

"I was dumbfounded," says Justin. "It was fantastic because, up to then, everything was so select

with all the machine stuff being written in America. Everybody says that the Americans are best and all that but I'm sure the British can do just as well."

Atari agreed to pay Justin a royalty on each copy sold in return for holding copyright and *The Lone Raider* was launched with great ceremony at the end of October, 1982. Initially the game is only on sale throughout Europe through Atari International, but hopes are high for an eventual U.S. release.

THE GAME'S THE THING

The Lone Raider is a three-stage game. On the first screen the Raider is beamed down from his mother ship and must destroy all the robot guards to enter the power

factory.

There are ten levels to work through. The first five can be selected but the last five must be taken in sequence. Unlike some games *Raider* has 1 enemies. If you can beat the tenth rank ("almost impossible" says Justin) there is a special message and how waiting. But nobody has done it yet, including Justin, who claims only to have cracked it "... by cheating!"

THE SOUND'S THE THING

The Lone Raider is an increasingly "playable" game involving the need for good tactics as well as reflexes. Sound is remarkable although the graphics are surprisingly simple for such a machine. "Some people with a game read a graphically technique," Justin explained. "They don't care about the play value. That isn't the way to do it. Sound is one of the most important things in games because it affects your subconsciousness opposed to anything else. You can't ignore it, by the second level of my game the amazing sound really gets you wanting!"

As is fairly clear by now, Justin is a big fan of Atari computers. "They're fantastic, because, you can never really master an Atari because there are lots of little things hidden inside. You can get 256 colours on the screen at once — what other micro can do that? There's just so much potential that's not realised."

Okay, so how about a few tips for Big K readers? Justin? "Get a book called *Do It Atari* by Chris Crawford. If you've got an Atari micro you think you've not got a basic routine. When you read that book your mind will be blown when you realise what you've really got your hands on!"

Justin was 17 when *The Lone Raider* was released last year. He's now 18 and a freelance programmer working on converting some of Atari's most popular games to other hardware for the new AtariST range. When Big K asks when he was working on *Big Bug* for the BBC and Electron.

Well about a follow-up to *Raider*? That'll be in the works very soon and Justin is saying nothing about it other than it will be an absolutely new game. Yes, when you're a boss man taking on the awesome task of cracking the American grip on software, you're entitled to a few secrets!

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NAME ALLEY



WHERE DO VIDEO GAMES GO WHEN THEY'RE SICK?

Answer: to the Doctor's



NEXT QUESTION...



2 OPEN NICAD and see AMBIT! Kero-coated machines (except the Doc — actually a Reflektor 4050-modification). Most elements are simple: broken microchips; smeared cabinets and screens — occasionally a burned-out PCIB as a result of out-of-control unprinted bricks played by the toxic adolescents.

3 The secrets of TIME PLOT (beyond the tedious TV's scenes) are not mentioned. Let's



4 There is something actually so complex about the DEFENDER of all its kind, it had nearly come in for its regular three-month check-up, including a quick test of the cabinet system. And now you're feeling the cabinet system, aren't you? (Mentioning programming maintenance, right?) These if you'll just enough... Thank you. You'll be able to go out there and take another three months' building in the hands of demented arcade freaks!



PAC-MAN
Pac-Man

CPUs for sound and display. CPUs for good old B&B — pressed into service to straggle the slugs.



5 The **BATTLEZONE** cabinet had its joystick game wrenched clean away by desperate customers. The **1995 DO** Street had a faulty crane supply, miscalculated to snatch coins.



PARDON, MY DISC HAS SLIPPED...

Olney's *Iron* was a supremely tested technique. Surprisingly was too busy gawping at the fact of megabyte computer animation to notice just how weird. But when was the last time you saw *Iron* demonstrate? And who would ever have imagined that the inside of a coin game would look like a *Project Palace*? The *Iron* game, like the fine, was too weird, gorgeous, to catch on with fans of the basic space-borne theme. ... And the feature of the four game options ... the best title — was over too quickly even when you had the time.

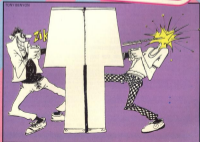
The new *Iron* game inherits the official speed of the best with a single over console. Once inside the facility subject you retransported. You have been selected to solve an old game and ... These about to be thrashed.

Your sense appears, a rectangle viewed from the same perspective as

snicker rides on the TV, with your opponent poised on a hovering platform at the far end. You have to throw your disc to knock him off, along with a marker that circles out at any point around the four walls, when dodging the disc he's throwing. At each stage, the number of platforms increases, and the game gets not so much faster as more mobile and these platforms.

Ultimate 3D Game

The disc bounces like snicker balls from the walls and returns to you on your platform. At stage five, the platforms begin to slither back, making *Over 3D* from the ultimate 3D game. In other respects too, *Over 3D* is different: the minimalist colors and strange morphology of the spirit outside the reflex speed of play, the move but it's wonderful. What would turn in his fudge if he knew.



TONY BRAWN



No. 1 DEFENDER

mean, there was **NO** AT such a killer machine could be consumed in a year.

Was there? Thankfully I was wrong. Not only did they create it, they produced a game with almost identical play-to-be original Atari programmer Rob Polare achieved a minor miracle by retooling 28 Kilobytes of a human. I couldn't make him into the heart of a 16K-sized cartridge. It worked. *Defender* is — I guess — the single most successful conversion in the entire 2000 library. A home-file classic.

Armageddon

Earth is under attack. Hostile aliens, frantically attracted by a "technology" signal beamed by an intergalactic space, are descending in waves. Civilization is being rained to the ground. It's like some George Pal movie come to life. Only you, in the cockpit of the Universal Space Ship *Defender*, remain as the last line of defense. (But I may be wrong. I'm still thinking. Those missions between your soccer bowl *Armageddon*. With a defiant sigh your ship ascends across the horizon. It's time for action....

Defender's inherent challenge lies in its cast. The stars come in six shapes: Bombers, Missiles, Landers, Meteors, Pods and Swarriors. Bombers are the quiet types and cause the least of problems. They tend to drift quietly down the screen and are quickly picked off. Missiles are just the opposite. Their automatic appearance follows a swarming nature. They'll find you dogmatically and often they wipe you as you wipe them. Their attack is both relentless and deadly. They also manage to distract you from the activities of the Landers, whose main aim is to bring the Humans to you live in the city below. Once kidnapped a Humanoid will be transformed into a 3-screen missile. Should the Landers object all 3 humans then you're in *DEF* trouble, as the earth is destroyed in an apocalyptic instant takeover.

Ultimately your prime concern throughout the game must be to protect the humanoids and prevent such a catastrophe from happening. Pods are considerably less bothersome; they just float across the screen in a swarming manner. However, should you succeed and that one it'll wriggle into a faithful homewarding movement. By way of defense you have an 8-laser and smart bombs. *Defender* is a game for class.

Oh, now that you've fully briefed it's time to shake some action. Screen 1 and 2 are regulation shoot-'em-ups.

The aliens have yet to pile on any pressure and most flying will enable you to crush up a respectable score. Screen 3 is based on the long Member (read later), as this, almost any point in life of an accident history (very hard hitting) and a real out for descending Landers. On the lower levels they move as an earthy pace and so are easily shadowed. Let the Landers attack the Swarriors and then — as they reach the screen — for home — blast 'em. You'll probably catch the falling bombs and shoot 1,000 points per hit. Make the most of this strategy here, though, as it becomes impossible on later screens.

From screen three onwards *Defender* begins to play tough. Landers move across the screen with considerable speed and the fast-boosting to get ready. Mr. I always begin by aiming towards the top right. It's good to be catch both with one hit and this moves the handle of satisfying Swarriors later on. Never — ever — skip on the screen as bombs. They're easily replaced and only foolish (or brilliant) pilots shoot them. Just let the others fly. As before, your main aim is to protect the Humanoids. As soon as you hear the garbled cry of a human being being gapped, check out the screen and move. Missiles, having shot the Landers and caught the bombs, don't bother to get hit down. As long as you've a Humanoid clinging to your belly the population will be safe. The other Landers won't try to kidnap anyone else.

Nerve-racking

A part of VCS (under bubble) the Meteor takeover of Earth. This terrible event occurs the moment those filthy Landers succeed in abducting your entire population. The city is captured in a chugge flash and swarms of crimson Meteors loop on the horizon. This is no time to panic as you'll need to survive 3 screens of Meteor Hell before Earth is restored in a massive occurrence. I'm sure you'll agree. The cast though is probably the most interesting thing which will help you practise for this nerve-racking occurrence. Once again, we're carefully with your score and keep on the move. Remember that a sudden change in direction will confuse the scrappy beasts and so allow you time to fire up a healthy salvo of laser fire. And, of course, if things get too hot you can always hyperspace away. (The wing's way out.)

And so you it goes. The ultimate challenge. The appeal of *Atari Defender* clearly goes far beyond that of lesser shoot-'em-ups. It's the complexity of the swarming action, not so much the player that it almost becomes an intimate experience. Only try and express that excitement to those in the outside world and they'll think you're nuts. It's the first true classic of the video era. And the only one guaranteed to make your bed sweat.

Play it in circle rock.

STEVE KEATON

DEFENDER IS THE spin-off essential Atari VCS cartridge. It has an appeal clearly lifted by the above the hidden popularity of other games, and since its release remains pretty much unchallenged as the ultimate 2000 challenge.

The cart is an adaptation of an arcade machine first developed by Williams Electronics, a company which they best known for its pinball machines. *Defender* straddled into the arcade during the Christmas of 1980 and revolutionized many warlike overnight. It was the first game to take back. The frenetic attack of Bombers and Swarriors made the old plodding manner of *Academy* seem positively homely. Arcade had steadily homogenized the landscape of machine gaming at those slick-wire *Defender* warriors who stood right after night happily developed in a dazzling display of pixels. I was just not I had no idea what was going on. The sheer speed of the thing was overwhelming.

Fearsome Nature

Defender is an extremely complex game to master. The cost is without exception the most sophisticated ever presented on a single video screen. But when Atari announced their acquisition of the title for the home file VCS, I fairly groaned at the prospect. I

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30 PRINT "CLEAR BOARD"

40 YOUR PIECES ARE DENOTED BY "C".

40 PRINT "RIGHTS:THE COMPUTER'S BY "O"

."

50 PRINT "DOWN: CONVERT A PIECE TO
YOUR SYMBL. YOU

60 PRINT "RIGHTS: MUST SWAP IT-HORIZIION

TALLY, VERTICALLY")

70 PRINT "OR DIAGONALLY - BETWEEN TWO

"C".

80 PRINT "DOWN:PIECES ARE ENTERED AS H

OR, COLUMNS - C.B.

90 PRINT "RIGHTS: H, C B ETC., TO DEL

THE FIRST

100 PRINT "RIGHTS: CHARACTER,

PRESS THE "DEL" KEY.

