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# POPULAR Computing WEEKLY

11-17 October 1984

*It's the best selling weekly*

Vol 3 No 41

## Megagame for QL

IT has now been announced that Sinclair Research has definitely acquired *Bandersnatch*, the Imagine 'megagame'. (See *PCW*, 27 September).

Sinclair hopes that *Bandersnatch* will be completed and available in the first quarter next year. It is to be produced for the QL computer. Sinclair also has options to buy further megagames as and when they are completed.

"The games are being developed by ex-Imagine staff, who have set up a new software house in Liverpool," said a Sinclair spokesman. "They are being paid a fee by Sinclair to complete the programs."

The staff working on *Bandersnatch* and further megagames include former directors Dave

Lawson and Ian Hetherington, Eugene Evans, Tom Flannery, Michael Glover, Andrew Sinclair and three to four others.

"*Bandersnatch* is being completely rewritten, not just finished," said Dave Lawson. "This is partly because they are now to be released on the QL rather than the Spectrum and Commodore 64, and partly because we have learned a lot about this particular programming technique from developing it for the other micros."

One of the major features of Imagine's megagames was that they were to be released as Rom cartridges. While the QL has facilities to use Rom cartridges, it is not yet known whether this is the format to be

used or if the games will appear on microdrive.

Further megagames releases after *Bandersnatch* would probably include *Psychopase*, which had also been partially developed when Imagine went into liquidation in July this year. "Originally at Imagine we were working on seven megagame titles," continued Dave Lawson. "I see no reason why we shouldn't continue with them all."

Sinclair has not yet decided on a price for *Bandersnatch* when it is published, but Imagine was hoping to sell its megagames for around £40. Royalties for *Bandersnatch* and further releases will go to Imagine's creditors via the official liquidators.

## UK pirate sued by US Gold

US GOLD and Activision have jointly taken action against an individual in Dorset offering pirated software for sale by mail order.

"He had produced a catalogue of software for sale — all American games, from companies such as Access, Atarisoft, Broderbund, Datasoft, Activision and Synapse," said Geoffrey Heath, managing director of Activision.

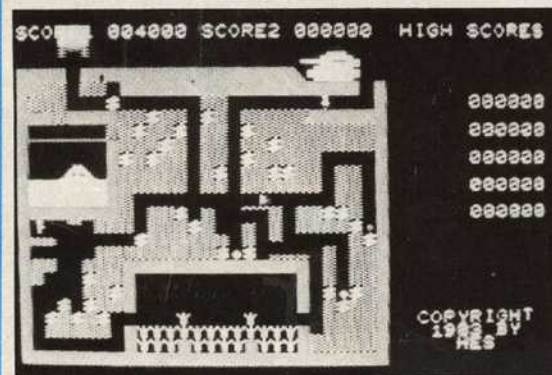
Many of the programs were titles licensed by either Activision or US Gold. After the two companies threatened legal action, the man has since ceased production of the catalogue, destroyed the tapes and discs, and given a legal undertaking not to continue.

"The people who go in for mass-production of copied programs make my blood boil," said US Gold's Geoff Brown. "US Gold has to be seen to be extremely tough on copyright issues, although all our programs now either feature a protection system or a special high speed loader which makes them very difficult to break into."

US Gold has also recently prevented further production of Starzone's *Zaxxon*, which Geoff Brown says "outrightly plagiarised" its licensed version, *Zaxxon*.

US Gold served a writ against Starzone, which has now removed *Zaxxon* from the market, and paid US Gold substantial damages.

## Hesware goes under



HESWARE, the American software company whose games are marketed in the UK by Thorn-EMI, has filed for liquidation.

Hesware has filed under Chapter 11, an American ruling which enables the company concerned to carry on trading. It provides a means for the company to slim down its operation, in the hope that it can eventually trade normally. The company's affairs are conducted under the supervision of the Bankruptcy courts.

Thorn-EMI hopes to continue distribution of Hesware titles in this country. "It is very sad to hear that Hesware is in

continued on page 5 ▶

INSIDE

)} GANG WARS }

)} WAFADRIVE }

)} ELITE ON BBC }

# CURRAH $\mu$ SPEECH



## Speech Synthesiser for ZX Spectrum

The **CURRAH  $\mu$ SPEECH** is ready to talk immediately on power-up, has an infinite vocabulary and outputs speech and ZX Spectrum sound through your TV speaker. There is no software to load with  **$\mu$ SPEECH** — sophisticated Gate Array technology means you can just plug in and start constructing words and sentences like this:

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Whilst much of the computer press and such notable industry figures as Sir Clive Sinclair have been quick to condemn the MSX system as outdated and technically unexciting, little attention has been paid to what may, in the marketplace, be a more important problem. It is very expensive.

The one machine you can actually buy at the moment — the Toshiba HX10, is retailing at £279.99, which is around £80 more expensive than what would appear to be its nearest competitor, the CBM 64.

Nor is the Toshiba machine alone; the Sanyo MSX machine, the MPC 100, is expected to retail at £299.95 and other evidence suggests that the general MSX machine price is going to be closer to £300 than £200.

But there is another consideration — the price of software. Activision has recently announced the release of a number of programs with versions available for Spectrum, Commodore, and MSX machines. Retail price for the MSX software is £11.99 compared with £9.99 for the Commodore version which few would pretend was noticeably inferior. This pricing policy reflects less on Activision than a general feeling amongst the major software companies that the market for MSX machine software will 'bear' a higher price.

The reason for this stems from the MSX companies belief that MSX is intended for a whole new market of 'general consumers' quite different from the 'traditional' computer market.

It is hard to see exactly why this new breed of 'general consumer' should pay so much for MSX 'security'. Could it be that the companies involved are hoping that merely possessing a household name like Sanyo or Sony or Toshiba will be enough?

# POPULAR Computing WEEKLY

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**How to submit articles** Articles which are submitted for publication should not be more than 2000 words long. The articles, and any accompanying programs, should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here — so please do not be tempted. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

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## It's a full house for PJP

PJP Computers has hit the jackpot on *The Times's* Portfolio competition.

For the last four months, PJP has been offering a service on subscription for Portfolio card holders to have their numbers checked against each day's list on computer.

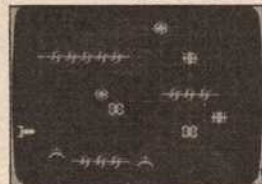
"Christopher Austin from Banstead was our first winner last week," said PJP's company secretary Melanie Phillips. "We have also now started the same number checking service for the *Daily Mirror's* Who Dares Wins competition and Millionaire of the Month in the *Daily Express*."

Over all three competitions, PJP, better known for management database systems, now has almost 5000 subscribers.

Details from PJP Computer Services Ltd, 34-36 High Street, Barksidge, Essex.

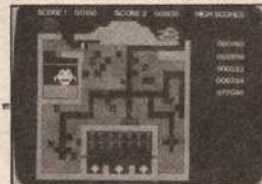
## US Gold

Continued from page 1



trouble, but we will certainly continue to support them over here for as long as possible," said John Forrest, general manager at Thorn-EMI Computer Software distributors.

Hesware also distributes three Llamasoft titles in the States — *Gridrunner*, *Matrix* and *Laser Zone* — and Llamasoft is now looking for an



alternative distribution deal. "We have been approached by Activision, Quicksilver and Currah to take over US marketing, but no definite moves have yet been finalised," said Llamasoft's Hazel Minter.

## GEC drops MSX plans

THE future of GEC's involvement in the home computer market now looks in doubt.

The company has shelved plans to launch an MSX computer in Britain indefinitely, and is uncertain as to whether it will continue marketing the Dragon 32 and 64 machines.

"Originally we planned to bring out the MSX computer this autumn," said Dennis Judd, marketing manager of GEC Radio and Television. "However, we were unable to obtain sufficient supplies, and as a result have shelved the whole project, and there is no guaran-

tee we will pick it up again.

"We are currently taking a long hard look at home computers. While we are still selling what stocks we have of the Dragon machines, it is possible we may not continue marketing the Dragon when stocks have run out."

GEC funded Dragon Data to a large extent during its lifetime, and took over the marketing for the machines after Dragon Data went into liquidation. Dennis Judd affirmed that Dragon's demise had coloured the company's current attitude to the home computer market.

## Latest Forsyth thriller on the screen

BEST selling author Frederick Forsyth will see his latest book *The Fourth Protocol* on a micro next spring.

Hutchinson Computer Publishing is currently working on an adventure game based on *The Fourth Protocol*, in liaison with Forsyth.

Bart Ullstein, of Hutchinson, said, "It seems logical to use storylines by our future and existing authors to translate to the computer. However, while the adventure is based on the book, it is not true to say that anyone who has read it will find the adventure easy."

The game will contain both

graphics and sophisticated text input. The plot of the book concerns a Russian plan to disrupt a British General Election to ensure an extreme left-wing government. To further this end, the Russians plan to set off an 'accidental' limited nuclear explosion in the UK.

As the player, you must uncover the Russian plans and foil the attempt.

"The adventure should be available in April or May 1985," continued Bart. "It will definitely be released for the Spectrum, and probably for the Commodore 64 as well. We hope to sell it for around £10."

Frederick Forsyth's book, *The Fourth Protocol*, is available in hardback in the shops now, published by Hutchinson, priced at £9.95.

## Sampler from Intec

INTEC Electronics of Shrewsbury has brought out a sampler interface with accompanying software for the Spectrum and 16K ZX81.

"With the package you can enter up to 12 sounds into the computer memory. You can then program it to play the sounds back in any order. The output can go to, for instance, a drum machine or synthesiser, and the data saved and loaded back into the micro," explained Intec's Robert Weston.

"We hope to produce a sampler for the QL soon, and we will also be bringing out an interface to connect the sampler with MIDI keyboards."

Intec's sampler interface

costs £178.25 — the software packages are £9.95 each. Further details from Intec, 42 Old Coleham, Shrewsbury SY3 7BU.

## Oric suppliers give support

AT a meeting of the Oric Suppliers committee, three major Oric suppliers have pledged their support for the company's future, emphasising Oric's success in the European market.

Representatives from Stackpole, Jermyn and Hitachi Electronic Components all attended the meeting, and Mike Squire of Jermyn said, "Certainly the main business for Oric would appear to be abroad, where the demand seems to be much higher for the products."

## Acorn goes to the Middle East

ACORN has sent a representative to a British Trade Computer Mission in the Gulf States. While the other members of the party are promoting business computer and technology products, Acorn has its eye set on the educational sector.



Derek Lee (above) Acorn's Regional Manager for the Middle East, is promoting an Arabised version of the BBC micro, with an Arabic and European text processor and Arabic keyboard. Acorn is hoping to penetrate the Arabian educational market in the same way that it has in the UK.

## Dixon's in take-over bid for Curry's

HIGH Street electrical retailer Dixon's has made a £180m bid to take over Curry's.

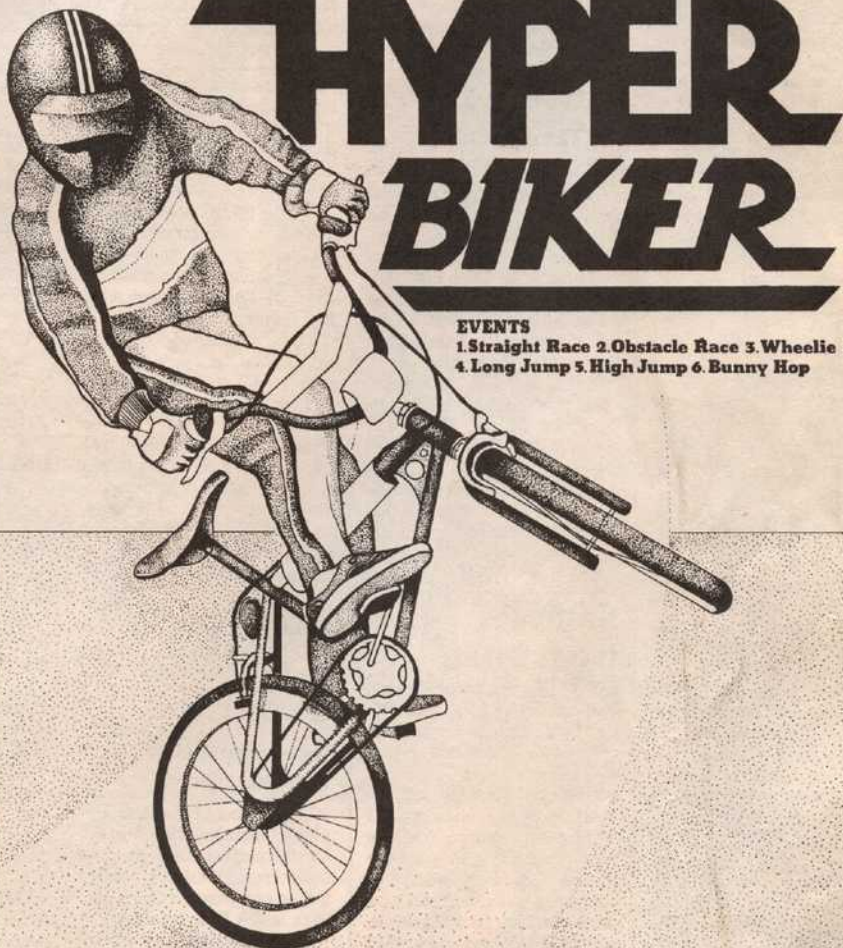
The offer comes almost immediately after Currys announced its profits had dropped from just over £9m to £8.4m in the first half of this year. Chairman Stanley Kalms has said that he has 'had his eye on Currys for the past 30 years', but only started looking seriously at the chain six months ago.

Colin Stanford, Currys's group commercial director, said, "The offer came as a surprise to us, but it is definitely unacceptable. We are not selling."

Currys recently closed down its chain of Micro C business computer divisions in favour of expanding its home computer stocks. "Our sales in the home computer market are now up to ten times on last year," Colin Stanford continued. Dixon's is also a major home micro retailer, claiming around 10% of the total market.

# Go for it with Hyper Biker ..... real berm warfare

Now you can experience all the thrills, spills and skills of BMX racing without leaving your commodore keyboard. Play on your own or with up to 3 friends to beat each other and the qualifying times set by the computer. There are 6 different events but you must qualify on each to move on to the next. Track features include, table tops, whoop de doos, ramps, speed bumps, ditches and drop offs. You have complete control of your pedals, handlebars and brakes so that you can jump, wheelie and really perform - but go easy or you'll end up eating dirt.



# HYPER BIKER

#### EVENTS

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2. Obstacle Race
3. Wheelie
4. Long Jump
5. High Jump
6. Bunny Hop

#### FRONT HOP



#### SPEED JUMP



#### WHEELIE



#### ENDO



COMMODORE 64

Available on Cassette **£7.95**

## Issue 4?

I have tried the example given in answer to Roberto Corrana's *Peek and Poke* enquiry in the September 20 issue that tells if you have a Spectrum Issue 3 or not.

When I entered *Print In* 16602, instead of getting 191 — as per Issue 3 — or 255 for an Issue 1 or 2, I get 63.

Could I have the only Issue 4 in existence?

M Payne  
5 Bassett Road  
Coundon  
Coventry

Does anyone else get 63?

## Shipwrecked

I've been a wargamer for a number of years, and I've just bought a Sinclair Spectrum for this purpose.

What I was wanting to know through your excellent magazine is, are there any people or firms that produce computerised wargame rules?

My interests are in a number of fields, but my main one is Modern Naval. I feel that such a product would speed up a game, and be more realistic.

I hope one of your readers can help.

D Wilson  
34 Beech Park  
Brandon  
Durham  
Co Durham

## Rom bugs

If the bugs in the Spectrum *Rom* no longer interest you, then read no further. Quite simply, the bug concerned is that the temporary colours in a statement containing the *Str\$* function are cleared by that function; thus: *Paper 7: CIs: Print Paper 5; Sts 1234*, prints 1234 on white paper not on cyan, as may be expected. The same is true if the colours are introduced as control characters (either by addition within the statement or by their incorporation in extended mode). The problem may be overcome by assigning a temporary string variable to the evaluated statement, and then printing in the normal way.

Ian Logan has been kind enough to comment on this for me, and in essence, the problem arises because the programmers have used the general purpose routine *Chan-Flag 1615* to recalculate the flags associated with the required current channel details following the evaluation of the function, rather than working them out from scratch. This causes the temporary colour details to be lost.

I do hope this is of interest and if it's already been described (it does seem to be the sort of bug that might have been expected to turn up sooner) then I apologise to the discoverer!

Vivian Stevens  
Montague House  
3 Andover Rd  
Upavon  
Wilts

## QL news

Popular Computing Weekly (September 26) includes a letter from Alan Turnbull regarding an up-graded version of the Psion software for the Sinclair QL.

He is correct in stating that an up-dated version will be issued in due course, but your readers should note that it will be available to members of the *QLUB* only. It is in fact one of the key benefits of membership.

The only non-*QLUB* members to automatically get updated software are the limited number of people still in pos-

session of an initial *FB* version.

We regret any misunderstanding that may have arisen.

Bill Nichols  
Sinclair Public Relations  
Berkeley Square House  
London W1

## Save it

I read with interest the article on graphics on the QL page of Issue 39. As I had had a Spectrum before buying a QL, I wondered whether it was possible to use UDG's on my new machine.

R. Snowdon's program creating UDG's was excellent, but he left out any commands to save or load these graphics. The following few lines remedy this problem:

```
555 IF KEYROW(4)&&1 THEN
LO
556 IF KEYROW(3)&&8 THEN
SA
615 AT 19,0: PRINT "S.....SAVE
UDGS□□□L.....LOAD UDGs"
1060 DEFINE PROCEDURE SA
1070 INPUT #0;"File Name?";
aa$
1080 SBYTES "mdvl_"&aa$,
newbase,875
1090 CIs#0:RUN
1100 END DEFINE
1110 DEFINE PROCEDURE LO
1120 CIs#0
1130 INPUT#0;"File Name?";
bb$
1140 LBYTES "mdvl_"&bb$,
newbase
1150 CIs#0: RUN
1160 END DEFINE
```

I hope the Load and Save routines will be of use.

I Souter  
55 Somersset Ave  
Westcliff-on-Sea  
Essex

## Not happy

I am writing to say that Microvitec were less than happy with the PCW Show review on Page 14 of your 27th September issue which suggested that they had been negligent or irresponsible in having three tiger cubs on their stand to promote CUB colour monitors.

We feel that you should make clear to your reviewer — and your readers — that a licence would never have been granted for the tiger cubs to be present had not Microvitec complied with the strictest of requirements. The local Borough Council inspected the

facilities on the stand and saw the cubs in the cage, as did the City of London's Senior Animal Health Inspector and a representative of the RSPCA. All of them were satisfied that the animals were happy, well-cared for and represented no danger to the public. The licence could not have been obtained without their approval.

I should also like to make it clear that they are not wild animals, but had been hand-reared personally by Sally Clipperfield, their owner. Assisted by two handlers, she was present throughout the show to make sure that the cubs were not distressed in any way. The air temperature was regularly monitored and the tigers were bottle fed on demand by Sally who would never have consented to the animals being abused in any way. The cubs played and slept and their behaviour was entirely normal for tigers of their age.

Tony Fall, Microvitec's Marketing Manager, has also pointed out to me that while the cubs were taking part in photographic sessions earlier in the year for Microvitec's new brochure, Sally told him that the cubs loved being the centre of attention. Mr Fall would not have allowed the session to continue and would have vetoed the idea of the cubs being on the stand if there had been any question of their being in distress.

As you can see, the concern of everyone involved has been at all times for the cubs' welfare. I hope that you will be able to see your way to correcting the impression which your PCW Show review may have created.

John Pearson  
Managing Director  
Microvitec PLC

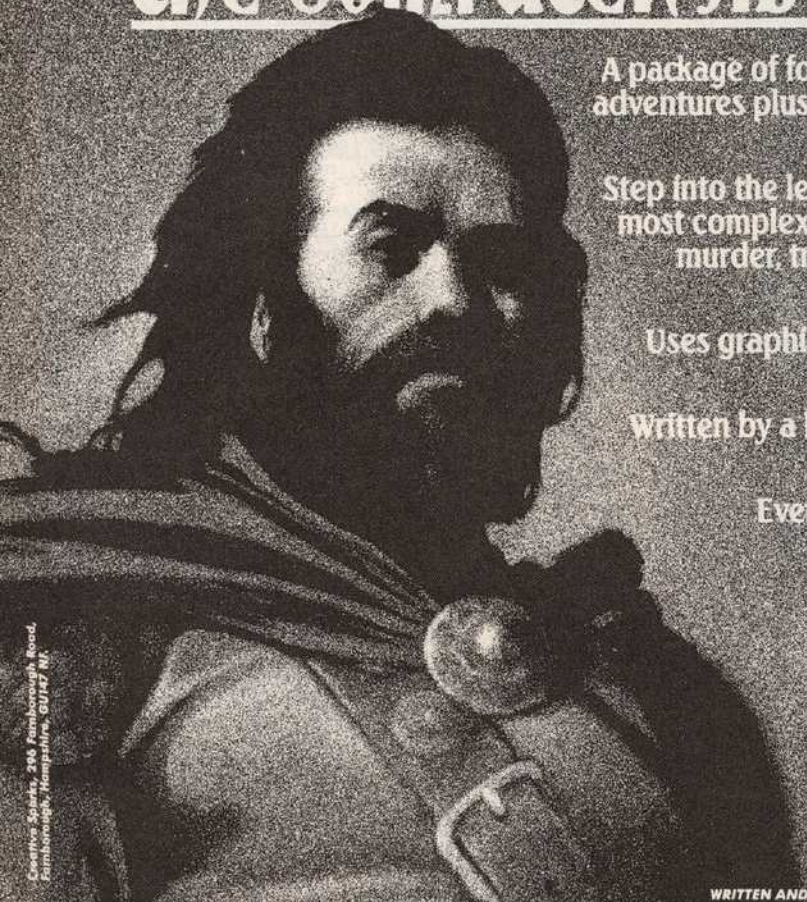
Whilst it is clear that Microvitec complied with all legal requirements and intended no cruelty, we would point out that the RSPCA received an enormous number of complaints about the living conditions of the cubs. An RSPCA representative who spoke to at the show said they were powerless to act because of the licence granted by the council.



"Hallo! PJP Computers? Do you do *The Times Crossword* too?"

