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# electron user

Vol. 7 No. 6 March 1990 £1.25

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## REVIEWS

*Sam 12, Hobgoblin and  
24 pin Panasonic printer*

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## ★ ★ PRODUCT HIGHLIGHT ★ ★

The Advanced Plus 3 Mk 2 <AP3> (requires Plus 1 to operate) now you can turn your Electron into a full disc system - no more waiting for tape loading or "bad block"/"data 7" messages. The AP3 is the only fully compatible disc upgrade running Acorns own filing system - the ADFS. (As supplied in Acorns Plus 3, Master 128, Master Compact, Archimedes and AA3000 range). AP3 Mk 2 gives you:

- 1) A fully Acorn compatible 1770 interface in cartridge form with spare 16k ROM socket. Can be fitted with DFS modification kit to give BBC compatibility.
- 2) 80 track-double sided - 3.5" disc drive. Storage capacity 640k.
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- 5) Welcome disc with extra 3 bonus games of Snapper, Draughts, Reversi.
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- 7) Full documentation.

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3 versions ADM/C(11) - ADB(12) ADE (13)  
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## ADVANCED ELECTRON DFS

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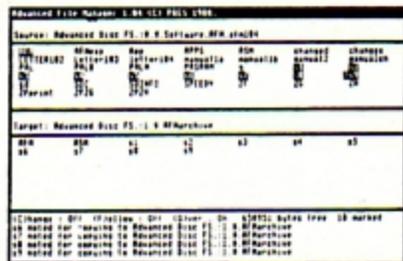
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A very powerful Disc utility for standard & non-standard discs. Backup most protected discs, edit any type of non-standard disc, check & repair faulty tracks, create new disc formats, copy 40 track discs to 80 track discs, verify two non-standard discs. (ADI features an extremely comprehensive sector editor, and one of the finest I've seen"... Tubelink on Prestel) (supplied on 16K EPROM + manual)

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Screen picture shows AFM in Copy mode on Master Turbo

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Maize	Guardian
Killer Gorilla 2	Stranded
Frak	Constellation
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Ring for details on other new titles still to come!!

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Bonecruncher	✓	
Elixir	✓	✓
Play It Again Sam	✓	✓
(Contains Citadel, Thrust, Strikers Run, Ravenskull)		
Palace of Magic	✓	✓
Superior Col. Vol. 3		✓
(Contains Synchron, Repton, Repton II, Karate Combat, Deathstar, Smash & Grab & Overdrive)		
Codename Droid		✓
Crazy Rider		✓

# PRES

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5.25" ADFS (manual avail. sep.) £14.00 ex VAT;  
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ADFS E00 .....	£49.52	£56.95
AP7 + 5.25" .....		
ADFS E00 .....	£48.65	£55.95
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AP1 + AP4 + CS400 .....	£189.00	£217.35

