

A Database Publication

# electron

## user

Vol. 6 No. 12 September 1989 £1.25

**Be a micro mechanic!**

**Clever type-in program lets you create your own expert system**

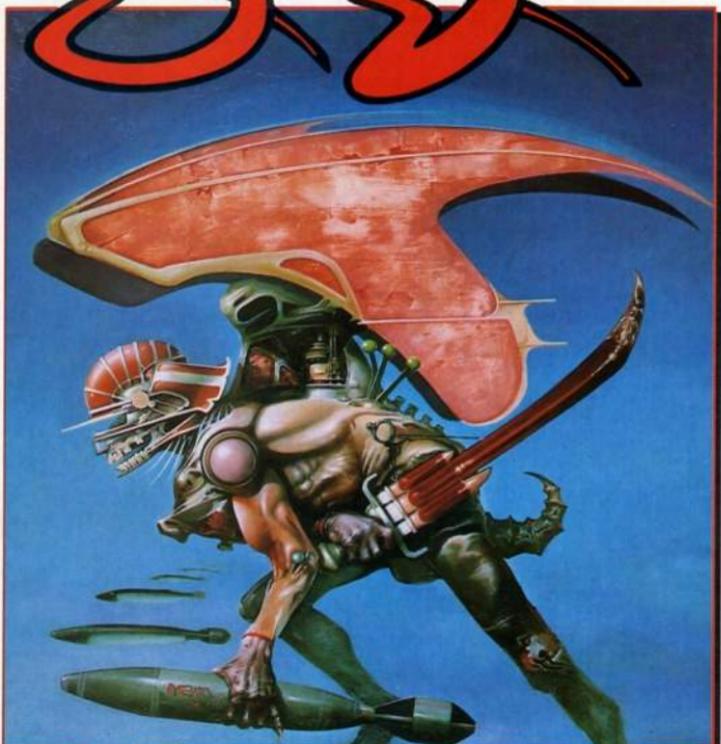
### REVIEWS

**Basic Editor Plus,  
Sam 10, Ballistix  
Avon and Murdac**

### LISTINGS

**Keep track of your magazines with Ceemags  
Update your files with Attribute Editor  
Learn to touch type with Snakes**

# BALLISTIX



## BALLISTIX - It's a whole new ball game!

Sick of silly old soccer? Tired of pathetic pinball? Then you need a dose of BALLISTIX - the fastest, wackiest, toughest computer ball game yet to appear - and a No. 1 smash hit on the Atari ST and Commodore Amiga computers. BALLISTIX just explodes with excitement, puzzles and an amazing 60 different screens of frenetic action.

BALLISTIX is incredibly flexible too. You can play against the computer or another player, can define where the balls are fired and their direction and can rack up bonuses that will get you extra goals, all to the accompaniment of a crowd that applauds your every goal. It's tough, fast, challenging and incredibly competitive.

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Please make cheques payable to "Superior Software Ltd".  
 (The screen pictures show the BBC Micro version of the game.)

### GAME FEATURES

The aim of the game is simple enough: score more goals than your opponent to win a match. However there are lots and lots of extra features to contend with as you advance from screen to screen, for example:

- **HIGGLES** to get the balls over.
- **SPITTERS** produce extra balls.
- **BUMPER** bounce balls all over.
- **MAGNETS** divert balls from you.
- **HOLEE** for balls to drop down.
- **TUNNELS** hide balls from view.
- **RED ARROWS** accelerate balls.
- **OIL SLICKS** stop balls dead.

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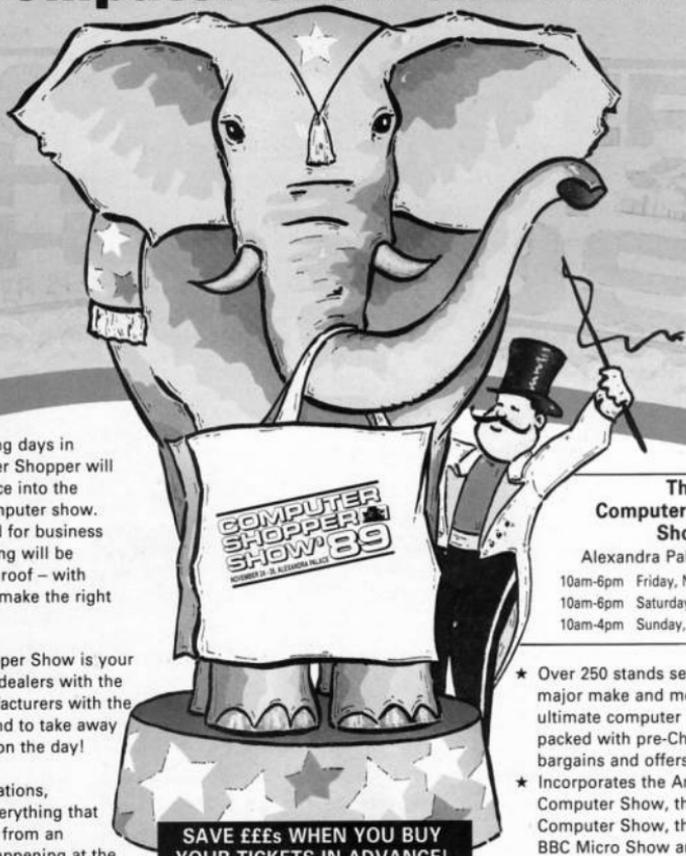
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Order on Page 45

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## Pres scoop brings 50 disc games to Electron

**A DEAL which promises to revolutionise games playing for Electron users has been pulled off by Surrey-based Pres.**

After several months of negotiations with brothers Richard and Steve Hanson, John Huddleston of Pres (0276 72046) has secured the rights to convert more than 50 Superior Software games to Electron disc. Games discs for the Acorn machine have always been very few and far between, but as the Pres plans unfold they should form the most important boost

for the Electron in recent years.

Some of the titles will be released singly, but many will be put into four-game compilations in line with the Play it Again Sam concept already successful for Superior.

"We already have people working on converting the first of the titles to Electron disc and hope to be able to announce initial releases as soon as possible", said John Huddleston. "We will start with the games which can be converted easily then move onto the more difficult

ones. It is our intention to eventually convert all the titles".

He acknowledges that some like Elite may cause memory problems, but is confident that snags can be overcome by grouping games together with an E00 filing system.

Since the conversion work is in its infancy, not even approximate times have been released for the first disc versions.

"We have never gone in for expensive products. The games discs will be reasonably priced", promised John.



## Superior tackles soccer

DUE out soon on the Electron is Superior Soccer, a game which demands more than just player skill. "You can be a player or a manager or a player manager," said Richard Hanson of developers Superior Software (0532 459453). The Electron cassette version of Superior Soccer will cost £9.95.

## New Email services for MicroLink

FOLLOWING last month's decision to switch the MicroLink electronic mail service from Telecom Gold to Istel, it has been revealed that the 10,000 subscribers will soon have access to the widest range of electronic mail services in Britain.

New plans include easy access to more than 1,000 global databases, international teleconferencing and teleresponding. They also offer Istel's higher speed 2400 baud rate with MNP error correction and the support of X-Modem, Y-Modem and Kermit.

Subscribers will continue to be able to communicate with Telecom Gold and other international Dialcom systems and MicroLink chairman Derek Meakin has promised that the service will continue to undercut Telecom Gold prices.



## Winners collect

LONDON Zoo, complete with panda, recently hosted the awards presentation of the national Datachase schools competition, a joint venture between the World wide Fund for Nature and computer printer manufacturer Citizen Europe.

Winners of the 5 to 8 age group were the pupils of Cuckfield School. First in the 9 to 14 class was Hemphill Hall Primary, of Nottingham, and winners in the 15 to 19 age group were Loreto College, County Derry.

Each of the winners received

computer equipment vouchers worth £2,000 plus a Citizen 180E printer.

Pictured with pupils from the winning schools are judges Biddy Baxter, former Blue Peter editor, Dominic Powlesland of English Heritage and Rosemary Gacki, of Citizen Europe. Another of the judges was John Craven of Newsround fame.

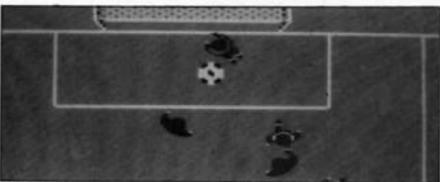
## 4D dives in, too

THIS month sees kick-off for the first action football game on the Electron. Arcade Soccer from The Fourth Dimension gives you sliding tackles, diving goalies, corners and throw-ins.

Other features include goal kicks, eight directional scrolling, one to 16 player options and full keyboard or joystick controls.

"It's a game that I have wanted for some time", said Dimension's Steve Botterill. "We have put everything into it that we wanted in a soccer game ourselves".

Arcade Soccer has an overhead view for ease of play with the option to take on 16 computer teams of varying ability. Electron cassette costs £9.95.



Arcade Soccer gives an overhead view

**ELECTRON users can now test their brain power with Hi Q Quiz, a £2.99 offering from Blue Ribbon (0302 321134). Based on a board game, Hi Q Quiz has four categories of questions, science, sport, history and geography plus art.**

# Gallup Software Chart



THIS MONTH	LAST MONTH	TITLE (Software House)	COMMENTS	PRICE
1	●	<b>PLAY IT AGAIN SAM 10</b> <i>Superior</i>	The latest but not the last of the Sam compilations. This one re-runs Zalaga, 3D Dotty, Repton thru Time and debuts Qwak.	9.95
2	●	<b>SPOOKSVILLE</b> <i>Blue Ribbon</i>	Ghost hunting time again. An arcade adventure, simple and a little dated now. Good value though as you search for the spell book.	2.99
3	▲ <sub>14</sub>	<b>ZALAGA</b> <i>Aardvark</i>	The original release which is now also available on Sam 10. If you haven't got this Orlando classic, buy it, (it's cheaper as part of Sam 10).	9.99
4	●	<b>GALAFORCE</b> <i>Blue Ribbon</i>	One more from the Superior/Blue Ribbon deal to bring you the classics of yesteryear at a budget price. Well worth the money.	2.99
5	●	<b>PREDATOR</b> <i>Superior</i>	A new full-priced game. This is your opportunity to take on the Schwarzenegger role rescue to the diplomats and destroy the alien.	9.99
6	●	<b>COMBAT LYNX</b> <i>Alternative</i>	Back in the charts again is this wartime helicopter simulation. A nice introduction to the world of chopper pilots.	1.99
7	▼ <sub>1</sub>	<b>FRAK!</b> <i>Aardvark</i>	A good five years old now, this is another Orlando classic and one of the first for the Electron. A collector's piece.	7.95
8	▼ <sub>5</sub>	<b>JOE BLADE 2</b> <i>Players</i>	The graphics are good and the game very playable. The puzzle screens are wicked and will keep you busy for hours.	1.99
9	●	<b>YIE AR KUNG FU</b> <i>Hit Squad</i>	There have been many clones of this and any combat game is invariably compared to it. A nice trip into meaningless violence.	2.99
10	▼ <sub>2</sub>	<b>LAST OF THE FREE</b> <i>Audiogenic</i>	Still selling well even at full price, this one has not been in the charts for some years but has had a new lease of life recently.	7.95
11	▼ <sub>10</sub>	<b>GRAHAM GOOCH TEST CRICKET</b> <i>Alternative</i>	Originally released by ASL, it is more suited to the budget label. Recommended if you are totally disheartened with England's Ashes performance.	1.99
12	●	<b>CODENAME: DROID</b> <i>Blue Ribbon</i>	Now at a budget price this is a must if you have got Stryker's Run and are willing to take on the vengeful hordes.	2.99
13	●	<b>RAVENSKULL</b> <i>Blue Ribbon</i>	A classic and a bargain even at full price. An excellent arcade adventure which will keep you busy for days.	2.99
14	●	<b>JOE BLADE</b> <i>Players</i>	Back to the charts this month is the original of the Joe Blade duo. Community-conscious Joe has a battle on his hands.	1.99
15	▼ <sub>8</sub>	<b>COMMANDO</b> <i>Encore</i>	A Rambo style shoot-'em-up against the odds. Now on a budget label, but you can also buy this as part of Play it Again Sam 3.	2.99
16	●	<b>HI Q QUIZ</b> <i>Blue Ribbon</i>	A new budget-style Trivial Pursuits quiz. If you like general knowledge questions this is a nice chance to test your skill.	1.99
17	●	<b>HOWZAT</b> <i>Alternative</i>	Back to cricket and to the screens where it never rains. You can now be the team selector. A simple but fun implementation.	1.99
18	●	<b>COPS 'N ROBBERS</b> <i>Atlantis</i>	Escape imprisonment in this platform game by shooting the intrepid police. Of dubious taste though quite a good game.	1.99
19	●	<b>PLAY IT AGAIN SAM 6</b> <i>Superior</i>	This compilation gives you the chance to see Galaforce 2 and Hunchback for the first time, as well as reminiscing over Hopper and Video's Revenge.	9.99
20	▼ <sub>3</sub>	<b>STORMCYCLE</b> <i>Atlantis</i>	Save Earth from imminent invasion and disaster by finding five diodes, killing the enemy and beating the clock.	1.99

# Having a ball



Product: Ballistix  
 Price: £9.95  
 Supplier: Superior Software, Regent House,  
 Skinner Lane, Leeds LS7 1AX.  
 Tel: 0532 459453

BALLISTIX, Superior Software's latest release, is a sort of cross between a pinball machine and shove ha'penny, making it unlike anything you've seen before. It's a one or two player game and is great fun either against the micro or a friend.

The game is played on a court and the screen shows about half of this from a bird's eye viewpoint, scrolling as necessary to reveal the rest. At either end of the court is a goal, yours is at the bottom of the screen in the one player game. You can take your pick in the two player version.

The puck — a large red ball — is released in the centre of the court. You control an arrow which automatically follows the puck a short distance away and always points toward it. You fire small balls at the puck in an attempt to knock it into the opposing goal.

While you're about this tricky business your opponent or the computer is attempting to reverse the process.

The computer opponent simply takes the form of gravity — it's like playing uphill. It might not sound difficult, but in practice it certainly is.

You score points for goals, but the number you receive depends on how good the goal is. Run the puck over the line and you won't score many, but a long shot from half way down the court earns a lot.

To add interest and create a lot of frustration various objects litter the court and special tiles can be shot for extra features and bonuses.

Arrows accelerate the puck in the direc-

tion they point, which more often than not isn't the direction you want to go. Also the puck can disappear down black holes and reappear in the centre of the court. Tunnels suck in the puck and blast it out of the other end. Ridges present barriers and magnets attract it. Oil slicks and dead spots stop the ball.

Bonus tiles can be shot and RICOCHET letters can be collected for a further bonus. Splitters shatter the ball into four or eight bits, other tiles stop or send the puck off in a random direction.

You start off on a court with very few extra features, and on scoring three goals you move on to the next and harder level. More features are progressively added to increase the difficulty. With 30 levels to master, Ballistix is very challenging.

One feature I particularly like is that on completing a level you are given a password so you can skip any levels you've mastered next time you play.

The Mode 5 graphics are excellent, and minor colour changes add a little variety. The sprites are well defined and clearly visible over the background court graphics. The court scrolls quite quickly, though it jerks a little, but I didn't notice this while playing.

The sound effects are limited, just the odd beep here and there when the puck is hit or bounces off an object. A tune or two would have brightened up the game.



Ballistix is original, fun and very addictive. Each new level is a challenge which brings a new court layout with several surprises. I found it just as much fun as a one player game as with a friend. If you're on the lookout for something completely different Ballistix could be right up your street. Recommended.

Roland Waddilove

Sound.....	5
Graphics.....	10
Playability.....	10
Value for money.....	9
Overall.....	9

## Second Opinion

*I found Ballistix interesting initially, but after a while it became tedious. The two player version has more challenge, so if you can't find an opponent to play it with I'd forget it.*

Llewelyn



SAM finally reaches double figures with a compilation consisting of Zalaga from Aardvark, 3D Doty by Blue Ribbon, the ubiquitous Repton with his time travels and a new arcade game called Qwak.

**Zalaga**, a typical classic shoot-'em-up, is an early work from the keyboard of the acclaimed Orlando and is best described as an update of the old Galaxians arcade game. You start each level with a blank screen on to which streams of aliens pour at an incredible speed. By positioning your laser base correctly you can dispose of quite a few of them.

Once on screen they form a traditional space invader pattern, moving back and forth then diving down towards you in groups dropping bombs. Between every second screen there's a challenge where aliens stream on without dropping bombs – you must shoot as many of them as possible. You get a bonus depending on your success rate.

While Zalaga is fast, colourful and furious the good-sized sprites tend to flicker, and although I've made it to level three, you'll need to be a really dedicated keyboard basher to want to play it a lot.

Next up is **3D Doty**. I'd never seen it before and was quite pleasantly surprised. You are presented with a three dimensional view of three floors of a sort-of multi-storey car park with the floor missing. Small white dots fill the narrow pathways and your little figure – a sort of pac-man with legs – has to

# Gaggle of games

Product: *Play it Again Sam 10*

Price: £9.95 (tape)

Supplier: Superior Software, Regent House, Skinner Lane, Leeds LS7 1AX.

Tel: 0532 458453

go round and chomp them.

Three highly mobile fungi stream across the floor, and contact with them drains your energy. So you run across the floor surfaces avoiding the fungus – which chases you – trying to get every dot, some of which are hidden behind pillars. For your defence you have three blocks that will prevent the fungus following you.

The game is fairly simple, the graphics small but adequate, the sound uninspired and irritating but can be turned off. It makes a refreshing change after the stresses of Zalaga.

