

December  
1984

AN ARGUS SPECIALIST PUBLICATION

# CGAMES COMPUTING

85p

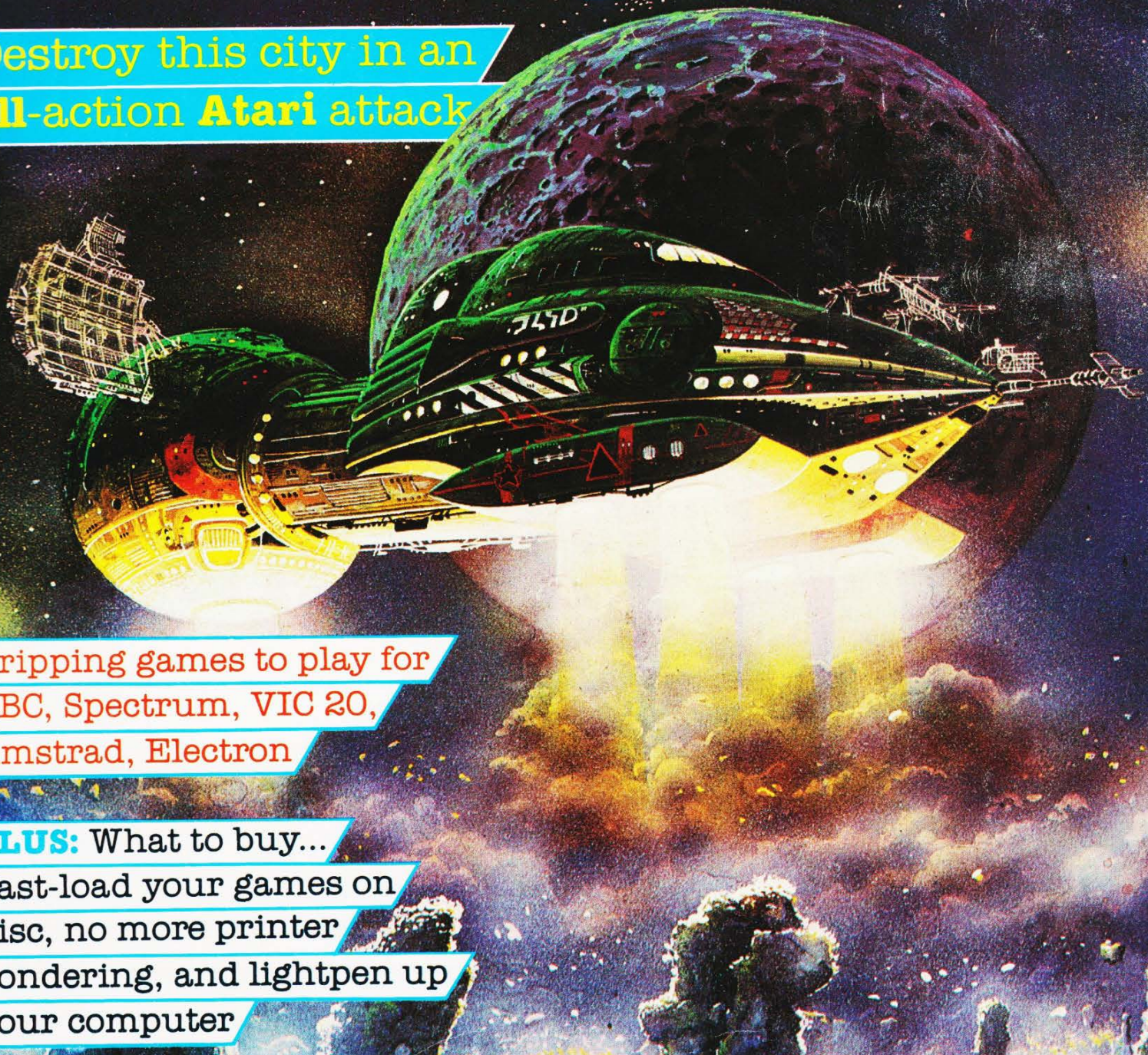
The magazine for those who take their computer and video games seriously

New games machine reviewed –  
**Commodore's Plus Four**

Destroy this city in an  
**all-action Atari** attack

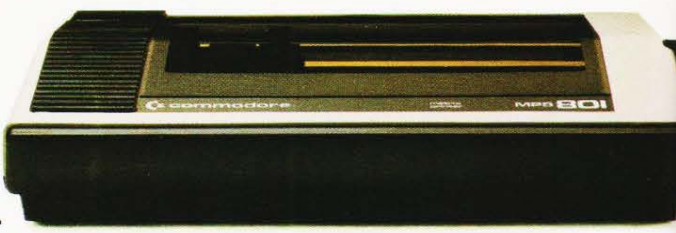
Gripping games to play for  
BBC, Spectrum, VIC 20,  
Amstrad, Electron

**PLUS:** What to buy...  
Fast-load your games on  
disc, no more printer  
pondering, and lightpen up  
your computer



# 3 printers,

A range of daisy wheel and dot matrix printers.



# cassette unit,

For program storage and

retrieval. For faster storage



# monitor,

Gives really superb reproduction and clarity.



# joysticks

They put the control

# a vast range of software

There's something for everyone and for all interests... thought-provoking, amusing, entertaining



# home,

leisure and practical interests...



# education

pre-school and beyond



# and

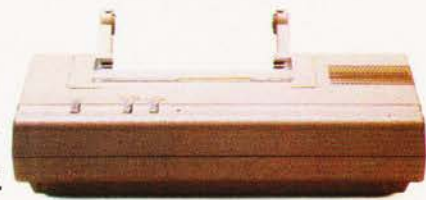
# a 64K

Plus excellent sprite graphics

About the only thing the Commodore 64 doesn't have

# printer plotter,

Plots graphs, draws bar and pie charts. Prints in four colours.



# single disk drive,

and retrieval of programs. Uses 5¼" diskettes, and has a very large 170K memory.

# keyboard, paddles,

games directly into your hands... they also improve both speed and accuracy.



# software

challenging, and exciting.



# (business,

To cover the essential office and business needs...

# educational,

created with the help and advice of specialists.



# games)

From shoot 'em up to strategy.

# memory.

amazing music synthesis capabilities.



# any serious competition.

THE COMMODORE 64 COSTS JUST £229 (OR LESS).

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COMMODORE 64  MONITOR  CASSETTE UNIT   
PRINTERS, PRINTER PLOTTER  DISK DRIVE  SOFTWARE

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64 GCO 1284



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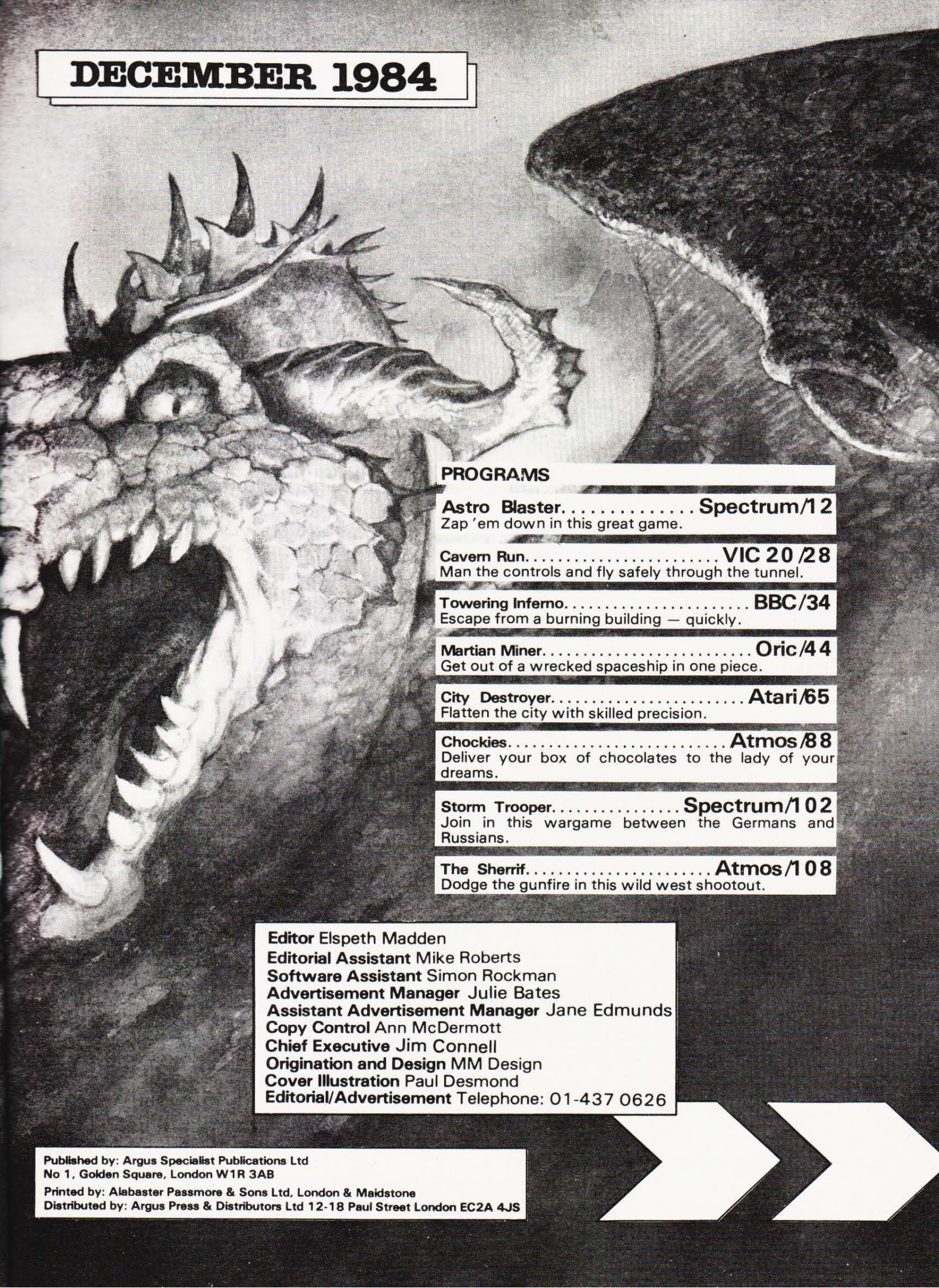
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**DECEMBER 1984**



**PROGRAMS**

**Astro Blaster**..... **Spectrum/12**  
Zap 'em down in this great game.

**Cavern Run**..... **VIC 20 /28**  
Man the controls and fly safely through the tunnel.

**Towering Inferno**..... **BBC/34**  
Escape from a burning building — quickly.

**Martian Miner**..... **Oric/44**  
Get out of a wrecked spaceship in one piece.

**City Destroyer**..... **Atari/65**  
Flatten the city with skilled precision.

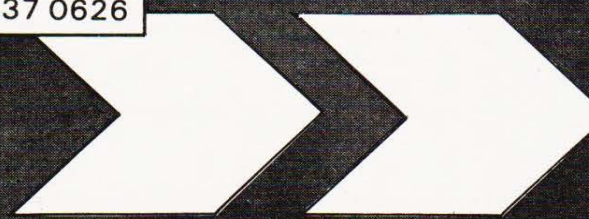
**Chockies**..... **Atmos/88**  
Deliver your box of chocolates to the lady of your dreams.

**Storm Trooper**..... **Spectrum/102**  
Join in this wargame between the Germans and Russians.

**The Sheriff**..... **Atmos/108**  
Dodge the gunfire in this wild west shootout.

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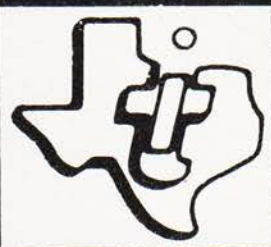
+ many more publications.

### 4 THE FUTURE IS HERE

The TI-99/4A is a well established and proven machine. Even so, it has long enjoyed features that other micros are still struggling to emulate, yet there is also room for new growth.

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LIST F1

SPACE TREK



news  
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news

## Ghost Busters come to Britain

Ghost Busters the smash hit American film makes its computer debut from Activision.

Activision are simultaneously releasing it for the Commodore 64, Sinclair Spectrum, Atari VCS and other leading games consoles and computers.

The film is about a team of parapsychologists (try saying that with your mouth full!) who set up a business in New York to combat paranormal occurrences.

The Game is a mixture of arcade, ac-

tion, and adventure with other odd bits thrown in and is based on events that happen in the film. The game is being written by top author David Crane who wrote Pitfall and Pitfall 2.

In America Ghost Busters broke all box office records and is fast becoming the cult film of 1984. It is set to do the same thing over here. Its success is mainly due to its family appeal, humorous nature, and rubber gloves! Music from Ghost Busters has done well in the pop charts, but this is only a taster for the real thing.

The game should be out in mid November, the film is on general release on December 7, certificate PG.

## Extended Warranties for Home Computers

The Micro Repair Club is a partnership between Thorn-EMI, Domestic and General insurance, and Communidata, to provide cover for computers after their guarantee has expired.

The new scheme costs £25 per year with reductions for continuations, more than one year, or schools. The Micro Repair Club say that any home computer made within the last seven years and costing less than about £500 is covered. It is not yet certain whether some of the older or more exotic ones are covered. The scheme covers only the main console, not any peripheral equipment, when it comes to machines

like the Amstrad, Adam, or C16 computers, which have the extras built in there is also some uncertainty.

Thorn-EMI, well known in the computing world for their manufacture of computers for other companies is doing the repair work. If Thorn-EMI cannot fix it, the original purchase price of the computer is refunded.

Domestic and General insurance are providing the financial backing for the venture. D & G have been in the insurance market for years, so there is little risk of your money disappearing into a back street specialist insurer.

Communidata are running the whole show and making sure everything runs smoothly.

Communidata are at Swan Court, Mansel Rd, Wimbeldon, London SW19 4AA.

*at your Service*

THE  
MICRO  
REPAIR  
CLUB

## Virgin Price Drop

The prices of 12 of Virgin's games have been dropped to £2.99. Falcon Patrol, one of 1983's best games, is included in the list. These prices will last until the end of November.

Also out is Virgin's new releases including the sequel to Falcon patrol — FPII. The game is similar in concept to Falcon Patrol and has you fighting off helicopters, flak batteries, and radar

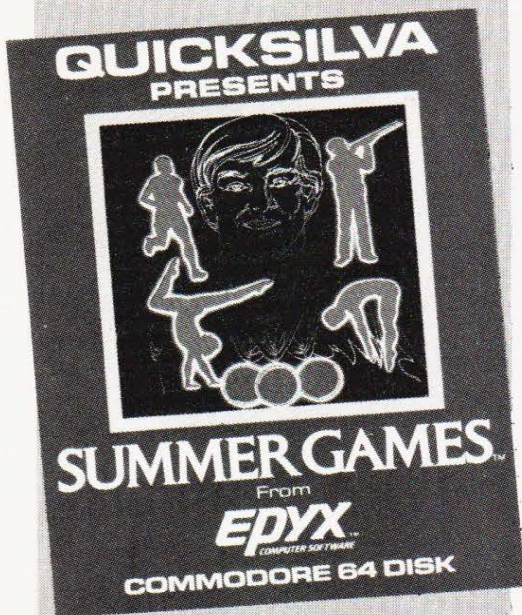
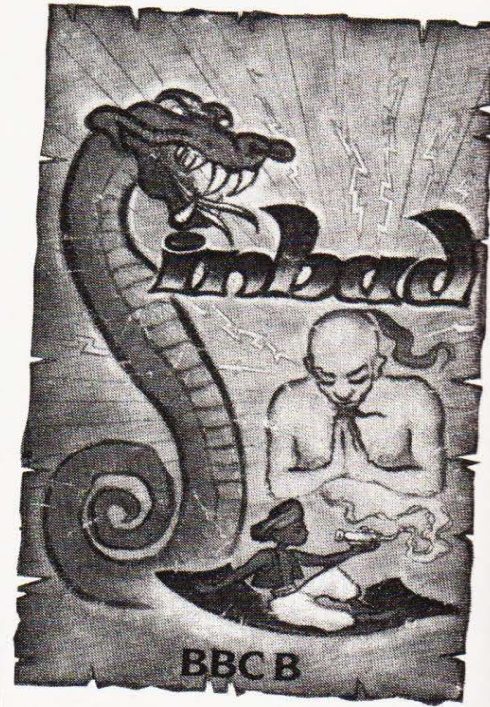
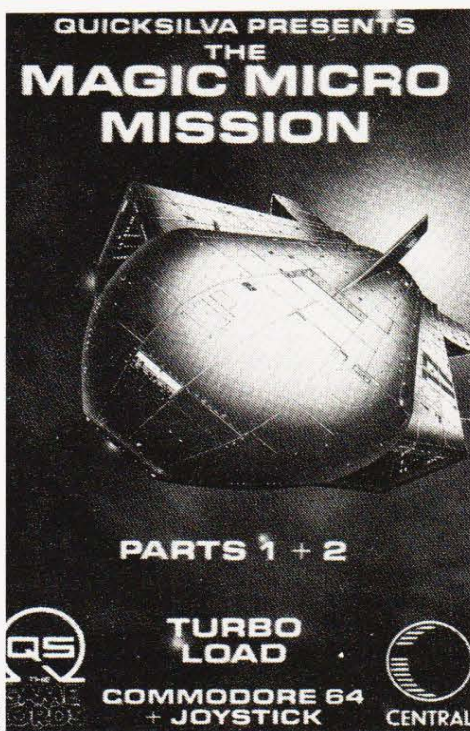
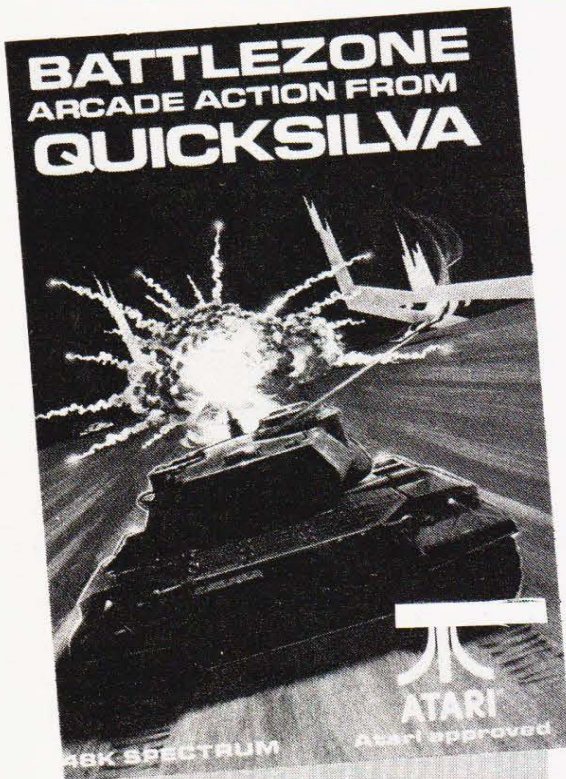
jammers. This is part of Virgin's new look and new strategy.

Up to now Virgin have released a larger number of titles for many machines, but Nick Alexander — Virgin Games' managing director — said "The shotgun approach will not work any more". So instead of the usual crate of new releases from Virgin landing on my desk there was a slim package of six titles for the 64, Spectrum, and BBC.

The new titles are FPII, Terrorist —

this game by Andromeda for the 64 features you as an anti-terrorist commander out to get the terrorists. Strangeloop — for the Spectrum, this game is a 240 room arcade/adventure/maze game. Sinbad for the BBC has you flying a carpet across Persia.

The Biz is, aptly, a game based on the record industry for the Spectrum. Lastly, Sorcery for the Commodore 64 has you in the dark ages playing through a 3D arcade adventure.



## New Releases from Quicksilva

Quicksilva, one of the leading British Games houses, has released its new range of games.

Zombie Zombie is the sequel to the smash hit game '3D Ant Attack' for the Spectrum. The game uses the same 'softsolid' graphics system to produce the 3D effects. In this game the player controls a helicopter as well as himself, flying over a similarly complex landscape of blocks. The player can also construct his own buildings to be included in the city. Quicksilva claim that the program produces two channel sound out of the Spectrum — I think that this must be heard to be believed though. In addition to this, this game can drive a MIDI synthesizer.

Summer Games is an athletic game from Epyx in America for the Commodore 64 and released over here by Quicksilva. Summer Games has eight Olympic type events such as high jump, swimming, diving, gymnastics, skeet shooting, and running. The game is so massive that it comes on disk and each event needs to be loaded in separately. The graphics are superb and excell anything that has been done on any computer before.

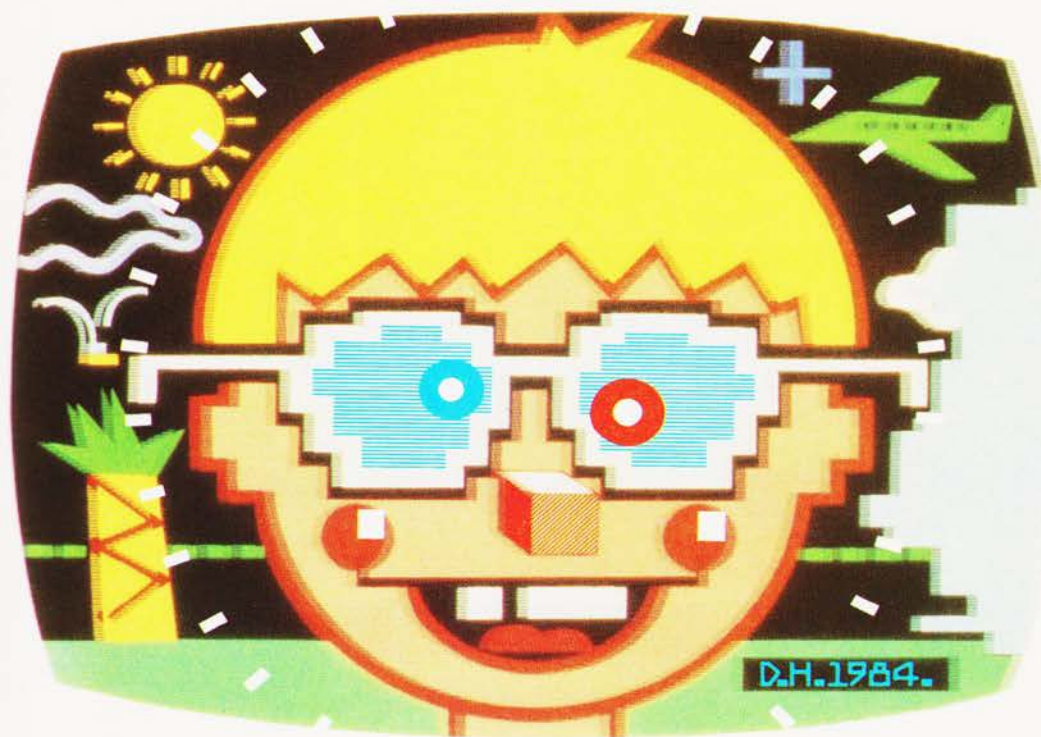
Magic Micro Mission is a game for the Commodore 64 and Atari which is based on the title sequences of the TV show. Blood and Guts is the gory title of the game for the ZX Spectrum where you have to go inside a human body and get to your escape ship. The game has an accurate layout of a human body complete with all internal organs.

Quicksilva has produced two games in conjunction with 2000 AD, the science fiction comic, featuring Strontium Dog, a mutant bounty hunter whose eyes emit alpha waves enabling him to see through walls etc. The two games 'Strontium dog and the gauntlet of death' for the Commodore 64, and 'Strontium Dog and the Killing' for the Spectrum.

Other titles are Battlezone, licenced officially from Atari, for the Spectrum. Castle of Jasoom and Dungeons of Ba are adventures for the Commodore 64 disk. Pro darts for the Spectrum, endorsed by Eric Bristow. Lastly, but apparently not least, is Outpost for the Atari, which Quicksilva claim took two years to write.

Spectrum games are at £6.95, Commodore 64 games are at £7.95 except for the adventures on disk at £12.95, the Atari game is £12.95.





So you're hardly stumped for choice.

You simply choose your colours and characters, then 'build up' your picture. Just like any other artist.

With 'Art Master' you again get a choice of 121 colour shades.

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The pictures are drawn using either the keyboard or a joystick, and can be stored on either tape or on disk.

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And a collection of character sets totalling over 250 shapes.

year old right up to the 66 year old, will enjoy 'Art Master' and 'Picture Builder'.

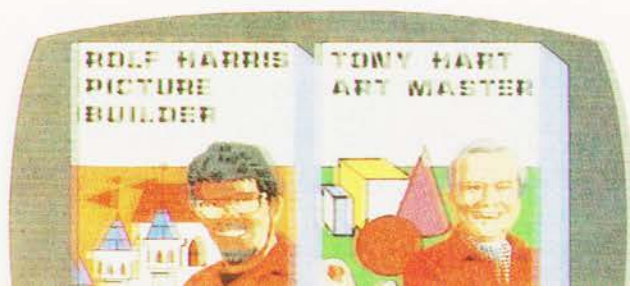
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# Your Christmas Day Program Guide

Acornsoft announce tidings of great joy for both BBC Micro and Electron owners: eight brand new programs for Christmas.

Each one makes an ideal stocking filler.

They're all available at your local Acornsoft stockist. For the address or to order by credit card simply ring 0933 79300.

Or you can send off for our catalogue by writing to Acornsoft, c/o Vector Marketing, London Road, Wellingborough, Northants NN8 2RL.

Alternatively, however, you could always take a chance and drop a line to Father Christmas.

**ACORN**SOFT  
Software for the BBC Micro and Electron

## 9.00 Firebug

A fast moving arcade-type game in which you are a fireman, trying to rescue some oil drums and take them to the safety of a water tank. Your opponent is the firebug who runs around lighting fires which move slowly towards the drums and fire extinguishers, destroying them if contact is made.

## 10.00 Maze

A gripping graphics game where you enter a top secret installation with the aim of stealing secrets from a rival company. The security system, however, has many levels each consisting of a maze of corridors patrolled by armed robot guards. Complete with full colour 3-D graphics, sound effects and a high score table.

## 12.00 Elite

A superb 3-dimensional graphics game that's light years ahead of any other. You are a space trader who roams the universe, making your living from buying and selling cargo in your Cobra space craft. On your travels, you will encounter aggressors who are eager to put an end to your dealings. Be warned, only the fittest will survive.

## 1.00 Crazy Tracer

A crazy adventure in which you guide a paint roller round the edge of a maze of rectangles, while avoiding the monsters which are trying to stop you by crushing the roller. Beware – as the game progresses, so the number of monsters chasing you will increase.

## 3.00 Go

'Go' is a board game for two players which originated in China 3000 years ago and is now more popular than Chess in the Far East. It requires strategic insight, intuition and a strong, calculating mind. If you wish, you can also challenge the computer at differing degrees of difficulty. A velly good game indeed.

## 4.00 Watch Your Weight

At last, a weight-loss program designed especially for you. With it, your computer becomes an expert wholly conversant with and sympathetic to your needs, and will help you choose an appropriate and individual weight-loss plan. The program also includes a calorie counter and a series of apposite menu suggestions to help stimulate your imagination when you just can't think what to eat.

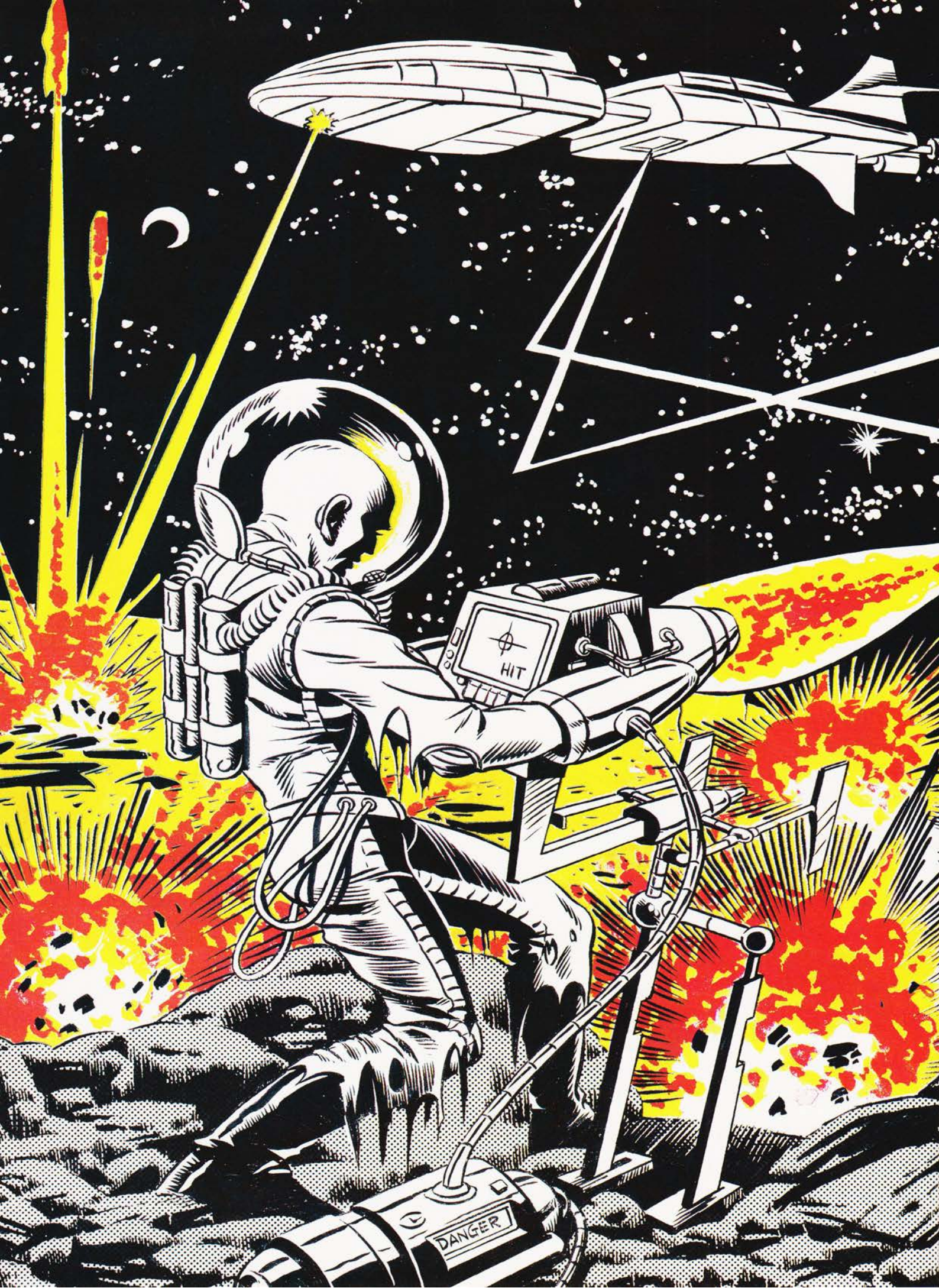
## 5.00 The Complete Cocktail Maker

With everything from a Black Russian to a Betsy Ross, this program contains data sufficient to concoct a staggering 320 different cocktails.

## 6.00 Paul Daniels' Magic Show

Stun and amaze your friends with your astounding feats of magic. This program contains ten tricks to be performed by or with your BBC Micro/Electron. Hurry though – it's bound to disappear fast.

---



# ASTRO

# BLASTER

RUNS ON  
SPECTRUM 48K



Three waves of aliens try to break through Earth's defences, namely you FXIII laser launcher. Unfortunately you have limited laser power and using it too much will cause you to overheat and blow up. If the attacking alien reaches your end it's also curtains.

On destroying the present wave of aliens you have a chance to go onto the next screen.

Your ship flies from right to left. Pressing fire (M) drops a bomb hopefully on the alien, missing causes you to go back to the beginning of the wave. If the aliens fail to break through your barrier they will mount the attack again from the beginning. Watch out, aliens fire lasers.

Control keys:

Q = Up  
A = Down  
M = Fire laser/Drop bomb

10 Aliens have to be destroyed on the first wave  
20 On the second, and 30 on the third.

## RUNdown

Lines	Action
2-9	Prints title and plays tune
15-25	Prints your ship
30-40	Reads direction keys (Q and A)
50	Checks to see if you've pressed fire
500-600	Fires laser
800-820	Prints initial score, lives left, etc.
1000-1200	Moves alien
1500-1550	Fires alien laser
2000-2040	This routine is called when alien reaches your side of screen
3000-3050	Ship blows up routine
6000-6100	Alien blows up routine
7000-7100	Prints your ship
8000-8060	Drops bomb
8500-8700	Blows up alien, moves on one level
9000-9010	Data for title tune
9500-9600	Blows up your ship
9800-9940	Sets up graphics

SHINE



## Variables Used

A,B Your ship's co-ordinates  
 X,Y Alien's co-ordinates  
 SC Score  
 HS Hi-Score  
 AL Aliens destroyed

BL Lasers left  
 PI,DUR Pitch, duration of notes in tune  
 PO Used in scoring  
 G,VAL Used in initialisation of graphics  
 E\$ Alien

```

1 GO SUB 9800
2 LET HS=0
4 INK 6: PAPER 0: BRIGHT 1: BORDER 0: CLS
5 RESTORE 9000: FOR S=1 TO 17
6 PRINT AT 10,7: INK INT (RND*6+2): "AB ASTRO BLASTA
JK": AT 12,7: INK INT (RND*6+2): "---- By J.Hall ----"
8 IF INKEY$("<>") THEN GO TO 10
9 NEXT S: GO TO 5
10 GO SUB 800
12 LET X=INT (RND*15+3): LET Y=28
30 IF INKEY$="q" THEN LET A=A-1+(A<4)
40 IF INKEY$="a" THEN LET A=A+1-(A>18)
50 IF INKEY$="m" THEN GO SUB 500
60 PRINT AT A-1,B: " "
70 PRINT AT A,B: INK 7: "AB"
80 PRINT AT A+1,B: " "
190 GO SUB 1000
200 GO TO 15
500 BEEP .01,50
505 LET B=B$+"": LET BL=BL-1: PRINT AT 0,27: INK 3: B
$
510 IF BL=0 THEN GO TO 3000
530 FOR Z=2 TO 28 STEP 3
540 PRINT AT A,Z: INK 6: " I"
560 IF ATTR (A,Z+4)=64+I THEN GO TO 6000
580 NEXT Z
590 PRINT AT A,29: " "
600 RETURN
800 CLS : LET AL=0: LET E$="PQR": LET B$="": LET I=INT
(RND*3+3): LET L=3: LET SC=0: LET BL=5
805 PRINT AT 0,0: INK 6: "SCORE "; SC: AT 0,11: INK 5: "SH
IPS "; L: AT 0,20: INK 4: "LASERS "; B$
810 LET LEV=1: PRINT AT 21,0: "HI-SCORE "; HS: INK 4: AT
21,14: "ALIENS "; AL: INK 7: AT 21,25: "LEVEL "; LEV
815 LET A=10: LET B=0
820 RETURN
1000 IF INT (RND*2)=1 THEN LET X=X+1-(X>17)
1002 LET I=INT (RND*3+3)
1003 IF INT (RND*I)=1 THEN LET X=X-1+(X<4)
1005 PRINT AT X+1,Y: INK 6: " "
1007 PRINT AT X,Y: INK I: E$: AT X,Y+3: INK 6: " "
1009 PRINT AT X-1,Y: INK 6: " "
1010 IF ATTR (A,B+2)=64+I THEN GO TO 3000
1100 LET CHA=INT (RND*11-LEV)
1110 IF CHA=1 THEN GO SUB 1500
1180 LET Y=Y-1: IF Y=0 THEN GO SUB 2000
1200 RETURN
1500 BEEP .01,-20
1505 FOR P=Y-4 TO 0 STEP -3
1510 PRINT AT X,P: "I "
1530 IF ATTR (X,P-1)=71 THEN GO TO 3000
1540 NEXT P
1545 PRINT AT X,0: " "
1550 RETURN
2003 PRINT AT X,Y: " "
2020 LET X=INT (RND*15+3): LET Y=28
2040 GO TO 3000
2050 PRINT AT 0,6: SC: RETURN
3000 FOR N=0 TO 25
3005 PRINT AT A-1,B: " "
3010 PRINT AT A,B: INK INT (RND*6+2): "GH "
3013 PRINT AT A+1,B: " "
3015 BEEP .005,N: BEEP .005,N/10: NEXT N
3020 PRINT AT A,B: " "
3022 LET L=1-1: IF L>0 THEN GO TO 3030: CLS : PRINT AT
10,11: INK 6: "GAME OVER": PAUSE 0: RUN 2
3024 CLS : PRINT AT 10,11: INK 6: "GAME OVER": PAUSE 0
3026 IF SC>HS THEN LET HS=SC
3028 GO TO 4
3030 PRINT AT 0,17: INK 5: 1
3040 FOR N=2 TO 20: PRINT AT N,0,,, : NEXT N
3050 LET BL=5: LET B$="": PRINT AT 0,27: INK 2: " "
: AT 0,25: B$: GO TO 11
6005 FOR N=0 TO 25
6010 PRINT AT X,Y: INK INT (RND*6+2): "FGH "
6015 BEEP .005,N: BEEP .005,N/10: NEXT N
6020 PRINT AT A,Z+1: " "
6025 FOR N=1 TO 19: PRINT AT N,0,,, : NEXT N
6032 LET PO=5: IF Y>5 AND BL>1 THEN LET PO=PO+5
6033 IF Y>10 AND BL>2 THEN LET PO=PO+5
6034 IF Y>20 AND BL>3 THEN LET PO=PO+5
6037 LET SC=SC+PO: PRINT AT 0,6: INK 6: SC
6040 LET BL=5: LET B$="": PRINT AT 0,27: INK 2: " "
: AT 0,25: B$
6050 LET AL=AL+1: PRINT AT 21,21: INK 4: AL: " "
6055 IF AL=10 THEN GO SUB 7000
6060 IF AL=20 THEN GO SUB 7000
6070 IF AL=30 THEN GO SUB 7000
6100 GO TO 11
7000 PRINT AT A,B: " "
7001 FOR N=0 TO 25
7002 PRINT AT 10,9: INK INT (RND*6+2): "BONUS SCREEN"
7004 BEEP .005,N: BEEP .005,N: BEEP .005,N: NEXT N
7006 PRINT AT 10,9: INK 6: " "
7008 LET X=INT (RND*7+11): LET Y=28
7010 LET TO=0
7020 FOR Z=29 TO 0 STEP -1
7025 LET A=3
7030 PRINT AT A,Z: INK 7: "JK "
7035 IF INKEY$="m" AND Z<20 AND TO=0 THEN GO SUB 8000
7040 IF Z<20 THEN GO SUB 1000
7045 IF TO=1 THEN GO SUB 8010
7047 IF Z>20 THEN FOR Q=1 TO 10: NEXT Q
7050 IF Z=1 THEN LET AL=0: GO TO 9500
7100 NEXT Z
8000 LET TO=1: LET TL=Z: LET AB=4
8010 LET AB=AB+1
8020 PRINT AT AB,TL: INK 6: "L"
8030 PRINT AT AB-1,TL: INK 6: " "
8035 IF AB=X-1 AND TL=Y THEN GO TO 8500
8040 IF AB=X-1 AND TL=Y+1 THEN GO TO 8500
8045 IF AB=X-1 AND TL=Y+2 THEN GO TO 8500
8047 IF AB=X AND TL=Y THEN GO TO 8500
8050 IF AB=X AND TL=Y+1 THEN GO TO 8500
8053 IF AB=X AND TL=Y+2 THEN GO TO 8500
8068 IF AB=19 THEN PRINT AT AB,TL: " ": GO TO 9500
8070 RETURN
8500 PRINT AT AB,TL: " "
8510 FOR N=0 TO 25
8520 PRINT AT X,Y: INK INT (RND*6+2): "FGH "
8530 BEEP .005,N: BEEP .005,N/10: NEXT N
8540 PRINT AT X,Y: " "
8550 LET SC=SC+2*10
8560 PRINT AT 0,6: INK 6: SC
8565 LET LEV=LEV+1: PRINT AT 21,31: INK 7: LEV
8575 IF AL=10 THEN LET E$="CDE"
8580 IF AL=20 THEN LET E$="MNO"
8590 IF AL=30 THEN LET E$="PQR": LET AL=0
8600 FOR N=3 TO 20: PRINT AT N,0,,, : NEXT N
8700 GO TO 11
9000 DATA .25,1,.35,6,.55,13..1,11,.1,10,.1,8,.25,18..3
5,13,.1,11,.1,10,.1,8,.25,18
9010 DATA .4,13,.1,11,.1,10,.1,11,.6,8
9500 FOR N=0 TO 25
9510 PRINT AT AB,TL: INK INT (RND*6+2): "G"
9520 PRINT AT A,Z: INK INT (RND*6+2): "FGH"
9530 BEEP .005,N: BEEP .005,N/10: NEXT N
9540 IF E$="PQR" THEN LET AL=0
9550 IF E$="CDE" THEN LET AL=10
9560 IF E$="MNO" THEN LET AL=22
9570 PRINT AT 21,21: INK 4: AL: " "
9580 FOR N=2 TO 20: PRINT AT N,0,,, : NEXT N
9590 IF I=0 THEN GO TO 3021
9600 GO TO 11
9800 RESTORE 9800
9803 FOR G=0 TO 142
9805 READ VAL
9810 POKE USR "A"+G,VAL
9820 NEXT G
9825 RETURN
9830 DATA 192,240,211,31,31,211,240,192
9840 DATA 0,192,224,255,255,224,192,0
9850 DATA 96,247,157,247,96,0,0,0
9860 DATA 0,248,92,244,31,26,15,0
9870 DATA 0,0,0,6,239,185,239,6
9880 DATA 131,115,24,1,226,56,99,131
9890 DATA 136,204,69,25,27,202,100,204
9900 DATA 193,198,28,135,64,28,198,193
9905 DATA 0,0,0,0,255,0,0,0
9910 DATA 0,3,7,255,255,7,3,0
9915 DATA 3,15,203,248,248,203,15,3
9920 DATA 26,12,31,56,112,96,0,0
9925 DATA 127,213,213,127,7,3,15,31,195,103,125,221,215
,118,60,153
9930 DATA 254,87,87,254,224,192,240,248
9935 DATA 126,215,255,171,129,215,126,0,255,255,85,170.
255,255,0
9940 DATA 0,248,252,92,172,252,248,0
9999 SAVE "BLASTA" LINE 1

```

# The Runaway Robot Replies



Dear Sir  
Could you, please, inform the readers of *GAMES COMPUTING* that our club exists? The C.U.F.O. (club des utilisateurs francophones de l'Oric, 65 members), founded two years ago, is an international club of exchange by correspondence for the Oric 1 and Atmos. The membership is free. We edit a newspaper, LA PUCE, for the members. We send information to all request to the C.U.F.O.

Thank you for your aid.  
V. Maud  
Redaction La puce  
C.U.F.O.  
Rue de la tourette, 1  
5650 BIESME  
(BELGIUM)

Dear Sir  
I am writing to you in reply to the letter sent by Simon Burford in October issue.

I don't know what computer he has, but I have a VIC-20 and I think that *Pirate's Adventure* is the same.

To get past the snake first leave the book on the beach, then take the crackers and the parrot with you to Treasure Island.

Leave the parrot on the boat, and take the crackers with you to the snake. Leave the crackers there, then go back to the boat and the parrot will fly off. Go back to the snake and the parrot will fight it and draw its attention while you take the treasure.

Go back to the boat, and if you have not already dug up the rum on the beach, walk 30 paces and dig it up, to give it to the pirate.

He will then run off and you will find him in the graveyard. Wake him up and he will disappear go back to the boat and he will be there. Set sail and go to *Pirate's Island*.

When you get there say Yoho to get back to London. If you fall off the building just say Yoho again until you get back to the window.

Steven Smith  
Chertsey

Dear *Games Computing*

Congratulations, your magazine is one of the best, if not the best, but I must agree with G. Swain in May's issue that you should publish a high score chart.

I have *Harrier Attack* and think it is excellent. My high score on *Harrier Attack* is 67,800. Some people may think that the game is hard but if you progress one level at a time your scores should get better and better. You should also keep a good supply of bombs for the town and keep as near to the town as possible when bombing.

Yours sincerely  
Jason Byng  
Newbury

Dear *Games Computing*

I am a Commodore 64 owner and when I saw that *'Triple Chance'* for the VIC 20 required no graphics I began typing it in, then I spotted a thing that needed a minor alteration.

I am not sure whether it is a bug in the VIC 20 ROM but Commodore 64 owners should change line 61 to read:

```
21 FOR Z=1 TO 50: NEXT:GOTO 30
```

This action will take place when you hit return. To reduce the delay decrease the second number.

Yours sincerely  
Gordon Darrock  
Horstead

P.S. I think that your Commodore 64 games are great — keep it up!

*Thanks for the advice Gordon. If any other reader has any hints for converting games across to other machines send them in and be a star!*

Dear Editor

Since I last wrote to you in June I have been enlightened as to the solution of *'Pirate's Adventure'*, by a minor genius from *Workop*. How Scott Adams expected any mere mortal to complete the adventure I don't know, but it has been done!

I would like to thank Simon Burford for trying to help out in your October issue but I hope I can now help him with his problems. To stop the fish from drying put them in the empty bottle which you fill with sea-water. Also to get past those highly dangerous, deadly poisonous snakes just *'DROP PARROT'*. Yes that's all! The snakes are frightened by this parrot! — Amazing!!! from here though it's easy as long as you take back the parrot till you arrive back on *Pirates's Island*. Then you've done it, scoring 100 out of 100 for your two treasures: rare stamps and dubeons.

But can no one help me with *'Savage Island'*. I haven't got any further since June. So if any other minor genius or demi-god reads this please help out a poor, grey-haired, struggling *TI-Adventurer*.

Back in July I also bought a graphics adventure game called *'Mania'*. What a mistake! The graphics are poor — what they are meant to be is unclear. There is no sound and the action is about as fast moving as watching snow melt in the Arctic! Apart from this, and the fact that it cost a small fortune, it's a really interesting game. (Yawn Yawn!!). You can have great fun interrogating the characters as they appear. But they don't give in easy, evading questions with answers like, "Good question" and "continue your quest".

So can you help and explain why it got such good reviews in all the magazines?

Yours despairingly  
Steven Joyce  
Halifax

Dear Sir

Here is a helpful tip for all ORIC owners, who have trouble staying alive on *Zorgons Revenge*. The following routine gives endless lives and within minutes your score will double.

- Get lives down to one man.
- Get yourself on the defender level.
- When large ship appears shoot it and within seconds you must kill yourself.