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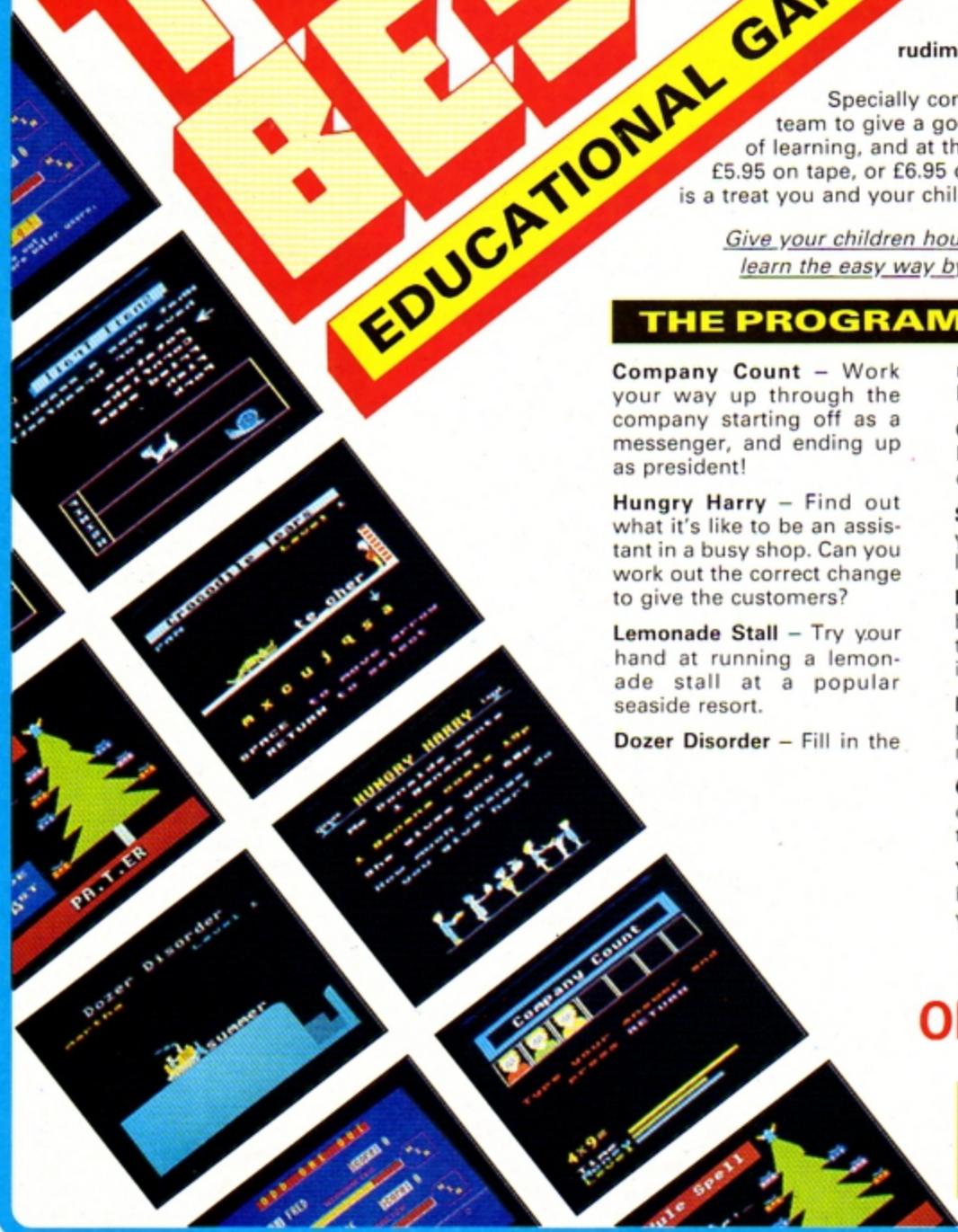
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**Back to  
school**

10 educational games for  
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## Lab picks electron user program

A SIMPLE Electron program written six years ago has received an accolade from one of the country's most prestigious computer establishments.

Largest offshoot of the Science and Engineering Research Council, The Rutherford Appleton Laboratory has included the program Kaleidoscope in a new educational venture designed to introduce the work of the laboratory to secondary school pupils.

From its headquarters in Didcot, the laboratory has sent out a free suite of programs on floppy disc to schools in Oxfordshire.

To demonstrate three fold symmetry, researchers delved into the archives of *Electron User* from the days when it was combined with sister publication *The Micro User*. They unearthed Kaleidoscope, which was written by readers Gwen and Roy Collier and appeared in the January 1984 issue. It simulates on screen the patterns generated by a toy kaleidoscope.

The package's 15 programs are designed to contain something of interest for everyone including geography and poetry as well as more familiar applications for computers.

It was the brainchild of Kate Crennell from the laboratory's Science Department Computing Group and highlights the computing opportunities at Rutherford Appleton.

The laboratory is the centre for JANET, the Joint Academic Network and provides a wide range of experimental and support facilities to scientists and engineers working in higher education institutes in the UK and overseas.

Its departments cover science, computing, particle physics and space science.

WHAT is believed to be the only on-line bulletin board specifically for Electron users has been set up by 19-year-old Scott Green.

From his home in Swanage Scott hopes his service will give Electron enthusiasts throughout the country a unique opportunity to swap ideas on their machines.

"I am interested in comms and have used an Electron since 1984", he told *Electron User*. "As far as I know, there has never been a service like this aimed at Electron owners and it has always been

## Electron users get their own bulletin board

my ambition to run a bulletin board where people can chat, leave messages and solve their problems through a helpline".

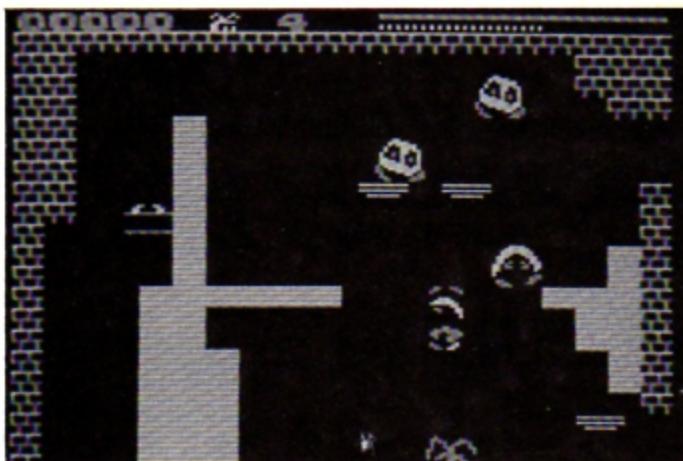
Scott has provided some files for down-loading but hopes that as Electron enthusiasts hear of his service, they will add their own contributions.