110 PRINT "DOWN: THE WINNER IS THE ONE

WITH THE LARGEST

120 PRINT "RIGHTS: KESULTANT NUMBER OF

PIECES.

130 PRINT "DOWN: IF YOU CANNOT MOVE -

TYPE "O".

140 PRINT "DOWN: IF YOU CANNOT MOVE -

TYPE "O".

150 PRINT "RIGHTS: IF PLAYING LEVEL -

TYPE "L".

160 PRINT "DOWN: THE KEY TO SEE

BT

170 GET P=IF B= "THEN 175

180 W00L8 24001P0R1=DOWN,ADD444

BT WHAT LEVEL OF COMPLEXITY DO YOU

DOWN

190 PRINT "RIGHTS: WISH TO PLAY (1,2,

3) 1-9"

200 GET P=IF P=1:IF V=1:FOR V=2

TO 9

210 C=V-W:V=PRINT "CLEARING"

"THEN 200

220 B= "ORDEET DEL"

230 B= "

240 B= "IF P=1:W=0:IF P=2:W=1:IF P=3:

W=2

250 FOR I=1:TO 1:FOR J=1:TO 8

260 B= "IF V=1:V= "ORDE, DOWN, RIGHTS"

270 DEL P= IF W=1:W=1:W=2:W=3

280 W= "ORDE, DOWN, DOWN, RIGHTS"

290 FOR J=2 TO 8:FOR I=1 TO 8

300 W= "IF W=2:W=1:W=3:W=2:W=1

310 W= "IF W=3:W=2:W=1:W=3:W=2:W=1

320 W= "IF W=2:W=1:W=3:W=2:W=1

330 W= "

Play the board game that's sweeping the civilized world without as

much as a single counter to lose under the carpet. Just type in

the listing below and RUN it. Please note—Commodore

graphics have been translated into easy-to-understand commands



```

320 FOR J=1 TO 10:FOR I=1 TO 1
330 IF I=10 THEN IF J=10 THEN 350
340 USR 1:GOTO 350
350 NEXT I
360 DATA 1000,2.5,10,10,10,10,2.5,1000
370 DATA 2.5,1000,10,10,10,10,2.5
380 DATA 10,10,10,10,10,10,10,10
390 DATA 10,10,10,10,10,10
400 DATA 10,10,10,10,10,10
410 DATA 10,10,10,10,10,10,10
420 DATA 2.5,1001,11,10,10,10,1001,
2.5
430 DATA 1000,2.5,10,10,10,10,2.5,1000
440 FOR I=1 TO 10:FOR J=1 TO 10
450 PRINT I;J
460 NEXT J
470 PRINT
480 IF I=10 AND J=10 THEN 510
490 PRINT"YOU HAVE WON!"
500 GOTO 510
510 PRINT"YOU HAD THE FIRST MOVE"
520 PRINT"YOU WERE BOMBED BY YOUR MOVE"
530 PRINT"YOU WERE BOMBED BY YOUR MOVE"
540 PRINT"YOU WERE BOMBED BY YOUR MOVE"
550 PRINT"YOU WERE BOMBED BY YOUR MOVE"
560 PRINT"YOU WERE BOMBED BY YOUR MOVE"
570 PRINT"YOU WERE BOMBED BY YOUR MOVE"
580 PRINT"YOU WERE BOMBED BY YOUR MOVE"
590 PRINT"YOU WERE BOMBED BY YOUR MOVE"
600 PRINT"YOU WERE BOMBED BY YOUR MOVE"
610 PRINT"YOU WERE BOMBED BY YOUR MOVE"
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720 PRINT"YOU WERE BOMBED BY YOUR MOVE"
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830 PRINT"YOU WERE BOMBED BY YOUR MOVE"
840 PRINT"YOU WERE BOMBED BY YOUR MOVE"
850 PRINT"YOU WERE BOMBED BY YOUR MOVE"
860 PRINT"YOU WERE BOMBED BY YOUR MOVE"
870 PRINT"YOU WERE BOMBED BY YOUR MOVE"
880 PRINT"YOU WERE BOMBED BY YOUR MOVE"
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970 PRINT"YOU WERE BOMBED BY YOUR MOVE"
980 PRINT"YOU WERE BOMBED BY YOUR MOVE"
990 PRINT"YOU WERE BOMBED BY YOUR MOVE"
1000 PRINT"YOU WERE BOMBED BY YOUR MOVE"

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630 IF I=10 THEN IF J=10 THEN 1010
640 PRINT"YOU WERE BOMBED BY YOUR MOVE"
650 GOTO 1010
660 IF I=10 AND J=10 THEN 1010
670 PRINT"YOU WERE BOMBED BY YOUR MOVE"
680 PRINT"YOU WERE BOMBED BY YOUR MOVE"
690 PRINT"YOU WERE BOMBED BY YOUR MOVE"
700 PRINT"YOU WERE BOMBED BY YOUR MOVE"
710 PRINT"YOU WERE BOMBED BY YOUR MOVE"
720 IF I=10 THEN IF J=10 THEN 1010
730 PRINT"YOU WERE BOMBED BY YOUR MOVE"
740 PRINT"YOU WERE BOMBED BY YOUR MOVE"
750 PRINT"YOU WERE BOMBED BY YOUR MOVE"
760 PRINT"YOU WERE BOMBED BY YOUR MOVE"
770 IF I=10 AND J=10 THEN 1010
780 PRINT"YOU WERE BOMBED BY YOUR MOVE"
790 PRINT"YOU WERE BOMBED BY YOUR MOVE"
800 PRINT"YOU WERE BOMBED BY YOUR MOVE"
810 IF I=10 AND J=10 THEN 1010
820 PRINT"YOU WERE BOMBED BY YOUR MOVE"
830 PRINT"YOU WERE BOMBED BY YOUR MOVE"
840 PRINT"YOU WERE BOMBED BY YOUR MOVE"
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990 PRINT"YOU WERE BOMBED BY YOUR MOVE"
1000 PRINT"YOU WERE BOMBED BY YOUR MOVE"

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970 FOR J=1 TO 3
980 D=25+J*3000
990 PRINT " *%PIID(10,0,0,0)
1000 NEXT
1010 PRINT " *%PIID(0,1,1,1)
1020 PRINT"%PIID(1,1,1,1)"
1030 PRINT "%PIID(1,1,1,1)"
1040 PRINT "%PIID(1,1,1,1)"
1050 PRINT "%PIID(1,1,1,1)"
1060 PRINT "%PIID(1,1,1,1)"
1070 PRINT "%PIID(1,1,1,1)"
1080 PRINT "%PIID(1,1,1,1)"
1090 PRINT "%PIID(1,1,1,1)"
1100 PRINT "%PIID(1,1,1,1)"
1110 PRINT "%PIID(1,1,1,1)"
1120 PRINT "%PIID(1,1,1,1)"
1130 IF C1=60 THEN 2000
1140 NEXT C1
1150 IF W=2 AND W*3=6 AND W=2 THEN
1160
1170 IF C=2 THEN 1470
1175 IF W=7 THEN C=C+1:GOTO 1170
GOTO 1150
1180 IF C=2 THEN 1470
1190 FOR J=0 TO 10
1200 GOTO 1170
1210 IF J=0 AND W=1 THEN W=2, GOTO
1220 IF J=1 AND W=1 THEN W=2, GOTO
1230 IF J=2 AND W=1 THEN W=2, GOTO
1240 IF J=3 AND W=1 THEN W=2, GOTO
1250 W=-.0001:IF J=10, W=0 THEN W=100
1260 IF W=10 THEN 1270
1270 FOR I=0 TO 6
1280 IF J=0, I=0 THEN 1310
1290 W=I, I=I+1
1300 NEXT I
1310 IF W=10 THEN 1420
1320 FOR I=0 TO 6
1330 IF J=1, I=0 THEN W=2, GOTO
1340 W=I, I=I+1
1350 NEXT I
1360 GOTO 1450
1370 FOR I=0 TO 3:STEP-1
1380 IF J=2, I=0 THEN W=2, GOTO
1390 W=I, I=I+1
1400 NEXT I
1410 GOTO 1310
1420 FOR I=0 TO 3:STEP-1
1430 IF J=3, I=0 THEN W=2, GOTO
1440 W=I, I=I+1
1450 NEXT I
1460 NEXT J
1470 IF W=2 THEN 1480
1480 GOTO 1200
1490 W=-.3000:GOTO 1150:IF W=1 THEN W
=1
1500 IF W=0 THEN W=-1
1510 IF W=1 THEN W=1

```

```

1520 IF W=0 THEN W=-1
1530 IF W=0 THEN W=-1
1540 IF W=0 AND W=0 THEN W=2
1550 IF W=2 OR W=7 OR W=2 OR W=7 THEN
1560
1570 IF W=0 AND C=2 THEN 1600
1580 W=0, C=C+1, GOTO 1560
1590 IF W=0 AND C=2 THEN 1600
1600 W=0, C=C+1, GOTO 1560
1610 W=-.001:GOTO 1540:IF W=10, W=0
1620 GOTO 1540:IF W=10, GOTO
1630 GOTO 1540
1640 IF W=10 THEN 2200
1650 IF W=10 THEN 2210
1660 IF C=2 THEN 1690
1670 W=.0000:IF J=2, I=1 AND J=1,
1680 THEN W=1, I=I+1, GOTO
1690, I=I+1, GOTO
1700 IF J=7, I=1 AND J=10,
1710 THEN W=7, I=I+1, GOTO
1720, I=I+1, GOTO
1730 IF J=2, I=1 AND J=10,
1740 THEN W=2, I=I+1, GOTO
1750, I=I+1, GOTO
1760 W=10:IF W=10:GOTO 1540:IF W=10:GOTO
1770 W=7:IF W=7
1780 FOR I=0 TO 10
1790 FOR J=0 TO 10
1800 IF J=1, I=1 THEN 1820
1810 IF J=1, I=1 THEN 1820
1820 W=1:GOTO 1810:IF W=1:GOTO
1830 NEXT J, I
1840 IF W=1 THEN 1900
1850 GOTO 1810
1860 IF W=1 THEN 1900
1870 IF W=1 THEN 1900
1880 IF W=1 THEN 1900
1890 PRINT W;" CORRECT GO"
1900 IF W=1 THEN 2000
1910 GOTO 1800
1920 IF W=1
1930 W=1:GOTO 1800:IF W=1:GOTO 1800 AND
1940 IF C=2 THEN 2040
1950 IF W=2, I=2 OR W=2,
1960 OR W=10 THEN 2040
1970 IF W=2 OR W=2 THEN 2040
1980 IF J=1, I=0 OR J=2, I=1,
1990 THEN 2040
2000 GOTO 2040
2010 IF J=1, I=0 OR J=2, I=1,
2020 =1 THEN 2040
2030 GOTO 2040
2040 IF W=2, I=2 THEN W=1, I=1, GOTO
2050 2040
2060 W=1, I=1, GOTO
2070 IF W=1 THEN 2040
2080 IF W=1 THEN 2040
2090 GOTO 1810
2100 PRINT "%PIID(10,0,0,0)
2110 W=2:GOTO 1200

```


FOY CODENAME MAT

MAT is an award-winning arcade. The original one player to play in the world of all-arcade games. The computer's artificial skills all play the game as if you were the player. From your mind to MAT's mind. Total control of the 48K Commodore 64/63000, 64000, and 64000 Commodore 64 with its computer graphics. MAT is the only arcade game on the 48K Commodore 64/63000, 64000, and 64000.