Please note...If you don't get killed before the magic brick appears the routine will not work.

Yours Faithfully  
R. Hanlon  
Jersey

**Have you got any opinions to air, has someone somewhere upset you and you want to grizzle and gripe? Or maybe you're full of the joys of spring and feel like telling a happy story?**

**Whatever you want to say, be it good, bad or indifferent drop us a line here at *Games Computing* and get it off your shoulders.**

**Send your letters to:**

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Harry's little niece Rhonda and Quickclaw, her cowardly cat, are supposed to be with him, but they strayed away and are lost in the bowels of the caves.

A wealthy university has asked him, while he's cleaning this mess up, to capture an elusive stone-age cave rat.

What fun.

He just has to avoid the occasional poisonous frog.

Oh yes. And the wickedly clawed condors.

The electric eels. And a very nasty line in thirsty vampire bats.

So you can see Harry could do with some help.

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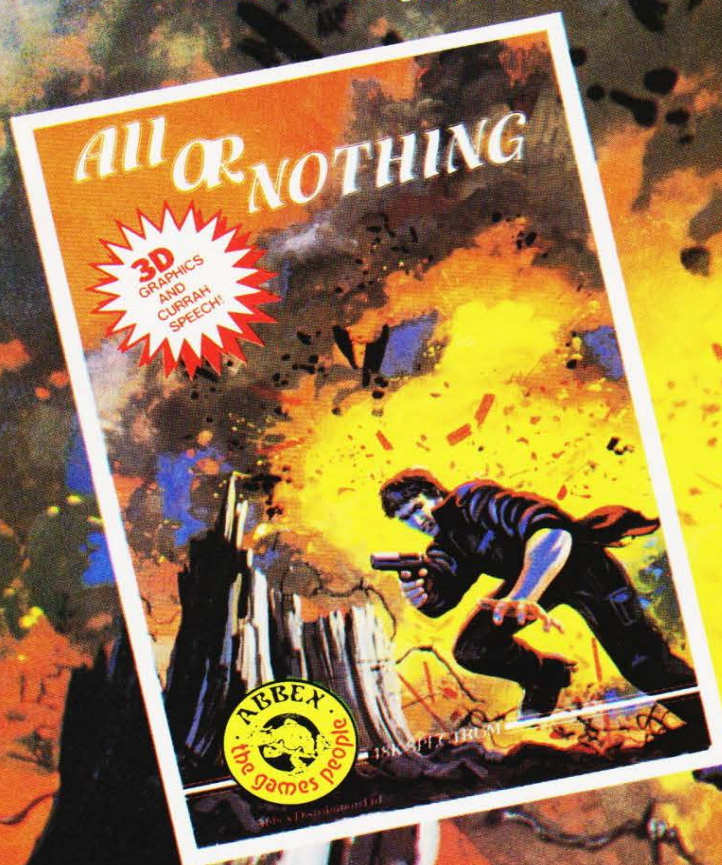
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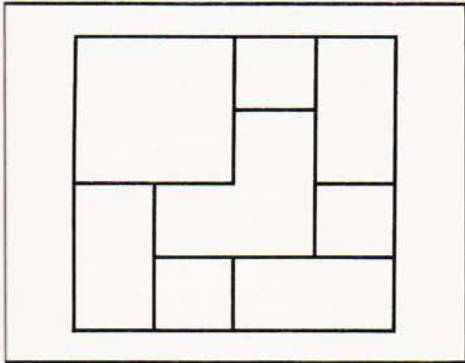


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As the bleak midwinter closes in all around, Lou and Les, loyal to the end, have decided to skip town and visit those faraway places you always dreamed of going to... where the ice you encounter is on a long rum and coke and the only thing that's chilled is the melon. This is their dispatch...

### 1. HORRORMOLINOS

It may be great to fly away to the sun — but have you ever tried to get on the beach? It's so crowded in Horrormolinos that the authorities have demanded that only small, square beach towels are to be used on the golden sands. Below is a plan of the beach where overcrowding has caused a row to break out. Can you settle the argument and decide which towel is at the bottom of the pile? There are eight square towels all of the same size.



### 2. ALPINE ALPHABET

To get away from the sweltering heat Les nipped off the beach and fled into the mountains to indulge in his favourite hobby. Can you decipher what it was?

3.15.12.12.5.23.20.9.14.7.  
4.5.1.4. 22.15.15.4.12.9.3.5.



### 3. WHERE IN THE WORLD

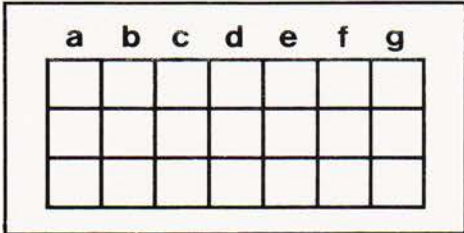
First ask a question  
And look at the line  
Last will not help you a  
Kingdom to divine.  
Only an answer in  
Verse will provide  
Inside information  
About a place to reside.

where?

### 4. COALS TO NEWCASTLE?

We are sure that everyone in the universe would agree that Lou and Les are the salts of the earth — but the solution to this puzzle is an extraordinary place to take them. Solve the clues down and find a very unlikely holiday resort.

- A: A silly question?  
Now get a silly answer
- B: Something upon which you might attach your hopes
- C: Computer giant?
- D: Most people would get the answer nine times out of this
- E: To do this is human
- F: Don't stand on ceremony
- G: Sticky traffic chaos



### 5. THE GRAND TOUR

Find a hidden country in each of the headlines below:

- 'Lou's painting is dreadful,' claims art-world
- Press announce new list of Soviet names for expulsion
- 'Danger Man yearns for freedom,' says Prison Weekly
- The fashion world agrees: 'Les looks lovely in diamonds'
- 'British demand more accuracy. Prussians walk out.' EEC Journal
- 'Give Bad Bob a life sentence,' MP's demand
- 'Bishop calls Fakir an outrageous cheat'



### 6. TAVERNA TANGO

A cocktail or two too many has left Lou and Les staggering aimlessly around the town square. Can you add the missing letters to the sequence below and explain why it might show the delirious duo the way to go home?

\_\_\_ N E N E N \_\_\_



# PUZZLES

## 7. IT'S A SQUARE WORLD

As a final treat before returning to the rain-lashed shores of the good old UK, Lou and Les visited the casino in Monte Carlo. If they could solve the problems below then they would receive a free flight home. They didn't, so if you see two poor bedraggled hitch-hikers somewhere between Cannes and Grimsby — give them a lift.

This was the problem:

The pictures show three views of the same dice. There are six different symbols on the dice. Can you answer the following?

1. What is opposite the
2. What is opposite the
3. What is opposite the

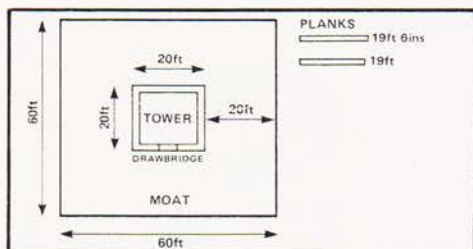


## 8. HOLIDAY CAMP

While he was travelling foreign parts Lord Gilberdyke of Falkovia gave Jousting Jack Caye permission to use his tall, secluded tower. The gay blade occupied the country seat — and very comfortably he found it. However, when the time came for the noble knight to vacate the premises he bluntly refused and replied by raising the drawbridge. Now, Lord Gilberdyke wanted the tower for his own mad merrymaking; he knew that there was a secret entrance hidden behind some false bricks in the tower wall, but how was he to get across the wide, deep moat? As is always the case in times of crisis, none of the Lord's men were to be found, and he was afraid to swim the great divide because the wicked witch, Monica, who also ran a fish and chip restaurant, had aided Jaunty Jack by filling the moat with man-eating goldfish of an extremely rare and vicious variety.

Lord Gilberdyke scoured the land near and far to find some tree trunks which could bridge the deadly water. But, war and pillage had left the land bare; almost a desert. All that could be found were two short planks. Neither plank was quite long enough to reach across, so the Lord, who was as thick as two short ones, sat on the moatside and moped.

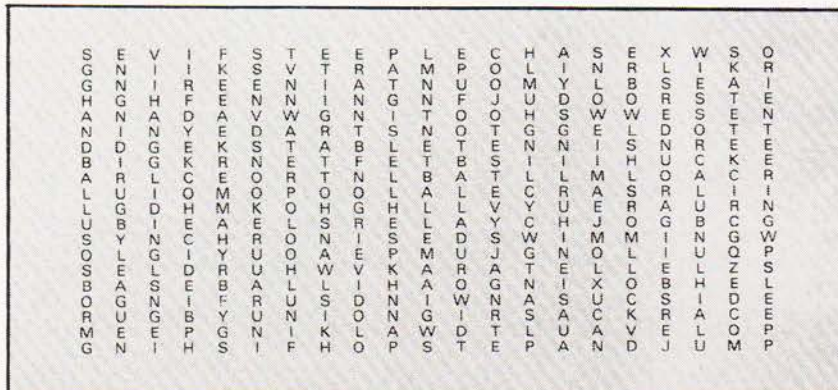
Can you resolve the dilemma and get him across. The diagram below gives you all the information you need.



## 9 JEUX SANS FRONTIERES

This month's grid to stupefy the square-

eyed features sports events and activities. There's 60 that we know here — can you rise to this occasion?



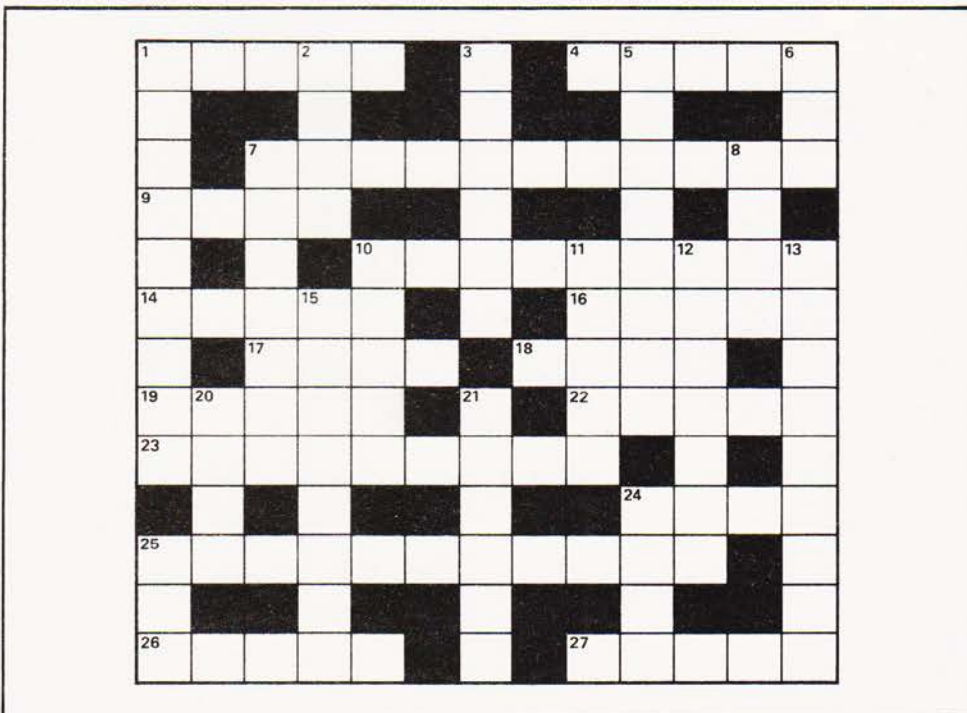
## CHANNEL CROSSINGS

### Clues Across

1. Surrender the product (5)
4. Suppose there's no tree (5)
7. Hitler was, in a way, radical to it. (11)
9. Grass grows here (Eden) (4)
10. Of course! It might be a cup of tea! (5)
14. Untie badly to make the connection (5)
16. Sounds French, relatively speaking. (5)
17. Intend to be poor (4)
18. Beat about the b-ush (4)
19. Little can be seen in a dismal light. (5)
22. Deserve reward. (5)
23. The Money List rite (9)
24. How about a stop here? (4)
25. Places Conservative in nappies apparently — a wet? (11)
26. Preference for fat (5)
27. Cock of the walk — or walk of the cock! (5)

### Clues Down

1. Compares favourably with mine (4,5)
2. Face up and put down. (4)
3. Badges of office employed in offices. (6)
5. Hanger-on. It's a pear of a kind. (8)
6. Distance from 'ades? (3)
7. The month I get bad French/English currency? (7)
8. Tangled lace makes his smart (4)
10. Real Madrid kicks off for their country (5)
11. No friend of Irene Myers. (5)
12. You can almost hear this round the firesides. (7)
13. Reserve — BR have one in their support (9)
15. Concise message transmitted by arm, leg, et cetera. (8)
20. Mannequin loses a pound this way. (4)
21. Gown OK for one Highlander. (6)
24. Cried when he had Purchase Tax. (4)
25. This clue is the end! (3)



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# SYSTEM 3

Taking photos of cakes can't have anything to do with writing computer games. Or can it? Mark Cale talks to Games Computing about his adventures in the software world.

What have the pictures on Kipling cake boxes and Death Star Interceptor got in common? You'll never guess... it's Mark Cale — ex-photographer extraordinaire and now managing director of new games software firm, System 3.

Only a couple of years ago Mark was doing a double act in jobs, as a photographer during the day and computer programmer by night. Eventually his photographic colleagues got so fed up with Mark gibbering on about programming games that they suggested he take it up as a full-time job! Mark took the hint and set out on the rickety road to professional games writing.

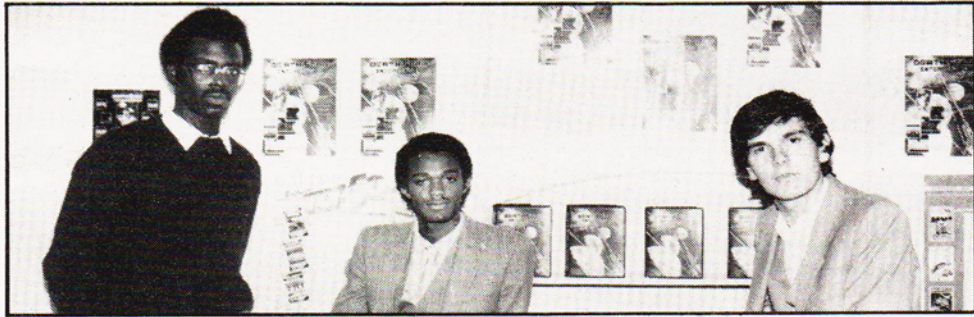
From 'the year dot' (well, since the advent of space invaders) 20 year old Mark has been a keen arcade games fan and it was this that spurned his interest in computer games. 'I had the ideas for games but didn't know how to program them', said Mark. He got to know some people at Atari and bought himself an Atari computer. And with an old school friend, Emerson Best, set about teaching himself to program, while writing a game simultaneously. It sounds like a back-to-front way of doing things, but it was the only way he felt his ideas could be transcribed, as he saw them, onto the computer.

When he wasn't snapping pictures of goeey cakes he was hooked to his Atari programming a game called *Citadel* which made use of Atari's GTIA chip, enabling the facility of sprite-like graphics giving a 3D effect. Unfortunately, the game was scrapped despite Mark and Emerson believing it to be the first game of its kind.

But Atari was cutting down and as a result *Citadel* had to go. Many of Atari's past problems, in the states and the UK alike, were due to the overwhelming number of software pirates who would rather 'steal' a game than pay £30 for it, and then there was only a small number of machines sold in the UK.

So after Mark felt he had mastered the Atari computer he looked around to see what computers were up-and-coming in the market. It was obvious — the CBM64. 'I chose the 64 after the Atari because it is the next best machine out, as far as I am concerned anyway.' It has also, of course, one of the largest user bases in the UK and was therefore ripe for the software market.

And after that came Death Star Interceptor — the first release from System 3 Software. It took 1½ years to write and as the title suggests, it's a star wars trench type game in which



your ultimate aim is to destroy the death star. Mark admits it's not the most original of themes, but is convinced that the graphics and gameplay warrant both the name tag of '*graphically amazing*' and the price of £9.99 — a little on the high side for 64 games. The name tag will remain the same on future System 3 games.

We didn't have the chance to take a detailed look at Death Star before going to press but the graphics we saw are good and the plot of the game is slightly different to most other 'trench' shoot 'em up (or down) games. But as 6,000 copies of the game have been sold in its four weeks on sale and the game's first appearance in the Daily Mirror software chart was straight in at No. 14, the game can't be bad. And apparently Smiths, Menzies and Boots can't get enough copies of the game!

Death Star was initially supposed to have been launched back in April of this year, but the launch had to be postponed when one of the programmers left the firm and a lot of his work had to be re-written. Mark feels a bit sick about this because he reckons it would have been a bigger success had the timing of the launch been right. 'But that's the way the cookie crumbles,' said Mark philosophically with a tinge of regret.

Plans for System 3's future are to continue producing quality software rather than software in quantity over the next year or so. And this means that any original game idea will be worked upon, he's even got ideas for a space game set for a March release which will take this type of game 'another step forward' but that was all he would say about it.

Mark's favourite computer games are space shoot-outs, yet he admits that he thinks they have had their day and lost out in the popularity stakes to character games. So why did he decide on a space game as System 3's first release, and why are they now working on another space game to release in March '85? 'Well I still think there is a

market for these type of games although it is a much smaller one than it used to be,' explained Mark.

Now he is very keen to see more American games on sale in the UK and is in the process of tying up deals involving four US games titles, all of them well-known in the States. These could be on sale here before Christmas.

A couple of games are also scheduled for a new year release, Twister, which will run on all machines and Discus — move over Daley Thompson. Actually, it's got nothing to do with his sport but it is in fact a character game featuring caverns and mazes and collecting things. Sounds vaguely familiar. These will all cost £7.95, as will all future games produced by the firm, Mark is particularly aware that if the games are over priced there is a tendency for people to pirate copy them. And that means he'll lose out.

But what of the future? He believes that the new 68000 chip will herald the arrival of the next generation of home computers. Indeed this has already started with the Lorraine — a computer first shown at the CES (consumer electronics show) in the US earlier this year. Commodore has recently bought Amiga, the company which produced the Lorraine, but are now involved in a law suit with Atari as to the ownership of the design.

Apple's latest computer, the Mackintosh, is built around the 68000 chip and is purported to be one of the best personal computer's on sale, all be it primarily for business use. This new chip will offer far more versatile graphics and colour facilities than ever before seen. In the meantime Mark is making do with the CBM64 and also converting games to run on MSX machines.

His latest observation of the American games market is pretty dire. 'Games in the US are dead,' he says. 'They all seem to be into pogo sticks instead, I couldn't believe it!' Could this be a sign of things to come?



**HIGH STREET**

# Taskset & Commodore 64

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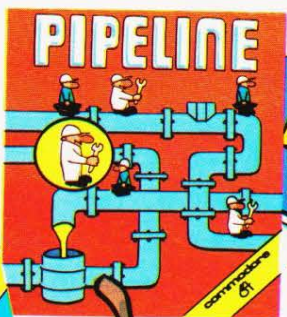
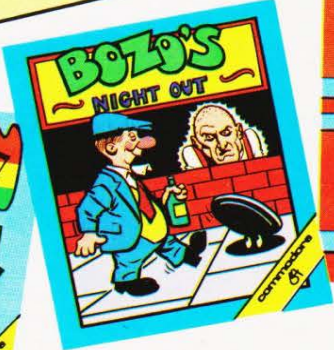


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THE BUG STOPS HERE!

# ROCKMAN FILES

Being a computer journalist can be great fun, apart from having the latest hardware and software to review and play with you get the chance to go to launches. When you read in the news pages of this, or any other magazine, that company XYZ has just launched a new computer/game/joystick it may mean that the company has sent a letter to the magazine or it could mean that there has been a huge party to tell all the press about it in the hope that it will make the news pages.

## For Richer

Normally a software launch takes the form of a talk by the boss of the company followed by a buffet lunch, with lots to drink, and then a chance to play the game and talk to the programmers. A rough generalisation is that the better the launch the poorer the product, this is not always true. Acornsoft had a very plush launch for their new game "Elite". This was held at the Thorpe Park fun fair. The attending journalists were filled with champagne, orange juice and coffee on the coach from central London and then taken for a ride on the roller coaster. Perhaps Acorn wanted to be careful with the occupants because the ride was very tame.

Despite the flashing lights, the eerie noises and the big build up the roller coaster was not the highlight of the visit, the game was. Most people ignored the huge spread of food to get to grips with the game, it was not until I had bitten the alien dust a couple of times that my attention turned to the cold roast chicken and lamb chops. Eating gives you a chance to talk to the authors and this is when you discover things like the fact that parts of Elite were written on an Acorn Atom. Some launches are blatant attempts to woo the journalists into being nice about the product.

A group of MSX companies recently flew a whole planeload of journalists out to the South of France for the day. Quicksilva held a showing of their latest games at one of London's best restaurants and combined it with a five star meal.

## For Poorer

By contrast Aardvark software launched its latest product, Zalaga for the Electron without telling most people. The launch consisted of five people and the programmer/boss of Aardvark meeting in a seedy pub in the West End of London followed by a pizza. There was no hype about how good the game was, no press release written in the hope that *Games Computing* would re-write it and give Electron Zalaga lots of publicity, there was no computer in

sight and there were no copies of the game given out.

This event was just the game's programmer celebrating the completion of his latest program. If you include this as a program launch then it is fair to say that software houses spend between fifty and fifty thousand pounds on launching a program. This may seem exorbitant but when you look at the effect that public image has on a product you realise why the companies go to such lengths.

Imagine kept a high profile even as it sank. When Imagine launched a new game there was some degree of expectation. The new Atarisoft titles were awaited with baited breath, these games ended up as no better than the rest but they had a better image.

## For Better?

Alligata software have some of the best software about for the Commodore 64 but do you get excited when you hear about "Rocket Rodger"? Unless you have played the game it is doubtful that you have even heard of it. There are so many games launched each week that it is impossible to keep track of them. Software houses have to go to great lengths to make their package stand out.

One trend is to make more of the software by including a booklet. Melbourne House could have got away with a simple inlay card for their new social climbing adventure "Hampstead". Instead they chose to include quite a detailed pamphlet showing stereotyped lifestyle in Hampstead.

The Booklet is very funny, lampooning the kind of people who "make" Hampstead. This makes it much nicer to have the original tape rather than pirate it.

The same is true of Elite. This comes with a bundle of booklets, posters and a card to label the Beeb's function keys. As the, still fairly young, computer industry becomes more and more professional we can expect to see more of this kind of promotion and packaging.

## Or For Worse?

The MSX companies are the masters of marketing, they may have missed this Christmas but intend to be a big force for Christmas '85. With the great similarity between the rival machines they will need to really push home their individual advantages if they want a piece of the action. In the past computers have been made and sold by en-

thusiasts, now they will be sold by marketing people. Amstrad have ended up with a great compromise. The design is that of computer experts but the marketing is that of an experienced consumer electronics company.

The result is a good, cheap computer that is readily available. Perhaps the growth of the home computer industry will lead to even better launches, motoring journalists get taken to much more exotic locations and better hotels!

## Arcade Developments

The amusement arcades are having a rough ride at the moment, not enough people are shovelling coins into slots. However this has not affected the quality of games. The sequel to Galaga, which was the sequel to Galaxians, is very addictive. It is called something like Galpus, but uses funny writing and is difficult to read. In Galaga you can double your firepower by having a ship captured and then rescuing it. In Galpus you turn the tables and can capture aliens. You can capture up to six aliens to give yourself the fire power of seven ships. This is a formidable weapon, and can clear a sheet in no time.

It is then possible to double the rate of fire by hitting a second bonus ship. The action is fast and furious making it surprisingly addictive for a machine which has its roots in Space Invaders.

Sequels seem to be flavour of the month in the arcades. The controls are the same as in Star Wars but the tasks are very different being based on the Ewok planet where you have to fly a rocket bike and dodge the trees.

A neat role reversal has been the transfer of the "Lode Runner" computer game to the arcade. This started life on the Atari and the Commodore 64 and has ended up as a bespoke machine that plays a better game but takes money. How long before we start seeing "Revenge of the Mutant Camels" in the arcade?

## Whatever happened to...

A couple of months back *Games Computing* looked at a preproduction model of the "I Robot" machine. This has now made it to the arcades and looks even better. The machine's cabinet has been tidied up and the fire buttons placed at an angle. If you studied the article in the September issue you should have a head start over your friends.

Good Luck and happy zapping.

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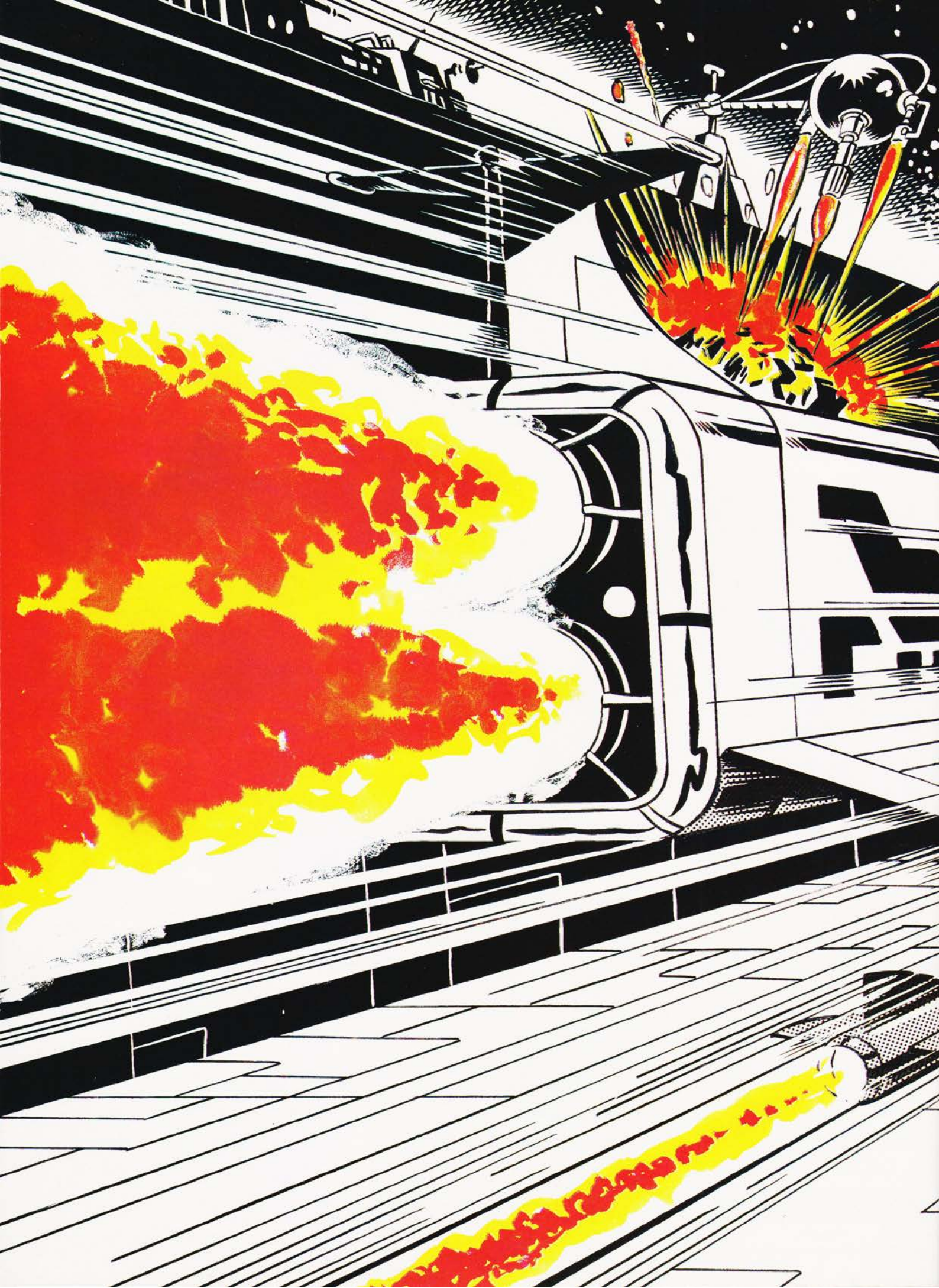
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The object of this game is to steer your spaceship through the twisting cavern for as long as you can. Your ship can withstand three hits into the side of the cavern. You have a choice of nine speeds (1 the fastest). Use keys "←" and "→" to move left and right. During play the current number of lives and the number of seconds you have lasted are printed along the top line of the screen. There is also a high score feature.

**Note:** Care should be taken in typing in data statements as a mistake in the machine code could result in the system crashing.

**N.B.** Pressing shift during play causes the game to pause until pressed again.

D. HINE



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If you have written a program to take the software world by storm and want to show your fellow readers just what you can do on a keyboard, cut out or photocopy the form below and send it to the Editor, *Games Computing*, (clearly marked PROGRAM SUBMISSIONS) at 145 Charing Cross Road, London WC2H 0EE (until 16 December 1983) and after that to 1 Golden Square, London W1.

Please send with your tape recording of the program a thorough explanation of the game, a line by line listing of how the program works along with a list of relevant variables etc. Also include any clues which you can think of to help owners of other computers other than the one which the program was written for, convert it for use on their computer.

We will look at games programs on tape for all the popular home micros and disc versions for the Commodore machines, Atari and BBC (40 track and Hitachi format). Whenever possible use CHR\$ rather than command codes and please avoid making programs autorun. If you can let us have a printout of the program it helps and the same goes for screen dumps.

*P.S. They'll be paid for too!*

★ PLEASE COMPLETE IN BLOCK CAPITALS

Your Name \_\_\_\_\_ Age \_\_\_\_\_

Program Name \_\_\_\_\_

Computer/memory size it runs on \_\_\_\_\_

Amount of memory program occupies \_\_\_\_\_

Other computers/memory size which your program runs on \_\_\_\_\_

Does your game need joysticks? \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_

Any known bugs? If so, what are they? \_\_\_\_\_

Have you sent your game to another magazine \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_

Is it original/or a variation on a theme? \_\_\_\_\_

Your Address \_\_\_\_\_

Telephone Number \_\_\_\_\_

Times to contact you \_\_\_\_\_



# DEATHSTAR INTERCEPTOR

Each will be destroyed by an Empire Deathstar, can you penetrate its defences and destroy it before it destroys you?

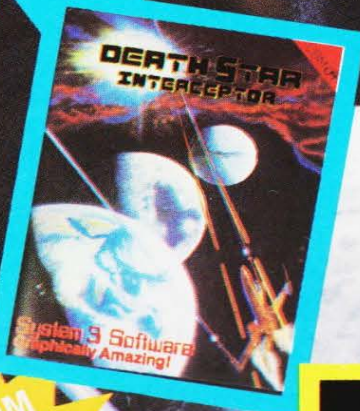
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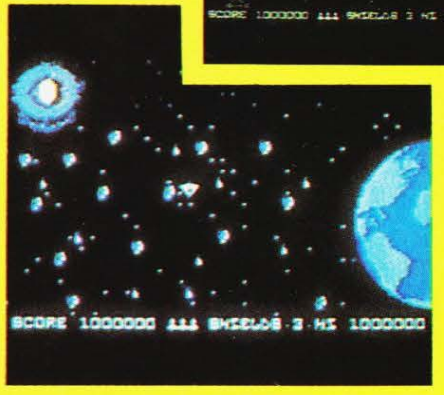
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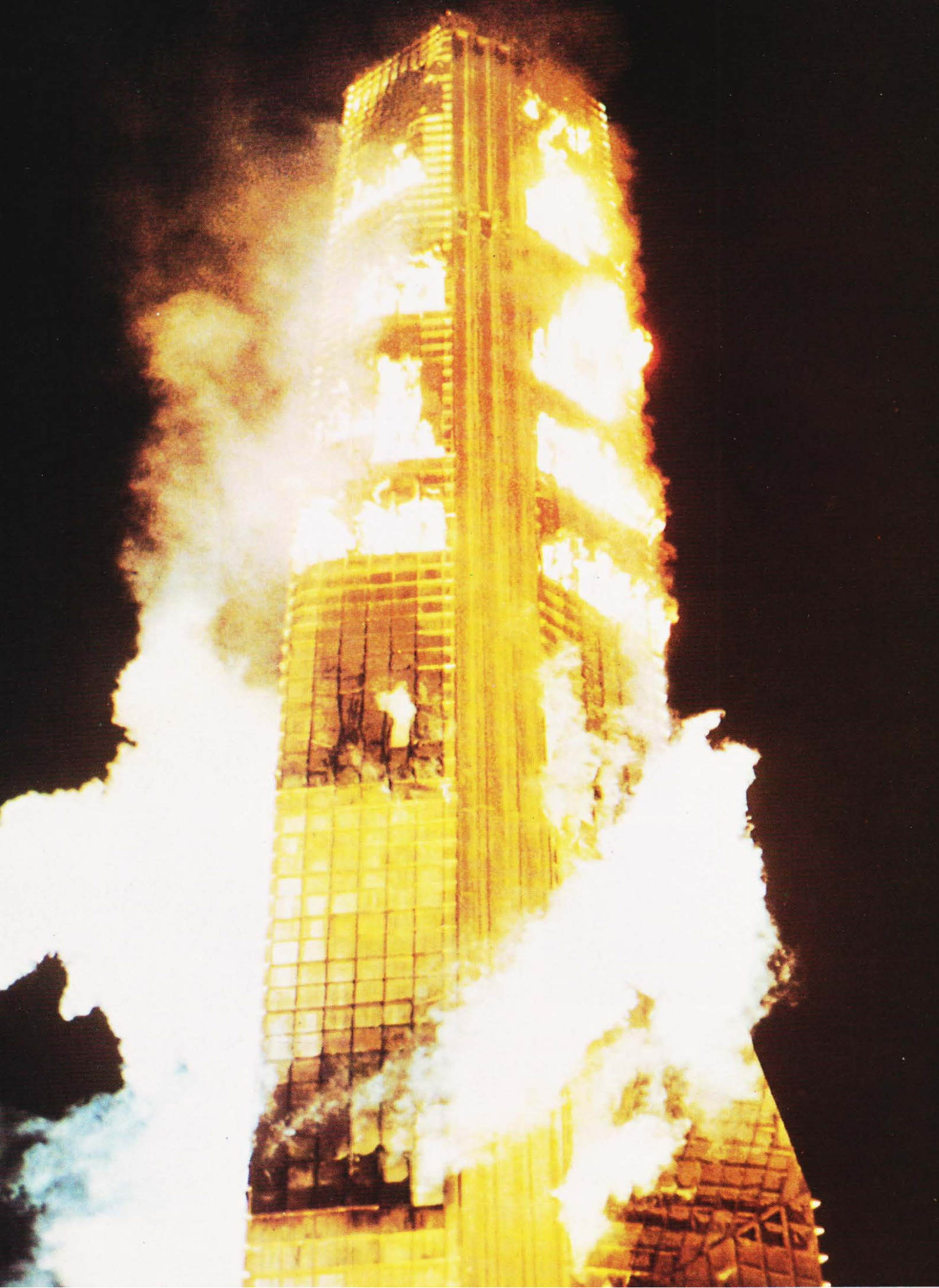
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## System 3 Software

South Bank House, Black Prince Road, London SE11  
Tel: (01) 587 0873



Please help me! I have just come out of my office on the 8th floor of a busy office and shopping complex and have found that the main corridor is on fire. I must try to escape before the I am overcome by the smoke. You must give me instructions in the form of two word sentences such as GO IN.

BEWARE: I have only 175 moves before the fire kills me!

### Aims

The program was written for the BBC 'B' in MODE 7 and includes SOUND commands which are sent to CHANNEL - 1. This is the speech channel and the statements are ignored if Acorn's speech system is not fitted. The speech is used to tell you your score, if you see anything and a few other things!

ELECTRON users will find that if they try to run the program as it stands, it will appear to work (IN MODE 6!) but will get a NO ROOM error when they input any response. The only changes needed to allow the program to run are listed below.

1. USE MODE 6 and introduce colour by using VDU19,0,1,0,0,0 as line 10.
2. Delete all REM statements.
3. Delete all SOUND statements.
4. Remove all CHR\$ statements which are used to introduce colour in MODE 7.

It will then run in the ELECTRON (just!).

### RUNdown

Lines	Action
70-80	Disable break/escape.
100-110	Set variables.
120-170	Titles
180-260	Fill Arrays
270	Speech.
280-580	Data for game.
590-1020	Main control loop which describes location and objects speaks, inputs response and calls appropriate procedure.

I have given the procedures names which describe their action so to explain their purpose.

### Variables Used

P%	Current location.
A%,B%	Score.
S%(X,Y)	Map.
Q\$(X%)	Locations descriptions.
G\$(X%)	Description of objects.
B%(X%)	Pointer to objects.
N\$(X%)	Words understood.
Z\$,C\$,	Your responses and
B\$,D\$,L\$	substrings of response
N%(X)	Pointer to words.

### Conversion Clues

1. The main REPEAT UNTIL Loop line 590-1020 will need to be replaced with:

```
590 CLS  
1020 GOTO590
```

PROCedures will need to be replaced with GOSUB's eg.

```
700 IF P%=86 THEN GOSUB 1750  
(line after DEFPROCstatement).
```

Then remove DEFPROC statements and replace ENDPROC with RETURN.

**T  
O  
W  
E  
R  
I  
N  
G**

**I  
N  
F  
E  
R  
N  
O**

# TOWERING

## Hints

Read these only as a last resort!

1. In a fire, you often can't get back to locations previously visited, so don't forget anything you might need!

2. Words understood include: GET, DROP, SCORE, INVENTORY, TAKE, LEAVE, GO IN, OUT, UP, DOWN, LIFT, SLIDE, TIE, LOWER, CRAWL, OPEN, UNLOCK, PULL, PUSH, PRESS.

3. Don't forget the keys!

4. there are 88 locations to visit!

```
10 REM ** TOWERING INFERNO **
20 REM ** AN ADVENTURE GAME (with speech) FOR THE BBC
MICRO **
30 REM ** S.W. Lucas 1984
40 REM ** ELECTRON USERS SHOULD USE MODE 6 and remove
all SOUND, REM's and redundant spaces **
50 MODE7
90 REM ** does not need relocation if disc interface
is fitted **
100 PX=2:BX=0:CX=0:AX=139 : REM SET score for speech
system to say zero
110 AA=0:AB=0:AC=0:AD=0:AE=0:AF=0:AG=0:AH=0:AI=0:AJ=0
:AK=0:AL=0:AM=0:AN=0:AO=0:AP=0:AQ=0:AR=0:AS=0:AT=0:AU=0
:AV=0:AW=0:AX=0:AY=0:AZ=0
120 FOR X=1TO2
130 VDU136,131,157,132,141:PRINT"TOWERING INFERNO..an
adventure":NEXT
140 REM ** This program contains SOUND lines for the
speech system.. ignore them if you don't have Acorn's s
ystem fitted **
150PRINT:VDU129,131,157,129:PRINTSPC(6)"<C> 1984 Stev
e W. Lucas"
160 REM ** an adventure game for the BBC model B comp
uter by Steve W. Lucas **
170PRINT"CHR#131;" Please wait whilst the data is re
ad."
180 DIM V$(4),S$(88,4),Q$(88),N$(25),NX(25),G$(25),B$(
25,1)
190 FOR X=1 TO 4:LET V$(X)=" ": NEXT X
200 FOR X=1 TO 86: READ Q$(X)
210 FOR Y=1 TO 4 : READ S$(X,Y)
220 NEXT Y,X
230 FOR X=1 TO 25
240 READ G$(X),B$(X,1),N$(X):NX(X)=X
250 NEXT X
260 FOR X=1TO4:V$(X)="":NEXT
270 SOUND-1,73,0,0:SOUND-1,67,0,0:SOUND-1,85,0,0:SOUN
D-1,82,0,0:SOUND-1,207,0,0:SOUND-1,264,0,0:SOUND-1,133,
0,0:SOUND-1,50,0,0:SOUND-1,192,0,0
280DATA in a small room. There are flames to theNorth
and West.,88,0,2,88,in a wide corridor which is full o
f acrid smoke,0,0,3,1,at the junction of a North/So
uth corridor and one going East/West,88,5,4,2
290DATA at the top of a lift shaft. The door is shut.
,0,0,0,3,in a corridor. There is a hole in the floor
where it has collapsed,3,0,0,0
300DATA in a corridor. There is a hole in the floor
to the North.,0,7,0,0,in a narrow corridor. The doors
to the East and West are smouldering.,6,10,8,9,in the
gents toilets.,0,0,0,7,in the ladies toilets.,0,0,7,0
310DATA at the top of a fire escape.,7,0,0,0,on a nar
row ledge. There was a fire escape here but it has
collapsed!,88,88,13,12,on a narrow ledge,88,88,11,88
320DATA on a narrow ledge. There is a small airdu
ct here. I think I could crawl through it.,88,88,88
,11,in a bedroom. There is an airduct in the wall above
the bed. It is very hot in here,0,0,15,0
330DATA in a lounge. The furnishings are very luxur
ious.,0,16,0,14,in a large office. The curtain are
alight.,15,0,17,18,in a small kitchen at the rear of t
he office.,0,0,0,16,in a corridor. The way South is a
light.,0,88,16,0
340DATA in a smoke filled corridor,0,0,20,0,standing
in a smoke filled hall.,0,21,22,19,at the south end of
a long hall. A long corridor leads east from here,20,0,
24,23
350DATA outside a locked office with a sign on the d
oor which reads 'District Fire Officer',0,0,0,20
360DATA by a large window. The view down is fright
ening!,0,0,21,0,in a narrow corridor,0,0,25,21,by a li
ft.,0,0,0,24
370DATA by a lift. A sign reads 'FLOOR 6',0,28,27,0,in
a stationary lift,0,0,0,26,in a small conference room.
There is an open window to the east,28,0,29,0,by an op
en window. There is a wide ledge on the outside!,0,0,0,
28
380DATA standing on a wide ledge. Flames have swept
into the conference centre. There is a strong iron rai
ling here.,0,0,0,0,standing on a narrow ledge. There is
an open window to the south.,0,32,0,0,in a locked stor
age room,31,0,0,0
390DATA in a small corridor,0,34,0,32,outside a secur
ity door. There is a slot here with a sign which reads
'INSERT CARD',33,0,0,0
```

# RUNS ON BBC B/ ELECTRON

400DATA at the south side of a large steel door. It is locked!,0,0,36,37,by a reception desk,0,0,0,35,by a sign which reads 'Car Park South',0,38,35,0,in a multistorey car park,37,0,0,39

410DATAin the car park. Flames stop me going further south,0,40,38,0,at the top of a short flight of stairs,39,0,0,0

420DATAat the bottom of a flight of stairs. A sign reads 'LEVEL 4',0,0,42,0,in a car park. It is full of cars. The slope down is blocked by a large lorry,0,0,43,41

430DATAby a locked fire\_door,0,0,0,42,by the main shopping arcade,43,45,48,0,in a shopping arcade,44,46,0,0,at the south end of the main arcade,45,0,47,0,inside Boots (the Chemists). It is too dangerous to go South,49,0,0,46

440DATAin a small tobacconists,0,0,0,44,by a row of shelves containing charred computer cassettes,0,47,50,0,at the top of an escalator. It is not moving but I could get down it,0,0,0,49

450DATAat the bottom of a moving escalator,0,52,0,0,in the photographic department,51,57,53,0,by a counter selling films and batteries,0,54,55,52,by the cosmetic counter,53,58,0,0

460DATAby a counter selling cassette tapes,0,56,0,53,in the home made wine section,55,0,0,0,by a wall of flames. I can still go back North.,52,0,0,0,by the fire entrance. The door is locked,54,0,0,0

470DATAon a flight of stairs,0,0,58,0,on a flight of stairs. I can't go down because of the intense heat. A passage leads east,0,0,61,0,by a sign which reads 'Second Floor',0,62,0,60,in a large reception hall,61,63,0,0

480DATAat the entrance to a banqueting suite,62,0,64,0,in a large banqueting hall,0,65,0,63,in a narrow corridor,64,66,0,0,at the end of a corridor. There is a stockroom to the west,65,0,0,67

490DATAin a small stockroom. There is a ventilation shaft to the south. It is wide enough to crawl through.,0,68,66,0,crawling along a ventilation shaft,67,0,0,69,in a ventilation shaft. I can see light to the North,70,0,68,0

500DATA in a small room. The door is locked from the outside. There is a garbage chute here.,0,69,0,0,in a maze of passages all alike,71,72,73,71,in a maze of passages all alike,71,75,74,72,in a maze of passages all alike,73,74,73,71

510DATAin a maze of passages all alike,73,76,74,72,in a maze of passages all alike,72,75,76,75,in a maze of passages all alike,74,76,77,75,in a narrow corridor,0,78,0,76

520DATAat the top of a garbage chute,77,0,0,0,at the bottom of a garbage chute,0,80,0,0,in a room full of rubbish,79,0,0,81

530DATA in a small room. The floor has collapsed and I can see through to the ground floor,0,0,80,0,underneath a hole. A corridor leads East,0,84,0,0

540DATAin a narrow corridor,0,84,0,82,in a long corridor,83,85,0,0,in the entrance,84,86,0,0,outside the building,85,0,0,0

550DATAa toilet roll,8,ROLL,a small hammer,3,HAMMER,a fire extinguisher,10,EXTINGUISHER

560 DATA an iron bar,6,BAR,an old handkerchief,21,HANDKERCHIEF,a stale sandwich,17,SANDWICH,a large button,27,BUTTON,a key,16,KEY,a rope,10,ROPE,a Ford Escort,42,FORD,a cassette,55,CASSETTE,a corkscrew,56,CORKSCREW,a safety bar,58,SAFETY

570 DATA a bottle of developer,52,DEVELOPER,a table laden with food,64,TABLE,food,64,FOOD,a dustbin full of rubbish,70,DUSTBIN

580 DATA a plank of wood,60,PLANK,a plastic security card,28,CARD,a locked car,38,CAR,"",38,TORCH,some batteries,55,BATTERIES,a switch,50,SWITCH,a metal railing,30,RAILING,a burning door,43,BURNING DOOR

```
590 CLS:REPEAT
600 AA=AA+1:IFAA>100 AND AA<125 THENPRINTCHR$129"It is getting hot in here":SOUND-1,76,0,0:SOUND-1,131,0,0
610 IF AA>124 AND AA<150 THENPRINTCHR$129"The heat is getting unbearable!"
620 IF AA>149 THEN PRINTCHR$129"Watch out. It is getting too hot!"
630 IF AA=175 THEN X$="I am overcome by the heat and die!":PROCLOSE
640 IFPX=88THENX$="I walk straight into a wall of fla
```