# MACBETH

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
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PCW1084

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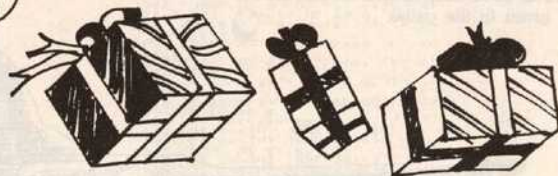


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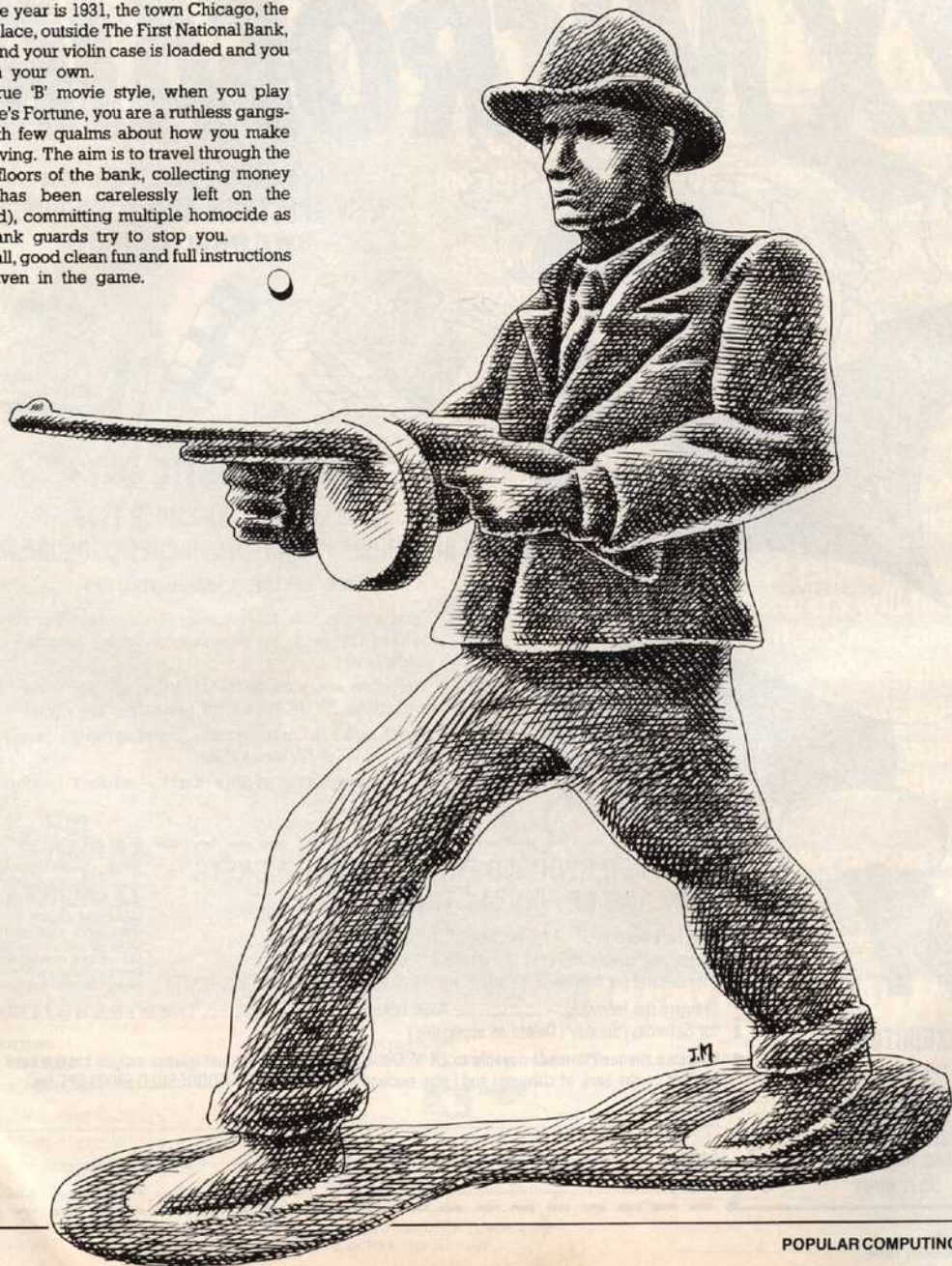
# Gang Wars

Crime really can pay in this game by Steve Lathrope, as you help Malone make an unscheduled withdrawal from the First National, on the Spectrum 48k

**T**he year is 1931, the town Chicago, the place, outside The First National Bank, and your violin case is loaded and you are on your own.

In true 'B' movie style, when you play Malone's Fortune, you are a ruthless gangster with few qualms about how you make your living. The aim is to travel through the three floors of the bank, collecting money (that has been carelessly left on the ground), committing multiple homicide as the bank guards try to stop you.

It's all, good clean fun and full instructions are given in the game.



```

10 REM *****
20 REM MALONE FIGHTS BACK *****
30 REM *****
40 REM * 5. LAST OPE AUG 03 *
50 REM *****
60 REM * 481. SPECTRUS *****
70 REM *****
80 GO SUB 3000: GO TO 1000
90 GO SUB 200: GO SUB 1000: GO
95 200
100 REM main loop
110 IF d1=0 THEN GO SUB 400
115 IF d1=1 THEN GO SUB 930
120 IF h1 THEN GO SUB 530
130 IF IN 61436=100 AND f2=0 TH
EN GO SUB 600
140 IF f2=0 THEN GO SUB 640
145 IF AND .b THEN GO SUB 1400
150 IF ad=0 AND AND .9 AND v>15
THEN GO SUB 700
160 IF ad=0 THEN GO SUB 730
165 IF IN 61436=100 THEN GO SUB
900
170 IF bd=0 AND AND .9 AND v<15
THEN GO SUB 800
180 IF bd=0 THEN GO SUB 930
190 GO TO 100
200 REM variables
210 LET x=15: LET y=24: LET z=-
1
220 LET l1=4: LET l=0: LET ad=0
230 LET f2=0
240 LET ch=0
250 LET bx=15: LET ay=23
260 LET ax=15: LET y=2
290 RETURN
400 REM save balone
410 PRINT AT x,y: "AT x+1,y"
420 LET x=x+1
430 LET w=0: (IN 60406=100)-IIN
60406=100 AND v>1)
430 IF v<0 THEN LET z=w
440 LET w=v
450 IF SCREENS (x+2,y)="" THEN
LET ch=ch+100: PRINT AT 19,7,ch.
" "
460 IF w=5 THEN LET l1=1
470 IF w=1 THEN PRINT AT x,y: "
"
AT x+1,y: " "
AT x+2,y: " "
480 IF z=-1 THEN PRINT AT x,y: "
"
AT x+1,y: " "
AT x+2,y: " "
490 RETURN
500 REM lift above
510 PRINT AT x,y: "AT x+1,y"
"
AT x+2,y: "INROU"
"
1,25,"123":AT 7,25,"123":AT 13,
20,"123"
520 LET x=x-5
530 IF x=-3 THEN LET x=15
550 LET l=0: LET v=1: LET z=-
1
560 IF x=0 THEN PRINT AT 1,38:
FLASH 1: "AT 7,38: FLASH 1"
"
AT 10,39: " "
570 IF x=0 THEN PRINT AT 1,29:
FLASH 1: "AT 7,29: FLASH 1"
"
AT 13,29: " "
580 IF x=15 THEN PRINT AT 1,26:
FLASH 1: "AT 7,26: FLASH 1"
"
AT 10,26: " "
590 RETURN
600 REM balone fire
610 LET x=x+1
620 IF x=-1 THEN LET fy=y-1
630 IF z=1 THEN LET fy=y+2
640 PRINT AT fx,fy: " "
650 LET fy=fy+1+z
660 IF fy=1 OR fy=26 THEN LET
fz=0: RETURN
670 IF SCREENS (fx,fy)="" THEN
LET ad=1: LET bd=1: PRINT AT ax+
1,y: "AT bx+1,by: "
"
AT fx,y: " "
680 RETURN
690 REM stack left
700 LET ax=x: PRINT AT ax,y: "
"
AT ax+1,y: " "
AT ax+2,y: " "
710 LET ay=y: LET ad=200:INT (RN
D 5) +3
720 LET ay=ad-1: IF ad>0 THEN
RETURN
740 IF ad=0 THEN PRINT AT ax,y:
"
AT ax+1,y: " "
AT ax+2,y: " "
750 PRINT AT ax+1,y: " "
LET z
y=ay+2
760 IF ay=26 THEN LET ad=1: RE
TURN
770 IF SCREENS (ax+1,y)="" AND
(ay=v OR ay=y+1) THEN GO SUB 12
00
780 PRINT AT ax+1,y: " "
790 RETURN
800 REM stack right
810 LET bx=x: PRINT AT bx,y: "
"
AT bx+1,y: " "
AT bx+2,y: " "
820 LET by=23: LET b=20:INT (R
ND 5) +3
830 LET bd=bd-1: IF bd>0 THEN
RETURN
840 IF bd=0 THEN PRINT AT bx,y:
"
AT bx+1,y: " "
AT bx+2,y: " "
850 PRINT AT bx+1,y: " "
LET b
y=by+2
860 IF by=1 THEN LET bd=1: RET
URN
870 IF SCREENS (bx+1,y)="" AND
(by=v OR by=y+1) THEN GO SUB 12
00
880 PRINT AT bx+1,y: " "
890 RETURN
900 REM duck
910 LET dx=1
920 PRINT AT x,y: "AT x+1,y"
"
AT x+2,y: " "
930 IF IN 61436=100 THEN RETUR
N
940 LET dx=0
970 IF z=1 THEN PRINT AT x,y: "
"
AT x+1,y: " "
AT x+2,y: " "
980 IF z=-1 THEN PRINT AT x,y: "
"
AT x+1,y: " "
AT x+2,y: " "
990 RETURN
1000 REM set screen
1010 PAPER 0: INK 7: BORDER 0: C
L 5

```

```

1020 FOR n=0 TO 10 STEP 6
1030 PRINT AT n,0: INK 2: *****
1040 NEXT n
1050 FOR n=1 TO 31: PRINT AT n,0
: INK 2: *****
1060 FOR n=2 TO 14 STEP 6
1070 PRINT AT n-1,27: INK 2: *****
"
AT n,28: INK 7: *****
"
AT n+2,28: *****
"
AT n+3,2
8: *****
1075 PRINT AT n,27: INK 2: *****
"
AT n+2,27: *****
"
AT n+3
,27: *****
1080 NEXT n
1090 PRINT AT 21,0: INK 2: *****
*****
1100 PRINT AT 17,4: "0 0 0 0
"
0
1110 PRINT AT 19,2: "CASH: "
*****
1120 PRINT AT 17,4: "0 0 0 0
"
0
1130 PRINT AT 19,16: "Lives:****"
*****
1140 RETURN
1200 REM alone shot
1210 LET l1=1
1220 FOR n=22 TO 22+11
1230 PRINT AT 19,n: " "
1240 NEXT n
1250 PRINT AT 19,22+11: " "
1260 IF l1=0 THEN FOR n=1 TO 100
NEXT n: GO TO 1500
1270 PRINT AT ax+1,y: " "
AT bx+
1,y: " "
LET ad=1: ay: " "
AT bd=1
1280 RETURN
1290 REM start
1310 INK 5: PRINT AT 3,5: "Me
alone's
Fortl
ine "
1320 PRINT AT 7,6: " "
1330 PRINT AT 11,2: "CONTROLS: "
1340 PRINT AT 13,3: " "
1350 PRINT AT 15,3: " "
1360 PRINT AT 17,3: " "
1370 PRINT AT 19,3: " "
1380 PRINT AT 20,8: "Press 'p' to
play "
1390 PRINT AT 21,8: "Press 's' fo
r scenario "
1400 IF INKEYS="s" THEN GO TO 16
00
1410 IF INKEYS="p" THEN GO TO 90
00
1420 REM save bony
1430 LET ay=INT (RAND*10)+6
1440 LET ax=INT (RAND*3)+6+5
1450 LET bx=INT (RAND*8)+0
1460 LET bx=INT (RAND*3)+6+5
1470 PRINT AT ax,ay: INK 6: "
"
1480 RETURN
1490 REM Malone is hit
1500 CLS
1510 PRINT AT 7,4: INK 5: "Malone
is fighting
"
1520 DATA 0,2,0,2,0,2,2,2,0,0
-1,0,0,2
1530 RESTORE 1530: FOR n=1 TO 8:
READ a: BEEP w: s: q: NEXT n
1540 PRINT AT 11,3: INK 5: "he co
llected s' ch: "
1550 PRINT AT 21,5: INK 5: "Press
'p' to play again "
1570 BEEP 100.0: IF INKEYS="p" T
HEN RETURN
1580 PRINT AT 21,5: INK 4: "Press
'p' to play again "
1590 BEEP 1.0: GO TO 1560
1600 REM scenario
1610 PRINT AT 11,0: "Malone is
out to make his
fortune in the
New York back-
street. He
doesn't mind
get his bony.
You play a
stone and, using
the lift, s
ust collect the
gold and so
ney bags from the
various lev
els "
1620 PRINT AT 20,5: "Press 'p' to
play "
1630 PRINT AT 21,5: "Press 'c' fo
r controls "
1640 IF INKEYS="c" THEN CLS : GO
TO 1000
1650 IF INKEYS="p" THEN GO TO 90
00
1660 GO TO 1640
2000 DATA "a",0,0,60,126,52,62,6
0,24
2030 DATA "b",60,64,111,220,252,
0,0,60
2040 DATA "c",24,24,24,24,24,24,
20,20
2050 DATA "d",0,6,252,126,0,0,0,0
0
2060 DATA "e",65,65,65,65,65,65,
65,65
2070 DATA "g",255,24,24,24,24,24,
24
2080 DATA "h",0,0,60,126,44,124,
60,60,64
2090 DATA "i",60,108,246,251,60,
60,60,60
2100 DATA "j",24,24,24,24,24,24,
50,120
2110 DATA "k",0,16,63,1,0,0,0,0
2120 DATA "l",119,119,119,0,255,
230,230,0
2130 DATA "m",62,20,34,103,227,2
51,103,54
2140 DATA "n",0,0,0,62,126,3,200
,245
2150 DATA "o",0,0,126,253,91,255
,127,0
2160 DATA "p",0,0,0,126,191,223,
239,243
2170 DATA "q",0,0,0,0,0,252,255,0
0
2180 DATA "r",24,60,24,255,24,60
,65,65
2190 STOP
3000 RESTORE 2020: FOR a=1 TO 17
READ s: FOR n=0 TO 7: READ r
POKE L+1+n,s: NEXT n: NEXT a
3010 INK 7: PAPER 0: BORDER 0: C
L 5: RETURN

```

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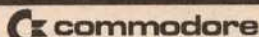
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# Beating the system

Christina Erskine talks to Lee Kristofferson, aka John Wagstaff, programmer of *System 15000*

Very few games programmers can claim to have achieved cult status within the industry — Jeff Minter and Matthew Smith are a couple of names that spring to mind.

Even fewer can be said to have done the reverse, but Lee Kristofferson, programmer on Craig Communications' *Flight 015* and *System 15000*, is already something of a household name on the Continent.

In his pre-programming existence, Lee found more than his fair share of fame and fortune in the Dutch and German pop music world, but only limited success in the UK; being voted number one in *Sounds* magazine alternative charts for a ditty entitled *Night of the Werewolf* is the pinnacle of his success over here so far.

On meeting the man, it is actually quite refreshing to discover that he really looks like a rock star — at a programmers' convention, he'd stick out like a sore thumb. And, like all real rock stars, his stage name is not the one he was born with.

For programming purposes, Lee has reverted back to John Wagstaff. "I became Lee Kristofferson for a number of reasons, but it has always been simply a stage name.

"My first record, in 1977, was called *Dinner with Drac*, and was something of a spoof on the horror theme. At the time, *A Star is Born* had just been released and all those nauseating posters of Barbra Streisand and Kris Kristofferson were up all over the place. The record sleeve had a 'send up' picture similar to the posters, and using the surname Kristofferson also fitted because it was a reversal of Christopher Lee's name, the horror actor. Then the name stuck."

Lee/John became interested in computers through owning a Vic20, and hunted high and low without success for a flight simulation program for it.

"There just didn't seem to be such a thing available, so I began tinkering around with the Vic, talked to a few pilots, decided to forgo extravagant graphics, and ended up with *Flight 015*.

"I tried to make it as realistic as possible — for instance, getting the plane to take off is reasonably easy, but landing it is quite another matter. I hoped that there would be a fair amount of suspense and sweat involved in completing the program."

Having written *Flight 015*, it struck John that it could be commercially viable. "I took it into the Visions store in Kingston, where the assistant suggested I wait for one of the suppliers to turn up and talk to him."

The supplier appeared one hour later — Dave Giles of Craig Communications — and John was signed up almost on the dot.

"There's no way I went deliberately into the computer market — I just sort of fell in, but now I've got two programs out that are selling — and selling well — I'll carry on.

"I hope I'll be able to write computer games and continue making records, because there's such a lot I haven't done in the music industry. For one thing, I desperately want to crack the British music market, and if I can make it in the British computer market too, then so much the better."

John, the computer programmer and Lee, the rock and roll singer turn out a very different type of product. The stage shows, with Lee and an all-female backing group, are big, raunchy, dry-ice and flashing light affairs. "The whole thing is very outrageous and over-the-top. It's not just going to see a concert, it's a Production, and full of very black humour."

By comparison, his latest computer game, *System 15000*, is an adventure based on the simple premise that the computer plays the



part of a computer. The storyline involves the player as a hacker breaking into other computers to investigate a computer fraud.

"I'm not really into all that fantasy stuff with dragons and fairies. I wanted to do something that was very real. And, like the flight simulator, I spent a lot of time looking at both the British and US markets to see if it had been done before and I couldn't find anything.

"It took absolutely ages. Because I couldn't find anything to base it on, I started from scratch and wrote the story behind the game in longhand first. The programming from that storyboard took six months. Still, it's the end product that counts — the mechanics of the whole procedure are of little consequence, as far as I'm concerned.

"As for the differences between the music and the games, it's not easy to be gutsy with computer graphics in the same way as you can be with music. I'm particularly interested in film and films, and at the moment it's obvious that people are being sold short with computers and their beeps. I want to develop the idea of using computers for visual programs that are more film-like in the not-too-distant future."

In the short-term, however, *System 15000 2* is underway, and due to come out soon after Christmas. Before Christmas, Lee Kristofferson has a new single and album out, *The Night Time is the Right Time*, which he fervently hopes will be as successful here as his two games have been.

"The last record, *Fire*, came out a year ago, and then I got involved with *System 15000*, and the music took a back seat for a while. In some ways, it was very good for me to drop music for that six months, because it made me sit up and think hard about exactly what I wanted to do, and where it was getting me."

Whether or not the music catches on in Britain the way that *Flight 015* and *System 15000* have remains to be seen, but it's all a far cry from John's first job, mucking out the animals at Chessington Zoo. Fame in Germany has also meant he is able to live in comfortable style in, of all places, Carshalton Beeches, fringe of the stockbroker belt. Hardly the place you'd expect to find the Continental priest of demonic rock and flight simulations for the Vic20.



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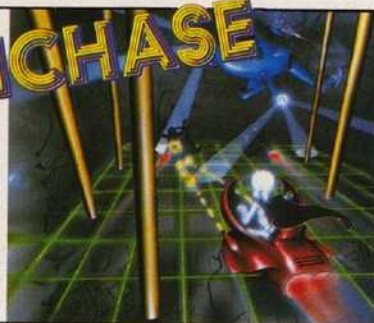


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**ROTRONICS**  
**WAFADRIVE**

## Design decision

**Hardware** *Wafadrive* Micro Spectrum **Price** £129.95 **Supplier** Rotronics, 29 Octagon Parade, High Wycombe, Bucks.

The Sinclair Microdrives have, as with most Sinclair products, received a very mixed reception. Some people hate the things, describing them as slow and unreliable. Others, such as myself, find them both convenient and reliable. We could be talking about different items of equipment as far as our agreement of opinion goes. However, one thing which cannot be argued against is that the Microdrives fill a gap between the oh-so-slow cassette recorder and the floppy disk drive, both in terms of cost and performance.

If you want to produce an alternative to Sinclair Microdrives, then there are only a limited number of design decisions available to you. You must compete on cost, which cuts out the disk technologies and such things as bubble memories, you must compete on storage capacity and you must compete on save/load speed, which limits what you can do with tape. Thus you tend to end up with something looking very much

## Converter lead

**Hardware** *Joystick adaptor lead* **Micro QL** **Price** £6.00 **Supplier** Custom Electronics, 40 Sharrow Lane, Sheffield, Yorkshire S11 8AA

When Sinclair designed the QL, they decided to make it as difficult as possible to plug anything extra into the beast, by using totally unobtainable types of sockets. The joystick sockets were chosen for the most way-out connectors, namely a reverse Telecom 6-way plug, which is very difficult to get hold of. However, Custom Electronics have got hold of them, and can supply a converter lead so that you can plug the industry standard Atari-type joysticks into your QL. (If you want to use both joystick sockets, you'll need two leads — they are identical.)

I can't say much about the lead itself, it's just a plug, a socket, and a short length of cable. Supplied with it is a very crude drawing program, poorly written, but then you'd hardly expect Melbourne Draw with a £8 cable, now would you?

If Sinclair had used sensible sockets in the first place, there would be no need for this, but they didn't, so there is, and this one is cheap, and it's available. All I need now is a game on my QL to use the joystick! I wonder if Custom are working on a similar cable for the Commodore C16 and Plus 4, which also have weird joystick sockets.

**Andrew Pennell**

like the original Microdrive. What you can do is compete on quality, or ease of use, or



specialise the hardware for some particular application. The new Rotronics' *Wafadrive* is just such a product.

Providing a twin-drive system, complete with sophisticated word processing software, the *Wafadrive* offers the same facilities as the Sinclair Microdrive plus a few more. The price of *Wafadrive* is competitive with a two-drive Sinclair set up, at £130, but you do get more for your money. Using the *Wafadrive* is slightly easier than Microdrives, and disk-like names and file types have been adopted. A similar technical approach has been used for both the *Wafadrive* system and the Sinclair Microdrives, which makes it difficult to use either system for storing the majority of commercial tape-based software.

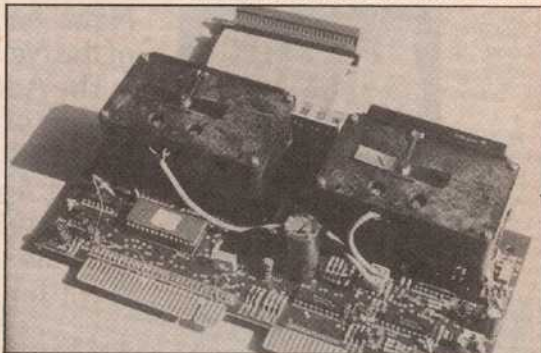
Overall, the *Wafadrive* hardware is more bulky than the Sinclair Interface 1 plus Microdrives, and appears more robust. The wafers are cheaper than the Sinclair versions and even have a auto-sliding cover to protect the tape from accidental damage. They come in 16K, 64K, and 128K sizes, but are generally slower in use than the Sinclair ones.

Rotronics leaves the Sinclair Interface 1 miles behind when it comes to built-in interfaces, offering a Centronics output for driving most common printers as well as an RS232 for two-way communications. The RS232 appears to be a full bi-directional interface suitable for use with a modem, which Sinclair's is not so suited to. The *Wafadrive* does not provide a network port.

The word processing software is good, although you will need a good TV or a monitor to make best use of the 64 column display (just as for *Tasword*). One of the interesting features is the ability to set up special printer codes to suit your particular

printer, which makes for a much more serious word processing system. A total of 351 lines filled with text can be held in memory, about eight to 10 times the length of this article. An in-built Help feature allows you to keep track of all the features.

To summarise, the *Wafadrive* provides a serious competitor to the Sinclair Microdrive system when two drives are required, and in several respects offers superior



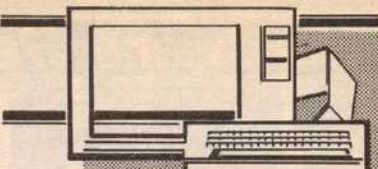
facilities. I can see no reason why *Wafadrive* should not be used with most of the popular keyboards currently available. It simply plugs into the Spectrum expansion port and sits behind the computer, not under it as Interface 1. The word processing software is well suited to the hardware and could, if we can convince Rotronics to produce additional software to the same quality such as communications and spreadsheet, prove to be a very useful system.

**John Cochrane**

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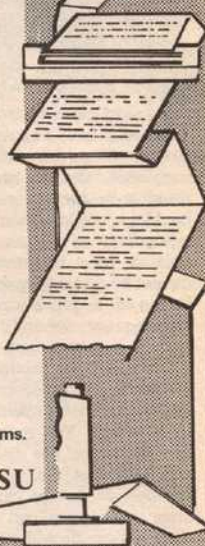
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## Animated

**Program** *Flip & Flop Micro*  
Commodore 64 **Price** £6.95  
**Supplier** Statesoft, Bessemer  
Drive, Stevenage, Herts.

**F**lip & Flop is set in the zoo of the future — Flip is a kangaroo and Mitch a chimp. You have to guide Flip first all round the zoo, which consists of a series of platforms linked by ladders. The platforms are made of squares, some of which change colour when you land on them. If you change all the special squares you progress to the next level, where you have to guide Mitch round the platforms in the same way. However, since Mitch is a chimp, he is hanging from them

not jumping on top of them. From level three onwards the zoo keeper and his net appear, to try to recapture the animals.

The size and complexity of the zoo increases as you get further into the 36 screens. Every five levels there is an animated intermission where you see Flip and Mitch rejoin their friends in the circus. The platforms are cleverly presented in 3D perspective and the whole zoo scrolls smoothly on and off the screen as the characters move round it.

The diagonal control of the animals via the joystick takes a while to get used to, but once mastered, the game is hauntingly addictive.

**Richard Corfield**



## Toadstool

**Program** *Bumble Bee Micro*  
Electron **Price** £6.95 **Supplier**  
Micro Power Sheepscar  
House, Sheepscar Street South,  
Leeds LS7 1AD.