To join him on-line you need an RS423 interface and a modem. You can log on at 300/300 or 1200/75 with the option to use Prestel mode.

His machine runs on 96k of storage but he hopes that with the possible help of a sponsor this may be increased.

The number to ring is 0929 426003 and the service is available from 8am to 10pm.

"I would like to be on-line for longer each day but there is a problem", said Scott who works for GEC Plessey in Poole. "My disc drive makes a noise and since it is in my bedroom, I can't get to sleep".



## Two new conversions

ELECTRON games players will soon have their own versions of two top selling oldies.

Superior Software (0652 58585) has acquired the rights to the Peter Scott screen arcade adventures Pandemonium (seen left) and Network and is to convert them for inclusion in compilations.

This year will see Play It Again Sam 13, 14 and 15. Latest news on Sam 13 is that the lead game will be Barbarian II. It will also include either Pandemonium or Network with the unused title going into Sam 14.

"We are expecting the Electron conversions of these two games to be more or less identical to the BBC originals", said Superior boss Steve Hanson.

## More Doom - no gloom

THE third and final part of Peter Killworth's Doom trilogy for the Electron has now been launched by Trilogic (0733 244682) Latest in this text adventure series is Last Days of Doom which costs £19.95 including a free copy of classic adventure game Hezarim. It follows Countdown to Doom and Return to Doom but comes on DFS disc and can only be used with a Pres Plus 4 disc interface.

## Programming courses for the Electron

UNIVERSAL Computer Support (0922 30038) has released a range of new software courses for Electron users who want to learn programming.

The first offering is Elementary Basic, which includes 16 lessons plus example programs filling a double sided disc.

There are 62 programs including one called INFO which says what the course is all about. Due later in the year are three more courses dealing with Basic - Elementary II, Intermediate and Advanced.

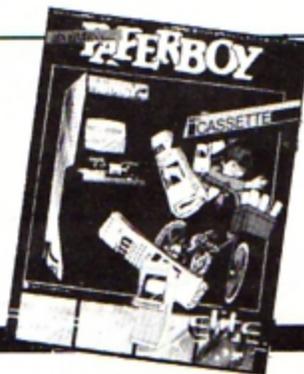
Each lesson has a minimum of 10 screens

including plenty of samples, plus a final screen pointing to the corresponding software which follows.

The Elementary Basic course is convenient for newcomers, as the number of books to wade through has been kept down. Seasoned programmers may also find it a useful reference source as each lesson is looked at in depth.

Part one is available in four modules, each containing four lessons and example programs. All four, including 16 lessons and 46 programs cost £20.95.