UNFERNON

# TOWER DRINK

```
me!":SOUND-1,85,0,0:SOUND-1,82,0,0:SOUND-1,171,0,0:PROC
lose
650 IF P%>10 THEN IFB%<1THENB%=1:A%=142
660 IF P%>18 THEN IFB%<2THENB%=2:A%=143
670 IF P%>25 THEN IFB%<3THENB%=3:A%=145
680 IF P%>29 THEN IFB%<4THENB%=4:A%=147
690 PRINTCHR$131;"I am :-"Q$(P%):A$="":IFS$(P%,1)>OT
HENA$="North"
700 IFP%=86THENPROCwin
710IFP%=59AND(AT<2ANDAS<1)THENX$="I trip and fall in
the dark!":PROClose
720 IFS$(P%,2)>OANDLEN(A$)>OTHENA$=A$+",South"ELSEIFS
$(P%,2)>OTHENA$="South"
730 IFS$(P%,3)>OANDLEN(A$)>OTHENA$=A$+",East"ELSEIFS$
(P%,3)>OTHENA$="East"
740 IFS$(P%,4)>OANDLEN(A$)>OTHENA$=A$+",West"ELSEIFS$
(P%,4)>OTHENA$="West"
750 IFA$="":THENA$="nowhere obvious!"
760 PRINT'CHR$129;"I can go :-"A$
770 IF P%>34 THEN IFB%<5THENB%=5:A%=149
780 IF P%>39 THEN IFB%<6THENB%=6:A%=151
790 IF P%>50 THEN IFB%<7THENB%=7:A%=153
800 IF P%>59 THEN IFB%<8THENB%=8:A%=155
810 IF P%>68 THEN IFB%<9THENB%=9:A%=157
820 E=0:FORT%=1TO25:PP%=0:IFB%(TX,1)=P%THENPP%=1
830 IFPP%=1 THEN B50
840 NEXT:GOTO 870
850 IFE=0THENPRINTCHR$134"I can see :-":SOUND-1,73,0,
0:SOUND-1,67,0,0:SOUND-1,256,0,0:SOUND-1,106,0,0
860 PRINTG$(TX):E=E+1:GOTO840
870 PRINTCHR$133"What shall I do now ";:INPUTZ$:B$=LE
FT$(Z$,2):C$=LEFT$(Z$,3):D$=LEFT$(Z$,4)
880 CLS
890 IFC$="JUM"THENPROCjump ELSE IFC$="OPE"THENPROCope
n ELSEIFC$="SCO"THENPROCscore ELSEIFC$="GET"ORC$="TAK"
THENPROCget
900 IFC$="INV"THENPROCinventory ELSEIFC$="DRO"ORC$="L
EA"THENPROCdrop ELSEIFC$="PRE"THENPROCpress ELSEIFC$="T
IE"THENPROCtie
910 IFB$="FU"ORB$="PI"THENPRINT"How dare you speak to
me like that!" ELSEIFC$="IN"ORD$="GO I"THENPROCin ELSE
IFC$="OUT"ORD$="GO O"THENPROCout
920 IFC$="DOW"THENPROCdown ELSEIFC$="CRA"THENPROCcraw
l ELSEIFD$="GO L"THENPROClift ELSEIFC$="UNL"THENPROCunl
ock
930 IFC$="INS"THENPROCinsert ELSEIFC$="UP"THENPROCup
ELSEIFC$="SMA"THENPROCsmash ELSEIFC$="PUL"THENPROCpull
940 IFC$="PUS"THENPROCpush ELSEIFC$="SLI"THENPROCslid
e ELSEIFC$="LOW"THENPROClower
950 IFB$="N"ORD$="GO N"THENK=1:IFS$(P%,1)>OTHENP%=5%(
P%,1):PROCYes
960 IFB$="S"ORD$="GO S"THENK=1:IFS$(P%,2)>OTHENP%=5%(
P%,2):PROCYes
970 IFB$="E"ORD$="GO E"THENK=1:IFS$(P%,3)>OTHENP%=5%(
P%,3):PROCYes
980 IFB$="W"ORD$="GO W"THENK=1:IFS$(P%,4)>OTHENP%=5%(
P%,4):PROCYes
990 IF C$="EAT"THENPRINT"I don't have time to eat any
thing!":PROCno :ELSEIFC$="DRI"THENPRINT"I' can't wait a
round here long enough to drink anything!":PROCno
1000 IF C$="EXT"ORLEFT$(Z$,7)="USE EXT" THEN PROCextin
guish
1010 IFC$="LIG"THENPROCflight
1020 UNTIL FALSE
1030 END
1040 DEFPROCscore
1050 REM *** The following sound routine is for use wi
th ACORN'S speech system and can be left out if you don
't have it fitted ! ***
1060SOUND -1,85,0,0:SOUND-1,204,0,0:SOUND -1,257,0,0:S
OUND-1,132,0,0:SOUND-1,A%,0,0
1070 PRINTCHR$134"You have scored ";B%
1080 ENDPROC
1090 DEFPROCyes
1100 SOUND-1,79,0,0:SOUND-1,75,0,0:ENDPROC
1110 DEFPROCno
1120 SOUND-1,110,0,0:ENDPROC
1130 DEFPROCjump
1140 IFP%=5THENP%=6:PRINT"Phew I just made it!":PROCYe
s ELSE IF P%=6THENX$="I fell and broke my neck!":PROClo
se
1150 ENDPROC
1160 DEFPROClose
1170 CLS:PRINTX$:PRINT""I AM DEAD !!!""CHR$129"Woul
```

# RUNS ON BBC B/ ELECTRON

```
d you like to play again ?"
1180 REPEAT
1190 A$=GET$
1200 UNTIL A$="Y"ORA$="N":IFA$="Y"THENRUN ELSEPRINT"GO
ODDBY":SOUND-1,202,0,0:SOUND-1,73,0,0:END
1210 ENDPROC
1220 DEFPROCopen
1230 IFP%=4THENX$="I open the door, slip and fall down
the lift shaft!":PROCyes :PROClose
1240IFP%=38ANDAH<>1THENPRINT"I have no key!":ENDPROC E
LSEIFP%=38ANDAT<1THENPRINTCHR$129"I see something":PROC
yes :G$(21)="a torch"
1250 ENDPROC
1260 DEFPROCget
1270 K=1:PROCcheck
1280 IFLX<>1THENENDPROC
1290 EX=0
1300 FOR H%=1TO 25:IFB%(H%,1)=P%ANDB%(N%(R),1)THENE%=1
1310 NEXT
1320 IFE%=0THENPRINTCHR$131"I don't see it here!":K=1:
ENDPROC
1330 IF R=3THENAB=1 ELSEIFR=15ORR=7ORR=10ORR=13ORR=20
RR=24THENPRINT"Don't be silly!":PROCno :ENDPROC
1340 IFR=1THENAC=1ELSEIFR=2THENAD=1ELSEIFR=4THENAE=1E
SEIFR=5THENAF=1ELSEIFR=6THENAG=1
1350 IFR=8THENAH=1ELSEIFR=9THENAI=1ELSEIFR=11THENAJ=1E
LSEIFR=12THENAK=1ELSEIFR=14THENX$="The bottle breaks an
d sprays developer all over me. It is very caustic":PR
OCclose
1360 IFR=16THENAL=1ELSEIFR=17THENAM=1ELSEIFR=18THENAN=
1ELSEIFR=19THENAQ=1ELSEIFR=21THENAP=1ELSEIFR=22THENAQ=1
ELSEIFR=23THENAR=1ELSEIFR=24THENAS=1
1370 EX=0:FORDX%=1 TO 4
1380IF V$(DX)=" "THENV$(DX)=G$(N%(R)):EX=1:DX=5
1390 NEXT
1400 IFE%=0THENPRINT"I'm sorry my hands are full!":END
PROC
1410 B%(N%(R),1)=0:ENDPROC
1420 DEFPROCcheck
1430 L$="":XX=INSTR(Z$," "):L$=RIGHT$(Z$,(LEN(Z$)-XX))
1440 R=0:LX=0:IFLEN(L$)<2THENENDPROC
1450 FOR HX=1TO25:IFLEFT$(N$(HX),LEN(L$))=L$ THENLX=1:
R=HX
1460 NEXT
1470 ENDPROC
1480 DEFPROCinventory
1490 PRINTCHR$134:"I am carrying :-"
1500 FX=0
1510 FOR HX=1 TO 4
1520 IFV$(HX)<>" "THENPRINTV$(HX):FX=1
1530 NEXT
1540 IFFX=0THENPRINT"Nothing at all!":SOUND-1,110,0,0:
SOUND-1,136,0,0:SOUND-1,106,0,0
1550 PRINT:ENDPROC
1560 DEFPROCdrop
1570 PROCcheck
1580 IFLX<>1THENPRINT"I can't see a ";L$:ENDPROC
1590 EX=0
1600 FOR DX=1 TO 4
1610 IF V$(DX)=G$(N%(R)) THENV$(DX)="":EX=1:PROCyes
1620 NEXT
1630 IFEX<>1THENPRINT"I don't have it":PROCno
1640 B%(N%(R),1)=P%
1650 IFR=3THEN AB=0 ELSEIFR=1THENAC=0 ELSEIFR=2THENAD=
0 ELSEIFR=4THENAE=0 ELSEIFR=5THENAF=0 ELSEIFR=6THENAG=0
ELSEIFR=8THENAH=0
1660 IFR=9THENAI=0 ELSEIFR=11THENAJ=0 ELSEIFR=12THENAK
=0 ELSEIFR=16THENAL=0 ELSEIFR=17THENAM=0 ELSEIFR=18THE
NAN=0
1670 IR=19THENAQ=0 ELSEIFR=21THENAP=0 ELSEIFR=22THENAQ
=0 ELSEIFR=23THENAR=0
1680 ENDPROC
1690 DEFPROCdown
1700 IFP%=10THENP%=11:PROCyes :ENDPROC
1710IFP%=25ORP%=30THENP%=88ELSEIFP%=40THENP%=41ELSEIFP
%=50THENX$="I trip and break my neck":PROCclose
1720 IFP%=59THENP%=60ELSEIFP%=81THENPRINT"I fall and b
reak my neck!":ENDPROC
1730 ENDPROC
1740 DEFPROCwin
1750 CLS:PRINT"CHR$131"W E L L D O N E""CHR$129"y
ou have escaped from the flames !"
1760 SOUND-1,118,0,0:SOUND-1,103,0,0
1770 END
```

UN  
NEE  
R  
NO

# RUNS ON BBC B/ ELECTRON

T  
O  
W  
E  
R  
I  
N  
G

I  
N  
F  
E  
R  
N  
O

```
1780 ENDPROC
1790 DEFPROCcraw1
1800 IFP%<>13THENPRINTCHR$134"Not here !":PROCno :ENDP
ROC
1810PRINT"well I made it.. I don't think I could get
back . The heat is so intense":P%=14:ENDPROC
1820 DEFPROCextinguish
1830 IF AB<>1 THENPRINT"I have nothing to extinguish i
t with":ENDPROC
1840 IFP%=18THENP%=19:PRINT"I extinguish some of the f
lames and run South through them":PROCYes :ENDPROC
1850 ENDPROC
1860 DEFPROClight
1870 IFAP=0THENPRINT"How?":PROCno :ENDPROC ELSEIFAQ=0T
HENPRINT"I need some batteries !":PROCno :ENDPROC ELSE
AT=2:PROCYes :PRINTCHR$131"I fit a battery and light th
e torch !"
1880 ENDPROC
1890 DEFPROClift
1900 IFP%<>25THENPRINT"Not here!":PROCno ELSEPROCYes :
PRINT"I enter the lift and it descends!":P%=27
1910 ENDPROC
1920 DEFPROCpress
1930 IFP%=27THENX$="The lift starts to descend but the
cable breaks!":PROCclose
1940 ENDPROC
1950 DEFPROCin
1960 IFP%=30THENP%=29:PROCYes
1970 ENDPROC
1980 DEFPROCout
1990 IFP%=29THENP%=30:PROCYes
2000 ENDPROC
2010 DEFPROctie
2020 IFAI=0THENPRINT"No rope !":PROCno :ENDPROC
2030 IFAI>1THENPRINT"not now!":ENDPROC
2040 AI=2:PRINT"I tie the rope to the railings and cli
mb down":P%=31:PROCYes :ENDPROC
2050 DEFPROCunlock
2060 IFAH<>1THENPRINT"I have no key!":ENDPROC
2070 IFP%=32THENPRINT"O.K.":PROCYes :S%(32,3)=33:Q$(32
)="Inside a storeroom"
2080 ENDPROC
2090 DEFPROCinsert
2100 IFP%<>34THENPRINT"Not here!":PROCno :ENDPROC ELSE
IFAD=0THENPRINT"I can't do that just now!":PROCno :ENDP
ROC
2110 PRINT"The door opens and i walk through. It clo
ses behind me":P%=35:PROCYes :ENDPROC
2120 DEFPROCup
2130 IFP%=41 THENX$="the staircase sets alight and I b
urn to death in the flames":PROCclose
2140 IFP%=51THENPRINT"I can't make it up the down esca
lator!":ENDPROC ELSEIFP%=60THENP%=61
2150 ENDPROC
2160 DEFPROCsmash
2170 IFP%<>43THENPRINT"Not here":PROCno :ENDPROC
2180 IFAD=1THENPRINT"I try the hammer but nothing happ
ens"
2190 IFAE=1THENPRINT"That does the trick. The door ope
ns and i walk through":P%=44:S%(43,2)=44:Q$(43)="By an
open fire-door"
2200 IFAE=0ANDAD=0THENPRINT"what with?":PROCno
2210 ENDPROC
2220 DEFPROCpull
2230 IFP%<>50THENPRINT"not here!":ENDPROC
2240 PRINT"The escalator starts to move":P%=51:PROCYes
2250 ENDPROC
2260 DEFPROCpush
2270 IFP%<>58THENPRINT"I see nothing worth pushing!":P
ROCno :ENDPROC
2280 P%=59:PRINT"I push the bar and walk out":TIME=0:
REPEATUNTIL TIME>100:ENDPROC
2290 DEFPROCslide
2300
2310 IFP%=70THENP%=71:PRINT"Wheeee that was fun!":PROC
yes :ENDPROC ELSEIFP%=78THENP%=79:PRINT"I don't think I
could face another shute like that!":PROCYes :ENDPROC
2320 PRINT"NOT HERE!":PROCno :ENDPROC
2330 DEFPROClower
2340 IFP%<>81THENPRINT"Not here!":PROCno :ENDPROC
2350 IFAN<>1THENPRINT"I have nothing to lower!":ENDPRO
C
2360 PROCYes :P%=82:PRINT"I lower the plank and slide
down it!":ENDPROC
```



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# GRAPHICS HELP

The one single feature that makes arcade games possible is high resolution graphics. However, good hi-res is very difficult to achieve and there are many ways of doing it. Mike Roberts takes a look at some of the different ways of getting graphics help. I have broken this feature into certain categories. Each evaluation follows the same format but is grouped with products of a similar kind.



## Light Pens

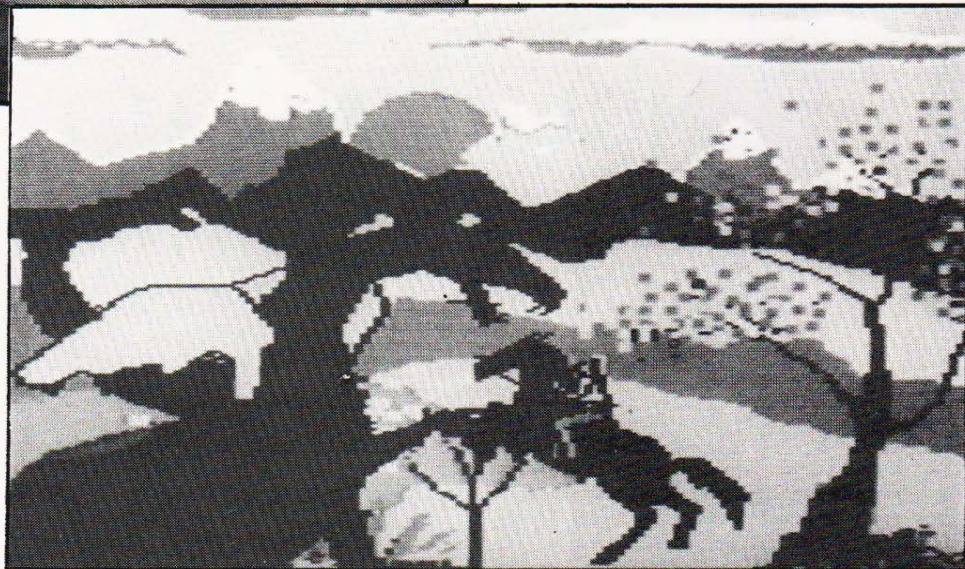
Light pens are objects about the size of a pen that are attached to the computer by means of a length of coiled cable. You then point the pen at the screen. By hardware or software means the accompanying program can read where you are pointing the pen and then performs some action, whether plotting a point or changing an option.

**Made by:** Datapen  
**Compatible with:** Commodore 64, ZX Spectrum  
**Price:** £25.00

The actual pen for both the Commodore and Spectrum versions of this drive are almost identical, only differing in the connector at the end. The pen itself differs from most similar products of this type by having an oval cross-section rather than being a tube. This makes it rather easier to hold than most pens.

Also on the pen is a button to confirm entry. This is used so that you don't write all over the screen when you are just moving the pen from one area to the next. At the base of the pen is an LED. This shows when the pen is receiving data from the screen, and is invaluable in deciding whether the brightness of the screen is high enough.

All these features are unique to the Datapen, and are very useful. Also of note is that rubber inserts for the tip of the pen are provided so that better contact with the screen is made.



The software provided is quite good and is totally lightpen controlled. On the Commodore 64 photocopied sheets are provided with bare instructions for use and a listing of the programs used. This is all that is really necessary as most of the instructions for use are held in an introductory program, and Hardware internal to the Commodore handles most of the light pen's functions.

Not so with the Spectrum. The Spectrum has no lightpen port to attach to so that all the hard work must be done by the software. The software is accompanied by a 36 page spiral bound manual which details the software in full. The Spectrum software has more to it and includes things like a character definer.

Good value with reasonable and accessible software.

**Made by:** Stack  
**Compatible with:** Commodore 64  
**Price:** £28.00

This pen was the most accurate one of all the pens that I tried. It would pick up a signal off the screen without the brightness being turned up at all. The pen itself resembles a pen in as much as it is a short tube. It is quite heavy but this is no problem.

The software supplied is quite substantial and is comparable with the Computapix program. A stack (pardon the pun) of ten games are supplied on one tape including Simon, Othello, Draughts, Concentration and some other less well known ones. The drawing software is quite good and allows you to draw screen with the greatest of ease.

As I mentioned earlier, the games are of a high standard for this kind of product, and there are so many of them. The pen gave no trouble at all and the accuracy of it was uncannily compared to the quality of some of the other products I got to review. Normally the dot produced on the screen by the pen would shake around, but not so the Stake device. I assume that they used a higher quality light sensor in the pen.

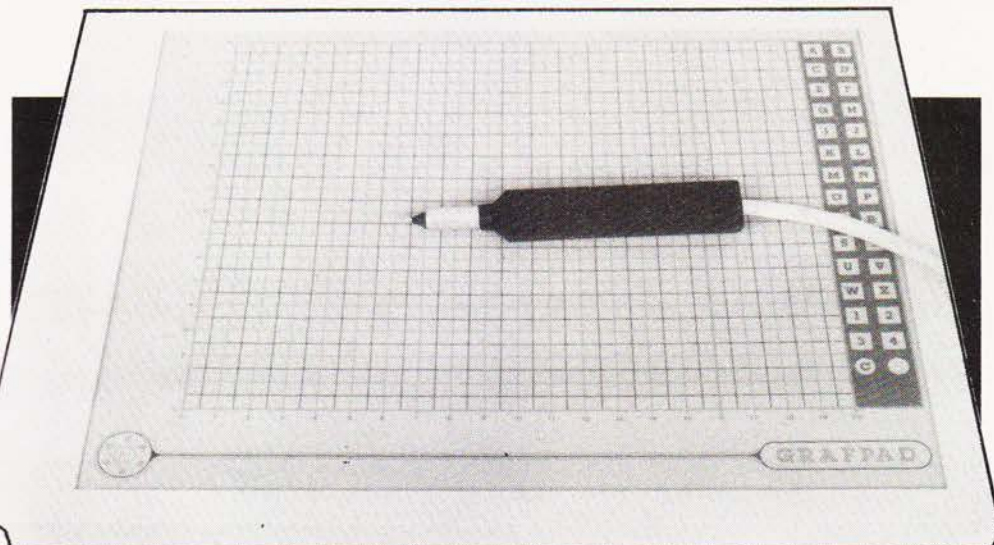
Overall I think this probably represents the best lightpen package for the games player due to the large amount of supplied software.

**Made by:** Computapix  
**Compatible with:** Commodore 64, VIC, BBC, Spectrum  
**Price:** £19.95

Of all the light pens that I looked at this was the best — and in some ways the worst. In the Commodore 64 version the software to draw graphics was fantastic, complete with on screen menus, animation, storage and retrieval of many screens from memory at once.

This software was easy to use and had a very professional air to it. A lot of software looked like it had been tacked onto the hardware as an after thought — not so the Pixstick.

I haven't seen the software for other versions of the pen but if it is up to this



level of excellence then I would be very pleased.

The big problem is the hardware. The pen was probably the most inaccurate one that I have seen. It needed a professional monitor at full brightness and the glare filter taken off before it would work at all. On a domestic TV it was non functional, I believe that Computapix are changing their design. If it comes up to the standard of the Stack or Datapen pens then it will be an unbeatable combination.

Three light pen games are also supplied. The software really makes this product, if the new pens are any good then this pen will be up with the leaders.

**Made by:** Stonechip  
**Compatible with:** Commodore 64, VIC  
**Price:** £13.45

This lightpen is literally that, being housed in the body of a Sheaffer pen, complete with clip and screw on cap!

This is quite a good idea as it allows Stonechip to get a good quality body for the pen at low cost. The clip is quite useful and so is the case as it protects the delicate light sensor in the tip. The cable to connect it to the computer is longer and more flexible than most that I have used which is a great help. Normally the cable is too short and springy which makes it a running battle between you and the pen because it is always trying to pull itself off the TV screen and back to the lightpen port.

The software supplied is nothing to shout about, the graphics designer does not use hi-res graphics and you can only manipulate character graphic screens. Also on the tape is a sliding block puzzle which is great fun to play with and very well executed. The only trouble is that it doesn't recognise that you've won.

The accuracy of the pen is very high, almost to that of the Stack pen, and works with every TV/monitor that I've used. To conclude, good and easily manipulated hardware but a bit short on software.

**Made by:** Dk'Tronics  
**Compatible with:** Spectrum  
**Price:** £19.95

Like most Spectrum light pens there is a slight problem in operation — the Spectrum itself. To drive a light pen properly

the computer must have the facility for one built in from the start like the CBM 64, VIC, or BBC. The way they work is by having two memory locations that represent the X and Y axis of the screen. When the little dot (or raster dot) on the screen goes across, the X axis value is incremented. When the dot goes down the X axis is set to 0 and the Y axis is incremented.

All this time the video chip is listening to the light pen. When the light pen 'sees' the raster dot it yells at the video chip which locks or 'latches' the X and Y values of the pen. All the software has to do is calibrate and read those locations — simple really.

But what about the Spectrum with its dirt cheap video chip that can't do that kind of thing? Well, the way that Dk'tronics have done it is to have a black screen and plot a white line across the screen to find the vertical and another to get the horizontal. This process takes about a second and is considerably slower than the first method, but there is nothing that you can do about it. The Dk software is good, in as much as it looks around where the pen last was for extra speed.

The software itself is very good allowing full use of hi-res graphics and screens stored in memory. The pen is quite accurate and I had no problems with it. If you really want a light pen for your Spectrum and you haven't seen one working on another make of computer then you can't go far wrong with this one.

## STACK LIGHT RIFLE

**Made by:** Stack  
**Compatible with:** Commodore 64, VIC, BBC  
**Price:** £29.95

This is not a light pen but it works on the same principal. It is, as the name implies, a gun which is attached to the computer by a very long cable.

The gun comprises of a main unit with the trigger and sights, a rifle barrel and end sights, a shoulder stock, and a telescopic sight. The tele sights were more for looks than use because the normal sights were much more useful.

Supplied with the game is a set of programs such as Grouse Shoot (needs no explanation), Escape from Alcatraz where you prevent the escape by shooting convicts as they climb the

walls. Lastly High Noon, is a game where you shoot the hats off cowboys.

All these games are great fun to play, but Anirog also do games for it. The Anirog games are truly excellent and had me blasting away at the screen for hours. Unfortunately the SLR is not compatible with the fire repeater reviewed last month, by Stack, the fire works alright but the light pen pin is not connected.

This is an excellent product and well worth putting in somebody's Christmas stocking.

## Graphics Pads

Graphics pads are not a new development, but only recently have prices fallen to a reasonable level so that home users can afford them.

The principal behind a graphics pad is simple — a large pad with a stylus is moved over the pad and the software reads where the stylus is and converts this into a screen co-ordinate. Pads have the advantage that you can trace a picture placed on the pad.

### Grafpad

**Made by:** British Micro  
**Compatible with:** BBC, Spectrum  
**Price:** £143.75

The Graph pad is the Rolls Royce of graphics tablets — with a price to match. It works in an electromagnetic fashion which is very accurate, but expensive. The stylus is attached to the pad and has a switch in it that allows the software to know if it is on the pad or not.

The software is accompanied by a full manual with examples and is an example on how manuals should be produced.

The software itself is very good allowing you to draw on the screen in hi-res as well as having example programs to show you how to use the system in your own software.

If you can afford it an excellent buy.

### KoalaPad

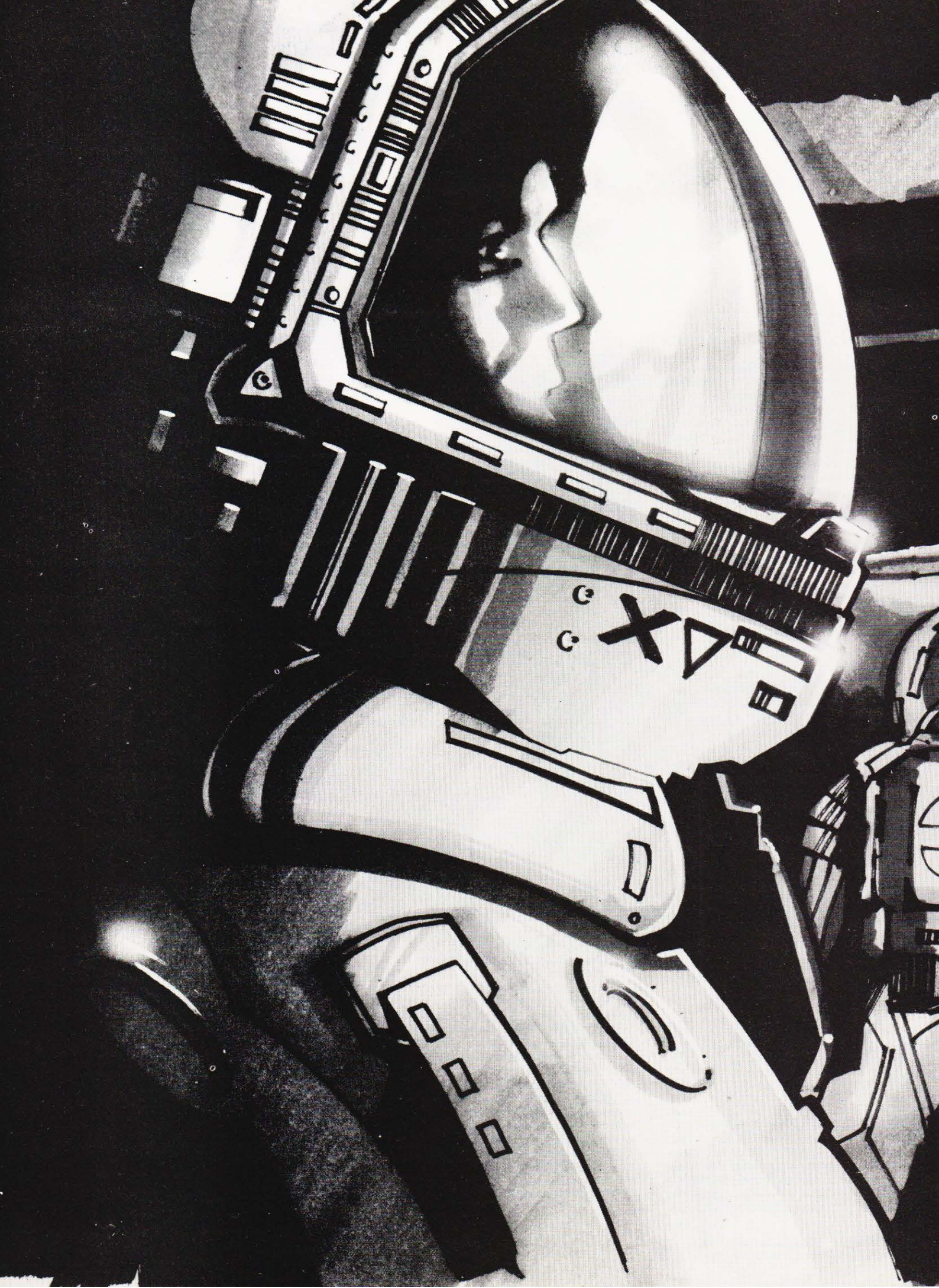
**Made by:** Audiogenic  
**Compatible with:** Commodore 64  
**Price:** £69.95

This pad is really put through its paces by the excellent software that comes with it. Full on screen menus, all selected by the pad. The only time you need access the keyboard is typing in a file name. The software can come on disk or cartridge. The big problem is that files can only be saved to disk, no tapes here. As this is an American product it is understandable, but I would have hoped that it would be modified for the English market.

The software is designed so that a three year old can use it, Icons are used everywhere so you don't even have to know how to read!

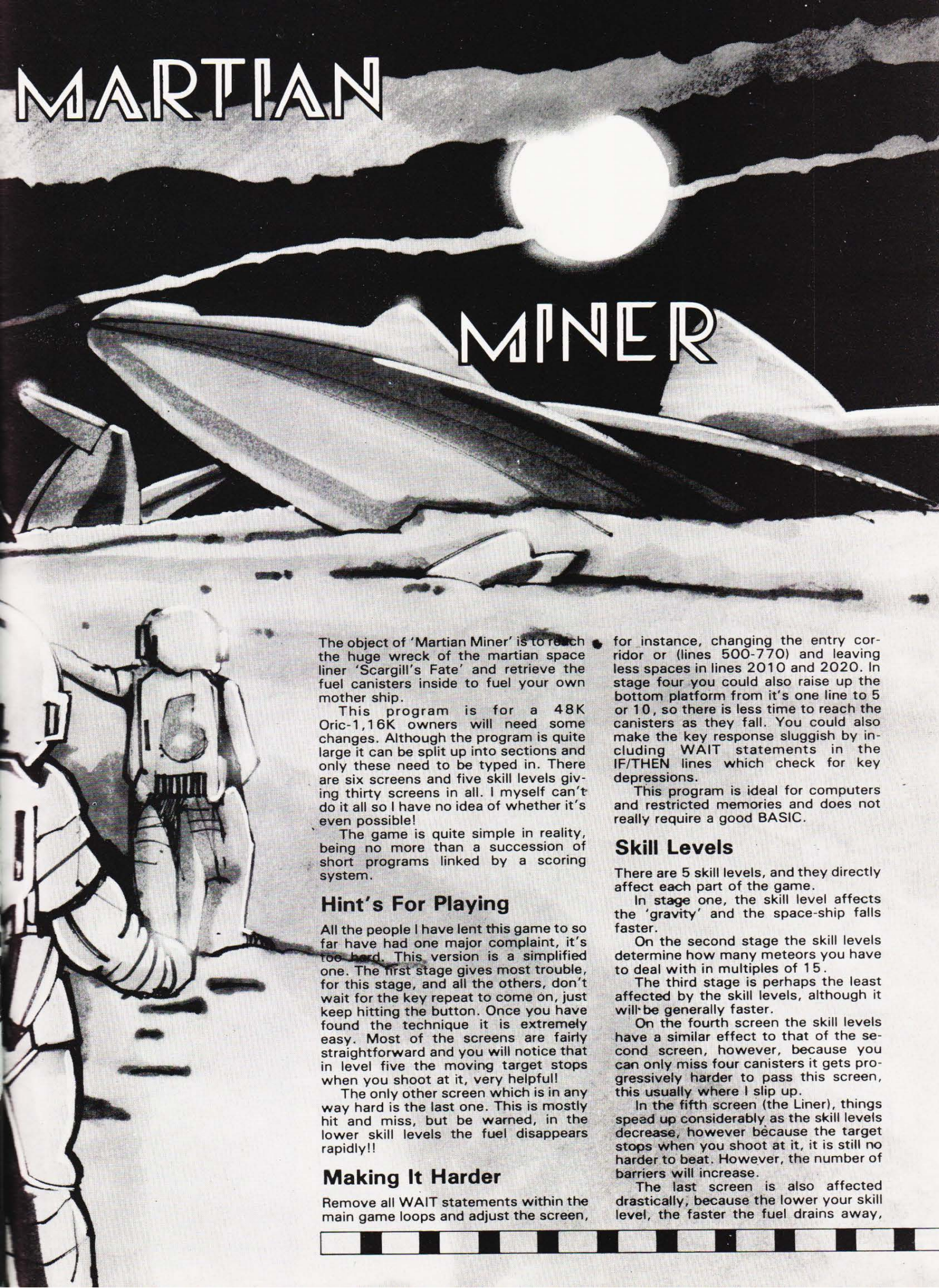
There are some demo pictures on the disk version and they really show the products off.

This is the best graphics tool available for the Commodore 64.



# MARTIAN

# MINER



The object of 'Martian Miner' is to reach the huge wreck of the martian space liner 'Scargill's Fate' and retrieve the fuel canisters inside to fuel your own mother ship.

This program is for a 48K Oric-1,16K owners will need some changes. Although the program is quite large it can be split up into sections and only these need to be typed in. There are six screens and five skill levels giving thirty screens in all. I myself can't do it all so I have no idea of whether it's even possible!

The game is quite simple in reality, being no more than a succession of short programs linked by a scoring system.

## Hint's For Playing

All the people I have lent this game to so far have had one major complaint, it's too hard. This version is a simplified one. The first stage gives most trouble, for this stage, and all the others, don't wait for the key repeat to come on, just keep hitting the button. Once you have found the technique it is extremely easy. Most of the screens are fairly straightforward and you will notice that in level five the moving target stops when you shoot at it, very helpful!

The only other screen which is in any way hard is the last one. This is mostly hit and miss, but be warned, in the lower skill levels the fuel disappears rapidly!!

## Making It Harder

Remove all WAIT statements within the main game loops and adjust the screen,

for instance, changing the entry corridor or (lines 500-770) and leaving less spaces in lines 2010 and 2020. In stage four you could also raise up the bottom platform from it's one line to 5 or 10, so there is less time to reach the canisters as they fall. You could also make the key response sluggish by including WAIT statements in the IF/THEN lines which check for key depressions.

This program is ideal for computers and restricted memories and does not really require a good BASIC.

## Skill Levels

There are 5 skill levels, and they directly affect each part of the game.

In stage one, the skill level affects the 'gravity' and the space-ship falls faster.

On the second stage the skill levels determine how many meteors you have to deal with in multiples of 15.

The third stage is perhaps the least affected by the skill levels, although it will be generally faster.

On the fourth screen the skill levels have a similar effect to that of the second screen, however, because you can only miss four canisters it gets progressively harder to pass this screen, this usually where I slip up.

In the fifth screen (the Liner), things speed up considerably as the skill levels decrease, however because the target stops when you shoot at it, it is still no harder to beat. However, the number of barriers will increase.

The last screen is also affected drastically, because the lower your skill level, the faster the fuel drains away,

this screen will also get faster as you progress.

Because of the way skill levels are used in the program it is not possible to have a skill level 0, and going above 6 usually has strange results. However, I think you should still find the game quite a challenge!

## RUNdown

Lines	Action
100-490	Instructions first stage.
500-770	Set up screen first stage.
840-1030	Program loop first stage.
1060-1300	Set up instructions for second stage.
1320-1460	Set up second stage screen.
1520-1740	Main program loop for second stage.
1790-1960	Set up third stage instructions.
1980-2060	Set up third stage screen.
2340-2500	Set up fourth stage instructions.
2610-2810	The main program loop stage four.
2850-3010	Instructions for the fifth stage.
3020-3090	Set up fifth stage screen.
3120-3300	Main loop for the fifth stage.
3390-3630	Short 'graphics' section.
3640-3910	Instructions for last stage.
3920-4070	Set up the last stage screen.
4090-4340	Main loop for last stage.
4360-4470	Crash loop for second stage.
4490-4710	Crash loop.
4720-4780	This loop prints messages on the Orics status line, it can be replaced by PRINT.
4810-4990	Plot the score.
5000-5140	Special message for losing the last stage.
5150-5380	special message for winning the last stage.
5390-5520	Message for completing all 30 screens.
5530-5560	Data for UDG's.

## Variables Used

SC	Score.
SL	Skill Level.
A	Horizontal position of spaceship.
B	Vertical position of spaceship.
A\$	String to be printed on status line.
AB\$	Message to be printed when you have crashed, changes with each screen.
PM	Random number for positioning of meteors.
MOV\$	Equals KEY\$.
C/1/2 etc	Counter inside REPEAT/UNTIL loops.
MC\$,PM\$	strings of UDG's to form meteors etc.
REG\$	Set to = KEY\$ to clear input buffer.
X,C	Loop values.

To produce a random number bet-

ween 1 and 10 requires:  
NUMBER = RND(1) \* 10 + 1.

On an Oric, adjust this to your own machine's special requirements.

## Conversion Clues

The general idea of each screen is easily convertible although Oric basic has many special features which I shall explain later. Another point of consideration before trying to convert the listing is whether your own machine is fast enough. Particularly fast machines like the BBC or the TI 99/4A will need to be slowed down. The Oric uses a 6502A, running at 1MHZ, whatever that means. In more simple terms this is faster than a Spectrum and slightly slower than an Electron.

### Note for 16K Oric users

Unfortunately this program is too large to run on a 16K oric, but there are ways around this. The program occupies 13422 bytes. The data area is only 164 bytes. There is a HIRES bit but this is only a bit of light relief and should be omitted and the HIRES RAM GRABBED. This still leaves you about five K short. The solution is to save the program in two parts. When you start to run out of memory put in this line:

```
XX DOKE #400,SC:POKE
#402,SL CLOAD"
```

This will store your skill level and score in the machine code RAM in page four and load the next part. When you start to type in the next bit start with this line:

```
XXSC = DEEK(#400) SL = PEEK(#402)
```

Your game will now continue (after a load, of course), as if nothing had happened. (XX is the line number).

With regard to the very few POKES I have used I am told that 16K orics will respond to 48K addresses. To check, type in HIRES:POKE #A000,127. A line should appear at the top of the screen. If it does not then subtract 32768 from all addresses above #B400. This includes all the loop values for the User Defined Graphics (UDG's). A full list of these shall be in the program rundown.

Of course, it's your own fault for not buying an Oric, but the BASIC used in this program is fairly standard and only the graphics need changed. The Oric uses the serial attribute method, as used in Acorn's MODE 7 and all teletext systems. The Oric has teletext keys, modes colour codes, character set etc; all it lacks is a modem! The major advantage of this method is it's speed and economy on memory, the disadvantage is that it's very hard to learn to use it. It works by placing a 'code' on the screen and everything to the right of it will be directly affected. By mixing these you can get 80,640 different colours, but I've stuck to the eight base colours, thank goodness. These colours can either be achieved using plot or placing them after a CHR\$(27), both types have their own codes.

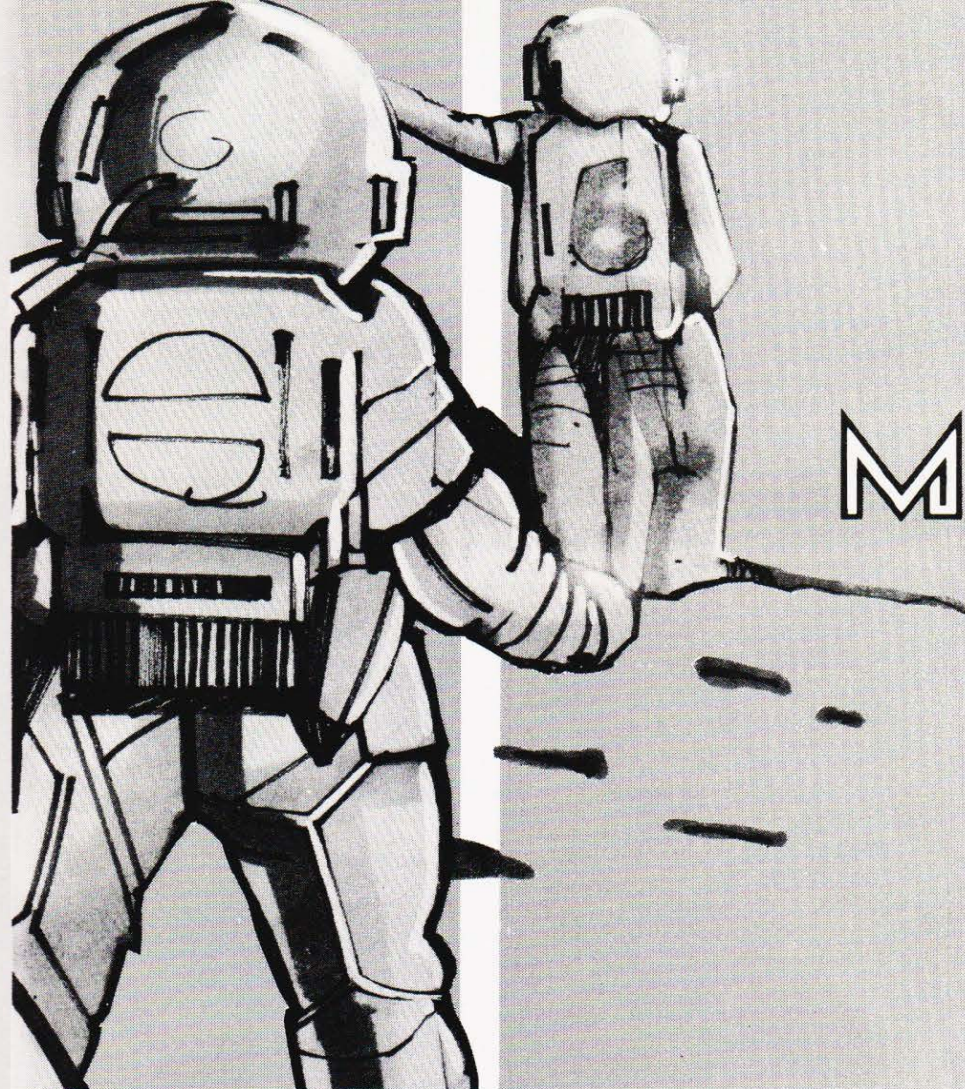
On an Oric, variables do not need to be initialised, they are automatically assumed to be '0'. LET is an optional command, and in the interests of memory I have omitted it.

## Special Oric Commands

Oric basic is particularly fast and powerful and has many extra commands, which I have used in the program for speed, though you should be able to simulate or omit most of them, here are those used in the program:

RELEASE	Hand the graphics RAM (8k) over for graphics.
GET	WAIT for an input from the keyboard.
PLOT	Place a character or colour code at X,Y (across,down).
SPC(X)	Print X spaces (TAB is bugged on the Oric-1).
REPEAT/UNTIL	Loop, REPEATs UNTIL the until condition.
MUSIC W,X,Y,Z	W = chord, X = octave, Y = note, Z = volume.
SCRN(X,Y)	Report colour or character at X,Y.
KEY\$	This is like INKEY\$ or GET.
WAIT PAPER X	Conditional wait. Set background colour corresponding to plot codes.
INK X	As for PAPER but for foreground colour.
PLAY X,-Y,Z,W	Open channels for music, sound, envelope and duration respectively.
SOUND X,-Y,Z	Controls the sound channels (MUSIC is pure) X = 1-3, tone, 4-6, noise, y-period, Z-volume.
HIRES	Graphics mode (200 * 240) + text window.
curset	set cursor at X across, Y down and Z fb (see later).
CURMOV	Move cursor X across, Y down and Z fb.
DRAW	Draw a line X across, Y down and Z fb.
CHARx,y,z	Place a character on the HIRES screen (X), from y character set with fb.
CIRCLE X, Y	Draw a circle of X radius with Y fb.
FILL	This is a very special command which allow you to manipulate any area of the screen at M/C speed. it is exclusive to the serial attribute method so should be ignored.
DEEK/-DOKE	Double peek/poke.
CALL X	Same asUSR.
Only one CALL is used in the program? CALL 62510, which resets the screen and character set.	
ORIC CHR\$ used in the program	
CHR\$	EFFECT
4	double print on/off
17	cursor on/off
12	clear the screen and print
Location 48035 controls the CAPS sign on a 48K Oric-1.	

**RUNS ON  
ORIC/ATMOS**



# MARTIAN MINER

As the program uses a lot of CHR\$, you should note that the character set starts at 32 (space). ASC(A\$) is the same as CODE on the Sinclair 'computer'. SCRN reports in CHR\$ and should give you the most trouble.

I would suggest that you use PEEK, rather than test for the position of the spaceship in relation to other objects on the screen. You should first test how your screen is stored in memory. First find out the start and finish addresses of your screen RAM. (MARTIAN MINER operates in a low resolution mode), and enter this program:

```
10 FOR X= START
20 POKE X,255
30 NEXT X
```

and if you own an Electron or BBC replace line 20 with  
20 X = 255

Now RUN the program and see whether the blocks which fill the screen run across or down.

If your computer does not support REPEAT/UNTIL then do be careful about jumping out of loops, as this will cause ? OUT OF MEMORY ERROR's on most machines. It may even be better to restructure the entire program using GOTO's.