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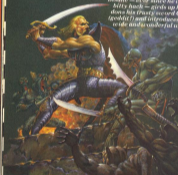


ADVENTURE

It all began way-back-when with two cats named Crowther and Woods. They were skiving from the Stanford University, California, who employed them, and while dallying with a monster mainframe one day, they got tapping... The result was a 300K interactive storyline called Colossal Cave, and within weeks it became a hoisting hit. Since then it's grown and grown, and today Adventure is the fastest-developing form of computer fantasy. You can be who you want, where you want and when you want. But you'll find it difficult to get out alive.



STEVE KEATON, who's been playing the dare things with an obstinateness that borders on the insane — at one time he was a little bit of a hack — gives up his faith, shows his trust in our *Colossal Cave* (good?) and introduces us to this world and a wonderful world...



THE DREADED mind-bender can take many forms. It could be an immensely chaotic or an incredibly subtle. Dragon can surprise you just as often as your Black Pudding. It could be any one of many diabolical developments that forces you to grasp your hair and groan in despair. Perhaps you're incarcerated in some ghastly Golem's dungeon and can't get out. Or you can join the club. The Adventure's the club. The rest of the hero's Club. The rest of the

COMPUTER ADVENTURE

confused and slightly insane.

In meetings are easily startled. They've withered from late night explanation, and have a disconcerting habit of breaking off conversations and declaring someone and declaring someone (name like: "The chosen I need your attention with the chosen") for no apparent reason. They're a serious kind. And rather strangely... they're growing!

The adventure is fast becoming an essential ingredient in the microcomputer's diet. More important than that the average arcade test, it'll test and inspire you, challenging your imagination like few things have ever done before. And, as you might imagine, it could well drive you nuts.

Needing several weeks to digest, a full-blown adventure will transport a player to an alternate reality where only lateral thought and a trusty blade will guarantee survival. It's a whole different ball game from the old slaying.

Convention would almost certainly set an adventure

THE HOWL (McDermott House)

The stars split! Love it or hate it, it's a strange experience. Goop at the ridiculous. Wooley at the work... Wonder at the sophistication. Despite all the hype, I wonder if the gameplay will be more engaging!

GREEDY GULCH (Phipps Associates)

Tip: A nice Western mystery set in an old deserted mining town. Can you and your partner discover that dark lost goldmine before some pesky vampire places you full of business?

VELNOV'S LAIR (Hinkleyware)

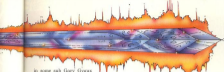
Definite, spellbound... if deflated, spellbound... if light-hearted — based on a recovery from rape and murder so child, girl's and mother! Go on, sleep on one night. You know it makes sense.

MISSION 3: PERHIT VOLCANO (Mission 3 House)

Superior score, smart logic that pushes you against the peak's edge of the Soviet Union. None of that, no comrades!

ADVENTURE

ADVENTURE



in some call Gary Gygax, Dungeons and Dragons creator, peopled with unusual and other exotic creatures, a great variety of levels is available. There's nothing to stop you leading an expedition in the Wild West, or on a battle-frenzy world for some use within the confines of Number Ten. The choice is both lucid and huge. Newcomers to the club are quite likely to feel overwhelmed by choice.

One's first adventure is always a memorable experience. The thrill of the quest

is exhilarating. It's a classically styled text adventure that pits you against Zombies, Orcs, Goblins and werewolves in a thrilling search for the Black Wizard Volnus.

It seems the old goat has taken refuge within the Goblin Labyrinth of Mount Eld and is about to realize his one great ambition, to become a true demon on Earth. Naturally this causes much consternation amongst decent thinking folk. Only you can thwart

it. Naturally wishing to realize my own physical prowess and stature I played the game as the hero. The adventure is wonderfully scripted and delightfully friendly, which makes it an ideal initiation for the newcomer. And while not being exceptionally difficult it does possess a number of those infuriating misadventures. The toughest of which is without doubt the crocodile infested river.



ER TURE

THE LAST FRONTIER

setting the scene for your subsequent mental collapse. It's most important not to get lumbered with a duffel on your first outing, it could ruin you for life. A personal favourite of mine is VELLNOR LAIR (which runs on a 48K Spectrum from

his plot and save mankind! It's a marvellous sword and sorcery romp with a wry sense of humour.

The game allows you the choice of a character. You can play a priest or wizard — both of which have spells at their command — or a heavy barbarian, who, while being shortchanged in the sports department, can slog it out with the best

of us. Naturally wishing to realize my own physical prowess and stature I played the game as the hero. The adventure is wonderfully scripted and delightfully friendly, which makes it an ideal initiation for the newcomer. And while not being exceptionally difficult it does possess a number of those infuriating misadventures. The toughest of which is without doubt the crocodile infested river.

Having feared both apples and floor I concluded that the only solution was to make the previous apples an apple pie! Needless to say this was way off base. The culinary hint was of a far

Continued on page 54

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GOLDEN APPLE
(Aristic Computing)
Travel through a maze of treacherous caverns to this hilariously scripted quest for a magical golden apple. Start's easy — gets tough!

MAGIC MOUNTAIN
(Phiggo Associates)
Does your system wish to be a big-brained creature of a big-brained creature? I treasure your imagination! I treasure your imagination! I treasure your imagination! You give me no predictable!

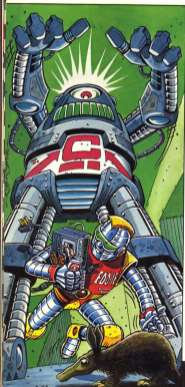
MUCKBUB
(Blackware Programs)
Entertaining 3D escape adventure that has you slithering around on board a one-way magic carpet and only limited options to be had. Run on up Muck!

THE DUNGEON MASTER
(Crosstalk)
A classic adaptation of Dungeons and Dragons, but using a role-playing format. Play in profane and hilarious ways and be disappointed.

THE KNIGHT'S QUEST
(Phiggo Associates)
A medieval quest with a wry sense of humour. It's a search for gold. Not for much and not for the thrice-upon-a-time. Can you find Merlin's hidden gold?

ESPIONAGE ISLAND
(Aristic Computing)
Downed while on a mission, you must survive the enemy's trap and escape in a vain attempt to restore the stability of the post-World War II. Or, by the way, don't dally with loose talk or women!

ADVENTURE



Returning to Earth from Alpha Centauri, your teleport beam is interrupted by a weird glitch and you find yourself stranded in an alien, apparently deserted, alien city. As you begin to investigate your surroundings you encounter a heavily armored alien encounter. With his help you begin to explore a maze of rooms, encountering deadly laser traps and diabolical dangers at every turn. But you can't find a way to leave the alien world? Or will you be stranded forever in an endless labyrinth — where perhaps you're not alone . . .?

THE ADVENTURE IS ON

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IS OVER - YONCE
YOU STOP ZEM!

IT'LL END IN
TEARS, TEDDY!

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AT THE BEST SOFTWARE STORES NOW!

E...GOOD GAME

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Including touch will be added scenes provided by pre-shot location film which is added as a third layer to the digitized visual films.

The second effect is one of "believable realism," according to producer Meade. It was his job to make a pilot for The Game in January of this year; it cost a ton of stomach money. This first programme, which will never be aired, was called The Quest for A Knight—inspired on the Holy Grail story.

Adventure

An Oxford-based games unit was known called Insight Staff were prepared an adventure game especially for the pilot; this adventure is destined to become a big name.

A few editors of The Game would avoid three distinct impressions which define the adventure. First of all the contestants must guess the period, location or theme of the story—it might be anything from outer space to the inside of a microscope. Next, they will proceed through the adventure's

multimedia to discover a hidden secret, fighting enemies in 3-D. In a way, it's the world's great personality. And finally they must work out just who is the mystery personality.

Insight won't be making which makes The Quest for A Knight was written for (though an educated guess might settle on the Thomas King West.) The choice of hand-



ware is likely to cause a hostile vocal amongst the suppliers. And YTV won't be saying whether Insight would be employed to write or commission old magazines and films, or how it would be marketed.

What is clear is that the TV station and an offshoot of Fulton's called Versatile will continue to market early videogames as it is used in the show. And Versatile would like the pair to agree either a 'YTV logo' machine or some standard which could also be marketed as an accompanying machine for The Game.

When it comes down to the gritty-gritty of marketing The Game-related becomes differentiated, while preparations about its future are more forthcoming.

Versatile is talking to that Prime-Miramax Transmax connection which is getting involved in everything from the modest ITV games machine to games set away in the boxes Prime sends to customers mailing the Club's baby mail-order.

But it isn't clear whether they are trying to get the right to use a television channel that West owns. In his story for games players at £1,000, or just access to the Private-based Miramax. Whatever comes of this bargaining is sure to be a bit spicy.

As the prime-directive, Versatile would be handling the sale

of software. But as a creative ally, it would also be looking to realise the potential of that technology which makes The Game special for television.

Potential

Consider what Leaving hat is say about that potential: "I see the TV as just another form of screen to a screen, with the potential for being anything someone's living rooms. One day there will be an enormous volume of there are now TV in the living rooms, so we have got to start thinking about how they might work together. This could be live, interactive television," he said.

In principle Miramax 800 could have vehicle to link people who have the more popular views into the TV studio "line" using just an interactive modem and the telephone Post-telecommunication.

This basic network could accommodate up to a hundred simultaneous players of The Game. But one thinks that this hides an unwelcome fact that they had to try all kinds of open of viewers' "live" response to programmes or advertising is under consideration; many being able to tell politicians when to get off or after the ending of Simoncast Street?

But of course this kind of two-way link would never be on the same scale as former Cable TV bandwidth due to start during 1985—unless the broadcast TV companies invest a great deal more in digital technology, studio equipment and the large controlling computer systems like Quantel.

Interactive

Before they can begin to think about doing that they will need some indication of how the audience, more now they look like getting that chance with The Game.

"We are thinking very, very hard about the possibility for interactive television, having made this technical breakthrough," was about the only comment producer John Meade had to make.