**Repton Thru Time** hardly deserves a mention – you got the game, the 40 screens and the editor. Apart from that it's just more Repton 3 fun, but we've seen it all before



too many times. Sound and graphics are what you've come to expect from this game.

I'm in two minds about the final offering, a new release called **Qwak**. By itself is not worth the price of the compilation so if you've got the other three games you're

Product: *Avon and Murdac*

Price: £17.50 (DFS format)

Supplier: Topologika, PO Box 39, Stilton, Peterborough PE7 3RL.

Tel: 0733 244629

TOPOLOGIKA is a software house that has steadily gained a first class reputation in the provision of adventure games and educational software. It's not surprising, really, when you remember that the stable of writers includes such luminaries as Jonathan (Kingdom of Hamil) Partington, Jon (Acheton) Thackray and Peter (Philosopher's Quest) Killworth.

Just issued is a double-game blockbuster from the combined talents of Jonathan Partington and Jon Thackray. The disc contains two quite different text-only adventures that delighted my purist here: **Avon and Murdac**.

The package consists of the usual neat folder containing the disc, two leaflets introducing the background to each adventure, two sealed envelopes embellished with the admonition *Don't be tempted* – concealing clue sheets – and last, but not least hour upon hour of fun and frustration.

I'll begin with Avon, since that should be regarded as the A side of this particular release. As the title hints, it is a brilliant rump that pays tribute to that Swan of Avon, that Bard illustrious, Will Shakespeare no less.

As a tourist from the United States, here you are in Stratford absorbing the atmosphere when slowly but steadily the magic of history begins to take effect – as the introduction puts it. *There was nothing I*

*could get my bearings from. Modern Stratford was leaving me behind.*

And so you suddenly find yourself in the following location: *"You are standing on a flat plain. From here it seems that all the world's a stage, and all the men and women merely players. They have their exits and their entrances to the north, south east and west".*

With these words you are pitched headlong into a world redolent of Shakespearean references and allusions, many extremely funny, and a number of puzzles that need deductive and observational power to solve them rather than literary know-how.

I strongly recommend a good wander

# The bard's tale

round the many locations that you can without needing to solve any puzzles first. I am delighted to say that Jonathan here follows the philosophy I heartily approve of – he doesn't pack the early stages of this adventure with puzzles that must be solved before you can advance any further. Other, lesser, writers or would-be-writers, please note and follow the example set by these experts.

The only tiny problem that has to be over-

come early on is that of finding some way of seeing in the dark – and those three charming ladies on the blasted heath have the answer to that. And, what's more, are quite willing to see eye to eye with you regarding your need.

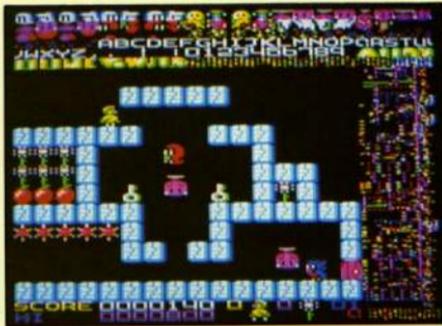
Another acquisition which will be useful from very early on in the game is the equivalent to the packing-case used as a storage medium in *Dungeon Adventure* – and you should remember what use Sir John Falstaff made of it in *The Merry Wives of Windsor*, too.

The language at times is lyrical and at others acts as a vehicle for the zany humour that characterises this adventure. I really must give a few examples to whet your appetites:

*"A rather dull-looking constable appears, cries 'HAVOC, and lets slip the dogs of war.*

*In fact a small chihuahua appears and stands barking at you. 'Drug squad', says the constable. 'I must search you for certain substances'.*

*"You sit down at the feast. To your horror a ghastly vision appears and shakes its gory locks at you. It is the ghost of the Scotsman you have so foully slain! You stand and address this shadow, this unreal mockery, which only you can see. This displaces the mirth of the guests, who stand*



paying over the odds. Then again, it is very smoothly programmed and has a sense of humour.

You control Qwak, a little duck, in a simple levels game in which you collect all the keys on the screen and make your way through a door to the next. You can move left, right and jump plus send out a bubble to dispose of baddies. However, completing a screen peacefully – without bubbling a baddie – earns you a nice bonus.

You also get points for various other objects picked up and collecting seven flowers gives you an extra life. The graphics are detailed and the sprites' movement is quite

smooth. Unusually for an Electron game, it is in Mode 2 and the extra colours make it very colourful.

As with the other Sam compilations, its value for money depends on how many of the other re-releases you've got. If you're missing two or three of these games then Sam 10 is recommended.

Lazarus

Sound	7
Graphics	7
Playability	8
Value for money	9
Overall	8

## Second Opinion

*The only new game for me is Qwak, an entertaining and addictive, if old-fashioned, levels game. I liked the gameplay and the colourful Mode 2 graphics. The other re-releases were all excellent titles in their day, but I'm now bored with Repton. Let's see something a little different on the next Sam compilation, Superior.*

Roland Waddilove

*not upon the order of their going, but go at once. The ghost awants and quits your sight, melting into the wall to your north-east.*

*You are at the centre of the wood. To the south is a cottage which probably belongs to a retired criminal, for it bears the name Dunsinnin\*.*

The parser is of the kind we have grown to accept as normal for a sophisticated adventure from a top flight author. It happily accepts multiple input such as GO NORTH, EAT THE PIE, OPEN DOOR, IN and can deal with exclusions such as TAKE EVERYTHING EXCEPT THE GOBLIN.



It's very helpful when mapping to be given a long location description first time there and a shorter one on subsequent visits, but you can arrange to have the full description every time simply by entering the command VERBOSE.

At the heart of the adventure – apart from the treasures to be collected – are a number of fascinating puzzles which will have

many of you muttering away to yourselves as you try to solve them.

For me, the most fascinating was the casket problem: Lady Portia – from The Merchant of Venice – has three caskets, of lead, silver and gold.

The problem is working out in which order to open them so as to get the real prize as against the booby prize. You'll encounter this problem three times, since the action of the game takes place on three different dates – January 6, March 15 and June 24 – and a potion is your passport to time travel.

There are a whole host of less complex puzzles, some of which need applied common sense and some a little general knowledge. Thus, you can pacify a musical goaler provided you know who is his favourite composer.

Similarly, you have to drink that old toper Sir John Falstaff under the table – which is

Turn to Page 10 ▶

## Second Opinion

*I prefer adventures which concentrate more on puzzle solving and less on mapping a large number of locations and Avon and Murdac fit the bill.*

Roland Waddilove

Presentation	9
Atmosphere	10
Puzzlement	9
Value for money	9
Overall	9

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# fun school

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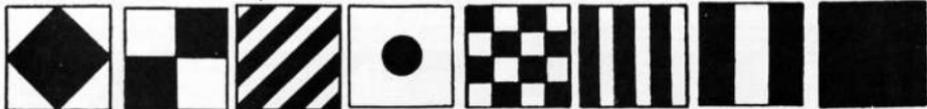
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## Attribute Editor

```

Directory entry No :3
Name :ScrSave      Attributes :WR
Load address : Exec address : Length
1F00             8023             01FD

A - Alter, N - Next, Q - Quit
L - LR, W - WR, T - LWR, E - E
    
```

# F

# lying the flag

**Jim Mure presents a handy disc utility to make changing access codes of files easier**

**A**TTRIBUTE Editor is a short but very useful utility for ADFS disc owners who can use it for setting and re-setting the access codes associated with each file.

Along with each file saved on disc the ADFS stores a number of flags which define what you can do with a file. For instance, one of the most common flags, L, is used to indicate a locked file. Once this is set it is impossible to accidentally delete or overwrite the file - a useful safety net for valuable programs and data.

If you save a file like a program listing or View text and then catalogue the disc you'll see the letters WR following the name. The first letter, or access code to give it its proper name, means you can write to the file. In other words you can overwrite it by saving or opening a different file with the same name or delete it entirely from the disc. The R means you can also read the file - in other words open, or load it.

To change the flags or access codes you use ACCESS like:

\*ACCESS Program LR

This will set Program so that it can be read - loaded and run, but it can't be overwritten or deleted. It's a good idea to lock all

your valuable files in this way.

With up to 48 files in a directory and the number of directories limited only by disc space, it can be very time consuming and tedious altering all the access codes. And a further problem is that if you change a file to E - execute only - you can't change it back again like you can with the other flags.

Attribute Editor, a menu driven utility, is designed to make the process of altering these flags much simpler - and you can alter the E flag too. All you need to do is run the program, place a disc in the drive and hit

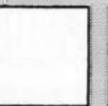
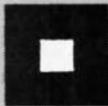
a key. Press Return for the \$ root directory or enter the directory name to go to. Each program will be listed along with its flags, length, load and execution addresses. Press N to see the next file or A to alter the current one's attributes.

On pressing A another prompt is displayed and here you select L for LR, W for WR, T for LWR, and E for E. The file will be changed and re-displayed. Press N for the next one or Q to quit. And that's all there is to it, now valuable files can be locked in a flash.

```

10 REM Attribute Editor
20 REM By Jim Mure
30 REM (c) Electron User
40 PROCstart
50 PROCdir
60 NUM1=0
70 FORFX=1205 TO 1616F STEP26
80 IF?FX=0 CLS:PRINTTAB(3,10)"
No more entries in this directory
!":AS=GETS:RUN
90 NUM1=NUM1+1
100 CLS
110 PROCheader
120 VDU23,1,8202;0;0;0;
130 PRINT"Directory entry No :
";NUM1
140 PRINT"Name :";
150 PROCshow
160 PROCattr
170 PROCdetails
180 PRINT"TAB(4)"A - Alter, N
- Next, Q - Quit"
190 AS=GETS
200 IF AS="A" PROCalter:GOTO 10
0
210 IF AS="Q" PROCend
220 NEXTn
230 END
240 DEFPROCalter
250 FOR UX=0 TO 4
260 IFUX=3 THEN 280
270 ?(FX+UX)=(?(FX+UX) AND 7F)
280 NEXT
290 PRINT" L - LR, W - WR, T
- LWR, E - E"
300 AS=GETS
310 IFAS<>"L" AND AS<>"W" AND A
S<>"T" AND AS<>"E" THEN GOTO 300
320 IFAS="M" THEN ?(FX)=(?(FX)
+128):?(FX+1)=(?(FX+1)+128)
330 IFAS="L" THEN ?(FX)=(?(FX)+
128):?(FX+2)=(?(FX+2)+128)
340 IFAS="M" THEN ?(FX)=(?(FX)+
128):?(FX+1)=(?(FX+1)+128):?(FX+2
)=(?(FX+2)+128)
350 IFAS="E" THEN ?(FX+4)=(?(FX+
4)+128)
360 *OPT4,3
    
```

Turn to Page 14 ▶



◀ From Page 13 |

```

370 ENDPROC
380
390 DEFPROCdir
400 CLS
410 PROCheader
420 FOR FX=81205 TO 816FF STEP
26
430 IF ?FX=0 FX=816FF
440 IF?(FX+3)>127 PRINT"Dir na
me :";PROCshow
450 NEXT
460 PRINT
470 PRINT" - Hit Return for
$ directory -"
480 INPUT"Enter directory name
: ",NS
490 IF NS="" THEN 510
500 OSCLI("DIR S." + NS)
510 ENDPROC
520
530 DEFPROCshow
540 FOR AX=0 TO 4
550 IF ?(FX+AX)=13 AX=4:GOTO600
560 IF?(FX+AX)>127 PRINT CHR$(1
(FX+AX) AND 87F); ELSE IF ?(FX+AX
)>31 PRINT CHR$(?(FX+AX)); ELSE P

```

```

PRINT ". ";
570 NEXT
580 FOR AX=5 TO 9
590 IF?(FX+AX)<=13 AND ?(FX+AX)
>31 AND ?(FX+AX)<128 THEN PRINT C
HR$(?(FX+AX)); ELSE IF?(FX+AX)=13
THEN AX=10 ELSE PRINT " ";
600 NEXT
610 ENDPROC
620
630 DEFPROCstart
640 CLS
650 PROCheader
660 PRINT" - Insert disc and
press any key -"
670 BS=GETS
680 *MOUNT
690 ENDPROC
700
710 DEFPROCattr
720 PRINT TAB(20)"Attributes : "
;
730 IF?(FX+4)>127 PRINT "E":END
PROC
740 IF?(FX+3)>127 PRINT "D";
750 IF?(FX+2)>127 PRINT "L";
760 IF?(FX+1)>127 PRINT "M";
770 IF ?FX>127 PRINT "R";

```

```

780 ENDPROC
790
800 DEFPROCheader
801 COLOUR 129:COLOUR 0
810 PRINTTAB(10,1)" Attribute E
ditor "
815 COLOUR 128:COLOUR 1
820 PRINTTAB(10,2)"-----
-----"
830 ENDPROC
840
850 DEFPROCend
860 *
870 VDU23,1,1;0;0;0;0;
880 END
890
900 DEFPROCdetails
910 PRINT"Load address | Exec
address | Length"
920 FOR DI=11 TO 19 STEP 4
930 IF ?(FX+DI)<17 PRINT;"0";"?
(FX+DI); ELSE PRINT;"?(FX+DI);
940 IF ?(FX+DI-1)<17 PRINT;"0";
"??(FX+DI-1); ELSE PRINT;"?(FX+DI-
1);
950 PRINT;" ";
960 NEXT
970 ENDPROC

```

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# EXPERT ELECTRON

## Awaken your micro's artificial intelligence with the help of Francis Botto's utility

**I**f ever there were a computer application shrouded in mystery, the expert system must surely be it. The fact that expert systems have become synonymous with artificial intelligence (AI) — or is it the other way round — might have something to do with it.

AI is possibly the most fuzzy term in the computer dictionary. It seems no one can agree about its actual meaning. Expert systems are an attempt to emulate the knowl-

edge, and more important, the reasoning of a human expert. In other words they're designed to share an expert's knowledge and experience with others.

The fact that human experts of all kinds share a universal process of reasoning when problem solving makes possible the idea of an expert shell, where the knowledge base can be programmed according to a particular user's needs. The knowledge base being a collection of specific rules, which are more often than not, painstakingly arduous to define.

Within an expert system the computations that use the knowledge base in an intelligent manner may be as identical in car maintenance as computer repair. These computations are collectively referred to as the inference engine. The nature can be such as to make the whole program portable, in

terms of applying it to a variety of subjects.

Expert shells as they're called, are quite popular now, so with this in mind, and not to leave the Electron in the lurch, the program here is a shell for you.

To demonstrate how simple expert systems are, the program below is a sophisticated system incorporating the up-to-date computational technique of backward chaining. Expert Shell will allow you to enter your own knowledge base.

This base can accommodate up to 299 IF ... THEN rules, which are continually shown when the program is running so you can see what you have or haven't entered. (Hold down Control+Shift to stop them scrolling).

Before you start developing your expert system, you'll have to pinpoint a particular application. I've started using the shell to store rules concerning computer breakdowns.

For instance, each time I hear of a computer failure and its subsequent cause or cure, I record the appropriate rules. Eventually I will have a computer repair expert which will have more knowledge, as well as a better memory, than myself.

The simplest type of rules that can be entered are those involving a single fact and conclusion. For instance, consider computer fault diagnosis. If you know that when the screen is fuzzy the monitor lead is incorrectly plugged in, in Basic you'd write:

```
IF screen is fuzzy THEN monitor  
lead incorrectly plugged in
```

If you select the Enter option using Expert

```
10 REM Expert Shell  
20 REM By Francis Botto  
30 REM (c) Electron User  
40 :  
50 MODE 6  
60 DIM A$(2,299)  
70 A=1  
80 B1=0  
90 I1=19  
100 file$="New knowledge base"  
110 MODE 6  
120 REM Switch cursor off  
130 VDU 23;B202;0;0;0;  
140 REM Quit the following line  
if using tape  
150 SOUND #11,-4,SX,2  
160 :  
170 DEF PROCmain_program  
180 PROCscreen  
190 PROCcommand_interpreter  
200 PROCwhich_command  
210 END
```



## EXPERT SYSTEM SHELL

- New knowledge base

Right + left cursor keys + Return  
 ENTER EDIT Expert LOAD SAVE

```

Input problem
?CAR WON'T START
LEADS: BATTERY DEAD: SPARK PLUG FAULTY
Input LEAD you wish to investigate
?BATTERY DEAD
-USE JUMP LEADS
Knowledge base -
23 IF THEN
24 IF THEN
25 IF THEN
26 IF THEN
27 IF THEN
28 IF THEN
29 IF THEN
30 IF THEN
31 IF THEN
    
```

The Electron expert system tracing a car fault

Shell, you can simply enter this fact and conclusion.

Any single fact might have a number of conclusions. "Screen is fuzzy" could be the result of a number of things, like a video circuit blowing, a monitor fault, a damaged socket, and so on.

Expert Shell however, will cope with any number of identical facts, and will list the possibilities, giving you the option to investigate further. If a great number of possibilities flash before your eyes, then use the Control+Shift keys to slow things down.

Rather than just regurgitating conclusions of IF ... THEN statements - which would be a pretty unintelligent program by anyone's standards - Expert Shell relates rules by backward chaining.

This is a technique by which identical facts and conclusions of different rules are

chained together to get to the root of a problem. For example, if you entered two rules like:

```

1 IF screen snowy
  THEN video circuit fault
2 IF video circuit fault
  THEN short circuit
    
```

Clearly, the conclusion of rule one is the same as the fact of rule two. A program which didn't backward chain would mindlessly ignore one of these rules, which are obviously related. Expert Shell on the other hand, using the Expert option allows you to investigate further by backward chaining the whole knowledge base.