**M**icro Power's *Bumble Bee* is, I am afraid, very much like *Pacman* type games. Instead of little meanies, you have a bumble bee trying to stay alive and not get caught by the wicked spider.

At the outset of the game you have the option of key or joystick control. Once again, this is a game where it is hard luck if your interface is Acorn's own Plus 1, because your joysticks are not catered for. You need switched, not analogue joysticks.

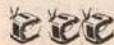
The maze which you have to guide your bumble bee around is built up of turnstiles which can be swung by the bumble bee but not by the spiders. Therefore, it is a maze for the

spider but not for the bumble bee — if you see what I mean! Anyhow, the bumble bee goes on his way gathering pollen and keeping out of the way of the dreaded toadstools and firebarrels. If he walks into either, he's dead. He also has to watch out for the wicked spiders who can only be killed by luring them into the firebarrels, as toadstools don't affect them.

There is an early warning system to tell the bumble bee that the spider is about to emerge — the pollen flashes. To escape into the next maze, you must eat up all the pollen after which a door in the escape hatch opens.

I like *Bumble Bee*. Even though it is similar to other games, the turnstile action within the maze adds an interesting innovation and therefore demands a degree of cunning in order to use these against the spiders.

**Fred Short**



## Relegated

**Program** *Amstra-Draw Price*  
£9.95 **Micro** Amstrad **Supplier**  
B.S. McAlley, 1 Cowleaze,  
Chinnor, Oxford OX9 4TD

**A** pretty straight conversion from the Spectrum release *Spectra-draw*, the pools prediction utility which was acclaimed as being the most attractive and friendly of its genre. Indeed my first impression was pleasant surprise at the quality of packaging and presentation. There is a small manual taking you through all the features and the screen display is easy to follow being menu-driven and with prompts for data entry and correction. It comes with an extensive database containing the results of many thousands of matches in recent years. This must be updated each

week to ensure that current form is taken into account.

It is written in Basic, which doesn't matter a bit, and you are positively encouraged to break in to the listing to correct data for relegation, etc. if you feel this is beyond you, or you allow the database to fall behind you can have both updated for a small charge. Predictions are for draws only but you can ask for the least likely ones as well. There is also a routine to help you fill out the coupon. Using the system, the company anticipates that you will finish the season with a small profit.

One point does worry me though — unless you include a random element in your selection, as advised, the more people who use the utility the smaller the winnings will be.

**Tony Kendle**



## Haunted

**Program** *Moonlight Magic*  
**Price** £5.95 **Micro** Spectrum  
48K **Supplier** ESP, 6 Royal Buildings,  
Talbot road, Port Talbot,  
SA13 1DN.

**B**oasts that a game is 'entirely new' (ESP's italics) are risky, particularly when it is so obviously a hybrid of platform games and painter games with *Manic Miner* pretensions.

As Mack, you have to paint a five storey haunted house, avoiding ghosts, spiders, tax men et al, jumping over open windows, recharging your brush and beating the time limit. Complete a screen and you proceed to the next, more difficult one.

There is a commendable selection of joystick options

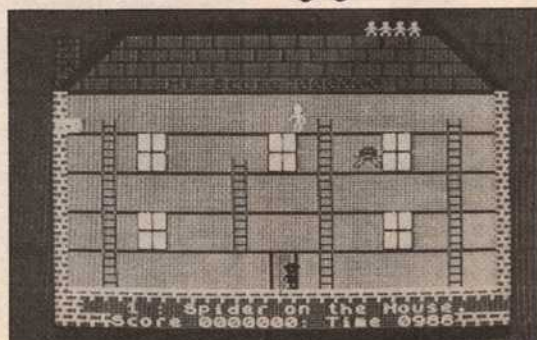
and redefinable keys, plus sprite animation and continuous sound — but none of these can detract from the basic dullness of the game's aim.

Each screen is rather irrelevantly named, which, however, does not compensate for their blandness. All the variety is provided by more obstacles and fewer ladders, until the last screens become almost impossible.

It does take skill to dodge the ghosts and time jumps exactly, which is fun for a while, but I found no real incentive to continue.

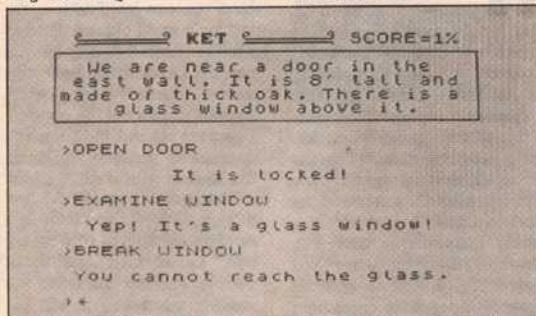
If this program had appeared twelve months ago it would have deserved more attention. Now it is exceptionally average.

**John Minson**



## Tantalising

**Program** *The Final Mission*  
**Price** £5.95 **Micro** Spectrum  
**48K Supplier** Incentive Software Ltd., 54 London St., Reading RG1 4SQ



Previous veterans of *Ket* will need no encouragement from me to buy this. Incentive are living up to their name by providing a video recorder for the first person to complete the trilogy. But newcomers need not be discouraged. A fresh character is generated at the start of this text only adventure, ready to seek out the dread Vran himself.

I've always felt that the *Ket* style comes closer to *Dungeons and Dragons* than the brainteaser type of adventure. Combat, or more often, avoiding it, is an integral part of the

system. The dungeon itself is nicely designed, there are some moderately complex puzzles and some tricky wandering monsters, of which one can be extremely useful — 'nuff said. Responses are sometimes a little slow and some descrip-

tions a little sparse, though others include tantalising details.

The screen display is a model of clarity, with percentage scoring above a scrolling display, and small tokens to illustrate many items. However I was a trifle disappointed, I think the adventure needs the atmosphere built up by the earlier parts and would suggest starting with *Mountains of Ket* and making this a real *Final Mission* rather than a stand alone adventure.

John Minson



## Puddles

**Program** *Noah* **Price** £5.95 **Micro** Spectrum **48K Supplier** ESP, 6 Royal Buildings, Talbot Road, Port Talbot SA13 1DN

It's a hard life being an Old Testament hero. Thirty one pairs of animals to drag by their tails to your houseboat, only three days to do it, and the forecast is rain.

Noah, understandably paranoid about water, travels through a puddle-pitted landscape of 256 screens, containing a large wall (find the key first) and a maze (find a lamp first).

While Noah wanders, doubtlessly whistling 'Give me a home where the buffalo roam...' along with rabbits, dodos and a deadly snail, time

ticks away and angry villagers try to stone this prophet of doom.

Much of this game has a Python-ish humour, adding to the fun. Play is preceded by a scrolling *History of the World (Part One)* — but the fun disappears when you have to sit through it every game.

The graphics are attractive and smoothly animated, although there is some lack of definition of the fatal puddles. Noah, however, is a delightfully large sprite.

My main reservation is that in a game of this scale, a *Save* facility would be useful, and the adventurer may tire of constant return visits to the Ark. However, it is different enough to be of interest, if not perfect.

John Minson



## Intergalactic

**Program** *Elite* **Price** £14.95  
**BBC**, £12.95 **Electron Supplier** Acornsoft, Betjeman House, 104 Hills Road, Cambridge CB2 1LQ.

*Elite* marks a new departure for Acornsoft by blurring the line between arcade and adventure games more than ever. Superb three dimensional graphics are combined with a conventional trading game to produce a highly realistic simulation of intergalactic conflict, commerce and intrigue.

In the game, the universe is made up of eight galaxies containing 250 planets each, which are orbited by a single space station. You are the

commander of a Cobra MkIII fighter. At the start of the game, the ship is docked with the space station orbiting the planet Lave. You are given a full tank of fuel and 100 cash credits. Initially you are rated as harmless and your criminal record is clean. Having bought anything you need from the suppliers in the station, you use the local galactic chart to program a course for the planet you wish to visit next. The chart also allows you to determine the political climate of a given planet. Having picked a planet, usually on the basis of the profits you can make by selling goods there, you leave the space station. Your sole means of defence (or attack) are three heat seeking missiles and a laser. You may now use the

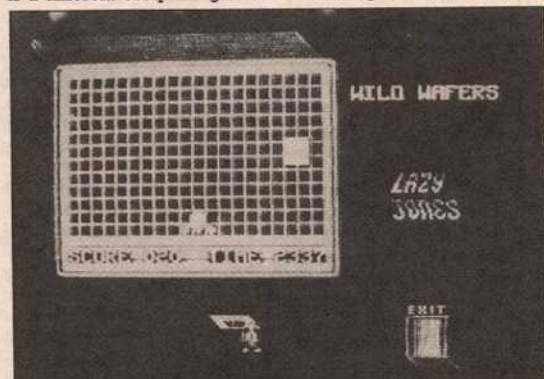
go to all the games. You must avoid being caught by the hotel manager, and also your cleaning trolley — if you bump into this you have a heart attack at the thought of having to do some work. You can enter each games room once only, but if you survive all the games you can play each one again.

An original idea for a game, and good fun to play. The games in each room are really rather basic arcade shoot-outs, but they are nicely presented on a TV screen within the main screen. Although the individual parts of the game are unexceptional, the whole game is unusual and varied enough to be interesting. Hardened arcade

## No work

**Program** *Lazy Jones* **Price** £6.95 **Micro** Commodore **64 Supplier** Terminal Software, Derby House, Derby Street, Bury BL9 0NW.

If you are someone who would much rather spend your time playing games on your micro than doing more boring things like working for a living, you will have plenty of sympathy for the principal character in *Lazy Jones*. *Lazy Jones* works in an hotel, and in almost every one of the 18 rooms there is a different computer game.



He is much more interested in playing the games than doing his work, so the object of the game is to guide him from room to room on the three floors of the hotel so that he can have a

game players may not find it challenging enough, but many will enjoy it.

Richard Corfield



hyperspace drive to get to the planet you selected.

On materialising, you will find yourself within visual range of the planet. Your objective is now to reach the space station orbiting the planet to trade with it. However, if you are carrying particularly valuable cargo, or you have a price on your head due to some misdemeanour, you are fair game to pirates and bounty hunters. Incredible three dimensional battles usually ensue.

Having made a small fortune (which is easier if you cast away your scruples and trade in illegal drugs and slaves), you can buy lots of goodies for your ship like extra lasers, electronic countermeasures against missiles and a highly improbable device which speeds up energy replenishment.

Joysticks or the keyboard may be used to move the ship. Even when using the joysticks, you still need to use the keyboard to change speed, trade, launch missiles and so on. A function key strip is provided, making life easier.

The screen display of all this is rather neat. Most of the screen is given over to the view from your ship, represented using wire frame figures with hidden line removal in mode 4. This part of the screen is updated frequently, giving exceptionally smooth animation. Our only quibble with the display is that planets are transparent, which makes them look more like bubbles.

Your objective is to make lots of money, buy lots of weapons and kill lots of people, hence becoming a member of the Elite. Very laudable.

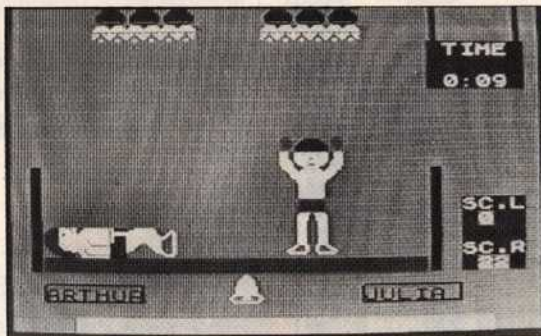
For the price, you get a disc or cassette, a flight manual (borrowed in places from the HHGTTG), a small novelette of dubious use and literary standing, and a couple of reference cards summarising the 51 command keys you can use. The whole thing is beautifully packaged in a high gloss, low-tech cardboard box.

Tony Pearson and  
Jeremy Ruston



## Body blow

**Program Boxing Micro Spectrum Price £5.95 Supplier Sillicon Joy, 7a Richmond Hill, Bournemouth BH2 6HE.**



**A**pparently making a living for years from the unsuppressible *Football Manager*, Addictive Games have finally got around to releasing another tape. For those who tire of winning soc-

cer accolades Kevin Toms offers new sporting horizons with *Boxing* — satisfy your primitive blood lust whilst leaving the brain damage to the pro's. To match a change from strategy/simulation to arcade, there has been a change of label name

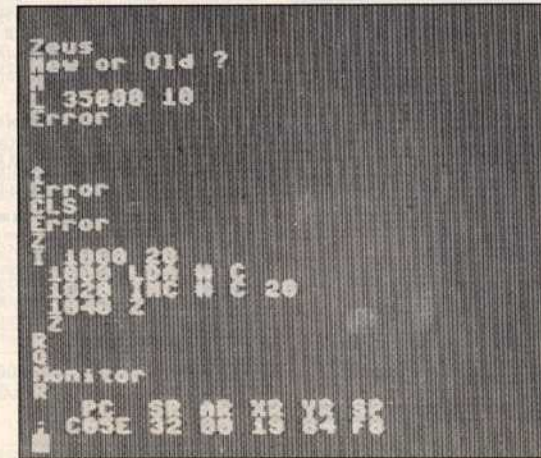
but the painstaking attention to detail has not been abandoned since *Boxing* sticks closely to the official system of scoring — making it an immediate candidate as an educational aid for Olympic judges.

## Registered

**Program Zeus 64 Price £9.95 Micro Commodore 64 Supplier Crystal Computing, 125 Smedley Road, Cheetham Hill, Manchester.**

**Z**eus 64 is an assembler/editor development package complete with a co-resident machine code monitor. The two parts of the package are loaded together

but operate separately, although it is easy to swap between them. After loading you are left in the monitor. This provides a pretty standard but nicely implemented set of commands for the direct manipulation of memory and registers, plus formatted disassembly and memory listing. The ability to execute a program one instruction at a time is also provided. From the monitor you can exit to standard Basic. No Basic memory is used by the Zeus package, but the mo-



The two or more sluggers are under the control of you and your friends (I'm afraid you need one of these if you want to play the game). Graphics are adequate if not breathtaking and controls are simple — left, right, hit head and hit body. Points are awarded for blows and a clear margin of 20 gives you a knockout. Immediate impressions were that it was a great two-player game but, small flaws in the gameplay spoiled it. Notably in the clinches no points are awarded no matter how hard you thrash away, meaning that one or both players must back off. This invariably means your guard falls and you lose points. The result is cries of 'Move back!', 'You move back pig!' and lots of boring draws. In fact we came closer to boxing in real life. I was also annoyed by the lack of a replay option which meant there are lots of tiresome re-entries of players' names.

Tony Kendle



nitor sits in the 4K buffer at \$C000, so unfortunately this is unavailable for your own routines.

The editor/assembler facilities are also accessed from the monitor. Using the editor you can enter assembler programs in much the same way as Basic. However, a number of useful toolkit type commands are available, eg, auto line number, block delete of lines, find/change, renumber, etc. All commands in both editor and monitor are single letters. Unfortunately, they are not very consistent between the two programs, eg, X in the monitor exits to Basic, whereas in the editor it executes the last program assembled!

The assembler is a very fast multi-pass program, which supports the usual range of pseudo-ops, although with some slightly non-standard syntax. It lacks some of the most powerful features of more expensive products, eg, macros and automatic file linking, but it has some good features of its own, like labels of up to 31 characters, and a powerful expression evaluator.

Richard Corfield





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Q

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A

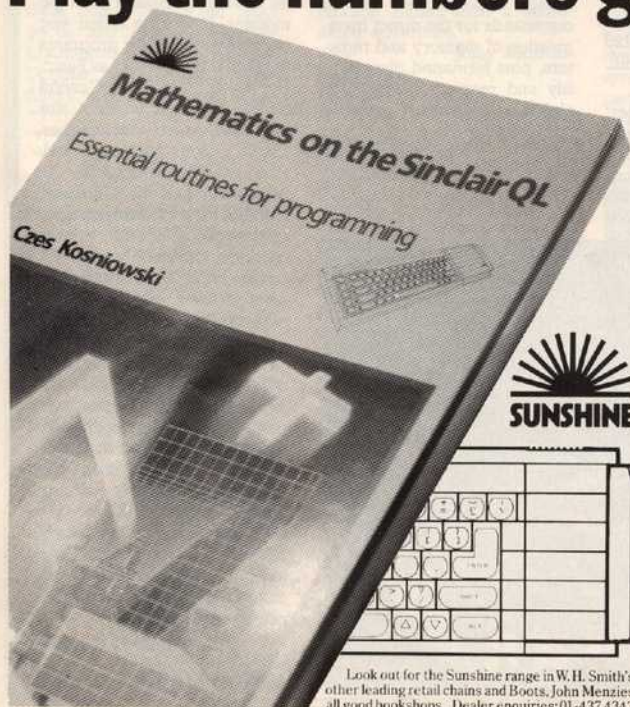
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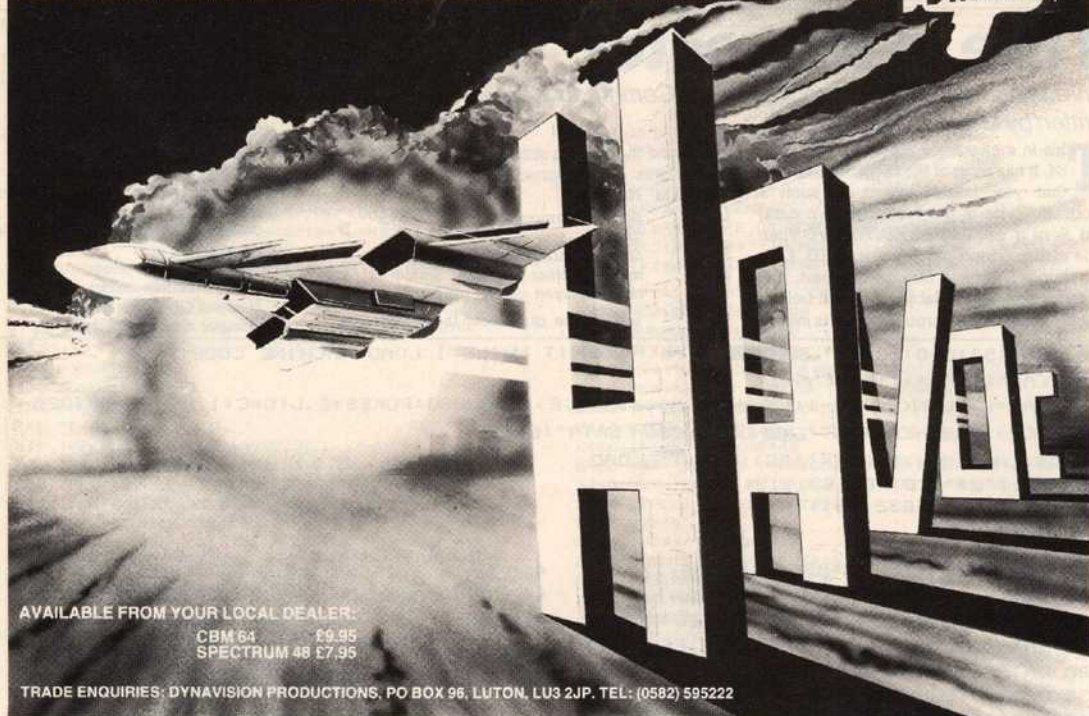
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### UTILITIES

#### EXTENDED BASIC FOR THE CBM 64 WITH BUILT-IN 2/3 PASS ASSEMBLER

This excellent programmers aid includes a 60 page reference manual explaining in detail the 51 extra multifunctional commands and 10 control functions made available to you which include:— GRAPHIC, SOUND, PROCEDURE, RENUMBER, PROGRAM LINE DELETION, DISK DRIVE ACCESS, SCREEN DUMP ONTO 1525 PRINTER & FUNCTION KEY DEFINING. Although this program is 16K long it is located in such a way as to leave 35.5K available for storing a BASIC program.  
CASSETTE £19.50 (Disk £21.50)

#### 2/4 PASS MACHINE CODE ASSEMBLER

An updated version of the assembler contained in the extended BASIC above. Comes complete with manual.  
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### GAMES

#### SUPER SCRAMBLE

A great deal of effort went into the writing of this game, resulting in imaginative sprite and graphic design and beautifully smooth scrolling action. Not being satisfied with creating a superb version of this ever popular arcade game, the writer has gone on to add some extra features. Suitable for JOYSTICK or keyboard.

CASSETTE £6.50

#### DUNE BUGGY

Advanced programming techniques give you amazingly realistic background scrolling, the writer having split the screen no fewer than 7 times! Other techniques including multi-tasking have been used in this game where you must race your buggy over the desert with the local customs militia determined to prevent your getaway. Fast action using JOYSTICK or keyboard.

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## True to character

An easy to use character editor for the Commodore 64

written by Gary Foreman

This is a character editor for the CBM 64. It has most of the required features that you might expect of such a program. Type in the first part (m/c data) and Save it as *CBM 64 EDITOR VI*. Then type in the second part, Save it as *ED. 1*. To use simply Load and Run the first part. The features that are available are listed below. Most inputs are fool-proof (if there is such a

thing) and the current status is shown in the status lines of the screen.

### Program Notes

- L— Load a character set from tape or disk.
- S— Saves a character set to tape or disk.
- M— masks another character with the one displayed on the grid.
- R— reflects the grid about the y-axis.