FB Codes: the third parameter after all Oric Hires commands is the FB number, they are

- 0 - set to background.
- 1 - to set to foreground
- 2 - invert pixel
- 3 - do nothing

Inverse colours change say BLACK to WHITE

## Oric-1 /Atmos Attribute Chart

CHR\$	PLOT CODE	EFFECT ACHIEVED
"@"	0	Foreground - BLACK
"A"	1	RED
"B"	2	GREEN
"C"	3	YELLOW
"D"	4	BLUE
"E"	5	MAGENTA
"F"	6	CYAN
"G"	7	WHITE
"H"	8	SINGLE HEIGHT STANDARD
"I"	9	SINGLE HEIGHT ALTERNATE
"J"	10	DOUBLE HEIGHT STANDARD
"K"	11	DOUBLE HEIGHT ALTERNATE
"L"	12	SINGLE FLASHING STANDARD
"M"	13	SINGLE FLASHING ALTERNATE
"N"	14	DOUBLE FLASHING STANDARD
"O"	15	DOUBLE FLASHING ALTERNATE

The background colours are the same as foreground except that 16 must be added to the plot code or 16 letters of the alphabet for the CHR\$ method. The codes from 8 to 15 are for the double height/flashing text facility so are not naturally available in background.

## User Defined Graphics

While obviously UDG's cannot be standard the Oric is even more unusual than you might think because in order to maintain correct spacing characters are defined on a 6 \* 8 grid, instead of the usual 8 \* 8.

I have used the percent sign for the space ship, the ampersand for a square and some obscure brackets for the meteors. The formulae for finding the

start address of a character in RAM is:  
 $START + (8 * ASC("%")) /$   
 $START + (8 * CODE("%"))$   
 where start is the bottom of the character set and the percent represents the character. The UDG loops using data in my program are at 610-630,700-720,1400-1420. The data is at the end of the program and will need changing too.

The loops which only poke the same value to a character are at 500,1420. These will only need the loop value's changed.

NB: On the 6 \* 8 grid, the two columns which must be left blank are on the left. The data in my program will work, but it would be preferable to make use of the two extra columns on your own machine.











**RUNS ON  
ORIC/ATMOS**

```
2800 IFLI=0THENGOSUB4510
2810 UNTIL L2=ABS(SL-6)*10
2820 PING
2830 REG$=KEY$:REG$=""
2840 A$=""
2850 CLS:PAPER0:INK7
2860 PRINTCHR$(4);CHR$(12)
2870 PRINTCHR$(27);"J Level 5 - the Liner"
2880 PRINTCHR$(4)
2890 FORX=1TO12:MUSIC1,4,X,15:WAIT15:NEXT:PING:PING:PING:PING
2900 PRINT:PRINT"CONGRATULATIONS !!!"
2910 PRINT:PRINT"You have reached the entrance to the"
2920 PRINT:PRINT"Liner.You must shoot through the "
2930 PRINT:PRINT"sheilds and destroy the robot gaurd"
2940 PRINT:PRINT"before you can enter the Liner"
2950 PRINT:PRINT"          YOUR CONTROLS"
2960 PRINT:PRINT"          L.ARROW - LEFT"
2970 PRINT"YOUR SCORE : ";SC
2980 PRINT"          D.ARROW - RIGHT"
2990 PRINT:PRINT"          SPACE - FIRE"
3000 PRINT:PRINT"          Press any key"
3010 GETA$
3020 CLS:PAPER0:INK7
3030 PL=7
3040 A=19
3050 PLOTA,26,"% "
3060 PLOT3,0,0:PLOTS,0,17:PLOT7,0," SCARGILLS FATE":PLOT29,0,16
3070 PLOT6,1,19:PLOT28,1,16
3080 L1$="-----"
3090 FORX=4TO(ABS(SL-6)*4)+4:PLOT0,X,L1$:NEXT
3100 A$="PRESS SPACE TO START":GOSUB4740:REPEAT:UNTILKEY$=CHR$(32)
3110 A$=""
3120 REPEAT
3130 IFA>38THENA=A-1
3140 IFA<2THENA=A+1
3150 PL=PL+1
3160 PLOTPL,2,"&"
3170 PLOTA,26,"% "
3180 MOV$=KEY$
3190 IFMOV$=CHR$(8) THENPLOTA,26," ":A=A-1
3200 IFMOV$=CHR$(10) THENPLOTA,26," ":A=A+1
3210 IFMOV$=CHR$(27) THENCALL62510
3220 IFMOV$="S" THENGOSUB4820
3230 IFMOV$=CHR$(32) THENGOSUB4930
3240 YY=YY+1
3250 IFPL>26 THENR1=1:YY=0
3260 IFPL<7 THENR1=0
3270 IFR1=1 THENPL=PL-2
3280 PLOTPL,2," "
3290 IFR1=1 THENPLOTPL+2,2," "
3300 UNTIL FALSE
3310 SOUND1,999,15
3320 FORX=26TO28STEP-1:PLOTA,X," ":PLOTA,X-1,"%":WAIT10:NEXT
3330 REG$=KEY$:REG$=""
3340 A$="SUPER BONUS 5000 !!!":GOSUB4740
3350 PING
3360 SC=SC+5000
3370 FORX=1TO50:R=RND(1)*12+1:MUSIC1,6,R,15:NEXT:PING
3380 A$=""
3390 HIRES
3400 PRINTCHR$(17)
3410 CURSET0,1,3
3420 A$="YOU HAVE REACHED THE LINER!"
3430 FORA=1TOLEN(A$)
3440 CHARASC(MID$(A$,A,1)),0,1
3450 CURMOV6,0,3:NEXT
3460 CURSET0,15,3
3470 A$="FUEL IS BEING TRANSFERED TO YOUR SHIP"
3480 FORA=1TOLEN(A$)
3490 CHAR ASC(MID$(A$,A,1)),0,1
3500 CURMOV6,0,3
3510 NEXT
3520 CURSET0,30,3:FILL169,1,0
3530 CURSET50,199,3
3540 DRAW-40,-40,1:DRAW0,-35,1:DRAW35,0,1:DRAW75,75,1
3550 CURMOV30,0,3
3560 DRAW40,-40,1:DRAW0,-30,1:DRAW20,-20,1:DRAW0,30,1:DRAW5,-5,1
3570 DRAW-30,65,1
3580 CURSET190,60,0:CIRCLE20,1
3590 CURSET0,199,3:DRAW239,0,1
3600 CURSET0,30,3:FILL169,1,7
3610 WAIT250:TEXT
3620 PRINTCHR$(17)
3630 POKE48035,0
3640 PRINTCHR$(4);CHR$(12)
3650 PRINTCHR$(27);"J The final stage";CHR$(4):PRINT:PRINT
3660 PRINT"AT LAST !!!!"
3670 PRINT:PRINT" You have picked up the fuel and are"
3680 PRINT:PRINT"on your way back to your mothership."
3690 PRINT:PRINT" Alas your mothership is nearly out"
3700 PRINT:PRINT"of fuel and is wobbling out of orbit."
3710 PRINT:PRINT" You must dock with the mothership."
3720 PRINT:PRINT"          YOUR CONTROLS"
```



**RUNS ON  
ORIC/ATMOS**

```
4650 EXPLODE:WAIT10
4660 WAIT150:CLS:PRINT:PRINT"SORRY - Your ship was destroyed"
4670 PRINT"whilst ";AB$
4680 RESTORE:PING
4690 PRINT:PRINT:PRINT"YOU SCORED ";SC
4700 PRINT:PRINT"Another game?":R2$=KEY$: R2$="":GETR2$:IFR2$="N"THENCALL62510
4710 CLEAR
4720 GOTO310
4730 END
4740 FORD=1TOLEN(A$)
4750 C=ASC(MID$(A$,D,1))
4760 POKE48003+D,C
4770 NEXT:FORG=48037TO48039:POKEG,32:NEXTG
4780 RETURN
4790 END
4800 A$=F2$:GOSUB4740:SC=SC+500:A$=F2$:GOSUB4740:GOTO1740
4810 END
4820 REM PLOT SCORE
4830 PING
4840 SC$=STR$(SC)
4850 SC$=MID$(SC$,2)
4860 SC$=SC$+" "
4870 PLOT25,4,"SCORE "+SC$
4880 WAIT70
4890 S1=LEN(SC$)+5
4900 FORP=25TO25+S1
4910 PLOTP,4," ":NEXT
4920 RETURN
4930 REM SHOOT AT LINER
4940 FORU=25TO1STEP-1
4950 PLOTA,U,"!"
4960 IFSCRN(A,U-1)=38THEN3310
4970 IFSCRN(A,U-1)>32THENEXPLODE:PLOTA,U-1," ":PLOTA,U," ":RETURN
4980 PLOTA,U," "
4990 NEXTU
5000 RETURN
5010 REM LOSE LAST STAGE
5020 FORX=1TO36:PLOTX,0,"*":EXPLODE:PLOTX,1,"*":EXPLODE:PLOTX,2,"*"
5030 EXPLODE:PLOTX,3,"*":EXPLODE
5040 NEXTX
5050 ZAP:PLOTA,B," "
5060 WAIT40:CLS:PAPER0:INK7
5070 PRINTCHR$(4)
5080 PRINTCHR$(27);"J Sickened";CHR$(27);"N!!"
5090 PRINTCHR$(4)
5100 PRINT:PRINT" You've been ionised by the explosion":PRINT
5110 PRINT"on the very last stage !!"
5120 PRINT:PRINT" However,you did score ";SC
5130 PRINT:PRINT"ANOTHER GO?":REG$=KEY$:REG$="":GETRR$
5140 IFRR$="Y"THENCLEAR:GOTO310
5150 CALL62510
5160 END
5170 REM WIN LAST STAGE
5180 PING
5190 IFSL=1THENS400
5200 FORL1=0TO6
5210 FORL2=1TO12
5220 MUSIC1,L1,L2,15
5230 NEXTL2,L1
5240 SC=SC+5000:A$="SUPER BONUS 5000":GOSUB4740:WAIT40:A$=""
5250 GOSUB4740
5260 EXPLODE
5270 PAPER0:INK7:PRINTCHR$(4)
5280 PRINTCHR$(12)
5290 PRINTCHR$(27);"N AMAZING !!"
5300 PRINTCHR$(4):PRINT
5310 PRINT"You have saved your mothership AND"
5320 PRINT:PRINT"acheived a score of ";SC
5330 PRINT:PRINT" Now,as a mark of our appreciation"
5340 PRINT:PRINT"you're going to do it all over again"
5350 PRINT:PRINT"on skill level ";SL-1;" !!"
5360 PRINT:PRINT" Press any key"
5370 REG$=KEY$:REG$="":GETA$
5380 SL=SL-1:GOTO490
5390 END
5400 REM THE END OF THE END
5410 PRINTCHR$(4):PRINTCHR$(12)
5420 PRINTCHR$(27);"J THATS IT";CHR$(4)
5430 PRINT
5440 PRINT:PRINT" YOU MIGHT AS WELL THROW THE TAPE"
5450 PRINT:PRINT"AWAY NOW, YOU CAN DO THE WHOLE THING"
5460 PRINT:PRINT" BUT DON'T REST ON YOUR LAURELS,THE"
5470 PRINT
5480 PRINT"WORST IS YET TO COME!!"
5490 PRINT:PRINT:PRINT"by the way,you scored ";SC
5500 PRINT:PRINT:PRINT"ANOTHER GO?":REG$=KEY$:REG$="":GETR4$
5510 IFR4$="Y"THENCLEAR:GOTO310
5520 CALL62510
5530 END
5540 REM PROGRAM DATA
5550 DATA32,16,12,46,63,46,0,18
5560 DATA0,0,0,0,0,0,255
5570 DATA0,8,28,62,62,28,8,0
```

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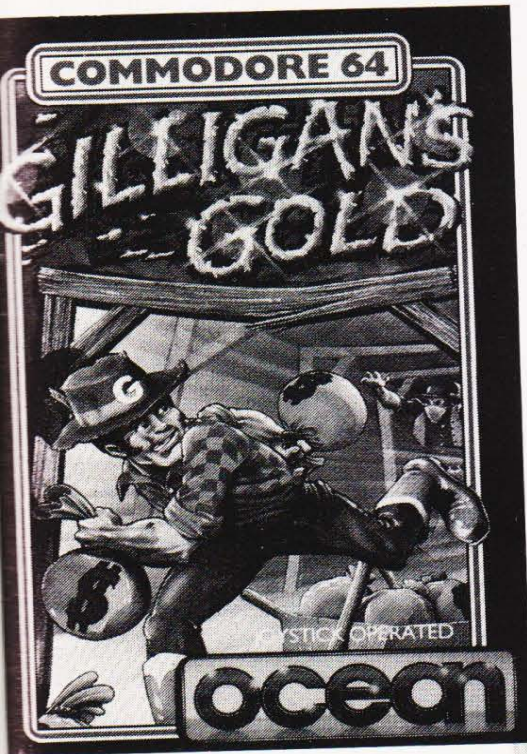
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GC12/84

# SOFTWARE



## GILLIGAN'S GOLD

Runs on: CBM 64  
 Made by: Ocean Software Ltd  
 Price: £7.90

An interesting maze type game in which you control Gilligan who has to negotiate the labyrinths of a gold mine. As you manoeuvre him through the mine your task is to pick up bags of gold, carry them to a wheelbarrow and to do so before your time runs out. As always obstacles are in your way. There are three outlaws who roam the mine and who cause the loss of a life if they catch you. This can be avoided by simply evading them in the various corridors, up ladders or in lifts. They can be stunned temporarily by hitting them with pickaxe handles that can be found around the mine.

A further method of escaping from them is to jump onto small ore trucks that roll along the corridors, but beware, if you mis-time your jump, they will run you over.

This is a multi screen game that scrolls horizontally to show further parts of the mine.

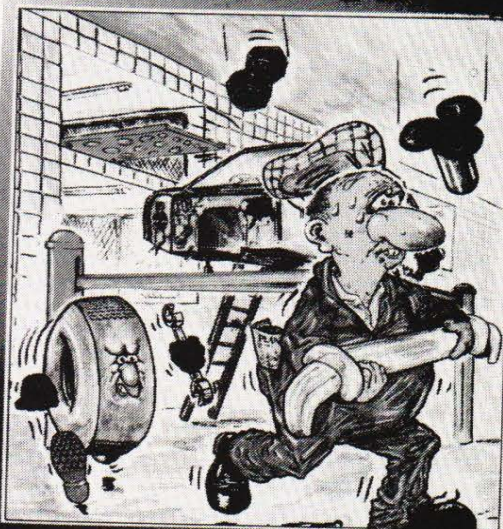
## AUTOMANIA (MANIC MECHANIC)

Runs on: CBM 64  
 Made by: Mikro-Gen  
 Price: £7.95

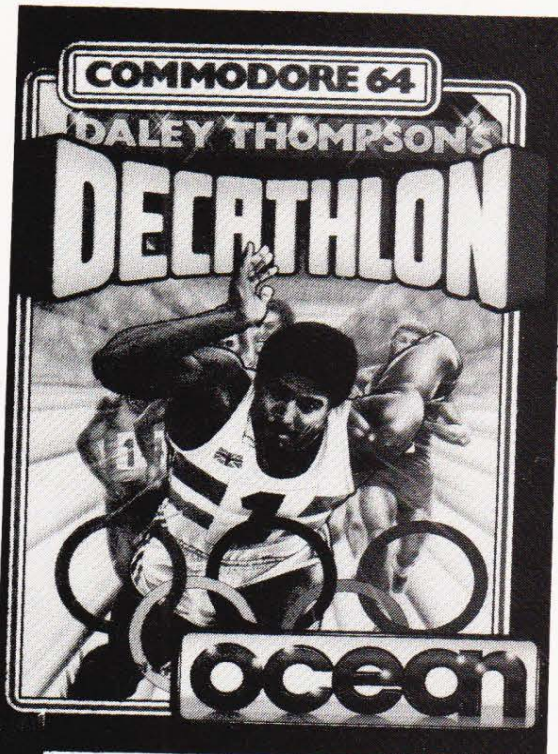
Yet another variant of the 'mobile maze' type of game. In this version, you guide the mechanic, Wally Weeks, around his garage and store room to collect car parts. There are six parts of each car to be collected, from wind-screens to doors and wings. However, as usual things are not quite as easy as all that. There are ladders to negotiate and gangplanks to walk along which are constantly moving and are therefore easy to fall off. The floor is strewn with rubbish which you must jump over or else you will fall over it and lose a life. On top of all this, there is a time limit in which you must complete the car.

This program is another in the ever growing series in which Software Houses offer cash prizes for the highest verified scores sent in. In this case it is £100 per month.

## GENATIONAL SOFTWARE FROM MIKRO-GEN



## AUTOMANIA (MANIC MECHANIC) FOR COMMODORE 64



## DALEY THOMPSON'S DECATHLON

Runs on: Tape  
 Made by: Ocean Software  
 Price: £7.90

It's a good job Daley Thompson won the Olympic Gold because he has only won silver compared with the Activision version in the software race.

The game follows the same format as the Activision one but falls short with the graphics. The figures are not as realistic, more comic like, and the screen is full of information and advertisements. Did Boots really pay for this privilege?

The main difference is that you get four lives and unless you qualify at an event, you will lose a life, and do not go through all ten events.

Ocean use the 'Turbo Loader' loading system which is a plus in favour. While the game is loading a graphical representation of Daley Thompson appears on screen with background music for you to enjoy.

If I had not seen the Activision Decathlon I would have been quite happy with this effort, but I have!

# REVIEWS

# SOFTWARE

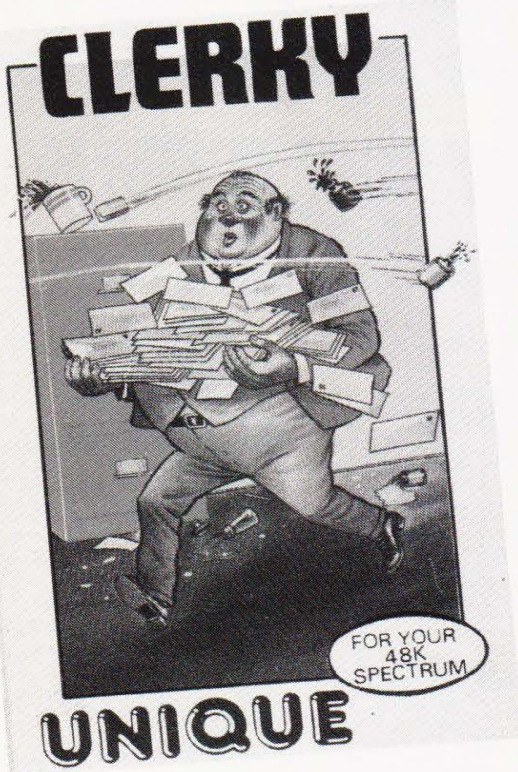
## CLERKY

**Runs on:** 48K Spectrum  
**Made by:** Unique Computer Products  
**Price:** £5.99

Essentially this game is a question of using four keys (or a joystick) to drive a neatly animated clerk around a roughly square office. White letters are posted one at a time from one of six slots at the top, and drift down slowly. The aim is to pick it up (50 points) and deliver it to the left hand side for filing (100 points).

You lose one of four lives if you are hit by an inkpot (they move diagonally, and quite fast), or collide with a bouncing rubber.

There are ten levels, I signed off at level 2 (it could have become addictive!) The game lacks the charm of Escape (remember those intelligent little dinosaurs?) or the complication of the many rooms of Atic Atac. But it's harmless enough, and fun.



## EVEREST

**Runs on:** Lynx 48/96K  
**Made by:** Multisoft  
**Price:** £7.95

This is a tactical game with three skill levels which requires you to lead an expedition of climbers, sherpas and porters to the top of Everest. All

associated equipment also needs to be transported up the mountain. This is not as straightforward as it first seems as the conditions may be against you. Also each team member can only carry one item per day.

The program loads in two parts, the first part drawing a picture of Everest. This is the only graphics in the game and remains on the screen throughout. The second part is the game itself. Both parts are written in BASIC and for this type of game this is no handicap. The playing consists of forging new routes and transporting food and equipment between camps. At the end of each day a status report tells you how each camp is faring. You have around 30 days to reach the summit. I have not made it yet even on the easiest level. If you enjoy games of strategy then this should appeal to you.

## Centipede

**Runs on:** Lynx 48/96K  
**Made by:** Play It  
**Price:** £7.95

This game has all the features of the original arcade game. It is colourful and fast moving and has the option of using a joystick or the keyboard. I used the keyboard and found that it responded instantly and was easy to use. A continuous firing feature means that you only have to keep the space bar pressed down rather than having to pound away at it.

There is a hall of fame for the ten highest scores. This is done using customised graphics and reflects the thought that seems to have gone into the whole game. If Play It can come up with more software of this quality for the Lynx then we will be hearing a lot more of them. I only hope that we do not have too long a wait.

## WARSHIP!

**Runs on:** Oric 1 48K  
**Made by:** J.L.P.  
**Price:** £5.95

When Oric 1 first appeared, software as bad as this was suffered for quite a while by patient Oric owners. I thought we would see no more but sadly I was wrong. I wouldn't feel so aggrieved but they even have the cheek to charge nearly six pounds for it. Daylight robbery!

For those of you still interested the game involves navigating a warship and troopship through a minefield while defending yourself against gun batteries, helicopters and submarines. The game is written in BASIC and it shows! The cassette inlay says 48K but it will

work on a 16K machine if the grab command is used before loading. One that I cannot recommend.

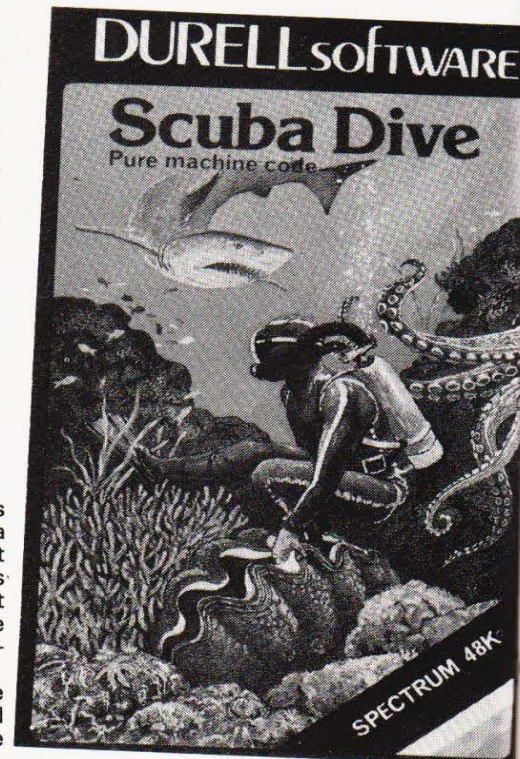
## SCUBA DIVE

**Runs on:** Spectrum 48K  
**Made by:** Durell Software  
**Price:** £6.95

If you have ever wanted to swim the icy depths in search of sunken treasure, then this is the game for you. Under your careful control is a highly manoeuvrable Frogman, who, with the swish of a flipper can turn, dive, twist and accelerate with beautiful motions, in any conceivable direction, even upside down.

The object of the game is to collect as many pearls and items of treasure as you can before either your air runs out or you are killed by one of the numerous inhabitants of Davey Jones's Locker. Just to make life difficult your intrepid Frogman has to put up with the fact that he doesn't even have any defence against these nautical nasties. The only real drawback with this game is when the screen is scrolled, which tends to jump into position. But that is a small price to pay for the excellent graphics contained.

So remember, when you are underwater, no one can hear your screams!!!





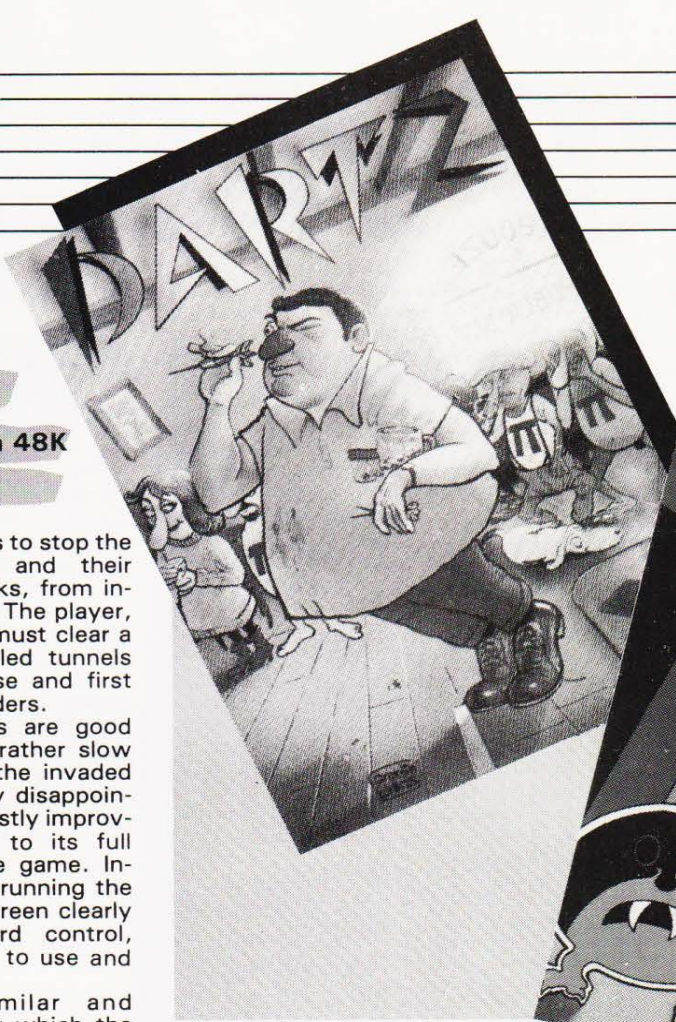
## DRILLER TANKS

**Runs on:** ZX Spectrum 48K  
**Made by:** Hudson Soft  
**Price:** £5.95

The object of Driller Tanks is to stop the fire breathing Mammuts and their mindless cohorts, the Skorks, from invading the Summer House. The player, as controller of the tanks, must clear a path through the earth filled tunnels beneath the Summer House and first freeze, then crush the invaders.

The on screen graphics are good although the animation is rather slow and jerky. The demise of the invaded Summer House is also very disappointing and could have been vastly improved upon. Sound is used to its full capacity and enhances the game. Instructions are provided on running the game and shown on the screen clearly and simply. The keyboard control, however, is very awkward to use and a joystick is desirable.

There are eight similar and unstimulating screens after which the game repeats itself.



## KROCATILE WALTZ

**Runs on:** Oric 1 48K  
**Made by:** Superior Software  
**Price:** £7.95

In this game you play the part of an ecologically sensitive native trying to protect the 'Krocattiles' on your stretch of jungle river. The poor souls are under threat of extinction from both big white hunters trying to turn them into handbags and watersnakes who just love Krocattile eggs.

You certainly have problems. Watersnakes keep biting you, hunters couldn't care less whether they shoot you or the swimming handbags, Krocattile don't appreciate your kindness and they have a nasty habit of eating you. Is it all worth it you might ask! Well, unless you've got pretty nimble fingers, it probably isn't.

Considering the price and the Oric's capabilities the graphics could have been a little smoother but the music is pure jungle, almost hypnotic.

Will other software houses please note the superb tape loading program used on this game.

## DARTZ

**Runs on:** Spectrum 48K  
**Made by:** Automata UK Ltd  
**Price:** £5.00

This latest release from Automata tries, without much effect to convey the atmosphere of a pub pastime onto the screen. Not only does the player have to compete against the dart board, he must also put up with the constant alcoholic intake which only serves to make scoring more difficult.

The actual dart throwing procedure is reasonably well done, giving the player at least a fighting chance. There are also some good skill factors included, which makes it more than just a game of chance. However, if the player takes too long in bringing his score down, then he becomes more and more drunk, which inevitably leads to dropped darts and darts bouncing out.

Due to this constant increase in alcohol the longer the game takes the more boring it becomes. As the skill factor changes to a hit and miss affair and on one is really interested in losing a game because they are paraletic through no fault of their own!!!

## ZIG ZAG

**Runs on:** 48K Spectrum  
**Made by:** DK Tronics  
**Price:** £5.95

ZIG ZAG is another maze game, but one totally different to any I have seen before for the Spectrum. It is in very realistic 3D, and is graphically superb: very large aliens run away from you in the maze, and your job is to corner them, and then kill them. The screen display features a 3D window with the view of the maze and alien, and a map of the whole maze.

The game does not finish as soon as you have caught and destroyed the alien, but you then gain access to a larger section of the whole maze (to start with, you are restricted to a small part of it).

The sound effects are as good as can be expected from the Spectrum, and help make the game one of the best that have been released recently.

# REVIEWS

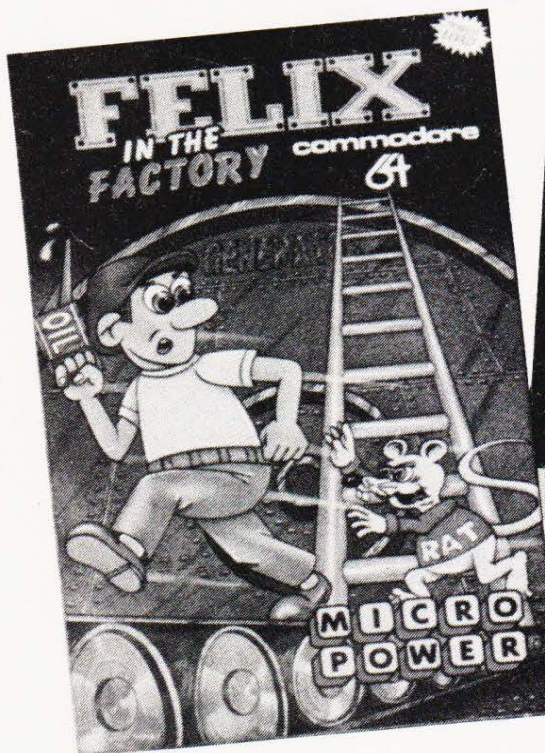
# SOFTWARE

## FELIX IN THE FACTORY

Runs on: CBM 64  
 Made by: Micro Power  
 Price: £6.95

In this game you are presented with a randomly generated layout of a factory on several floors with connecting ladders. Your task is to guide Felix down a ladder from where he is tending the generator, along a moving conveyor belt, where he must jump over parcels, and then up the other ladders to retrieve an oil can.

All very easy you might think, but of course there are the usual obstacles in your way. There are blue, green and pink gremlins which chase Felix and can cause the loss of a life. However, they can themselves be killed by Felix if he attacks them with a conveniently placed pitchfork. Another hazard is the 'Factory Rat' who periodically scuttles across one of the floors accompanied by a very realistic sound. He can also be killed off by Felix strategically placing a bag of poison. Having retrieved the oil can, Felix must re-negotiate his way back to the generator to fill it. Meanwhile the oil level in the generator has been decreasing and if it runs out before Felix returns, then the game is over.



## BEAM RIDER

Runs on: Dragon 32/64  
 Made by: Microdeal Ltd  
 Price: £8.00

The first time I tried to load Beam Rider I

thought to myself "Help! The computer's about to blow up!", for as soon as it found the program my Dragon began switching its cassette relay on and off quite merrily half way through each block of the program. After turning the computer on and off several times, and then trying other tapes I came to the conclusion that it must be the Beam Rider program causing all this alarm, so I left the tape running and suddenly, half way through the program appeared the new Microdeal title screen — a full colour hi-res picture of good old Cuthbert!

Anyway, after all the heart attacks I finally loaded Beam Rider to find quite a good game. The right joystick is used in order to move your Beam Rider across the screen. Of the nearest block to you in the direction you want to go is not immediately adjacent then a beam is fired to the block which your beam rider immediately 'rides' at twice the normal speed.



To make matters difficult, Chasers (small red bugs with yellow eyes) follow your beamer around in a desperate attempt to get in the way and destroy you. There is one chaser in the first screen and two on all the others. There are also spinners (spinning yellow rings) which move around at random. If a spinner hits you your beam rider or the energy beam then you lose a beamer. Energizers (multicoloured spinning squares) are formed when a Spinner touches a block. Hitting these doubles your score for the next 7 seconds (approx.) and allows you to temporarily disable any Chaser which may hit you while Energized. Extra points are also awarded for hitting an energizer.

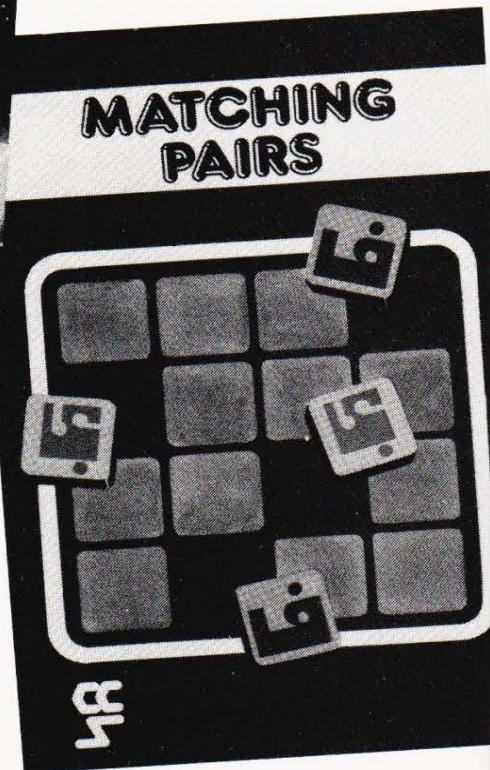
## MATCHING PAIRS

Runs on: Spectrum 48K  
 Made by: Cases Computer Simulations  
 Price: £2.99

What a pleasant change from games of death and destruction. This game as its name implies is a computerised version of the child's card game where a card is turned face up one at a time and its matching pair attempted to be located. If it is not found at the first try, then the two cards are turned face down again.

This game has seven successive levels of difficulty ranging from differences in colour only, to differences in colour and pattern. If you fail to get all of the pairs in a reasonable number of tries, the program will not let you progress to the next level.

It can be played as a one or two player game and has a high score table at the end. There are catchy little tunes at each stage of the game including a snatch of "Congratulations" at the successful completion of a level.



## LES FLICS

Runs on: 48K Spectrum  
 Made by: PSS  
 Price: £6.95

The infamous Pink character has at last made his debut in the computer scene: he is the star of this new arcade adven-

ture from PSS. PSS have rather recently exploded their advertising profile, and so I somehow expected more of a professional game from them than their old games, but I was disappointed.

The idea here is to find, and steal, the jewel. There are dozens, literally, of gendarmes out to arrest you, and at the same time as avoiding these, you have to collect various items.

The plot is fine, even good. Unfortunately, the execution of it leaves something to be desired. The graphics are rather small, reminiscent of the very first Spectrum games, until you reach one of the second screens. There are about a dozen different screens at this stage, which you can get to from the first, but even here, the graphics are rather plain — except for the panther itself (you) which is very well animated.

At this stage of the game, you have to climb up to various different floors in each building, looking for the objects. Once you have for as far as you can (for me this did not take too long) the way ahead is very unclear, with the result that you roam around not knowing what to do, so the game soon palls.

Apart from this, the game is a straightforward adventure, but a real graphic one where you have to physically pick up objects (less easy than you might hope) and kill policemen. Not my favourite, though a step ahead of standard arcade games.

### 3D SPACE WARS

**Runs on:** Dragon 32  
**Made by:** Hewson Consultants  
**Price:** £7.95

The object of this space-invader type game is to seek out and destroy the SEIDDAB Fleets (Yawn, Yawn) I seem to remember this type of scenario before. You are both armed with twin laser guns.

If they hit you some of your huge energy reserve is used up (when this is all used up you have finished the game). Also when you fire the energy reserve is depleted. To replenish this reserve you have to dock at a twin tanked fuel station.

To actually hit a ship needs a high degree of accuracy — firstly the ship has to be close to you and then in the very centre of your sights.

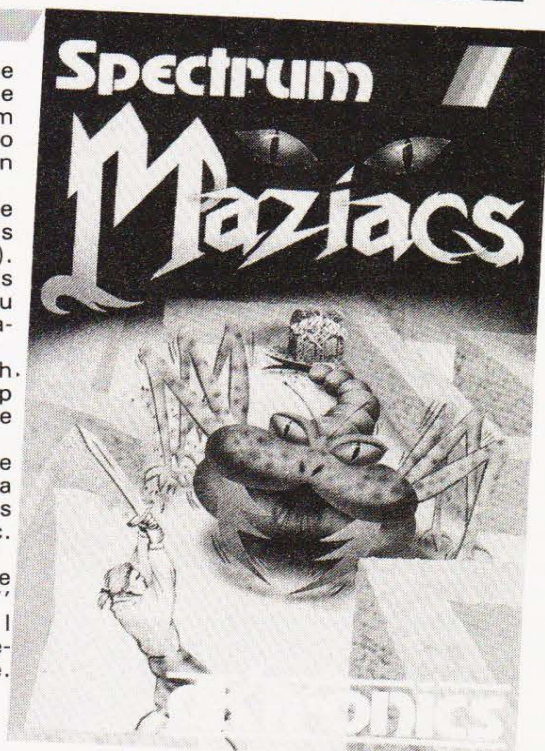
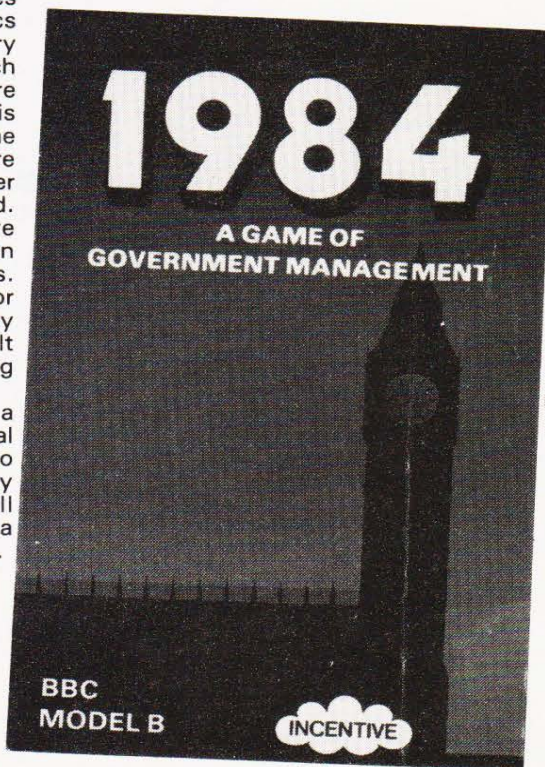
The graphics were designed to make you think you were looking out of a cockpit and were effective. Explosions and oncoming ships looked realistic. The sound was insignificant.

Overall, it was a well-written game but I am a bit tired of "shoot 'em up" games. I became bored usually after I had scored 120 but to the space-invader game fanatic it is a good game.

### 1984

**Runs on:** BBC Model B  
**Made by:** Incentive Software  
**Price:** £6.50

Most people at some time in their lives have claimed that they could run the country better than the Government,



well here is an opportunity to put your money (or balance of payments) where your mouth is.

1984 is a game in which you take on the role of Prime Minister, guiding the country along the road to economic prosperity, fighting inflation and unemployment in this comprehensive economic simulation.

At the end of each year in office your performance is displayed in the form of histograms covering such economic indicators as inflation and average earnings. Should you survive 5 years in office you must place yourself at the mercy of the electorate in a general election and pray for leniency.

Overall this is a very professional program, it is a good game and it could well be suitable for use in an educational environment.

### MAZIACS

**Runs on:** Commodore 64  
**Made by:** DK'Tronics  
**Price:** £6.95

The title suggests the types of game, a maze. You run through a large maze, get a treasure and return to the start, easy. Yes? No! These nasty Maziacs, little black creatures who are the guardians of the treasure are out to stop you, although they always know where you are they are not intelligent enough to find their way through the maze. As you leave the safety of your starting place you should collect a sword, from many placed randomly around the maze, and be prepared to kill the guardians. Continuing along don't forget to eat or your strength will be low and this could be your downfall should you find yourself without a sword, you lose the sword everytime you kill a Maziac.

Two things help you on your way along at least 250 moves. One is the facility to see more than the one fiftieth of the maze you normally see. It gives you the chance to see a twelfth, this is most useful with your second piece of assistance, the prisoners, these poor devils are trapped in the maze, but have the knowledge of where the treasure is. To get this valuable information just brush up against one and he will colour the route yellow the way in, in the first place to the treasure, and on the way out he will give you just as much help. Three levels give you chance to die quicker since there is less food, swords and prisoners to sustain and assist you. Finally, keep an eye on the two meters provided, one is your strength, the other how far you are from the treasure, and it's amazing how often you're not moving the second meter!!

# REVIEWS

Sherlock has arrived and elementary it is not! With *The Hobbit* still a permanent fixture in most charts eighteen months after being released, it seems inevitable that Philip Mitchell's latest offering, based on Sir Arthur Conan Doyle's famous sleuth, will quickly join its predecessor in that elite band of software evergreens.

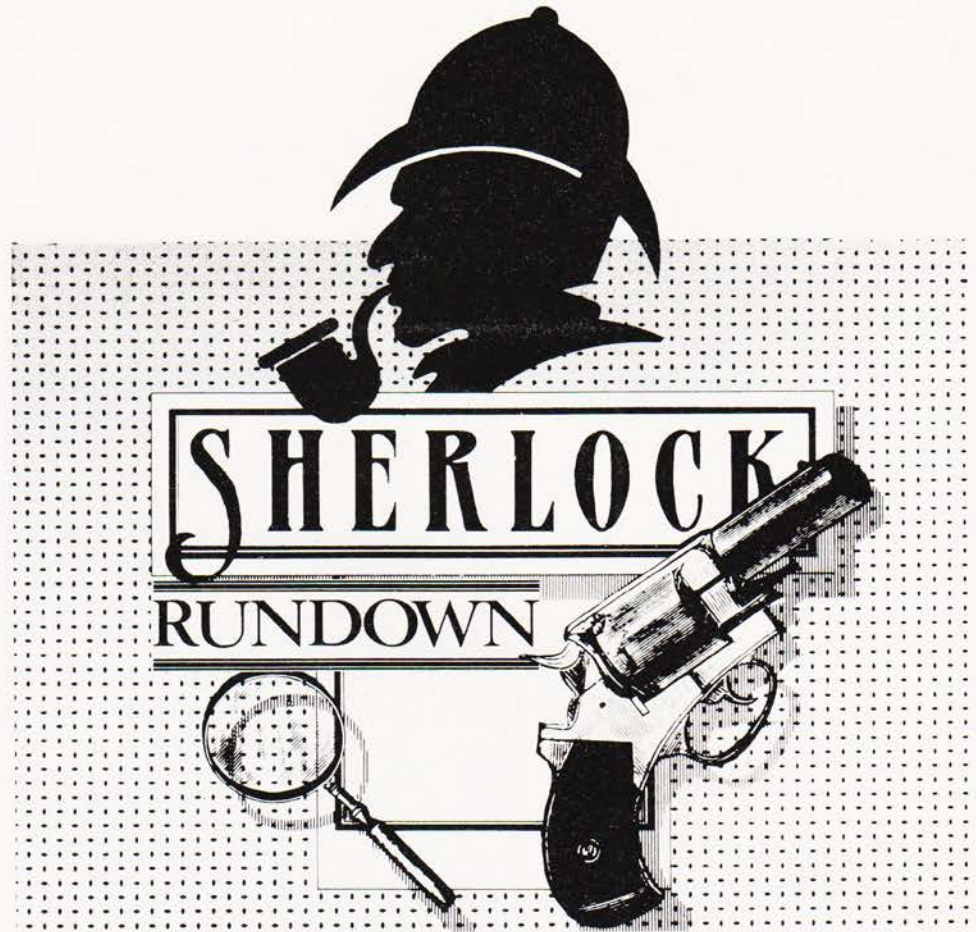
Set against a backdrop of Victorian England, you take on the role of Sherlock Holmes as he attempts to solve a number of mysterious, but apparently connected crimes. As with *The Hobbit*, all the characters you may meet lead lives of their own ("Animation") and can be conversed within "Inglis" (a subset of English) and instructed to do or say things ("Animtalk"). The latter is not always fruitful as the characters, being independent, make their own minds up whether or not to be co-operative.

As in Doyle's originals, Doctor Watson is there to accompany Holmes on his travels rather like a loyal Labrador with about as much independence. One is almost tempted to type in 'Say to Watson "Heel" or "Fetch"'. In retrospect the good Doctor should have been made a little more intelligent and useful!

The adventure begins at 8.00 one sunny Monday morning in the upstairs rooms of Holmes and Watson at 221B Baker Street, London. We are greeted with a beautifully detailed description of the sitting room with maps and charts on the walls, a table with acid stains in one corner, and a pipe rack. A few disappointments here, namely not being able to pick up and smoke a pipe or find a deerstalker to wear. Although these are minor things in themselves (and no doubt expensive on memory consumption) it is this kind of attention to detail and authenticity that would have helped us mortals slip into the role of Sherlock poised for some serious sleuthing.

After some minutes Watson, who up until now has had his head buried in this morning's *Chronicle*, draws our attention to a news story concerning two murders in "Leather Head", both apparently committed with the same murder weapon. Why "Leather Head" two words, you ask? Answer simple — "Leather Head" is the name of a fictitious town invented by Mitchell, who had never heard of Leatherhead, Surrey.

The article goes on to say that the famed Inspector Lestrade of Scotland Yard has taken a personal interest in the case and is visiting the scene of the crimes this morning. The imparting of this information seems to be the only genuinely useful thing that Watson does! Nevertheless, unable ever to walk away



### Melbourne House have just released *Sherlock* their successor to *The Hobbit* and it looks as if it will be just as good. Here's an in-depth review of this new adventure game.

from a case, *Sherlock* sets off for Leather Head.

Having worked out how to take a cab and subsequently a train (sorry, no help here or I'd spoil the fun), we arrive at the main street in Leather Head. One hint — pick the right train and choose your travelling companions well! From the main street, there are a number of possible directions that our investigations could take including the Jones Estate, where an extremely dead Mrs Jones was found in the early hours of the morning. Then, to the west, there is a Brown Estate, where the lady of the house was found on the lawn by the gardener after he had been woken by the sound of a gunshot.

Searching the houses and gardens in, and around, Leather Head reveals some very interesting clues about the shady characters living in the area. What, for instance, was the Major up to during the night of the murder? Does Patricia Fender really exist, is Daphne withholding information behind a wall of sobs and tears, and where is Basil really coming from?