When the ITV companies finally agree to access The Game, if the antenna it will probably replace that could emit about 10.5". Dumbly said all. More important it will be a major boost for the home computer market and is destined to become a prime-time advertising slot for free early on Sunday evening.

Which ever wins The Game is eventually played on, the sponsors could be looking at their kind of perpendicular sales growth that would double after its link to television. And that's all there isn't just mean advertisement anymore... The Game might not even be necessary good for you.

A DVENTURE

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Paul
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novel

narrated
and
the
plot
of
the
book

you start out with a suggestion and start in the complications as they occur to you. Once you've written two-act plays, for example, there's nothing to stop you shifting another in between.

"Have a nice day"

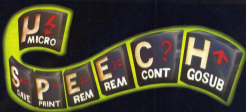
Adventure is ideal in of course and you certainly have to step and run through it. The plot of lines and things you have to step through a bit of course, but that's only one of a few other directions. A system on the fact that you can't change some of the basic bits. It's always the other things "I avoid your instructions," for example, and the sign-off line is invariably a silly reminder "Have a nice day." But there are problems.

Put a bit of work into The Quest and you can write a game or story and stick away on the market. And if you want to sell one you've written, well, the Quest also offers you a way that you give his system a standard introduction.

And now all the books have been taken out of the reading, maybe some more will go into reading these types of entertainment, the other reads, maybe it's goodbye to that bloody golden.



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 BOMB..... 30 Minutes (Panic, Shark Attack, Colour Dash..... MARTIAN..... Blast'em..... MOOSE..... Las Vegas..... CRYSTAL..... The Island
 BIRTH OF PAIN..... Mysterious Adventures (Part 1-10)..... LYNX..... Lunar Rescue..... SM TANKS..... Grand Prix Drive..... COOL..... Three Bears
 APOCALYPTIC..... Multiverse Wars..... PEG..... Snake Alley..... MR MICRO..... Crazy Golf..... Penalty..... Katakana..... SATURDAY..... Market

Some of these games will be available in the near future

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MY DREAM

What would you buy if you could buy what you want — money no object? We asked a panel of experts to unleash their imaginations — and their greed.



Pete ("The Hat") Neale (with Peter Nelson) of Salamander Software.

"Given as much money as I wanted I'd like a system large and powerful enough to run the biggest Dungeons & Dragons campaign in the world!

First, the CPU. This would have to be extremely fast to be able to cope with the large number of people participating in the game. This CPU would be something like the one Josephson or Junction, super-cooled for speed, using lasers for all I/O. This would need to be at least one of these for every country, linked worldwide by several satellites, a possibility only if aq. Attached to each CPU would be at least 1 gbyte of hard disk storage.

"At the rear end of

things there would be an intelligent colour graphics terminal along the lines of the BBC microcomputer. Attached to this would be a laser printer and laser disc. The majority of communications with the computer would be spoken so a speech-recog voice-recog system would be included, with a large vocabulary than most people's and the ability to check syntax and correct grammar. (Why not be fun and misanthropic at the same time?) Output from the computer would be mostly by a speech-synthesis module, allowing for inter-plot arguments, and thence sound effects through a Headphone (and, of course, optional rings).

Software is very important. Aside from all the general driving software, a nice touch would be a Genius/People Personalizer generator which would tailor individual personalities on all the characters and non-player characters too.

The last and possibly most important thing would be a full-time team of crack programmers to keep the system up and running at all times. And, of course, enough change so that we could all live happily ever after.

Projected cost: Around £10 billion (not including cost of satellite launch vehicles or I/O).

Greed Rating: Degrating



Ian Weatherburn: Imagine Software programmer, Author Zip-Zap and Alchemisr for the Spectrum.

and a printer — the interface is already built into the OS, plus, of course, the better form of storage needed.

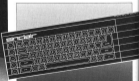
"The OS, is of course still a very new and unproved machine but I like the look of its graphics capabilities. Although it's being pushed as a business model there's a lot of talk about games for it. Some people have speculated on 'super' adventure games, utilizing the 128K memory. That remains to be seen. I think there'll be games equal to or better than the best of the Spectrum to start with and then they'll impose as people gain more experience.

Projected cost: £1,000.00

Greed Rating: Surprisingly low

"To my mind the OS's only drawback is the Micro-drive storage system but someone is bound to come up with 'proper' disk-drives for it so that won't worry me too much.

"With the basic OS, I'd like a good quality monitor



RIG

—
wash



Paul Wilson: computer journalist.

"We dream machines's a reality, the IBM Games Pavilion mini-arcade game. And the reason is... immediate addiction to their graphical games! Why was I lyrical about something which I could afford to buy for myself? Easy—because it's a conceptual leap forward over other micro games in almost every department. And because supporting it is a subtle bribe for yet more software for it."



"Wilson does what it does by concentrating on those three ingredients for which arcade games were designed: out-to-front stimulation, 'hooking in' power to draw you in, and absolute control of the action."

"It's down to the vector for VECTOR Resolution Extra! graphics screen, a powerful joystick controller and scaled output chips... and great 'at' imagination!"

"You can have your wizard too — I know that! Under bars, that's not really. I don't want more power, more memory — or even more colour."

"The man of modest means."

"Mr. Wilson owns a £2,000+ Wang Word-processor. — Ed."

Projected cost: £190.00
(with software)

Good Rating:
bunble to the point
of absurdity

Justin Whittaker: freelance programmer. Author: The Game Raiders for Atari Home Computers.

"Given unlimited cash I'd like the top of the Atari Home Computer range, the 14900125 with built-in dual disk drive, unfortunately not on sale without nearly £100 in software yet. So that I'd add a very high quality beam monitor and an Atari 1027 better quality printer."

"Graphical art very important in making games as being able to draw what I have done's Factor Robot and the 1000 line output printer, for working out designs and printing out screens."

"A speech synthesizer would come in very handy to debug my listings. I'd get the computer to read out the listing so that I can check it as I go along!"

"To make my work easier, I'd like a monitor so that I won't have to keep twisting up to see it's off-screen — it's just above my games, or a 5.25-inch disk drive would also be nice so that I need not buy another disk again."

"I'd settle, too, for a really responsive joystick. One called Lo-204 would be nice so moving pens. You just hold it, move your hand around the direction you wish to move, it's objects on-screen and mercury switches do the rest."

"Finally on the hobby side, like music software I'd like a synthesizer to my big idea, for good music, it multi-track, multi-note, which I can play around with in my computers."

"I think that's all me for now."

Projected cost: £3,000+

Good Rating:
considerable



Continued on next page

MY DREAM RIG



Tony Tyler: Editor, *Big K*

I suppose it's indicative that when I started up with — after it moved out of school — my first computer was — more almost exclusively divided between personal use and professional use and professional use.

For the latter there's really no alternative to a Notebook Computer (recalled as the Tandem ACC 8200) type. Computer hacks have lately taken to attending launches, trade fairs, and with these latest gadgets, react almost under the arm — like a feline mauler — with his inevitable AAAs.

I figure there's little good programming than I do playing games, so the overall requirement is for a portable equivalent, then again I do spend quite a bit of time playing games, mostly adventures, so I also need some reasonable computing

ability plus commensally some without that there's not likely to be many alternatives and games for me to play.

It's the latter that rules out the ACT Apicot, obvious choice as it is in many other ways. So I think it has to be the Apple II with an 80-column card and a base of several disk drives. And an excellent spreadsheet printer and a modicum of extra video for the times when somebody else I know gets one. And a colour plotter so that I can arrange screen dumps of all these graphic masterpieces. I know I'll never want it.

Projected cost: £3,500.00

Good Rating: excellent



Richard Burton: computer innocent.

"When we're talking about my dream rig we're talking about how to do it right, I speak of a computer that is yet to come to Britain — the Apple Macintosh."

"When I clipped applications onto this, it's basically then what I, Jack! Everything — monitor, processor, disk drive — comes packed in one neat plastic box. Add the dot-matrix printer — another neat box, a beautiful mouse and a cute little mouse and there was all I wanted. Even the software, word processor, graphics designer, spreadsheet, was bundled in and ready

Andy Green: freelance programmer and journalist, *Author Ultra Zone (Tansoft) and Three (Virgin) for Olio-1*



"As a machine code programmer I'd base my dream rig around the 6800 micro. It's a blindingly fast and has plenty of interfaces with which to communicate with other micros. Add the Bees would be high-resolution monitor (for colour graphics and 80-column text) and on top of that a non-expandable laser video disc for storage, with a couple of gigabytes per LP sized disc (also ready to access a program when you've got a million megabytes to play with).

"Stepping out of the back of the 6800 would be a 7230 controlled 40-pin 16-bit Engine, A 1024 x 1024 pixel screen in 256 colours, with hardware zoom and pan controlled by an Apple graphics tablet. This would be interfaced through the Port23 and have custom software to run it and would be dealer producing new game shaped and badge cards.

"With the Bees I could be mega-speed assembler, writing the code for a 68000 system is as easy as pie. A 280 and 16000 second processor (this is a dream, right?) would have other cross-assemblers for all the popular CPUs.

"I'd use a battery-powered, hand-held, Motorola with 64K of low power CMOS RAM and a microfloppy drive as a portable 'notepad', the contents of which can be downloaded into the 6800 when I get home, or even through a built-in acoustic modem down the phone lines if I'm away.

"All this stuff is either available right now or could be built from parts available now. The catch is... the bill. Dream and!"

Projected cost: £5,000.00

Good Rating: substantial

to go. It just looked so good.

"I'm sorry, but I mean of those people that can be seduced by a nice piece of design work. A machine can be as slow as a snail or faster than a jet. It requires membership of MIBWA to comprehend, but if the design is aesthetically pleasing — it's for real."

"As if I needed to be told any further, when I actually got my hands on a Macintosh the romance dissolved. I bought the thing up and running, doing word processing, graphic work and printing out the results within 20 minutes, without even seeing an instruction manual. The mouse controller combined with on-screen ap-

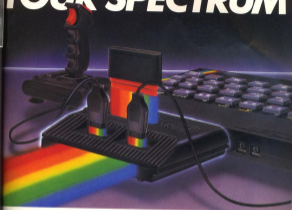
plets made the whole machine just get "user-friendly". Apple have even thoughtfully provided a handy tagline which the Mac will print.

"Okay, it's not a games machine, I'll take a Spectrum and a Commodore to fulfil those needs. Finally, to justify my dream rig, I'll have the best modem money can buy, access codes to all the world's largest databases and unlimited free use of British Telecom's international service."