- I— inverts the displayed character (inverse video).
- O— restores original charset from ROM.
- +/-— adds/deletes a dot to/from the grid.
- CRSR— keys to move cursor.
- CLR— clears the grid area.
- N— goto next character, saving the present one to memory.
- Q— quits the editor.
- P— prints the data of the displayed character to screen or printer.
- D— deletes a certain character from the present set.
- F1— changes Border colour.
- F3— changes Screen colour.
- F5— changes Character colour.
- F— changes current filename.

```

10 S=49152:C=0:PRINT "PLEASE WAIT WHILE I LOAD MACHINE CODE"
20 READA$:IFA$="*" THEN40
30 FORX=0TOLEN(A$)/2-1:L$=MID$(A$,2*X+1,2):GOSUB90:POKE$+C,L:C=C+1:NEXTX:GOTO20
40 IFC<>1048THENPRINT "NOT ENOUGH DATA":END
50 Q$=CHR$(34):D=PEEK(186):PRINT "LOAD"
"Q$"ED.1"Q$":D:POKE631,19:
POKE198,2 POKE632,131:
60 NEW

90 L=0:FORJ=1TO2:L%=ASC(MID$(L$,J)):L=
16*L+L%-48+(L%>64)*7:NEXT:RETURN
100 DATA "78A50129FB8501A00084FE84FC"
110 DATA "A9D085FDA93085FFB1FC91FE8D00F9"
120 DATA "E6FDE6FFA5FDC9D9D0EFA501090485"
130 DATA "015860EAEAF0009899D006A90199D0"
140 DATA "DA8D0F460EAA9002090FFA901A8AA"
150 DATA "20BAFFADFFCEA200A0CF20BDDFA9FE"
160 DATA "A23086FFA20086FEA040A20020D08F"
170 DATA "A9C0290FF60A9002090FFA901AA8"
180 DATA "20BAFFADFFCEA200A0CF20BDDFA900"
190 DATA "20D5FFA9C02090FF60EAA9002090FF"
200 DATA "ADFFCEA200A0CF20BDDFA901A208A0"
210 DATA "0120BAFF20C0FFA9FEA23086FFA200"
220 DATA "86FEA200A04020D08FFA9C02090FF60"
230 DATA "A9002090FFADFFCEA200A0CF20BDDF"
240 DATA "A901A208A00120BAFF20C0FFA90020"
250 DATA "05FFA9C02090FF6000000000000000"
260 DATA "000000000000000000000000000000"
270 DATA "000000AD400385FEA90885FF20B4C1"
280 DATA "A5FE858BA5FF858C18A58C6930858C"
290 DATA "A900858DA58B858EA58C858F18A58E"
300 DATA "658D858EA58F6900858FA000B18E85"
310 DATA "14A9008515A9008502A58D85FEA928"
320 DATA "85FF20B4C1A5FE85A3A5FF85A418A5"
330 DATA "A3650285A3A5A4690085A418A5A369"
340 DATA "A002C9085A4690485A4A9C2E859718A5"
350 DATA "1465148514A51565158515A515C900"
360 DATA "F008A9008515A9518597A000A59791"
370 DATA "A318A5A4690485A4AD860291A3E602"
380 DATA "385A3A5A4690485A4A9C2E8597A0034C"
390 DATA "1FC16018A900A2086A66FE90031865"
400 DATA "FFCA10F585FF60A900858BA9008502"
410 DATA "A900858C2016C2C951D00AA68C18A5"
420 DATA "027D38C28502E68CA58CC908D0E7AD"
430 DATA "400385FEA90885FF20B4C1A5FE8514"
440 DATA "A5FF851518A51569308515A502A48B"
450 DATA "9114E68BA58BC908D0B660A58B85FE"
460 DATA "A92885FF20B4C1A5FE85A3A5FF85A4"
470 DATA "18A5A3693885A3A5A4690485A4A48C"
480 DATA "B1A3608040201008040201A900858B"
490 DATA "AD400385FEA90885FF20B4C118A5FF"
500 DATA "693085FFA5FE85A3A5FF85A4AD4103"
510 DATA "85FEA90885FF20B4C118A5FF693085"
520 DATA "FFA5FE8514A5FF8515A48BB1A31114"
530 DATA "91A3E68BA58BC908D0F04C00C1A900"
540 DATA "858BAD400385FEA90885FF20B4C118"
550 DATA "A5FF693085FFA5FE85A3A5FF85A4A4"
560 DATA "8BB1A349FF91A3E68BA58BC908D0F0"
570 DATA "4C00C1A900858BA9008502A900858C"
580 DATA "2016C2C951D00AA68C18A5027D11C3"
590 DATA "8502E68CA58CC908D0E7AD400385FE"
600 DATA "A90885FF20B4C1A5FE8514A5FF8515"
610 DATA "18A51569308515A502A48BB114E68B"
620 DATA "A58BC908D0B6600102040810204080"
630 DATA "0000000000000000A5C5C940000160C9"
640 DATA "2BD005A92E4CCAC3C928D005A9514C"
650 DATA "CAC3C933D0034C4EC3C902D0034C00"
660 DATA "C3C907D00B4A05C3AD80D2C901F00C"
670 DATA "A90085FB85FC2000C14CF3C3AD4003"
680 DATA "85FEA90885FF20B4C118A5FF693085"
690 DATA "FFA007A90091FE8810FB4C55C3AD80"
700 DATA "02C901D00FC6FA5FC99FD004A907"
710 DATA "85FC4CF3C3E6FCA5FFC908D004A900"
720 DATA "85FC4CF3C3AD80D2C901D00FC6FBA5"
730 DATA "FBC9FFD004A90785FB4CF3C3E6FBA5"
740 DATA "FBC908D004A90085FB4CF3C348A5FB"
750 DATA "85FEA92885FF20B4C1A5FE85A3A5FF"
760 DATA "85A418A5A3693885A3A5A4690485A4"
770 DATA "A4FC6891A34CC7C12000C1A5FB85FE"
780 DATA "A92885FF20B4C118A5FE693885A3A5"
790 DATA "FF69085A4A4FCFA90591A34CC7C100"
800 DATA "*"
READY.
    
```

```

20 PRINTCHR$(9);CHR$(142);CHR$(8)
30 POKE56,47;POKE55,255;POKE52,47;POKE51,255;CLR
40 POKE251,0;POKE252,0;CS=54272
60 L$=""
70 S=0;F$="00";SET ONE;"DS$="OK";CH=0
80 DS=49295;DL=49345;TS=49216;TL=49261;CR=49152
FS=49200;V=53248;SC=12288
90 POKEV+32,0;POKEV+33,0;POKE646,1;SYSCR:POKEV+24
,28;MC=49731;IN=49808;RE=49858
100 ME$="";BL$="";D$=CHR$(20)
110 S$(0)="EDIT";S$(1)="LOAD";S$(2)="SAVE"
S$(4)="INPUT";S$(5)="PRINT"
170 GOSUB2000
180 GOSUB2100
190 GOSUB2700
200 PE=PEEK(197)
210 IFPE=38THENSYSCR:GOTO190
220 IFPE=18THENGOSUB2600;GOTO190
230 IFPE=42ORPE=13THENGOSUB2300;GOTO200
240 IFPE=21THENGOSUB2500;GOTO200
250 IFPE=4THENPOKE53280,(PEEK(53280)+1)AND15;
GOTO200
260 IFPE=5THENPOKE53281,(PEEK(53281)+1)AND15
GOTO200
270 IFPE=6THENPOKE646,(PEEK(646)+1)AND15;
GOSUB2100;GOTO190
280 IFPE=62THENPRINT"↓":END
300 IFPE=39THENGOSUB2800;GOTO200
310 IFPE=26THENGOSUB3000;GOTO200
320 IFPE=41THENGOSUB3100;GOTO170
330 IFPE=36THENGOSUB3300;GOTO200
340 IFPE=33THENPOKE832,CH:SYSIN:GOTO200
350 IFPE=17THENPOKE832,CH:SYSRE:GOTO190
360 SYS49952;GOTO200
2000 POKE53265,11;PRINT"*****";L$;" ";L$;
" ";L$;" ";L$;" ";L$
2010 SYFS:PRINT" ";TAB(15)" "
2020 FORQ=1TO8:PRINTTAB(15)" |
":NEXTQ:PRINTTAB(15)" "
2025 RESTORE
2030 READQ1$,Q2$:IFQ1$<"***"THENPRINTQ1$;TAB
(26);Q2$:GOTO2030
2040 DATA"LOAD/SAVE","F1 BORDER"
2041 DATA"MASK CHAR","F3 SCREEN"
2042 DATA"REFLECT CHAR","F5 CHAR COLOR"
2043 DATA"INVERT CHAR","F6 ILENAME"
2044 DATA"ORIGINAL SET","GOTO CHAR"
2045 DATA"ADD/DEL"," "
2046 DATA"NEXT CHAR"," "
2047 DATA"EDIT EDITOR","ALL CRSR KEYS"
2048 DATA"PRINT DATA"," "
2049 DATA"DELETE CHAR"," "
2050 DATA"***"," "
2060 POKE53265,27;RETURN
2100 PRINT"*****";STATUS;" ";S$(S)
2110 PRINTTAB(13);"□";BL$;
2120 PRINTTAB(13);"□";ILENAME;" ";F$
2125 CH$=STR$(CH);CH$=RIGHT$(CH$,LEN(C$)-1)
2127 IFLen(CH$)<3THENCH$="0"+CH$:GOTO2127
2130 PRINT"□ CH:";CH$;" "
2135 PRINTTAB(13);"□";BL$;
2140 PRINTTAB(13);"□";ISK;" ";DS$
2150 PRINT" USER:";ME$;RETURN
2200 POKE199,0;IN$="";S=4;GOSUB2100
2210 GETI$:IFI$=""THEN210
2220 IFI$=D$ANDLEN(IN$)>1THENIN$=LEFT$(IN$,LEN
(IN$)-1);PRINTD$;
2230 IFI$=D$ANDLEN(IN$)=1THENIN$="";PRINTD$;
2240 IFI$=CHR$(13)THENME$=BL$;GOTO2100
2250 IFI$<"OR I$">+ THEN210
2260 IFLen(IN$)=16THEN210
2270 IN$=IN$+I$:PRINTI$;GOTO2210
2300 IFA$="L"THENS=1
2310 IFA$="S"THENS=2
2320 ME$="TAPE OR DISK"?;GOSUB2100
2330 GETI$:IFI$=""THEN2300
2340 IFI$=CHR$(13)THENS=0;GOTO2240
2350 IFI$<"T"ANDI$<"D"THEN2330
2355 ME$=BL$;GOSUB2100
2360 ONSGOTO2370,2420
2370 IFI$="T"THEN2390
2380 ME$="LOADING "+F$;GOSUB2100;SYSDL:GOTO2470
2390 ME$="PRESS PLAY ON TAPE";GOSUB2200
2400 IFPEEK(1)=55THEN2400
2410 SYTL:GOTO2470
2420 IFI$="T"THEN2440
2430 ME$="SAVING "+F$;GOSUB2100;SYSDS:GOTO2470
2440 ME$="PRESS RECORD & PLAY ON TAPE";GOSUB2100
2450 IFPEEK(1)=55THEN2450
2460 SYTS
2470 IFI$="T"THEN2630
2480 OPEN15,8,15:INPUT#15,DS,DS$:CLOSE15:GOTO2630
2500 S=3;ME$="FILENAME";GOSUB2100
2510 GOSUB2200;F$=IN$;F$=LEN(F$)
2520 POKE52991,F
2530 IFF=0THEN2550
2540 FORA=1TOF:POKE52991+A,ASC(MID$(F$,A,1)):NEXTA
2550 ME$=BL$;S=0;GOSUB2100;RETURN
2600 ME$="CHAR#";GOSUB2200
2610 IFVAL(IN$)>55THEN2600
2615 CC=VAL(IN$)
2620 FORQ=CC#8TOCC#8+7:POKE832+Q,0;NEXTQ
2630 ME$=BL$;S=0;GOSUB2100;RETURN
2700 POKE832,CH:SYS49408;RETURN
2800 GOSUB2900;CH=CH+1;IFCH>255THENCH=CH-255
2820 GOSUB2100;GOSUB2700;RETURN
2900 POKE832,CH:SYS49607;RETURN
3000 ME$="CHAR#";GOSUB2100
3010 GOSUB2200;IFVAL(IN$)>55THEN3000
3020 CH=VAL(IN$);S=0;ME$=BL$;GOSUB2100
3030 GOSUB2700;RETURN
3100 S=4;ME$="GREEN OR INTER"?
GOSUB2100;GOSUB2200
3110 IFIN$="S"THENQ=3:T=5;GOTO3130
3120 T=20;D=4;S=5;GOSUB2100
3130 CLOSE1;OPEN1,D:CMD1
3140 IFD=3THENPRINT"↓"
3150 PRINT:PRINT:PRINTSPC(29+(D=3)*15)"CHAR
# ";CH$
3160 PRINT
3170 X=SC#8*CH:FORR=0TO7:Y=PEEK(X#R);L=Y#N=Y
3180 PRINTSPC(T);
3190 FORC=0TO7:Q=46;Y=Y#2;IFY>255THENQ=113;Y=Y-255
3200 PRINTCHR$(Q);NEXTC
3210 PRINTSPC(5)"#";
3220 L=L/16;FORJ=1TO2:LX=L;PRINTCHR$(48+LX-
(LX)/9)*7);L=16*(L/LX);NEXT
3230 PRINTSPC(5)"#";N=NEXTR
3235 PRINT
3240 PRINT#1;CLOSE1;IFD=4THEN3250
3245 PRINT"PRESS ANY KEY"
3247 GETQ$:IFQ$=""THEN3247
3250 S=0;RETURN
3300 ME$="CHAR#";GOSUB2100;GOSUB2200
3310 IFVAL(IN$)>55THEN3300
3320 MA=VAL(IN$);POKE833,MA;SYSMC;S=0;ME$=BL$;
GOSUB2100;RETURN

```

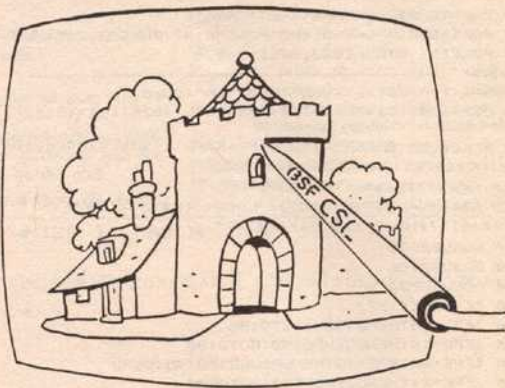
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Do your Run/Stop and Restore keys often fail? Do you want to come out of those crashes?! Or get into those unbreakable programs?! Then what are you waiting for, get yourself a **BREAKER!!** Reset switch and let your computer know who is the boss!! Breaker can be connected to your machine in seconds, no soldering. Included with the Breaker is a copy of basic recovery software on tape. Now available for any CBM 64 or Vic 20.

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## Smooth operator

Andrew Burgess shows how to produce smooth scrolling in machine code for the ZX Spectrum

Here is a short machine code routine that utilises the finest possible scrolling on a 48K Spectrum! I have found it most useful in my own programs, and I am sure that you will in your own.

To demonstrate this, first type in Program 1. This will Poke the machine code into memory. Save it on a blank tape, and then type in Run. Save the machine code it generates with, Save "M/C" Code 62000, 100. In any case, the code is now in the Ram of the Spectrum.

New the program with New (not Print Usr 0). Now type in the Demonstration program,

and Save it to tape. If all is well, when you type Run, the message will be scrolled from right to left across the top line of the display. You can easily change the message by typing in a new Line 20, altering As as you wish. To break out of the program, keep Caps Shift and Space pressed down for a time.

If something has gone wrong, load up the first program and check the Data statements. When loading the machine code from power up, remember to use Clear 61999:Load "" Code.

Having succeeded in making the message scroll effortlessly across the screen, you may

wish to use the routine in your own programs. To do this you will need Lines 9800 and 9810 of the demonstration routine somewhere within your own program. Use Gosub 9800 to poke your message into memory, where it is held as As. The variable Y represents the row in which the message will be printed. The message itself has a maximum length of 65536 characters.

Cosub 9810 is used to print and scroll your message. I suggest you experiment with the Ink values in Lines 9810 and 10 to change the colour of the message. If you are not running with black paper, then you will have to change the numbers in the Poke and after Ink. The new numbers should be: Ink (colour of paper), Poke 22528+31+(y\*32), (the colour of the paper times eight).

## &gt; PROGRAM 1

```

0001 REM *****
0002 REM MESSAGE SCROLLER **
0003 REM **
0004 REM BY ANDY J. BURGESS **
0005 REM **
0006 REM 2nd JUNE 1984 **
0007 REM **
0008 REM *****
0009 CLEAR 61999
0010 FOR n=62000 TO 62100
0011 READ a
0012 POKE n,a
0013 NEXT n
0014 DATA 00,00,205,1,0243,1,55
0015 DATA 00,00,148,04,00,197,09
0016 DATA 00,00,215,05,00,00,02
0017 DATA 01,015,005,00,00,015
0018 DATA 00,0,197,6,159,14,8,197
0019 DATA 00,0,170,34,04,00,193,5
0020 DATA 01,058,7,11,106,00,177,00
0021 DATA 01,053,1,16,106,00,00,005
0022 DATA 01,051,001,106,177,00,005
0023 DATA 03,051,6,31,106,00,00,005
0024 DATA 0,054,4,43,106,00,198,05
0025 DATA 119,055,16,041,04,004
0026 DATA 33,0,0,005,165,242,120
0027 DATA 163,0,0

```

## &gt; DEMONSTRATION

```

10 BORDER 0: PAPER 0: INK 7: C
20 LET a$="..... THIS ROUTINE
   WILL SCROLL A MESSAGE ACROSS TH
   E SCREEN": LET y=0
30 GO SUB 9800
40 GO SUB 9810
50 GO TO 50
60 FOR n=1 TO LEN a$: POKE 620
   +n,CODE a$(n): NEXT n: LET a=6
7000: POKE a+7,LEN a$-256*INT (L
   EN a$/256): POKE a+8,INT (LEN a$
   /256): POKE a+16,y: POKE a+31,17
   -(y/8): POKE a+44,175-(y/8)-8
80 POKE 22528+31+(y*32),0: INK
   0: RANDOMIZE USR 62000: RETURN

```

## &gt; ASSEMBLY LISTING (FROM ZEUS)

```

L,64
000010 ORG 62000
000020 ENT
000030 LD A,2
000040 CALL #1601
000050 DI
000060 LD BC,4
000070 LD HL,62100
000080 outer3 PUSH BC
000090 PUSH HL
000100 LD A,22
000110 RST #10
000120 LD A,0
000130 RST #10
000140 LD A,31
000150 RST #10
000160 POP HL
000170 PUSH HL
000180 LD A,(HL)
000190 RST #10
000200 LD B,6
000210 outer2 PUSH BC
000220 LD B,175
000230 LD C,6
000240 outer1 PUSH BC
000250 CALL #22AA
000260 JR shiftl
000270 aftsh POP BC
000280 DEC B
000290 LD A,B
000300 CP 167
000310 JR NZ,outer1
000320 LD BC,1950
000330 self DEC BC
000340 LD A,B
000350 OR C
000360 JR NZ,self
000370 POP BC
000380 DJNZ outer2
000390 POP HL
000400 INC HL
000410 POP BC
000420 DEC BC
000430 LD A,B
000440 OR C
000450 JR NZ,outer3
000460 EI
000470 RET
000480 shiftl LD A,(HL)
000490 SLA A
000500 LD (HL),A
000510 INC HL
000520 LD B,31
000530 sh1 LD A,(HL)
000540 SLA A
000550 JR C,set
000560 JR next
000570 set DEC HL
000580 SET 0,(HL)
000590 INC HL
000600 next LD (HL),A
000610 INC HL
000620 DJNZ sh1
000630 JR aftsh
000640 PO

```

## Take the money and run

A J Laurance presents a utility to display and auto-run programs on the QL

**B**oot is not a device for kicking the dog but a program to display a menu of programs and autoloading the selected program for the Sinclair QL.

The program is activated by the autoloading facility of the QL on powerup or reset. Any program called *Boot* on microdrive one will be automatically loaded and run after the powerup initialisation. The display on this program has been organised for the "TV" display option but could be modified for the monitor option if needed.

To create a datafile, type in *GOTO 2000*. To edit a single entry, type *change*. To save changed data, you type *save*.

Note that in the listing hash appears as a # sign, and underscore as . Also the QL needs an 'intelligent' printer to produce listings, and my printer will not automatically overspill on to another line, but stops printing, and needs both carriage return and line feed which the QL does not produce. As a result I had to produce the listing as a data file to import to the Quill word processor, in order to use the excellent Quill printer driver. Due to Quill's word wrap which you cannot switch off, a new line is produced too soon, so as not to break up words. Thus, the listing does not look exactly as it does on the screen (eg, Line 2100).

The method by which I achieved this might be of interest, as I have seen it stated that this feat is not possible. The following actions are done in direct mode so as not to appear in the listing itself.

Firstly, *OPEN ← new££, mdrv1 ← listing ← exp*. A channel to microdrive is opened called *listing←exp* (for export to Quill it will not work without the EXP). Next *LIST ££*. The listing is sent to the microdrive file. Finally, *CLOSE££*; (Very important as the lack of end of file marker will cause the whole of Quill to crash).

Load *Quill*, enter "Files" via the commands and press *I* for import, followed by the filename "listing" (without the exp). The listing will then be on a valid Quill file.

### Program Notes

**Line 1000 to 1040** Initialises screen and creates arrays for data. Up to nine programs can be placed on the menu. By omitting the commentary, more could be displayed on screen.

**Line 1060 to 1300** Reads data for titles and commentary from file called *Boot* data. Not all nine possible choices have to be filled.

**Line 1320 to 1350** Reads keyboard for option one to nine.

**Line 1360 to 1400** Loads and runs selected program.

**Line 2000 to 2100** Creates data for title and description.

**Line 3000 to 3050** Procedure for data input.

**Line 3100 to 3130** Procedure to change data.

**Line 4000 to 4080** Procedure to save data.

```

99 :
100 REMark Boot programm
101 :
102 REMark wafer must be in drive 1
999 :
1000 REMark display
1001 :
1005 MODE 4:CSIZE 2,1:PAPER 0:INK 7
1010 PRINT'          BOOT Autoload'
1020 CSIZE 1,0
1030 DIM title$(9,16)
1040 DIM description$(9,80)
1060 OPEN+IN ££,mdrv1+boot+data
1070 FOR n=1 TO 9
1100 INPUT££,title$(n)
1110 INPUT££,description$(n)
1130 CSIZE 2,0:AT n*2,14: PRINT n! title$(n)!n
1140 CSIZE 1,0: PRINT description$(n)
1300 END FOR n
1310 CSIZE£0; 2,0:PRINT£0;'press number key for required
    program':CSIZE £0,0,0
1320 REPEAT inputkey
1330 LET n$=INKEY$(-1):LET n=CODE(n$)
1340 IF n<56 AND n>47 THEN EXIT inputkey
1350 END REPEAT inputkey
1360 CLS:CSIZE 2,1:AT 5,8:PRINT "loading "title$(n$)
1400 LRUN 'mdrv1+'&title$(n$)
1999 :
2000 REMark create datafile
2001 :
2030 DIM title$(10,16)
2040 DIM description$(10,80)
2050 FOR n=1 TO 9
2060 input+data
2070 IF title$(n)=''THEN EXIT n
2080 END FOR n
2100 PRINT£0;'Change any data? ':LET a$=INKEY$(-1):IF a$=
'y' OR a$='Y'THEN change:GO TO 2100
2110 save+data
2200 $TOP
2999 :
3000 REMark data input
3010 DEFINE PROCEDURE input+data
3030 PRINT£0;n!'program name-':INPUT title$(n):PRINT
    n!title$(n)
3040 PRINT£0;n!'comment- (80 chars)'\:INPUT description$
(n):PRINT title$(n)
3050 END DEFINE
3100 DEFINE PROCEDURE change
3110 PRINT£0;'input number to change ':LET n=INKEY$(-1)
3120 input+data
3130 END DEFINE
3999 :
4000 REMark save data
4001 :
4005 DEFINE PROCEDURE save+data
4010 DELETE mdrv1+boot+data
4020 OPEN+NEW ££,mdrv1+boot+data
4030 FOR n=1 TO 9
4040 PRINT ££, title$(n)\description$(n)
4060 END FOR n
4070 CLOSE££
4080 END DEFINE
4100 :
30000 SAVE mdrv1+boot
    
```

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DEvised BY  
IAN LIVINGSTONE**

The storylines for "Eureka!" are by Ian Livingstone, whose "Fighting Fantasy" books have sold over 2,000,000 copies. He's dreamed up some rather nasty tricks and twists for you in this Epic, because he has also devised the cryptic clues and conundrums in the booklet that goes with the program. He's the one who knows the answers.

"Eureka!" was programmed by Andromeda teams led by Hungarians Donat Kiss and Andras Csaszar. It took the equivalent of 5 YEARS to create, and the skills of 4 graphic artists, 2 musicians and a professor of logic too. We told them to stretch the hardware's capabilities, and make sure you were kept awake for hours! They've done it...

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## Not on your Nellie

A challenging word game (with elephantine connections) for the Amstrad by Steve Lucas

In this game, you will be shown an anagram and will be asked to solve it. Each incorrect letter causes the mouse to move closer to Nellie the Elephant, and this will eventually scare Nellie away!

You can add extra data statements containing extra words, provided that the final data item in the list of questions is XXXX (see Line 940).

The number of incorrect guesses allowed is half the number of letters in the word plus two. This can be changed in Line 690 (see Rem in Line 700).