Having visited some 75% of the locations in *Sherlock*, covered with many of its inhabitants, ripped people's alibis to shreds and been shot trying to open a safe, we are still no closer to the truth. But having gleefully invested many hours trying to find out "Whodunnit", it has become clear that *Sherlock* will attract a sizeable cult following, just like *The Hobbit*, and we can expect special *Sherlock* "helpline" columns to appear in many magazines before long. In short, *Sherlock* is not to be taken lightly.

### Comments Overall

**Text** — sophisticated text interaction with good use of adjectives. Large vocabulary of about 800 words — similar to *The Hobbit*.

**Graphics** — poor! This game is essentially a text adventure with some graphical embroidery so that it could be marketed as a graphic/text adventure (against the wishes of Philip Mitchell) to widen its appeal. This is an unfortunate commercial compromise as the graphics — such as they are — will be disappointing to most people. Also, the memory that they consume would have allowed for an even more elaborate text adventure. The CBM64 version will have more text than the Spectrum version.

**General** — a challenging and stimulating adventure that will keep you pulling your hair out for months. Good attention to authentic detail with some notable exceptions. Thoroughly recommended, if you like adventures, problem solving, Sherlock Holmes' novels or *Chopin!*

by David Bishop and Beth Wooding.

### Clues and Tips

1. "Open All" is useful.
2. Keep your eye on the clock at all times.
3. Acting like a sheep can pay dividends.
4. Watch out for many red herrings.
5. When is the safe safe?
6. When it comes to verbs, qualifications will help.
7. There are nearly 250 objects or locations, but we're not telling you how many of each.
8. Listen to the Inspector inspecting.
9. Initials!

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## Cavelon II

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FAST LOAD  
1 1/2 minutes

061 775 0333

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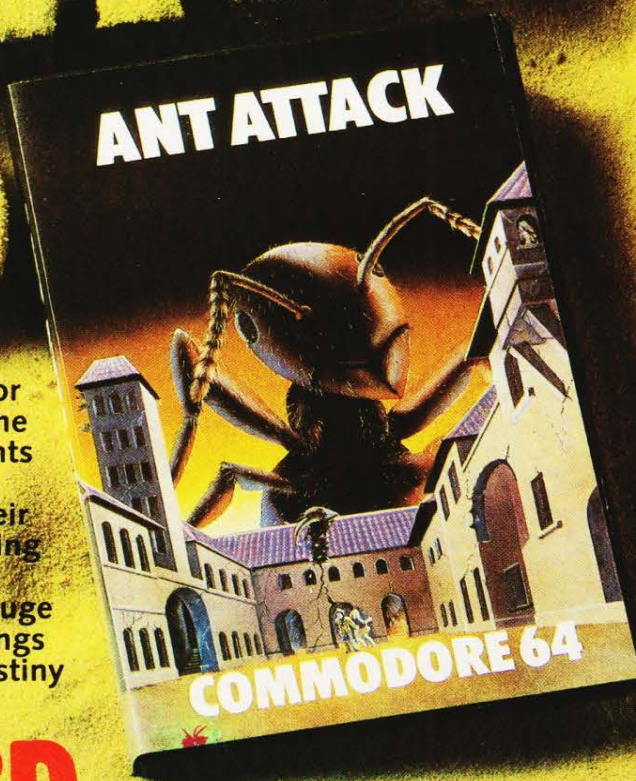
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RUNS ON  
ATARI 800, 600



# CITY DESTROYER

You were flying to your home base with the ultimate laser gun. When, suddenly there was a flash, and before you knew what had happened you were heading towards a city. Your only hope of survival is to destroy the city with bombs.

## Features

To get an extra life your score has to be greater than the high score, but if the high score is zero then no extra is

awarded but you do get 3000 points instead. If you choose the slow level, when you get to level 13 the game gradually speeds up.

Type out listing one and save to tape with the SAVE command e.g. SAVE "C:". Then turn off the system and turn it on again and type out listing two. When complete CSAVE it to tape just after listing one. Now turn off your system and rewind the tape. Then type RUN "C:" and wait for the program to load.

## Conversion Clues

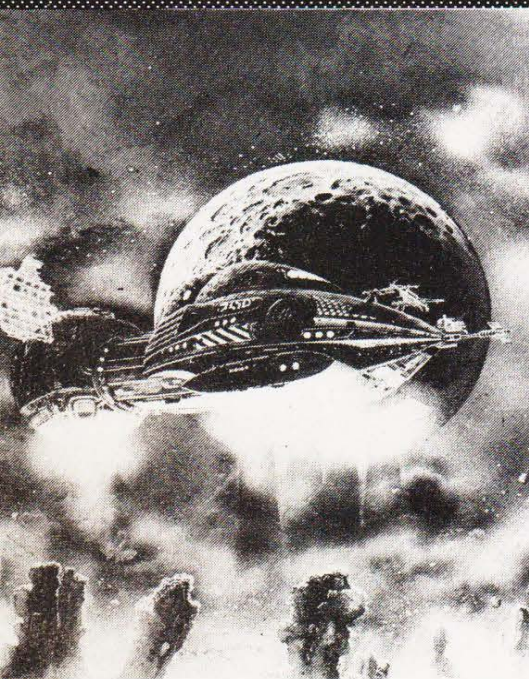
The game uses player missile graphics which are unique to only a few computers. However, here is a list of a few of the Atari p/m registers.

Location	Function
53248	Horizontal position of player 0 POKE here to move player 0
53249	Horizontal position of player 1
53250	Horizontal position of player 2
53251	Horizontal position of player 3
53256	Size of player 0, from 0 to 3
53257	Size of player 1
53258	Size of player 2
53259	Size of player 3
623	Priority POKE

The rest of the locations set up the resolution of the screen, colours and set the high byte of where the PMG DATA area starts. This program also uses a DLI routine. This is used to give 7 shades of blue for the sky, 3 shades of green for the ground and a yellow and red strip at the top.

I think the best conversion would be for the BBC B as it has double width text and you could possibly use a sprite generator to obtain the p/m's. But it would be impossible to get the shaded background colour effects as it hasn't got the excellent 256 colour range!!

# CITY DESTROYER



```

0 LEV=1
1 COM CH$(4),A$(1):CH$="FAST":POKE 559,0:GOSUB 6000:GOT
0 4000:REM 'FAST' IN INVERSE
2 HI=0
5 GRAPHICS 17:POKE 559,0:L=5:GOSUB 25000
6 POKE 756,144:POSITION 0,0:? #6;"IUP:";SC;" 1:
";L:REM 9 SPACES & 1UP IN INVERSE
7 POKE 710,LEV*16+6
10 X=2:Y=2:FOR D=2 TO 17:HIGH=LEV+5:COLOR 161:PLOT D,2
:DRAWTO D,21-INT(RND(0)*HIGH)+1
20 NEXT D:COLOR 37:PLOT 0,22:DRAWTO 19,22
45 POKE 559,46:GOSUB 28000:POKE 709,113:POKE 708,94
46 GOSUB 5000
47 SOUND 3,40,60,2
50 POSITION X,Y:? #6;" ";CHR$(34):X=X+1
55 LOCATE X+1,Y,Z:IF Z=161 THEN GOTO 7500
60 IF X>17 THEN POSITION X,Y:? #6;" ":Y=Y+1:X=0
70 IF PEEK(644)=0 AND BOMBFLAG=0 THEN VOL=0:BOMX=X:BOMY
=Y+1:GOSUB 1500
80 IF BOMBFLAG=1 THEN GOSUB 1000
90 IF X=16 AND Y=21 THEN SOUND 3,0,0,0:GOTO 3000
100 IF CH$="FAST" THEN 120:REM 'FAST' IN INVERSE
110 FOR T=1 TO TIME:NEXT T
120 IF PEEK(764)=28 THEN POKE 559,0:GOSUB 28001:GOSUB 2
8002:POKE 559,46:POKE 764,255:GOTO 4000
121 X3=X3-1:POKE 53250,X3:IF X3<40 THEN X3=220:REM MOVE
S PLAYER 3
122 X2=X2+1:POKE 53249,X2:IF X2>220 THEN X2=40:REM MOVE
S PLAYER 2
123 X4=X4-1:POKE 53251,X4:IF X4<40 THEN X4=220:REM MOVE
S PLAYER 4
124 POKE 77,0
125 POSITION 4,0:? #6;SC:IF SC>HI AND CT=1 THEN CT=0:SO
UND 3,0,0,0:SOUND 3,40,60,2:GOSUB 600
500 GOTO 50
600 POSITION 16,0:? #6;L:COL=0:FOR REP=0 TO 35:FOR TY=5
656 TO 23 STEP -500:TRAP 630:SOUND 0,TY,10,15
610 IF HI<>0 THEN COL=COL+1:POKE 709,COL
620 NEXT TY:NEXT REP
625 IF HI=0 THEN SC=SC+3000:POSITION 4,0:? #6;SC
630 TRAP 40000:SOUND 0,0,0,0:POKE 709,113:IF HI<>0 THEN
L=L+1:POSITION 16,0:? #6;L:RETURN
1000 POSITION BOMX,BOMY:? #6;"#":POSITION BOMX,BOMY-1:?
#6;" ":BOMY=BOMY+1
1005 TRAP 1020:SOUND 0,BOMY,0,VOL:VOL=VOL+1
1020 IF BOMY>22 THEN SOUND 0,0,0,0:POSITION BOMX,22:? #
6;"%":BOMBFLAG=0:VOL=0:RETURN
1025 LOCATE BOMX,BOMY,0:IF 0=161 THEN GOSUB 1590
1500 BOMBFLAG=1:RETURN
1590 SOUND 0,255,8,15:HIT=HIT+1:SC=SC+40*LEV
1591 IF HIT>4 THEN HIT=0:BOMBFLAG=0:SOUND 0,0,0,0:POSIT
ION BOMX,BOMY-1:? #6;" ":GOTO 50
1600 POSITION 4,0:? #6;SC:SOUND 0,0,0,0
1610 RETURN
3000 GOSUB 28001:POSITION 7,6:? #6;"bonus":SC=SC+2000:P
OSITION 4,0:? #6;SC:GOSUB 9000:POSITION 7,6:? #6;"
"
3010 POKE 710,LEV*16+6
3011 IF SC>HI THEN HI=SC
3014 SOUND 0,0,0,0
3020 POKE 712,0:LEV=LEV+1:POKE 710,LEV*16+6:IF LEV>13 T
HEN LEV=13:TIME=TIME-2
3030 POKE 559,0:GOTO 10
4000 GRAPHICS 0:DL=PEEK(560)+256*PEEK(561)+4:POKE 710,0
:POKE 82,0:POKE 752,1:SOUND 0,0,0,0:SOUND 1,0,0,0
4001 SOUND 3,0,0,0:POKE 756,144:COLGLOW=0:POKE 708,LEV*
16+6
4002 POKE DL-1,71:POKE DL+3,6:POKE DL+2,6:POKE DL+5,7:P

```

## Variables Used

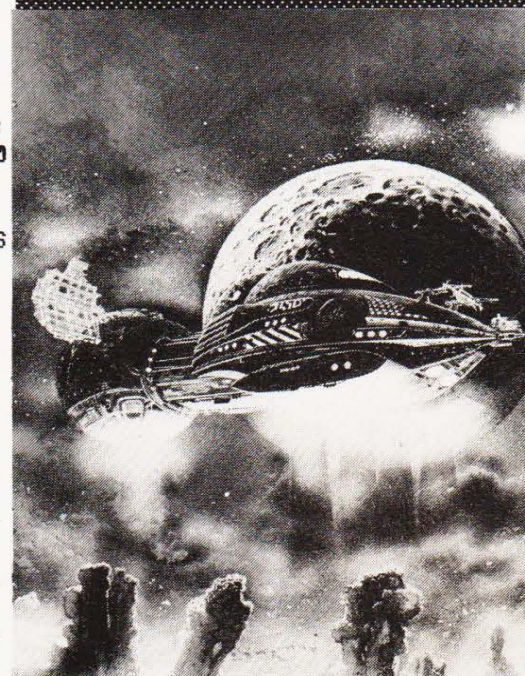
LEV	Level of play
HI	High score
L	Lives
X	Horizontal position of plane
Y	Vertical position of plane
HIGH	Height of the city
BOMBFLAG	Flag to keep game moving while bomb being dropped
TIME	Delay in game
X3	Player 3 horizontal position
X2	Player 2 horizontal position
X4	Player 4 horizontal position
SC	Score
CT	Score flag
BOMX	Horizontal position of bomb
BOMY	Vertical position of bomb
HIT	So you don't destroy all the line of the city
DL	Start of display list
A	Start of p/m RAM
Y1	Vertical position of player 1
Y2	Vertical position of player 2
Y3	Vertical position of player 3
Y4	Vertical position of player 4

**RUNS ON  
ATARI 800, 600**

```

OKE DL+6,6:POKE DL+8,4
4003 POSITION 20,4:? "CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCC";:REM C'S IN INVERSE
4004 SOUND 0,250,10,15:SOUND 1,248,10,15:POKE 53768,1:R
EM 'city destroyer' IN INVERSE
4005 POSITION 3,0:? #6;"city destroyer":POSITION 2,1:?
#6;" BY M.OSBORNE":POSITION 20,2
4006 ? #6;"the ultimate bomber":POSITION 22,8:? "Press
OPTION for speed :-";CH$:REM OPTION IN INVERSE
4008 POSITION 22,10:? "Press SELECT for level :-";LEV:R
EM SELECT IN INVERSE
4009 POSITION 22,12:? "Press START to begin":REM START
IN INVERSE
4010 POSITION 29,20:? "HIGHSCORE :";HI
4011 POSITION 29,18:? "LASTSCORE :";SC
4025 POKE 755,2:POSITION 29,20:? "HIGHSCORE :";HI
4026 IF PEEK(53279)=3 THEN GOSUB 4700
4030 IF PEEK(53279)=5 THEN GOSUB 4800
4031 IF PEEK(764)=157 THEN SOUND 0,0,0,0:SOUND 1,0,0,0:
POKE 764,255:GRAPHICS 0:POKE 710,0:GOSUB 32000:GOTO 100
00
4032 FOR DE=0 TO 4
4033 IF PEEK(53279)=6 THEN TIME=26:SC=0:SOUND 0,0,0,0:S
OUND 1,0,0,0:CT=1:BOMBFLAG=0:GOSUB 28001:GOTO 5
4034 POKE 711,COLGLOW:COLGLOW=COLGLOW+1:IF COLGLOW>254
THEN COLGLOW=0
4035 NEXT DE
4036 IF HI>0 THEN POSITION 29,20:? "
";
4037 POKE 755,1:FOR DE=0 TO 26:NEXT DE
4038 POKE 77,0
4040 GOTO 4025
4700 IF CH$="FAST" THEN CH$="SLOW":GOTO 4704:REM 'FAST'
& 'SLOW' IN INVERSE
4702 IF CH$="SLOW" THEN CH$="FAST":REM 'SLOW' & 'FAST'
IN INVERSE
4704 POSITION 39,9:? "" ;CH$:REM 8 ESC CTRL ARROW RIGHT'
S
4706 RETURN
4800 IF LEV>12 THEN LEV=0
4801 LEV=LEV+1:POSITION 39,11:? "" ;LEV;" " :REM 8 ESC C
TRL ARROW RIGHT'S
4802 POKE 708,LEV*16+6:RETURN
5000 SOUND 3,0,0,0:POKE 712,250:POSITION 3,3:? #6;" LE
VEL: ";LEV
5010 VOL=15:FOR RE=0 TO 60:FOR ER=890 TO 4000 STEP 250:
TRAP 5011:SOUND 0,ER,10,VOL:VOL=VOL-0.1:NEXT ER:NEXT RE
5011 TRAP 40000
5020 SOUND 0,0,0,0:FOR DE=0 TO 340:NEXT DE:POSITION 3,3
:? #6;" " :REM 14 SPACES
5030 RETURN
6000 POKE 559,0:A=PEEK(106)-8:P=256*A:POKE 54279,A:POKE
53277,3:POKE 704,235:POKE 705,14:POKE 706,10:POKE 707,
B
6010 X1=190:X2=160:X3=106:X4=50
6030 Y1=35:Y2=40:Y3=55:Y4=35
6040 FOR J=P+512 TO P+1024:POKE J,0:NEXT J
6050 RESTORE 6060:FOR J=P+512+Y1 TO P+519+Y1:READ A:POK
E J,A:NEXT J
6060 DATA 24,60,126,126,126,60,24,0
6070 RESTORE 6080:FOR J=P+640+Y2 TO P+640+7+Y2:READ A:P
OKE J,A:NEXT J
6080 DATA 56,124,254,255,254,124,56,16
6090 RESTORE 6080:FOR J=P+768+Y3 TO P+768+7+Y3:READ A:P
OKE J,A:NEXT J
6100 RESTORE 6110:FOR J=P+896+Y4 TO P+896+7+Y4:READ A:P
OKE J,A:NEXT J
6110 DATA 16,56,124,254,255,254,124,56

```



To convert the game to keyboard change the following:  
70 IF PEEK (53775) 251 and BOMB-  
FLAG=0 THEN POKE 764,255:  
VOL=0: BOMX=X: BOMY=Y+1:  
GOS 1500

To bomb press the shift key.

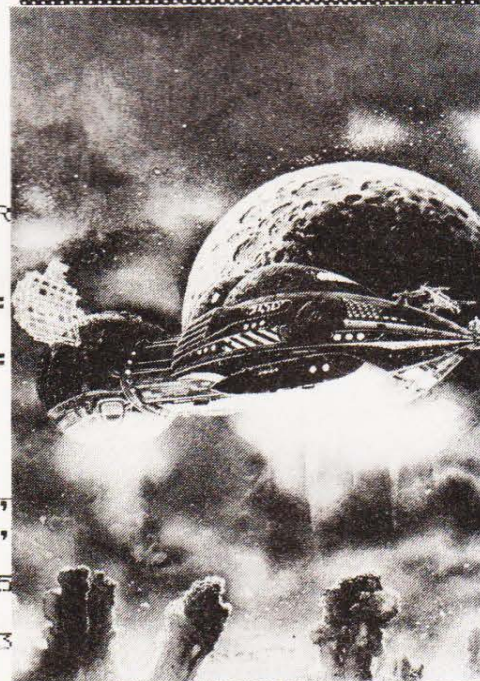
Lines	Action
0-46	Sets up screen
47	Creates plane sound
50-500	Main loop with movements and collision detections
600-630	Extra life and bonus
1000-1020	Moves bomb
1025	Detects collision with bomb
1590-1610	If city is hit with bomb
3000-3030	Bonus
4000-4802	Title display
5000-5030	Prints up level with sound
6000-6130	Player missile graphics
7500-7530	Plane explosion
7535-7550	Game over routine
9000-9040	Complete a sheet sound
25000--	
25110	DL1 routine
10000--	
20020	SAVE and LOAD HIGHSCORE
30000--	
32767	Also SAVE and LOAD HIGHSCORE

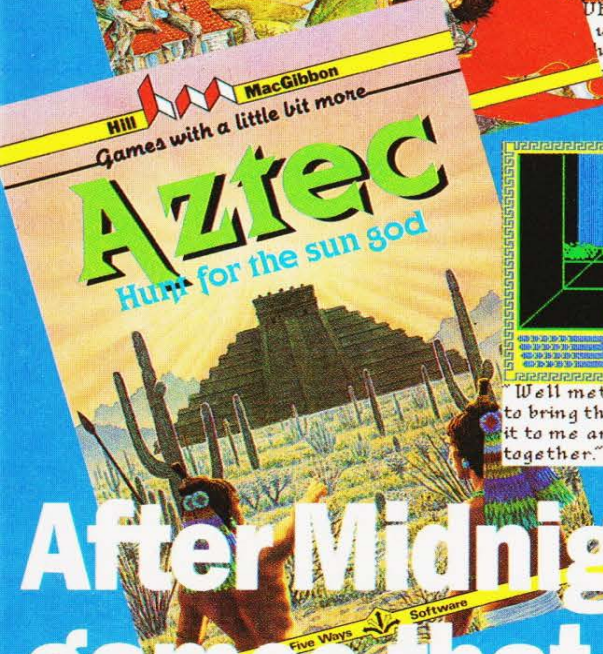
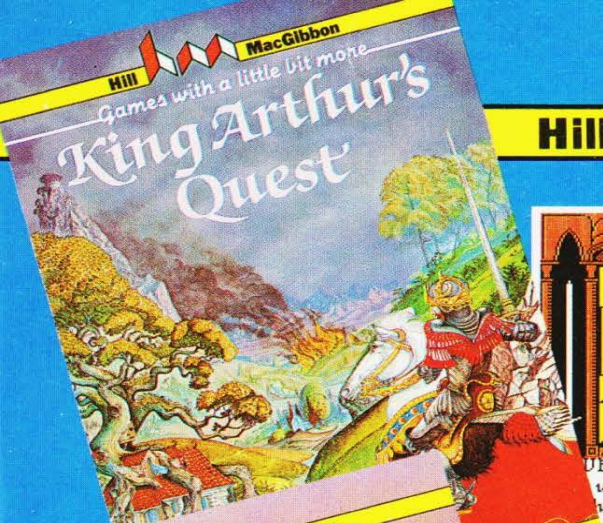
```

6120 POKE 53257,3:POKE 53258,1:POKE 53259,3
6125 POKE 623,4:REM Playfields have priority over P/M
graphics
6130 RETURN
7000 IF SC>HI THEN HI=SC
7010 GOSUB 7535:GOSUB 28001:L=5:GOTO 4000
7500 L=L-1:IF L<1 THEN GOTO 7000
7510 POSITION 16,0: ? #6;L:POSITION X,Y: ? #6;" "
7511 REM $ IN INVERSE
7520 POSITION X+1,Y: ? #6;"$":FOR D=255 TO 0 STEP -4:SOU
ND 0,D,8,15:NEXT D:SOUND 0,0,0,0:POSITION X+1,Y: ? #6;"
"
7530 X=0:Y=Y-3:GOTO 45
7535 SOUND 3,0,0,0:FOR ZA=53248 TO 53251:POKE ZA,0:NEXT
ZA:GRAPHICS 18:POSITION 5,5: ? #6;"GAME OVER"
7540 VO=15:FOR A=0 TO 255:TRAP 7550:SOUND 0,PEEK(A),10,
VOL:SOUND 1,PEEK(A),10,VO:VO=VO-0.1:POKE 708,PEEK(53770
):NEXT A
7550 VOL=0:SOUND 0,0,0,0:SOUND 1,0,0,0:RETURN
9000 NUM=8:VOL=15:COL1=0
9010 FOR U=0.45 TO U+9000 STEP 40.4:SOUND 0,U,10,VOL:TR
AP 9040:FOR DE=0 TO NUM:NEXT DE:NUM=NUM-0.2
9020 IF NUM<0 THEN VOL=VOL-0.1
9025 POKE 711,COL1:COL1=COL1+1
9030 NEXT U
9040 TRAP 40000:RETURN
9999 REM 'L' IN LOAD & 'S' IN SAVE IN INVERSE
10000 POKE 752,1: ? " LOAD OR SAVE HIGHSCORE ";:C
LOSE #2:OPEN #2,4,0,"K":REM 8 SPACES
10005 GET #2,K
10010 IF K=ASC("L") THEN ? CHR$(125);:GOSUB 31000:TRAP
32767:GOTO 30000
10020 IF K=ASC("S") THEN ? CHR$(125);:GOSUB 31000:TRAP
32767:GOTO 20000
10030 GOTO 10005
20000 ? " SAVING HIGHSCORE":OPEN #1,8,0,"C"::R
EM 10 SPACES
20010 PRINT #1;HI
20020 CLOSE #1: ? CHR$(125);" SAVING COMPLETE":
GOSUB 32020:GOTO 4000
25000 RESTORE 25100:FOR A=1 TO 56:READ B:POKE 1535+A,B:
NEXT A
25010 D=PEEK(560)+256*PEEK(561)
25020 POKE D+3,198:FOR A=1 TO 23:POKE D+5+A,134:NEXT A
25030 POKE 512,0:POKE 513,6:POKE 54286,192:RETURN
25100 DATA 72,138,72,238,80,6,174,80,6,189,31,6,141,10,
212,141,26,208,224,24,208,5,169,0,141,80,6,104,170,104,
64
25110 DATA 54,52,144,146,146,146,148,148,148,150,150,15
0,152,152,152,154,154,154,156,156,156,156,194,196,198
28000 POKE 53248,X1:POKE 53249,X2:POKE 53250,X3:POKE 53
251,X4:RETURN
28001 FOR CL=53248 TO 53251:POKE CL,0:NEXT CL:RETURN
28002 IF SC>HI THEN HI=SC
28003 RETURN
30000 ? " LOADING HIGHSCORE":OPEN #1,4,0,"C"::
REM 10 SPACES
30010 INPUT #1;HI
30020 CLOSE #1: ? CHR$(125);" LOADING COMPLETE"
:GOSUB 32020:GOTO 4000
31000 TRAP 31010:LPRINT
31010 TRAP 40000:POKE 764,12:RETURN
32000 IF SC>HI THEN HI=SC
32010 RETURN
32020 FOR DEL=1 TO 500:NEXT DEL:RETURN
32766 POKE 65,0:TRAP 32766:LPRINT
32767 ? CHR$(125);" TAPE LOAD ERROR":GOSUB 32
020:CLOSE #1: ? :GOTO 10000:REM 11 SPACES

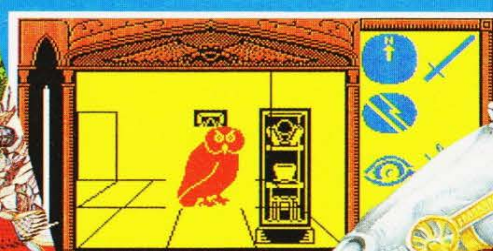
```

# CITY DESTROYER





Hill MacGibbon



GO FORWARD  
 way past my feeding time and I'm  
 hungry. Would you mind bringing my  
 r? I think it's to the north.



Well met, young you have done v  
 to bring the sun r this far. Now gi  
 it to me and we s free the Sun  
 together."



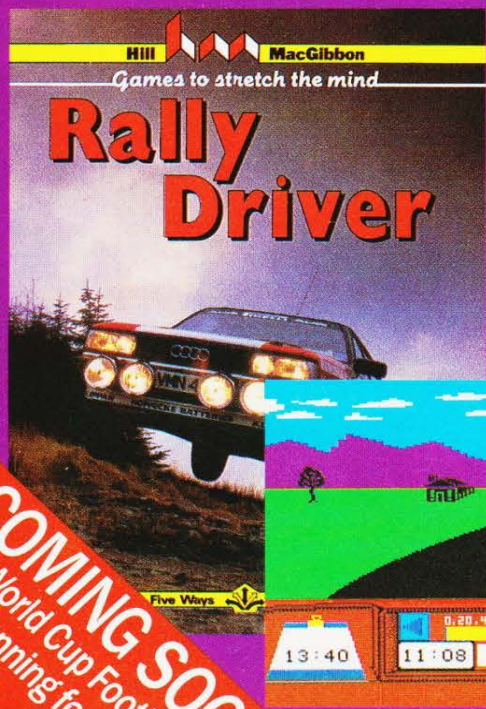
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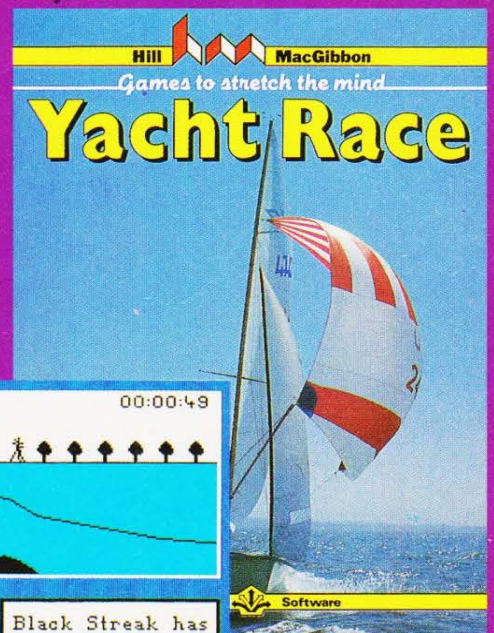
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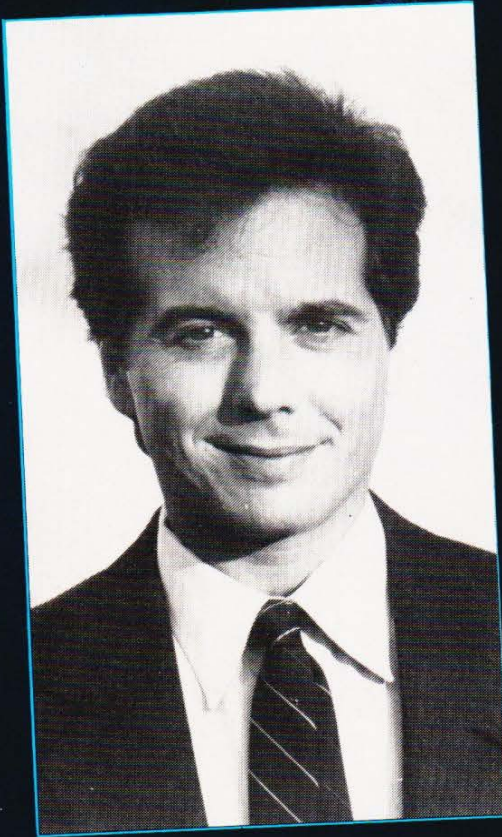
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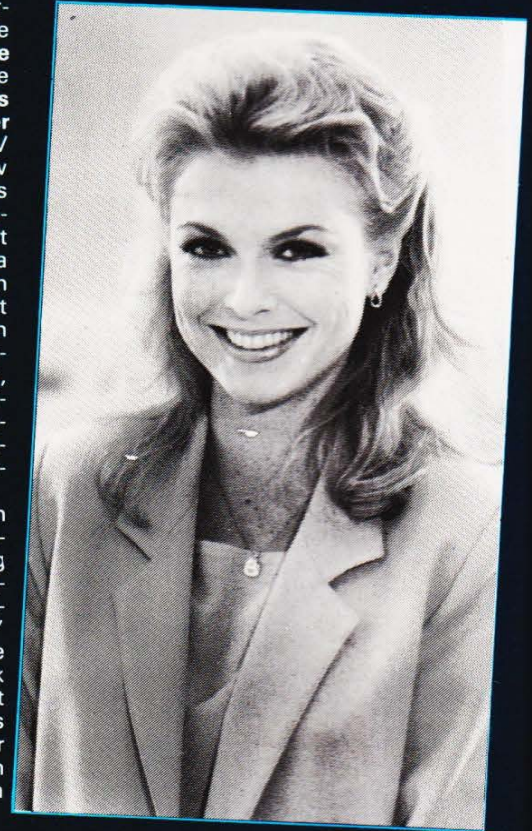
# AUTOMAN

As a special feature this month we bring you the rundown on the popular BBC TV program *Automan*. Jon Abbot, takes up the story...



A short while back last year, Glen Larson, creator of many a larger-than-life TV tough guy, including *Magnum*, *The Fall Guy*, *Buck Rogers*, *Jake Cutter*, the "Indiana Jones" lookalike from *Tales Of The Golden Monkey*, *Knight Rider* and others, came up with two new TV super-heroes for American TV's new season last year. One of them was *Manimal*, who eventually made his appearance a couple of months ago — it featured Simon MacCorkindale as a research scientist who could transform himself into a variety of different animals, but met early cancellation in the US ratings game. Undeterred, Larson went ahead with the other, *Automan*, which stars Lucille Ball's offspring, Desi Arnez Junior, as a computer wizard, who, in the grand tradition of all super-hero fantasies, suddenly gains a super-strong alter-ego!

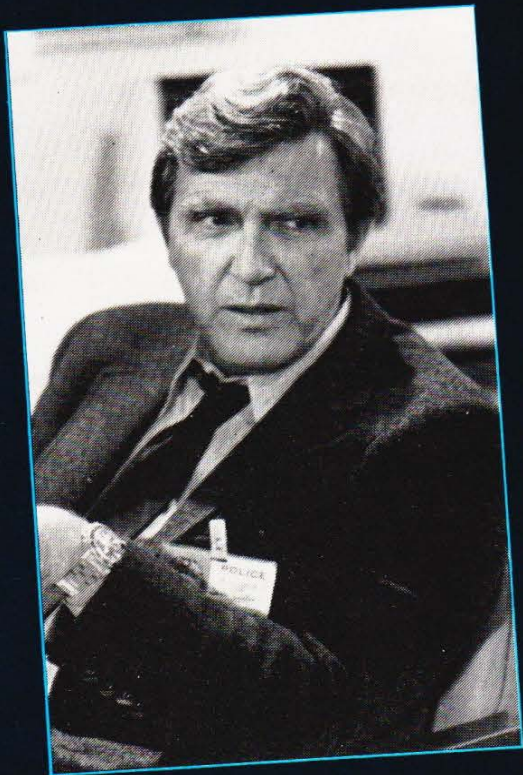
*Automan* is a video-game creation come to life, and whose arrival is invariably accompanied by flickering lights, electrical disturbances, and sudden temors that leave no ornament untouched! *Automan* knows "everyone" from *Pac-Man* and *Donkey Kong* to the traffic lights computer, and he can walk through walls, create super-vehicles out of thin air, absorb his creator into his body, and drive a computer-game car that does 90 degree turns! "If he can take that corner, I can!" snaps a misguided hood in the pilot episode.



## Great Graphics

There's a number of clever effects in the series too, including a video-game 'plane that disappears just as it lands, leaving Walter (Arnez) sitting on the tarmac, a brick wall that springs out of nowhere to baffle some pursuers, dollar signs that follow hookers, and a power shortage that lets *Automan* walk through a wall to safety but leaves Arnez behind as he goes! *Automan* is probably the best TV super-hero to date, perhaps because his series moves along at a cracking pace with the hero actually on-screen as often as his other half, unlike previous TV super-heroes who, for mostly economic reasons, had their super-feats limited to one or two appearances per programme. Also, although the show owes a lot to comic-book traditions (a trusting girlfriend, a tough boss, a Mr. Puny-verse who becomes Mr. Universe), *Automan* is the first TV super-hero not to have been obviously swiped wholesale from the comics.

So how can *Automan* afford to be on-screen so much of the time? Well, the optical effects are simple and straightforward to produce, yet surprisingly successful. Actor Chuck Wagner wears a suit made partially of a shade of blue that the camera won't pick up — it's the same process used to make pic-



tures appear behind TV newscasters that aren't really there, and, more expensively, to make spaceships supposedly whiz through space in series like **Battlestar Galactica** and **Buck Rogers**, two other Larson productions. Onto this is superimposed a spectacular, sparkling background of stars that give Automan his unearthly appearance. Other effects are, quite understandably, computer graphics flashed on the screen in the outline of a car, 'copter, or plane, while the camera is halted and the real thing is slipped in.

Although in reality **Automan** is the creation of producer Glen Larson, in the series he's the product of computer wizard Walter Nebicher, a put-upon worker in the local police department. Nebicher (Arnez) programmed Automan to emulate not just one or two but all of today's media heroes — "On a scale of one to ten", explains Automan on his first appearance from the "twilight zone" of computer games, "think of me as an eleven". Automan isn't lying or boasting, because, as he explains to his bemused originator, he's been programmed never to lie.

## Cashing in on crazes

In one episode, Automan thinks he's James Bond; in another he wows the ladies in a disco with his ability to imitate John Travolta. (Larson has never been slow to cash in on a trend — the title of the episode, the first in the series after the pilot, but the second to be screened by the BBC — is titled "Staying Alive While Running A High Flashdance Fever"! At least Larson's honest about his, er, Larson-y). Another episode has the poor guy plugged into a Dallas-style soap on TV and having his

wholesomeness corrupted by coming out of the experience as a J.R. Clone! The series offers numerous in-jokes for computer freaks which will go over the heads of many viewers unfamiliar with computer terminology, and plenty of moralising and pontificating on the subject of man and machine. Generally though, the series is pretty sympathetic and encouraging to the computer generation, and Walter and Automan constantly tease each other about their various shortcomings.

As Chuck Wagner, who plays the musclebound Peter Pan figure told *Fantastic Films* magazine, "Just as people are becoming more aware of computers in their daily lives, Automan is becoming increasingly aware of the world of humans. I believe that the show is creating a friendlier picture of the computer for America. We've all seen movies where the computer is a good tool but used in the wrong way. In **Automan** we're adding literally a human element to the public's perception of the computer". Like Lou Ferrigno, TV's **Hulk**, Wagner grew up with the Marvel and DC Comic super-heroes, as well as other TV series like **Automan** (such as **Star Trek**) which present audiences with a positive vision of the future.

Wagner has compared Automan with the machine-like character of Mr. Spock on more than one occasion, and, like the comic-strip heroes, Automan has a weakness...he needs a vast amount of electrical energy to stay in "our" world, and consequently can only appear at night working to full capacity. As soon as the city wakes up, and starts switching on their TVs, radios and other appliances, Automan and his powers start to fade, leaving hapless Walter high and dry!

With a voice like Remington Steele, and an ego to match, Automan is accompanied by a **Close Encounters**-style blob of light that manifests itself at the beginning of each of Automan's spectacular appearances...like a sort of advance scout. As Automan's impish innocence is reminiscent of Disney's Peter Pan, it seems only right that he should have his own futuristic "Tinkerbell", although this odd character has a mischievous mind of his own and an inexplicable "eye" for the ladies, although quite what he intends to do with them when "caught" remains a mystery! Automan, on the other hand, is the eternal child and his innocence and naivete forms the basis of many of the series' most amusing incidents. It's a series for all the family to watch; after all, there's a bit of the eternal child in all of use!

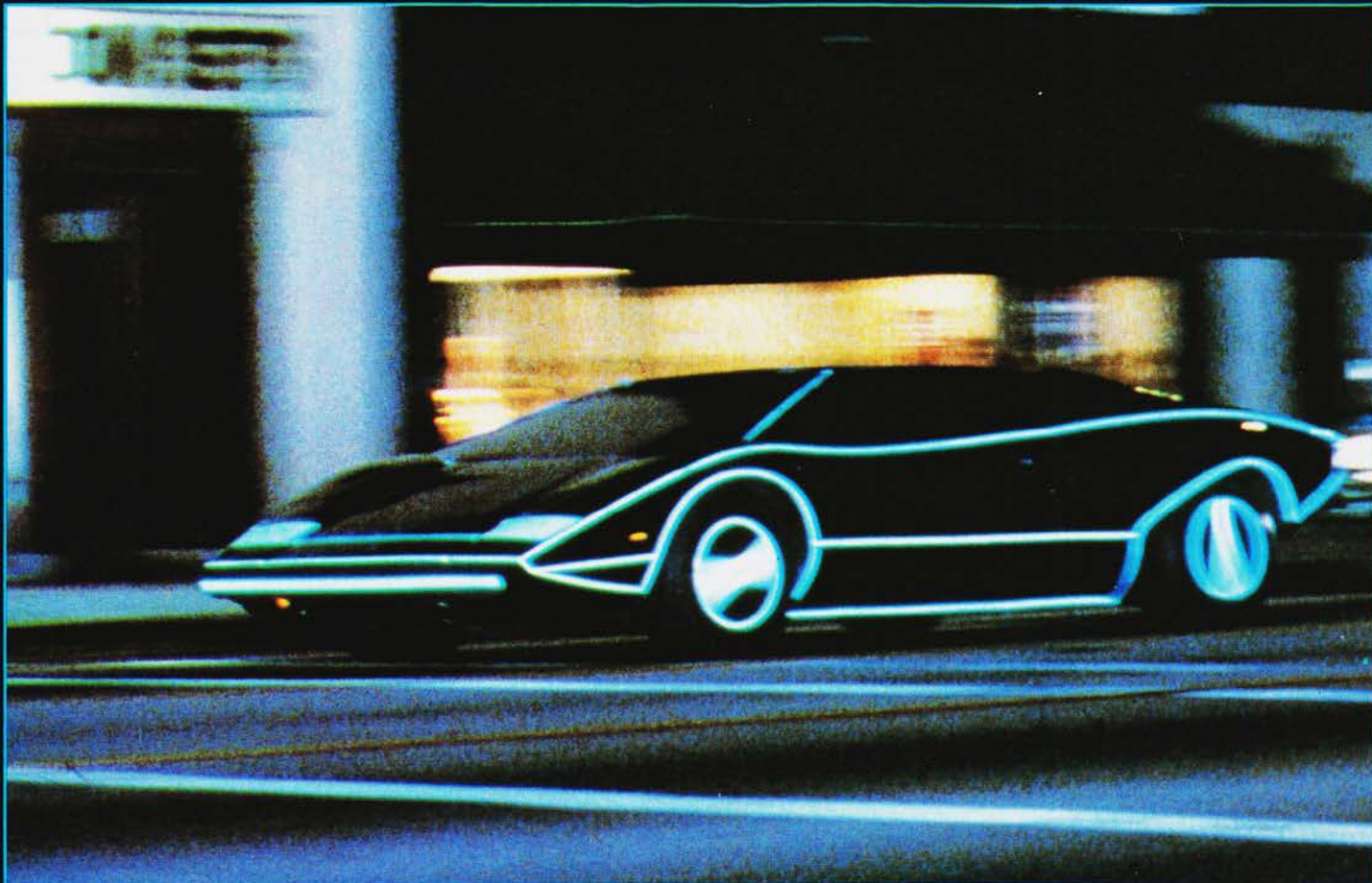
## The Bug-Byte Connection

At about the time you are reading this (mid Nov.) Bug Byte will have realised the Commodore 64 game of Automan.

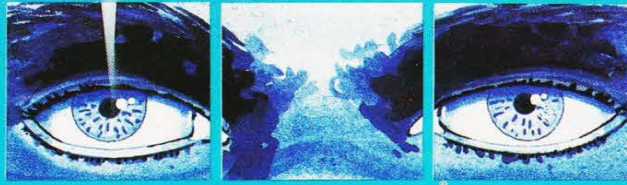
The game is of the 'Jet Set Willy' arcade-adventure type with our hero having to run around different scenes getting objects such as keys and credit cards in a certain order. As a link between scenes there is a car chase sequence (what else in an American program!) with buildings whizzing past in full 3D. The cars will also make the famed 90° turns.

Soon after the launch of the Commodore game there may be a Sinclair version.

Watch out for them in stores now.



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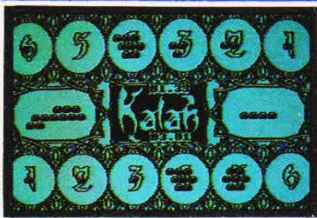
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An outstanding graphics package for the Commodore 64. Features include: free-hand sketches, circles, ellipses, block move, copy and reverse, magnification choice of cursor, joystick or key control. PLUS texture definition and texture and colour fill. PANORAMA (H) uses the full colour facilities of the Commodore 64.

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# COMMODORE PLUS/4 REVIEW

Following the review of the C16 last month we got our hands on its big brother the Plus/4. Is this mega-machine really suitable for recreational use? Mike Roberts puts it under the magnifying glass.

The Commodore Plus/4 is Commodore's first entry into the top level home/very small business bracket. Commodore said that it wasn't suitable for running a business but went on to say that it could be used in certain applications for a 'professional' person. This is one of the most honest statements that I have heard a computer company say on the subject of the business use of a home computer, Clive Sinclair once said that you could run a power station on a ZX80 (1K RAM, 4K ROM, and no keyboard)!!!

Where this business subject comes from is the four built in software packages — wordprocessor, spreadsheet, database and graphics — hence Plus/4.

Externally the Plus/4 is a gunmetal coloured wedge shaped box with a keyboard taking up most of the room on the top and ports and interfaces taking up the whole of the back and sides. Now it becomes obvious why Commodore opted for the smaller type of connector instead of keeping the same type as they have for ages. If the normal 'chunky' type edge connectors and D sockets were used there would not be enough room around the edge of the machine.

## Shades of SX

The keyboard excels even Commodore's beautiful quality although some people that have used it express reservations when they first get to dabble with it. However, after a period of use everybody loves it.

The keyboard is very similar to the SX-64, and is angled, sculptured, and curved. This makes typing on it a real dream. The layout consists of 68 keys, 60 of which are normal and four function keys above the top row and four cursor control keys arranged in a cross formation. One odd thing about these keys is their shape, they look like arrows — the way the arrow is pointing indicates the direction that the cursor will go in.

The ports around the back and sides of the box show a departure from the 64/VIC stable. The VIC and 64 had almost identical I/O.

Most things that are left have been changed: The cartridge/expansion port has been reduced in size to stop people shoving CBM64 cartridges into it. It is unknown whether the highly advanced structure of the CBM64's slot is duplicated with the facility for second processors etc. But given the nature of the machine as a small system/serious device, this is more than a distinct possibility.



The Plus/4 supports sideways ROMs, these were first implemented on the BBC micro some years ago and computers are starting to get these featured. Commodore call them 'Function key packages'. The reason for this rather strange name is that when the machine boots up, it checks to see if there are any ROMs attached. If there is then it will assign each ROM to a function key. The internal software uses this system so pressing F1 gets you into it.

If the ROMs are removed the function key goes back to its original state. External ROMs will go on F2. It is unknown how many ROM cartridges can be attached to the machine at once, but the complexities of the memory management system built into the Plus/4 could easily handle several.

## What's all that DIN?

The two D9 connectors of the CBM, 64 have been dispensed with and replaced with mini DIN connectors. This means you can only buy Commodore's joysticks. Commodore joysticks are not the best things in the world, even their new 'hi-tec' style ones.

The cassette recorder socket is also a mini DIN connector, this is because the new C16 cassette deck is different to the old tape decks. The Plus/4 is at its best with disk drives, including the new high speed ones intended for this new range of machines.

Thankfully Commodore have left the serial BUS, and the audio/video connector alone. All of Commodore's existing peripherals, that use these ports, will work straight off, so there are already printers and disk drives available for the machine. Though it may be worth the wait to get hold of their new disks which use the cartridge port and are a lot faster than the old ones.

Moving on to the internal hardware reveals some surprises. Most of the insides are driven via one big chip. Called either the 7501 or the TED chip depending on your inclination, it combines a 6510 processor at 2MHz with a sound

generator, timers, input/output, memory banking, and graphics generation. In all it has 19 registers to control things.

## Son et Lumière

Sound ability is as good as can be expected although it only has two channels. These can be two sound channels or one sound and one noise (for special effects). Nearly all the advanced sound

features of the SID chip have been left out like ADSR, filtering and modulation.