The order in which you enter rules makes no difference, but you must be careful to

ensure that rules which are connected are entered using the same wording. For instance, "fuse blown" is not the same as "fuse has blown".

To turn your micro into an expert system first enter and save the program listing. Type RUN and you'll see a menu at the top of the screen with the rules scrolling in a window below.

Let's turn the Electron into a car mechanic. Using the cursor keys, move the pointer left to the Enter option and press Return - you'll be prompted to enter rule one. Type:

CAR WON'T START

and press Return. Now type:

BATTERY DEAD

pressing Return again. That's the first rule - if the car won't start then the battery must be dead. Now for the second rule. Press Return to select the Enter option and type:

CAR WON'T START

and:

SPARK PLUG FAULTY

Rule three is:

BATTERY DEAD

and:

USE JUMP LEADS

Now you've got the beginnings of an expert system. You can test it by moving the menu pointer to Expert using the cursor keys and selecting it with Return. You'll then be prompted to type in your problem. Enter CAR WON'T START and you'll be told BATTERY DEAD, SPARK PLUG FAULTY. Now enter BATTERY DEAD and the system will tell you to USE JUMP LEADS.

Clearly the system is very limited, but it can easily be improved by typing in more rules and conclusions. The whole knowledge base can be saved to disc or tape at any point and reloaded next time you require it.

```

220 :
230 DEF PROCscreen
240 VDU19,3,1,0,0;19,0,7,0;
250 VDU26,12,61F,10,0:COLOUR129
:COLOUR:PRINT"EXPERT SYSTEM SHEL
L"
260 COLOUR128:COLOUR1:PRINTTAB(
0,2); " - :files
270 VDU81F,1,4:PRINT"Right + le
ft cursor keys + Return"
280 VDU81F,1,14:PRINT"Knowledge
base -"
290 COLOUR129:VDU28,0,24,39,15,
12,28,0,13,39,5,12,26
300 VDU81F,1,5:COLOUR:PRINT"
ENTER EDIT Expert LOAD SAV
E"
310 COLOUR129:PROCsquare
320 ENDPROC
330 :
340 DEF PROCcommand_interpreter
350 REM Enable escape key
    
```

```

360 *FX14,6
370 REPEAT:UNTIL NOT INKEY(-74)
380 ONERRORIFERR=33GOTO420
390 REPEAT
400 IFINKEY(-122) AND XX<36X=X
X+1:VDU26:PROCsquare
410 IFINKEY(-26) AND X2<4X=X2-
1:VDU26:PROCsquare
420 IFINKEY(-74)ENDPROC
430 BX=BX+1
440 PROCwindow_computations
450 IFINKEY(-74)PROCwhich_comma
nd
460 UNTILINKEY(-74):PRINT"RETUR
N"
470 ENDPROC
480 :
490 DEF PROCwhich_command
500 PROCsound
510 IF X2<3 AND X2<9 PROCcenter
520 IF X2<11 AND X2<16 PROCedit
530 IFX2<17 AND X2<24 PROCinfer
    
```

```

encc_engine
540 IF X2<25 AND X2<30 PROCload
550 IF X2<32 AND X2<37 PROCsave
560 GOTO190
570 ENDPROC
580 :
590 DEF PROCcenter
600 VDU28,1,13,39,7
610 *FX15,1
620 *FX13,6
630 IFAX=300:PROCsound:PRINT;"K
nowledge base full":GOTO190
640 ONERRORGOTO190
650 PRINTTAB(0,6)
660 PRINT;AZ;" IF ";:INPUTAS(1
,AZ)
670 REPEAT:UNTIL NOT INKEY(-74)
680 PRINT " THEN ";:INPUTAS(2
,AZ)
690 AZ=AZ+1
    
```

Turn to Page 46 ▶

# Here's how you can get the very best out of your Electron

Within the pages of these three books you'll find ALL the information you need to fully harness the power of your Electron. They cover Basic, machine-code programming and the operating system, and between them they also show how to combine all three to create more powerful and effective programs.

For the give away price of just £7.95 for the three, these books represent exceptional value and are a must for any serious Electron user.

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The Electron Assembly Language reference guide will help you get to grips with machine code in next to no time. Whether you're a beginner or are already fairly proficient, there is something for you in this book.

It has over 200 pages packed with hints, tips and example programs on subjects ranging from basic hex, binary and decimal number theory and logical operators, through addressing modes, stacks and loops, to subroutines, jumps and calls.

Every aspect of machine-code programming is covered in this book in a friendly, readable style, and there's also a comprehensive index. If you want to get more out of your micro, but thought machine code was indecipherable, this is the book for you. *Save £3 off the recommended retail price.*

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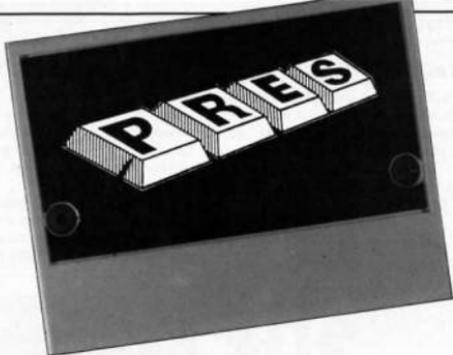
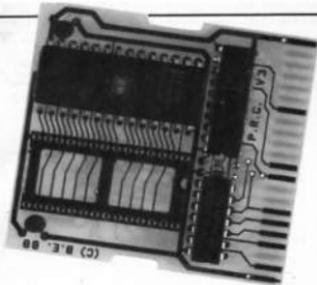
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**O**NE of the most powerful and complex utility roms available for the Electron, Advanced Basic Editor Plus, is about to be launched by Pres. It was originally produced by Acorn for the BBC Micro, but now Pres has converted it for the Electron, adding a few enhancements along the way.

It is available as either a rom cartridge or rom module – a bare rom in a small carrier that can be plugged in to a rom socket. The cartridge priced at £36.80 and the rom at £28.69 aren't cheap by Electron standards, but like many Pres products, are compatible with the BBC Micro and Master.

Plug the cartridge in to the Plus 1, type \*BE and the editor takes over offering more than 30 commands, plus another 14 from a utilities menu accessed using the UTILS command.

The best description of Advanced Basic Editor Plus is that it combines the features of View with Basic's built-in program editor. Like Basic, the editor has LOAD and SAVE commands, however once loaded, the program isn't listed with LIST – like View you tap the Escape key and go to text editor mode.

The program is listed on the screen and, like View, you can move the cursor around the screen and type in either insert or overwrite mode. New lines can be created simply by hitting Return. A space is opened up and a line number is automatically chosen for you. If necessary, the program is renu-

# Advanced listings editor

**A powerful new Basic program editor gets a thorough preview by Roland Waddilove**

bered to make room for a new line number.

Like View, it has global search and replace facilities. This is useful for renaming variables, for instance, a single command will replace all occurrences of *delay*

with *pause*. A marker can be placed in the listing and a single command will take you back to that point. It's useful for remembering your position when browsing forward or backward through the listing.

Moving the cursor to the top or bottom of the screen scrolls the listing up or down. You can also jump forward or backward one screen at a time or to the first or last line with a single keypress. Scrolling can be disabled if you prefer.

Pressing Escape takes you back to command mode where you have the options to save your modified program, run it or return to Basic. Once back in Basic the program is stored at PAGE like any other, so you can load, list, save, modify or run it as you like.

Advanced Basic Editor Plus is more than a simple text editor, it has a whole host of utilities and commands designed to make the process of entering and modifying programs much quicker and easier.

It will compact a program, taking out REMs and blank lines, shortening variable and procedure names and linking short single statement lines together to make long multi-statement ones. The process can be reversed to a certain extent – it can't replace your comments however, but it will split multi-statement lines.

Programs can be listed in a formatted style rather like LIST07, but also splitting multi-statement lines. The output can be sent to the printer as well as the screen.

The Advanced Basic Editor Plus is most useful for structured programmers that

## The BASIC Editor Plus

Program size : 1647  
Bytes free : 16529  
Screen mode : 6

### >HELP

APPEND P	INFO	000	OVERTYPE
BACK c	INSERT		QCHANGE s1 s2
CHANGE s1 s2	IT		RENUMBER n1 n2
END	LOAD P		RUN
EDIT S	LABEL		SAVE P
EXIT	MODE n		SCROLL
FIND S	NEW		TOP
FORE c	NOSCROLL		TAB n
GOTO	NUMBER		UTILS
HELP	OLD		UPDATE
IE	n		

Where: p is a program;  
s, s1, s2 are strings;  
n, n1, n2 are numbers;  
c is a colour (N,R,G,Y,B,M,C,W).

>

The HELP facility provides a brief summary of the commands available

Turn to Page 20 ▶

◀ From Page 19

avoid GOSUBs and the often abused GOTO statement. However, if you must use them labels can be substituted instead of line numbers. These take the form of:

```
110
120 GOTO @here
130
.
.
.
360
370 REM @here
380
```

The program can't be run with these labels as they are used for editing purposes only. The NUMBER command instructs the editor to replace all label references with the correct line numbers.

Merging programs is simple using the intelligent APPEND command. It takes a file from tape or disc and adds it to the end of the one in memory. Don't worry about line numbers clashing, as the imported program will be renumbered to continue from the last line of the resident one.

The only problem experienced with the software was with the VLIST command, which can be used to display all the variables used and their values after running a program. I was so eager to try out the Basic

Editor I didn't read the manual, loaded a program and entered \*VLIST x. The result was one crashed micro.

The fact that I've got every rom and add-on except the kitchen sink plugged into my Electron may have something to do with it, and the command does work if entered correctly.

Apart from that minor glitch I was very impressed with the Advanced Basic Editor Plus. It is probably the most powerful software to be released for the Electron for a

long time. If you spend a large proportion of your time entering, editing, running and debugging Basic program listings I can fully recommend this most useful package.

Product: Advanced Basic Editor Plus  
Price: £36.80 (cartridge)  
£29.69 (rom module)  
Supplier: Pres, PO Box 319, Lightwater,  
Surrey GU18 5PW.  
Tel: 0276 51427

## The BASIC Editor Plus

Program size : 3182  
Bytes free : 13458  
Screen mode : 6

### >INFO

Scroll on  
Overtyping mode  
White on blue

Program name: EXPERT  
Last search: None

Tab value : 5  
First line : 10  
Current line: 10

No. of lines: 162  
Last line : 1620  
Marked line: None

Pending commands: None

INFO provides information about the program and editor

# NEW! for the Electron

# KEYWORD

"5.25" version now available

## The dynamic word finder for home and business use

Now you need never be stuck for a word again because Keyword contains dozens of synonyms for over 12,000 words.

And it's so easy to use. Just type in a word and straight away you'll be offered a huge list of alternatives. Then, using the cursor keys you can select the word that's nearest to your liking.

Or if it's not exactly the one you're looking for, just press return to home in on another, more closely related set of words - and so on.

With Keyword you'll be able to quickly and effectively make use of the complete wealth of the English language, and once you've used it you'll wonder how you ever managed without it.

And the best news of all is the price. Just £19.95, plus you get a FREE calculator watch!

- Easy to use
- Over 12,000 synonyms and antonyms
- Nearly 1,000 main subject headings
- Extra rapid word search
- Can select over 70 words at a time

- Simple operation
- Flexible ' roam' facility
- Can be used as a Thesaurus
- 40 track disc contains 4,500 words

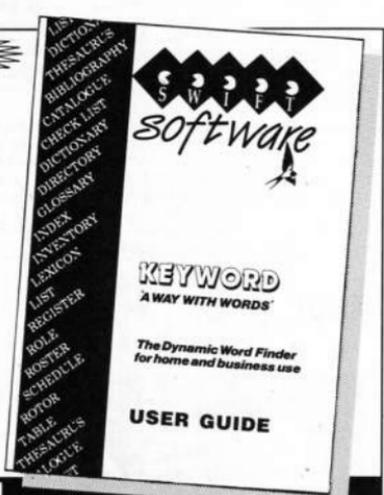
Watch offer extended - for one month only

## Special Introductory Offer

### SAVE £4.95

We will send one of these superb calculator watches, worth £4.95, to the sender of every order for Keyword we receive before 31st August, 1989

In case of high demand we reserve the right to replace this watch with one of equal or better value



## ORDER FORM

Please send me a copy of Keyword for the following:

5.25' DFS (40T)	£19.95	<input type="checkbox"/>
5.25' DFS (80T)	£19.95	<input type="checkbox"/>
3.5' ADPS	£19.95	<input type="checkbox"/>

Name

Address

Post Code  Tel:

I enclose a cheque/Euro cheque/PO made payable to SWIFT SOFTWARE.

Swift Software, EUS,  
347 London Road,  
Hazel Grove,  
Stockport,  
SK7 6AA,  
Tel: 061-477 8405

Share your hints, tips and cheat modes with fellow *Electron User* arcade addicts, but please ensure they are all your own work. Send them to:

Arcade Corner, *Electron User*,  
Europa House, Adlington Park,  
Adlington, Macclesfield, SK10 4NP.

## Timely cheat

### Repton Thru Time - Superior Software

If you are still struggling with *Repton Thru Time*, John and David Pitcher of Worcester provide some relief with the passwords and edit codes.

You can now start on the screen of your choice, temporarily skipping the more difficult ones.



## Pass the word...

### Breakthrough - Audigenic

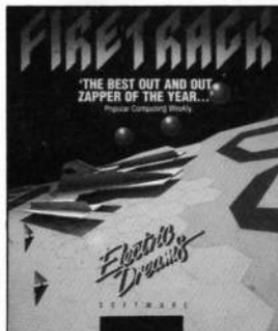
*PASSWORDS* to Audigenic's superb puzzler, *Breakthrough* are provided by Paul Sanderson of Chesterfield.

When the game has loaded press Return for the menu then C to select the starting screen. Type a number and press Return. Now enter the password, again pressing Return. The game will start on the selected screen.



	PREHIST	EGYPT	VICTORI	NOW	FUTURE
1	PREHIST 12345	EGYPT 6473	VICTORI 54066	NOW 54524	FUTURE 33776
2	HEATERS 16494	FAVOURS 5012	MERCURY 57950	OCTAGON 21370	ORACLES 1119
3	HILLOCK 29652	HAPPENS 48238	CLEAVER 62809	CASTLES 48417	STAPLER 36126
4	PILFERS 28285	PERSONS 2248	BINDERS 31463	CHARLES 9698	DANCING 46223
5	MEDIATE 25655	CONQUER 31761	CONFUSE 35584	GREATER 58449	FANCIER 48475
6	COMPACT 9761	EVENING 19495	JINGLES 10659	BOOKLET 23963	BANANAS 34409
7	CARTOON 43981	MASTERS 52592	DOLPHIN 45367	FUNTIME 64332	EVEREST 54136
8	TUBULAR 35802	PIMPLES 51035	MINSTER 23180	SAVOURS 29294	KINGDOM 53646

## Playing with fire



### Firetrack - Superior Software

HERE is a cheat mode for the brilliant shoot-'em-up *Firetrack* - the star of Superior's Sam 7 compilation. It's supplied by Ashley Wong of Streatham, London. Load the game as normal and instead of pressing the spacebar to start the game, press Z, X, C and spacebar simultaneously. You'll start the game with 50 lives, which should be enough to get you through the first few levels.

Ashley also reports that Imogen on Sam 5 can be completed with at least 14 transformations remaining. So it is still possible to complete the game even if you make a few early errors. The message is: Don't give up too soon!

### Screen Password

- 5 MAINTAIN
- 10 TUNGSTON
- 15 SYMPATHY
- 20 INFINITY
- 25 MICRODOT
- 30 SCRUTINY
- 35 WITHDRAW
- 40 LIGAMENT
- 45 ESTIMATE
- 50 PROLOGUE
- 55 SOFTWARE
- 60 RETRIEVE
- 65 TOBOGGAN
- 70 VENDETTA
- 75 DIAMETER
- 80 RHAPSODY
- 85 SPECIMEN
- 90 MONORAIL
- 95 TERMINAL

# Topologika on a top note

**T**HE golden beams of this Indian summer are still casting shadows from the castle battlements as I once more sit here and hold forth to your scrolls and parchments.

Perhaps the best news this year came in the form of a press release and a 5.25in disc from Topologika (formerly Chalksoft). You will all I am sure be delighted to hear that the company has now released versions of all its popular text adventures for the Electron.

Priced at £14.95, Countdown to Doom, Acheton, Kingdom of Hamil and Philosophers Quest are now all available on 3.5 and 5.25in discs for any Electron fitted with an ACP Plus 4 disc interface.

Also available from Topologika is a brand new game by Jonathan Partington – author of Kingdom of Hamil – called Avon. This adventure is based on a Shakespearean theme and the pack also includes another game called Murdac.

Both are excellent high quality jaunts, even though the price of £17.50 may deter some adventurers from parting with their hard-earned groats. You'll find reviews of both in this month's software pages.

I also received an interesting epistle from recently retired Jeff Rock. He explains that he has only played one Electron adventure, Adventure, by Microwaper.

He completed it after a bit of a struggle but was puzzled by illogicalities, such as having to kill the dragon with bare hands while you are carrying a sharp axe, and puerile comments made as the adventure progresses.

He was not at all impressed and questions whether this one is typical of all Electron adventures. Well, I can assure Jeff – and others – that Microwaper's Adventure is thankfully not typical. It is rather old – published in 1984 – and includes a restricted parser, hackneyed problems and a poor plot.