### Program Notes

10-50	select colours/mode
60-330	define characters
340-410	define graphics
420	titles
440	seed random number generator
450-470	initialise
480-510	define 3 text windows
510	select background colours for windows
520-820	main control loop
830-810	shuffle word
610-680	graphics
770-810	draw mouse

830-940	data for anagrams
960-1040	win game
1050-1100	lose game
1110-1150	instructions

### Variables

aa\$	graphics
score%	holds score
x%, y%, x,	
y	counting loops
a\$	read word
b\$	holds anagram
c\$	holds answer
a%	number of blank spaces to centre word
dd%	length of word
z	random number for shuffling
d	keyboard input

```

10 REM ** Nellie's Anagrams **
20 REM ** a game for the AMSTRAD CPC 464 **
30 REM ** by Steve Lucas 1984 **
40 INK 0,0: INK 1,20: INK 2,24: INK 3,6
50 MODE 1: BORDER 22
60 REM ** define the character set for graphics **
70 SYMBOL AFTER 229
80 SYMBOL 230,0,0,0,216,244,254,36,32
90 SYMBOL 231,0,0,7,159,191,127,31,16
100 SYMBOL 232,0,0,0,0,28,62,127
110 SYMBOL 233,128,128,0,0,0,0,0
120 SYMBOL 234,127,127,0,0,0,0,0
130 SYMBOL 235,252,252,0,0,0,0,0
140 SYMBOL 236,1,1,0,0,0,0,0
150 SYMBOL 237,196,132,132,128,128,128,128
160 SYMBOL 238,31,31,31,31,31,31,31
170 SYMBOL 239,252,252,252,252,252,252,252
180 SYMBOL 240,96,96,96,96,0,0,0
190 SYMBOL 241,240,240,240,252,252,204,236,196
200 SYMBOL 242,247,3,1,0,0,0,0
210 SYMBOL 243,123,128,128,112,112,112,96,96
220 SYMBOL 244,240,240,240,240,240,240,240
230 SYMBOL 245,63,31,31,31,31,63,127
240 SYMBOL 246,0,0,128,224,244,224,244,240
250 SYMBOL 247,252,255,255,255,255,255,255
260 SYMBOL 248,255,255,255,255,255,255,255
270 SYMBOL 249,3,15,255,255,255,255,255
280 SYMBOL 250,248,255,127,191,191,223,255,255
290 SYMBOL 251,253,254,254,159,159,255,255,255
300 SYMBOL 252,63,63,63,63,63,63,127
310 SYMBOL 253,0,0,0,0,0,240,240
320 SYMBOL 254,0,0,0,0,0,251,251
330 SYMBOL 255,0,0,0,0,0,7,15
340 REM ** data for elephant **
350 RESTORE
360 DATA 255,254,253,10,8,8,8,252,251,250,249,248,247,246,
10,8,8,8,8,8,8,8,245,248,248,248,248,248,244,10,8,8,8,8,8,
8,8,243,242,248,248,248,248
370 DATA 241,10,8,8,8,8,8,8,8,249,9,239,9,9,238,237,10,8,
8,8,8,8,8,8,9,236,235,9,9,234,233
380 aa$="": FOR x=1 TO 74: READ y
390 aa$=aa$+CHR$(y)
400 NEXT
410 aa$=STRING$(10,CHR$(0))+aa$
420 GOSUB 1120
430 REM ** random number set to random start **
440 RANDOMIZE TIME
450 RESTORE 830
460 score%=0: x%=INT(RND(1)*160)+1:FOR y=1 TO x%: READ a$
470 NEXT
480 WINDOW #1,1,40,1,10
490 WINDOW #2,1,40,11,15
500 WINDOW #3,1,40,16,24
510 PAPER #1,0: PAPER #2,1: PAPER #3,2
520 WHILE hX<999
530 b$="":READ a$:a$=UPPER$(a$):c$=a$: REM ** c$=word :
b$= shuffled word : a$ used for shuffling
540 IF a$="XXXX" OR a$="XXXX" THEN RESTORE 830: READ a$:
c$=a$
550 aX%=(40-LEN(a$))/2: REM ** adjust word to appear at
centre of screen **
560 dd%=LEN(a$)
570 FOR x=1 TO dd%
580 z=INT(RND(1)*dd%)+1
590 REM ** shuffle word **
600 IF MID$(a$,z,1)<>" " THEN b$=b$+MID$(a$,z,1): LET
a$=LEFT$(a$,z-1)+" "+RIGHT$(a$,LEN(a$)-z) ELSE 580
610 NEXT x
620 CLS: PEN #1,3: PRINT#1:PRINT#1,aa$
630 CLS #2
640 PEN #2,0: PRINT#2: PRINT#2," The Word is :-"
650 PEN #2,3: PRINT #2:PRINT#2,TAB(aX%);b$
660 CLS #3
670 PEN #3,0: PRINT#3:PRINT#3,TAB(13);"Your attempt :-"
680 PEN #3,3:PRINT#3
690 sX%=0:tX%=0:uX%=LEN(b$)/2+2: vX%=1: wX%=0
700 REM ** uX is used to set the number of wrong attempts
allowed to half the number of letters in the word +2...
you can adjust i to make it easier !
710 d$=INKEY$: IF d$="" THEN 710
720 d$=UPPER$(d$)
730 IF MID$(c$,vX,1)=d$ THEN LOCATE #3,aX+vX-1,5
:PRINT#3,d$: vX=vX+1 ELSE sX%=sX+1: GOSUB 780
740 IF vX=LEN(c$)+1 THEN tX=1
750 IF tX=1 THEN 950 ELSE IF sX=uX THEN GOSUB 1050
760 GOTO 710
770 REM ** draw mouse... to scare elephant **
780 PEN #1,2
790 LOCATE #1,2,6: PRINT #1,SCORE*(#3):CHR$(231):CHR$(230)
800 SOUND 1,478,30,15
810 RETURN
820 WEND
830 DATA umbrella,ample,welter,vaseline,understanding,
transparency,toxicologist,testimonial,succinct,ruffian,
reversend,proportional,pantograph,operetta,dissonance
840 DATA vehicle,petroleum,vapour,inhale,initiate,progress,
historical,disonant,distracton,councillor,clarify,calyx,
assortment,eclipse,prayer,adept,liberty,sectional,twitter
850 DATA secondary,curriculum,development,research,grammar,
envelope,inflation,index,lanquor,impetus,express,developer,
enlarger,vacuum,velocity,seasonal,musical,guitar,platinum,
future
860 DATA textile,photography,testimonial,primary,relation,
rehabilitation,pentagon,incense,contrite,admiral,united,
blazonry,canal,cleaver,honey,outsider,thumb,suitable,thrush,
pendulum
870 DATA literature,graduate,shoulder,turkey,sincerity,
denomination,democracy,purulent,retrospective,supercilious,

```

Continued over the page

```

aprom,temperatur e,violation,submerge,seedling
880 DATA navigate,france,damsel,brocade,attorney,stomach,
renewal,mechanism,lingual,jumper,litmus,prescription,
airport,fumigate,infestation,foreboding,feudal,duodenum,
contrast
890 DATA numeral,navigation,meridian,ligament,magnetism,
leash,jasmine,insect,impassioned,humour,general,distractio
n,composition,discordance,penitence,overt,tuneful
900 DATA sensational,tangerine,wraith,gerontology,wombat,
trinity,suspicion,sequester,repellent,assortment,adenoids,
chocolates,conciliation,enwind,hostel,parliament,reason,
plague,penumbra,computer,orchid
910 DATA revealed,theocratic,sociable,layer,blister,
disintegrate,irrational,peccable,sentimental,cabaret,ascent
,explanation,christian,greenhouse,ordinary,magazine,death,
ionosphere,microscope,gardening,happiness,philosophy
920 DATA anagram,philately,physical,burocracy,numismatics,
archaeology,industrial,printing,advanced,layer,cassette,
recording,typewriter,album,keyboard,display,modular,carpet,
kitchen
930 REM *** you can add extra words in data statements
here ...but make sure that the final statement is xxxx
940 DATA xxxx
950 CLS:PRINT aa$
960 PEN 3:LOCATE 3,3:PRINT"Well Done !!"
970 RESTORE 1110: FOR x=1 TO 34
980 READ d: SOUND 5,d,20,15
990 FOR t=1 TO 10: NEXT t
1000 NEXT x
    
```

```

1010 PEN 1: LOCATE 2,22: PRINT"Press <Space Bar> for
another game ."
1020 f$=INKEY$: IF f$<>" " THEN 1020
1030 RUN
1040 END
1050 CLS #3 :PEN #3,0: LOCATE #3,15,2: PRINT #3,"You Lose !!"
1060 LOCATE #3,1,4:PRINT#3,"It was 1-"
1070 PEN #3,3 :LOCATE #3,16,4: PRINT#3,c$
1080 PEN #3,0: LOCATE #3,3,0: PRINT#3,"Press <SPACE BAR>
for another game"
1090 g$=INKEY$: IF g$<>" " THEN 1090
1100 RUN
1110 DATA 239,239,213,239,190,239,239,213,190,179,159,239,
239,213,190,179,159,239,239,213,239,159,239,142,239,127,
239,127,142,159,179,190,213,239
1120 RESTORE 1110 :CLS: LOCATE 12,2: PEN 3: PRINT" Nellie's
Anagram"
1130 PEN 1:PRINT:PRINT:PRINT aa$
1140 PRINT:PRINT:PRINT:PRINT:PRINT:PRINT" In this game,
you must try to solve the anagram before the mouse scares
Nellie the elephant away !"
1150 PRINT:PRINT:PRINT:PRINT:PRINT" by Steve W. Lucas
July 1984"

1160 FOR x= 1 TO 34
1170 READ d: SOUND 5,d,20,15
1180 FOR t=1 TO 0: NEXT t
1190 NEXT x
1200 RETURN
    
```

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Commodore 64

# CRYSIS

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# THE EDGE

## Top of the Charts

Bring a little colour into your statistics with this histogram construction program for the BBC B by Neil Barnes

The representation of statistical data, especially in a graphically appealing form, is useful in both the business and home environments.

This program allows the user to enter data (along with headings) which is then produced in colourful Mode 1 graphics as a histogram. The routine also includes auto-

matic re-scaling of numbers and labels on the axes.

With the Rem statements and structured programming techniques used, the listing should be quite easy to follow.

### Program Notes

Prochar

Main bar graph routine

Procbig	Prints titles
Procescale	Re-scales all data
Proclabel	Prints title and labels
Procnumber	Numbers axis
Procborder	Draws borders and axis
Procdrawbars	Draws bars
H	Used for titles
ID	Number of pieces of data
barscale	Determines scale
high	Highest item of data
C, F, K, Kl, T, Q, W, Z	For-Next variables
AS, X, C	Parameters in Procbig
R\$	Validates input
T\$	Title of graph

```

10 REM *****
20 REM ***** Charts *****
30 REM ***** Neil Barnes *****
40 REM *Bishop Rawstorne School *
50 REM *Croston,Lancashire *
60 REM *& the '0'level hopefuls *
70 REM *****
80MODE7
90 REM * Turn cursor off *
100 VDU23;8202;0;0;0;
110barscale=1
120 REM * Titles *
130 VDU23,224,255,255,255,255,255,
255,255
140FORH=0TO3:PRINTTAB(0,H)CHR#157:NEXT
150PRINTTAB(14,1)CHR#141CHR#133"CHARTS"
160PRINTTAB(14,2)CHR#141CHR#134"CHARTS"
170VDU31,1,6,129:PRINT"Designed and
written by";VDU131:PRINT"NEIL BARNES":
VDU31,13,8,130:PRINT"(C) 1984"
180VDU31,1,10,134:PRINT"This program
enables the user to:VDU134:PRINT"
represent statistical data in a":VDU134
:PRINT" colourful and interesting way."
190 VDU31,6,20,133:PRINT"Press SPACE BAR
to continue":REPEAT UNTIL GET=32
200 PROCbar
210DEFPROCbar:CLS:PROCbig("BAR CHART",
12,134):PRINTTAB(14,3)"=== ====="
220VDU31,1,5,129:PRINT"How many items of
data do you wish to":VDU129:PRINT" re
present";VDU131:PRINT"(1-20)":INPUTTAB
(19,6)ID
230IFID<10RID>20THENPRINTTAB(0,6)SPC(40)
: SOUND1,-15,200,2:GOTO220
240DIMchart(ID)
250high=0
260FORW=1TOID
270 REM * Enter data *
280VDU31,1,8,130:PRINT"Enter value of
bar ";W
290INPUTTAB(10,9)chart(W)
300P#=STR#((chart(W)))
310IFASC(P#)<49ORASC(P#)>57THENPRINTTAB
(0,9)SPC(40):SOUND1,-15,200,2:GOTO290
320IFchart(W)>highTHENhigh=chart(W)
330IFhigh>20THENbarscale=INT(high/20)
340SOUND1,-15,180,2
350PRINTTAB(0,9)SPC(40)

```

```

360NEXT
370VDU31,1,10,133:PRINT"Enter title of
chart":INPUTTAB(24,10)T$
380IFLEN(T#)>8THENPRINTTAB(0,10)SPC(40)
:SOUND1,-15,200,2:GOTO370
390 VDU23;8202;0;0;0;:PRINTTAB(2,18)
"Press 'F' to end viewing of graph":
PRINTTAB(6,23)"Press SPACE BAR to cont
inue":REPEATUNTILGET=32
400 PROCrescale
410 VDU22,1:VDU23;8202;0;0;0;
420 REM * Call major procedures *
430 PROClabel
440 PROCnumber
450 PROCborder
460 PROCDrawbars
470DEFPROCbig(A$,X,C):FORQ=0TO1:PRINT
TAB(X,Q+1)CHR#141CHR#C A$:NEXT
480ENDPROC
490DEFPROCrescale
500 FORZ=1TOID:chart(Z)=INT(chart(Z)
/barscale):NEXT
510 ENDPROC
520 DEFPROClabel
530 COLOUR1
540 PRINTTAB(INT((36-LEN(T#))/2));T#
550 ENDPROC
560 DEFPROCnumber
570 REM * Set printing fields *
580 @%=1
590 FOR C=27 TO 3 STEP-3
600 PRINTTAB(0,30-C)INT(C*barscale)
610 NEXT
620 ENDPROC
630 DEFPROCborder
640 FOR T=3 TO 29:PRINTTAB(3,T)CHR#224
:NEXT
650 FOR T=4 TO 39:PRINTTAB(T,29)CHR#224
:NEXT
660 ENDPROC
670 DEFPROCdrawbars
680 REM * Draw bars on screen *
690 FOR K=1 TO ID
700 FOR K1=1 TO chart(K)
710 COLOUR2:PRINTTAB(3+K,29-K1)CHR#224
720 NEXT
730 NEXT
740 F=GET:IF F=70 THEN CLS:RUN ELSE
GOTO740

```

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## Commodore 64

# Firequest

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# Open Forum

Open Forum is for you to publish your programs and ideas. Take care that the listings you send in are all bug-free. Your documentation should start with a general description of the program and what it does and then give some detail of how the program is constructed.

## Equation Solver

on BBC

```
10 g=9.81
20 @%=%0102020A
30 REPEAT
40 CLS
50 PROCgetinfo
60 PROCcalculate
70 PROCprintout
80 PRINT'' Another set of readings (Y/N) ?":
90 UNTIL GET#<>"Y"
100 PRINT
110 END
120 DEF PROCgetinfo
130 PRINT'' Enter values in metres & degrees"
140 INPUTTAB(0.4)"What is the speed of Projection ? "u
150 INPUTTAB(0.6)"What is the angle of Projection ? "theta
160 ENDPROC
170 DEF PROCcalculate
180 timeofflight=(2*u*SIN(RAD(theta)))/g
190 range=(u*u*SIN(RAD(2*theta)))/g
200 maxrange=u*u/g
210 maxheight=(u*u*(SIN(RAD(theta))^2))/(2*g)
220 ENDPROC
230 DEF PROCprintout
240 PRINT''
250 PRINT"The time of flight is "timeofflight;" secs"
260 PRINT"The horizontal range is "range;" m"
270 PRINT"The maximum range Possible is "maxrange;" m"
280 PRINT"The maximum height is "maxheight;" m"
290 ENDPROC
```

Equation Solver  
by Robert Turner

# Baud Walk



## Warning word

**A** note of caution this week about any modem users who are planning to attempt to use some of the more commercial and 'professional' databases.

There are many hundreds of different databases accessible via modems, ranging from financial resources, through to patent, scientific and medical research.

A regular reader of Baud

Walk, Harvey Nyman of Harrow in Middlesex, points out that the costs of some of these services is very high, with modest usage clocking up bills of around £150 a month.

If users do want to delve more deeply into these types of databases, I recommend you talk to the Online Information Centre, based in London (tel 01-430 2502).

Searching techniques on host systems like *Dialog* involve professional training, otherwise searches can be expensive and inconclusive. Certainly these types of databases will develop a breed of Information Brokers, skilled at extracting the maximum amount of information at the cheapest possible cost. When you consider some databases charge

upwards of £1 a minute, it could turn into big business.

Next week I will be publishing the numbers of the latest services to come to my attention. If you know of any, please drop me a line here at *PCW*, and also detail the types of services offered plus any costs associated with them where applicable.

A series of books about baud walking are being published this month by Century Communications and one, in particular, promises to be very interesting. Entitled, *Talking to the World with your Home Computer*, it is written by an acknowledged bulletin board expert John Newgas, who operates what is probably the UK's biggest board.

John's book will appeal both

to the beginner and the hacker who wants to get to grips with the detailed technicalities of hooking up.

It usefully explains methods used for making micros communicate with one another and tells you how to set up your own bulletin board service. More details when I get a review copy — are you listening, Century?

**Baud Walk** is a new weekly column with news on networking, databases, reviews of modems and software and points of contact for information.

Any readers with experience of networking are asked to send their experiences or news of services to: Robin Wilkinson, Baud Walk Popular Computing Weekly, 12-13 Little Newport Street, London WC2R 3LD.

He can also be contacted on Prestel mailbox 01993727.



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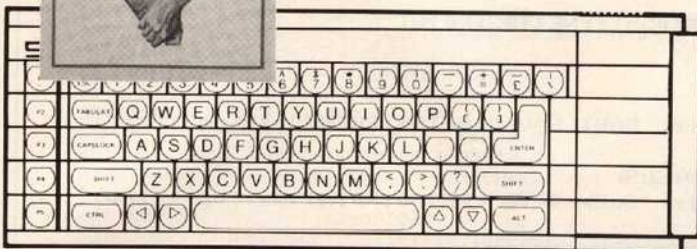


Just released from Sunshine is the latest book from the highly acclaimed QL Classics series – and it's called *Quill, Easel, Archive & Abacus on the Sinclair QL*. All these packages, which are included with every QL sold, are recognised as powerful in their own right, but when working together with one another, they become highly effective problem-solving tools for business.

Alison McCallum-Varey's book introduces you to all the four packages, but, most importantly, shows you exactly how to run them as a complete system.

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### Spectrum 48K

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## Tape Player

on Oric

This program enables a tape player to be tested and the volume level to be set correctly. The program sets up a screen display, largely of 'U's which were chosen because their Ascii code is hex 55, binary

01010101.

The screen is treated as a block of memory and saved to tape, fast at first followed by slow. The block of memory may then be loaded by typing *Load*. Whilst the loading takes place the characters will be brought to the screen and, therefore confirm that the cassette is working. This allows the volume control to

be adjusted to the optimum level.

Line 1160 restricts the *Print* statements to two lines and thus allows instructions to be printed on the screen without disrupting the display. The two variables used are general purpose numeric variables. In both programs the *Rem* statements are not subject to *Cotos*, etc, and may, therefore, be omitted.

```
995 REM*****
996 REM* PROGRAM TO SET VOL LEVEL *
997 REM* WHEN LOADING FROM TAPE *
998 REM* By Barbara Prowse 1984 *
999 REM*****
1000 CLS:PAPER7:INK0
1020 PRINT:PRINT
1040 GOSUB2000
1060 FORG1=1TO16
1080 FORG2=1TO37:PRINTCHR$(#55);:NEXTG2:PRINT
1120 NEXTG1
1140 GOSUB2000
1160 DOKE623.2:CLS
1170 PRINT"Press ANY KEY for FAST SAVE":GETG$:PRINT"Saving (fast)..
*"
1180 CSAVE"" ,A4B120,E49120:CLS
1200 PRINT"Press ANY KEY for SLOW SAVE":GETG$:PRINT"Saving (slow)..
*"
1220 CSAVE"" ,A4B120,E49120,S:DOKE623,27
1240 CLS:END
2000 PRINT"*****"
2020 PRINT"* PROGRAM TO TEST TAPE VOLUME LEVEL *"
2040 PRINT"* By Barbara Prowse 1984 *"
2060 PRINT"*****"
2080 RETURN
```

Tape Player  
by Barbara Prowse

## Microradio

GW6JJN



### Radio waves

**R**adio Teletype or RTTY is still the most popular subject in the letters to Microradio.

First of all, just what is RTTY? Simply, it is a means of sending written information over the radio waves, rather like telex. In the old days in order to send or receive RTTY, large mechanical units were used which were both expensive and noisy. Now, with the advent of the

home computer, sending or receiving RTTY is fairly simple. RTTY is transmitted by means of a code which represents letters and figures called the Murray-Baudot code.

Radio Teletype is the means by which many radio amateurs communicate across the world as well as through satellites. Other organisations using RTTY are the world's news-agencies, such as Reuters, Tass and Associated Press. Various commercial organisations use this means of communication as well as weather stations both manned and automatic around the world.

There is certainly no shortage of RTTY stations on the airbands and the biggest advantage of using radio to send and receive data is that the airwaves are free, which is

more than can be said for the telephone lines. The kind of radio receiver that is required for radio teletype reception is either an amateur or general coverage receiver. It needs to be able to receive short-wave bands between one and 30 megahertz. RTTY can also be heard on VHF radio around 144 megahertz.

In addition to the radio receiver and the computer, you will need an interface/terminal unit to connect the computer to the radio. There is one exception to this: the Dragon. Partly due to the construction of the Dragon, but mainly due to clever programming, Grosvenor Software of 22 Grosvenor Road, Seaford, Sussex, provides a complete RTTY package for the Dragon which will put you on air with software alone.

The interface/terminal unit is necessary for most computers to do two important things. The first is to convert the computer's parallel way of talking to things to the serial form needed for general communication to the outside world. The second thing that such a unit does is to convert the computer's electrical impulses to audible tones that can be transmitted. It takes care of the baud rates concerned and generally tidies up the signal.

Ray Berry GW6 JJN

This series of articles is designed for radio and microcomputer enthusiasts alike. If you have any queries that you want answered, hints and tips to share, or topics that you would like to see covered, write to: Ray Berry, Microradio, Popular Computing Weekly, 12-13 Little Newport Street, London WC2R 3LD.

## Wipe Out

on Vic20

This is a game for the unexpanded machine. It involves moving your man around the screen, wiping out all the blocks before your time runs out. After each new wave,

you have five more blocks to wipe out but you still only have 40 seconds.