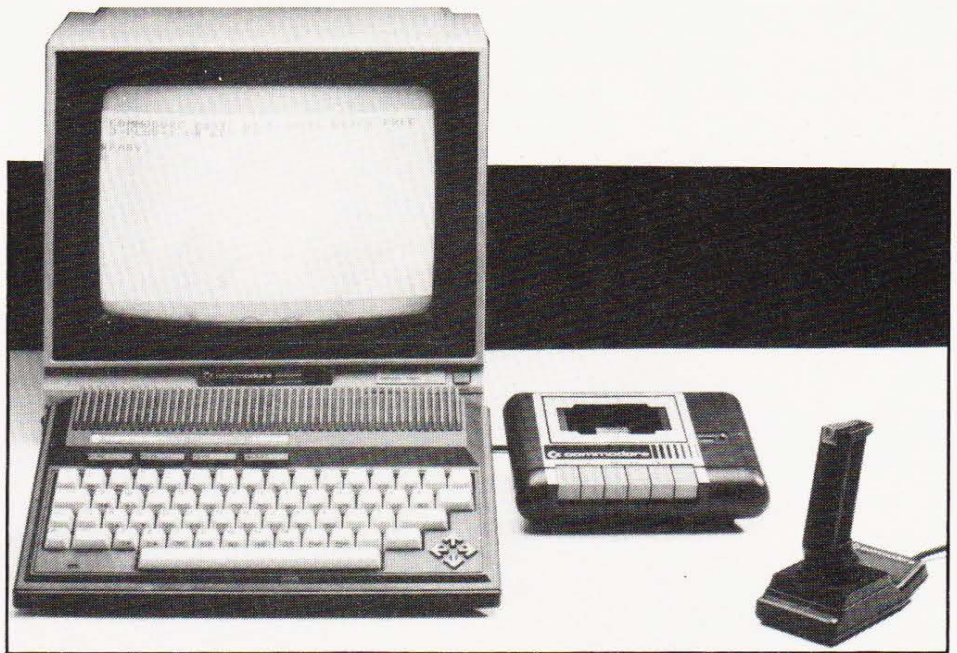
Graphics ability is superb. It is natural that this will be compared with the Commodore 64 as there are a lot of similarities in spec, the graphics are different and there are currently two schools of thought as to which is better the CBM64 or the Plus/4.

The big difference is sprites. These wonderful things that make games programming easy have been chopped from the Plus/4. In their place is a software simulation of them from Basic where you can extract an area of the screen and store it in a string. This string can then be recalled and put back on the screen at any point. There are also other options to manipulate these objects, but they are not true sprites, a large 120 byte object takes about a quarter of a second to write to the screen.

The trade-off against sprites is more colour. The screen of the Plus/4 can have 128 colours (121 excluding black) made up of 16 colours, 8 luminance levels, and flashing. Screen size is 40 x 25 text with four other graphics modes. The other graphics modes are 320 x 200 with the previously mentioned 128 colours being used in a colour map system, and 160 x 200 in a multicolour form. Both hires screens have an option to leave four text lines at the bottom of the screen. There are some other graphics modes and options but these are only available by POKEing. UDGs are obtained by POKEing and manipulation of registers.

## Good Character

The manual gives no hint of these although they are very straightforward to obtain. When playing with UDGs one



other feature becomes apparent. A character generator is 2K long, (256 x 8 bytes) the Plus/4s is only 1K long, how come? Well, the long and short of it is that the Plus/4s uses a hardware reverse field attribute. The top bit of the current character displayed indicates whether it is inverted or not. This has some advantages and disadvantages. The advantage is in memory consumption. The disadvantages are that you can only have 128 UDGs, and flashing works in a rather strange way. A reverse field space is shown as a black square, when you flash it instead of getting a flashing square nothing happens. This is quite confusing until you realise that a flashing space doesn't change.

Other modes not documented include Extended Background Colour mode, which gives you different background colours as well as foreground colours, and multicolour characters where each character can be made up out of a number of colours. There may be others but I must wait un-

til I get a technical manual to find them out.

This brings me onto another point. The Basic is ideal for an inexperienced user or an experienced Basic user, but what about us machine code hacks and people that wouldn't use Basic if they were paid to?

The answer is TEDMON this is a full feature assembler, disassembler, monitor and debugger. It is similar to Extramon and is very good indeed. This makes writing assembly language very easy as you already have most of the development software built in.

The monitor can also be called by using the reset button. This is a great feature and is a little recess at the side. Press it in and the machine goes back to its power on state — memory contents are preserved but it is awkward to get at them. The beauty of it all is when you keep the STOP key pressed down at the same time as you press in the reset key. The computer jumps into the monitor, key in 'X' (for eXit) and you are back in Basic. Complete with an intact program.

The Manual is excellent and way past Commodore's usual standard. It is informative and instructional for the first time user. For the experienced person there are memory maps and register details.

The Plus/4 scores over its little brother the C16 by having 64K of memory, now comes the good bit — the Basic has built in memory banking so that you can use the extra memory to the full — 60K! When using Hi-res this only cuts you down to 50K. Compare that to a BBC which leaves you with a fifth of that after hi-res has taken its chunk out. This mammoth (sorry elephantine!) memory will mean that there should be a lot of huge advantages and great arcade games on the market to use this.

The Basic is identical to the C16 and all I said last month applies here. This is the computer of today's excellent Basic, keyboard, software built in, and best of all a vast amount of user memory. The problem is whether it is worth it at the price — £299. This is well below the BBC with which it is comparable. But then the BBC always was over priced. Only time will tell with this computer, as it is carving a new area in the market.



The phrase 'Paperless Office' has been used in recent years to describe the office of the near future where everything is computerised. The problem is that 'Paperless Offices' generate more paper than normal ones!! Why? — Printers.

Why get a printer, do you really need one, and what use for games are they anyhow? Mike Roberts investigates.

## M-1009

Interface: Centronics  
Made by: Brother  
Price: £199



The Brother M-1009 makes no excuse about being a budget priced printer, and at £199 it is priced as such. Setting up with an Atari with an interface gave no difficulty. If being used with an Atari an appropriate interface must be bought as the Brother uses Centronics and the Atari has no Centronics port. Using it on a BBC or Oric was easy — you just plug it in.

Setting the CR/LF situation was quite difficult as the DIP switches were in a different orientation to that explained in the manual.

The problem was soon sorted out and all was well. I have seen easier DIP switches to get at, but at least you don't have to take the machine to bits.

Print quality is reasonable but not fantastic. Ribbons are rather awkward to obtain as they are none of the common types. All the normal facilities are present like hires, enlarged (40 cols), condensed (132 cols), emphasized, subscripts etc.

**Verdict:** Easy to use, a bit slow, but good value all the same. There also seems to be a certain level of compatibility with Epson printers, but I have not had a chance to check this.

# PRINTERS

Printers have a variety of uses, but in this context they would be used mainly for programming. A printer should be your third peripheral after a disk drive and a joystick.

Interfaces for printers are more or less standard with the Centronics interface being predominant. Most computers have a Centronics interface or can be made to have one. Most of the printers featured here have a Centronics interface.

The big problem is printer configuration, that is do I CR/LF or just CR, how many lines per page, what width paper am I using. Luckily this need only be done once (unless you have more than one computer).

on the supplied paper, which is a special type, but that defeats the object of not using thermal paper!

The ribbons are only made by Brother but they should not be hard to get hold of. Three ribbons are supplied.

**Verdict:** Compact, quiet, cheap. The worst thing about it is the speed which is rather slow.

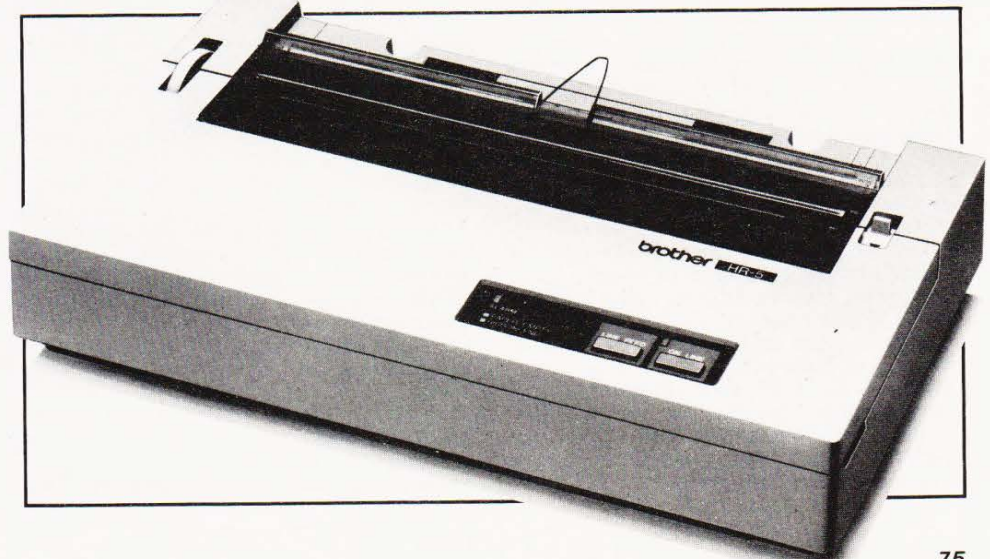
## HR5

Interface: Centronics  
Made by: Brother  
Price: £159

The HR5 is very similar to the M-1009 except that it is slightly smaller, runs on batteries, and is thermal!

You can plug in a mains adaptor and this is advised as the batteries run down very fast.

Also supplied is a roll of paper and some 'thermal transfer' ribbons. Thermal transfer ribbons are ribbons that can be used on thermal printers to produce print on non thermal paper. This is a good idea but the ribbons are expensive and the quality leaves something to be desired. However the quality is good



## GP-700A

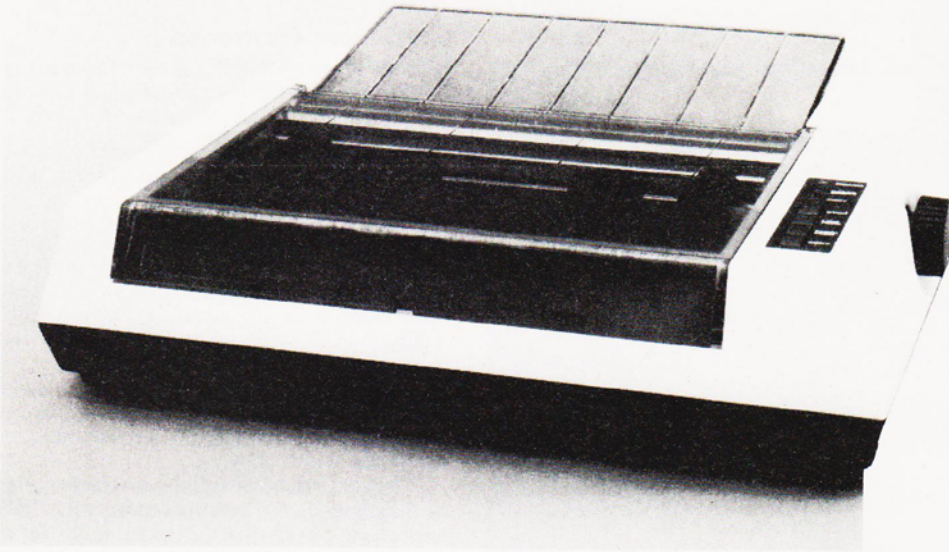
**Interface:** Centronics  
**Made by:** Seikosha  
**Price:** £349.95

The unusual thing about this printer is its ability to print in eight different colours.

The way it does this is by having a four colour ribbon (cyan, magenta, yellow, black) that rotates diagonally across the print head. These four colours are mixed in some way to produce the primary colours. When the ribbon is new the colour balance is good, but after a while the red turns a bit brown looking.

Full colour screen-dumps can be produced by using 'RGB' mode. This is a hires mode where you plot points of colour across the paper much like a raster dot passes across the TV screen.

The inking method of the printer is



## 1520

**Interface:** Commodore IEEE  
Serial BUS  
**Made by:** Commodore  
**Price:** £99

This is one of those printers based on the four pen plotter/printer mechanism. This one has the Commodore badge plastered on it and communicates down the, now infamous, serial bus.

Of all the plotter/printers based on this mechanism I like this the best because you can use text and graphics at the same time. The secondary address system is used to great effect, you can have two files open at once — one for text and one for graphics, unlike most implementations where you must switch between modes.

One problem is the Commodore reverse field characters. This is solved by drawing a line below the character that would be inverted.

Most Commodore printers use device number four, this uses device six. A lot of software defaults to device four so you may not be able to use a lot of software with this — check first.

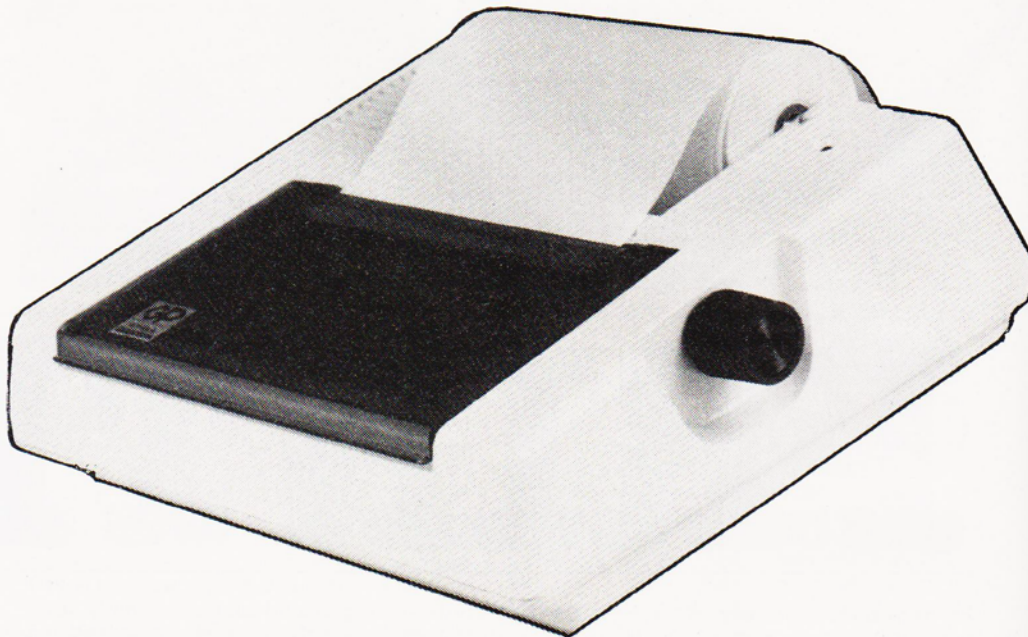
Print quality is excellent but at the cost of speed (12 cps), paper is of the four and half inch variety and comes on a roll. Spare rolls can be acquired at a reasonable price from Tandy.

The print mechanism is via four ball point pens, each pen is a different colour, red, green, blue, black. Spare pens can also be got from Tandy at about half the price that Commodore want for them. As well as four colours a number of different print sizes are available ranging from a readable 80 columns to four characters per line. You can also print up down and upside-down.

Graphics are good and allow drawing lines between any two points on the paper without breaking or stepping. A horizontal resolution of about 960 steps is attainable.

Various line styles are also available for dotted lines etc.

**Verdict:** At £99 this represents excellent value, the documentation is excellent and examples are given, a definite must for the Commodore owner with a small budget.



## GP-50S

**Interface:** Sinclair  
**Made by:** Seikosha  
**Price:** £99.95

This little device is designed to emulate the, now defunct, Sinclair ZX electrostatic printer. It is small in size and acts just like a Sinclair printer.

The machine plugs into the rear expansion slot of the computer and there is an external power supply. Print method is by straightforward dot matrix onto plain paper through a ribbon — quite unusual in this class of product. Loading paper is rather awkward and takes a few attempts. The ribbon is likewise rather fiddly — but these problems are only there because of the compactness of the device.

There are no special functions other than those which the Spectrum provides.

**Verdict:** Good quality for a Spectrum, the paper is cheap and this makes it cheap to run.

rather odd, but totally logical for this

system. The Ribbon, by necessity, is rather thick. This makes it difficult to have a large long lasting one. So Seikoisha have opted for a short continuous loop ribbon and four ink bottles. This system enables you to replace only the ink that has run out, so as you are more likely to use up black than yellow, you can just replace the black cartridge.

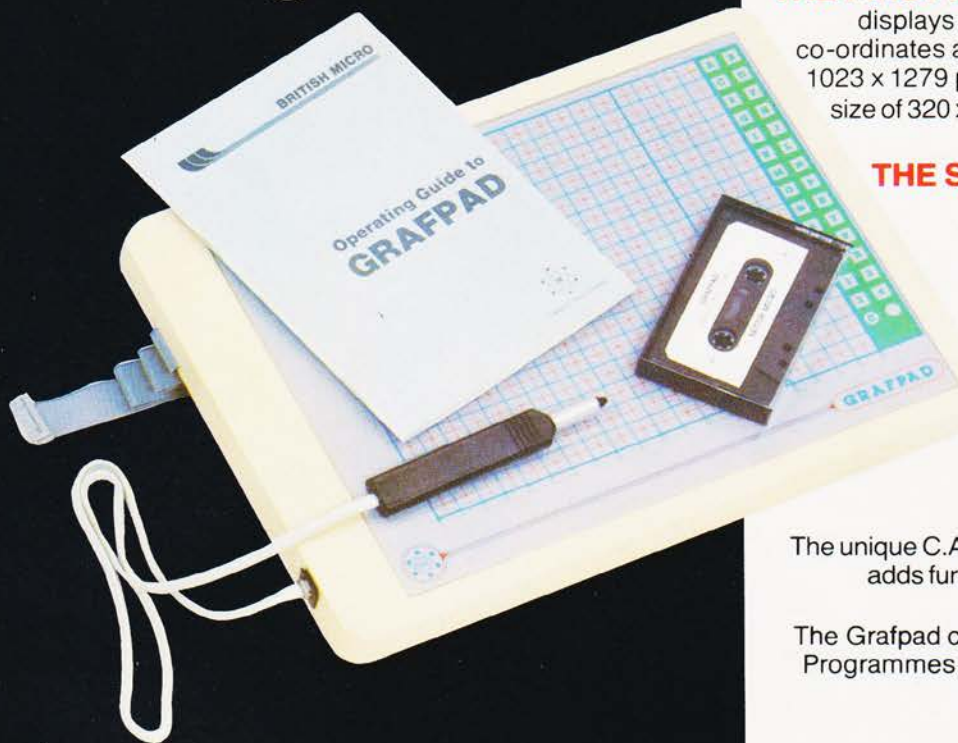
Print speed is very slow, 30cps, but when you see a full colour screen dump come churning out it is worth the wait. The ZX LPRINT III interface by Euro Electronics has built in software for screen dumps to various printers, the only colour printer supported is the 700. Having this facility built in is excellent and it is well worth buying both of these items if you have a Spectrum.

As colour printers go this is of reasonable quality. Ink Jet printers are better but they are more costly to run. It is also slow, but this is something you have to live with if you want colour.

**Verdict:** I'm not sure of the sort of person who would want a colour printer. They are great novelty value and they add a lot to printer generated documentation. With a full colour screen dump capability it is a lot of fun.

# GRAFPAD

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as YOU  
can imagine!



## BBC MODEL B • SPECTRUM COMMODORE 64

With Grafpad you can now add a new dimension to your computer enjoyment, but most important, it helps you create your own application programmes by the simple use of the Grafpad!

The BBC Grafpad comes complete with cassette and disk comprising of three programmes.

### THE FIRST PROGRAMME

displays the co-ordinates of your screen area. The co-ordinates are based on the screen with a grid size of 1023 x 1279 pixel, also in the Grafpad giving you a grid size of 320 x 256 pixels! This is to allow you to write your own graphic programmes.

### THE SECOND PROGRAMME

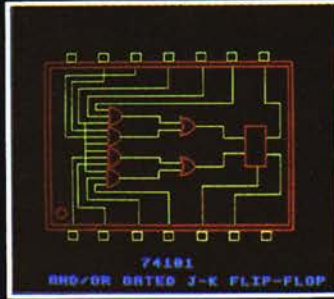
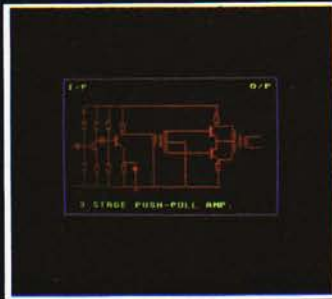
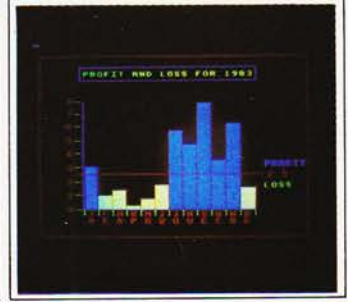
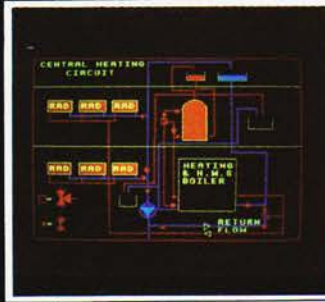
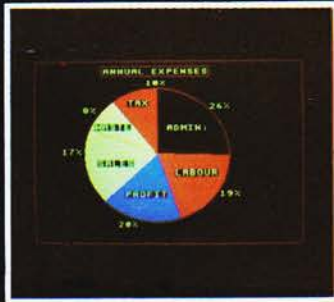
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# fantasy

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You proceed to explore the Pyramid from top to bottom with the difficulty generally increasing with the depth of level. Depending on the choice of exit from each chamber you are likely to have a different game every time you play.

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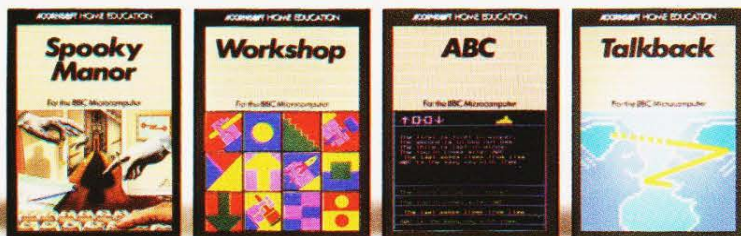
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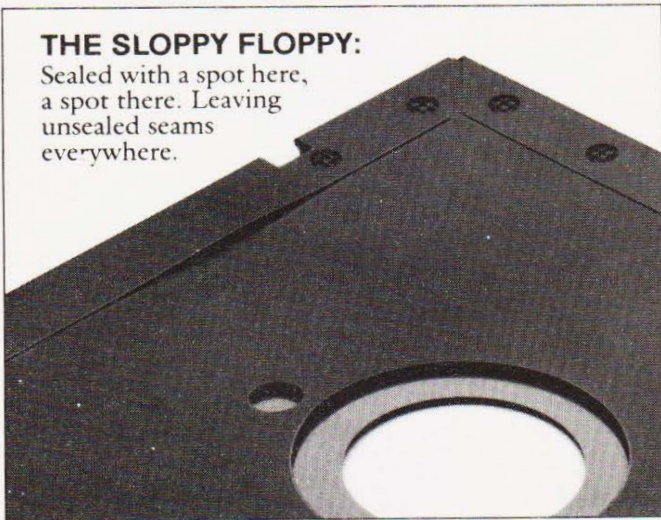
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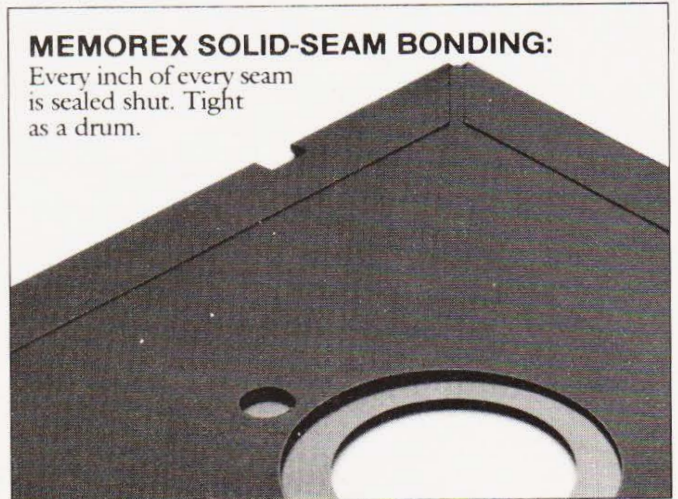
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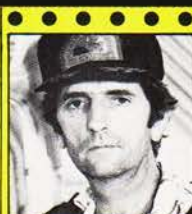
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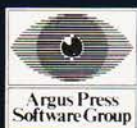
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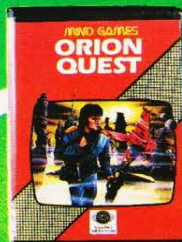
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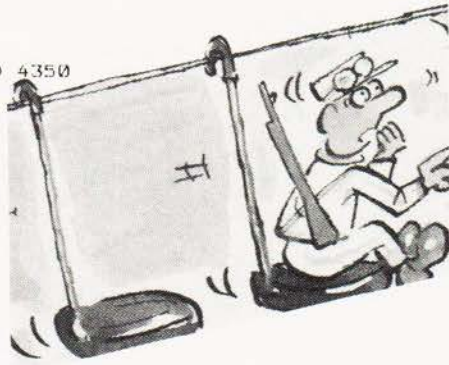




```

3200 NEXT I
3210 GOTO 3120
3500 ZAP:FOR Z=1 TO LEN(SN$(K3))
3510 LET Z$=MID$(SN$(K3),Z,1)
3520 IF Z$="n" THEN 3540
3530 NEXT Z:RETURN
3540 LET L=LEN(SN$(K3))
3550 LET Z1$=LEFT$(SN$(K3),Z-1)
3560 LET Z2$=RIGHT$(SN$(K3),L-Z)
3570 LET SN$(K3)=Z1$+" "+Z2$
3575 EXPLODE:EX=EX+1:SC=SC+5
3577 SC$=STR$(SC):PLOT 10,25,CHR$(10)+SC$:PLOT 10,26,CHR$(10)+SC$
3580 RETURN
3700 REM **** CLEAR LEVEL 2 ****
3702 PING:PLAY 7,0,0,0
3705 PLAY 7,4,3,10:MUSIC1,3,1,0
3710 FOR I=S2+1 TO 38
3720 FOR Z=13 TO 15
3730 PLOT 1,Z,CHR$(INT(RND(1)*7)+17)
3740 NEXT Z,I
3750 PLAY 0,0,0,0:PING:PLAY 7,0,0,0:PING
3760 RETURN
4000 REM *****
4001 REM *          LEVEL 3          *
4002 REM *****
4010 K4$=KEY$
4020 IF K4$=CHR$(8) THEN PLOT X,Y," ":X=X-1:PLOT X,Y,"k"
4022 IF K4$=CHR$(9) AND X<S2-2 THEN PLOT X,Y," ":X=X+1:PLOT X,Y,"a"
4025 IF X<4 THEN GOTO 12000
4030 IF K4$=" " AND X=4 THEN GOSUB 9000:GOTO 4050
4040 GOTO 4010
4050 GOSUB 9800:GOSUB 11600:GOSUB 9900
4060 K5$=KEY$
4065 IF K5$=CHR$(9) THEN PLOT X,Y," ":X=X+1:PLOT X,Y,"a"
4070 IF K5$=CHR$(8) THEN PLOT X,Y," ":X=X-1:PLOT X,Y,"k"
4080 IF X=1 OR X=3 THEN GOTO 12000
4090 IF K5$=" " AND X=2 THEN GOSUB 9500:GOTO 4105
4100 GOTO 4060
4105 REM ***** ICE MOVEMENT *****
4110 ICE$(1)="          n          n          n          n          n          n          n          n          "
4120 ICE$(2)="          n          n          n          n          n          n          n          n          "
4130 ICE$(3)="          n          n          n          n          n          n          n          n          "
4140 ICE$(4)="          n          n          n          n          n          n          n          n          "
4150 ICE$(5)="          n          n          n          n          n          n          n          n          "
4160 ICE$(6)="          n          n          n          n          n          n          n          n          "
4170 K$=KEY$:IF K$=CHR$(9) THEN GOTO 4190
4180 GOTO 4170
4190 PLOT X,Y," ":PLOT 4,8,ICE$(1)
4200 X=X+1:PLOT X,Y-1,"p":PLOT X,Y,"a"
4210 WAIT 200
4220 FOR I=1 TO 6
4225 FOR U=1 TO 53:NEXT U
4230 PLOT 4,8,ICE$(I)
4235 IF SCRN(X,Y-1)=110 AND HEAD$="UP" THEN GOTO 12000
4240 IF HEAD$="UP" THEN PLOT X,Y-1,"p"
4250 K6$=KEY$
4255 IF HEAD$="DOWN" THEN GOTO 4320
4260 IF K6$=CHR$(10) THEN GOTO 4300
4270 IF K6$=CHR$(9) THEN PLOT X,Y-1," ":PLOT X,Y," ":X=X+1:PLOT X,Y-1,"p"
4272 IF K6$<>CHR$(9) THEN GOTO 4275
4273 SC=SC+X:SC$=STR$(SC)
4274 PLOT 10,25,CHR$(10)+SC$:PLOT 10,26,CHR$(10)+SC$
4275 IF X=37 THEN RETURN
4280 IF K6$=CHR$(9) THEN PLOT X,Y,"a"
4290 GOTO 4400
4300 REM ***** DUCK! *****
4305 HEAD$="DOWN"
4310 Z=0
4320 PLOT X,Y-1," ":PLOT X,Y,"i"
4325 IF X=37 THEN RETURN
4330 Z=Z+1:IF Z=3 THEN HEAD$="UP":GOTO 4350
4340 GOTO 4400
4350 PLOT X,Y-1,"p":PLOT X,Y,"a"
4400 NEXT J
4410 GOTO 4220
5000 REM *****
5001 REM *          LEVEL 4          *
5002 REM *****
5010 LET CL$="
5020 PLOT 2,8,CL$:PLOT 1,9,CL$
5040 X=38:Y=3:CX=5:CY=Y:J=3
5050 PLOT X,Y,"k"
5055 PLAY 7,0,3,200:MUSIC1,0,1,0
5060 FOR I=3 TO 0 STEP -1
5070 PLOT 1,10,CHR$(18)
5075 BP=1000:BO$="Y":GOSUB 9800:WAIT 400:GOSUB 9900
5080 NEXT I
5085 PLAY 0,0,0,0
5090 COBRA$(1)="m          m          m          m          m          m          m          m          "
5100 COBRA$(2)="          m          m          m          m          m          m          m          m          "
5110 COBRA$(3)="          m          m          m          m          m          m          m          m          "
5120 COBRA$(4)="          m          m          m          m          m          m          m          m          "
5130 COBRA$(5)="          m          m          m          m          m          m          m          m          "
5140 COBRA$(6)="          m          m          m          m          m          m          m          m          "
5150 COBRA$(7)="          m          m          m          m          m          m          m          m          "
5160 COBRA$(8)="          m          m          m          m          m          m          m          m          "

```



5600-5790 Level four jump routine.

5800-5820 Check for spring below level of ground on level four ie SAVED.

5900-6060 Saved by spring routine.

7000-7510 Won game routine and message.

8000-8999 Introduction and skill level initialisation.

9000-9030 Jump left routine.

9500-9570 Jump right routine.

9800-9870 Bonus plot.

9900-9920 Bonus unplot.

10000-10500 Redefine characters (lower case a-u).

11000-11500 Title page music and data.

11600-11650 Spring movement upwards.

12000-12170 Hero killed music and message.

### Variables Used

**EX** Counter for number of ice-balls hit on level two.

**SC \$ , SC** Score (SC\$-Score in PLOT format).

**HEAD \$** ("UP" or "DOWN") State of hero when dodging ice-balls on level three.

**X , Y** Position of hero (Column, line) on your screen.

**U , Z , I , J** Miscellaneous Counters.

**SK** Skill level (0-15)

**K \$ , K2 \$ , K3 \$ , K3 , K4 \$ , K5 \$ , K6 \$ , K7 \$** Used to check for keypress in game levels (KEY\$).

**S1 , S2 , S3 , S4** Control variables related to SK in order to construct a skill level for each level of the game.

**B 1** Bonus counter for level one.

**SN \$ (1-3)** Array string carrying line of ice-balls on level two.

**Z \$** Searching variable that scans for nearest ice-ball to gun turret on level two.

**B \$** Checks to see if ice-ball has reached gun turret ie DEAD.

**L** Length of string containing line of ice-balls.

**Z 1 \$ , Z 2 \$** When deleting hit ice-ball, Z1\$ is SN\$(1-3) prior to ice-ball Z2\$ = SN\$(1-3) after ice-ball. This extracts the hit ice-ball and inserts a space ie HIT.

**ICE \$ (1 - 6)** String array that when used under a FOR-NEXT loop produced the movement of ice-balls on level three.

**CL \$** Clears a line when required.

**CX , CY** Position of cobra (Column, line)



```

7190 PLOT 1,23,CHR$(3)+"oooooooooooooooooooooooooooooooooooooooooooo "
7200 PLOT 8,25,CHR$(4)+"YOUR SCORE WAS "+STR$(SC)
7500 WAIT 600
7510 RUN 2
7998 REM *****
7999 REM *      INTRODUCTION      *
8000 REM *****
8001 NB="C H O C K I E S":FOR I=48000 TO 48040:POKE I,32:NEXT I
8002 FOR I=48012 TO 48026:POKE I,ASC(MID$(NB,I-48011,1)):NEXT I
8010 CLS:PAPER0:INK7
8020 FOR I=1 TO 15:PRINT:NEXT I
8030 PLOT 13,1,CHR$(10)+CHR$(4)+"CHOCOLIES"
8040 PLOT 13,2,CHR$(10)+CHR$(4)+"COOKIES"
8045 GOSUB 10000
8050 GOSUB 11000
8060 PRINT "PLEASE TYPE SKILL LEVEL(0-15)"
8070 INPUT SK
8080 IF SK=0 OR SK=15 THEN ZAP:GOTO 8070
8085 LET SV=INT(SK)
8090 PING
8100 LET S1=30-(SK*2)
8110 LET S2=INT(SK*1.533)+10
8120 LET S3=(30-(SK*2))*9
8130 LET S4=(30-(SK*2))*9
8999 RETURN
9000 REM *****
9001 REM *      JUMP LEFT      *
9002 REM *****
9010 PLOT X,Y," ":PLOT X-1,Y-1,"F"
9015 FOR I=50 TO 1 STEP -1:SOUND 1,I,15:NEXT I
9020 PLOT X-1,Y-1," ":PLOT X-2,Y,"F"
9025 FOR I=1 TO 50:SOUND 1,I,15:NEXT I
9026 PLAY 0,0,0,0
9028 X=X-2
9030 RETURN
9500 REM *****
9501 REM *      JUMP RIGHT     *
9502 REM *****
9510 PLOT X,Y," ":PLOT X+1,Y-1,"e"
9520 FOR I=50 TO 1 STEP -1:SOUND 1,I,15:NEXT I
9530 PLOT X+1,Y-1," ":PLOT X+2,Y,"e"
9540 FOR I=1 TO 50:SOUND 1,I,15:NEXT I
9550 PLAY 0,0,0,0
9560 X=X+2
9570 RETURN
9800 REM *****
9801 REM *      BONUS PLOT    *
9802 REM *****
9810 IF Y=2 THEN BP=1000-B1:PLOT 10,25,CHR$(10)+STR$(BP)
9811 IF Y=2 THEN PLOT 10,26,CHR$(10)+STR$(BP)
9820 IF Y=15 THEN BP=100
9855 IF BP=100 THEN BP=100
9860 PLOT 14,19,CHR$(12)+CHR$(4)+"BONUS "+STR$(BP)
9862 IF Y=3 AND B0$="Y" THEN B0$="N":BP=250
9865 SC=SC+BP
9866 SC$=STR$(SC):PLOT 10,25,CHR$(10)+SC$:PLOT 10,26,CHR$(10)+SC$
9870 RETURN
9900 REM *****
9901 REM *      BONUS UNPLOT  *
9902 REM *****
9910 PLOT 14,19,CHR$(12)+CHR$(4)+" "
9920 RETURN
10000 REM *****
10001 REM * REDEFINE CHARA. ROUTINE *
10002 REM *****
10010 FOR J=46856 TO 47023
10020 READ A:POKE I,A
10040 NEXT J
10050 REM CASTLE
10060 DATA 21,31,31,31,31,27,17,17,"a"
10070 DATA 1,3,3,9,7,1,2,4,"b"
10080 DATA 0,32,32,8,48,0,32,16,"c"
10090 DATA 47,47,63,63,63,63,63,63,"d"
10100 DATA 63,60,56,56,56,56,56,56,"e"
10110 DATA 63,15,7,7,23,7,7,7,"f"
10120 DATA 17,17,31,31,31,31,31,31,"g"
10125 REM SKIS
10130 DATA 0,0,0,0,0,0,63,0,"h"
10140 DATA 0,0,0,0,0,1,62,0,"i"
10145 REM GUNS
10150 DATA 24,24,24,31,31,24,24,24,"j"
10155 REM OUR HERO(FACING WEST)
10160 DATA 24,24,8,56,8,52,39,32,"k"
10165 REM FLOOR
10170 DATA 63,63,63,63,63,63,63,63,"l"
10175 REM SPRING
10180 DATA 12,48,12,3,12,48,12,3,"m"
10185 REM ICE BALL
10190 DATA 0,0,0,0,0,12,30,12,"n"
10195 REM OUR HERO(FACING EAST)

```

RND (1) \* IC. Produces random number between 1-10.  
(Replace by BBC = rnd (10), Sinclair = rnd x 10).  
SCRN (x,y) Return ASCII code of character at column x and row y on the screen. Used to check for





# BrainWare

## BISMARK

**Runs on:** 48K Spectrum  
**Made by:** Argus Press Software  
**Price:** £6.99

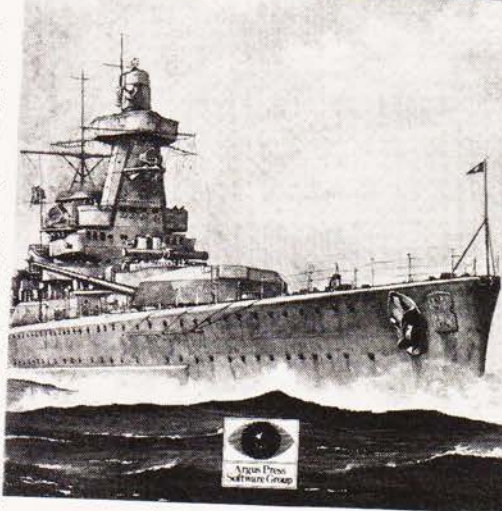
The object of Bismark is to find and destroy the Bismark after she sank HMS Hood.

In the fleet there are a number of ships including two aircraft carriers. Once loaded there is an option of whether instructions are wanted. These are very detailed and explain everything in good depth.

The screen display is basically split into three sections. The first is a map of the sea with locations. Positioned on the map are all your ships and, if the Bismark has been sighted, it appears as well. Then there is a list of all the fleet's ships and whether they have been sunk or not, which is in the same section as the time and weather. The bottom section is where the computer asks for your moves. The time is split into turns and overall there are thirteen turns until the fleet must refuel.

The game is a strategic one and is written in BASIC. There are no apparent bugs. All in all the game is fair.

## BISMARK



meets up with a hostile being. Combat is entered in real time and the keyboard is the judge of whether you missed your strike (like in The Valley). There are numerous monsters to defeat and many difficult puzzles to solve.

The aim of the game overall is to return from your adventures, regain lost spells, sell treasure and achieve higher levels of character. Monsters and Magic takes the role playing game into new areas of complexity and although text only, can prove exciting in the challenge it presents. I think that more use could have been made out of the BBC's sound but nice exploitation of the function keys is made with command words like HIT, FLEE, SPELL, STATUS, being assigned to them for quicker response.

## MONSTERS AND MAGIC

**Runs on:** BBC Model B  
**Made by:** ISP Marketing  
**Price:** £7.95

This is, as the name suggests, a fantasy adventure game. Its one claim to be slightly different is that it involves some real-time action. The player adventures out from home base to roam about one of the two possible dungeons in the traditional manner (entering N, S and so on).

The initialising of the game allows a wide variation between contests since there are many variable factors. The player has a fair say in the role he will play. The choice is from Fighter, Magic-using Cleric, Thief or Ranger. These 'types' have characteristics such as strength, intelligence, dexterity, in different proportions. The player also has to choose from human, dwarfen and elven races.

One hundred gold pieces are awarded to buy equipment from amongst a sword, dagger and magic staff, oh, and bow and arrows. Further payment gives the weapon magical qualities. Also available are the Gloves of Skill, the Potion of Healing, Bag of Holding, Boots of Speed, and rings of Protection and Resurrection. The latter is associated with a particularly humorous comment in the game: "Resurrected by the power of the ring but failed to survive the shock and died again"!

The strength, intelligence and dexterity attributes are randomly assigned



and it is up to the players' choices to make the most of them.

There are also a number of spells associated with self-protection and healing which are assigned to the player, plus hit points (fighting ability) and an armour class (vulnerability). These come into play when the player

## WEST

**Runs on:** Commodore 64  
**Made by:** Talent Computer Systems  
**Price:** £9.95

This is basically a text adventure in the classic mould, consisting of a series of puzzles to be solved. However there are a number of additional features which make it feel rather different from the traditional game. Some features enhance the game, others reduce it.

On the plus side there are excellent full screen graphics. Occasionally. They appear instantaneously, so presumably are paged and therefore must consume a fair wack of RAM. They are worth the wait but there are not really enough of them to justify calling this a graphic adventure.

A second good feature is the command parser. It is basically a two word parser but it can ignore redundant words and so apparently interpret complex sentences. But this can lead to errors, and when the program cannot find a word it sometimes takes a very long time to tell you so.

The feature I disliked most but which the designers presumably regard as a plus in the huge random element is the game. Your trusty steed can wander in (despite being killed in a previous move), tumbleweed rolls by, snakes appear and bite you (or don't) and bankrobbers shoot at you for no good reason. This might be a good feature if it was more controlled but it happens too often. Particularly irritating is the way that random events can interrupt your typing so instructions get mistyped or repeated.

The game is well constructed and thought out but rather quirky. Still adventurers are a quirky bunch.

# BrainWare

For Thinking  
Players

## PLANETFALL

**Runs on:** 48K Spectrum  
**Made by:** Argus Press Software  
**Price:** £6.99

Since the Wars of Intercession were won there has been a pretty rotten time trying to build a civilisation around the Galaxy.

In Planetfall you must sell goods to various stars to develop them. This is a game of skill and strategy. The computer will haggle with you to add the element of skill which is so often left out of games.

At first the number of players must be entered. One player cannot play by himself, which puts obvious restriction on the game. Next other names like ship names and your name must be entered.

The game is complicated and may be saved on to tape. It is written in BASIC. The graphics for this sort of game are superb. There is little sound. For strategy fanatics a good buy.



## BATTLE FOR MIDWAY

**Runs on:** 48K Spectrum  
**Made by:** P.S.S.  
**Price:** £7.95

Battle for Midway is a computer war game. When I saw the title, I thought, great, another "Beach Head". It isn't. A manual is supplied with the tape; it is full of vague instructions on how to play the game. Through experience, I have found it best to read the manual whilst playing a practice game. There is a sec-

tion on Basic Tactics (how to win) — not at all helpful.

So, being the trier I am, I sat down for a long session and tried to defeat the Japanese forces.

The graphics are poor and the game too involved to hold the average micro players attention for long. The first screen is about finding the Japanese fleet on a very boring map, by the way, all the action is timed which tends to draw out the game too much. There is also an Arcade section for the fans, shoot down the bluebottles, or were they Jap fighters, who cares!

Having never played war games before, I might have missed the finer points of the game, but with such poor graphics and lack of action I could not really get into it.

## STUART HENRY'S POP QUIZ

**Runs on:** 48K Spectrum  
**Made by:** Bellflaier Software  
**Price:** £5.75

This Pop Quiz, produced with the backing of Radio Luxembourg's DJ Stuart Henry presents fine compilation of questions selected from over 750 questions in its memory on present and past pop.

It can be played with 2 players or by yourself. The game is different from most quiz programs as it has a tune at the start of each round of about 6 notes. You have to remember how the tune goes because if you answer a pop question correctly then you will be asked to enter one of the notes in the tune.

The questions vary from the Beatles to Eurovision Song Contests to Duran Duran, it also tests your knowledge (and spelling) very well. The annoying thing is that the answer has to be exactly correct. For instance, for one question I knew the answer was Shaking Stevens. I entered the answer but was told I was wrong. It said that the answer was "Shakin' Stevens"! I had put a 'g' instead of an apostrophe.

Ten points are awarded for each question answered correctly and ten points bonus for getting a note correct. Ten points are taken away for an incorrect answer or note. When your bonus reaches '0' then the game ends. When a note is finished a longer tune is given and the game continues.

This is a good quiz for a pop music lover and at the same time helping the Stuart Henry Sclerosis Society which receives a donation for every copy bought.

## RAINY DAY

**Runs on:** Spectrum 48K  
**Made by:** Cases Computer Simulations Ltd  
**Price:** £2.99

This tape from Cases Computer Simulations is aimed squarely at the pocket money range and so not too much should be expected from the games contained. The first is a computerised version of the Puzzle Square, where a picture (one of several) is rearranged by sliding pieces around a square in such a way that the jumbled picture becomes whole.

The second game is an extended version of Mastermind where the code must be broken in 15 moves or before the time runs out.

The third, and worst game is simply a tester, where you must press a key and halt the movement of a ball as quickly as possible.

Apart from the last game this tape represents quite good value for money, for anyone who likes a gentle mind puzzle as opposed to an arcade game.

## RAINY DAY



SOFTWARE  
REVIEWS



# DISKS

There is an old saying in the computer world 'he who has a tape deck wants a disk drive, he who has a disk drive wants two'!

Are disks and other fast storage media really necessary. What use are they for games. Mike Roberts has a look and tries to find out what it's all about.

## 1541

**For:** Commodore 64, VIC, Plus/4, C16  
**Made by:** Commodore  
**Price:** £199

Unfortunately the 1541 is the only disk unit available for the Commodore 64/VIC/Plus 4. I say unfortunate because it is so slow that you can make the tape system go faster!