Projected cost: £3,000.00

Good Rating: reasonable

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```

3412000=6677F LDRD#04469D CLEAR 7MFC0
3467F 7MFC0447 LDRD#1448D BUCK=8B
1800F0=8103E7E7C7E=88D1 CDP7YX1 TRD
LF 8E1E LDRD#00E8E7AF3C=LDFR04 BL LDR1E
7A0 YR786(LR7E) P178C7868EFC5+4 JNCR7E L
RCA74=8E0FD44 TRD#1E LDR#70C8P472 BRDCL
RCA671=C8P472 BRDCL RDRM448E8E(8E0FD0E) CL1
VAT8) 2=8E0
20F0E7FV8[NT *Now assembling.* P04
SFP=88888
4B1XFP0=45:
207LE0= [SAPPL,=
433808 108 F 108,40,7) [R94=^ *780E L0
780C 8E7F184,13^0=^ 8E8 C7E04 TRD040
V7) 30T040
884=8 108TR 04E,3) [P1NTTR 0,2=007]
3) * Pass "1" 780041+1) 8E04=7'000 [ "L
030 -044= " 8E0E" 05+48000 P400=1000 00T
02
P0P5NTTR 028,3) *00 [7C0=6TR8P5NTT
8E10,1=0407] *Now ending* 7878=1,0 P00204
78714X01 V084 7870C 0P04E200, 7870C 7C01
V001 7874=0E 7878=88E L9=PC CALL TRD1780
T040
0000T040
11[7Y0=6TR8V04=00T030
12P5NTTR 02,12) *Done* 8E0

```

FIG. 2

need concern us, the "HELP" assembler service and the unrecognized * command seems

Typing "HELP" will result in ROM's courtesy in your machine (with the exception of BASIC) so we'll want our new ROM to support it.

Whenever you type a command, the OS searches through its own little dictionary of * commands it knows, eg "HELP", "TAPE", "X", if the command isn't found it doesn't give up yet -- it asks the paged ROMs if they know the unrecognized command. Each ROM should respond to you in its own * command; for example Whypipe can be asked from BASIC by typing "WHPYPIPE". This wasn't understood by the OS, so it asked the paged ROMs if they knew that command, the Whypipe ROM recognized it and hence selected "itself" as the current language.

Service

The OS continues with the service routine with the AR and continues. I realize that the Accumulator always contains the Service Page that is being requested. A zero indicates that another ROM has already answered the service call, and the OS is just going through the rest of the ROMs as a matter of course. An 804 indicates an unrecognized * command has been made, and that the command serve could be (BF 2) 3.

An 809 means the user has just typed "HELP" and you should announce "service". The rest of the line after the "HELP" is printed to by BF 2) 1, enabling the ROM to answer

specific queries. For example, typing "HELP UTILS" with the OPS ROM will tell you all about the OPS utilities. A "HELP <Name>" means the ROM should respond with its name only.

The X register contains the ROM number that the OS is currently looking at, from 0 to 15. The contents of the X and Y registers should be preserved.

Routing

You should exit from a service routine using a RTS instruction with the accumulator set to zero if the service was performed by this ROM and shouldn't be offered to any others. If, as in the "HELP" instruction, the service was performed but should be offered to the rest of the paged ROMs as well, or the service wasn't performed at all, the accumulator should be preserved at the value which it entered the routine.

An example ROM idents its section and service routine is given in Fig. 1.

Sideways ROMs can also be used in the ROM filing system mode. Yes, the ROM filing system! You can reference by using "ROM file" "TAPE", "DISK" and it works rather like the tape filing system, only you obviously can't save anything to ROM.

Speech

BBC owners who add a speech synth to their micro also finally get to use the mysterious, modest "talk" on the left-hand side of the keyboard. This is for use with "talk" ROMs which also

work on the ROM filing system but aren't accessed the same way as sideways ROMs. Serial ROMs should be available shortly -- that's an Acorn shorty -- a new word for you -- containing extra word sets for the speech system which badly needs it, as well as games and the like from Acorn.

More data can be found on serial ROM protocols in the excellent *Advanced Users Guide* and Acorn do one of their great applications Notes on the subject.

Millions

Before you rush off to look up the data and manufacture serial ROMs in millions, remember that only people with the speech synth can use the serial ROM capability, which isn't many. This rule applies for the relevance of Acorn's serial ROM software (in any market) to the present and efficient service they are justly renowned for. The rest of the story is done by ROM software in-house ways format for now.

When developing your software to run on a sideways ROM it is more than a little wise to plug in a sideways RAM as this every time you make an alteration you don't have to blow a new EPROM.

An 88, wide 5204 RAM chip is compatible to a 2704 EPROM and can be plugged into some sideways ROM expanders (some notably-Warlock/Electronics board and the 3rd Version 2 board. You can't just plug it into a normal sideways socket.

Sideways

The program in Fig. 2 works like the 'A' programs in *Good Year Code* (last month), assembling source files one by one -- only instead of sending the machine code to another micro it saves it on disc, this program looks if instead in a sideways RAM chip. The socket number that the chip is in should be set into the variable S0CK.

Note that the BBC will only talk to ROMs that were in the machine at the time BREAK, so you may have to hit break before the BBC will recognise that your ROM ROM exists.

Now, eh?

SUPPLIERS

For hi-tech prices on this or any other subject, should write:

BARRY GREEN
 BBC/Micro SCPS,
 IPC, King's Reach, Taver-
 ham, Dorset, BH1 5LE.

PROGRAM: MINE GOLD

```
0 REM ADAPTED FROM VIC BY H. COLE
10 G=36875:FOR J=1 TO G:G=POKE J,0
20 PRINT "CLEAN, SEARCH THE SA! THERE'S
MINE HERE" GOTO 100:GOTO DUMMY 3"
30 FOR J=1 TO 200:NEXT
40 REM J=2 TO 200:NEXT
50 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
60 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
70 FOR J=1 TO 200:GOTO 100:GOTO D=50
80 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
90 FOR J=1 TO 200:GOTO 100:GOTO D=50
100 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
110 IF D=0 THEN GOTO 100:GOTO D=50
120 IF D=0 THEN GOTO 100:GOTO D=50
130 IF D=0 THEN GOTO 100:GOTO D=50
140 IF D=0 THEN GOTO 100:GOTO D=50
150 IF D=0 THEN GOTO 100:GOTO D=50
160 IF D=0 THEN GOTO 100:GOTO D=50
170 IF D=0 THEN GOTO 100:GOTO D=50
180 IF D=0 THEN GOTO 100:GOTO D=50
190 IF D=0 THEN GOTO 100:GOTO D=50
200 IF D=0 THEN GOTO 100:GOTO D=50
```

```
210 FOR J=1 TO 200:GOTO 100:GOTO D=50
220 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
230 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
240 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
250 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
260 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
270 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
280 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
290 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
300 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
310 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
320 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
330 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
340 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
350 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
360 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
370 PRINT "DIVERSIBLE DIVERS" GOTO 100:
FOR D=0FF1 D=50
IF D=0 THEN GOTO 100:GOTO D=50
```



Water

FOR VIC 20
by H. Cole

You don't have to be a member of a swish, pricey gold club — not that you'd want to — in order to brandish a nitpick (or whatever they're called) with aplomb (or whatever it is). Just type in the prog, dust off your ball — and, tee off!



```

300 IF P=1 THEN 610
310 P=1+2,2000 IF P=100 THEN 490
400 IF P=127 THEN 2000:GOTO 630
410 IF COS(1)+=0 OR Y=0 THEN 630
420 B=-S/GOTO 620
430 IF COS(1)+=0 OR Y=0.5 THEN 630
440 B=-S/GOTO 620
450 IF SIN(1)+=0 OR X=0.5 THEN 630
460 B=1+S/GOTO 620
470 IF SIN(1)+=0 OR X=0.5 THEN 630
480 B=1+S/GOTO 620
490 B=S+RND*(1)/5-0.2:G=1-14
500 GOTO 620
510 IF COS(1)+=0 AND SIN(1)+=1 GOTO 620
520 GOTO 560
530 IF SIN(1)+=2 AND COS(1)+=2 GOTO 630
540 GOTO 560
550 IF COS(1)+=2 AND SIN(1)+=2 GOTO 630
560 B=2-S/GOTO 620
570 IF SIN(1)+=2 AND COS(1)+=2 GOTO 6
30
580 B=3+2-S/GOTO 620
590 IF P=5 THEN 630
600 OR P=76 GOTO 560,580
610 P=0:G=140:J=3:B=S+RND*(1)/5
-718:IF J=4 THEN G=2
620 P=0:G=235:J=2
630 P=0:G=5:R=0:R=0:R=0:P=4
+RND*(1)+=0:R=0:P=0:G=0:G=0:G=0
+P J=1 THEN 720
640 J=2-S/R/5:G=1:R=4:RND*(1)
+R=1:RND*(1)
650 R=2*(1)+S/RND*(1)+P=2:G=22:R=4
+RND*(1)+R=1:G=2:G=1:1+2:RND*(1)

```