### Program Notes

0-9 Sets up variables and displays title page  
10-50 Prints up blocks  
70-71 Gives warning sound  
80-480 Main loop

480-490 Routine after each wave  
10000-10600 End of game routine  
10000-10070 Instructions

### Variables

K = Number of blocks  
W = Waves  
TIS = Time  
A = Score

```

0 REM*****
1 REM** WIPE OUT **
2 REM** BY **
3 REM**KEVIN WRIGHT**
4 REM*****
5 REM*****ALL REMS CAN BE LEFT OUT*****
6 K=20;W=1
9 GOSUB10000
10 POKE36879,25;X=20;POKE36878,15;TI$="000000";A=0;POKE198,0;B=1
20 PRINT"□";POKE650,255
30 FORB=BTOK;R=INT(RND(1)*490)+7686
40 IFPEEK(R)=160THENB=B;GOTO30
41 IFR=7779THENB=B;GOTO30
50 POKE36874,200;POKER,160;POKER+30720,(INT(RND(1)*6)+2);POKE36874,0;NEXT
70 FORM=1T03;POKE36874,240;FORH=1T0300;NEXT;POKE36874,0;FORB=1T0200;NEXT;NEXT
71 TI$="000000";T=7779
80 PRINT"□";TI$;IFTI$>"000040"THEN1000
81 IFA=KTHENPOKE36876,0;MIF=TI$;GOTO400
90 POKET,81;POKET+30720,0
400 PRINT"□";TI$;IFTI$="000040"THEN1000
401 POKE36876,0;GETA$;IFA$=""THEN400
410 IFA$="P"THENPOKET,32;T=T-22;IFPEEK(T)=160THENPOKE36876,INT(RND(1)*70)+170;A=A+1
411 IFT<7680THEN T=T+22;GOTO80
420 IFA$=","THENPOKET,32;T=T+22;IFPEEK(T)=160THENPOKE36876,INT(RND(1)*70)+170;A=A+1
421 IFT>8185THEN T=T-22;GOTO80
430 IFA$=";"THENPOKET,32;T=T+1;IFPEEK(T)=160THENPOKE36876,INT(RND(1)*70)+170;A=A+1;GOTO80
440 IFA$="L"THENPOKET,32;T=T-1;IFPEEK(T)=160THENPOKE36876,INT(RND(1)*70)+170;A=A+1;GOTO80
450 GOTO80
460 POKE198,0;POKE36879,254;PRINT"□";Z$="YOUR TIME WAS "
461 FORT=1T014;POKE36874,250
462 PRINT"□";LEFT$(Z$,T);FORH=1T0100;NEXT;POKE36874,0;NEXT
463 PRINT"□";LEFT$(Z$,T);FORJ=1T0100;NEXT;POKE36874,0;NEXT
467 PRINT"□";LEFT$(Z$,T);FORK=1T0100;NEXT;POKE36874,0;NEXT
468 V$="HIT A KEY FOR NEXT";M$=" WAVE"
469 FORT=1T018;POKE36874,250
470 PRINT"□";LEFT$(V$,T);FORJ=1T0100;NEXT;POKE36874,0;NEXT
471 PRINT"□";FORT=1T012;POKE36874,250
472 PRINT"□";LEFT$(M$,T);FORG=1T0100;NEXT;POKE36874,0;NEXT;POKE198,0
480 WAIT198,1
490 K=K+5;W=W+1;GOTO10
500 GOTO480
1000 PRINT"□";POKE36879,254
1010 FORT=1T00STEP-.1;POKE36878,T;POKE36877,170;NEXT
1020 PRINT"□";LEFT$(T,1);POKE36877,170;NEXT
1021 PRINT"□";LEFT$(T,1);POKE36877,170;NEXT
1022 PRINT"□";LEFT$(T,1);POKE36877,170;NEXT
1030 GETA$;IFA$=""THEN1030
1040 IFA$="Y"THENPOKE36877,0;RUH
1050 IFA$="N"THENSYS64802
1060 GOTO1030
10000 PRINTCHR$(14);PRINT"□";POKE36879,254
10010 PRINT"□";LEFT$(T,1);POKE36877,170;NEXT
10020 PRINT"□";LEFT$(T,1);POKE36877,170;NEXT
10030 PRINT"□";LEFT$(T,1);POKE36877,170;NEXT
10040 PRINT"□";LEFT$(T,1);POKE36877,170;NEXT
10050 PRINT"□";LEFT$(T,1);POKE36877,170;NEXT
10060 WAIT198,1
10070 PRINTCHR$(142);RETURN
20000 REM**SAVE THIS PROGRAM BEFORE RUNNINGIT!!!!**

```

Wipe Out  
by Kevin Wright

## Character set

on QL

This short utility produces a large version of the QL character set. Note that the 'to the power of' sign has lost its tail on my printer and appears like a Chinese hat.

```
90 REMark ** E.A.Duncan-Dunlop
1 DAN-Y-LAN ABERKENFIG BRIDGEND
MID GLAM CF32 9AB
100 MODE 4 :CSIZE 3,0
110 LET sv = 41443
120 REPEAT loop
130 LET sv=sv+1
140 LET num =PEEK(sv)
150 AT 19,10 : PRINT CHR$(num)!!sv!!num
160 binary
170 LET s=sv-40000
180 LET v=s MOD 9
190 IF v=1 THEN PRINT CHR$(10)
200 END REPEAT loop
210 DEFine PROCedure binary
220 FOR n=7 TO 0 STEP -1
230 PRINT CHR$((num DIV 2^n)+31)!!
240 LET num=num MOD 2^n
250 NEXT n
260 END DEFine
```

Character Set  
by Duncan Dunlop

## Arcade Avenue



### Cheat mode

You will never guess what ... we've actually had some letters from people who have computers other than Spectrums! Let's celebrate with a couple of desperate pleas for help. First of all from Laurence Moran of Dublin. "Dear Tony, I have a CBM 64 and at the moment I am playing *China Miner*. It's a brilliant game. It took me a long time to get past the screen called 'Horace goes Walkabout' and I have just managed to reach screen 14 — 'The Observatory'. Do you or your readers know any *Pokes* to get infinite lives or to eliminate all the monsters as in *Jet Set Willy* — I would be very grateful." So how about it — get hacking you lot and let's have some *Interceptor Pokes*. Incidentally *Interceptor*, who churn out great Commodore games at an incredible rate of knots, have lately started to

produce programs for the Spectrum. They started with a couple of pretty good adventures and have now released the odd arcade game, such as *Tiler*, which is good news. Hopefully we'll soon see some games of the quality of *Arabian Nights* (unfortunately minus the excellent music) for this machine — certainly a company to watch.

Along similar lines comes a letter from Terry Ireland of London. "I recently purchased *Alligata's Blagger* for my BBC B. Having played for several days I have only reached as far as the fifth screen — without much hope of getting any further. Can anyone tell me some cheat details for this program — ideally extra lives. How on earth you can score the 10,000 necessary to get just one extra life I will never know." Ironically, Terry, I have got some cheat tips for *Blagger* this week — but it's for the wrong micro! Stephen Bailey of Carterton has found out how to choose which screen you start on with the Commodore version (but it might be worth trying a similar approach on the BBC). "First you have to tap the space bar (the screen shouldn't change

but the lives should change to 5). Then type any of the following keys — *Ctrl A* to *Ctrl Z* respectively will put you on screens 2-27. *Ctrl* and Square bracket ([]) gets you onto screen 28. *Crsr* → ← puts you onto screen 29 and *Clr Home* puts you onto screen 30."

Staying with the Commodore, Graham Mash of Wakefield has the following high scores and tips: "*Aztec Challenge* by Cosmi (sold by U.S. Gold in this country) — phase 3, level 4. *Arabian Nights* by *Interceptor* — level 5 (where I am stuck). *Trollie Wallie* by *Interceptor* — 25 objects. *Son of Blagger* by *Alligata* — 157,000 (57 screens). *Guardian* by *Alligata* — 319,450 (21 attack waves). I find *Guardian* is better on the keyboard. If you find it boring shoot all the humans and it really hots up! (A bit inhumane, don't you think Graham?). If you type 'Goats' on the title screen of *Revenge of the Camels* then 'cheat mode' appears and any key press will move you to the next level.

"Incidentally the speech on *Arabian Nights* can be reproduced exactly with a program called *Big Mouth 64* and this speech can be included in your

Basic programs. Finally, beware of Activision's *Decathlon*. I've already broken two joysticks but I still play it."

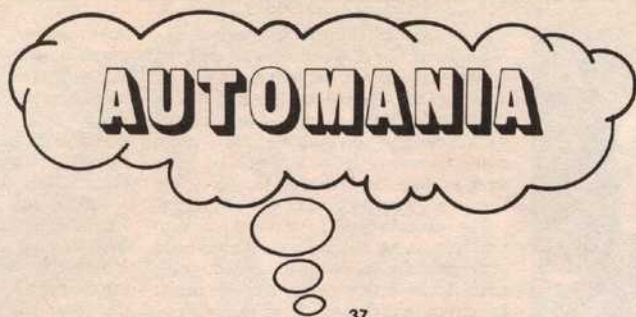
And now to a different computer, Gary Ardern of New Mills, Cheshire has scored 1,081,680 on the 61st level of *Chuckie Egg* on his *Dragon 32*. He suggests that "if you get on the lifts jump up and down, then when you reach the top you will fall down to the next lift" (But why?)

Finally this week, I have my own plea for help. Can anyone tell me how to get past screen 14 of *Monty Mole* from Gremlin Graphics, the second screen with the overhead pipes, as I am faced with an impenetrable barrier and get killed when I touch the railway lines. Where am I going wrong?

Tony Kendle

The Arcade Corner is a new section for anyone who enjoys playing arcade games. If you have any comments, from playing tips on difficult games or programs you'd particularly like to praise (or blame) then write to: Tony Kendle, *Arcade Avenue*, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

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# Tony Bridge's Adventure Corner



## Redesigned Quill

Last week, I looked at some new adventures, and there are still many left to look at. I found the *Quill* adventures to be extremely good — it seems that the *Quill* is undergoing the same transformation as most software: a "honey-moon" period, when authors gingerly feel the temperature of the water, followed by a period when imagination goes hand-in-hand with technical expertise. Thus, the first *Quill'd* programs took the program at face value, using the basic facilities. The authors of the programs recently released are delving deeper into the secrets of the *Quill*, to bring us ever better adventures.

Ross Harris, trading as Anubis Software, sent me, a long time ago, a *Quill'd* adventure called *The Dunshalt Donut*. The intriguing name refers to a nearby village in Fife, Scotland, and many of the characters mentioned in the adventure will be recognisable to people living in the neighbourhood. I'm mentioning it now for two reasons — the first is that Ross has since repackaged the game, and it now comes complete with a little book. It's only ten pages, but is very funny and stylish, as well as giving the run-down on what you have to do.

The adventure starts in a house, in which there are several strange locations (including the bathroom, which features a smell "as if something had died here recently") and several objects. Among the puzzles are: a toilet bowl which must surely hold some awful secret and Huckle the Dog — there is

a tin of dog meat in the kitchen as well as a leg of lamb, one of which must surely keep him from biting you, but which one I've not yet found out. The biggest puzzle is how to get out of the house — I managed, once, but can't remember how I did it! Moral — make notes! There's a lot of atmosphere here, even in these few opening locations, and there's not a single Troll or Goblin in sight.

The second reason I mention this adventure here, is that the character set has been very tastefully re-designed, and the program looks much nicer than the usual Spectrum *Quill'd* game. Ross has recently offered *The Donut* for sale at a very reasonable £2.50, on Micronet, so for those of you who are able, buy it now... There is a problem, of course, in that he hasn't worked out how to get the book through the phone lines yet... Anubis Software, 36 The Riggs, Auchtermuchty, Fife.

*The Key to Time* is the final *Quill* program that we'll look at for the moment! This one comes from Lumpsoft (where do they get these names?), of 44 New Briggate, Leeds, Yorks. This comes in the usual cassette box (I know that *The Quill* allows many individual authors to write and market their own machine-coded game, but I sometimes wish a little more was offered to the buyer). The outstanding feature of this *Quill'd* adventure is not the packaging, as we've seen, but the contents of the game itself.

The scenario itself is pretty mundane, and rather familiar: "The Time Storms have affected the ability of the Doctor's current persona to operate properly. The Time Lords have authorised that control is passed to you...". In the adventure, you must guide your earlier persona by sending him messages through the "Time Lord Telepathic Controller", cunningly disguised as Sinclair Spectrum.

So far, all is pretty standard *Quill* stuff, but the display is different from the usual fare. The first thing you'll notice is that messages (for example, the Inventory) scroll up from the bottom of the screen, rather than suddenly appearing mid-screen, as is usual. Then, commands are kept on-screen, so that previous mistakes can be studied. The Help command, usually a source of rather sarcastic comments of the "You're on your own, dummy" variety, is, like much of this adventure, rather more

imaginative. Ask "Help Dalek", for example, and a little fact-sheet, like the *Hitch-Hiker's Guide*, scrolls up to give you interesting information. The adventure itself is of the usual object-and-puzzle variety, but all the bells and whistles tacked on to it make an absorbing, colourful and welcome change from the usual *Quill'd* effort.

Staying with the Spectrum for a while longer, many of you will now be hunched over the final part of *The Ket Trilogy* from Incentive Software of Reading. You'll know that the prize for the first person to complete the adventure is a video recorder worth £400, which can't be bad. The final part is called, simply, *The Final Mission*, and features the fast loading and protection system of power *Powerload 48*. Ian Andrews, worried that some players may have given up at the last hurdle, has passed on a hint to me, so that *Temple of Vran*, the second part, may be finished. You must remember that Wizards are totally magical — therefore, you *must* have the four magical items (Hat, Robe and so on), and *Drop* everything else. Then you will get the next part of the sentence, and be able to progress to the third part, and your chance at that video.

I spoke last week of a couple of new adventures for the QL, which reminds me of a letter I received some time ago, from Tony Lambert, of London SE9. He was asking for help in a QL adventure called *The Pawn*. How does he capture the Horse with no legs? And where does the Guru keep his rice? The Horse sounds like a Knight to me, and as for the Guru — who can tell where a Wise Man's grains are? But, unless this is a very elaborate joke, I hope someone else can give some help.

The Dragon hasn't been well served with adventures, particularly, since the troubles with Mettoy/GEC but one of the better programs was *Ring of Darkness*, from Wintersoft. They have recently released the follow-up, called *Return of The Ring*. It is more of a role-playing game than a traditional adventure, in that the player can set up his own character and guide him through many adventures and perils. It features several scenarios; the planet, the forest moon and a final quest that is a 64-location adventure in its own right. Set on the mysterious planet of Ringworld (nothing to do, the authors say, with Larry Niven), the program features sophisticated 3-dimensional graphics, and machine-code arcade sequences.

## Adventure Helpline

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## Vic20 software

R Edwards Of Fords Heath, Shropshire, writes:

**Q** Do you know of a club from which I could hire software for the Vic 20, preferably in the Midlands?

**A** Most of the software hire organisations seem to ignore the Vic20 these days, preferring to concentrate on the Spectrum and the Commodore 64. If you wish to hire (not copy) software tapes then you might find that your local computer club is a good place to start. I must confess that I get a little uneasy when I see adverts for the software hire companies — if an individual attempted to do this he would probably be threatened with dire punishments.

## Constant hi-score

R H Edwards of Port Talbot, West Glamorgan, writes:

**Q** I am writing to find out if you can answer a query. I would like to know if it is possible to install a permanent high score table into the games I buy. Something like those found in real arcade machines. I would also like to know if any software houses take ideas for games, I get quite a few but do not have the skill to work out a program for them.

**A** Unless you have a disc system the idea of a permanent high score table is but a dream I am afraid. Apart from modifying the programs concerned (which is probably no easy task in any case), you would have to re-save the program when you had finished using it (so that the latest high

score table was retained for next time).

If you have an original idea for a game then I suggest that you send an outline of it (not too much detail) to one of the larger software houses (go by reputation, not by the machine they write for) and ask them whether they are interested in using you as a games designer. Your other option would be to use a games designer program yourself to build up your idea and send a completed 'mock up' of your work to a software house, again with a view to them using you as a designer. However, don't get your hopes up too high — software companies must get hundreds of ideas sent in every day.

## Quickshot joysticks

Dilip Bhadresa of Wembley, Middlesex, writes:

**Q** For my birthday I received a pair of Quickshot joysticks for my Dragon 32. But I already have two joysticks for my Dragon. Since I already have a 48K Spectrum, I also got a Kempston joystick interface. Now I have four joysticks for my Dragon and one joystick interface for my Spectrum. I want to change the DIN plug on the joysticks to a 'D' plug so that I can plug it into the interface. Could you please, if possible, tell me how to go about this?

**A** The simplest advice is to take your joysticks into a specialist computer shop and get them to make up your lead for you.

## Round the track

Peter Francis of Grimsby, South Humberside, writes:

**Q** I own a 48K Spectrum, and I was wondering whether there was a Pole Position game for it. If so, could you please tell me where I could obtain it from?

**A** Nothing to match the Atari original, I'm afraid. But *Chequered Flag* from Psion lets you drive your racing car around a track although with no opposition — all you can do is

challenge your own lap record.

*Full Throttle* by Micromega does let you both charge around the track and compete with other riders but it concerns motor bikes rather than racing cars. Both of these games are widely available.

## Book mistake

Kevin Jenkins, of Coventry, Swansea writes:

**Q** I own a 48K Spectrum and have just bought Melbourne House's *Spectrum Machine Language for the Absolute Beginner*. On page 23 (the decimal to hex converter) Line 150 will not enter. It is:

```
150 Let $$ = Chr$( (n1 (=9) * (n1 + 48) + (n1) 9) * (55 + n1) ) + $$
```

Is this a fault of the computer or of the book?

**A** Quite simply your edition of the book has one mistake in it. The statement should read:

```
150 Let $$ = Chr$( (n1 <= 9) * (n1 + 48) + (n1 > 9) * (55 + n1) ) + $$
```

## Golf ball printer

J C Nicholls of Birmingham writes:

**Q** I am considering the purchase of a reconditioned golf ball printer. I have spoken on the telephone to someone in the company and have been assured that the machine will be compatible with both my Spectrum and my Sord M5.

I have been quoted a price of £197, which is just within my price range, but I want to ensure that I do not find myself in the position of having to buy any extras to get the printer to work on both computers. Your remarks and advice on my proposed purchase would be much appreciated.

**A** The price you mention sounds reasonable for

this type of printer. You will, unfortunately, almost certainly have to spend a little more money on interfaces (at least for the Spectrum). I suggest that you contact the company again and make sure that the printer comes complete with interface leads, and also find out what type of interface it requires (ie, whether it is Centronics compatible, or RS232).

Although there are other printers on the market within this price range they are not going to print as well as your proposed machine.

## Recurring problem

Jason Kemp of Guildford, Surrey, writes:

**Q** I own a CBM 64. I enjoy using it but I keep on getting a recurring problem. My cassettes seem to be totally mucked up, although they are all originals. At first I thought it might be the cassette recorder but I demagnetised that several times before having to send it back. When I received a brand new one, that immediately played up. It has got so bad that the screen just displays 'Found' and a series of strange symbols before crashing. All the cassettes work on my friend's machine. Also if I manage to load a game and press the fire button the screen goes blank and returns to the cursor. Have you any idea what is wrong?

**A** A fault such as this is very easy to diagnose. It can only be caused in one of three parts of your computer configuration: (a) the computer itself, (b) the tape recorder, (c) the cassettes.

As you say the cassettes load perfectly well on another machine, they cannot be the source of the problem.

You should try out your recorder on your friend's computer and see if it works OK. If so you will know that the computer should be returned — it is broken!

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Phil Rogers and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke*, PCW, 12-13 Little Newport Street, London WC2R 3LD

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**3K RAM ROM** expansion. £15. Suitable for Vic-20. Stack light pen Vic-20 or Atari £20.00. Send name, address + phone. NO MONEY YET! Keith Hazell, Flat 20, 30 Granada Road, Southsea, Portsmouth PO4 0RH.

**VIC 20, C2N, 16K** switchable RAM. Five cartridges, £180 software inc Jet-pack, Trader, Matrix, I.B. Pt 1 books, mags, 10 programmed-tapes + colour TV game, 5 cartridges boxed G.C. All £240!! 0292 45477 evenings.

**VIC 20 + C2N** cassette + super expander + Intro to Basic Parts 1 and 2 + Programmers Reference Guide + software £150 ono or swap (offers). Tel: (01) 310 8109.

**CBM 64 SOFTWARE** for sale. All originals. Easy Script disc £45, Mission 1: £4.50, Siren City £4.50, Encounter £4.50, Heroes of Karn £4.50 and others. S. Rayner, 15 Welbeck St, Abbey Hey M/C 18.

**COMMODORE 64 GAMES** for sale — all original. Less than half retail price. Phone Welwyn (043871) 7252 after 6pm for details.

**CBM 64 FORBIDDEN FOREST.** Savage Pond, O' Riley's Mine and many more for sale or swap. Write F. Choong, 11, Wineleigh Road, Handsworth Wood, Birmingham B20 2HN.

**COMMODORE 64 PROGRAMS** to sell or swap Cosmic Split £4.00, Manic Miner £4.00. Phone Andy 01-940 9808 after 7pm.

**CBM 64 + C2N** cassette, 4 months old, mint condition, £180 ono. Tel: 01-310 1832.

**SPECTRUM 48K CASSETTE** recorder, joystick, I/F, printer carry case. Lots s/w (original). Swap for CBM 64 + C2N with similar s/w library. Tel: 0742 347551.

**COMMODORE 64 + C2N** cassette deck, 1 month old. Disk Drive, ITT 14" portable Colour TV and over £800 of software on disk, cass and cartridge. Worth over £1,500, sell for £600. Tel: 05827 69152.

**16K VIC-20** with 2 game cartridges still under Guarantee. Cost £137. Sell for £70 ono.

**"EASYSRIPT" WORD Processing Program** for CBM 64. Disk based. Includes manual and ori-

**ginal box. As new. Unwanted gift. Accept! 27 including registered post! (0244) 675717.**

**CBM VIC 20 + C2N** + joystick + 16K + ??? + 6 books + 7 cartridges + 16 original cassettes. IQ Pack. Worth £500 at today's prices. Sell for £300 ono. A great buy for Christmas.

**CMM 64 + Simons Basic** + 1520 printer plotter + CN2 cassette unit, joysticks, software and books. All boxed. Under 1 year old. Only £350.00. Tel: Chelmsford (0245) 557492 after 6 p.m.

**CAM/VIC 1515** graphics printer F/S W. 2 ink ribbons, 500 sheets of paper. All leads inc. Offers £140 ono. Tel: Sid 061-624 6728.

**FOR SALE.** CBM VIC 20, C2N, 16K ram pack, 4 cartridges. £150 worth of software. Only £180. Tel: South Shields 565956 after 5 p.m.

**CBM 64 software sale!** Hover Bover £5.00, Radar Rat Race £6.50, Arcadia 64 £3.00, Cosmic Cruiser £3.00, China Miner and Kong £6.50 on disk. Arabian Knights £5.50. All originals. Tel: Rotherham 851292.

**VIC-20 + 16K**, + super expander, joystick, programmers reference guide, all leads, 20 tape games, 4 cartridge games; Chess, Pacman, Galaxians, Asteroids. Sell for £130 ono. Phone 267-0465 (London) for details.

**VIC 20 C2N** cassette unit — 2 joysticks, 1 quickshot, 1 Atari. Introduction to basic. Loads of games, Krazy Kong, Magnetic Llamas and Whacky Waiters. Books and mags. £100. Tel: 01-764 1919 p.m.

**VIC 20.** Starter Pack + 3K Super expander. 16K joystick, dirt cover, 100 S/W. For 48K Spec. Cass. deck + S/W. Or sell £250. Tel: 0942 495530.

**FOR SALE.** Commodore 64, 1541 disk drive, Juki 6100 printer. All under 3 months old. Good business packet. £200 worth of the best software, including easy script and easy spell plus interface. Owner going abroad. £930 ono. Tel: 01-536 1204 after 7 p.m.

**COMMODORE 64,** 3 week old plus disk drive, C2N cassette deck, joysticks and over 100 pieces of software. Worth over £1,000. Sell for only £500 (no offers). (05827) 09152.

**COMMODORE DISK** software for sale. Over 200 American Games and utility programs. Including Disk Turbo, Summer Games, Zaxxon Gyruus, Starwars, Po- peye. Contact Amier, 160 Edward

Road, Balsall Heath, Birmingham B12 9LX, England.

**VIC 20** starters pack. 16K switchable rampack, machine code, monitor programmers, reference guide, Quickshot II, joystick, loads of games including Radar, R- trace, Arcadia, Bongo, Bonzo, Matrix etc. Boxed. Guaranteed. £170. 0706 55280.

**BARGAIN.** Commodore 1541 disk drive, good condition. Only £110. Tel: 224-8391 after 6 p.m.

**VIC 20, C2N Super Expander** 16K switchable ram. All leads etc. Ariel splitter, hundreds of pounds worth of software worth £400. Want £240 ono. Phone Stourport 4874, ask for Chris.

**COMMODORE 64 C2N** cassette deck, 1520 printer plotter, voice box, intro to Basic I, programmers reference guide, books and software. 12" B&W TV monitor and desk. £300 ono. 01-646 1695.

**VIC 20 C2N** cassette, switchable 16K ram pack. £200 of original S/W. Inc. Jet Pack, Matrix, Itrax. Cartridges inc. Rat Race, + adventure level. £200 ono. Tel: 051 4180 0899.

**CBM 64** software for sale. All original including Tornado Super Fast Saver. Write with s.a.e. to Mab, 50 Longmeadow Road, Knowsley, Merseyside L34 0HS.

**COMMODORE 64.** C2N, joystick + black and white monitor. Over £160 of software. Sell the whole lot for £165. Tel: Trowbridge (02214) 69912. Ask for Philip.

**VIC 20 + C2N** tape deck + 8K 3-slot mother board + super expander + M/C Monitor + games + joystick + books. Excellent condition £120 ono. Tel: Carterton 841677.

**CBM 64** disk drive. Perfect condition £180. Tel: 01-444 0880.

**VIC 20 s/w** (all originals). Titles include Arcadia, Chopuiter, Submarine Commander, Bonzo, Pit, Skyhawk, Myriads, Pirates, Cove Blitz, River Rescue. Tel: 04862 67693.

**CBM 64 + C2N + 1520** printer, all under guarantee + book, dust cover, spare paper, pens and over £300 best s/w all for £300. Tel: 061 626 8607 after 7.00 p.m. Dave.

**CBM "PET"** computer with C2N cassette unit. Ideal business or pleasure. Large amount software. Also books and manuals. Must sell! Accept best offer or would consider part exchange. (0244) 675717.