If newcomers or novices are looking for good adventures with which to get started, I can wholeheartedly recommend any of the Scott Adams or Larsoft games, such as Voodoo Castle, Adventureland, The Nine Dancers and Wychwood.

A hefty missive also found its way to the castle from an anonymous adventurer who signs himself: One trusted with so much, but knows so little.

This shady character asks whether D.U.P.E. – mentioned in the April issue of *Electron User* – is available to the public in this country yet? Sorry, but the answer is no. I may have already mentioned this, but D.U.P.E. was exactly as its name implies.

The changeling also asks whether the old Melbourne House games are still available for the Electron. The answer to this query is less straightforward. Melbourne House is now owned by Virgin/Mastertronic and as far as I am aware the games mentioned are now deleted for the Electron. However, mail order companies such as Mithras, Impact and Towerhill still keep some old stock and may be able to help you in your quest.

A final question centres on which BBC Micro adventures work on an expanded Electron with a Slogger Master Ram Board. Lists of such adventures appeared in the November 1987, April 1988 and August 1988 issues of *Electron User*.

Finally, this month's featured map is of the



opening scenario to Epic's classic Quest for the Holy Grail. This should help many adventurers who are stuck at the outset of this superb adventure.

● Next month I continue this series with a guide to the openings to *Riverdale's excellent Suds*. So until Shakespeare turns in his grave, happy adventuring.

## Overture and Beginners

WE have looked at just about every aspect of adventuring in this long running series. But let's just take a little time now to examine the core of any adventure – riddles or puzzles. They come in all forms and guises and sometimes may be so heavily veiled that you may not even recognise them as puzzles at all.

In the best adventures the problems are an intrinsic part of the plot, not merely tacked on as intellectual appendages.

While puzzles may be interlinked, you should not be compelled to solve them in a strictly linear fashion. Nothing can be more frustrating than getting stuck near the beginning of an adventure where failure to solve one particular teaser prevents you from making further progress.

Even so-called classics such as *Myorem* and *Island of Xaan* fall into this trap. In both these games you must solve some very tricky early puzzles to be allowed to get even a small way into the adventure.

In *Myorem* you must first find a way of escaping from the firing squad then immediately

work out how to extricate yourself from a quickly flooding ditch. The materials are all at hand and the solution is logical – tie an oil drum with a piece of vine and use it as a raft. However, it is infuriating that you can only explore eight or nine locations. Indeed, in *Xaan* you only have two initial locations to explore!

Yet other adventures, such as all the Level 9 games and *Village of Lost Souls* allow a more exploratory early approach, which lets you get the gist of the puzzles and a feel for the game.

Many puzzles involve the manipulation of an object, the normal purpose of which may disguise the fact that it can be used in another way. It is therefore vital that you collect as many items as possible as you go on your travels – read my tips in the July issue of *Electron User*.

Not all the objects turn out to be useful. In Scott Adams' *Pirate Adventure* you will come across a mongoose, and realising that such creatures are skilled at killing snakes, you will probably cart it round for the whole game.

Near the end of the adventure, an uncrossable pit full of deadly snakes is found. You naturally assume that the mongoose will solve the problem – but the snakes kill the mongoose.

It transpires that it wasn't a mongoose after all, but a squirrel, and another means of disposing of the snakes must be found.

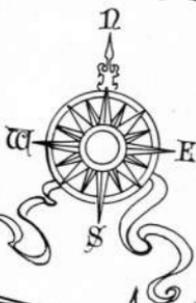
Rather a dirty trick on the part of the author, but no adventurer worth his salt should take everything at face value in these games.

In *Colossal Adventure* a fierce dragon sits on a rug. If you attempt to fight it, the program responds: "What, with your bare hands?" and most people at this point take the hint and look for other ways of overcoming the beast.

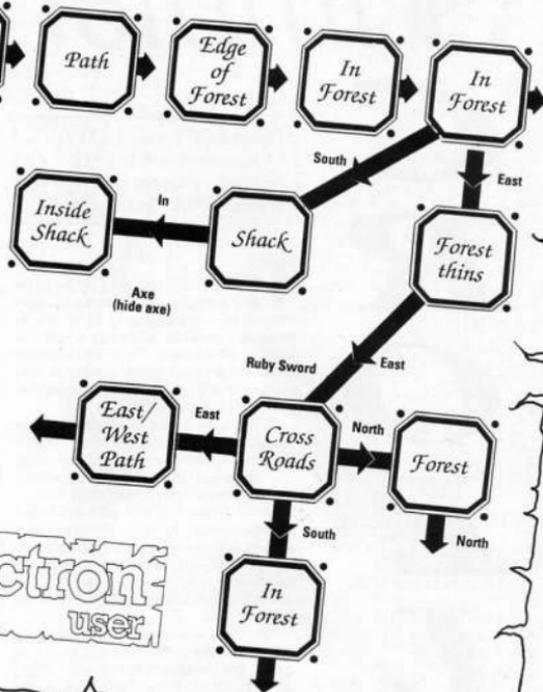
However, for anyone foolish enough to enter yes in answer to the question, the program goes on to describe how you manage to kill it with your bare hands, and adds that anything is possible in an adventure. Now where has that been mentioned before?

Without puzzles, adventures would be the poorer and the enjoyment less.

# Electron User gambit Map 8 for the Holy Grail



electron  
user



## Problems Solved

THIS MONTH I feature a host of queries and answers on a whole host of Electron adventures.

First out of the bag is Carl Berry who asks a few questions about some older games. In Softek's **Five Stones of Anadon** he says that he has followed my previous advice, but can't find the cross. I suggest you search the ante-room north of the throne room.

In another Softek game, **Eye of Zoltan**, he explains that he can't open any of the doors. A piece of magic is called for, so drop the eye at the cavern and the doors will open for you.

Also, in Micropower's **Adventure**—getting a lot of mention this month—Carl is experiencing problems with the plant. The procedure is in fact quite simple: Water Plant, Water Beanstalk and Climb!

S. Walters of Ruislip asks how to get past the rat in the same game. I must have answered this query dozens of times in this column. So for one last time here goes ... Off Lamp, Hoot, On Lamp, Enter, Look.

Craig Campbell from Stirling is having problems in **The Nine Dancers**. He has successfully

completed part two of the game but can't enter the fairy kingdom. The route is fairly simple: After you have poisoned the dog you should climb the hill and enter the entrance at the top of the barrow.

Meanwhile, Andy Stevens is stuck in Larsoft's **Hex** as he can't cross the causeway. You ought to do a bit of waiting, Andy.

In yet another Larsoft adventure, **The Puppet Man**, Steven Kelk asks how to please the Muse of Comedy and thus complete part two of the game. Without giving it all away, you must indulge a bear, use a ladder and a wooden box, trap an owl and give an egg. Think about it for a while, then try again!

Darren Steer is stuck in Robico's **Project Thesis** and can't get past the dog at the cottage. The solution is straightforward Darren, just Drop the Rabbit and Open the Gate.

In Classic Adventure, R. Hetherington has found all the treasures but is unable to locate the Repository. Your solution is at hand. When you have dropped all the treasures at the building, just go to the Vast Hall to enter the Repository.

Finally, I must thank Claron Drain who has sent in a sprint finish to that oldie of all oldies, **Sphinx Adventure**. His solution does not enable full points, but takes you through the game quickly.

Here goes: North, Get Bottle, North, In, Get Keys, Get Lamp, Out, South, East, East, Down, Light Lamp, South, Get Carrot, West, West, Get Wand, East, South, Get Sword, Down, Get Food, West, Fill Bottle, East, North, Throw Water.

East, Wave Wand, Cross Bridge, Get Rug, North, Feed Rabbit, Carrot, East, North, East, South, South, Feed Crocodile, East, South, South, Up, Wave Wand, Down, North, North, West, West, North, North, West, South, West, South, East, South, South, Pay Troll, Cross Bridge.

West, South, North, East, East, Up, East, South, Kill Dragon with bare hands, Get Teeth, North, West, Down, Kill Ogre with sword, North, East, North, Down, Wave Wand, Cross Bridge.

North, West, West, Throw Teeth, West, North, East, North, East, East, West, East, South, North, South, East, West, East, South, North, South, East, West, East, South, North, Kneel, Wave Wand.

# Simpler

# C R O L L I N G

**Upgrade Basic's LIST command with this machine code utility from John Geraghty**

**T**HE Basic LIST command is fine as far as it goes, but it does have one major limitation - you can only go forwards through a program and once a line has scrolled off the top of the screen you have to list the program again in order to have another look at it. This can make the program logic difficult to follow.

Blist is a handy machine code utility that puts an end to this state of affairs. With it installed in your Electron you can scroll backwards and forwards through any Basic listing. It works in any screen mode too.

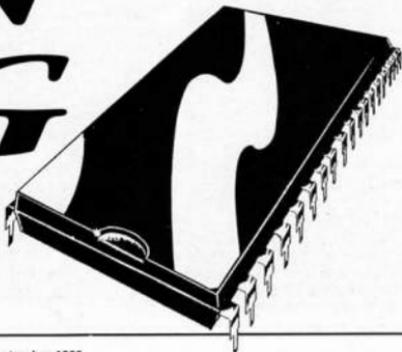
First of all type in the program and save it before attempting to run it - this is always a wise precaution with assembly language listings. Don't use the filename Blist as it is reserved for the machine code file. The object file, Blist, will automatically be saved to disc or tape.

The utility is enabled after saving the code. Press Return and you can scroll forwards and backwards through the listing with the Control and Shift keys. Press Escape to quit to command mode.

Whenever you want to use Blist in the future enter:

```
*LOAD Blist
CALL #B00
```

To list the program enter LINE either by itself or followed by a line number to start listing from. Use the Control and Shift keys to scroll as before. The machine code program occupies pages &B and &C, normally used for user-defined characters and function keys.



```
10 REM Back and forth lister
20 REM by John Geraghty
30 REM (c) Electron User
40 :
50 ON ERROR PROCerror
60 MODE6
70 PROCassemble
80 PRINT"Saving..."
90 OSCLI"SAVE BLIST"+CHR#32+"B
00"+CHR#32+STR#PI
100 CALL intercept
110 PRINT""Press Return, then
use""CTRL and SHIFT to scroll li
sting..."
120 *FX15
130 REPEAT UNTIL GET=13
140 %B1F=1:REM LIST01
150 LINE 560
160 END
170 :
180 DEF PROCassemble
190 IF %20F<=0 CALL %B19
200 temp=070
210 scr_flag=072
220 count_flag=074
230 oldaddr=075
240 count=077
250 rows=078
260 previous_line=07A
270 width=07C
280 :
290 ptr_a_index=080A
300 lineaddr=080B:REM=ptr_a
310 top=0812
320 page=0818
330 listo=081F
340 inta=082A
350 brkv=0820E
360 wrchv=0820E
370 pos=08318
380 vpos=08319
390 wind_rt=0830A
400 wind_lft=08308
410 wind_bot=08309
420 wind_top=08308
430 :
440 osnewl=08FF7
450 oswrch=08FFEE
460 osrdch=08FFED
470 osbyte=08FF4
480 :
490 basic=08AF3
500 no_spaces=08A97
510 decode=08970F
520 print_num5=089923
530 print_num0=08991F
540 linesrch=089970
550 print_tkn=0850E
560 :
570 FOR pass=0 TO 2 STEP2
580 PI=#B00
590 [OPT pass
600 .intercept
610 LDA #count_char DIV#100
620 PHA
630 LDY #count_char MOD#100
640 LDX #scroll_chk MOD#100
650 STA count_flag
660 :
670 .vectors
680 SEI
690 STA wrchv+1
700 PLA
710 STA brkv+1
720 STY wrchv
730 STX brkv
740 CLI
750 RTS
760 :
770 .off
780 LDA #0B4
790 PHA
```

```

800 LDA #0DE
810 LDY #A2D
820 LDX #802
830 BNE vectors
840 :
850 !intercept oswrch to get nu
mber of screen rows a detokenised
line will occupy
860 .count_char
870 PHA
880 LDA count_flag
890 BNE no_count
900 PLA
910 LDA count
920 CMP width
930 BNE inc_ok
940 LDA #0
950 STA count
960 INC rows
970 .inc_ok
980 INC count
990 .no_print
1000 RTS
1010 .no_count
1020 PLA
1030 JMP !wrchv
1040 :
1050 .scroll_chk
1060 PHA
1070 TYA
1080 PHA
1090 !remove leading spaces
1100 JSR no_spaces
1110 !LINE token?
1120 CMP #86E
1130 BEQ line_tkn
1140 !OFF token?
1150 CMP #867
1160 BNE exit
1170 JSR off
1180 BRK
1190 ERUB 99
1200 ERUS "disabled"
1210 BRK
1220 :
1230 .line_tkn
1240 JSR no_spaces
1250 !CR or number token?
1260 CMP #80D
1270 BEQ first_line
1280 CMP #80B
1290 BEQ get_line
1300 :
1310 .exit
1320 PLA
1330 TAY
1340 PLA
1350 JMP !brkv
1360 :
1370 .first_line
1380 JSR page_line
1390 BPL set_screen !always
1400 :
1410 .get_line
1420 BEC ptrs_index
1430 JSR decda3
1440 JSR get_addr
1450 JSR top_test
1460 :
1470 .set_screen
1480 !reserve initial line addr
1490 LDA lineaddr
1500 STA oldaddr
1510 LDA lineaddr+1
1520 STA oldaddr+1
1530 !set non_paged mode
1540 LDA #0F
1550 JSR oswrch
1560 !screen flag used when list
in first screenful
1570 LDX #0
1580 STX scr_flag
1590 !get window width
1600 LDA wind_rt
1610 SEC
1620 SBC wind_lft
1630 STA width
1640 INC width
1650 !CLS
1660 LDA #80C
1670 JSR oswrch
1680 !PRINTTAB halfway down scre
en
1690 LDA #81F
1700 JSR oswrch
1710 LDA #0
1720 JSR oswrch
1730 LDA wind_bot
1740 SEC
1750 SBC wind_top
1760 LSR A
1770 JSR oswrch
1780 JMP into_forwards
1790 :
1800 .forwards
1810 !cursor beside line num; au
at be underneath for next line
1820 LDA #80A
1830 JSR curs2
1840 JSR inc_lineaddr
1850 .into_forwards
1860 !get number of rows line wi
ll occupy on screen
1870 JSR get_rows
1880 BNE to_screen !always
1890 .backwards
1900 JSR dec_line_addr
1910 JSR get_rows
1920 JSR curs1
1930 .to_screen
1940 JSR list
1950 !preserve vpos
1960 LDX vpos
1970 !cursor up beside line num
ber
1980 JSR curs1
1990 :
2000 !list screenful
2010 LDA scr_flag
2020 BMI !up_again
2030 BNE down
2040 LDA vpos
2050 CMP wind_top
2060 BNE backwards
2070 INC scr_flag
2080 .down
2090 CPX wind_bot
2100 BNE forwards
2110 DEC scr_flag
2120 DEC scr_flag
2130 .up_again
2140 CMP #8FE
2150 BEQ main_loop
2160 LDA oldaddr
2170 CMP lineaddr
2180 BNE backwards
2190 LDA oldaddr+1
2200 CMP lineaddr+1
2210 BNE backwards
2220 DEC scr_flag
2230 :
2240 !in main loop, scroll up or
down
2250 .main_loop
2260 LDX #FF
2270 BMI escape
2280 !CTRLT
2290 LDX #8FE
2300 JSR inkeys
2310 BCS backwards
2320 !SHIFT?
2330 LDX #8FF
2340 JSR inkeys
2350 BCC forwards
2360 BCC main_loop
2370 :
2380 .inc_lineaddr
2390 LDY #3
2400 LDA (lineaddr),Y
2410 CLC
2420 ADC lineaddr
2430 STA lineaddr
2440 BCC top_test
2450 INC lineaddr+1
2460 .top_test
2470 LDY #1
2480 LDA (lineaddr),Y
2490 BPL not_top
2500 .page_line
2510 LDY #0
2520 STY lineaddr
2530 LDA page
2540 STA lineaddr+1
2550 INY
2560 LDA (lineaddr),Y
2570 BPL not_top
2580 !if no prog in mem
2590 .escape
2600 !cursor to bot of screen
2610 LDA #81F
2620 JSR oswrch
2630 LDA #0
2640 JSR oswrch
2650 LDA wind_bot
2660 JSR oswrch
2670 BRK
2680 BRK
2690 ERUB "Escape"
2700 BRK
2710 :
2720 .get_rows
2730 LDY #8FF
2740 STY count
2750 INY
2760 STY count_flag
2770 STY rows
2780 JSR list
2790 INC count_flag
2800 .not_top
2810 RTS
2820 :
2830 .get_addr
2840 JSR linesrch
2850 !if line found, (P3D;83E) p
oints to CR+3; else points to CR
at start of next line...
2860 LDX #3D
2870 LDY #3E
2880 BCS not_found
2890 DEX
2900 DEX
2910 DEX
2920 CPX #8FD
2930 BCC not_found
2940 DEY
2950 .not_found
2960 STX lineaddr
2970 STY lineaddr+1
2980 RTS
2990 :
3000 .back_to_top
3010 !carry set always
3020 LDA top
3030 SBC #2
3040 STA lineaddr
3050 LDA top+1
3060 SBC #0
3070 STA lineaddr+1
3080 .dec_line_addr
3090 LDY #0
3100 STY temp
3110 LDA page
3120 STA temp+1
3130 .decla1
3140 LDA temp+1
3150 CMP lineaddr+1
3160 BEQ decla3
3170 .decla2
3180 LDA temp
3190 STA previous_line
3200 LDY #3
3210 ADC (temp),Y
3220 STA temp
3230 LDA temp+1
3240 STA previous_line+1
3250 BCC decla1
3260 INC temp+1
3270 BCS decla1
3280 .decla3
3290 LDA temp
3300 CMP lineaddr
3310 BNE decla2
3320 TYA
3330 BEQ back_to_top
3340 LDA previous_line
3350 STA lineaddr
3360 LDA previous_line+1
3370 STA lineaddr+1
3380 RTS
3390 :
3400 .list
3410 LDY #1
3420 LDA (lineaddr),Y
3430 STA inta+1
3440 INY
3450 LDA (lineaddr),Y
3460 STA inta
3470 JSR print_num5
3480 LDY #3
3490 LDA lista
3500 BEQ list_loop
3510 LDA #82D
3520 JSR oswrch
3530 .list_loop
3540 INY
3550 .list_loop2
3560 LDA (lineaddr),Y
3570 CMP #88D
3580 BEQ linetkn
3590 CMP #80D
3600 BEQ endlist
3610 JSR print_tkn
3620 JMP list_loop
3630 .endlist
3640 JMP osnew1
3650 !lin_tkn
3660 STY ptrs_index
3670 JSR decode
3680 TYA
3690 PHA
3700 JSR print_num0
3710 PLA
3720 TAY
3730 JMP list_loop2
3740 :
3750 .inkeys
3760 LDY #8FF
3770 LDA #881
3780 JMP osbyte
3790 :
3800 .curs1
3810 LDA #80B
3820 .curs2
3830 LDY rows
3840 INY
3850 .curs_loop
3860 JSR oswrch
3870 DEY
3880 BNE curs_loop
3890 RTS
3900 !:NEXT:ENDPROC
3910 :
3920 DEF PROCerror
3930 REPORT
3940 IF ERR=17 PRINT"
at line ";
ERL:END
3950 PRINT":":$870D=
"LIST"+STRS
ERL:$8710=
$88AF6:$8718-$88B094C:CA
LL $710

```

Don't miss out on the mass of material that's appeared in *Electron User* over the past few months. Bring yourself up to date with this back issue bundle, packed with games, utilities, features and programming tutorials.