```

(1)=111
660 IF P=0 AND R=0 THEN 680
670 IF R=10 THEN Y=1-S/GOTO 660
680 IF R=1 THEN Y=1-S/GOTO 660
690 IF R=22 THEN X=1-S/GOTO 660
700 IF R=1 THEN X=1-S/GOTO 660
710 IF P=10 THEN P=RND*(1)
720 GOTO 560
730 IF S=2 THEN 770
740 IF S=4 THEN PRINT"DRIVE"
YOU ARE IN DANGER!IF LEFT
750 IF S=2 THEN PRINT"DRIVE"
WATER - 1 STROKE!P=1+S+1+S=C+1
18+S/GOTO 640
760 GOTO 560
770 FOR J=0 TO 10:FOR I=0:PRINT"ACC+J"
IFOR I=1 TO 100:PRINT"NEXT"
780 IF P=0:G=1+57 THEN PRINT"CHARGE"
GAME OVER"END
790 C=0:GOTO 50
800 B=1:IF C=1 THEN G=0
810 B=1:IF C=1 THEN G=0
820 PRINT TAB(10) "SPD:0"CL:0"
RETURN
830 B=1:FOR J=1 TO 6
840 GET P:IF P=0 THEN G=0
850 IF VAL(P)+=0 AND P<100 AND P<100
THEN G=0
860 P=P+P:PRINT P:GOTO 820
870 IF AND(P)<100 THEN 900
880 IF J=1 THEN G=0
890 PRINT "LEFT:1"LEFT:"G=1+2
+P+LEFT+P+LEFT+P+1-GOTO 900
900 IF AND(P)<10 THEN 940
910 PRINT "G=1"
920 NEXT:PRINT"":VAL(P)+RND*(1)

```

That Bunker!



GOAD YOUR CODE...

PART TWO

... the 6502 Way. In the second part of ANDY GREEN's series, he shows you how to adapt BBC code for ORIC.

IN LAST month's "Goat Your Code" we set up the A-assembly control programs for the BBC, and examined how to use the assembly system. This month we'll see how to connect up your BBC to an Oric-1 or Atmos, and make a start on the example game. For reasons of space it's been decided to stop the Commodore 64 as a target machine and instead concentrate on the BBC itself and the Oric/Atmos as a "target" target machine.

The best way to transfer data between two computers is to use a parallel interface. This is a usual technique faster than an RS232 link and almost every micro has a parallel interface of one sort or another while very few include RS232 as standard.

For the Oric or Atmos, then you'll need two 20-way IDC (Insulation Displacement Connector) sockets and a strip socket. Connect up one socket to one end of the ribbon cable, separating heavily with plenty of space up the back of the ribbon cable. Note the little arrow which points to one end of the socket, and make sure that the red stripe on the ribbon cable goes to that pin. The other terminal that goes to the BBC's user port on the underside of the machine. Now take the other end and slide it up as in figure 1, fitting it into the other IDC socket as shown in figure 2.

Bumps

The second socket goes to the Printer port on the Oric. Note that IDC sockets have little bumps on one side, so you can only insert them one way.

Since the first article was written I found out a better method of getting the data into the Oric or Atmos, so you'll now use the program in Figure 3 as the A- program

instead of the program in the first article if you are not using the BBC as the target machine.

Okay, a quick overview of what needs to happen to get your program running on the Oric. At the start of a session you load in a special downloader program into the Oric off cassette (details follow) that enables the Oric to receive data from the parallel link we just built.

Whirring

Start up the A- program on the BBC by pressing F9 then F2. The disc drive should start whirring as the A- program loads up each source file and assembles it. After the disc drive starts up, press DEL-89700-Program on the Oric to execute the downloader program.

As the BBC assembles each source file on the second pass it sends the object code down the lead we just built into the Oric, where the downloader program accepts each byte and stores it in the correct location. When it's finished, both the BBC and the Oric return to their bases. You can now use the CALL statement on the Oric to execute the code you've just downloaded from the BBC. It's quite speed feeling to see your first program — after the usual BBC — working on the Oric!

The downloader, written in machine code, is created by typing in the program in Figure 4 on the Oric. As you can see from the listing, the code that this program enters in starts at 89700 and goes on to 89769. After running the program, C S A V E "D", A99700,89769 to make a copy of the downloader to tape. From now on you'll only have to CLDAD the downloader from tape and CALL 89700 to use it.



FIG. 1. Cutting pattern for ORIC end of ribbon cable

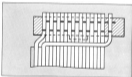


FIG. 2. Fitting position for ORIC end of ribbon cable

If you are writing for the BBC, then you won't have to worry about such hassles as special cables — the object code is stored on disc as it's assembled on the second pass, and all loaded in and executed when you hit H.

Right! Now the assembly system has been set up, let's think about games in general.

Knowhow

FOR THE last five years, almost all major new transistor computer games have been set by the arcade machine manufacturers, the coin-up companies. Let's face it... most of the games available for home computers have been nothing but pallid imitations of the arcade originals. From Space Invaders to Donkey Kong, the coin-up people made it first.

Recently several software houses (notably Ultimate and Imagine) have brought out 'original' programs, but even some of these take more than a little time to write to their arcade siblings. (4 weeks, Square?)

Some people see the home computer 'arcade style' game market doing very soon. They do think a game — to a limited degree. People will not quickly tire of buying awful (basic) programs packaged in pop art, but I suspect that there will always be a niche market for the new, good, fast and slickly balanced arcade-type game... a very large niche.

With more memory and faster processors available each year, games are going to become more and more complicated and much more interesting.

PART TWO

part
WS
R.C.

AGF

PROGRAMMABLE JOYSTICK INTERFACE

MICRODRIVE
COMPATIBLE



Works with QUICKSHOT II & TRACKBALL or ZX81

Designed at the very first, Hardware Programmable Joystick Interface this product offers all the features associated with such a device.

You can use any Atari-compatible joystick controlled with the software for your Spectrum or ZX81, not just those with a joystick option.

Movement of the joystick is recognized by the computer exactly the same as pressing the appropriate control keys and can therefore give the most immediate response by the joystick. The hardware programmed design marks out all possible keyboard-like keys, both BASIC and Machine code.

Eight directional movement, with or without the fire button being pressed, can be achieved by just programming the left, right, up, down and fire line required by the game.

Programming is achieved by a 200-digit code, which is loaded up on the Programming Chart supplied, for both joystick and being holes. These two methods are then utilised on a pair of leads which are clipped onto appropriately numbered strips of the interface.

Once configured this can be hooked onto a Quick Reference Programming Card for coding with the game. In programming a fire power depends on the interface can be immediately used when the fire button is.

The joystick remains fully functional and can be used simultaneously with the joystick.

An integral new expansion connector means that it can be used to enhance the interface to connect other peripherals.

MS. A recent design improvement now means that the AGF Programmable Joystick Interface will fit on Quickshot II and Trackball.

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	PACK(S) QUICK REFERENCE CARDS	1.00	
ZX81 <input type="checkbox"/> ZX SPECTRUM <input type="checkbox"/> Please tick		FINAL TOTAL	
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MAJOR-GENERAL Sir Jeremy Moore, GBE MC and Bar, was the Royal Marines amphibious and winter warfare specialist chosen to command the UK Land Forces in the 1982 campaign to retake the Falkland Islands from Argentina. That campaign was hailed as a brilliant and humanitarian use of force in pursuit of a legitimate political objective, and General Moore himself was widely seen as one of its major architects — though, as he is the first to point out, he was accused in the representation of the Falkland Islands "by a number of misanthropic people", the squaddies and sailors for whom he clearly has the most enormous respect.

It was therefore with some understandable hesitation that we approached him with the idea of asking him to visit BIG K's office and play — and then review — a fine representative computer war game. To our delight he readily agreed, and as a result spent a February afternoon and evening taking us — and, frankly, let it be said — the state of the Liverpool ad (see here).

The games we chose to show him were *Legionnaire* (Naxos Hill), *Stonkers* (Imagined), *Eastern Front* (Atari), and *Battle of Normandy* (Strategic Simulations) and ROM, two cassettes, and a disc. (We were also planning to show *Computer War and Combatation*, but the former went astray in the post and the latter, by Lethbridge, unfortunately failed to load, despite having run perfectly the previous night. Also, etc.)

General Moore tore into each game with a vigor that — we suspect — was not wholly martial. (We think he enjoyed himself.) You can read his comments on each game, as well as one or two other related matters, elsewhere on these pages.

BIG K CALLS IN THE EXPERTS.

General Sir Jeremy Moore, Falklands victor, reviews some electronic *kriegs*piels... **IT'S**



(Naxos Hill)

Roman Army grid-system tactical game designed by Chris Crawford. Up to ten legions of varying qualities are matched, in combat Gaul, against twice the number of barbarians, whose consistency or otherwise can also be specified. General Moore teamed with three legions against us, stood off, then fought ground, a well-earned result, then dissolved and annihilated in detail the remaining hapless Armines. It was No Contest.

"Obviously a very good game and I think enjoyed more than most. The ability to see how the enemy is doing is a great help in real war, and studies the enemy's strengths at some considerable length. Another feature was that clearly one's own troops don't attack them — in some cases I had two or more of my units moving on to the same spot and squaring with no trouble. Which — really — doesn't always happen in real life."

"This deals with the question of war itself. The author, I think, isn't qualified to express an opinion, but I enjoyed very good indeed."

ON THE ETHICS OF IT ALL

"I'm certainly not in favour of glorifying war, because the last thing war is is glorious. It's sordid and unpleasant. And any game that didn't have itself round the possible that war is both morally wrong and generally undesirable would itself be wrong. Nevertheless, wars do occasionally have to be fought from time to time."

"I don't think any sort of game makes war respectable. As long as it is seen as a game."



IN
S...

ector.

T'S MAGNIFICENT...
BUT IT'S NOT WAR

STONKERS (Imagine)

For a really successful adaptation of the large-format strategic videogame onto one half of a Spectrum screen. Relatively shallow in content, it nonetheless is visually excellent (for a Spectrum) offering a genuine zoom facility. And

ing is also available and operationally smooth. General Moore stalks patiently from the game table itself, whilst for some marvellously reassuring via a sort of flick-escape device, made here visible, needless. He thought his son might enjoy *Stonkers*.

"You say this is a letter and cheaper computer? Well, I'm sure it's a very possible but it's not really on the same class as the other ones shows me. The first 100% is REAL STONKERS FOR A MINUTE... comes up on the kitchen table, you'll find origin of this word 'Stonkers'? I don't like it would hold my attention for long enough though I'm sure my son would like it."



...the name of the game

EASTERN FRONT

Also a Crawford design — in fact it was chosen to illustrate two pages of a single issue — Eastern Front has the plotline of *Tigers in the Snow* — i.e. the 1941 German invasion of Russia, Operation Barbarossa.