## Dragons for Sale

**DRAGON 32** games for sale inc: City Defence & Leggit. Quick sale. £10. Tel: 01 578 2887.

**DRAGON 32** for sale including cassette recorder, leads, joysticks, books, many magazines and lots of software all very good condition cost £350 sell for £140 telephone: Bishop Auckland 832609 after 5pm.

**DRAGON 32** boxed less than one year old all leads included + 2 joysticks, magazines, users manual + 30 games inc the king, cave fighter & defender. Sell for £130 ono. Tel: Woking 73863.

**DRAGON 32 + joysticks** + s/w £120. Tel: 0306 880806.

**DRAGON 32** for sale + joysticks, dustcover light pen large assortment of programming books and magazines also 15 software titles the lot worth £370 will sell for £140 ono Tel: 01-393 1425.

**DRAGON 32** for sale plus light pen, joysticks and some s/w also dustcover £100 Tel: Robin. Thetford 3652 Robin England. Buyer collects.

**DRAGON 32** with dust cover, joystick and software, to swap for CBM64. Phone Washington 4165976

**DRAGON 32** — colour TV (nice picture) tape recorder, 2 joysticks, edit plus £300 of s/w. Original only. Xxxx mag £150. Tel: 01-591 6967.

**DRAGON 32 + 3 joysticks**, light pen, magazines, dustcover + s/w. Less than 1 year old. £150. Tel: 01-360 3443.

**DRAGON 32** software for sale city defence leggit all at good condition sell both for £7.00 or £6.00 Tel: 578 2887. Originals only.

**DRAGON 64** brand new. Unwanted gift £160. Tel: Staines 57818.

**DRAGON 32** Radio (Amtron) cartridge wanted to loan or swap or buy. Tel: Staines 58707.

**DRAGON 32** software for sale. All original titles microdeal etc. Would also like to hear from other users Mike Collins 3 The Briars High Wycombe, Bucks.

**DRAGON 32** software. 28 original cassettes. All mint condition. Many recent titles. Prices £2 to £4 each. Genuine reason for sale — getting a Commodore! Phone 061 682 5024 after 7pm.

**DRAGON 32**, compuserve edit+hi-res cartridge, sprint basic compiler, trojan light pen, all Dragon user magazines, color graphics books wood carrying case, £150. Goldingham, 76 Walker Road, Maidenhead SL6 2QT 0628 30108.

**DRAGON 32** boxed cassette recorder, joystick £50 of s/w 18 months old v.g.c. £130. Tel: 01-505 2115.

## COMPUTER SWAP

Computer Swap entries are limited to 30 words. Either fill in the accompanying form and send to Computer Swap, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD or telephone 01-437 4343.

All software offered through computer swap must be in original condition and for private sale only.

It cannot be swapped.  
Warning: It is illegal to advertise pirated software.

## COMPUTER SWAP

Please write your copy in capital letters on the lines below.


Name.....

Address.....

Telephone.....



## Wanted

**1541** Commodore disk drive wanted. Will pay up to £120. Phone 01-467-0591 evenings or 01-302-7470 day. Ask for Paul

**WANTED ATARI 800** will pay up to £85 or £110 for a working BBC model B. Tel Honiton 41484

**SWAP ATARI 400** with recorder and £150 software under guarantee for Commodore 64 and recorder or 48k spectrum with recorder and Joystick interface under guarantee (0632) 2740255

**WANTED Jupiter Ace** or ZX80 will pay up to £12 or swap for spectrum software. Contact John Skilleter, 22 Lynnhdale Ave Birkby Huddersfield W Yorks or ring (0484) 29355

**WANTED ZX Printer** for original spectrum software generator arcadia devils of the deep cruising starship enterprise gupman flight simulation or will pay cash. Write B Fitton 211 Lynford Drive Bradford BD9 6EY

**WILL SWAP ZX PRINTER** and 9 spectrum games including Valhalla and Hunchback for unexpended ZX81 which is complete and working or Aquarius or BBC Atom. - Phone 656 0838

**WANTED URGENTLY:** One copy of any American home computer magazine. Dragon or Commodore best. Will pay £12 plus postage. Ring (0706) 31239 (Tues). Must be in good condition.

**SELL or SWAP:** 300mm Soligor Len's + easy script in box for anything for a CBM 64 or ZX1 + extra's lot for £55.00 ring Swansea 71482 Jones 74 Heol CEFNI, Carmarw, Morriston, Swansea

**SWAP** or Sell BBC B with extras for Commodore 64 and disk drive or Commodore 64 plus money or £350 no offers. - Tel 051-263 3334 ask for Stuart

**WANTED** Your spectrum issue No 2. Tel 08 444 6579 after 7.00

**SWAP** My Commodore 64 C/W 1541 disk drive and C2N cassette, Joystick, lots of software, books, etc. For a BBC model B computer. - Tel. Bill (0202) 424092

**WANTED** 48k Spectrum in good condition will pay reasonable price. - Tel Phil Ruislip 76759 or 01-794 0461 ext 242 before 3 pm

**WANTED CBM64** best offer for £120 spot cash wanted - Tel Chas (Eves) 0202 426831 Bourne mouth

**SWAP** 48k Spectrum for Atari 48K computer. - Tel John 01-476 8884

**TO SWAP** VIC 20 plus 5 cartridges including Vic Avg the count for ZX Spectrum 48k will include boss Joystick and agreeable amount of cash. - Tel 041 647 2366 Stuart

**SWAP** My 48k Spectrum in excellent condition for a 48k ATARI computer with cassette recorder. - Phone John on 01-476 8884 after 6 pm

**WANTED:** working or faulty BBC or CBM computer 64. - Tel 0203 29361

**WANTED** BBC model B exchange for 48k spectrum light pen consul, 71 mags 3 books, 18 games under guarantee 0602 606037

**Printer** suitable for Spectrum - Tel: 01-860 4835

**WANTED!!!** non working ZX Spectrum for parts. - Phone (0803) 312472

**SWAP** 48k spectrum for good Dot Matrix Printer. - Tel 0733 267978

**WANTED** CBM 64 with C3m cassette recorder pay reasonable price. - Tel Hornchurch 42642

**VIC 20** cartridge, the count swap for pirate love cartridge. - Tel Neil on 0752 43538

**WANTED** Commodore 64 disk drive in good condition also a wico joystick in good condition wanted ask for Max on 28672 after 6 pm

**SWAP** VIC 20 C2N cassette deck K3 Ram super expander cartridge for CBN 64 disc drive or will sell offers to woking 67693

**SWAP** Spectrum 48k, prism VTX5000 modem, Joystick, software, cassette recorder for CBM64 + extras (disk drive, modem, etc). Must be in G.W.O. - Phone Shaun on Evesham 48457 (Worcs) after 5.15 pm

**WANTED** Joystick interface for the Oric 1, must have all instructions, also quickshot 11 Joystick wanted complete, working or not. - Tel 051 920 7517

**ASSEMBLER EDITOR** for OSI Super-board 2. Up to £10. Tel: 01-278 2225.

**WANTED:** ZX printer will swap for eleven original Spectrum games including Trashman, Rommel's Revenge, Reversi, Mr Wong's Loopy Laundry, Pool, Backgammon. Early evenings only Phone Radnage 3250.

**WANTED: PROGRAMMABLE** joystick interface and joystick will swap for 11 original Spectrum games including Trashman, Rommel's Revenge, Mr Wong's Loopy Laundry, Reversi and Backgammon. Phone early evenings only Radnage 3250

**VIC-20 SOFTWARE** wanted: only originals, Llamasoft's "Traxx", Anirog's "Xeno II", Anirog's "Slap Dab", Microantic's "Chariot Race", Commodore's "Superlander" and Mogul's "Great Adventure Pack". For sale: Commodore's "Mission Impossible" £3. 0558 822509.

**WANTED ORIGINAL** Quill offer Escape, Android II, Adventure A and Redwood. Phone (0703) 767580 after 4pm. Also want certain progs as up to 50% maker's price; want CBM64 progs as well.

**WANT A PENPAL?** Just send name, age, sex, computer, address and 50p for swap to: Jesterson, 91 Ryde Park Road, Rednal, Birmingham B45 8RD.

**WANTED 4 CHANNEL** FM radio control outfit in exchange for Video Genie complete with all leads s/w manuals, built in cassette: Stevenage evenings (0438) 720521.

**ATARI 1020** colour printer + any Atari disk drive, preferably 1050 (after 5pm) Tel: David, Reigate 43850.

**WANTED - COMPUTER** Penpal, Write to Barry Baker, 23 Jubilee St, Newark, Notts NG24 4DA. Tel: (after 4) 0636 78108.

**WANTED ZX 81** printer interface for a Commodore 64 + software to run interface. Ring Swansea 71482 or write Jones, 74 Heol Cefni, Caemawr, Morriston, Swansea.

**WANTED CBM 1541** disc drive prefer if still under guarantee Stephen Rayner 15 Welbeck St Abbey Hay M/C R 18.

**LEADS. 1K ZX81 + MANUALS** + leads. Must be working perfectly. £20. Also 16k RAM pack (non Sinclair) £10. Write to Derek Scott, 28D Harden Place, Hawick, Roxburghshire, Scotland.

**WANTED:- LORDS** Of Midnight by Beyond for my tape H.U.R.G. Steven Swindells, 6 Park Avenue, Poynton, Cheshire.

**SPECTRUM PENFRIENDS** in any town in England wanted. Girls and boys aged 13 to 16. Will swap tips and hints. Write to Lee Fraser, 4 Newhall Mount, Bradford, Yorks BD6 1DQ.

**WANTED 48K SPEC** Swap trains set or buy it. Tel: Leicester 606265 under £100 to buy.

**WANTED 1541 DISK** drive for C64.

Phone 031 669 5203 after 8.30pm any reasonable price paid.

## For Sale

**FOR SALE** Currah speech unit. Price negotiable. As new in presentation box with manual and tape. Will accept £20. Please phone Staines 57086 and ask for Farley. Hurry!

**T199/4A** + Persac game cartridge + 2 joysticks + 3 books + basic tutor cassette. All for only £70 from Barnes (01) 741 7824 (they are all in excellent condition and worth about £170).

**TRS 80 32K** level 2 expansion interface monitor cassette record lots of software £300 ono. Write with any offers to M Hurrer Brenthurst Barnet Road, Arkley, Herts. EN5 3LW.

**WILLIAM STUART** three channel sound board with two 8-bit I/O ports. Suits all ZX80/81s. Complete with all necessary software. V.g.c. cost £29.30. Sell £21.00 ono. Phone David on Maidstone 26861.

**OPUS 100K** disc drive with leads, manuals and utilities disc six weeks old £140.00 ono 48K Spectrum with software worth £80. (R90.00). Tel: 0865 249891 ext 6019 (Frickton).

**EPSON HX20** with micro cassettes £320 ono. Printer Brother EP22 typewriter RS232C Interface. £90 ono. Tel: 01 7339961.

**SHARP MZ80K** 48K CPU integral screen + cassette. £200 ono. Tel: Swansea 0792 851392.

**LYNX 48K** as new. Hardly used. In s/w books. Sell £100. Tel: 01527 8585.

**CURRAH MICRO** speech, 2 months old excellent condition. Sale at £23 ono. Phone Vince on 01 886 2931 after 4.30.

**ORIC 1** 48K 6 months old. Hardly used due to loss of interest. As new condition. 2 books of program + selection of s/w. Sell £95.00 ono. Tel: Bristol 0272 876322.

**48K SPECTRUM** + £80 or s/w, Kempston Interface Tel: 01 476 8884.

**48K ZX SPECTRUM** only 4 months old. Over £200 all originals inc: Hobbit, Valhalla, Atic Atac, £50 of mags. Only £185. Tel: Bordon 4030.

**CMC KEYBOARD** with LTK/KTC 4pin connection. Offers. Tel: 0525 370438.

**FOR SALE** Scrabble for Spectrum brand new in box with manual. Any offers? Currah Speech unit also for sale. Brand new. Boxed with manuals. £20. Phone Staines 57086 for Farley.

**MEMOTECH MTX512 64K** computer, 3 months old with new word Rom w/proc. As new value £390 sell for £325 or swap for BBC B. Cash adjustment if necessary. Tel: 0494 29251.

**SHARP MZ 80K 48K** Ram built in VDU and cassette. Lots of programs A and K Basics plus extensions, Pascal and others. £250. Tel: 02367 24501.

**COMPASS METAL** detector. Little used and in near new condition Cost over £300. Swap for CBM64 disk drive. 01 898 4836 evenings.

**TWO LARGE** cartons of 100 computer magazines. PCW, PC World, PCN, PCT, Your Computer, What Micro, etc. Very good condition. All offers considered. Tel: 01 642 8478. Evenings, weekends, worth over £80.

**T199/4A COMPUTER** 5 months old + Joysticks + books + cassette cable + persac + Invaders cartridges + many cassettes games £110 ono or swap for 48K Spectrum + games + joystick wanted still in box with cables and manuals. Tel: Plymouth (0752) 812655.

**THREE MEMOTECH** MTX cassettes £3 each Memotech book £3 ZX81 graphic rom plus five "Graphic Rom" cassettes £5 write to 7 Turner Road, Norwich NR2 4HD.

**VIC 1515** Graphic printer unwanted gifc.

All leads inc: 2 ink ribbons, 1000 sheets of paper. Offers £160. Sid 061 633 4887.

**ORIC 1 48K**, £40 software, and cassette recorder. Excellent loading due to tape modification. Inc. Manual, leads, articles, etc. £115. Tel: Bourne (0778) 422164.

**CURRAH MICRO SPEECH** synthesizer (Spectrum) hardly touched + £88 of software inc. Flight Simulator, Starship Enterprise, Androids etc. Asking price £40 Phone after 8pm any day Oxford 862191.

**TWIN 81** disk drives intelligent unit. High capacity complete with cables and manuals £150 ono. Tel: 0865 750600 for further details.

**SHARP MZ80K 48K** some software also supplied £230 ono 041 942 0117 (Glasgow).

**TEXAS TI 99/4A** cartridge for sale: Household budget management £15 ono. Used about twice. Phone 01 300 4900 after 5.45pm.

**SHARP MZ80A 48K** integral screen and cassette, Database, Home Finance, Games £335 Tel: 01 908 0688 after 6pm.

**SHARP MZ80K 48K** + Sharp MZ80-P3 printer + interface box + several languages. Books programs etc. £650 ono. Prepared to negotiate. Tel: Langport 250130.

**FIDELITY SENSORY** Chess Challenge 9 for sale. Cost £130, very good condition. Sell for £80 ono. Tel: 0222 861235 and ask for Paul.

**W.M. STUART** sound board. Suit ZX80/81 Spectrum issue three. Has three channels sound one noise and two 8-bit I/O ports. C/w manual V.g.c. £20. Phone David on Maidstone 26861.

**LYNX 48K** + black/white TV + tape recorder + software + all leads. A whole system, every item in excellent condition. Will sell for an amazing £230. On tel: (0924) 475291 after 5pm now!

**TRS 80** dot matrix printer adjustable tractor feed. Centronics interface complete with cable £100 ono Tel: 0865 750600 for further details. Evenings only.

**SHARP MZ80A** as new inc. software pack. Sale due to emigration worth £350 will accept £250 ono. Telephone 0377 88209 9am - 5pm. Grahame Ruddle

**NEC PC8001** with Hi-Res monitor and cassette. Genuine bargain, only £300 for this high quality computer. Mr. A. Pettit, 2, Caburn View, Firie, Nr. Lewes, Sussex. Tel: 079 159 492.

**LIGHT PEN** and cassette £10 ono Hunchback £3. Oracle's Cave £3. Hobbit £8 ono Centimunch £3 All originals phone Crawley (0293) 518460 after 6pm. For 48K Spectrum.

**PRINTER** Data Dynamics 390RC Teletype 110 Baud (RS232C). Uses plain paper £50 incl manuals Tel: 01 959 1844 (eves).

**SHARP MZ700** with printer and tape recorder and some s/w. Sell for £400 or swap for BBC B with disk also coupler for sale £150 ring John on (021) 551 6427.

**ALPHACOM 42** unused dot matrix printer, needs only interface to suit your micro £70 ono. 01 390 7318.

**COMPLETE HOME** computer course plus 2 binders immaculate condition cost £24 sell £18 or best original Spectrum s/w reason for sale have mastered Basic. G Jenkins 1 Greenwood Road, Victoria Village, Ponypool, Gwent.

**DISK DRIVE** 1541 under guarantee with extras £180. Please contact Mr Omar 14, Clarent Road Edinburgh EH9 2BN.

**SHARP MZ80A** as new with games tapes, utilities and books. £350 ono. Tel: Worthing (0903) 690370 evenings and weekends.

I HAVE an assortment of computer magazines for sale. Your Computer, PCW, Sinclair User, Sinclair Programs, C&VG, Crash. Approx. 50 of them. Very cheap. Will separate. Phone Staines 57086.

**TRS 80 MODEL I 18K.** Complete and working but slight fault in keyboard £40. Also Apocalypse (BBC), Caesar The Cat (Spectrum), OCP editor — Assembler (Spectrum). Hardly used. Half price. Tel: 0963 62544.

**SEKOISHA GP100A (AP100A).** Dot Matrix printer. Centronics parallel. Dot addressable. New ribbon. Makes way for new FX80. As new but for cracked perspex lid. Was £215. Yours for £99 ono. 061 724 8105.

**CURRAH SPEECH Synth.** £15 + 40 Spectrum sware to sell together or separately. Norwich 721376.

**TEXAS SOFTWARE** Parsec, Alpinar, Munchman, Invaders, Soccer, Attack, Pac-Man, Car Wars, Donkey Kong, Chess, Video Games I, Speech Synth, joystick interface. Tel: 01-607 7440.

**CURRAH MICRO SPEECH E20.** Zip-Zap, M Coder, Star Trail, Ant Attack, Pinball Wizard, Timegate £3 each ono. Tel: 0905 21871.

**ACORNSOFT JOYSTICK** £13.00 perfect condition (receipt) ring Southend 338246.

**JVC HRC 3 'C'** format portable VHS recorder. Mint condition £260 panasonic TC800 8" TV/monitor. £120 or exchange both for BBC 'B' with DFS. 01 644 9661.

**TO SELL** over £100 of s/w for £20. Inc: Mugsy, Manic Minor, Lunar JetMan + the Hobbit. First person to ring gets Valhalla + Antics free (originals). 01 952 2870 after 5pm. David.

**T1994/A EXTENDED** Basic speech synthesiser, terminal emulator, joystick, Chess, etc. All cables and manuals. Will accept offers around. £150 + write Mark Frost, 21 Mowbray Close, Bromham, Beds.

**SHARP MZ 700** cassette recorder + tapes + books. Almost new. £170. 04024 44025.

**CURRAH MICRO SPEECH** for sale £20. Tel: Sheffield (0742) 695011.

**48K LYNX** boxed, five months old, plus Dungeon Adventure for £130 ono. Phone Malcolm (01) 553 0349 after 6pm.

**INTELLIVISION 3D** Console with voice synth + games Frogger, Space Armada, Football Lock + Chase, Empire Strikes Back, Star Strikes etc. Phone Ron home no 221 1512. Work no 743 800 ext 499.

**48K LYNX's** with interface pack, manuals, £130 or swap. Tel: 699 8072.

## ADVENTURE HELPLINE

**Velnors Lair on Spectrum.** I cannot cross the crocodile infested river. I have the bathtub, the deal spider, club, tinderbox, torch, mirror, rubies and hankerchief. Jon Bins, 1 Owenden Road Terrace, Bank Top, Halifax HX3 5PW.

**Heroes of Karn on Commodore 64.** How do you get past the pirate? How do you get past the serpent?

Where is the magic mirror? Jason Doré, 3 Park Drive, Wickford, Essex.

**Valhalla on Spectrum.** I have mapped Midgard, Asgard and Hell—even the ringways—but I cannot find Ofnir. Does the clue 'Darkness in Midgard' mean that it is in the cave? James Ross, 171 Waverley Drive, Glenrothes, Fife, Scotland.

**Hobbit on Commodore 64.** How do you escape from the goblin's dungeon? I have the rope, a short strong sword and the curious key. G T Bankes, 66 Eastside Drive, Westhill, Skene, Aberdeenshire.

**Rescue from Castle Dread on Vic20.** I have got the princess but I don't know where to take her. When we leave the castle via the small crack it seems we have gone the wrong way. M J Jarman, AAF124 AFM TRG SQN, RAF Halton, Bucks.

**Planet of Death on ZX81.** Is there any way past the force field? If so how? Or do I have to face the maze? M. Hasker, 17 Cottarville, Weston, Favell, Northampton.

**Adventureland on Vic20.** How do you get the honey back from the tea?

How do you put down the mirror? How do you wake up the dragon? K West, 13 Stanley Avenue, Chesham, Bucks.

**The Count on Vic20.** I have been badly stuck for months. I keep having the test stake stolen and I can't get it back. Can you tell me how to stop being attacked, find the pep pills and find the coffin. R G Weeder, 24 Greenbank Road, Tunstall, Stoke-on-Trent.

**Hobbit on BBC.** How do you get past the cellar in the Elvenking's Dungeons? Also, how do you get to Gollum from the Goblin's door? D Thomas, 27 Grosvenor Avenue, Barnet, Herts.

**Colossal Adventure on Lynx.** I have found the vending machine but just haven't been able to buy any batteries. Terry Ireland, 27 Shuttleworth Road, Battersea, London SW11.

**Hobbit on Spectrum.** How can I get back after killing the dragon and what does the golden key do? Hesaan Sheridan, 123 Western Road, Haywards Heath, West Sussex.

**Golden Apple on Spectrum.** What use is the gas lever? How do you strike the matches? How do you get

to the cliff top? How do you open the safe? Geoff Marshall, 69 Adamsrill Road, Sydenham, London SE26.

**Aztec Tomb on Commodore 64.** How do I cross the stream at the beginning of the adventure? Joanne Sharp, 6 Upper Woodlands, Perth.

**Quest on Spectrum.** Where is the long key you need to enter Castle Oops? Also, what does 'What is needed is a slight change' mean? Edward McSloy, 8 Maple Road, Boston, Lincs.

**Mission Impossible on Vic20.** Is there a suit for protection when going down the steps to the reactor core? If so, where is it? Paul Wright, 4 West Croft Glen, Waterthorpe, Mosborough, Sheffield.

**Valhalla on Spectrum.** How do I get out of El Vino's (I've tried jumping)? James Leach, Preybrook Farm, Preywater Road, Wookey, Wells, Somerset.