The operating system is held inside the unit and it is an intelligent device. This has the advantage of not interfering with the operation of the computer (BBC users take note) but at the disadvantage of 64 and VIC users having to go through all sorts of trouble to use any functions at all. For instance to read the directory you must load it in like a program and list it, destroying any program that is currently in the machine. To read the disk status you must open a file to the disk read in some variables, print them, and close the file.

There is a sort of extension to Basic included on disk but it interferes with many operations of the computer and is only effective in direct mode.

The DOS is bugged and can lead to corrupted disks if you don't work around them. The whole system is unreliable.

Commodore have promised a new disk system for their new machines and a modification of this one called the 1542. I hope they hurry up!

## 80 TRACK DRIVES

**For:** Dragon, BBC  
**Made by:** Cumana  
**Price:** £333, £189.95

**BBC:** Cumana disks for the BBC have become almost the standard disks for the BBC. Even W.H. Smiths sell them in preference to the Acorn units. As far as the drives go they are straightforward BBC disk drives that are reasonably cheap, very reliable, and come with an excellent manual that will tell you everything you need to know about disk drives but were afraid to ask.

The utilities disk is very good as well. The formatter displays a graphical representation of the disk as it is formatted. If it fails to format it will play the death march and if it is successful it plays Beethoven's fifth! A good buy if you want a straight no nonsense disk drive for the Beeb.

**Dragon:** This disk system is the only alternative to the, now defunct, official Dragon one.

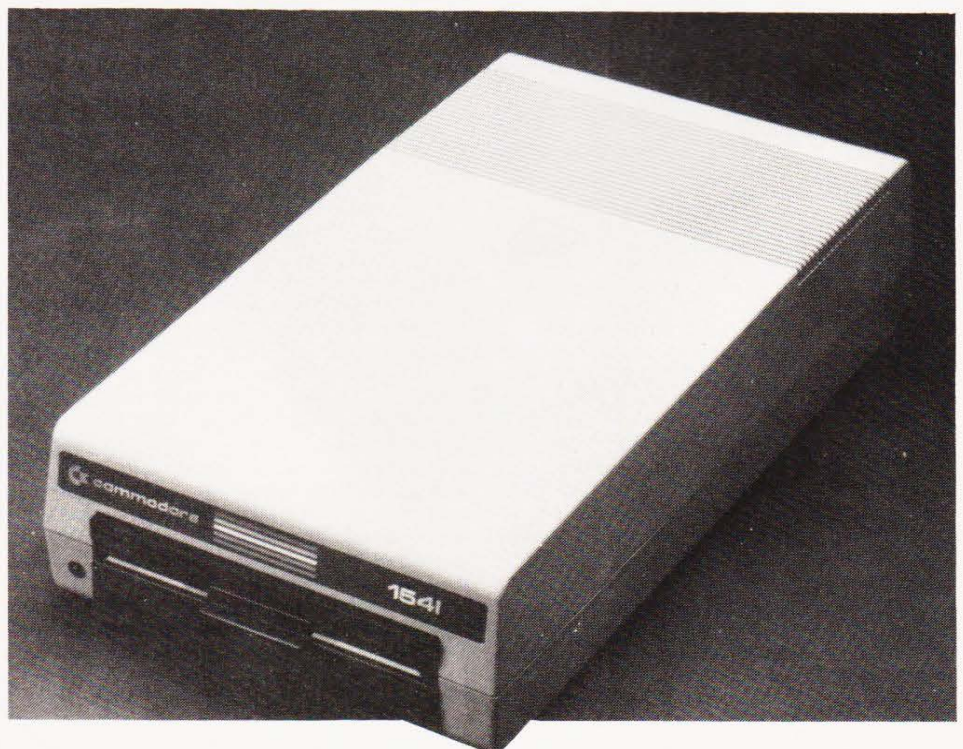
The Drive is identical to the BBC one. The Interface is made by Premier Microsystems, and the Manual is a collaboration between them both. This is an excellent example of cooperation between two companies.

The Interface plugs into the cartridge slot and is about triple the size of a normal cartridge. A long ribbon cable goes to the drive.

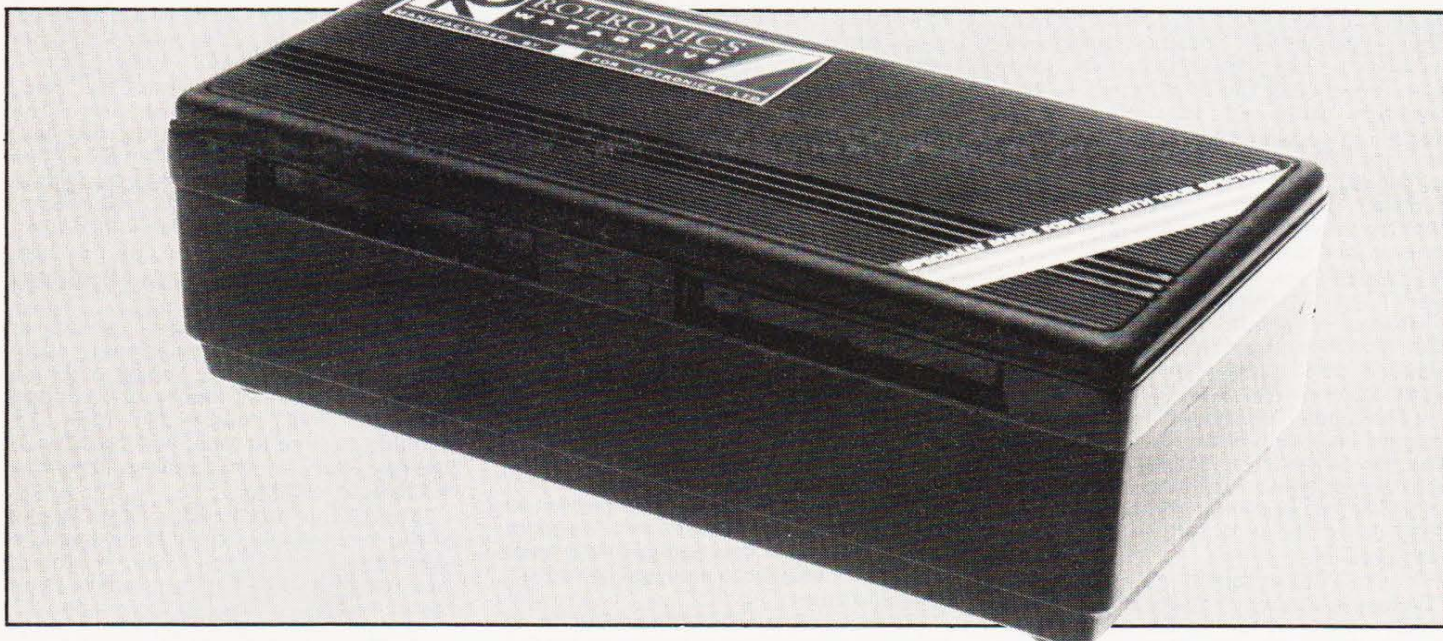
An extended Basic is in the cart to drive the extra functions. It is very comprehensive and covers every function that you could probably want.



This is the only disk system left for the Dragon. There is very little software support but that's what you've got to live with. Considering that it's hobson's choice it is very good.







## WAFADRIVE

**For: Spectrum, (Commodore)**  
**Made by: Rotronics Ltd**  
**Price: £129.95 (£149.95)**

The Rotronics Wafadrive is an alternative storage system that competes directly with the Sinclair Microdrive.

The unit itself is a compact box that connects itself to the rear of the Spectrum via a short length of ribbon cable, the expansion port is echoed at the rear. The recording system is continuous loop tape that is similar to Microdrive tape, but comes in a better case which has a slide back cover to protect it.

The main unit comes with two of these drives built in. There are three sizes of tape — 16K, 64K, and 128K. The longest it takes to find a program on the 16K tape is about six seconds. In practice it is a lot shorter. The 128K tape takes around 45 seconds but again in use it is less.

An Extended Basic is built in that uses Microdrive-like commands, it is as easy to use as any Sinclair Basic could be. The original Wafadrive had Microsoft style commands and I think it would have been better to use them instead.

The Basic is good for the task and I have no complaints about it. Also included in the package is a word-processor written by Softek called Spectral writer. This is a full feature wordprocessor that can generate a 64 column screen that is quite readable.

Why put a wordprocessor in with a storage medium? Wouldn't a database be more useful? Not when you discover that the unit has a Centronics interface and a bi-directional RS232 interface as well. This means that you can drive almost any printer on the market. Well done Rotronics!

As I mentioned earlier, this is competing directly with the Sinclair Microdrive system and it beats it hands down.

Software support is or will be available with quite a lot of companies supporting it like Hewson, Artic, Softek, and others while there is no software support for Microdrives at all.

All that is missing is the network (I'd swop that for a Centronics interface any day) and the dreadful unreliability of the Sinclair units.

There is a Commodore system on its way, I have seen a pre-production unit and it is quite good. It communicates with the Commodore 64, VIC, 16, Plus/4 via the serial bus and uses commands that are very similar to the 1541. It is also a bit faster. The big problem is that it is only £50 cheaper than the disk drives, but it has all the functions of the Sinclair drives.

The Spectrum version is available now and it is worth selling your Microdrives and Interface 1 to get this, it is so good.

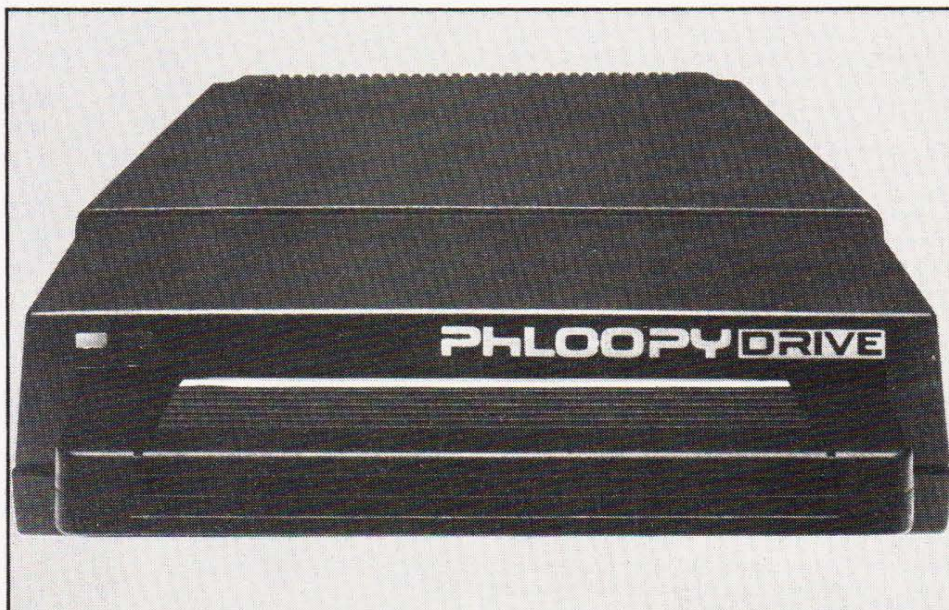
## PHLOOPY

**For: BBC, (Commodore)**  
**Made by: Phi Mag Systems Ltd**  
**Price: £113.85 + £29.90 for the Interface**

Phloopy is an attempt to produce a fast alternative to the rather expensive disks for the BBC Micro.

The system is based around an intelligent unit that takes special tapes and read/writes using a unique nine track head developed by Phi mag. There is a distinct advantage in using a nine track head. One byte takes up eight bits, one bit per track plus one bit for parity. A parity bit is a bit that confirms the contents of the byte it is associated with. This makes the Phloopy quite reliable.

To use the Phloopy on the BBC you





need to fit an interface. This comprises of a small circuit board plugging into where the disk interface usually goes, two link blocks being plugged in, two resistors being cut, the LFS ROM inserted into a sideways ROM socket, and sticking a small sticker on the front of the BBC saying "This machine is fitted with a Phloopy interface"!!

The drive plugs into the auxiliary power jack and the disk socket.

The LFS or Loop Filing System is very much like the Acorn DFS so a lot of software runs with it. ROM software like Wordwise seems to run all right. Advanced DFS commands are also present, such as EXT# and PTR#.

The tapes hold around 100K of information on a loop of about 12 feet long. Access times are a lot faster than tape and considerably faster than the Commodore disk system it's just that as the BBC disks are so fast it looks slow by comparison.

Two of the tapes are supplied, a 'Welcome Phloopy' and a blank. Blank tapes cost a whopping £5 each!. Software support looks a bit thin on the ground but it may pick up a bit.

A Commodore version should be out by Christmas and if it is comparable in speed with the BBC one it will be a good deal faster than the Commodore disk system.

As it stands for the BBC I don't know whether to recommend it or not. Disk prices are now down to around £200 for a DFS and a drive, if you shop around. The Phloopy is about £145, so it depends on whether you have the extra £55 pounds. If you can scrape it together then get disks, if you can't then this is just about the best alternative.

## The story so far . . .

Disk drives have been with us for many years. IBM first developed the floppy disk (the eight inch variety) for its new generation of mini computers a long while ago.

Shugart then went one step further and created the mini floppy with a diameter of five and a quarter inches.

This is the most popular disk storage medium in the world and because it was developed by one manufacturer there is only one type of disk and it will fit any disk drive, although the data on it is be unlikely to be readable.

There are some variations between density and number of sides, but on the whole it is a pretty standard arrangement. The same can be said of the drives themselves. The 'Shugart bus' is what nearly all disk drives use to communicate with their controllers.

The story is not the same when it comes to micro floppies. These come in sizes from two and three quarter inches to three and three quarter inches. Most manufacturers are Japanese although there are a few Europeans.

These micro floppies are all totally different from each other, each manufacturer has a different standard.

The two that look like winning the race are Sony, whose disk drives have been accepted by a lot of business machine companies (Apple, ACT, etc) and

Hitachi who have made inroads into the home computer market, with their drives being sold with the Einstein, Amstrad, Atmos, and possibly Enterprise. Third party manufacturers also use Hitachi drives for use with the BBC micro. MSX is also going to use one of these drives, but as both manufacturers are MSX subscribers it is going to be a big battle to see who gets the contract.

The American market is almost totally disk based — hardware is very cheap over on the other side of the pond. So over in the USA there is a lot of disk software. The British disk software market is expanding with Mastertronic, Richard Shephard, Interceptor, Acornsoft and almost every other manufacturer producing software on disk.

The advantages of using a disk drive are very plain. They are capable of 'random access', this does not mean that all your data is scrambled in a random fashion, but that you can get data from a random part of the disk just as fast as any other part.

The speed of disk accessing is so fast that it becomes practical to have a program in many parts on a disk of say 100K in length. If your computer has around 40K then the program can load in and out in three chunks. If you have a fast disk drive then there is only a short wait if any wait at all.

Adventure games for the Apple in America have been doing this for years. Some games can cover three, four, or even five disks! that's around half a megabyte of program, while the computer can only take around 48K at a time.

Elite for the BBC by Acornsoft uses the disk swapping method to good effect. Call up information from the

Galactic Encyclopaedia and the disks spin for a few seconds and the information is displayed.

Remember the Hobbit on the BBC, no graphics. If it was on disk then all the pictures can be stored on the disk and called up at the appropriate time. Thus getting around the lack of memory in the BBC that prevented the inclusion of the picture drawing routines.

With the development of the disk software market, exciting things will happen.

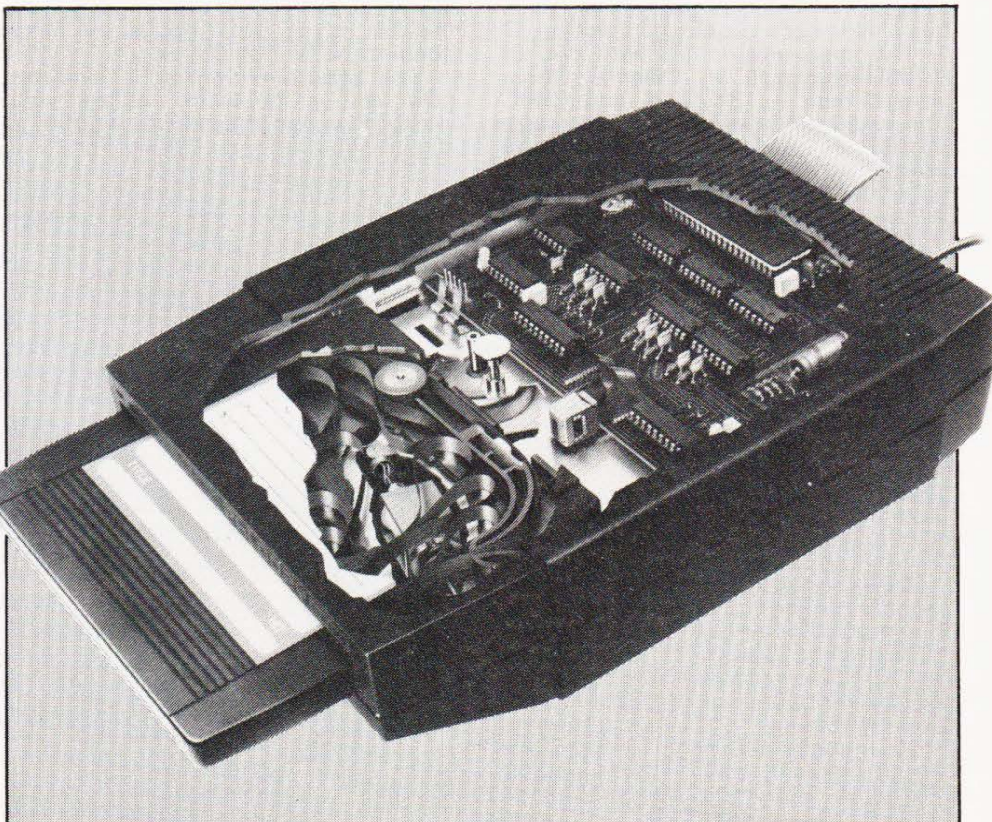
As far as programming, serious or otherwise, a disk drive is almost essential, if you can afford it. Whilst writing a game for the Commodore 64, I found that the 30K source file took 17 minutes to save to tape, and you should always verify — that makes around a 40 minute wait!.

The Commodore disk system is one of the slowest around but it still load the same game, but 20K bigger, in around two minutes. The BBC system is even faster — 25K in around five seconds!

Another storage method rivalling disks is collectively known as 'alternative storage media'.

This refers to 'Floppy Tapes', 'Stringy Floppies', 'Phloopies', and 'Microdrives' in all their shapes and forms. The emphasis is on emulating disks while keeping the high price of disk drives down, hence the odd names — most of which have a variation of 'floppy' or 'drive' somewhere.

In the main these devices consist of a long loop of magnetic tape which passes over a tape like read/write head. These range from the good but expensive Phloopy to the cheap but unreliable Sinclair Microdrive.





# ADVENTURE into PROGRAMMING

Steve Lucas is back again with part four of the series about all you wanted to know about adventure programming but were afraid to ask.

The sharp eyed amongst you will have noticed that the two adventures in this issue were written by him.

Now that you are able to move from one location to another in your adventure, you will need to be able to handle the objects which you find in the different locations. This means writing a routine to allow you to GET the different objects and this may be called by inserting a line into the main control loop such as:

```
410 IF G$="GET" OR G$="TAKE"  
OR G$="GRAB" THEN GOSUB 1600
```

BBC and ELECTRON users can replace the subroutines with PROCget.

The GET routine will need to analyse the word held in the variable H\$, which we extracted from the input statement F\$ last month. Listing 1 shows one subroutine to achieve this. It will work on most machines without any changes, although Spectrum owners will need to make the changes indicated below.

This routine will need some explanation:

- The variable E is used as a check. It is first set to zero and the FOR-NEXT loop searches each element

in the array C\$(X) to see if the word entered is understood. If it is, then variable E is set to 1 so that when line 1650 is reached, an appropriate message will be displayed if the word is not understood and control will then be passed back to the main loop.

- If the word held in H\$ is understood, the routine must then check if the object is found in the current location (P%). Lines 1660-1700 perform this check and the number of the item is held in the variable R.
- In any adventure game, you will want to include items which you should not be able to get. The checks for these should be placed in the listing at this point. As an example, supposing item 18 is an evil vampire, then we could prevent the player from being able to GET the vampire by adding line

```
1711 IF R=18 THEN PRINT "That's  
just about the most ridiculous sugges-  
tion I've ever heard!": RETURN
```

The RETURN statement prevents the object being transferred to the array holding the items you are carrying.

- Lines 1800-1850 transfer the item to the array holding the items you



## The GET routine

```
1600 REM ** GET routine **  
1610 LET E=0: LET R=0  
1620 FOR X=1 TO 24 : REM ** There are 24 objects in this game **  
1630 IF LEFT$(C$(X),LEN(H$))=H$ THEN LET E=1: LET R=X  
1640 NEXT X  
1650 IF E=0 THEN PRINT "I don't see a ";H$: RETURN  
1660 LET E=0  
1670 FOR X=1 TO 24  
1680 IF B$(X)=P% THEN LET E=1  
1690 NEXT X  
1700 IF E=0 THEN PRINT "I don't see it here!": RETURN  
1710 REM ** next few lines hold checks for items.
```

```
1800 LET E=0  
1810 FOR X=1 TO 4  
1820 IF V$(X)=" " THEN LET V$(X)=B$(B$(R)): LET E=1: LET X=5  
1830 NEXT X  
1840 IF E=0 THEN PRINT "My hands are full !":RETURN  
1850 LET B$(R)=0: RETURN
```

## Changes for SPECTRUM users:-

```
1630 IF c$(x,1 TO LEN(h$))=h$ THEN LET e=1: LET r=x  
1690 IF b(x)=p THEN LET e=1  
1820 IF v$(x,1)=" " THEN LET v$(x)=b$(b(r)): LET e=1: LET x=5  
notice that the variables must have lower case letters.
```





are carrying (V\$(X)). We have not already dimensioned this array and therefore you should add the extra DIM statement at the start of the program. In this game, you will notice that we are only going to be allowed to carry 4 items and therefore need to DIM V\$(4) at the start. Line 1850 resets the pointer so that the object will no longer be present at that location when you have picked it up.

- e) Line 1820 shows that we can jump out of a FOR-NEXT loop if we terminate it correctly by setting the variable to a number bigger than the end condition.

```

2000 REM ** drop subroutine **
2010 LET E=0: LET R=0
2020 FOR X=1 TO 24
2030 IF LEFT$(C$(X),LEN(H$))=H$ THEN LET E=1: LET R=X
2040 NEXT X
2050 IF E=0 THEN PRINT "I don't see it!":RETURN
2060 LET E=0
2070 FOR X=1 TO 4
2080 IF V$(X)=B$(R) THEN LET V$(X)="": LET E=1
2090 NEXT X
2100 IF E=0 THEN PRINT "I don't have it!": RETURN
2110 LET B%(R)=F
.
.
.
2200 RETURN
  
```

Line 2030 is used to get variable R so that it holds the number of the item dropped. Slight changes will again be needed to allow the routine to run in the Spectrum, but it should run in most other machines without change.

We have now completed the technical parts of the game so that we can move around freely and get and drop different objects. The next stage in developing an adventure game is the most interesting and also the most difficult. Next month I will be looking at how to set the puzzles which need to be solved.

As a taster, suppose that in location 19 there is a giant slug which blocks the way North. The solution to this will be well known to any gardener...drop salt onto it!. If we are carrying item 17

The array V\$ will now hold the items which you are carrying so that if you escape from a running program and type PRINT V\$(1) or PRINT V\$(2) etc. you will see the items you are carrying. It has become a standard convention in adventure games that typing INVENTORY or just INVE, you will be told the items carried. Such a routine can be called in the usual way by putting a check into the main loop such as:

```

450 IF G$="INVE" THEN PROC inventory
  
```

Listing 2 shows a suitable procedure.

```

1900 REM ** Inventory routine **
1910 DEFPROC inventory
1920 PRINT "I am carrying :-"
1930 LET E=0
1940 FOR X=1 TO 4
1950 IF V$(X)<>" " THEN PRINT V$(X): LET E=1
1960 NEXT X
1970 IF E=0 THEN PRINT "Nothing at all"
1980 ENDPROC
  
```

You will notice that the variable E is set to zero at the start. The FOR-NEXT loop then searches each element in the array to see if it is empty. If any item is found, then the variable E is set to 1 so that line 1970 prints an appropriate message.

Spectrum users will need to change line 1950 to:

```

1950 IF v$(x,1) "" THEN PRINT v$(x): LET E=1
  
```

There should be no other changes needed except for replacing ENDPROCs and PROCs with RETURN and GOSUB.

The only thing left to do now is to be able to drop the items where we want. Listing 3 shows a suitable subroutine which can be called from the main loop in a similar way to the GET routine.

(SALT), then the following line should give you the idea of how to code the problem.

```

2120 IF R=17 AND P%=19 THEN
"The slug dies":LET B$(7)
="a dead slug":LET A%(19,1)=15
  
```



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AGF products for the ZX Spectrum are compatible with the new Spectrum Plus computer.

Storm Trooper is a graphical simulation of the German attack on Russia in the last war.

Two players can fight it out. One player plays the German troops and the other plays the Russians. Varied terrain is presented on screen including, a forest, burnt out buildings, and undergrowth.

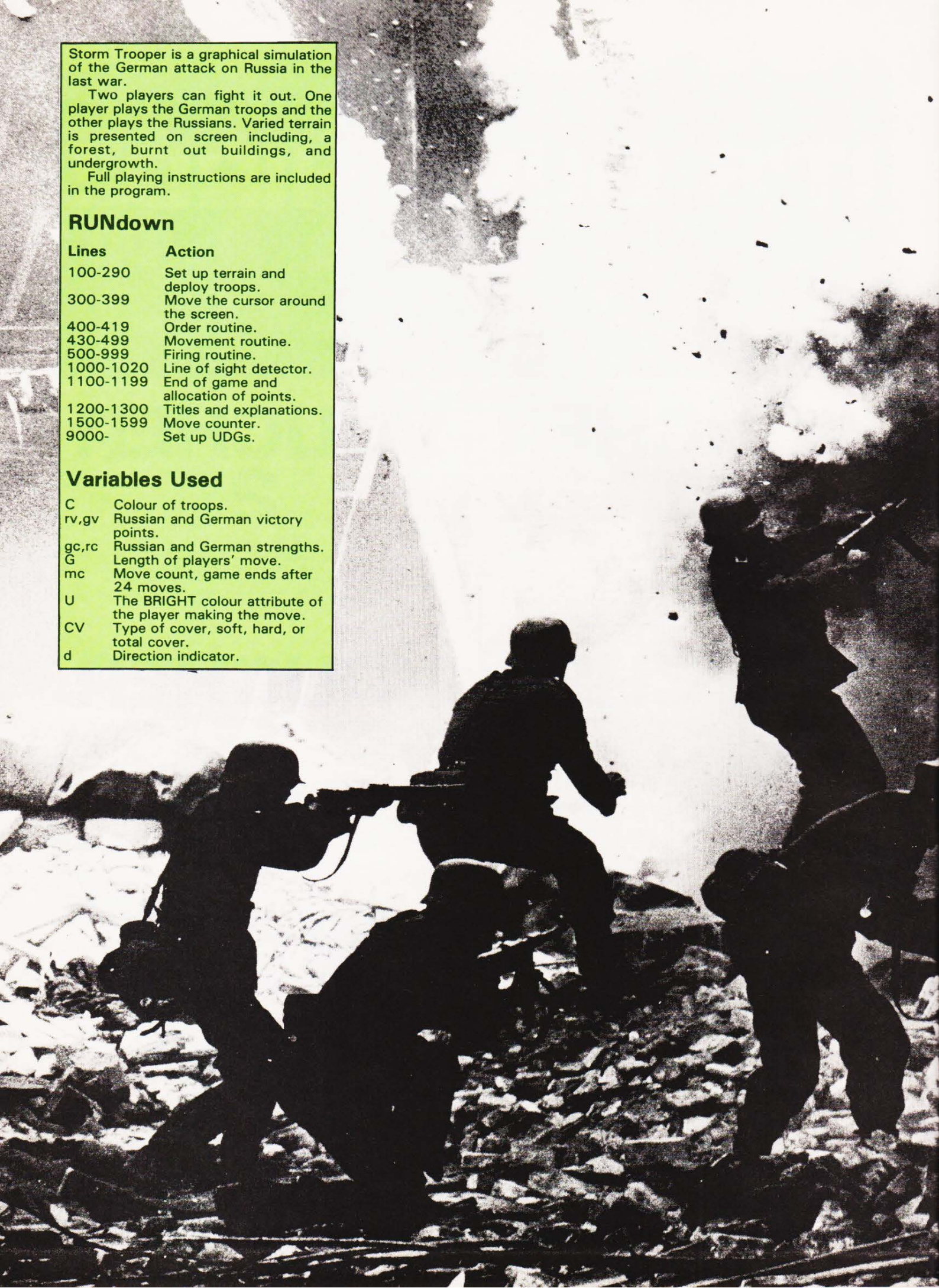
Full playing instructions are included in the program.

## RUNdown

Lines	Action
100-290	Set up terrain and deploy troops.
300-399	Move the cursor around the screen.
400-419	Order routine.
430-499	Movement routine.
500-999	Firing routine.
1000-1020	Line of sight detector.
1100-1199	End of game and allocation of points.
1200-1300	Titles and explanations.
1500-1599	Move counter.
9000-	Set up UDGs.

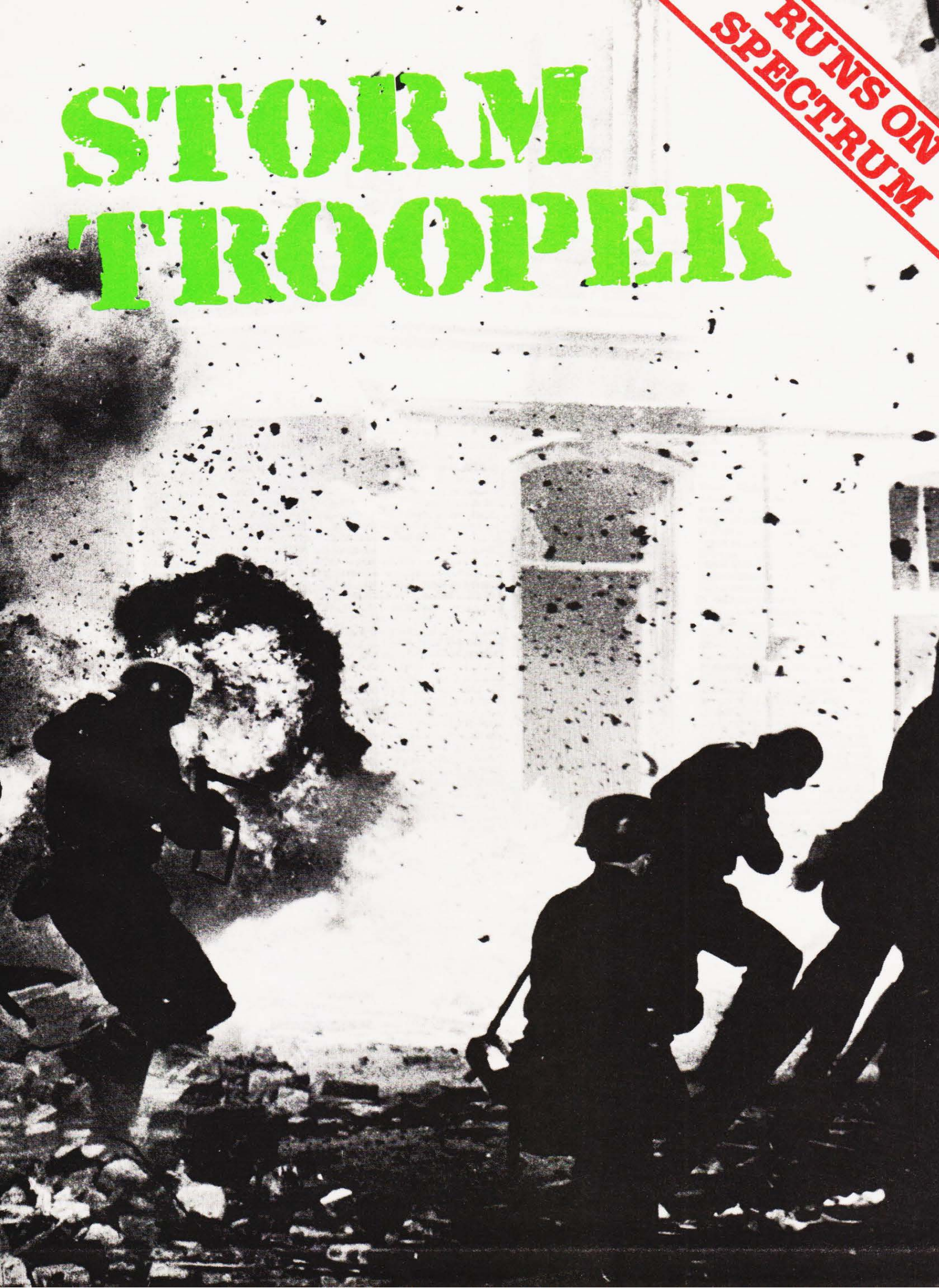
## Variables Used

C	Colour of troops.
rv,gv	Russian and German victory points.
gc,rc	Russian and German strengths.
G	Length of players' move.
mc	Move count, game ends after 24 moves.
U	The BRIGHT colour attribute of the player making the move.
CV	Type of cover, soft, hard, or total cover.
d	Direction indicator.



# STORM TROOPER

RUNS ON  
SPECTRUM



```

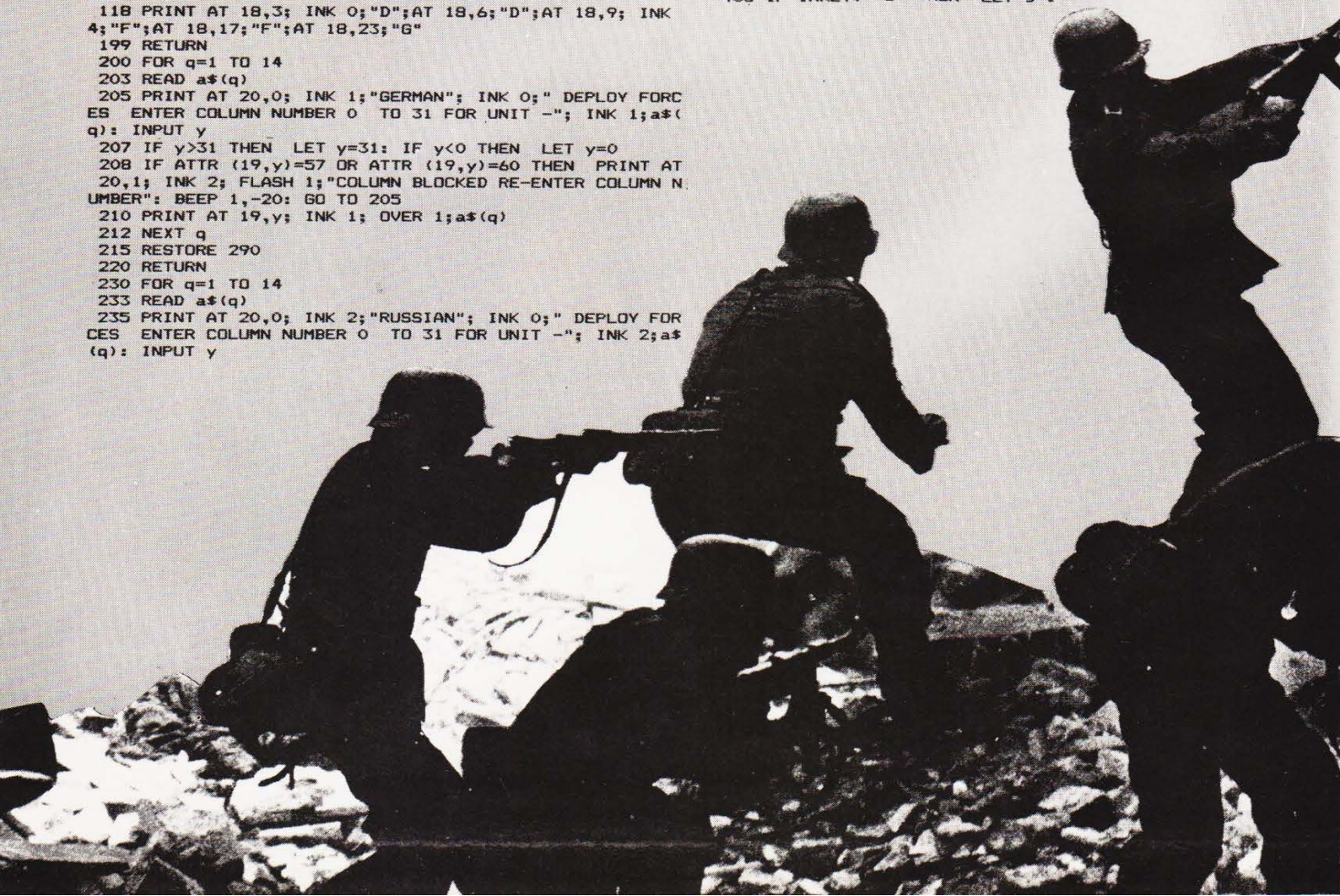
1 REM STORMTROOPER R.M.SIMPSON 1984
2 GO TO 1200
3 GO SUB 9000
4 DIM a$(14)
5 LET c=2: LET rv=0: LET gv=0
6 LET gc=14: LET rc=14: LET mc=0
7 RESTORE 290
8 GO SUB 100
9 GO SUB 1500
10 BEEP 1,10: GO SUB 200
30 BEEP 1,-10: GO SUB 230
35 BEEP 1,1: GO SUB 300
99 STOP
100 REM SETTING UP TERRAIN (Enter capitals in graphic
mode)
101 PRINT AT 1,8: INK 4;"F": PRINT AT 1,26: INK 4;"F"
-102 PRINT AT 2,8: INK 4;"F": PRINT AT 2,26: INK 4;"F":
PRINT AT 2,2: INK 0;"ABNAP": PRINT AT 2,12: INK 0;"ABO
BA": PRINT AT 2,19: INK 0;"ABAMMA"
103 PRINT AT 3,2: INK 0;"Q": PRINT AT 3,6: INK 0;"D":
PRINT AT 3,8: INK 4;"F": PRINT AT 3,12: INK 0;"Q": PRIN
T AT 3,16: INK 0;"D": PRINT AT 3,19: INK 0;"D": PRINT A
T 3,24: INK 0;"Q": PRINT AT 3,26: INK 4;"EREERE"
104 PRINT AT 4,2: INK 0;"Q": PRINT AT 4,6: INK 0;"D":
PRINT AT 4,8: INK 4;"ERER": INK 0;"D":AT 4,16:"Q":AT 4,
19:"D":AT 4,24:"Q"
105 PRINT AT 5,2: INK 0;"NABAN":AT 5,12:"PPBP":AT 5,1
9:"ACBD":AT 5,24:"Q":AT 5,29:"ANA"
106 PRINT AT 6,22: INK 0;"ABA":AT 6,29:"D"
107 PRINT AT 7,18: INK 4;"H":AT 7,27: INK 0;"AAA"
108 PRINT AT 8,1: INK 4;"H":AT 8,3:"H":AT 8,5:"H":AT 8
,8: INK 0;"ADPMBBPA":AT 8,19: INK 4;"H":AT 8,27: INK 0;
"D"
109 PRINT AT 9,0: INK 4;"H":AT 9,4:"H":AT 9,8: INK 0;"
Q":AT 9,10:"D":AT 9,15:"Q":AT 9,27:"D"
110 PRINT AT 10,5: INK 4;"H":AT 10,8: INK 0;"D":AT 10,
10:"D":AT 10,15:"D":AT 10,19:"ABCAB":AT 10,27:"AAD"
111 PRINT AT 11,1: INK 4;"H":AT 11,3:"H":AT 11,8: INK
0;"D":AT 11,15:"D":AT 11,19:"D":AT 11,23:"D":AT 11,26:
INK 4;"F":AT 11,29: INK 0;"ABA"
112 PRINT AT 12,5: INK 4;"H":AT 12,8: INK 0;"D":AT 12,
15:"D":AT 12,19:"D":AT 12,23:"D":AT 12,26: INK 4;"F"
113 PRINT AT 13,0: INK 4;"H":AT 13,2:"H":AT 13,4:"H":A
T 13,8: INK 0;"PPPPBPOP":AT 13,19:"AABAA":AT 13,26: INK
4;"F"
114 PRINT AT 14,26: INK 4;"EREERE"
116 PRINT AT 16,3: INK 0;"AABA":AT 16,9: INK 4;"EREERE
ERE":AT 16,23:"G":AT 16,25:"G":AT 16,27:"G":AT 16,29:"G"
"
117 PRINT AT 17,3: INK 0;"D":AT 17,6:"D":AT 17,9: INK
4;"F":AT 17,17:"F":AT 17,24:"G":AT 17,28:"G":AT 17,30:"
GG"
118 PRINT AT 18,3: INK 0;"D":AT 18,6:"D":AT 18,9: INK
4;"F":AT 18,17:"F":AT 18,23:"G"
199 RETURN
200 FOR q=1 TO 14
203 READ a$(q)
205 PRINT AT 20,0: INK 1;"GERMAN": INK 0;" DEPLOY FORC
ES ENTER COLUMN NUMBER 0 TO 31 FOR UNIT -": INK 1;a$(
q): INPUT y
207 IF y>31 THEN LET y=31: IF y<0 THEN LET y=0
208 IF ATTR (19,y)=57 OR ATTR (19,y)=60 THEN PRINT AT
20,1: INK 2: FLASH 1;"COLUMN BLOCKED RE-ENTER COLUMN N
UMBER": BEEP 1,-20: GO TO 205
210 PRINT AT 19,y: INK 1: OVER 1;a$(q)
212 NEXT q
215 RESTORE 290
220 RETURN
230 FOR q=1 TO 14
233 READ a$(q)
235 PRINT AT 20,0: INK 2;"RUSSIAN": INK 0;" DEPLOY FOR
CES ENTER COLUMN NUMBER 0 TO 31 FOR UNIT -": INK 2;a$(
q): INPUT y

```

```

240 IF y>31 THEN LET y=31: IF y<0 THEN LET y=0
245 IF ATTR (0,y)=58 OR ATTR (0,y)=60 THEN PRINT AT 2
0,1: INK 2: FLASH 1;"COLUMN BLOCKED RE-ENTER COLUMN NUM
BER": BEEP 1,-20: GO TO 235
260 PRINT AT 0,y: INK 2: OVER 1;a$(q)
275 NEXT q
280 REM Enter DATA capitals in Graphic mode
290 DATA "I","J","K","L","J","K","L","J","K","L","J","
K","L","L"
299 REM order cursor sub/r
300 LET x=19: LET y=15
301 IF g=0 THEN GO SUB 1500
302 IF c=1 THEN LET u=121
303 IF c=2 THEN LET u=122
305 PRINT AT x,y: INK 8: OVER 1: BRIGHT 1: " "
310 BEEP .01,20: PRINT AT 20,0: INK c: FLASH 1;"MOVE":
INK 0: FLASH 0:" CURSOR TO UNIT AWAITING ORDERS USING
CURSOR KEYS "
319 IF INKEY$<"0" THEN GO TO 319
320 PRINT AT x,y: INK 8: OVER 1: " "
325 IF INKEY$="8" THEN LET y=y+1
330 IF INKEY$="5" THEN LET y=y-1
335 IF INKEY$="6" THEN LET x=x+1
340 IF INKEY$="7" THEN LET x=x-1
341 IF INKEY$="o" THEN GO SUB 1500
344 IF x<0 THEN LET x=0
345 IF x>19 THEN LET x=19
350 IF y<0 THEN LET y=0
355 IF y>31 THEN LET y=31
356 PRINT A x,y: INK 8: OVER 1: BRIGHT 1:" "
357 IF ATTR (x,y)=u THEN GO SUB 400
399 GO TO 301
400 REM order sub/r
401 BEEP .1,-20: PRINT AT 20,0: INK c: FLASH 1;"ORDERS
": INK 0: FLASH 0:"PRESS FIRE-f MOVE-m OPO
NENTS MOVE-o "
402 IF INKEY$<>" " THEN GO TO 402
403 IF INKEY$="" THEN GO TO 403
405 IF INKEY$="f" THEN LET g=g-1: GO SUB 500
407 IF INKEY$="m" THEN LET g=g-1: GO SUB 420
408 IF INKEY$="o" THEN GO SUB 1500
419 RETURN
420 REM movement sub/r
430 BEEP .1,20: PRINT AT 20,0: INK c: FLASH 1;"PRESS":
INK 0: FLASH 0;"KEY FOR SPEED OF MOVE SLOW-s MEDIU
M-m FAST-f DOUBLE-d"
431 IF INKEY$<>" " THEN GO TO 431
432 IF INKEY$="" THEN GO TO 432
433 IF INKEY$="d" THEN LET s=6
434 IF INKEY$="f" THEN LET s=3
435 IF INKEY$="m" THEN LET s=2
436 IF INKEY$="s" THEN LET s=1