*Here's what you'll find in the  
March 1989 - August 1989 bundle:*

**March 1989 issue:**

**Games:** Taktiks, Trivia Test, Bomb Disposal, Sprog.  
**Utilities:** Search and Replace, Poetry. **Features:** Map of The Nine Dancers, Disc directories explored. **Reviews:** Repton Infinity, Question of Sport, Zenon, Last Ninja, Advanced File Manager.

**April 1989 issue:**

**Games:** Diamonds - a mind bending puzzle. **Utilities:** Pattern fill routine, automatic program saver, Home Finance Manager. **Features:** Input routines explained, disc drives revealed, palindromic numbers explored. **Reviews:** Sam 6, Exile, Orbital.

**May 1989 issue:**

**Games:** Eliminator. **Utilities:** EZ Type, DFS disc formatter. **Features:** Tournament sorts, Party Cocktail Creator, Landscape Designer, Fractal Generator. **Reviews:** Barbarian II, Circus Games, Superman, Mode 7 Simulator Rom.

**June 1989 issue:**

**Games:** Tic Tac Rhymes, Duel. **Features:** ADFS osword calls explained, creating customised tapes, maps to Woodbury End and Palace of Magic. **Utilities:** Disc-based database, new CIRCLE graphics command, Morse Code Tutor. **Reviews:** Holed Out, Tank Attack, Sam 7.

**July 1989 issue:**

**Games:** Jet Bike arcade adventure, educational fun with Ladder Adder, Time bomb arcade fun. **Utilities:** Speedy Reader. **Reviews:** Predator, Stormcycle, Sam 8. **Features:** Jafa Systems interview, Disc error codes documented, 10 Liners, Philosophers Quest and Palace of Magic mapped.

**August 1989 issue:**

**Games:** Rollerball, Bingo. **Reviews:** Alps, Turtle Worlds, White Magic, Play it Again Sam 9. **Features:** Map of Kayleth, Repton Infinity tips. **Utilities:** Disc Housekeeper, Mode 2 screen compacter, Titration, Chemical Equations.

# electron user

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**TO ORDER PLEASE USE THE FORM ON PAGE 45**

# DATA delver

**Y**OUR ever-growing collection of *Electron User* magazines is an invaluable source of programming tips, articles and reviews. Often however, finding the exact item you're looking for can be difficult, especially if you have several years' worth to thumb through.

Searching for a useful tip you can vaguely remember from Micro Messages, or the address of a software company that you noted down on a scrap of paper and then lost is very frustrating. Also sometimes it would be handy to have all the references to a single subject at your fingertips – for instance, to compare the merits of disc systems.

Teemags, the program presented here, is a solution to these problems which can be used with both tape and disc systems. To go some way towards overcoming the limitations of the tape system, the programs and data files are saved in a special format which loads 30 per cent faster than normal, and the data is compressed to around 65 per cent of its original length.

Useful memory is maximised by using Mode 6 with palette switching to add a little colour and by removing redundant initialisation procedures after they have done their work.

First type in the listing. It contains assembly language sections, so save it before attempting to run it. That way your work won't be lost if you've made a typing mistake.

When the program is run you'll be presented with a menu with two choices – Start new file and Load old file. Select the first and enter a filename at the prompt.

You'll then be presented with a second menu. Select Make new entry and you're ready to start entering records. Type the magazine title, its cover date, the page of the item, its title and a brief descriptive text. Continue entering records and press Escape when you have finished.

A point worth noting is that the text compression routine works better with lower case letters, so use capitals sparingly.

You should now be at the second menu – pressing Escape always takes you back to the last menu. You can select Set prefix and enter the magazine title and date. When you next add records these two fields will auto-

**Keep track of all your magazine information with this user-friendly database provided by John Geraghty**

matically be filled in for you.

The last option on this menu is Search. You can choose to have printer output for a hard copy or display the information on the screen. If you select this and get a row of question marks on the screen it means your printer is switched off or is off line.

You are then prompted for two strings to search for. If you entered Disc and Drive any entries with these two items would be displayed on the screen. You can leave the second search string blank and just enter the first one – Disc in our example – and press Return when prompted for the second. This searches for any records with the word Disc.

All records can be displayed by entering two null strings – press Return each time when prompted to enter a search string.

When a record is found and displayed on the screen you can continue to look for further occurrences by pressing Return, wipe the current record with Control-Delete, or amend it with Copy. With the last option select the field to alter with the spacebar and press Return to confirm.

When you've finished press Escape to get back to the first menu where you'll find an additional three options – Save, Rename and Restart. The first saves the data file to disc or tape, the second prompts for a new filename and Restart takes you back to the second menu.

When you've thoroughly tested the program enter this:

```
360D PROCshorten
```

and save the program by typing:

```
PROCFast_save
```

The next time the program is used there will be more than 5k more free space for the data, and tape users will have a faster loading copy.

```
10REM CEEMAGS
20REM By John Geraghty
30REM (c) Electron User
40:
50MODE6
60ONERROR PROCReport
70PROCinit:LOMEN=NIMEN-1100
80:
90REM constants
100esc1=FALSE:buf1Z=8700:buf2Z=8C30

110str1Z=buf2Z:str2Z=buf2Z+814:str3Z=bu
f2Z+830
120:

130PRINT "STRINGS(39,CHR$129)TAB(10,2)C
HR$128"Magazine Database"CHR$128
140:
150fil$="" :mag$="" :dat$="" :topZ=TOP+2
160:
170DEF PROCmenu1
180!px=81550
190REPEAT
200ON ERROR PROCerr(0)
210PROCcls(11)
220opt1=FMenu(11,11,5+3*(fil$="" ),1)
230ON ERROR PROCerr(1)
240IF opt=0 PROCnew
250IF opt=1 PROCold
260IF opt=2 PROCsave
270IF opt=3 PROCname
280IF opt=4 PROCmenu2
290UNTIL escX
300:
310DEF PROCnew
320PRINTTAB(0,1)"New file"
330PROCname
340topZ=TOP+2
350PROCmenu2
360:
370DEF PROCold
380PRINTTAB(0,1)"old file"
390PROCname
400topZ=TOP+2
410VBU28,0,24,39,11,12

420OSCLI"LOAD"+CHR$32+fil$+CHR$32+STR$
TOP
430topZ=TOP+(!TOP AND $FFFF)
440PROCmenu2
450:
460DEF PROCsave
470PROCcls(11)
480!enc=topZ-TOP
490!TOP=LenZ:(!TOP+1)=LenZ DIV8100
500?Z:Fncfs

510OSCLI"SAVE"+CHR$32+fil$+CHR$32+STR$
TOP+CHR$32+STR$topZ
520?Z=0
530IF Fncfs
VBU28,0,24,39,11,12:PRINT"Rewind, Press
Play to
Verify"OSCLI"LOAD"+CHR$32+fil$+CHR$32+
"8000"
540ENDPROC
550:
560DEF PROCname
570REPEAT
580PROCcls(11)
590!l$=FInput("Filename:",10,11,33,12
6,7,-3+FNcfs)
600UNTIL fil$=""
610PRINTTAB(29,1)SPC10;TAB(29,1)fil$
620ENDPROC
630:
640DEF PROCmenu2
650foundZ=FALSE
660ON ERROR PROCerr(1)
670REPEAT
680PROCcls(3)
690!px=81114
```

Turn to Page 28 ▶

◀ From Page 27

```

700optZ=FMenu(11,11,3,2)
7100 ERROR PROCerr(2)
720IF optZ=0 PROCoptZ
730IF optZ=1 PROCprefix
740IF optZ=2 PROCsearch
750UNTIL escZ
760:
770DEF PROCentry
780!PI=B1150
790entZ=topZ
800REPEAT
810topZ=entZ
820PRINTTAB(0,3)"New
entry"TAB(29,3)"Free:"STR$(LOWEN-
topZ)SPC1
830PROCcls(11)
840PROCheads(4)
850PRINTTAB(0,24)"(Press Escape when
finished)";
860RESTORE 3540
870FOR vposZ=11 TO 19 STEP2
880$bufZ=""
890IF vposZ=11 $bufZ="mag$
900IF vposZ=13 $bufZ="dat$
910PROCstore
920NEXT
930UNTIL escZ
940:
950DEF PROCheads(N1)
960PRINTTAB(0,10)
970RESTORE 3530
980FOR IZ=0 TO N1
990READ h$:PRINT h$
1000NEXT
1010ENDPROC
1020:
1030DEF PROCstore
1040READ lenZ
1050IF $bufZ=""
$bufZ=Finput("",10,vposZ,32,126,lenZ)
ELSE PRINTTAB(10,vposZ)$bufZ
1060PROCpack(bufZ,bufIX,1)
1070entLenZ=1877+1878
1080IF (entLenZ+entLenZ)>LOWEN
PROCno_room="FX125
1090entLenZ=entLenZ
1100PROCmove(bufIX+entLenZ-1,entLenZ-1,bufIX,-1)
1110ENDPROC
1120:
1130DEF PROCprefix
1140PROCcls(3):PRINT"Prefix"
1150PROCheads(1)
1160mag$=Finput("",10,11,32,126,15)
1170dat$=Finput("",10,13,32,126,8)
1180FX125
1190:
1200DEF PROCsearch
1210PROCcls(3)
1220!PI=B1150
1230PRINT"Search"
1240PRINTTAB(0,11)"Printout?(Y/N)";
1250!printZ=(GET OR 32)-ASC"Y";
1260PROCcls(11)
1270IF !printZ PROCprinter
1280$strZ=Finput("Item
One:",10,11,32,126,17)
1290PRINTTAB(6,3)"...."CHR$(34)+$strZ+C
HR$(34)
1300$strZ=Finput("Item
Two:",10,13,32,126,17)
1310:
1320PROCcls(11)
1330PRINTTAB(10,5)CHR$(34)+$strZ+CHR$(34)
1340PROCCase($strZ,$strZ)
1350PROCCase($strZ,$strZ)
1360!topZ=TOP+2
1370!IZ=0
1380VDU23,1,0;0;0;0;
1390!amendZ=FALSE
1400REPEAT

```

```

1410IF botZ=topZ PROCout
1420PRINTTAB(29,3)"Record:";RZ:RZ+R1+1
1430old_botZ=botZ
1440IF FInstr OR amendZ
amendZ=FALSE:PROCrecord:foundZ=TRUE
1450UNTIL escZ
1460:
1470DEF PROCprinter
1480PRINTTAB(29,3);
1490FX15,0
1500FX3,8
1510!AZ=ADVAL(-4)
1520PRINT"Printout";
1530TIME=0:REPEAT UNTIL TIME>100
1540IF ADVAL(-4)<AZ
printZ=0:PRINTTAB(29,3)STRINGS(8,"")
1550FX3,0
1560FX15,0
1570ENDPROC
1580:
1590DEF FMinstr
1600LOCAL foundZ
1610FOR IZ=0 TO 4
1620PROCpack(botZ,$strZ,0)
1630PROCCase($strZ,$strZ)
1640IF INSTR($strZ,$strZ)
foundZ=foundZ OR 1
1650IF INSTR($strZ,$strZ)
foundZ=foundZ OR 2
1660botZ=botZ+1877+1878
1670NEXT
1680=foundZ+3
1690:
1700DEF PROCrecord
1710FX21,0
1720PROCcls(11)
1730IF printZ:FX3,8
1740RESTORE 3530
1750fieldZ=old_botZ
1760FOR IZ=0 TO 4
1770PROCpack(fieldZ,bufIX,0)
1780READ h$:PRINT h$:SPC1;$bufIZ
1790fieldZ=fieldZ+1877+1878
1800NEXT
1810FX3,0
1820PRINTTAB(0,24)"(Ret:Next
Copy:Amend CTRL+Del:Delete)";
1830:
1840REPEAT
1850!GZ=GET
1860IF INKEY-2 AND GZ=127
GZ=255:PROCwipe
1870IF GZ=135 PROCamend
1880UNTIL GZ=13 OR GZ=135 OR GZ=255
1890PROCret
1900ENDPROC
1910:
1920DEF PROCwipe
1930!PI=B1154
1940REPEAT UNTIL NOT (INKEY-2 OR
INKEY-90)
1950RESTORE 3540
1960FOR vposZ=11 TO 19 STEP2
1970READ lenZ
1980PRINTTAB(10,vposZ)STRINGS(lenZ,CHR$(
130)
1990NEXT
2000PROCmove(botZ,old_botZ,topZ,0)
2010topZ=topZ+old_botZ
2020old_botZ=old_botZ
2030!PI=B1510
2040ENDPROC
2050:
2060DEF PROCout
2070PRINTTAB(39,24)STRINGS(39,CHR$(127);
2080IF foundZ PRINT "No more...";ELSE
PRINT "No match...";
2090PRINT"Press Escape";
2100REPEAT UNTIL escZ
2110:
2120DEF PROCamend
2130!amendZ=TRUE

```

```

2140botZ=old_botZ
2150fieldZ=old_botZ
2160PROCcls(23)
2170PRINTTAB(0,9)"Amending..."
2180optZ=FMenu(0,11,5,3)
2190RESTORE 3540
2200FOR IZ=0 TO optZ
2210READ lenZ
2220PROCpack(fieldZ,bufIX,0)
2230old_lenZ=1877+1878
2240IF IZ<optZ fieldZ=fieldZ+old_lenZ
2250NEXT
2260$strZ=Finput("",10,11+optZ+2,32,1
26,lenZ)
2270VDU23,1,0;0;0;0;
2280:
2290PROCpack($strZ,bufIX,1)
2300new_lenZ=1877+1878
2310:
2320!lenZ=new_lenZ-old_lenZ
2330IF (topZ+lenZ)>LOWEN
PROCno_room=ENDPROC
2340IF dlenZ=0
PROCmove(topZ,topZ+lenZ,fieldZ,-1)
2350IF dlenZ<0
PROCmove(fieldZ+old_lenZ,fieldZ+new_lenZ,
topZ,0)
2360PROCmove(bufIX+new_lenZ-1,fieldZ+new_lenZ-1,bufIX,-1)
2370topZ=topZ+lenZ
2380!RZ=1
2390PRINTTAB(0,9)SPC11
2400ENDPROC
2410:
2420DEF PROCno_room
2430PROCcls(11)
2440PRINT"No room...Press Return"
2450REPEAT UNTIL GET=13:PROCret
2460ENDPROC
2470:
2480DEF PROCmove(fromZ,toZ,untilZ,upZ)
2490!RZ=fromZ+1872-toZ;1874-untilZ
2500IF upZ CALL UX ELSE CALL DZ
2510ENDPROC
2520:
2530DEF PROCpack(fromZ,toZ,CZ)
2540!RZ=fromZ+1872-toZ:CALL SZ
2550ENDPROC
2560:
2570DEF PROCCase(fromZ,toZ)
2580!RZ=fromZ+1872-toZ:CALL KZ
2590ENDPROC
2600:
2610DEF FMenu(posZ,vposZ,itemsZ,setZ)
2620VDU23,1,0;0;0;0;
2630PRINTTAB(12,24)"(Select with
SPACEBAR, then RETURN)";
2640PROCstore
2650FOR optZ=0 TO itemsZ-2
2660READ opt$
2670PRINTTAB(posZ,vposZ+optZ*2)opt$
2680NEXT
2690READ opt$
2700PROCchilite
2710REPEAT
2720IF GET=32 PROCchilite
2730UNTIL INKEY-74
2740PROCret
2750VDU23,1,1;0;0;0;
2760!optZ
2770:
2780DEF PROCchilite
2790PRINTTAB(posZ,vposZ+optZ*2)opt$
2800optZ=(optZ+1)MOD itemsZ
2810IF optZ=0 PROCstore
2820!COLOUR:COLOUR129
2830READ opt$
2840PRINTTAB(posZ,vposZ+optZ*2)opt$
2850!COLOUR:COLOUR128
2860ENDPROC
2870:
2880DEF
Finput(prompt$,posZ,vposZ,asc_minZ,asc