Our guest rapidly gave involved in the edge-to-edge mechanics of this spectacular game. *Gothic* -like, he punched massive holes through the massed tanks of the Red Army and drove through the *Dnieper* plains towards Moscow. The sound and fury of the action were accompanied by fascinating commentary on the latest call event.



"That of course is a move on from the very large Roman Legion game we began with. Although you only begin the *Barbarians* level, it had more to become pretty complex, highest level. Let alone what it would have been on the in 20 minutes — you need quite a bit of time. Like a whole *Barbarians* !"

Heavier decisions making without the pressure of end — their voices on the telephone and in front. All for the reality of playing *Eastern Front* or any other videogame, it's a much more real than right-wing games — which I don't think anybody sees as being socially desirable. Even Chess!"

Continued on page 78

E

Only simple...
...ability to...
...being to a...
...are, but...
...it's there...
...made able...
...some re...
...to be...
...in some...
...of my...
...to stand...
...doesn't...
...are...
...in that...
...turned...
...to...
...but...
...it...



BATTLE FOR NORMANDY

(Strategic Simulation)



ON COMPUTER WAR GAMES

"As far as serious study goes, it seems to me that while computer games would be very useful to the professional who's got a technical — indeed, a computer — battle to fight, he can get a lot of value — say, in dealing with his mistakes — by reconstructing the combat on a computer. You can also usefully use computers to calculate logistics and supply. But the moment you start dealing with people ... there is no way a computer can represent a person."

Visually superb but extremely complicated two-sided D-Day simulation which gives you control of virtually every aspect of that game amphibious operations of war — and therefore of particular interest (we hope) to an amphibious warfare specialist.

The business was clearly very improved indeed with this state-of-the-art disc, unfortunately the accompanying documentation, while rich and varied in detail, was somewhat skimpy. It should be noted that you cannot save your progress at any time, so you have to start the game from the very beginning. As the title says, this is a two-sided game, so you can play as either the Allies or the Germans. The game is very complex and it's hard to see how you could not end up a few hours playing it. However, you should not be put off if you are not a military expert. The game is very well designed and it's a pity that it's not available on more than one computer. As the title says, this is a two-sided game, so you can play as either the Allies or the Germans. The game is very complex and it's hard to see how you could not end up a few hours playing it. However, you should not be put off if you are not a military expert.

"It games very complicated — but we've only been involved in it for a couple of hours and it's not yet hot yet. I think it would be a good idea to make a judgment. Some parts of it would I think be particularly interesting — the planning for D-Day, for example. Once it comes to the actual battle it doesn't become any less enjoyable but it still becomes less realistic."

There are really no other factors in *Battle for Normandy* that you would need a great deal of time just to learn how to play it.



PLOTTING TO SUCCEED

Many computer games depend entirely on good graphics for playability. In addition graphics pure and simple are emerging as the fastest developing form of computer art. In this first of an occasional tutorial series, **RICHARD TAYLOR** — designer of **CRL's EXB1 High Resolution** and, more recently, the Fifth games-writing extension to **Sinclair BASIC** — explains some routines both ancient and modern on the **SINCLAIR SPECTRUM**.

Want to know how to draw a 3D object on the Spec and then rotate it? Read on, Hackduff...

THE COMPUTER on which this article concentrates is the ZX Spectrum. Programs listed here are, except Listing 8, short and simple and lend themselves well to conversion to other machines. The rest will work equally well on both 128K and 48K machines.

Sinclair BASIC has a rather limited vocabulary of graphics commands — namely PRINT, PLOT, DRAW and CIRCLE. Lists are not helped by the relatively sluggish speed of Sinclair BASIC, which makes movement and animation difficult — and high impedance to visual to animate more than a couple of objects simultaneously.

The only real solution to this fundamental problem is to write programs in machine code for the sake of speed. Another possible alternative is to use a faster language, such as FORTRAN or PASCAL, or to use an extended version of BASIC that is specifically designed for real-time animation and movement.

Static

For three reasons I'll concentrate mainly on static displays rather than their animated counterparts. The four commands and the numerous mathematical and graphical functions of Sinclair BASIC represent about the minimal requirement to produce anything worthy of a machine like the Spectrum. A surprisingly small amount of

BASIC can often produce quite stunning displays.

Listing 1 illustrates this rather nicely. This six-line BASIC program produces a finely detailed regular pattern which looks quite attractive even without the use of colour. The basic of the program is the drawing of lines in OVER mode. As we will (initially) recall from chapter 17 of the BASIC manual, OVER alters the behaviour of the graphics commands, instead of just plotting a line point by plotting it in the colour specified in the point's coordinates. OVER changes this so that a pixel is set to the ink colour if it was previously the paper colour and the other way about.

Excellent

The use of OVER 1 can produce some quite excellent effects, especially if many lines are drawn in close proximity to one another.

Listing 2 produces a similar sort of pattern but it is circular, rather than the less inspiring rectangular shape. The pattern is created by the effects of lines radiating from the centre of the circle to its circumference at a one-degree spacing. 360 lines in all. The white area around the centre of the circle is caused by the numerous lines originating from the centre intersecting with one another to leave, in the main, just the white paper colour. The whitish areas around the



1
Melt
 10 FOR a=0 TO 200
 20 PLOT a,0:DRAW OVER
 1,233-2*a,170
 30 NEXT a
 40 PLOT 0,0: DRAW OVER
 1,233,170-2*a
 50 NEXT a

Circular Melt Pattern



2
 10 FOR a=0 TO 359
 20 LET angle=a/180*PI
 30 PLOT 120,0,0
 40 DRAW OVER 1,07*CDG
 angle,07*GIM angle
 50 NEXT a



Circles

3
 10 CIRCLE
 120,00,07* CIRCLE
 120,00,04
 20 FOR a=0 TO 359
 STEP 30
 30 PLOT 120,0,0
 07*a/180*PI
 1*07*CDG
 angle,07*GIM angle
 40 DRAW OVER
 1*07*CDG
 angle,07*GIM angle
 50 NEXT a

4 Rosette

10 PLOT 120,0,0
 FOR y=0 TO 360
 20 LET r=07*GIM
 (107+y/180*PI)
 30 DRAW 120+y*CDG
 (y/180*PI)-PI*07
 23*77,00+y*GIM
 (y/180*PI)-PI*07
 23*77
 40 NEXT y



edges of the circle is concealed by the gaps between the lines drawn from the center.

A useful advantage of DRAW is the ability to produce curved lines between two points. Listing 3 provides an example of this. You might notice a slight pause preceding the drawing of each curved line. This represents the time used by the computer while in a "number crunching" in order to work out what the line mathematically looks like, something the computer has to do before it can actually draw the line.

Rosette

Listing 4 produces a sort of rosette shape. The program's slowest speed is a result of the large amount of mathematics that has to be done to produce the shape, especially calculations involving SIN and COS which are not particularly quick executing functions at the best of times. Listing 5 produces a detailed spiral pattern. Again, the large usage of the SIN and COS functions slows down the program considerably.

In both listings 4 and 5 the expressions PI/4, 2*PI/7 and PI/8, 2*PI/70 are used. PI/8, 2*PI/7 simply returns the current x coordinate and PI/8, 2*PI/70 returns the current y coordinate. These x and y coordinates detail the point from which the DRAW command will draw a line. If you are converting the program

to another machine then you will have to replace these expressions with an equivalent.

The last listing is a program which enables you to draw regular polygons — shapes bounded by straight lines of equal length. When PI/8, the program will prompt you for the number of sides the polygon should have. Numbers greater than about 20 result in polygons with such short lines that the shape looks more like a circle than a polygon.

Listing 7 also constructs a polygon but this time each point at the end of a line is joined to every point attached to a line to produce a surprisingly detailed and intricate pattern. This pattern can be easily altered by having polygons with different numbers of sides. Be careful in your alterations however as polygons with less than about 8 sides result in simple and uninteresting patterns.

Full 3D

The final program, shown in listing 8, shows what is termed a "body of revolution" in full 3D perspective. This proceeds to rotate it through 360 degrees at a fast rate, using a memory eating animation technique. Unfortunately, this program will only work on the 486 version of the Spectrum. A body of revolution is any 2-dimensional

object which can be sliced vertically through its centre at any angle and will result in two identical slices. An example of a body of revolution is a bomb. This property, common to all bodies of revolution, greatly simplifies the drawing of the shape into the computer via the keyboard's animation routines. The algorithm used for constructing the object in 3D

Profile

When the program in listing 9 is executed it will draw a profile of the object by entering a sequence of x and y displacements. The y displacement must always be positive but the x displacement can be negative or positive. Basically, the numbers represent displacements (as used in the DRAW command) from the last point plotted. Initially at the bottom of the middle of the screen to the end of the line you wish to draw. Although the numbers are only really controlling the right hand side of the screen, a shape made in a mathematical drawing by the computer on the left hand side of the screen to help you get a better idea of what the object will look like. If you type 19 0, -40, 10, 8, 25, 50, 10, -84, 0, 200 in reply to the prompts then a suitable 3D object will be produced. In order to be sure that the object will always stay within the boundaries of the screen when drawn in 3D, the total width of the object must

not exceed 80 pixels and the height is limited to 80 pixels. In this way, you build up the outline of the object.

After you have typed 200 in reply to the request for the x displacement, the program switches you into the next stage. Your object is built up on the screen in full 3D perspective eight times. Each view is from a beam rotated very slightly compared to the previous construction. The program then proceeds to rotate the object at a quite fast and smooth rate, using a simple but very effective machine code routine. All the machine code does is to read 4K of screen data back onto the main screen at a very fast rate, making the change apparently instantaneous. There are eight such screens and each occupies 4K of memory, a full 32K is used for this purpose. This explains why the program will not run on the 16K machine.

Expanding

Computer graphics is a very wide subject that seems to be rapidly expanding. All the time all new uses for graphics are found and new techniques for producing them are discovered. The Spectrum is hardly in the computer graphics league table but, nevertheless, it is capable of some quite advanced and sophisticated work.

Next month: ATARI



5
Spiral