```





# RUNS ON SPECTRUM

```

437-BEEP .1,20: PRINT AT 20,0; INK 0;"PRESS CURSOR KEY
TO INDICATE DIRECTION OF MOVE
438 IF INKEY$("<") THEN GO TO 438
441 IF INKEY$=" " THEN GO TO 441
442 PRINT AT x,y; INK 7;" "
443 LET r=x: LET t=y: LET d=0
444 IF INKEY$="8" THEN LET y=y+s: LET d=1
445 IF INKEY$="5" THEN LET y=y-s: LET d=2
446 IF INKEY$="6" THEN LET x=x+s: LET d=3
447 IF INKEY$="7" THEN LET x=x-s: LET d=4
450 IF x>19 THEN LET x=19
455 IF x<0 THEN LET x=0
465 IF y>31 THEN LET y=31
470 IF y<0 THEN LET y=0
471 RESTORE 474
472 FOR f=1 TO 4:n
473 IF ATTR (x,y)=n AND d=1 THEN LET y=y-1
474 IF ATTR (x,y)=n AND d=2 THEN LET y=y+1
475 IF ATTR (x,y)=n AND d=3 THEN LET x=x-1
476 IF ATTR (x,y)=n AND d=4 THEN LET x=x+1
477 NEXT f
478 DATA 56,57,58,60
479 IF ATTR (x,y)=56 OR ATTR (x,y)=58 OR ATTR (x,y)=57
OR ATTR (x,y)=60 THEN PRINT AT 20,0; INK c; FLASH 1;"
MOVE BLOCKED BY DIFFICULT TERRAIN RE-ENTER MOVE": BEEP
1,10: BEEP 1,-30: PRINT AT r,t; INK c;a$(g+1): LET x=r:
LET y=t: LET g=g+1: GO TO 356
480 PRINT AT x,y; INK c;a$(g+1)
499 RETURN
500 REM firing sub/r
501 LET r=x: LET t=y
502 LET cv=0: LET co=0
505 BEEP .01,20: PRINT AT 20,0; INK c; FLASH 1;"MOVE":
INK 0; FLASH 0;" CURSOR TO TARGET USE CURSOR KEYS "; I
NK c; FLASH 1;"PRESS-1"; INK 0; FLASH 0;" TO LOCATE
"
511 LET h=ABS (x-r)*ABS (x-r)+ABS (y-t)*ABS (y-t)
512 LET ra=INT SQR h
515 IF INKEY$("<") THEN GO TO 515
516 PRINT AT r,t; INK 8; OVER 1;" "
520 IF INKEY$="7" THEN LET r=r-1
525 IF INKEY$="6" THEN LET r=r+1
530 IF INKEY$="8" THEN LET t=t+1
535 IF INKEY$="5" THEN LET t=t-1
536 IF r>19 THEN LET r=19
537 IF r<0 THEN LET r=0
538 IF t>31 THEN LET t=31
539 IF t<0 THEN LET t=0
540 PRINT AT r,t; INK 8; OVER 1; BRIGHT 1;" "
545 IF INKEY$="1" THEN PRINT AT r,t; INK 8; OVER 1;"
": BEEP .1,-20: GO TO 555
550 GO TO 505
555 REM LINE OF SIGHT s/r
556 LET xx=x: LET yy=y
560 LET e=(xx-r): LET f=(yy-t)
565 IF ABS f>ABS e THEN GO TO 605
580 FOR d=1 TO ABS e
585 LET dx=d: LET dy=d
586 IF e>0 THEN LET dx=-d
587 IF f>0 THEN LET dy=-d
588 IF f<0 AND d>ABS f THEN LET yy=yy-1
589 IF f>0 AND d>ABS f THEN LET yy=yy+1
590 IF e=0 THEN LET dx=0
591 IF f=0 THEN LET dy=0
599 GO SUB 630
600 IF cv=3 THEN RETURN
601 NEXT d

```

```

605 IF ABS e>ABS f THEN GO TO 644
610 FOR d=1 TO ABS f
615 LET dx=d: LET dy=d
616 IF e>0 THEN LET dx=-d
617 IF f>0 THEN LET dy=-d
618 IF e<0 AND d>ABS e THEN LET xx=xx-1
619 IF e>0 AND d>ABS e THEN LET xx=xx+1
620 IF e=0 THEN LET dx=0
621 IF f=0 THEN LET dy=0
625 GO SUB 630
626 IF cv=3 THEN RETURN
628 NEXT d
629 GO TO 644
630 IF ABS d>1 AND ATTR (xx+dx,yy+dy)=6 THEN LET cv=1
631 IF ABS d>1 AND ATTR (xx+dx,yy+dy)=60 THEN GO SUB
1000
635 IF ABS d>1 AND ATTR (xx+dx,yy+dy)=56 THEN LET cv=
2
636 IF ABS d>1 AND ATTR (xx+dx,yy+dy)=56 THEN GO SUB
1000
643 RETURN
655 REM location s/r
660 LET di=INT (RND*6+1)
661 IF cv>0 THEN LET co=-2
665 IF ra<=3 THEN PRINT AT 20,0; INK 0;"TARGET LOCATE
D
": BEEP 1,10:
GO TO 800
670 IF ra<=5 AND di-co>=2 THEN PRINT AT 20,0; INK 0;"
TARGET LOCATED
": BEEP 1,10
: GO TO 800
675 IF ra<=10 AND di-co>=3 THEN PRINT AT 20,0; INK 0;
"TARGET LOCATED
": BEEP 1
,10: GO TO 800
680 IF ra>10 AND di-co>=4 THEN PRINT AT 20,0; INK 0;"
TARGET LOCATED
": BEEP 1
,10: GO TO 800
699 PRINT AT 20,0; INK 0;"TARGET NOT LOCATED
": BEEP 1,10: BEEP 1,-30: RETURN
800 REM -----firing s/r
801 FOR F=1 TO 10: BEEP .01,-20+F: BEEP .01,-10: NEXT
F
805 LET pc=0
810 LET di=INT (RND*6+1)
820 IF ra>5 THEN LET di=di-1
825 IF ra>10 THEN LET di=di-2
832 IF di>=4 THEN LET pc=1
833 IF di=6 THEN LET pc=2
840 IF pc=0 THEN PRINT AT 20,0; INK c; FLASH 1;"MISSE
D
": BEEP 1,30: RETURN
850 REM Saving throw procedure
855 FOR s=1 TO pc
860 LET di=INT (RND*6+1)
865 IF cv=2 AND di>2 THEN LET pc=pc-1
870 IF cv=1 AND di>4 THEN LET pc=pc-1
875 IF cv=0 AND di>5 THEN LET pc=pc-1
880 IF pc<=0 THEN PRINT AT 20,0; INK c; FLASH 1;"MISS
ED
": BEEP 1,30: RETURN
900 IF pc>0 AND ATTR (r,t)=58 THEN LET rc=rc-1: PRINT
AT r,t; INK 7;" ": PRINT AT 20,0; INK 2; FLASH 1;"TARG
ET DESTROYED
": BEEP 1,30
905 IF pc>0 AND ATTR (r,t)=57 THEN LET gc=gc-1: PRINT
AT r,t; INK 7;" ": PRINT AT 20,0; INK 1; FLASH 1;"TARG
ET DESTROYED
": BEEP 1,30
999 RETURN
1000 REM line of sight blocked s/r
1005 LET h=ABS (x-xx+dx)*ABS (x-xx+dx)+ABS (y-yy+dy)*AB
S (y-yy+dy)
1010 LET rh=INT SQR h
1015 IF ABS (ra-rh)>1 THEN PRINT AT 20,0; INK c; FLASH
1;"LINE OF SIGHT BLOCKED
": LET cv=3: BEEP 1,-30: RETURN

```

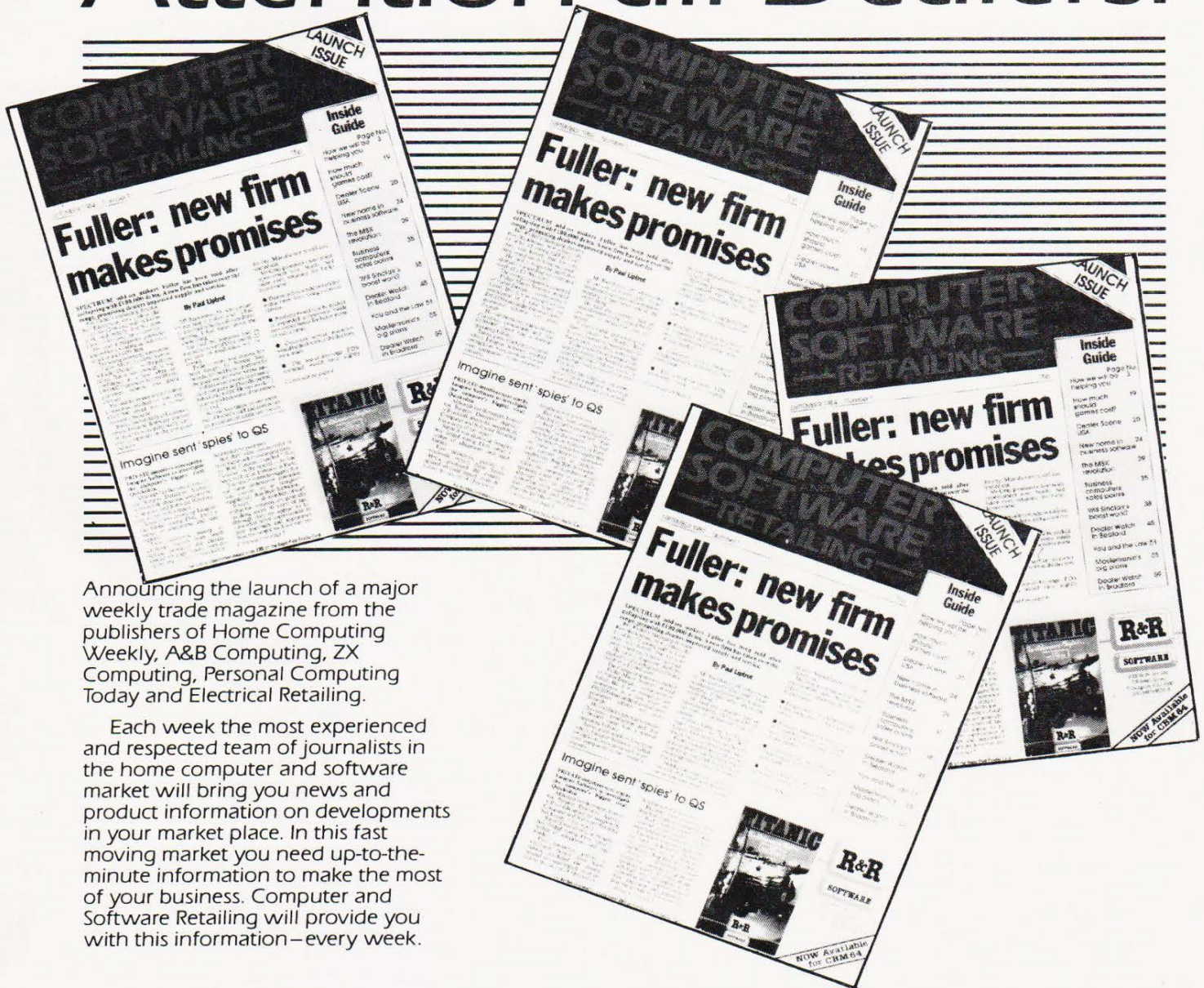




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RUNS ON  
ATMOS

# THE SHERIFF



This high speed wild west game for the Atmos should have you running for the baked bean tin in no time.

Instructions are in the game so I will let you get on with it. Get of yer hoss an' get yer Atmos.

## RUNdown

Lines	Action
80-600	Move bandits and

600-700  
700-750  
990

2000-2150

3000-5060

6000-7000  
9000-9000  
9000-9200  
10000--  
10070  
10100--  
10210

sheriff around.  
Make bandit shoot.  
Extra points routine.  
Decide whether a bandit should rush or not.  
Draw and set up initial screen.  
draw and clear bandits and sheriff.  
Kill sheriff.  
Next (harder) screen.  
Instructions.

New game.

Title tune.

## Conversion Clues

All POKEs in the program are explained so it should be slightly easier to convert this game to other machines than most games.







# BUYERS GUIDE

This is it, the big one. The comprehensive guide to all you ever wanted to know about which computer to buy for Christmas but were afraid to ask.

We present here the guide to end all guides, the list to end all lists, etc etc. . . . . Mike Roberts has taken a look at all the computers on the market, this is a totally accurate spec list for all the commonly available computers on the market for under £500. All these machines should be available through normal high street dealers such as Spectrum dealers, Dixons, or any of the main chain stores.

The headings are fairly self explanatory, price is the general price that you can obtain one of these machines, if you shop around you should get a cheaper quote. **Memory size** is the amount of ROM and RAM that the computer comes with and the actual amount of RAM that you can use.

**Keyboard** gives a description of the keyboard, its layout, and quality. **Screen** describes the graphical output of the computer along with some of its pitfalls and quirks.

**Sound** gives number of channels and extra features. **Languages** refers to the programming language supplied and also the number of other language options available. A **Processor** is the actual 'brain' of the computer. The most popular and powerful processor for home use is the 6502 series, this includes the 6502, 6502A, 6510, and the new 7801. The next most common is the Z80 series, and some computer's use the 6809 or 9900.

**I/O** stands for Input/Output and is the computer's way of conversing to the outside world, either listening to a joystick, talking to a printer, or having a chat with a disk drive.

**Speed** is the speed of the computer. This can be processor dependent, but other things must be taken into account. Theoretically the Z80 is faster, but in practice the 6502 outstrips it. Speed dictates the speed that games will play at. BBC games are very fast and playable. Electron games are quite slow.

**Software** is a short evaluation of what kind of software base the machine has.

Last, but by no means least, is my **opinion** on whether the computer is any good or not. I know a lot of people out there will disagree with me, so please no 'my Spectrum is better than his BBC' letters!

**Languages:** Commodore Basic 3.5. A full implementation of Basic with structuring and the most comprehensive set of graphics commands on any micro. Assembler monitor also included. The screen editor is superb and supports full screen editing and windows.

**Processor:** 7801 (6502 compatible).

**Speed:** Fast to medium.

**Software:** Four software packages supplied as standard — chess, two zap games, and a drawing program. More software should appear as lots of these should be sold up to Christmas.

**Opinion:** This is a real Spectrum beater. The best value computer on the market, comes complete with software and a tape recorder.

## AMSTRAD CPC464

**Price:** £229, £349

**Memory:** 64 K RAM 32 K ROM (42 K useable)

**Keyboard:** Comprehensive typewriter style. 12 user-definable keys already defined as a numeric keypad. Dedicated cursor control keys, real space bar.

**Screen:** Three modes, 640x200, 320x200, 160x200 in 2,4 or 16 colours selected from a palette of 27 and 80, 40 or 20 characters per line. Changing modes does not increase memory consumption.

**Sound:** Three sound and one noise channel through internal speaker.

**Languages:** Locomotive Basic included. Very good at certain functions like graphics, sound and structuring but needs spaces everywhere which is very awkward. The editor is also rather crude.

**Processor:** Z80A. **Speed:** Fast.

**Software:** Amsoft, the software arm of Amstrad, is commissioning as big a range of software that it can get together. There should be lots of games out by the time you read this. The games currently out are very poor quality but this should improve.

**Opinion:** Good value with the inclusion of a monitor and a tape recorder. Reliability may be a problem as Amstrad has a bad reputation for this. Tape recorders can be incompatible between each other.

## COMMODORE C16

**Price:** £139

**Memory:** 16 K RAM (12 K or 4 K useable depending on graphics)

**Keyboard:** Same as Commodore 64 except that function keys can be defined from Basic and the layout is different. Separate dedicated function keys and space bar.

**Screen:** Three modes from Basic, 320 x 200 and 160 x 200 graphics, 320 x 160 and 160 x 160 with five lines of text, and 40 x 20 text. There are 128 colours and flashing all available at the same time. The Basic's graphics handling is superb and unsurpassed. Outside Basic there is another three modes and UDGs which need to be accessed by POKEing.

**Sound:** Two channels of sound or one sound and one noise.





## COMMODORE PLUS/4

**Price:** £299

**Memory:** 64 K RAM 32 K ROM  
(60 K or 50 K useable depending on graphics)

**Keyboard:** Similar to the SX64 in feel. Function keys can be defined from Basic. Cursor keys set in a cross shape.

**Screen:** Same as C16.

**Sound:** Same as C16.

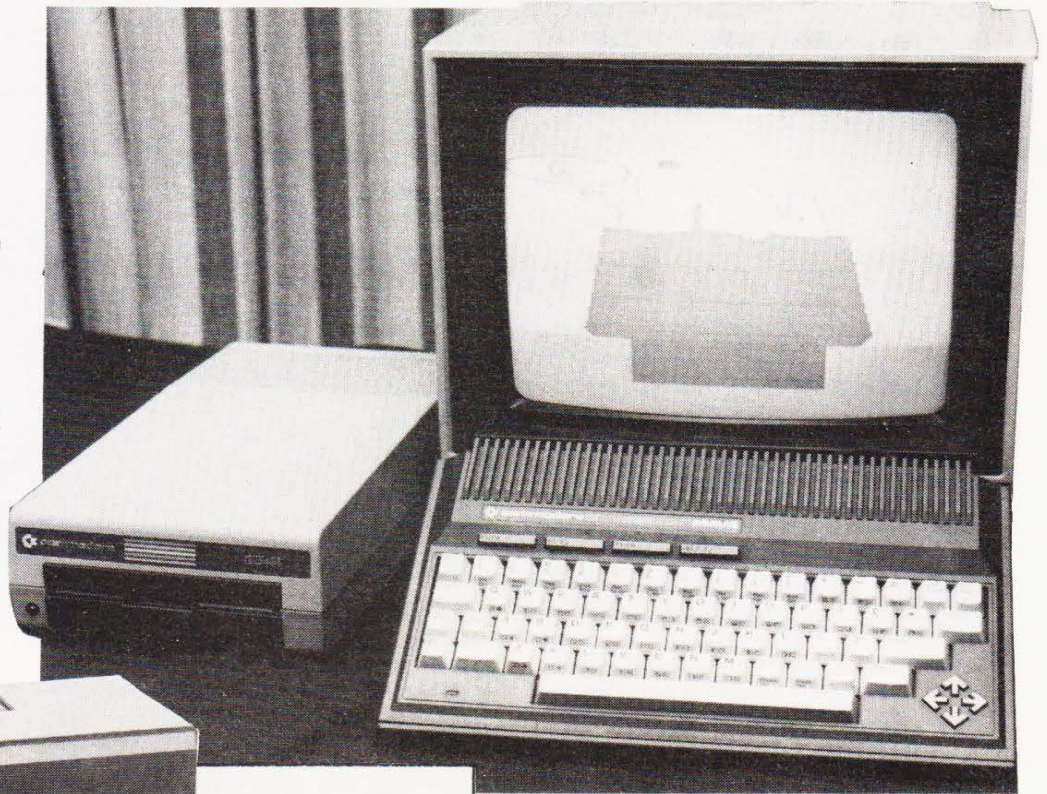
**Languages:** Same as C16.

**Processor:** 7801 (6502 compatible).

**Speed:** Fast to medium.

**Software:** Four home/business packages built in — spreadsheet, word-processor, database, graphs. Games software should appear as this machine is compatible with the C16.

**Opinion:** As this computer can run all C16 software, games should be widely available after Christmas.



## ELECTRON

**Price:** £199

**Memory:** 32 K RAM (9 K to 12 K useable depending on graphics mode used) 32 K ROM

**Keyboard:** Typewriter style, 56 keys, space bar, no dedicated cursor control keys, no dedicated user definable keys though the numeric keys double with the use of a function key.

**Screen:** Similar to the BBC micro, except for the lack of Teletext mode, sound and speed.

**Sound:** One channel through internal speaker, otherwise as BBC.

**Languages:** BBC BASIC is built in, FORTH and LISP are available.

**Processor:** 6502A.

I/O none on basic machine though there is an expansion slot into which an expansion board can be plugged that will



# BUYERS GUIDE

give the same sort of interfacing options as the BBC but at extra cost.

**Speed:** Medium.

**Software:** A growing range as software houses convert BBC programs.

**Opinion:** As this computer is almost BBC compatible with only some minor differences most of what I say for the BBC is true here except for the references to price.

## ATMOS

**Price:** £179

**Memory:** 64 K RAM (47 K useable in text mode, 39 K in graphics mode) 16 K ROM

**Keyboard:** Full typewriter, 57 keys, space bar, dedicated cursor control keys, no definable function keys, two functions per key.

**Screen:** 40 columns by 28 rows Teletext compatible text display, two user definable character sets, eight foreground and eight background colours, double height, flashing and inverted attributes available for each character. Graphics screen gives 240 by 200 resolution, colours and attributes are definable on a grid of 40 by 200. In each of these areas the foreground and background can be defined in eight colours, flashing and inverted output is also supported. In graphics mode three lines at the bottom of the screen also appear, and these are the same as the text mode lines.

**Sound:** sound generator with three channels and noise generator. There is a certain amount of envelope control. Pre-programmed sounds to produce pings and zaps etc. Sound is produced through an internal speaker although hi-fi output is available through a DIN socket.

**Languages:** Extended Microsoft BASIC built-in, FORTH available, BBC-like BASIC planned.

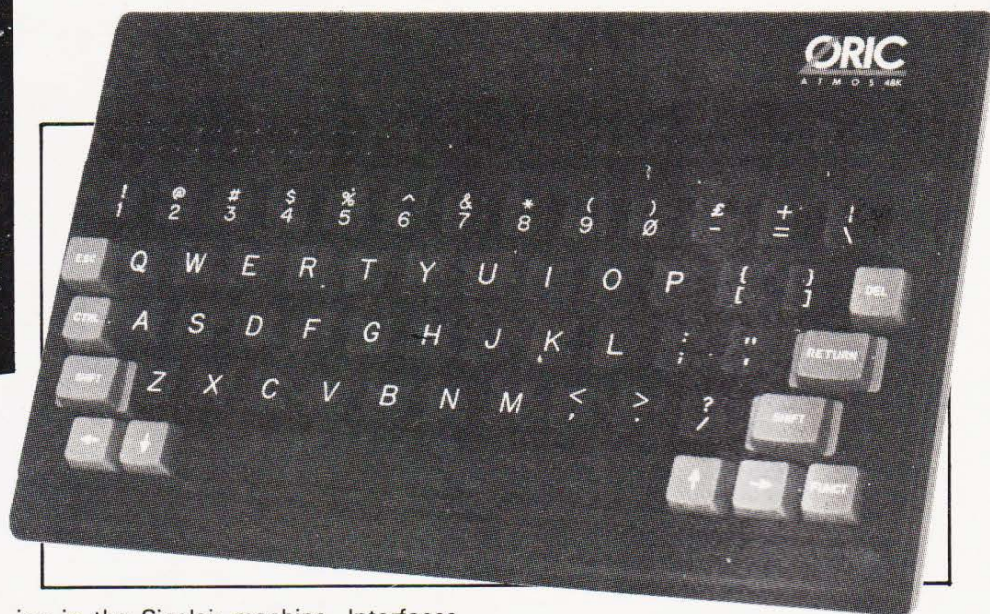
**Processor:** 6502A.

**I/O:** Centronics parallel printer port, user port, monitor port, expansion connector.

**Speed:** Fast.

**Software:** Badly supported from day one. Range growing smaller.

**Opinion:** This computer was originally compared to the Spectrum, and this was justified as they were outwardly similar, and look the same. The BASIC is easier and is a structured form of the de-facto standard Microsoft basic. The keyboard is better, the graphics are better, and it has real sound which is lack-



ing in the Sinclair machine. Interfaces are built in that would normally cost extra. The edge that the Spectrum has is more software. The more recent Spectrums will not run some of the available software due to internal design differences.

## VIC 20

**Price:** £129

**Memory:** 6 K RAM (3.5 K useable) 20 K ROM

**Keyboard:** Typewriter quality, 67 keys, space bar, dedicated cursor controls, four user definable function keys.

**Screen:** 22 column by 23 lines, eight colours for text, 16 for background, border and graphics. All characters user

**Processor:** 6502A.

**I/O:** IEEE 488 serial BUS, RS232, user port, cartridge port, joystick port, two paddle port (two analogue to digital converters).

**Speed:** Medium to fast.

**Software:** Many cassette tapes and cartridges from independents and Commodore.

**Opinion:** This is a nice machine to get started on and it comes as a package containing, a computer, a cassette recorder, a beginners guide to BASIC and a games tape. So the initial high price for a 3.5K machine is somewhat offset. The BASIC is very easy to learn and is microsoft compatible. This type of BASIC was first used by Commodore on the first widely available micro in 1977 so there is a lot of compatible software around.



definable, lower case, inverted output, two character sets. High-resolution possible with expansion cartridge or with extra programming but BASIC does not support this. Two modes, 160 by 128 in eight colours and 80 by 128 in 16 colours.

**Sound:** three channels and one noise channel covering nine octaves through TV speaker.

**Languages:** Commodore BASIC supplied, compatible with PET and Commodore 64. Extended BASIC, at extra cost gives access to the Hi-res sound, and user definable function keys. Forth, Comal and Pilot are available.

## SINCLAIR ZX SPECTRUM

**Price:** £99 / £129

**Memory:** 16 K 48 K RAM (7.5 K useable) 16 K ROM

**Keyboard:** rubber mat type, 40 keys, no space bar, definable function keys or dedicated cursor control keys, five or six functions per key.

**Screen:** 32 colours by 24 rows, but only 22 rows are available to the user. 256

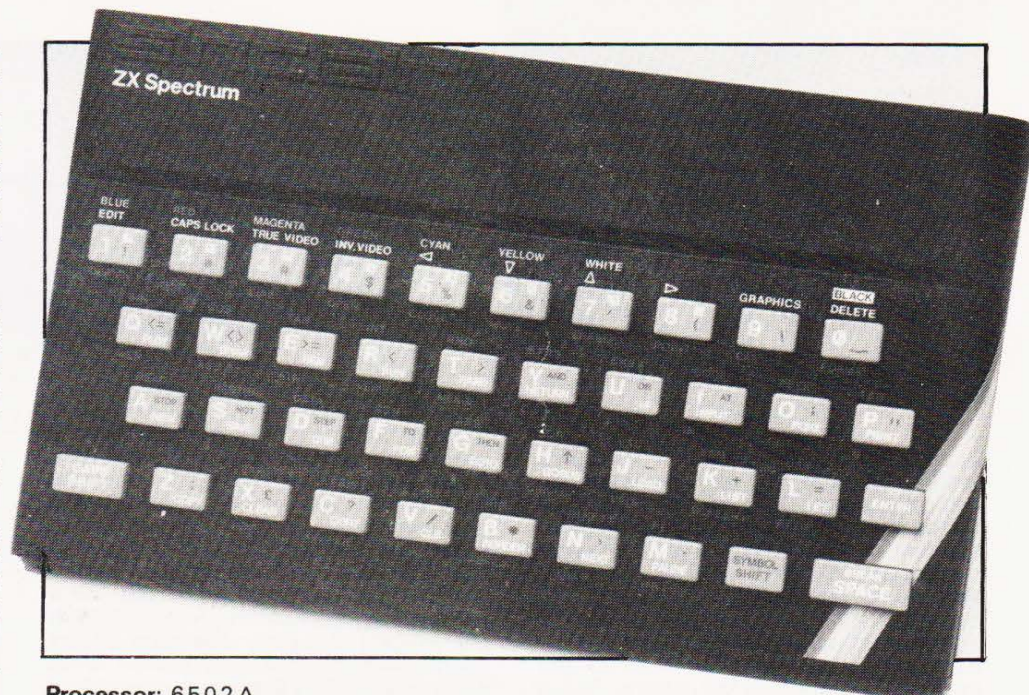
by 76 high resolution graphics supported by BASIC, two colours from a palette of eight are available in 704 areas on the screen. Foreground and background colours for each of these areas can be selected as well as whether the contents of the area are flashing or not. Two levels of intensity are also supported. 21 user defined characters are available.

**Sound:** Internal beeper.

**Languages:** Sinclair BASIC. This version is an extended form of the type used in the ZX81. The extensions do not cover structured programming or aid functions and only deal with the graphics and file handling. This BASIC is very non-standard.

**Software:** A lot of software is available for almost all applications, particularly games.

**Opinion:** When the Spectrum first appeared it was an innovation as the lowest priced colour computer. But newer designs have arrived recently with better technical specifications and more useable memory at similar prices. The colour display is not good and a colour display cannot be produced on a few colour TVs. For editing and the method of keyword entry see ZX81. With the Spectrum there are more keywords to be fitted on the same size of keyboard. Sound is through a beeper only. The range of software is enormous.



**Processor:** 6502 A.

**Speed:** medium to fast.

**I/O:** Serial input/output port along with two connectors for two joysticks or paddles. Other interfaces may be added via interface bus. Slot for ROM cartridges. Cassette port will only allow connection of Atari cassette recorder at

software is on sale from both Atari — which has a library of 500 titles — and from independents, including US imports.

## TI-99 /4 A

**Price:** £70-80

**Memory:** 16 K RAM (14.5 K useable) 26 K ROM

**Keyboard:** Typewriter style, 48 keys, including row of function keys (not user-definable), space bar. Two functions per key.

**Screen:** 32 columns by 24 rows text, 129 characters, all user-definable, 16 colours each for foreground and background. The way colour is handled is rather odd — a colour is assigned to a particular group of characters. There are 16 groups of eight characters, so a particular colour is assigned, for example, to the letter A but will also effect B to H. High resolution graphics only available with TI plug-in cartridges.

**Sound:** Three channels of five octaves with noise channel.

**Languages:** TI BASIC is included, but cannot use machine code, so arcade quality programs cannot be written or



## ATARI 600XL/800XL

**Price:** £99 £199

**Memory:** 16 K/164 K RAM (amount useable varies with graphics mode used) 26 K ROM

**Keyboard:** Full typewriter style keyboard, 58 keys, four function keys, space bar but no dedicated cursor control keys.

**Screen:** 16 screen modes comprising five text modes and 11 graphics modes. Text is 40 columns by 24 line in up to 256 colours. The graphics have a maximum resolution of 320 by 192 in the biggest hi-res mode. All characters are user definable and come in predefined shapes to start with. Player-missile graphics — like sprites — are also available.

**Sound:** Four channel sound generator with full software support.

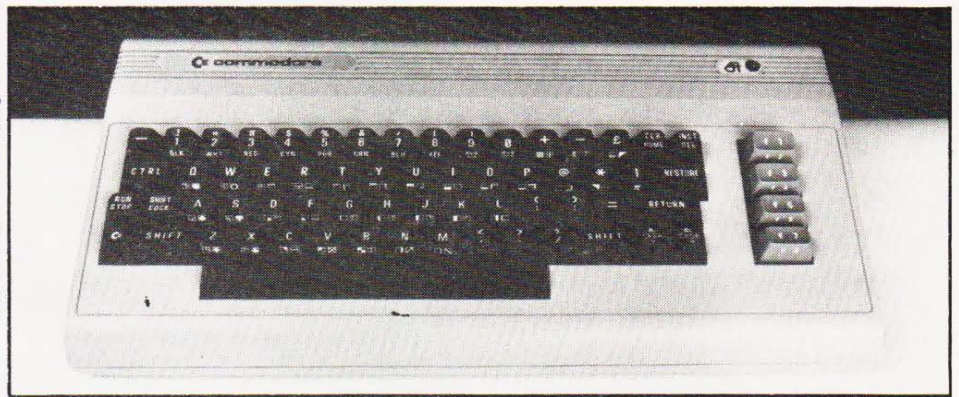
**Languages:** Atari BASIC included and these are available: Forth, Pilot, Logo, WSSM, Pascal, Microsoft BASIC. Two types of assembler editor are also available.

£49.99, so this must be taken into account when considering costs.

**Software:** the XL series of software is compatible with older models so lot of



# BUYERS GUIDE



bought on cassette for the standard model. To write or use the machine code programs, TI's Mini Memory or Editor Assembler cartridges are needed. Machine code can also be used with extended BASIC, provided 32K is added.

**Processor:** TMS 9900.

**Speed:** Slow.

**I/O:** joystick and cartridge ports.

**Software:** More software is becoming available — including US imports — but you may be forced to buy through mail order. TI sold a range of sophisticated cartridge software which is more expensive.

**Opinion:** An interesting computer which is now quite good value at its new low price. Its drawback is that machine code cannot be used with the standard model so there is not much arcade-type cassette software, although this is slowly increasing. However, if all the games that interest you are from TI and you are willing to pay cartridge prices, then this is a good machine. For programmers it has a line editor which, although one of the better versions, is awkward to use. The BASIC is slow but easy to use and comprehensive. Its worst features are that there can be just one statement per line and spaces are essential. Maths functions are good but string functions leave something to be desired. The computer is very well built and looks attractive. The TI is no longer manufactured but information on its status can be got from Parco Electrics.

very comprehensive implementation. As assembler is also built in for machine code access. Forth, Lisp and BCPL are also available.

**Processor:** 6502A.

**I/O:** RS 423 and Centronics printer ports. Four analogue to digital converters for joysticks etc. eight bit programmable user port. The tube allows connection of processors and so on to disk interface, Econet networking, speech synthesizer can be added.

**Speed:** Fast.

**Add-ons:** A great deal available from independents and Acorn.

**Software:** A very large and well-written range available, including a lot from Acornsoft, the maker's software arm. Many educational programs of varying quality.

**Opinion:** the BBC is an excellent machine if you ignore the high price. Support from independent suppliers is superb, but Acorn has been slow on the hardware side. The keyboard is very good and there is a useful set of function keys. The screen uses split cursor screen editing which is next best thing to full screen editing but not quite as easy to use. The BASIC is excellent and makes good use of all the hardware features. This computer is used by about 75 per cent of all secondary schools. So it is good for education as well as games. It also makes a good business computer, particularly with networking available for the future.

## COMMODORE 64

**Price:** £199

**Memory:** 64 K RAM (40 K useable)  
20 K ROM

**Keyboard:** Typewriter quality, 67 keys, space bar, dedicated cursor controls, four user definable function keys although full use of these can only be had through an expansion program.

**Screen:** 40 columns by 25 rows, 16 colours, all characters user definable, lower case, inverted output, two character sets. There are four different text modes but the format is the same for all, the only difference is in the handling of the colour. There are two graphics modes 320 by 200 and 160 by 200 resolutions in 16 colours. The difference is to do with colour: one mode uses the attribute system, similar to the Spectrum, the other uses a palette system where each dot is its own individual colour, similar to the BBC or Dragon computers. Unfortunately the BASIC does not support the graphics so you must write your own routines or buy a BASIC extension. Modes may also be mixed. Eight sprites are available and although the BASIC does not support these directly instructions are given in the manual on how to achieve them.

## BBC Model B

**Price:** £3.99

**Memory:** 32 K RAM (28 K to 9 K useable depending on graphics mode used) 32 K ROM

**Keyboard:** Typewriter style, 73 keys, 10 user definable function keys, dedicated cursor control keys. Space bar.

**Screen:** Very complex. The simplest mode is Teletext compatible and gives eight colours, flashing characters, double height, and block graphics. Text is 40 columns by 25 lines. There are seven other modes of screen operation ranging from 640 by 256 hi-res in two colours with 80 by 32 text to 160 by 256 hi-res in eight colours with 20 by 32 text. All 256 characters are user definable in all but the Teletext mode.

**Sound:** Three channel music with a noise channel through internal speaker. Full envelope control is available from BASIC.

**Languages:** BBC BASIC is included — a



**Sound:** Three channel music synthesizer. Full envelope control and waveform selection. BASIC does not support sound directly although, like the sprites, instruction is given in the manual on how to use sound.

**Languages:** Commodore BASIC supplied. Simons BASIC, Forth, Pilot, LOGO, Pascal available from Commodore along with BASIC compiler.

**Processor:** 6510 (6502 compatible with memory banking), Z80 available as option.

**I/O:** IEEE 488 serial BUS, RS232, user port, cartridge port, two Atari-type joystick ports, four analogue to digital converters for paddles or proportional joysticks.

**Speed:** medium.

**Add-ons:** Most of the VIC-20 add-ons produced by Commodore will fit. Others are exclusive to the 64 that involve the cartridge port, like the Z80 second processor with CP/M. There is also a speech synthesizer and several other options, including 32 Megabyte hard discs and daisy-wheel printers. Many add-ons available from independents.

**Software:** There is now quite a lot of software around, both for games and other applications. With business software and the vast amount of decent peripherals, the Commodore 64 is one of the few computers which can be seriously considered as an effective business micro as well as for use at home.

**Opinion:** An excellent computer and the available commercial software makes good use of its features. The big disadvantage is that the BASIC is simple, making it hard to write your own programs using the sophisticated features. Simon's BASIC, on cartridge, goes some way towards curing this. On the other hand, it is easy to use and memory space is not used to provide fashionable features at the expense of the functions you really need. It is almost totally compatible with the PET series of computers and the massive base of software that provides. Commodore's own cassette recorder must be bought at extra cost. Although interfaces to domestic recorders do exist, it is wise to go for Commodore's reliable recorder.

## DRAGON 32

**Price:** Less than £100

**Memory:** 32 K RAM (30K to 24 K RAM useable depending upon graphics mode used) 16 K ROM

**Keyboard:** 52 key typewriter style, space bar, no user definable function keys, there are dedicated cursor control keys. Keyboard quality could be improved.

**Screen:** Text mode 32 columns by 24 rows, text in one colour, no lower case or user definable graphics in colour, but there is an inverted output option. Text mode does have block graphics in colour though. Graphics mode: ranges from 256 by 192 in one colour to 128 to 192 in four colours. Text is not supported in this mode.

**Sound:** One channel music generator covering five octaves, good software

control.

**Languages:** Microsoft Extended Colour BASIC included. Identical to Tandy colour computer BASIC. Other languages from independents.

**Processor:** 6809 E.

**I/O:** User port, centronics parallel printer port, two joystick ports, cartridge port.

**Add-ons:** Joysticks, disc drives from Dragon and Cumana. Lots available from independents, ranging from printers to disc drives. Most Tandy suppliers have peripherals that will fit Dragon, likewise Tandy software. But software has only a certain amount of compatibility and it is wise to check.

**Software:** Quite a lot available from Dragon and independents and (but check) Tandy.

**Opinion:** This micro is limited by its very basic sound system and its horrible text mode with very limiting formats. The BASIC is very good at manipulating screen graphics although it does not allow structuring. An altogether much better buy than the Tandy computer to which it is so similar because it already has much of the expansion that comes

## MSX

**Price:** Varies around £250

**Memory:** Usually 64 K RAM (24 K usable) 32 K ROM

**Keyboard:** Just about the only thing that varies from machine to machine. They can be quite good but I have used some awful ones. 73 keys including five function keys and dedicated cursor control keys.

**Screen:** Up to 40x24 text with 256x192 graphics in 15 colours. All characters user definable.

**Sound:** Three channels plus noise.

**Speed:** Medium.

**Languages:** Microsoft MSX Basic built in, Pascal and Forth may be available.

**Software:** Very little at present although it may pick up as software

at extra cost for the Tandy machine and at a price that is lower than the basic initial price of the Tandy machine.

Also a point to consider is the continuing availability of this machine since the crash of Dragon.

## DRAGON 64

**Price:** Varies £200 +

**Memory:** 64 K RAM (up to 48 K useable) 16 K ROM

Dragon's new model offers three modes of operation: an emulation of the Dragon 32, Extended BASIC with 48K of useable RAM or as what the company calls a "soft machine". In this mode the BASIC is switched out for machine code programs or to add languages like Pascal. An RS-232 interface is standard and the OS/9 multi-user operating system can be added. A small amount of disc-based software, including business applications, is available at present.

houses start converting their existing games to fit MSX.

**Opinion:** MSX is not a single computer, rather a single design of computer that is made by different Japanese and Far Eastern electronics companies. The only difference between models is the keyboard and external styling, although some machines such as the Yamaha and the Sony are notable exceptions respectfully having music synthesizer and light pen options.

This has the advantage that all of the machines should be able to run the same software and, to a greater or lesser extent, hardware.

The resulting compromise of a lot of Japanese companies arguing has resulted in a very mediocre computer. Only software support, marketing, and price will see if these machines become successful.



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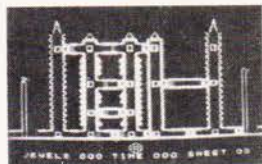
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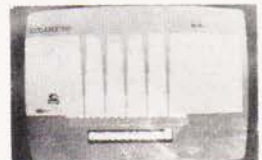
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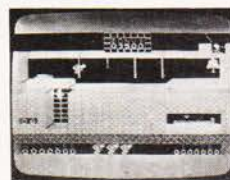
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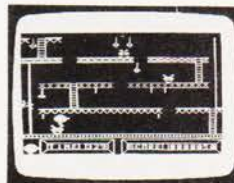
## FIVE NEW TI-99/4A GAMES



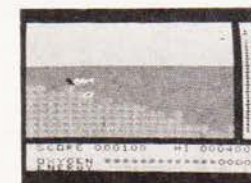
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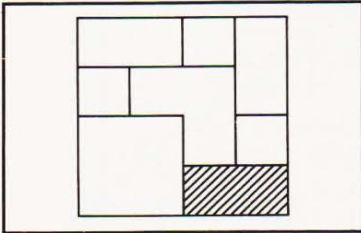
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# ANSWERS

## 1. HORRORMOLINOS

Next time you're on the beach and happen to come across eight square towels — try it. Or perhaps small paper squares might be easier!



## 2. ALPINE ALPHABET

If A = 1, B = 2, C = 3, etc, then Les' hobby is:

**COLLECTING DEAD WOODLICE**  
Very odd is Les.

## 3. WHERE IN THE WORLD

If you take the first letter of each line you arrive at FALKOVIA. What do you mean you've never heard of Falkovia? You obviously are not getting Games Computing regularly enough.

## 4. COALS TO NEWCASTLE

a	b	c	d	e	f	g
A	P	I	T	E	S	J
S	I	B	E	R	I	A
K	N	M	N	R	T	M

## 5. THE GRAND TOUR

Spain, Vietnam, Germany, India, Cyprus, Bali, Iran.

## 6. TAVERNA TANGO

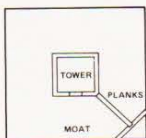
N N \_\_\_\_\_ E E

They refer to points on the compass from North to East:  
N, NNE, NE, ENE, E.

## 7. IT'S A SQUARE WORLD

- 
- 
- ◎

## 8. HOLIDAY CAMP



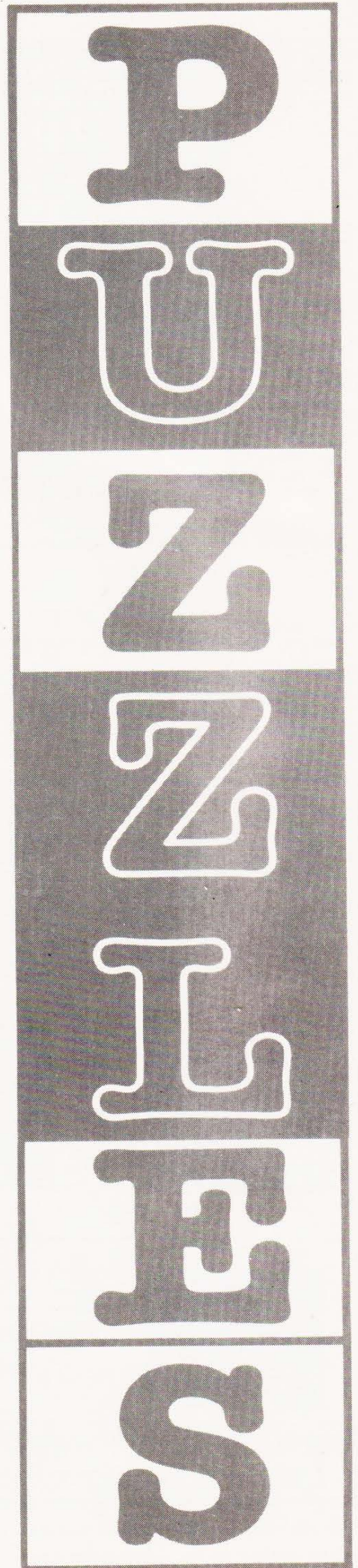
## 9. JEUX SANS FRONTIERS

Calling the horizontal A-U, and the vertical 1-20, then the words start at the

points indicated:

- G10 Polo
- G5 Water Polo
- G7 Table Tennis
- L7 Tennis
- L4 Football
- S10 Badminton
- K6 Netball
- T12 Curling
- N12 Cycling
- M13 Swimming
- P10 Hurling
- S12 Billiards
- U19 Pole Vault
- I11 Golf
- T1 Skate
- F6 Darts
- B9 Rugby League
- N3 Mountaineering
- C4 Hang Gliding
- L17 Wind Surfing
- D14 Ice Hockey
- D11 Hockey
- H17 Surfing
- Q13 Mile
- F13 Rowing
- Q14 Long Jump
- Q8 High Jump
- N14 Sack Race
- G20 Fishing
- A13 Synchronised Swimming
- H2 Trampoline
- F1 Steeplechase
- F7 Snooker
- A10 Rugby Union
- T12 Cricket
- M4 Judo
- G10 Pool
- H12 Shot
- Q3 Bowls
- U1 Orienteering
- U17 Discus
- A16 Baseball
- R10 Rounders
- O3 Shooting
- A4 Handball
- E1 Fives
- P12 Jog
- I17 Dive
- R16 Boxing
- G15 Hurdles
- J15 Karate
- S10 Lacrosse
- E13 Hammer
- I12 Relay
- K19 Walking
- H20 Triple Jump
- B9 Riding
- F2 Skiing

Y	I	E	L	D	S	O	P	I	N	E		
O	A	T	A	L								
U	D	I	C	T	A	T	O	R	I	A	L	
R	E	E	D		F		A	L				
Q				R	E	F	R	E	S	H	E	R
U	N	I	T	E	S	N	I	E	C	E		
E	M	E	A	N	B	E	T	A	S			
S	M	A	L	L	K	M	E	R	I	T		
S	O	L	E	M	N	I	T	Y	T	R		
D				M			W	H	O	A		
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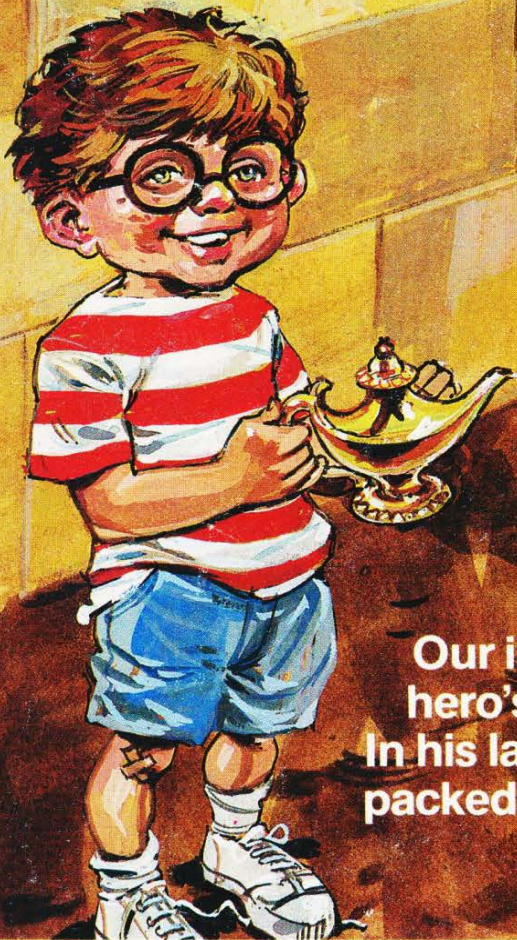
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