```

```

_maxl, len_maxl)
2890LOCAL lenl

2900PRINTTAB(posl,vposl)STRING$(len_max
l,CHR$(130);")TAB(posl-LENprompt$-
1,vposl)prompt$+";"
2910REPEAT
2920I:=buffl+l+lenl=13
2930G=GET
2940IF G=127 PROCdel
2950IF G=21 REPEAT PROCdel:UNTIL
lenl=0
2960IF G1=asc_minX AND G2=asc_maxX
AND lenl<len_maxl THEN
1(buffl+l+lenl)=G1:lenl=lenl+1:VDUGI;
2970UNTIL G1=13
2980PROCret
2990=shuffl
3000:
3010DEF PROCdel
3020IF lenl=0 VDUB,130,8:lenl=lenl-
1:1(buffl+l+lenl)=13
3030ENDPROC
3040:
3050DEF PROCret
3060REPEAT UNTIL NOT INKEY-74:"FX21,0
3070ENDPROC
3080:
3090DEF PROCerr(levelX)
3100COLOR1:COLOUR128
3110Y:=0
3120*FX3,0
3130IF ERR<=17 PROCreport
3140IF ERR=17 AND INKEY-2 PROCreport
3150IF levelX=1 PROCmenu1
3160IF levelX=2 PROCmenu2
3170:
3180PROCcls(3)
3190PRINTTAB(10,11)"Are you
sure?(Y/N)"
3200IF (GET OR 32)<ASC"y" PROCmenu1
3210:
3220DEF PROCreport
32300 ERROR OFF
3240*FX4,0
3250*FX13,0
3260*FX25,1
3270VDU2,6
3280IF ERR=17 THEN LOWEN:TOP:END
3290REPORT
3300IF Fbasic2
PRINT:"":$870="LIST"+STRERR:$8710=$8
8AF6:$8718=$880B4:CALL $710
3310PRINT" at line ";ERL
3320END
3330:
3340DEF Fbasic2
3350="88015"ASC"2"
3360:
3370DEF Fncfs
3380A:=0:Y:=0
3390=(USR($FFDA)AND$F)=1
3400:
3410DEF PROCcls(tZ)
3420VDU2,0,24,39,tZ,12,26,31,0,tZ
3430ENDPROC
3440:
3450DEF PROCrestore
3460RESTORE 3530
3470IF set=1 RESTORE 3510
3480IF set=2 RESTORE 3520
3490ENDPROC
3500:
3510DATA "Start New File...","Load Old
File...","Save.....","Rename..
.....","Restart....."
3520DATA "Make New Entry...","Set
Prefix.....","Search....."
3530DATA
"Magazines","Date.....","Page....","Ti
tle...","Text...."
3540DATA 15,8,4,29,149
3550:
3560DEF PROCint
3570IF FALSE [(Compatibility with
Supercharger)
3580PROCassemble
3590CALL start_event
3600*FX4,1
3610*FX25,0
3620VDU23,128,24,60,126,0,126,60
3630VDU23,129,255,0,255,0,255,0
3640VDU23,130,0,84,0,84,0,84,0,0
3650U:=move_up:=DI:=move_down:=TI:=tape:=KI:=
case:=PS:=palette2:=SI:=pack
3660DEM extra line goes here
3670ENDPROC
3680:
3690DEF PROCfast save
3700PROCassemble
3710I:=1
3720I:=1
3730CALL start_event
3740DCL"SAVE"+CHR$32+"CEMAGS"+CHR$32
+STR$PAGE+CHR$32+STR$TOP
3750*FX13,5
3760ENDPROC
3770:
3780DEF PROCshorten
3790RESTORE 3570
3800addl:=81C AND $FFF
3810I:=1
3820I:=1+addl:=3:MOD$100
3830I:=1+addl:=3:DIV$100
3840UN
3850:
3860DEF PROCassemble
3870*FX13,5
3880I:=1
3890I:=1
3900I:=1
3910I:=1
3920I:=1
3930I:=1
3940I:=1
3950I:=1
3960I:=1
3970I:=1
3980I:=1
3990:
4000IF pass=0 TO 2 STEP2
4010I:=1
4020OPT pass
4030I:=1
4040I:=1
4050I:=1
4060I:=1
4070I:=1
4080I:=1
4090I:=1
4100I:=1
4110I:=1
4120I:=1
4130I:=1
4140I:=1
4150I:=1
4160I:=1
4170I:=1
4180I:=1
4190I:=1
4200I:=1
4210I:=1
4220I:=1
4230I:=1
4240I:=1
4250I:=1
4260I:=1
4270I:=1
4280I:=1
4290:
4300I:=1
4310I:=1
4320I:=1
4330I:=1
4340I:=1
4350I:=1
4360I:=1
4370I:=1
4380I:=1
4390I:=1
4400I:=1
4410I:=1
4420I:=1
4430I:=1
4440I:=1
4450I:=1
4460I:=1
4470I:=1
4480I:=1
4490I:=1
4500I:=1
4510I:=1
4520I:=1
4530I:=1
4540I:=1
4550I:=1
4560I:=1
4570I:=1
4580I:=1
4590I:=1
4600I:=1
4610I:=1
4620I:=1
4630I:=1
4640I:=1
4650I:=1
4660I:=1
4670I:=1
4680I:=1
4690I:=1
4700I:=1
4710I:=1
4720I:=1
4730I:=1
4740I:=1
4750I:=1
4760I:=1
4770I:=1
4780I:=1
4790I:=1
4800I:=1
4810I:=1
4820I:=1
4830I:=1
4840I:=1
4850I:=1
4860I:=1
4870I:=1
4880I:=1
4890I:=1
4900I:=1
4910I:=1
4920I:=1
4930I:=1
4940I:=1
4950I:=1
4960I:=1
4970I:=1
4980I:=1
4990I:=1
5000I:=1
5010I:=1
5020I:=1
5030I:=1
5040I:=1
5050I:=1
5060I:=1
5070I:=1
5080I:=1
5090I:=1
5100I:=1
5110I:=1
5120I:=1
5130I:=1
5140I:=1
5150I:=1
5160I:=1
5170I:=1
5180I:=1
5190I:=1
5200I:=1
5210I:=1
5220I:=1
5230I:=1
5240I:=1
5250I:=1
5260I:=1
5270I:=1
5280I:=1
5290I:=1
5300I:=1
5310I:=1
5320I:=1
5330I:=1
5340I:=1
5350I:=1
5360I:=1
5370I:=1
5380I:=1
5390I:=1
5400I:=1
5410I:=1
5420I:=1
5430I:=1
5440I:=1
5450I:=1
5460I:=1
5470I:=1
5480I:=1
5490I:=1
5500I:=1
5510I:=1
5520I:=1
5530I:=1
5540I:=1
5550I:=1
5560I:=1
5570I:=1
5580I:=1
5590I:=1
5600I:=1
5610I:=1
5620I:=1
5630I:=1
5640I:=1
5650I:=1
5660I:=1
5670I:=1
5680I:=1
5690I:=1
5700I:=1
5710I:=1
5720I:=1
5730I:=1
5740I:=1
5750I:=1
5760I:=1
5770I:=1
5780I:=1
5790I:=1
5800I:=1
5810I:=1
5820I:=1
5830I:=1
5840I:=1
5850I:=1
5860I:=1
5870I:=1
5880I:=1
5890I:=1
5900I:=1
5910I:=1
5920I:=1
5930I:=1
5940I:=1
5950I:=1
5960I:=1
5970I:=1
5980I:=1
5990I:=1
6000I:=1
6010I:=1
6020I:=1
6030I:=1
6040I:=1
6050I:=1
6060I:=1
6070I:=1
6080I:=1
6090I:=1
6100I:=1
6110I:=1
6120I:=1
6130I:=1
6140I:=1
6150I:=1
6160I:=1
6170I:=1
6180I:=1
6190I:=1
6200I:=1
6210I:=1
6220I:=1
6230I:=1
6240I:=1
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```

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```

6180JSR store_nibble
6190PLA
6200AND #80F
6210JSR store_nibble
6220:
6230.end_chk
6240PLA
6250INC char_index
6260BEQ error
6270CMP #80D
6280BNE compress
6290RTS
6300:
6310.store_nibble
6320LDY nib_index
6330ORA (to),Y
6340STA (to),Y
6350LDA nib_posn
6360EOR #1
6370STA nib_posn
6380BNE high_nibble
6390INC nib_index
6400BEQ error
6410LDY nib_index
6420LDA #0
6430STA (to),Y
6440RTS
6450:
6460.high_nibble
6470LDA (to),Y
6480ASL A:ASL A
6500ASL A:ASL A
6520STA (to),Y

6530RTS
6540:
6550.instr
6560STX ref_addr
6570.loop
6580BEY
6590BMI out
6600CMP (ref_addr),Y
6610BNE loop
6620.out
6630RTS
6640:
6650.error
6660BRK:BRK
6680EUS "String"+CHR$7
6690BRK
6700:
6710.decompress
6720JSR read_nib
6730CMP #80C
6740BCS read_another
6750LDY #ref DIV#100
6760LDX #ref MOD#100
6770JSR store_byte
6780JMP end_chk2
6790:
6800.read_another
6810TAX
6820JSR read_nib
6830CMP #80E
6840BCC two_nib_char
6850CPX #80F
6860BEQ three_nib_char
6870:
6880.two_nib_char
6890STA temp

6900TXA
6910SEC
6920SBC #80C
6930ASL A:ASL A
6950ASL A:ASL A
6970CLC
6980ADC temp
6990LDY #ref2 DIV#100
7000LDX #ref2 MOD#100
7010JSR store_byte
7020JMP end_chk2
7030:
7040.three_nib_char
7050TAX
7060JSR read_nib
7070CPX #80F
7080BNE first_str
7090CLC
7100ADC #810
7110.first_str
7120LDY #ref3 DIV#100
7130LDX #ref3 MOD#100
7140JSR store_byte
7150:
7160.end_chk2
7170BEQ error
7180CMP #80D
7190BNE decompress
7200RTS
7210:
7220.store_byte
7230STY ref_addr+1
7240STX ref_addr
7250TAY
7260LDA (ref_addr),Y
7270LDY char_index

7280STA (to),Y
7290INC char_index
7300RTS
7310:
7320.read_nib
7330LDY nib_index
7340LDA (from),Y
7350TAY
7360LDA nib_posn
7370EOR #1
7380STA nib_posn
7390BEQ lo_nib
7400TAY
7410LSR A:LSR A
7430LSR A:LSR A
7450RTS
7460.lo_nib
7470INC nib_index
7480TAY
7490AND #80F
7500RTS
7510:
7520.ref
7530EUS "etaoinshrdl"+CHR$32
7540.ref2
7550EUS "ubcfghjklmnpq"
7560EUS "BCDEFGHIJKLMNOPQ"
7570EUS "RSTUVWXYZ0123456"
7580EUS "789.,;'+-CHR$34+'()+-
"+CHR$13
7590.ref3
7600EUS "#12<=>@["+CHR$93+"*"}]#!"
7610EUS "=/*?*_
7620]:NEXT:ENDPROC
    
```

electron  
user

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electron  
user

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**Solar powered,  
see through calculator.  
FREE with orders  
over £25\***

Using state-of-the-art technology this calculator has an invisible membrane keypad, runs from solar cells (so you'll never need any batteries), and because it's only the size of a credit card it fits easily in your wallet or pocket.

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\* UK orders only (not subscriptions). Subject to availability

**EXCLUSIVE**



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# SNAKES

# alive!

Improve your keyboard skills with this fun, yet educational game from Darren Bradley

**TYPING** tutors need not be dull, mind-numbing programs, as Stone the Snakes clearly demonstrates. It is designed to improve your knowledge of the Electron's keyboard, but the tutor takes the form of a simple, yet addictive game.

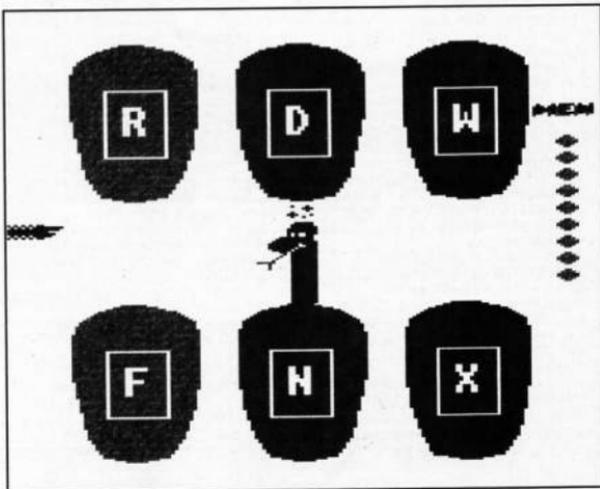
It is especially suitable for young children, helping them identify the most common keys while having lots of fun while they do so.

You are an Indian snake charmer's assistant and while he is at lunch your task is to watch his baskets, making sure the snakes don't escape. You sit beside the six baskets armed with a handful of pebbles.

Watch for any snake that pops its head out and when it does throw a pebble at it to make it jump back in. Each basket has a letter printed on the side - press that letter on the keyboard to throw a pebble.

If you are too slow the snake will put its tongue out, escape and bite you, costing you one of your lives. Throw at the wrong basket and the snake will again escape and bite you. Sometimes a snake will pop its tail out of its basket. Don't throw stones then as they bounce back and hit you.

There are five levels of difficulty, so no matter how good - or poor - your typing skills, you can still have a challenging game. If you complete a level you'll automatically move on to the next.



```

10 REM Snakes
20 REM By Darren Bradley
30 REM (c) Electron User
40 MODE4:VDU23;R202;0;0;0;:ONE
RROR:MODE4:PRINT:REPORT:PRINT" at
line ":ERL:END
50 PROCINS
60 MODE5:VDU23;R202;0;0;0;19;2
;2;0;19;3;3;0;:PROCch:PROCva:PROC
scr:PROClct:PROCupdate:PROCgame:PR
UN
70 DEFPROCscr
80 MOVED,0:DRAW0,1023:DRAW1279
,1023:DRAM1279,0:DRAW0,0:VDU5:FOR
y=670T0170STEP-500:FORx=250T0950S
TEP350:PROCba(x,y,1+(x-250)/350)
):NEXT:NEXT:GCOLOR,1:MOVE1127,700:
PRINTme$;GCOLOR,3:MOVE1131,704:PRI
NTEe$:PROCupdate:ENDPROC
90 DEFPROCba(x,y,z)
100 GCOLOR,z:MOVEx,y:PLOT0,0,150
:PLOT81,50,0:MOVEx,y:PLOT81,110,1
40:PLOT81,40,-20:MOVEx,y:PLOT81,1
60,90:PLOT81,0,-70:MOVEx,y:PLOT81
,150,-40:PLOT81,-20,-60:MOVEx,y:P
LOT81,100,-140:PLOT81,-50,-10:MOV
Ex,y:PLOT81,10,-150
110 PLOT81,-50,10:MOVEx,y:PLOT8
1,-70,-100:PLOT81,-20,60:MOVEx,y:
PLOT81,-100,20:PLOT81,0,70:MOVEx
,y:PLOT81,-90,120:PLOT81,40,20:MOV
Ex,y:PLOT81,0,150:ENDPROC
120 DEFPROCch
130 VDU23,224,65,97,113,121,125
,121,113,97,23,225,62,30,14,6,2,6
,14,30,23,226,254,254,255,239,229
,217,177,97,23,227,0,0,0,0,2,6,14
,30,23,228,0,62,74,81,145,161,161
,162,23,229,0,0,52,46,110,94,6,4
,23,230,3,7,15,31,31,15,3
140 VDU23,231,131,135,143,159,1
43,135,131,129,23,232,124,120,112
,96,112,120,124,126,23,233,24,60
,24,0,60,126,60,0,23,234,60,126,60
,0,126,255,126,254,23,235,0,0,0,0
,0,0,0,1,23,236,255,255,255,255,2
55,255,255,255
150 VDU23,237,1,2,4,8,248,16,16
,16,23,238,0,170,85,255,255,255,8
5,170,23,239,0,192,128,0,0,0,128,
192,23,240,0,0,126,252,224,248,24
0,0,23,241,0,24,60,126,126,60,24
,0,23,242,0,68,14,6,64,226,72,0,23
,243,0,0,238,170,238,172,170,0
160 VDU23,244,0,0,106,138,174,1
70,74,0,23,245,0,0,160,160,160,0
,160,0,23,246,0,0,139,218,251,170,
139,0,23,247,0,0,210,26,158,22,21
0,0,0:g$=CHR$18+CHR$0+CHR$3+CHR$24
3+CHR$244+CHR$245:me$=CHR$246+CHR
$247:g$=CHR$18+CHR$0+CHR$3
170 y$=CHR$18+CHR$0+CHR$3:cs=CH
R$8+CHR$10:sn$=CHR$228+CHR$8+y
$+CHR$229+cs+CHR$8+g$+CHR$230+CHR
$226+CHR$8+y$+CHR$227+c$+g$+CHR$2
4+CHR$8+y$+CHR$225+c$+g$+CHR$224
+CHR$8+y$+CHR$225+c$+g$+CHR$224+c
HR$8+y$+CHR$225
180 de$=CHR$236+c$+CHR$8+CHR$2
36+CHR$236+c$+CHR$8+CHR$236+CHR$2
36+c$+CHR$236+c$+CHR$236:sn2$=CHR
$233+c$+CHR$234+CHR$8+g$+CHR$2
35+c$+CHR$231+CHR$8+y$+CHR$232+c$
+g$+CHR$231+CHR$8+y$+CHR$232+c$+g
$+CHR$231+CHR$8+y$+CHR$232
190 ar$=CHR$238+CHR$238+CHR$239+y$+C

```

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Write your own arcade smashes using the

## ARCADE GAME Creator

Arcade Game Creator is a suite of programs for the Electron and BBC Micros. Taken from the pages of *Electron User*, it lets you into the secrets of writing fast-action arcade games, and provides you with a number of utilities to make design and programming easier.