**SEE  
INTERNATIONAL  
ADVENTURE CLUB  
(CLASSIFIED)**

## Diary

Event	Dates	Venue	Admission	Organisers
<b>Apricot and Sirius Show North</b>	Oct 18-18 10.00am-8.00pm	New Century Hall New Century House Corporation Street Manchester	Free in advance from organisers	16 Bit Computing Magazine 01-2412354
<b>Computer Games and Systems Retailer Show (trade only)</b>	Oct 12-18 9.00am-8.30pm	Novotel London W6	Free	Macro Exhibitions 0992 469556
<b>Home Computer Education and Games Fair</b>	Oct 20 12.00pm-9.00pm Oct 21 10.00am-6.00pm	Laton College of Higher Education	£1.50 adults £1.00 children	Shaw and Kilburn 0882 28611
<b>Electron and BBC Micro User Show</b>	Oct 25-27 10.00am-5.00pm Oct 29 10.00am-4.00pm	Alexandra Palace London N22	£3.00 adults £2.00 children	Database Publications 061-458 8383
<b>Home Tech 84</b>	Oct 28-29 10.00am-6.00pm	Bristol Exhibition Centre	£1.50 adults £1.00 children	Nationwide Exhibitions 0272 650465
<b>Computers in Action</b>	Oct 30 10.00am-6.00pm Oct 31 10.00am-8.00pm Nov 1 10.00am-6.00pm	Anderson Centre Glasgow	Free	Trade Exhibitions 041-204 0280
<b>Mycomp (Thames Valley Personal Computer Exhibition)</b>	Nov 1-3 10.00am-6.00pm Nov 4 11.00am-5.00pm	Fulcrum Centre Stough	£2.00 adults £1.00 children	Swan House Special Events 09322 43866
<b>Home Computer Show</b>	Nov 7 2.00pm-9.00pm Nov 8-10 12.00pm-9.00pm Nov 11 12.00pm-8.00pm	Royal Dublin Society (Main Hall) Ballsbridge Dublin 4	£2.00 adults £1.00 children	SDL Exhibitions Dublin 904171
<b>Buxton Home Computer Fair</b>	Nov 10 10.00am-5.00pm	Paxton Suite Pavilion Gardens Buxton	£1.00 adults 50p children	Technical Promotions 0298 6174
<b>Home Computer Exhibition</b>	Nov 10 10.00am-6.00pm	David Davies Gallery Newtown Pewys Wales	20p	Newtown and District Computer Club 0686 28715
<b>Microelectronics Applications</b>	Nov 10 10.00am-4.00pm	Barden Hgh School Burnley Lancs		Barden High School 0282 36324
<b>London Micro Market</b>	Nov 10 10.00am-6.00pm Nov 11 10.00am-4.00pm	Wembley Exhibition Centre	£1.50 adults 75p children	ECC Publications 01-359 3525

<b>Atari</b>		<b>Spectrum</b>	
1 (1) Solo Flight	Centrosort	1 (-) Avalon	(Hewson)
2 (2) Caverns of Khafis	Centrosort	2 (7) Daisy Thompson's Decathlon	(Ocean)
3 (3) Leggit	Imagine	3 (-) Lords of Midnight	(Beyond)
4 (7) Slinky	Centrosort	4 (1) Matchpoint	(Pison)
5 (3) Zaxxon	Centrosort	5 (6) Jack and the Beanstalk	(Thor)
6 (-) Crazy Kopter	English Software	6 (-) Kokonui Will	(Elise)
7 (8) Carnival Massacre	Atari	7 (9) American Football	(Argus)
8 (3) Orc Attack	Atari	8 (3) Tornado Low Level	(Vortex)
9 (9) Computer War	Atari	9 (2) Full Throttle	(Micromegas)
10 (10) Colony 7	Atari	10(8) Sabre Wulf	(Ultimate)
	System 3		

(Figures compiled by Boots/Websters)

<b>ZX81</b>		<b>BBC B</b>	
1 (2) Walk the Plank	Novus	1 (1) Elite	(Acornsoft)
2 (6) Planet Raider	Novus	2 (2) Fortress	(Pace)
3 (3) Black Crystal	PSS	3 (-) Frak	(Aadvarik)
4 (-) Scramble	Quickniva	4 (4) Micro Olympics	(Database)
(-) Mothership	Sinclair	5 (8) Smash and Grab	(Superior)
(3) Flight Simulator	Sinclair	6 (3) Wallaby	(Superior)
7 (9) Meteor Storm	DK Tronics	7 (6) Ghoulis	(Micropower)
(-) Hopper	PSS	8 (7) Aviator	(Acornsoft)
(7) Espionage Island	Sinclair	9 (9) Stockcar	(Micropower)
10 (-) Chess	Sinclair	10(3) Overdrive	(Superior)

(Figures compiled by Boots/Websters)

<b>Dragon</b>		<b>Vic 20</b>	
1 (3) Outburst in the Mines	Microdeal	1 (3) Flight 015	Craig Communications
2 (2) Ring of Darkness	Wintersoft	2 (1) Snooker	Visions
3 (-) Dragon Chess	Oasis	3 (-) Chariot Race	Micro Antics
4 (-) Hunchback	Ocean	4 (9) 3D Maze	Mastertronic
5 (-) Chocolate Factory	Mints	5 (-) Bridge Man	Voyager
(-) Morocco Grand Prix	Microdeal	6 (-) Mower Mania	Voyager
7 (-) Bug Driver	Mastertronic	7 (-) Fourtates Freedom	Phoenix
8 (-) Up Pertscape	Beyond	8 (-) Computer War	Creative Sparks
9 (-) Space Shuttle Simulator	Microdeal	9 (-) Maze Gold	Visions
10 (-) Sprite Magic	Knight	10 (-) Tank Commander	Creative Sparks

(Figures compiled by Boots/Websters)

<b>Books</b>		<b>Commodore 64</b>	
1 (-) Machine Code Applications		1 (1) Scramble	Leisure Genius
2 (-) Micro Wars on Commodore 64		2 (-) Hunchback	Ocean
3 (-) 60 Programs for Commodore 64		3 (6) Decathlon	Activation
4 (-) Step by Step Programming BBC Bk 1		4 (9) Space Pilot	Mastertronic
5 (6) Practical Spectrum Machine Code		5 (-) BMX Racers	Mastertronic
6 (-) 60 Programs for the Vic 20		(7) Gilligans Gold	Ocean
(-) Step by Step Programming Spectrum Bk 1		7 (-) Manic Miner	Software Projects
8 (-) Make the most of Micro Drive		8 (-) Flight Path 737	Antirog
9 (-) Sinclair User Book of Programs & Games		9 (-) Squirm	Mastertronic
10 (-) Beginners Micro Guide		10 (-) Snooker	Visions
(7) Machine Code Sprites & Graphics			

(Figures compiled by Boots/Websters)

## ACADEMIC

*Computer Science on a Micro with BBC Basic* is a book about computer programming which is concerned more with first principles than precise details. Thus whilst there are long sections on Loops and Algorithms, the author concerns himself with their abstract nature rather than exactly what keys to press on the keyboard.

There are sections on the design of a computer, intelligent program design, recursion, modes and numbers and sorting. All are clearly written with little padding and some humour. (Put it this way, it's good by computer book standards.) A good book for those with an interest in a more academic approach to computer programming.

**Book Price** *Computer Science* £8.95

**Micro** *General (examples BBC Basic)*

**Supplier** *Sigma Press*  
5 Alton Road  
Wilmslow  
Cheshire  
SK9 5DY

producing them. Redeemed, at least by concentrating on an unusual area of computer game, is *Power Plays* for the Commodore 64.

This book consists entirely of well annotated and described strategy games of power and politics. Topics like running newspapers, constructing railways and my favourite aggression in which you get to battle the computer at running the world — it represents the inevitable processes of entropy and you try to maintain order in a variety of collapsing societies. Appolonian and Dionysian rule OK. The really bleak thing about the game is that you are almost completely powerless — you set up the opening parameters but not much else — just watch the screen as dictatorships emerge and the world destroys itself.

The listings in the book are generally very good and for once in a very long while I think what we have here is a listings book that can genuinely be recommended.

**Book Price** *Power Plays* £8.95

**Micro** *Commodore 64*

**Supplier** *Century*  
Portland House  
12-13 Greek Street  
London W1V 5LE

## DICTATOR

Boring as books of games listings intrinsically are, they sell well enough for people to keep

# This Week

Program	Type	Micro	Price	Supplier
Ghouls	Arc	Amstrad	£6.95	Micro Power
European Knowledge	Arc	BBC	£6.95	Micro Power
Felix meets Evil Weevils	Arc	BBC	£6.95	Micro Power
Plutonium Plunder	Arc	BBC	£6.95	Micro Power
Swag	Arc	BBC	£6.95	Micro Power
Toy Bizarre	Arc	Commodore 64	£9.99	Activation
Beamrider	Arc	Commodore 64	£9.95	Activation
Catastrophes	Arc	Commodore 64	£6.95	Mirrorsoft
Decathlon	Arc	Commodore 64	£9.99	Activation
H.E.R.O.	Arc	Commodore 64	£9.99	Activation
Pitfall I	Arc	Commodore 64	£9.99	Activation
Pitfall II	Arc	Commodore 64	£9.99	Activation
River Raid	Arc	Commodore 64	£9.99	Activation
Star Eggs	Arc	Commodore 64	£6.95	Mirrorsoft
Zenji	Arc	Commodore 64	£9.99	Activation
Rhyme and Reason	Ad	Dragon	£5.95	Wet Paint
European Knowledge	Arc	Electron	£6.95	Micro Power
Felix meets the Evil Weevil	Arc	Electron	£6.95	Micro Power
Swag	Arc	Electron	£6.95	Micro Power
Junior Maths Pack	Ed	Electron	£6.95	Micro Power
Where?	Ed	Electron	£6.95	Micro Power
Which Salt?	Ed	Electron	£6.95	Micro Power
Warp 1	S	Electron	£7.95	Icon
Beamrider	Arc	MSX	£11.99	Activation
Decathlon	Arc	MSX	£11.99	Activation
Pitfall II	Arc	MSX	£11.99	Activation
River Raid	Arc	MSX	£11.99	Activation
Space Shuttle	Arc	MSX	£11.99	Activation

Zenji	Arc	MSX	£11.99	Activation
Beamrider	Arc	Spectrum	£7.99	Activation
Enduro	Arc	Spectrum	£7.99	Activation
H.E.R.O.	Arc	Spectrum	£7.99	Activation
Pitfall II	Arc	Spectrum	£7.99	Activation
River Raid	Arc	Spectrum	£7.99	Activation
Space Shuttle	Arc	Spectrum	£7.99	Activation
Turmoil	Arc	Spectrum	£6.95	Bug Byte
Zenji	Arc	Spectrum	£7.99	Activation
Kung Fu	S	Spectrum	£6.95	Bug Byte
Racing League	S	Spectrum	£2.90	Racing League Software
Machine Code Toolkit	Ut	Spectrum	£5.95	Unit 2
The Designer's Pencil	Ut	Spectrum	£7.99	Activation

**Key:** Ad — adventure/Arc — arcade/Ed — education/S — strategy-simulation/Ut — utility

This Week is a new section that covers all the new software coming on to the home micro market each week. All suppliers should send details of their new programs to: This Week, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

# New Releases

## WORD PLAY

*Lingo* is a good game. It would be a good game even if it wasn't a computer program (which it is), but as a piece of programming it's no better than functional.

*Lingo* is pretty easy to summarise but difficult to convey in words — at least the fun of playing it is. A sort of *Scrabble* for surrealists, drunks, and educationalists. You try to make a grammatical and by some stretch of the imagination meaningful sentence from a choice of 12 words selected by the computer. These may be combined with a number of suffixes, connecting words and other linguistic flotsam to create the required sentence. The result, if there is one, is likely to be very bizarre indeed and then comes the fun part — defending it as being sensible to the other players.

The game can be played with a time limit of various lengths adding to the sense of insanity. It kept me entertained for hours. Versions for other machines are expected.

**Program** *Lingo*  
**Price** £12.95  
**Micro** BBCB  
**Supplier** Complete  
 Microcomputer  
 Services  
 32-38 Osnaburgh  
 Street  
 London NW1 3ND

## DARK AGES



*Sorcery* is the latest Commodore 64 release from Virgin games, which is definitely

trying to raise the quality of its recent releases. It calls itself an arcade adventure, but is really only an arcade game with an adventure plot and a few objects which must be collected. All the action is controlled by a joystick.

Most plots used in games that call themselves adventures or arcade adventures can be reduced to certain common denominators, so here are the edited highlights of this one: Dark ages, Evil forces, Necromancer, Evil Demon, Great Sorcerers, up to you, strength and powerful spells, many lands, conquer Stonehenge, and so on. Get the picture?

Anyway, there are quite a few screens of colourful graphics in which you dodge your way past nasty things, collect other things and generally figure out what object opens what door, etc, to get through all the screens.

**Program** *Sorcery*  
**Price** £7.95  
**Micro** Commodore 64  
**Supplier** Virgin Games  
 2-4 Vernon Yard  
 Portobello Road  
 London W11 2DX

## ADDICTIVE

At long last a serious commercial program for the QL.

Serious in the sense that it has been produced by a professional company, written in machine-code and to some extent gets to grips with the possibilities of that enigmatic machine.

*Zkul* is an adventure from Talent Software, the Glasgow-based company that began recently with some well-received material for the Commodore and Spectrum.

Although they are also producing a version of their adventure *West* for the QL, *Zkul* is their first program to be launched on the machine.

*Zkul* is a text-only adventure of great difficulty — definitely not for beginners. It has, as you would expect, an enormous vocabulary of several hundred words and a vast number of locations. Not only that, but the locations are fully described in a couple of paragraphs or more. No major evidence of

Pick of the week

## ALIEN MOVEMENT

*Games Creator* is the equivalent, for the Commodore 64, of the *Games Designer* that Quicksilver produced for the Spectrum a while back. *Games Creator* actually works in a fairly similar way but has a wider range of features enabling a larger variety of games to be created.

Almost any aspect of a game you care to consider can be designed using the program. There are very few set conditions. All commands are controlled either by joystick or by typing in a number, etc.

In the first section the alien is chosen using a joystick to move a cursor over the one required, movement can be random or determined to varying degrees. You can then select the rules governing the alien movement — how quickly does it animate, how quick is the explosion, can it go off the edge, how fast does it move?

The basic playing area can be designed using a large scale equivalent of a sprite editor. The end result can look like anything from *Cavern Fighter* to *Jet Set Willy*. Music

can be arranged to play throughout the game and for specific events like high scores etc.

There would seem to be little you can't do with the game and for those prepared to make the necessary effort, it is a chance to bring some sense of involvement back into playing with your computer.



**Program** *Games Creator*  
**Price** £17.95  
**Micro** Commodore 64  
**Supplier** Supersoft  
 Winchester House  
 Canning Road  
 Wealdstone  
 Middlesex UA3 7SF

spelling mistakes either.

The plot is pretty much your classic adventure stuff — you are seeking ancient dwarf treasure guarded (it is believed) by a powerful wizard named Taron. You begin the adventure by a river somewhere near the ancient dwelling place of the elves — you must find the treasure and bring it to a house in the forest.

There are some features I've not often, or perhaps ever, seen on other adventures — if you save a location you can also record a screen full of information to be displayed the first time you reload it eg, locations, complex directions, time of day, what you are going to have for tea, etc.

In some locations the program will sense that you have reached a particular tricky problem and offer you hints in return for points if you wish.

This is instead of a *Help* command — no other form of

advice is available.

How many QL-owning adventurers there are out there? I don't know, but if there are some they'll certainly find several hours of confusion, irritation and addiction here.

**Program** *Zkul*  
**Price** £14.95  
**Micro** QL  
**Supplier** Talent Software  
 Curran Building  
 101 St James Road  
 Glasgow G4 0NS

## ANNOYING

Temptation has released an adventure game which it describes as 'the most complex and involving adventure available'. There are quite a lot of them at the moment.

*The Journey* is a 'real time text adventure with graphics' in which you journey through the lands of the BLACK WARLOCK

(this distinguishes him from the black warlock who is slightly less dangerous being in lower case).

There are a number of other characters in the adventure who wander about a bit like Thorin and may, sometimes, be helpful. The text handling is basically Verb-Noun combinations and the graphics are fairly simple, but there is quite a lot to it in terms of plot and it does have a certain atmosphere. Really my only complaint concerns essentially trivial things — the screen layout is unexciting and why the boring old Spectrum character set? A bit of time redesigning the screen layout and a nice new font and this could be a cult hit.

**Program** *The Journey*  
**Price** £7.95  
**Micro** Spectrum  
**Supplier** Temptation  
 27 Cinque Ports Street  
 Rye  
 East Sussex.

## BORING

I think that multi screen *Manic Miner* style games where you dodge and climb things are getting a little boring, possibly even very boring. *Cave Fighter* is such a game albeit with the added feature of a chance to blow a few of the aliens away.

There are 31 different caves, a little man who looks quite a lot like Miner Willy, ropes to climb, things that bounce up and down, things to jump and deadly spitting flowers.

There isn't actually anything wrong with the game at all in that it meets the current criteria



that represent 'good programming', but oh boy it's boring.

**Program** *Cave Fighter*  
**Price** £6.99  
**Micro** Commodore 64  
**Supplier** Bubble Bus Software  
 87 High Street  
 Tonbridge  
 Kent TN9 1RX

## ZAP AWAY

*Ancipital* is the latest from the near legendary as makes no difference Jeff Minter. It involves above all, killing endless waves of different things with an endless variety of unlikely bullets — bananas and cassette boxes amongst them.

The ancipital is a sort of half-man, half-goat mutant that has to find its way through a number of chambers (100 in all) rendering each one harmless.

The passage from one chamber to another is achieved either by blasting it, finding the right camel (yes, they've not been forgotten, folks) or landing on it.

This and a couple of other refinements bring some sort of strategy to the game but basically it's a treat for zappers everywhere.

**Program** *Ancipital*  
**Price** £7.50  
**Micro** Commodore 64  
**Supplier** Llamasoft  
 49 Mount Pleasant  
 Tadley  
 Hants  
 RG26 6BN

## GIANT ANTS

After nearly a year the sublime *Ant Attack* has been converted for the Commodore 64. The program uses slightly different techniques to generate the 3D walls that make up the walled city of Antesch, but the end result captures the wonderfully gothic atmosphere of the original. Only one major difference here, the walls are given a smooth appearance rather than the dotted effect on the Spectrum — I think it might be marginally less effective.

The idea of the game is to rescue a member of the opposite sex imprisoned within the walls of the city — staked out on top of one of the walls in fact.

This simple objective requires your little figure making a mad dash through the city jumping walls and dodging the hordes of nasty giant black ants.

Since much of the city is 'invisible' at any one moment, being 'behind' a wall you often have to move your angle on the city — this represents your viewpoint.



It's compulsive, very otherworldly, non-sexist and it doesn't look like any other game.

**Program** *Ant Attack*  
**Price** £7.95  
**Micro** Commodore 64  
**Supplier** Quicksilva  
 PO Box 6  
 Wimborne  
 Dorset BH21 78PY

## Q HERE

*Hubert* is yet another version of *Q Bert* for the Spectrum. Why people bother to produce endless versions of the same thing has always escaped me.

Once again *Q Bert* (OK this time he's called *Hubert*) jumps up and down the pyramid turning the blocks different colours.

There's nothing actually wrong with *Hubert* but it isn't as good as some of the other versions of the game. It does have one redeeming feature, though, it's cheap.

**Program** *Hubert*  
**Price** £4.95  
**Micro** Spectrum  
**Supplier** Turtle Software  
 Wychwood  
 40 School Road  
 Finstock  
 Oxford OX7 3DJ

## HECTIC

*AbbeX* is a Spectrum software house that has been around for a while now, and with *All or Nothing* they may get back into the charts. It is a sort of strategy game version of *Ant Attack* — lacking a lot of the atmosphere and slickness but using the same edge-on 3D screen.

The idea is that you are parachuted into a secret factory to discover the whereabouts of secret files. As you move about there are a number of useful things you may discover including guards who can be interrogated.

With charges to be laid and dogs and guards charging madly around it's a fairly hectic game. The bottom of the screen shows you what you have already collected and will



flash the appropriate object when it is in use. Features bribery, bluff and last, but by no means least, violence, as you hunt the enemy camp. What more could you want?

**Program** *All or Nothing*  
**Price** £6.95  
**Micro** Spectrum  
**Supplier** AbbeX  
 Tavistock House  
 34-36 Bromham Road  
 Bedford  
 MK 40 2QD

Compiled by Graham Taylor

New Releases is designed to let people know what software is coming on the market. If you have a new game or utility which you are about to release send a copy and accompanying details to: New Releases, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.



## Lack of attitude

**I**t has been a few months since I wrote my first Ziggurat on the prejudiced attitude, or lack of attitude, of software writers towards women. Earlier this year an advertisement appeared from Bug Byte warning of the approach of 'the first major piece of software for the female market'. Intrigued by this I decided to visit the company to find out more about it. There was only a niggling worry, that perhaps the program had turned out to be, surely it couldn't... I must be wrong... You guessed it, it was the *Computer Cookbook* by Ian Hoare.

However, the interview did turn out to be an interesting discussion with John Phillips, responsible for the marketing side of the company.

"I feel that attempts to capture the female market so far have been clumsy and condescending. It is inherently more sexist to say that this game is 'aimed at women'. But on the other hand, how do you stimulate an underdeveloped side of the market without aiming straight at it?" So how did he feel about their own approach to marketing the cookbook? Surely it was the content of the product as much as the advertising approach that determined whether it was stimulating or condescending. "It was the idea of our advertising agency to promote the cookbook that way, with the aim of hitting the biggest target market. But we weren't particularly happy about it."

Indeed, later handouts changed the wording to 'ideal for any member of the family, particularly those who spend a lot of time in the kitchen'. This raises the interesting question of how the professional advertisers see the issue.

So what about Bug Byte's more standard arcade games — what scope is there for making them less biased, without necessarily 'aiming them at women'. "I accept that the computer games market is incredibly sexist, even though the product is in theory not sexually orientated.

But that presents a problem for us, we have to accept that our sales rely on teenage males to a very great extent. If I started giving the characters female names to encourage girls and our existing market dropped off, my head would roll."

As a contrast to Bug Byte I decided to take a look at the other side of the computer games industry, ie, adventure games. I chose Level 9 to visit because they appear to be one of the few companies to have female characters in central roles.

"We agree that female characters may be hard to sell to the young males that dominate the arcade market, although there is no reason why they cannot offer a choice of sex," Pete Austin said. "I think at school girls are put off computers because the boys are encouraged to be more pushy and thus tend to take over computer classes, together with the fact that girls are encouraged towards art subjects.

Margaret Austin continued, "I think what you need are women running software companies. Level 9 would not be against taking on female programmers if we could find them. We do have a woman, Joan Lamb, programming the graphics for our new game, *Eric The Viking*. There was also Sue Gazzard who designed *Lords of Time*."

Regarding his own programs Pete had the following to say. "I feel that it would be stupid to alienate part of the audience for my games by resorting to insulting images of women. I was very conscious of the problem of stereotyping in most dungeon and dragon type adventures. Even in my own early games there are stereotypes that I find embarrassing in retrospect.

"The reason for choosing a female 'lead' in *Snowball* was a reaction to this stereotyping and to the male domination of the real USA/USSR space race even though no particularly 'male' skills are required to be an astronaut. There also seems to be an unspoken assumption that incidental characters should, by default, be men, so I have made them women as well."

So where does that leave us? Is there really scope for changing the sort of software being written? There are obviously differences between the two types of game. Adventures perhaps have more scope for imaginative and sensitive dealing of complex issues than arcade games. However, there have been very successful arcade games, *Ant Attack* in particular, that have overcome, and even made a spoof of, sexual stereotyping.

So it would seem that the idea that 'our market dictates our product' is an unacceptable oversimplification. The attitudes of the programmer have as much to do with it as anything.

Jane Stoneham

## Lowest form

### Puzzle No 128

One of the most amusing cryptograms of recent years has been the following: *EVE/DID = .TALKTALKTALK* . . . .

That is by substituting digits for letters (a different letter indicating a different digit) an arithmetical expression can be formed.

In the example quoted, the fraction — which should be reduced to its lowest form — is evaluated to obtain a decimal with four repeating digits.

Can you find its numeric value?

### Solution to Puzzle No 123

They had sold 118 of the hard back edition at £5.99 per copy, and 274 copies of the paper back at £1.07. This makes a total of one thousand pounds.

The program assigns a number for the total sales of the hardback edition, and evaluates the revenue that would be raised. This is deducted from the total amount, and the remainder is equal to the sales of the paper-back version. This is divided by the price of each copy to find the number sold, which must be integral.

```
10 LET X = 1.20 LET Y = (100000 - 599 + X)/107.30 IF Y = INT(Y) THEN PRINT X, Y 40 LET X = X + 1.50 GOTO 20
```

Of the answers printed, all but two contain negative values which are clearly not possible. From the two sets of values that remain, one has to be eliminated as it gives the number of hardback books as 11, and the problem states that more than this have been sold.

### Winner of Puzzle No 123

The winner is: Paul Cheetham, Pine Grove, Henthorn, Clithorn, Lancs., who receives £10.

### Rules

If the puzzle prize can be sensibly solved using a computer, then the winner will have included a listing of the program used to find the correct answer. The closing date for entries to Puzzle No 128 is October 26.

## The Hackers



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| PIROMANIA ..... 48K Spec £6   | MORRIS MEETS THE BIKERS .. Any Spec £6                                    | PI-BALLED ..... 48K Spec £6          |
| PI-IN'ERE..... 48K Spec £6  | T-SHIRTS State Size ..... Price £5  | DARTZ ..... 48K Spec £5              |
| YAKZEE.. Dragon/48K Spec £5   | 'BACKCHAT' Speech Synth. CBM64 with Software & Programming Book ..... £25 | NEW WHEELS JOHN? 48K Spec £5         |
| PIMANIACS CLUB for 20% off all products, PI-Monthly Magazine. Annual Subscription U.K. £5 |   | Piman's Stereo L.P. Cassette .... £3 |

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