```
50 PLOT 130,80
FOR y=0 TO 5000
  STEP 2
  30 LET
  cos=50*(PI/1000)*y/2
  30 DRAW
  COS=+COS
  C=(130+50*cos) -PI/8
  23*PI,80+PI/2
  C=(130+50*cos) +PI/8
  23*PI,80+PI/2
  40 NEXT y
```



7

```
10 INPUT "Number of sides?" :a
20 IF a < 8 OR a > 2000
  a = 1000 :GOTO 40
30 DIM arr(a,2) :LET
  arr
40 FOR x=0 TO 300
  STEP 30*a/a
  50 LET
  #11=130+COS
  15*(200*a/a)*PI
  60 LET
  #12=20+50+50*
  15*(200*a/a)*PI
  70 LET #13=PI/2
  80 FOR #4=1 TO a
  90 FOR #5=1 TO a
  100 PLOT
  #11+PI/8,#12
  100 PLOT
  #11-PI/8,#12
  110=11-40,PI/8,PI/2
  1-PI/8,PI
  120 NEXT #5
  130 NEXT #4
```



6

Polygon

```
10 INPUT "Number of sides?" :a
20 FOR y=0 TO 30
  STEP 3180/360
  30 LET
  #1=20+50+50*
  15*(300*a/a)*PI
  40 LET
  #2=20+50+50*
  15*(300*a/a)*PI
  50 PLOT #1,PI/8
  50 PLOT #2,PI/2
  60 DRAW #1-PI/8,#2
```



8

X — Could Be Better
BC — Could Be Worse
XXX — Unsurpassable

THE RHINOQA WAS NEVER LIKE THIS...

Readers of the last issue! Your search for those 40-minute genre thrillers you know the locations where you go to the Zoltan mine on the distant planet of Zol 2. Amazingly there's a newer, more elaborate feature now played on the computer, and only a few rating boards to confirm its order to play your game. Of course the 40-minute format doesn't really describe the first time doesn't just another version on the old Planet game, but it certainly adds a sort of legs to the proceedings.

Each level of the mine consists of a number of portions linked by

ladders. The question robots are easy to control at first. They're too big and only patrol one of the platforms. But as you enter modules (or locally they've shaped the top half) they become decidedly more active. Sometimes reappearing, clambering up and down ladders and getting ready as you're stopped for the slightest time. As in the early with Pac-Man-style games, you're paired with a shield for a few more hours with which you can dig holes in the platform. Careful timing will send your

standing portions plummeting a lower level, or completely you can dig your own escape routes. Amusement is smooth if you're good and the action is pleasing considering the hours I can't find faulting that the thing would have become even more enjoyable had included a power option, too. Not though. — **B.B.**

**Game: MONSTER
 Machine: SPECTRUM
 Platform: SPECTRUM
 Price: \$24.95
 Rating: BC**



ROBOT HOT



SAM SPACE

IT'S MINE
 — MINE I
 SAY!

Robot Hero: Pac-Man in space.

The object of the game is to lay mines along the corridors of a robot factory, where the robot-like running robots and the "King Robot" has taken over the construction, not only on your floor but throughout the whole building. Once the total floor area has been mined, the King Robot will try to escape by leaving the construction and you must act on the control screen. This means that all robots are destroyed on the floor and that you can travel to the next.

Sounds easy? Well, you do have to keep up your energy levels by collecting power pills which enable travelling around the corridors, and different types of robots will either paralyze or kill you if contact is made and more of them appear as time goes on.

As often is the case, the simple game on the face and this game will give the admirable Flowingland give you plenty of entertainment.

Last original of recent SilverSoft releases is **Sam Space**, a Pac-Man-like King type game where you have to run up ladders and dig holes on the various levels to lay the mines. You then have to bang them on the head with your pistons to ensure that they fall to their death. If you leave them trapped for too long they will change colour, making it more difficult to destroy them.

From a programming point of view this is able to entertain. The action flows smoothly and the graphics are fine, and if you are not already possess a similar game then this is as good as the best available. However, it is rather late in the day to come out with this intervention unless you're how good. — **B.B.**

**Game: ROBOT HOT
 Machine: SPECTRUM
 Platform: SPECTRUM 48K
 Price: \$24.95
 Rating: BC**

**Game: SAM SPACE
 Machine: SPECTRUM
 Platform: SPECTRUM
 Price: \$24.95
 Rating: BC**

JUST WAIT TILL THE SUN SETS

Ever fancied yourself as a budding "Van Helsing"? Well if you have this outdoor blend of maze and action games you could well be interested. The idea (at least) is to enter the gloomy tower, despite the fact that (eyes, ears) and help yourself to his head-rotated lion. A piece of cake? Not so... The tower is all of five stories high and each level consists of one hundred rooms — all of which look the same. The whole thing is exceptionally confusing.

I have been warning buyers that I am, apart from floors, would bring seriously around the full game based only just trying to find the exit. Level One is supposed to be the easiest floor and consequently this one depends on how good you are at the navigation. The result is a quite tedious task that will test your navigation for the game. There's a HELP feature which enables you to consult a map and to examine yourself but even that proved of little use. The more I consulted the map,

the further I seemed to get from the exit. Perhaps I was walking backwards? Anyway, once past the first floor things begin to look up. There are dragons and magic spells to be found, as well as punishing vampire bats to avoid.

Having negotiated all five levels you will finally come face to face with the vampire lord. Only one of the computers you'll have collected will kill him — an obvious twist. The game features a SAVE routine which is admirable if you don't want to end up back control once the main events are, it's not specific, like at most adventure. Happy hunting! — **B.B.**

**Game: THE WOLF AND THE LAMB
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 Platform: SPECTRUM SOFTWARE
 Machine: SPECTRUM 48K
 Price: \$24.95
 Rating: BC**



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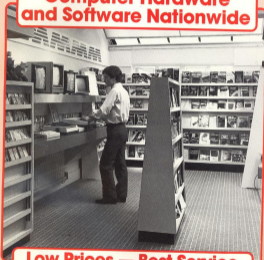
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MINIMUM BARRIERS



Screen 4

APPROACH



Screen 2

INTERCEPT MISSILE



Screen 3

ENTER



Screen 5

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PICTURE



Screen 6

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```
0 JBW34272:00000 9000
1 PRINT"CLEAN, YELLOW!"
5 F0R C1280,0:F0R C1001,0
10 F0R #44 BARRIAD #44
20 B0M 7041,7041,C144,C1115
30 F0R I=1 T0 44RRAD 8115,9115,0411
  INCR I
40 F0R I=0 T0 118RRAD 8115:INCR I
50 F0R I=1 T0 844078+744+C1RRAD
60 L=1001:CL=1601:R=400:R=0:0:0:0:0:0
  IY=24
70 LB=D100:2444,9444:0:0:0:0:0:0:0
  IY=1024
80 PRINT"CLEANED YOU WANT DISTRIBUTE?"
92 GET A$:IF A$="" THEN 92
95 IF LEFT$(A$,5)="" THEN 100
96 PRINT
97 G0T0 60000
100 PR0M=INPUT"BOBOWHAT A FANT,
  MEDIUM, OR SLOW GAME?":
110 A$=LEFT$(A$,2)
115 TL=40
120 IF A$="" THEN TL=1
180 IF A$="" THEN TL=20
200 G0T0 10000
220 T=ABS(-T1)
240 LB=D100:2100
260 LB=D100:7444:0:0:0:0:0:0:0
270 LB=D100:7444:0:0:0:0:0:0:0
300 R0M 0:0:0:0
301 LB=FEED:16000:IF B0=1 THEN A$=""
302 IF B0=25 THEN A$="4"
303 IF B0=14 THEN A$="4"
304 IF B0=26 THEN A$="4"
305 IF B0=25 THEN A$="2"
320 IF A$="" THEN A$="0" THEN 600
330 D=1601:0:0:0:0:0
350 IF INT(100-C0) THEN 600
370 LB=0
400 G0T0 7000
460 IF FEED:160:0:0 THEN C=0:V
750 F0R C4,CL:F0R C0=28,12
760 F0R A,C:0:0:0:0:0:0:0:0
800 G044:0:0:0:0:0:0
1000 T3=11
2000 G0T0 7100:0:0:0:0:0:0
2060 IF I=FEED:160:0:0:0:0:0:0:0:0
  B=0:0:0 THEN 1600
2080 T=INT(0.1:0:0:0:0:0:0:0:0:0)
2090 H=INT(1:0:0:0:0:0:0:0)
2110 G0T0 7100:0:0:0:0:0:0:0:0
2120 IF I=FEED:160:0:0:0:0:0:0:0:0
  90
2140 IF H=0 THEN H=0:0:0:0 1110
2200 G0T0 7000
2320 IF FEED:0:0:0:0 THEN 1600
2400 T=INT(0.1:0:0:0:0:0:0:0:0:0)
2420 H=INT(1:0:0:0:0:0:0:0)
2440 G0T0 7000
2470 IF FEED:0:0:0:0 THEN 1090
2480 IF H=0 THEN H=0:0:0:0 1460
2540 C=0
2600 IF FEED:0:0:0:0 THEN C=0:
2780 F0R C4,CL:F0R C0=28,15
2760 F0R A,C:0:0:0:0:0:0:0:0
2800 G044:0:0:0:0:0:0
2000 IF C12 THEN 5000
2020 IF T1-T2/TL THEN 2000
2040 B0T0 500
5000 PRINT"HOME,BOY!"
5005 IF C1V THEN 5200
5030 C0=C0+1
5040 PR0M="0 0"
5050 B0T0 5000
```



IT'DRMINE

by JONATHAN BULL



0000 IF DCL THEN S499
 0020 LGRHS41
 0040 PRINTR A ,1
 0050 GOUD S499
 0400 US+US+V,CS=CS+V
 0420 FORT A, 214
 0440 PRINTR D T 1
 0460 PRINTR " C R A S H E D !"
 0510 PRINTR
 (LEFT)23
 YOU "LGR HS41,=FCS
 0620 FOR 2+1 TO 10:GET PRINEXT
 0630 GET A4 OF PRINTR THEN S433
 0640 BDRS L50
 7000 2+US+V+US+DHS+DSD 0000
 7010 4+CS+V+V+D+CS+DSD 0000
 7020 2+CS+V+CS+DHS+DSD 0000
 7100 8+CS+CS+V+V+D+V+CS+D+CS
 DSD 0000
 7120 8+CS+CS+V+V+V+V+D+DHS+DSD 0000
 8000 8+D+D+D+D+D+D+D+D+D
 8010 IF DCL THEN S499
 8020 IF DCL THEN S499
 8030 IF YD THEN S499
 8040 IF YD THEN S499
 8050 R=D+D+D+V
 8100 RETURN
 9000 FOR 8200, 8300, 8400, 8500, 10
 PRINT "CLEAR": 10000 9100
 PRINT "DRAG, BOMB, BLACK":
 9010 R="WWW"
 9020 FOR R=1 TO LEN(R)
 1P#R-MID(R,M,1):IF PR#=""THEN P
 R#=""DRAG" DRAGFF"
 9030 8000 9100PRINT PRINEXE M
 9040 R#=""LEFT,UP,LEFT,UP,LEFT,UP
 LEFT,DOWN,LEFT,DOWN,LEFT,UP,LEFT,UP
 JDOWN,LEFT,DOWN,LEFT,UP,LEFT,UP
 DOWN,LEFT,UP,LEFT,DOWN,LEFT,UP
 JDOWN,LEFT,DOWN,LEFT,UP,LEFT,UP
 LEFT,UP,LEFT,UP,LEFT,UP,LEFT,UP,
 LEFT,UP
 9050 FOR R=1 TO LEN(R)
 1P#R-MID(R,M,1):IF PR#=""THEN P
 R#=""DRAG" DRAGFF"
 9060 8000 9100PRINT PRINEXE M
 9070 R#=""LEFT,UP,UP,LEFT,DOWN,LEFT,UP,
 DOWN,UP,LEFT,UP,LEFT,UP,LEFT,UP,
 LEFT,UP,LEFT,DOWN,LEFT,UP,
 DOWN,LEFT,DOWN,LEFT,UP,LEFT,
 DOWN,LEFT,UP,LEFT,UP,LEFT,UP,LEFT,
 UP,LEFT,UP
 9080 FOR R=1 TO LEN(R)
 1P#R-MID(R,M,1):IF PR#=""THEN P
 R#=""DRAG" DRAGFF"
 9090 8000 9100PRINT PRINEXE M
 9100 R#=""LEFT,LEFT,LEFT,LEFT,LEFT,UP
 LEFT,LEFT,DOWN,LEFT,DOWN,LEFT,
 LEFT,DOWN,DOWN,DOWN,DOWN
 9110 FOR R=1 TO LEN(R)
 1P#R-MID(R,M,1):IF PR#=""THEN P
 R#=""DRAG" DRAGFF"
 9120 8000 9100PRINT PRINEXE M
 9130 R#=""UP,LEFT,UP,LEFT,UP,LEFT,
 UP,LEFT,DOWN,LEFT,UP,LEFT,UP,
 LEFT,UP,LEFT,UP,LEFT,UP,LEFT,
 UP,LEFT,UP,LEFT,UP,LEFT,UP,
 DOWN,LEFT,UP
 9140 FOR R=1 TO LEN(R)
 1P#R-MID(R,M,1):IF PR#=""THEN P
 R#=""DRAG" DRAGFF"
 9150 8000 9100PRINT PRINEXE M
 9160 R#=""UP,WWWWWW"
 9170 FOR R=1 TO LEN(R)
 1P#R-MID(R,M,1):IF PR#=""THEN P

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