Among the programs are:

- A Mode 5 sprite editor that lets you design your own multi-coloured characters.
- A selection of fast print routines that will move sprites both in front or behind other objects on the screen.
- Map generators that will squeeze a Mode 5 screen into 8 bytes!
- Scrolling maps.
- Score update and printing routines.  
... and much, much more.

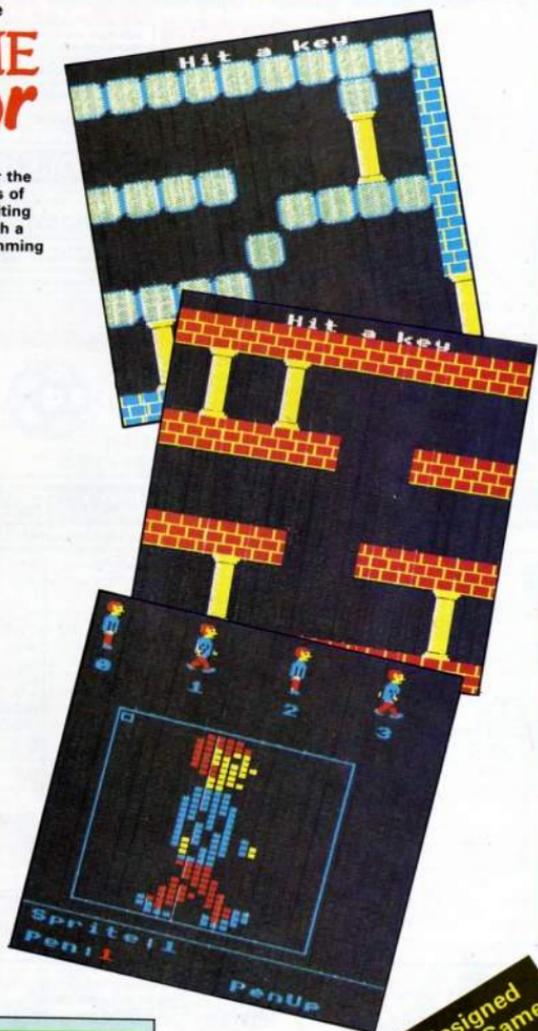
To help you make the most of the Arcade Game Creator, you will also get a comprehensive manual based on the original series.

Written in an easy to read style and with many illustrations and screen shots, it contains all the information you need to create and animate sprites, to design backgrounds and to link the two together into a complete arcade game.

If you are an aspiring games programmer, this is an offer you simply cannot afford to miss!

### Arcade Game Creator

Tape + manual .....£9.95



Screens designed  
using Arcade Game  
Creator

**TO ORDER PLEASE USE THE FORM ON PAGE 45**

# MICRO MESSAGES

## Expanding disc dilemma

I HAVE an Electron, Plus 1, ACP Plus 4, Turbo Board, Jafa Mode 7 adaptor, and a 5.25in 40/80 track disc drive. My problem is the ever occurring one of disc software for the Electron, or the lack of it. When Superior issued 5.25in DFS software of some of its catalogue I was very pleased, but it appears that the job was not done correctly.

The Play it Again Sam disc will not load or run correctly, in fact only Strykers Run will load and run. The Elixir disc will only run if the ADFS rom is present on the system and only then if the ADFS is on a lower priority than the DFS.

These problems as far as I am aware only exist on the ACP Plus 4 DFS discs. I notice that Impact Software is selling the Superior discs again. Are they upgraded versions? Can anyone assist me regarding the discs of Bonecruncher and Palace of Magic - do they run OK on the ACP Plus 4 system?

With the Mode 7 adaptor and Turbo board running the Electron is close to a BBC Micro and I believe you have a similar set up with the ACP Plus 4 in the office.

Is it possible for you to borrow the BBC Micro disc of the current game you are

reviewing from your sister magazine, The Micro User, and tell us disc users of which there are more than a few, if it will run on an expanded Electron?

I feel there is an untapped market for companies whose discs will run on Electrons which have been expanded. How about an article, I believe the Mirrorsoft titles run, but again which ones? I look forward to your comments. - J. Nunn, Hampton, Middlesex.

● From your letter it is clear you have quite a number of add-ons - DFS, ADFS, Plus 1, Turbo and Mode 7 boards. Any one of these could be causing compatibility problems with Superior's games.

We experienced problems a few months ago when programs would not correctly load with the Slogger Turbo. The solution was to load the loader and delete the line that tried to disable the Plus 1.

We like your idea of testing BBC Micro Software and will consider it for a future article. Pres is to produce around 50 Electron Superior Software titles on disc

now cut to seconds.

I have bought the game and it's brilliant and very addictive, making it a must for disc users. - Christopher Illidge, Holmes Chapel, Cheshire.

## Brother's serial link

I HAVE owned an Acorn Electron for two years. My set-up is an Acorn data recorder, colour TV, Plus 1 and View. I have recently been given a Brother HR5 printer. What do I need to connect my new serial printer to my Acorn Plus 1, and where can I obtain both this and a ribbon cassette?

I will shortly be getting an AP34 disc interface and I would like to know if the Watford DFS for the BBC Micro can be fitted to the interface. Is Interword compatible with the Electron? One final question, how do I fit the AP2 to my AP1? - Dean Fountain, Plaistow, London.

● You've got a problem with the printer - the Plus 1 has a Centronics parallel port and the printer has a serial one, meaning they are incompatible (the HR5 is available with a suitable parallel port but you can't easily

convert between the two).

We don't know of anyone who is currently producing a serial port add-on for the Electron, so our advice would be to sell the HR5 and buy one with a parallel port.

Boots used to sell printer ribbons and thermal paper for Brother printers, so check with them for current availability.

You won't need a Watford DFS for the AP34 as it already comes with two disc filing systems, one of which is compatible with the Watford version.

Interword is not available for the Electron. View is the most commonly used word processor. The AP2 is a rom which plugs into the rom socket inside the AP1.

## ON ERROR RUN runs into trouble

I HAVE just received the July Electron User and tape. You have included my program Jetbike and I must point out that the printed version is bugged.

An ON ERROR RUN statement is used by the program to re-run and thereby reset the data once three lives are lost. Your version omits this statement, so once you have died the published program crashes. This can easily be remedied by adding the line:

```
55 ON ERROR RUN
```

I have added this line to your version and have had no problems after a number of plays. Alternatively, you can tag the ON ERROR RUN on to the end of line 50 or 60 as in the original copy I sent you. - L.C. Davies, Redditch, Worcs.

● Our apologies for that boob Lyn. The line was taken out to aid testing and debugging for anyone typing it in.

## More disc games wanted

RECENTLY I upgraded my subscription to include the monthly tape and after initial problems in receiving it, I am now pleased to say it arrives every month, although a week later than in the shops. I find it excellent after I have converted the programs to disc.

Why are there only a handful of programs available on disc, especially 5.25in as used on the AP4? Are we likely to see Mini Office on disc, and what about 10 of the Best, Fun School and Nursery Rhymes?

Superior made a great mistake by only

Turn to Page 36 ▶

## Locked in Ravenskull

WOULD some kind reader help a frustrated Electron grandad with Ravenskull? I can complete the first level, but not without losing a life. I always seem to get trapped in the gates when the doors lock. - R. Gerrard, Macclesfield, Cheshire.

● Maps of level one and two of Ravenskull were published in the September and December 1987 issues of Electron User. Can any readers provide other clues?

## Super sort of Superman

AFTER reading your review of Tynesoft's Superman in the May issue of Electron User I was rather disappointed. I wanted to buy the game, but I learnt it was necessary to reload every time you die, which is very frustrating.

However, after I phoned Tynesoft about this point it came to my attention that Superman is also available on 3.5in disc for the Electron costing £14.99, so frustration is

#### ◀ From Page 35

bringing out *Play it Again Sam 1* on disc. Had more of this series been converted I would probably have bought them. If you produce another guide to software and hardware please include the Plus 4 and Citizen 120D printer, and Pascal language. — John Ross, Edinburgh.

● Pres is to produce around 50 Superior Software games on disc — see this month's news page. Mini Office can be put on disc with Slogger's T2P3 rom and the BBC Micro disc version of Fun School 2 works providing you disable the Plus 1. It was reviewed in last month's issue of *Electron User*.

There are no plans to produce a disc version of Nursery Rhymes.

## Not a mouse in the place

I HAVE been a reader of *Electron User* for three years and I find it a great help and very enjoyable. I own an *Electron* and Plus 1 and have recently decided to upgrade it with a mouse.

Looking through past issues I noticed an advert for the AMX Mouse and Art Package. I would like to know if Advanced Computer Products is still selling it, and if so how much it costs? If not, are there any suitable alternatives? — Alan Stainer, Horsham, West Sussex.

● The AMX Mouse is no longer available for the *Electron* and there aren't any alternatives. Impact (0742 769951) is releasing an art package shortly which promises to be very good

## Home finance improvement

I WOULD like you to pass on to other readers a few alterations I have made to Julie Boswell's excellent Home Finance Manager program which appeared in the April issue of *Electron User*.

Firstly, I thought the numerical columns would be much neater and easier to understand if the decimal points were kept in line vertically. To do this, including for the print-out, the following lines have to be added and changed.

```
680 PRINT date$(1)TAB(6)detail
$(1)TAB(24)dc(1)TAB(32)balance(1)
755 @=B20207
790 PRINTTAB(0,4+1)date$(1)TAB
(6,4+1)detail$(1)TAB(24,4+1)dc(1);TAB
B(32,4+1);
810 PRINTbalance(1)
```

As I usually make 30 or so transactions in a month, I would not be able to use the utility to verify a monthly bank statement, due to the limit of 20 transactions.

By adding and changing the following lines, a full screen can be saved under a chosen filename which could be the last entry date, such as 17FEB. The current file

All programs printed in this issue are exact reproductions of listings taken from running programs which have been thoroughly tested.

However, on the very rare occasions that mistakes may occur corrections will be published as a matter of urgency. Should you encounter error messages when you type in a program they will almost certainly be the result of your own typing mistakes.

Unfortunately we can no longer answer personal programming queries concerning these mistakes. Of course letters about suggested errors will be investigated without delay, but any replies found necessary will only appear in the mail pages.

could be saved each time under a name such as Latest to avoid confusion:

```
205 INPUT""filename""FNMS
230 file=OPENOUT FNMS
345 INPUT "filename?"NFMLS
350 file=OPENIN NFMLS
```

I hope these alterations will make the utility much more usable to other readers. — A.R. Dunks, Portsmouth, Hants.

## Is Robocop on our trail?

PLEASE print my letter, as not many young readers get their letters printed in the magazine. I would like to know if Robocop will be coming out for the *Electron*.

When I went to W.H. Smith they only sold a few *Electron* games, yet they sold loads for the Commodore and other computers. Please tell me why they do this because it doesn't seem fair as I like buying games? — John Close (aged 9), Daiston, London.

● We haven't heard of any plans to convert Robocop to the *Electron*. Sales of software for the *Electron* is now predominantly mail order. We're not sure how this situation has arisen, but don't worry, there's still enough cheap software available to keep you going into the next decade.

## Appreciation society

I READ J. Darlington's letter in the July issue of *Electron User* with interest. I experienced the same problems with Mini Office and Around the World in 40 Screens — I have an AP3 with T2P3 chip.

The tape filing system is re-enabled after a game is loaded using the rom. If there isn't a way around this problem I suggest Slogger could change the programming of the chip and produce a new version which would keep the disc system enabled. If they could do this I'm sure it would be appreciated by many users.

I also support the idea that a classified advertisements section would be a useful addition to an otherwise excellent magazine. — Gary Rychter, Livingston, West Lothian.

● The ball's in Slogger's court. It's up to them to find a solution to the problem.

## Upgrading the monthly tape

WHAT a great invention the pre-recorded tape is. I received my first one with the July issue, so no more late nights for me trying to get things right! However, I can think of one more improvement which would be a great asset.

Can we have a copy program produced to allow a straight copy to disc, so we disc users don't have to keep waiting for the programs to load after the initial transfer? The program could either be published as a listing to make the lazy ones among us work just once or twice, or be included in each month's tape running from the title page. — Charles Ayres, Bromsgrove, Worcs.

● We published a tape to disc copier more than three years ago. However, for our more recent readers, here it is again:

```
10 REM PROGRAM 1
20 REM Tape -> Disc
30 MODE 6
40 VDU 28,0,24,39,15
50 HMEM=67208
60 *FX16
70 *TAPe
80 *LOAD "" 2000
90 AX=0
100 REPEAT
110 n$=n$+CHR$(AX%&362)
120 AX=AX+1
130 UNTIL AX=11 OR AX%&362=0
140 *ADF5
150 n$="SAVE "+n$+" 2000 "+STR
$(%&3C6%256+%I%&3C8 AND &FFFF)+""
"+STR$(%I%&3C2)+"" "+STR$(%I%&3B6)""
160 PRINT"";n$;
170 OSLCI n$
180 CLEAR
190 GOTO 70
```

This version is for the ADFS and DFS users should replace line 140 with:

```
140 *DISC
```

## Leading question

I HAVE owned my *Electron* for four years, and for four years I've been able to load and save programs without any trouble. Recently, however, I've had trouble loading software from cassette.

The computer doesn't seem to be receiving any signals, as when I enter the command \*CAT nothing appears on screen. I have tried turning off my Plus 1, adjusting the volume, and cleaning the tape heads, but with no success.

The strange thing about all this is that I

can save programs without any trouble. Is it my Electron that is faulty, or just the cassette lead – seven pin DIN to three jack plugs? I would very much appreciate your help. – Pak Charoenkul, Chelsea, London.

● It sounds as if your cassette lead is faulty. If you are handy with a soldering iron try pulling the plugs apart at either end and checking for loose wires or cracked joints. However, cassette leads are so cheap that it's not worth getting it repaired. Buy a new one.

## Slogging away with Pres

I HAVE been a reader of Electron User for nearly five years and still wait eagerly for each new issue to appear on the shelves of my local newsagent. I own a 64k Electron, equipped with a Plus 3, Plus 1, Acorn data recorder, Olivetti ink jet printer and various cartridges.

Recently I decided to buy Slogger's joystick interface, but because I already had a Pres Plus 2 rom I decided to discard this and replace it with the Slogger expansion rom 2.0.

As I already own a 32k sideways ram cartridge, I copied the Pres rom using the Slogger rom 2.0 and they appear to be perfectly compatible. I can now format discs and use printer buffers within a few seconds of switching my computer on.

From my experiences it would be possible for R. Hand of Chatham to have both the Slogger and Pres roms in operation at the same time. I would, however, try it with the Slogger rom in place of the original Plus 1 rom first. This is how I presently operate my system. – Richard Taylor, Barry, South Glamorgan.

## Transformer faults

MY Electron's transformer has packed up and is apparently irreparable. I have made local inquiries but cannot trace a dealer prepared to service or supply me with a replacement. Please tell me where I can obtain a new transformer.

I also have a friend whose Electron has stopped working, and he wishes to know of a dealer, preferably in the Midlands, who can service his Electron. – Alan Petty, Sutton Coldfield.

● Try A1 Computer Services, 9 Paddock Mount, Dawley, Telford, Shropshire, or Gracar, Unit 6, Acacia Close, Leighton Buzzard.

## Space for a mistake

AS a retired senior citizen with an interest in computing, I acquired an Electron and with the help of your magazine articles set

## Creating screens causes a problem

I HAVE owned the Arcade Game Creator cassette for the Electron for some time, but as yet I haven't made a game because I have a problem creating screens. My query is, how do you create some more screens using the program 4\_PROG2? I haven't a clue what to change in the program so that it will print a third screen.

Could you please answer my question, as I can't wait to make a game? \_J.P. Tansey, Worcester.

● Creating and displaying more screens is really quite simple. First you must design the screen like this:

```
1790 REM Screen 3
1800 DATA 111111111111
1810 DATA 1000000101
1820 DATA 1400000301
1830 DATA 1444000201
1840 DATA 1000000441
1850 DATA 1000440001
1860 DATA 4440000041
1870 DATA 0000000441
1880 DATA 0000004441
1890 DATA 111111111111
```

Type this in at the end of the listing. Each of the numbers corresponds to a particular building brick, so build your screen by num

ber to learn the rudiments.

Having now fitted a Plus 1 and a View rom cartridge I have saved my first letter on tape as outlined in the instruction book. I find that after clearing the memory I can't get back a copy of the letter named Letter 1 after typing NEW then changing to Mode 6 and entering READ LETTER 1. I always get the message Marker not set.

I have experimented with various commands to no avail, and I note that in the manual's section eight, Blocks and Markers, it states "Markers are cleared whenever text containing them is formatted, text is saved without markers". – B.D. Menterfield, Sheffield.

● The problem is the space you have put between the word Letter and the number 1 in the filename. The solution is to either remove the number one or the space when saving text files.

## Incompatible joystick

I HAVE a Commander 3 F-Byte joystick interface and I am very happy with it. The only problem is I also have a Plus 1. Every time I want to use my F-Byte I have to take off the Plus 1. This is annoying because I use my Plus 1 and View for word processing quite a lot. Is there any way I can prevent this?

Also, could you show a graphics dump

memory. This new screen must be stored in memory along with the others so alter the following lines:

```
1335 scr2=PX+100
1340 FOR KX=0 TO 2
```

The first line sets up the label scr2 to point to the position of the data in memory – every screen takes up 50 bytes so the third starts 100 bytes after the first. The second line is a loop which now reads screens zero to two – three screens. Place the label scr2 in the machine code table:

```
1005 EQUW scr2
```

The machine code is written so that it draws the screen number in A%. To draw screen three A% must be set to two – zero is the first screen, one is the second and two is the third. Change line 110 to read:

```
110 A%=A%+1)MOD 3
```

You should now be able to run the program and it will correctly draw your new screen. As you can see, the process of creating screens isn't very difficult as the program is quite structured.

for a Panasonic KX-P1081 dot matrix printer please? – Robert Johnson (aged 11), Huntingdon, Cambridgeshire.

● There isn't a way round the joystick problem, apart from buying a new one compatible with the Plus 1. You'll find a multi-shade screen dump in last month's Micro Messages.

## A word for the Electron?

IS Speech available for the Electron, because if there is I would very much like to buy it. On Page 45 of the June issue there is an advert for it on the BBC Micro.

In the July issue someone was asking for a cheat for Bug Eyes II. Perhaps you could ask readers for a cheat for Elixir, as I am really stuck.

Finally, please would you give me some information on Mini Office, because it sounds excellent, but is it really as good as it sounds? – James Jagger, Welton, Lincoln.

● Speech is not available for the Electron, only the BBC Micro. Can any readers help with Elixir?

Mini Office is simply the best word processor, database, spreadsheet and graphics package at the price. More powerful programs are available, like View and Viewsheets, but they cost around four times as much

## LINERS

**T**HIS month's 10 Liners come from Robert Henderson of Liverpool. The first, Multi-demo, is a fascinating menu-driven program that produces some interesting and unique screen displays. It is a superb demonstration of how much can be achieved in just 10 lines of Basic.

Enter and run the listing then choose a menu option by typing in a number from 1 to 4. The first demonstration produces strange fuzzy waves running up the screen. The second is an example of multiple screen modes.

The third and fourth demonstrations produce dazzling displays of moving coloured backgrounds over which text and graphics are printed. You can only

```

1MODE6:VDU23,1,0;0;0;:78D3=
255:PRINTTAB(9,8);"S E L E C T
0 E M 0":78D3=0:PRINTTAB(9,10);
" 1 ... Screen bouncin'"TAB(9)"
2 ... Mixed mode":*KEY100LD|MRUN|
M
2PRINTTAB(9)" 3 ... Colour sc
roll 1"TAB(9)" 4 ... Colour scro
ll 2":INPUTTAB(9,16);"Well ";aX:I
Fa<1 OR aZ>4 THEN RUN
3FORa1=0TO2 STEP2:PI=890D:xI=
PI*5:COPTOI:SEI:LDA#FE07:AND#181:
LD#3:JSRdelay:STARFE07:LDA#FE07:
AND#172:LDX#2:JSRdelay:STARFE07:N
OP:JMP#90D:RTS
4.delay:DEY:BNEdelay:DEX:BNE
delay:RTS:.demo2:SEI:LDA#10D:STA#
FE08:LDA#144:STARFE09:NOP:NOP:NOP:
NOP:NOP:LDA#255:STARFE08:LDA#24:
STARFE09:NOP:LDA#41:.d:DEX:BNE:JM
Pdemo2:J:NEXT
5ON aX GOTO 6,7,8,9
6MODE3:VDU23,1,0;0;0;:FORna

```

quit from each demonstration by hitting the Break key. This does no harm however – all it does is simply take you back to the menu. The effects are achieved

```

meI=1 TO 120:PRINT " Electron Use
r 1989 ";:NEXT:CALL#900
7MODE6:VDU23,1,0;0;0;:7aX=1
33:AS=STRING$(80,CHR$(32)):FORnameX
=1 TO 120:PRINT " Electron User 1
989 ";:NEXT:PRINTTAB(0,1);AS;TAB(
0,14);AS;TAB(0,18);AS;CALL#900
8MODE5:VDU23,1,0;0;0;:FORBx
=1TO100:GCOLD,RND(3):PLOT85,RND(1
278),RND(1024):NEXT:CALLdemo2
9MODE5:VDU23,1,0;0;0;:COLOU
R129:CLS:COLOUR3:PRINTTAB(1,4);"W
HAT ABOUT THIS ?":PRINT "" Some
text scrolls":COLOUR2:PRINTTAB(0
,12);"And some does not !!"
10GCOLD,0:MOVE0,500:MOVE1278,5
00:PLOT 85,0,400:PLOT85,1278,400:
PRINTTAB(0,21);:FORFZ=1TO8:PRINT
" ELECTRON ";:NEXT:GCOLD,3:MOVE0,
100:MOVE1278,100:PLOT 85,0,200:PL
OT85,1278,200:PRINTTAB(6,31);"Fas
t ah ?":CALLdemo2

```

through the use of a machine code routine to poke a series of numeric values into the ULA chip's palette and mode registers.

## Long-life screens

Robert's second offering, Blackout, is a handy machine code utility which will extend the life of your monitor screen. Many people use their computers all day, and while this isn't harmful to the Electron, the picture being displayed on the TV or monitor often remains static for hours on end.

This may be the case if a fractal generating program is being run, or the micro is being used to monitor or control some external hardware. Sometimes, if this is done too often, a faint after-image can be burnt into the phosphor coating on the screen.

Blackout is a small interrupt driven machine code routine which monitors the keyboard, and if it isn't used for a specified length of time the screen display is turned black. You set the time delay when the program is run – just enter the number of minutes the Electron is to be left idle before the display is blanked.

The program is stored out of the way at #900. This area of memory isn't used by Basic so you can load and run Basic listings without worrying about memory clashes. A timer is initialised which is

```

1REM Blackout By R.Henderson
2MODE6:VDU23,1,0;0;0;:PRIN
TTAB(2,11);" Please enter amount
of time before ":INPUT TAB(5,13);
" the screen is blanked out: "tim
eX:IF timeX<1 OR timeX>255 RUN
3CLS:PRINTTAB(2,12);" The sc
reen will be blanked every ":PRIN
T TAB(13,14);" minutes.":VD
U23,1,1;0;0;0;
4pblock=#68:1pblock=0:osword
=#FFF:7870=50:7871=60:7872=1:787
3=1872
5FOR ix=0 TO 2 STEP 2:PI=890
D:OPT ix:PHA:PHA:TXA:PHA:TTA:PH
A:LDA #EC:CMR #60:BEQ test:.reset
LDA #60:STA #71:LDA #50:STA #70:
LDA #73:STA #72:LDA #74:CMR #B7:
EQ colour:PLA:TAY:PLA:TAX:PLA:PLP
:RTS
6.testLDA #EC:CMR #80:BNE r
eset:DEC #70:BNE ret:LDA #50:STA
#70:DEC #71:BNE ret:LDA #60:STA #

```

```

71:DEC #72:BNE ret:JSR blackout:J
MP blk
7.blkLDA #0:STA pblock
+1:LDX #15:.loopSTX #8E:STX pblo
ck+1:LDX #blockMOD 256:LDY #pblock
DIV 256:LDA #11:JSR osword:LDA
pblock+1:LDX #8E:STA #75,X:DEX:BN
E loop:RTS
8.blkLDA #15:.blankTXA:STA
pblock:LDA #0:STA pblock+1:STX #
8F:LDY #blockMOD 256:LDY #pblock
DIV 256:LDA #12:JSR osword:LDA
#8F:DEX:ONE blank:LDA #1:STA #74:
JMP ret
9.colourLDA #15:.restoreTXA
A:STA pblock:LDA #75,X:STA pblock
+1:STX #8F:LDX #blockMOD 256:LD
Y #pblockDIV 256:LDA #12:JSR osw
ord:LDX #8F:DEX:ONE restore:LDA #
255:STA #74:.retPLA:TAY:PLA:TAY:
PLA:PLP:RTS:J:NEXT
10.78220=0:78221=89:*FX14,4

```

then incremented every time frame fly-back occurs – every fiftieth of a second. If a key is pressed it is reset to zero. However, if one isn't pressed and the timer reaches the set limit the screen is blanked.

The colour palette is read using osword 11 and saved to memory. The colours are then all set to black using

osword 12 – a fast version of VDU 19. The routine now waits for a keypress and then proceeds to restore the original colour palette.

While the screen is blanked the program continues to run, you just can't see what is on screen. You should tap any key if you desire to see what is on the screen.

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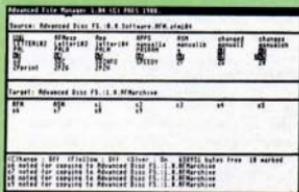
**DELETE** - allows files to be marked and then deleted with one keystroke.

**RENAME** - allows one or more files to be marked and then renamed using a wildcard name, ie one which varies with each file renamed. Thus you could rename s1, s2 and s3 to be s1\_old, s2\_old, and s3\_old in one operation... and that's only the beginning! As well as using the whole of the original name you can also pick out individual characters to form part of the new name.

**COPY** - the strongest feature of AFM. It is a two stage copy routine. With both source and target directories shown on screen the files to be copied are marked. Once all the files have been marked copying is started and the computer can be left to get on with it!

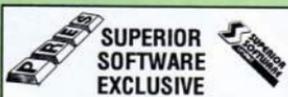
Large files can be split across several disks, and recombined. As much as possible of the computer's memory is used for copying files, including unused parts of shadow screen memory, sideways ram banks (inc. AP7), ram cartridges (inc. ABR 32K) and ABR (260K), tube memory (up to 61K), B+ paged ram (12K) and unused parts of the Slogger Master Ramboard (Electron).

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**Francis Botto reveals how the Electron came to be produced and reports on its success**

# From little Acorns...

**D**URING the last six years Acorn has had its up and downs, and one of those downs, surprisingly, was the Electron, which was a great disappointment in the wake of the BBC Micro phenomena.

In late 1983 everything looked rosy for the Electron, there was real optimism among Acorn staff at that time as all their successes seemed set to elevate Acorn Computers to the pinnacle of the British computer industry.

The initial demand for the Electron meant that Acorn could double production of its machine. The first 100,000 built in Malaysia were complemented by a further 100,000 assembled at AB Electronics in Rogerstone, Gwent. AB Electronics was already assembling BBC Micro motherboards at this time, so it was the ideal choice for the contract.

With a turnover of £42 million in 1983, Acorn was in the top five UK computer companies. However, the question which loomed in the background was: Is the Electron a real alternative to the BBC Micro and will the public take to it with equal enthusiasm?

After all, Acorn's strategy of launching an inexpensive cut-down version of the BBC Micro — which was what the Electron was intended to be — was a risk. For example, was the public interested in paying £199 for a 32k machine just because it had a BBC Basic interpreter?

At this time the 16k BBC model A (at £299) was about to be discontinued, so most dealers were selling 32k model Bs at a hefty £399. The Electron at £199, therefore, looked like an attractive alternative.

The first real setback came when the Electron failed to reach the shops on time, which must have led numerous would-be customers to look elsewhere.

Registered Acorn dealers were telling an inexhaustible supply of customers that all they need do was place a small deposit and they would have their machine shortly. Many patient customers placed confidence in their dealers and Acorn and ordered

machines for the Christmas of 1983. But how many didn't?

The Electron's late arrival aroused suspicions of technical problems with the design, which Acorn flatly denied. However, it was later revealed that there was, in fact, a nasty keyboard snag which led to a recall situation — the first hiccup in the Electron story.

There were no real PR disasters with the

Electron, such as a bad review, as almost everyone assumed that it would be a great success. The worst thing that reviewers said about it was that it was a stripped down BBC Micro in which all the good bits had been sacrificed for the sake of a lower price.

To cut a long story short, a small price war ensued and the Electron was reduced to £129 and that marked the beginning of the end for the machine.

I suppose the real problem with the Electron is that it is always in the shadow of the BBC Micro, undeniably a hard act to follow. But although the Electron has had rather a bumpy ride it has stood the test of time. It continues to be successful with thriving third party hardware suppliers like Pres providing a never-ending list of add-ons and software.

There's life in the old dog yet, and it should keep many enthusiasts computing well into the next decade.



## Before the Electron

*If you wanted to buy a British personal computer in 1981, you would have had two choices — a ZX80 or an Acorn Atom. Today the Atom is more likely to grace cupboards and attics than desktops, but it remains a notable milestone in the general evolution of Acorn Computers.*

*The Atom was the first affordable British personal computer to have a proper keyboard, and in terms of physical appearance it was not unlike the console of the BBC Master Compact of today.*

*In kit form it cost £138, built and tested it was £172.50. The Atom was generally used*

*by electronics hobbyists — it seemed that electronics people knew exactly what to do with them, unlike the general public who were at a slight loss.*

*The Atom, like the Electron to come later, had a 6502 processor, 2k of ram and 8k of rom. It could be enhanced in terms of graphics, input/output boards and so on. In fact, Acorn advertised it as "Unique in concept — a home computer that grows as you do... No need to worry that your investment will be overtaken by new technology. As you need more power, more facilities, you can add them".*

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```

700 ENDPROC
710 :
720 DEF PROCedit
730 VDU28,1,13,39,7
740 *FX15,1
750 *FX13,6
760 ONERRORGOTO190
770 PRINTTAB(0,6)
780 PRINT "Which rule number "
790 INPUTC%
800 PRINTTAB(0,6);C%; IF ";;1
NPUTAS(1,C%)
810 REPEAT:UNTIL NOT INKEY(-74)
820 PRINT;" THEN ";;INPUTAS(2
,C%)
830 IFAZ=CXAZ=AZ+1
840 ENDPROC
850 :
860 DEF PROCinference_engine
870 VDU28,1,13,39,7
880 *FX15,1
890 *FX13,6
900 PRINT TAB(0,6)
910 PRINT "Input problem"
920 INPUTAS:PRINT"LEADS";:FOR$Z
=1TO299
930 IFAZ=AS(1,$Z)PRINT;"":AS(2
,$Z);
940 NEXT
950 REM Backward chain starts h
ere
960 PRINT
970 PRINT "Input LEAD you wish
to investigate"
980 INPUTAS
990 FOR$Z=1TO299
1000 IFAZ=AS(1,$Z)PRINT;"":AS(2
,$Z);:AS=AS(2,$Z):GOTO990
1010 NEXT
1020 ENDPROC
1030 :
1040 REM Procedure loads knowled
ge base
1050 DEF PROCload
1060 REM flush keyboard
1070 *FX 15,1
1080 REM enable escape
1090 *FX13,6
1100 VDU28,81F,0,14:PRINT " "
1110 VDU28,1,24,39,7,12
1120 ONERRORIFERR=17GOTO110
1130 PRINT"(Cursor keys + cop
y enabled)"
1140 REM IMPORTANT!! Omit the
following line if using tape
1150 *CAT
1160 PRINT"Knowledge base title
";
1170 INPUTfiles:y%:0:PRINTfiles$
1180 V=OPENIN files$
1190 REM IMPORTANT!! Omit the
following line if using tape
1200 IFPTR#V#EXT#V=OPRINT"Not o
n this disk":GOTO1170
1210 REPEAT:y%+1:FORg%:1TO2
1220 INPUT#V,AS(g%,y%):NEXT
1230 UNTIL EOF #V
1240 CLOSE #V
1250 PRINTy%;" rules"
1260 AX=y%
1270 GOTO110
1280 :
1290 REM Procedure saves entire
knowledge base
1300 DEF PROCsave
1310 REM flush keyboard buffer
1320 *FX15,1
1330 REM Enable escape key
1340 *FX13,6
1350 VDU12,81F,0,13:PRINT;"Knowl
edge base title"
1360 ONERRORGOTO110
1370 INPUTfiles:PRINTAZ-1;" rule
s"
1380 V=OPENOUT files$
1390 FORh%:1TOAZ:FORg%:1TO2
1400 PRINT#V,AS(g%,h%)
1410 NEXT:NEXT
1420 CLOSE #V
1430 ENDPROC
1440 :
1450 DEF PROCwindow_computations
1460 IFB%:300B%:0:ENDPROC
1470 COLOUR129:COLOUR0
1480 VDU28,1,24,38,15
1490 PRINTTAB(0,9);B%;TAB(4,9);"
IF "AS(1,B%)" THEN "AS(2,B%)
1500 ENDPROC
1510 :
1520 DEF PROCsquare
1530 VDU81F,0,8:PRINTTAB(XZ-1,6)
" :REM 4 spaces
1540 VDU81F,XX-1,6:PRINTCHR$(131
);:""
1550 ENDPROC
1560 :
1570 DEF PROCsound
1580 FOR$Z=100TO150STEP50
1590 SOUND1,-4,$Z,2
1600 NEXT
1610 FOR $Z=1 TO 1000:NEXT
1620 ENDPROC

```

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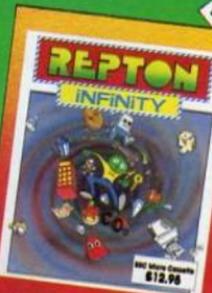
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