# Gallup Software Chart



THIS MONTH	LAST MONTH	TITLE (Software House)	COMMENTS	PRICE
1	●	<b>TARZAN</b> <i>React</i>	If swinging through the trees is your idea of fun you could try this game for a change – it's cheaper than a trip to Africa.	2.99
2	▽1	<b>PAPERBOY</b> <i>Encore</i>	Still near the top of the charts is this oldie. It's a shame about the flicker and slow speed – get a Turbo for faster arcade action.	2.99
3	▽2	<b>PLAY IT AGAIN SAM 10</b> <i>Superior</i>	Holding its own is this compilation of Zalaga, 3D Doty, Repton Thru Time and a debut for Qwak. Good value for money.	9.95
4	△15	<b>SUBWAY VIGILANTE</b> <i>Players</i>	Your angelic presence must strike to make the underground safe. A hack and slash martial arts game with little out of the ordinary to offer.	2.99
5	△18	<b>JOE BLADE 2</b> <i>Players</i>	Returning to the top with good graphics and a very playable game. The puzzle screens are wicked and will keep you pondering for hours.	1.99
6	△9	<b>STRYKER'S RUN</b> <i>Blue Ribbon</i>	The new generation of Blue Ribbon/Superior releases are definitely up to standard. One you really must have if you missed it first time round.	2.99
7	▽4	<b>YIE AR KUNG FU</b> <i>Hit Squad</i>	There are have been many clones and any combat game is invariably compared to it. A nice trip into meaningless violence if you like that sort of thing.	2.99
8	●	<b>ROCKFALL</b> <i>Alternative</i>	The name tells all – can you escape and do you want to, knowing what is out there? Making its reappearance in the charts.	1.99
9	●	<b>TOMCAT</b> <i>Players</i>	Graphically brilliant, superbly drawn screens. Turbo owners will find it a graphic delight. Don't bother if you have a basic Electron.	1.99
10	△13	<b>SNAPPER</b> <i>Acornsoft</i>	If you search hard enough you can still find this full-priced version, though it's better value as part of the Sam 7 collection.	9.95
11	●	<b>HOPPER</b> <i>Acornsoft</i>	Another oldie from the Acorn stable. Probably better value as a budget game, but a classic to add to your collection.	9.95
12	●	<b>VIDEO PINBALL</b> <i>Alternative</i>	A change of emphasis now as you can try a little wizardry and magic on the pinball simulator. Good fun and not too taxing.	1.99
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15	●	<b>PLAY IT AGAIN SAM 4</b> <i>Superior</i>	This Superior compilation gives you Frak, the new Cosmic Camouflage, Guardian and Spellbinder. Superb value for money.	9.95
16	●	<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 your spellbook.	2.99
17	●	<b>CODENAME: DROID</b> <i>Blue Ribbon</i>	If you haven't convinced yourself to buy Sam 2, this is your chance to add this nice sequel to Stryker's Run, to your shelves.	2.99
18	▽12	<b>CHUCKIE EGG</b> <i>A &amp; F</i>	Yes he's still pecking around. One of the first games available and you won't get egg on your face if you buy this one.	9.95
19	●	<b>SNOOKER</b> <i>Visions</i>	Not the best implementation, and also a little difficult to find. At the price you may do better with a budget Steve Davis.	9.99
20	●	<b>BLOCKBUSTERS</b> <i>TV Games</i>	As seen on TV, and if general knowledge quizzes are your forte you could have fun. Works rather well on a micro too.	7.95

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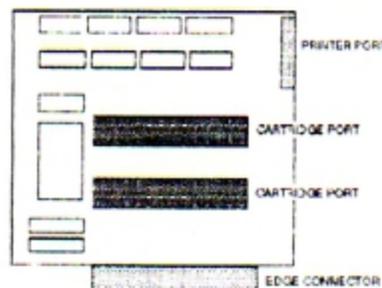
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# ADVENTURES

*By Pendragon*

## Conquest of the immortals

**T**HE hares are once more frisking madly as the weather warms, jousters joust, disc drives whirr and conquest is mine – conquest that is, over three immortal Electron adventures.

Since we last held forth I have completed Gateway to Karos, Red Moon and The Price of Magik. Yes, three classic adventures brought to a conclusion in one month is quite some going, even by my magical standards.

However, I have to admit that the enforced hibernation caused by heavy snow and long evenings has something to do with

my success. Hints and solutions to each of those adventures will feature here in due course, so watch this space.

In the meantime, two timely tips to supplement those I have already given for Gateway to Karos:

- If you find yourself tiring remember that only honest adventurers succeed in the quest. Take especial care not to travel around too much with Vork's crown and cup. Instead use the magic carpet to fly them to the Gate.

- There are 12 wearable artifacts in the game, and most of them are treasures. Also there are 14 objects which can be carried, and all – except the essential bag – have a high points value.

On another plane Quondam still eludes me, so please hurry with that help I asked for last month, you trusty citizens. Don't forget that prizes await.

We all struggle and sometimes win, and I thought it may be beneficial for readers to share experiences of how they have tackled and conquered some of the harder games. I will be pleased to hear from questers who have completed any of my previously listed Acornsoft and Level 9 adventures.

Let me know the most difficult points you came across in the games, what you found most irksome and how you overcame these problems. I also welcome votes for the Electron adventures you deem the hardest you have played.

## International rescue

Another interesting scroll to fall into the courtyard was from former knight of the Round Table – since demoted to hamster-rider – David Shepherdson. David, who is eager to regain his spurs, offers help with almost all Adventure International games.

His list is too lengthy to print here, but if you have a problem with any of the Scott Adams or Digital Fantasia adventures, then write – enclosing a stamped self-addressed envelope – to David Shepherdson, 3 Tarn Villas, Cowpasture Road, Ilkley, West Yorkshire LS29 8RH.

David also mentions his disgust at the number of bugs and spelling mistakes in Adventure International's game, Bukaroo Banzai.

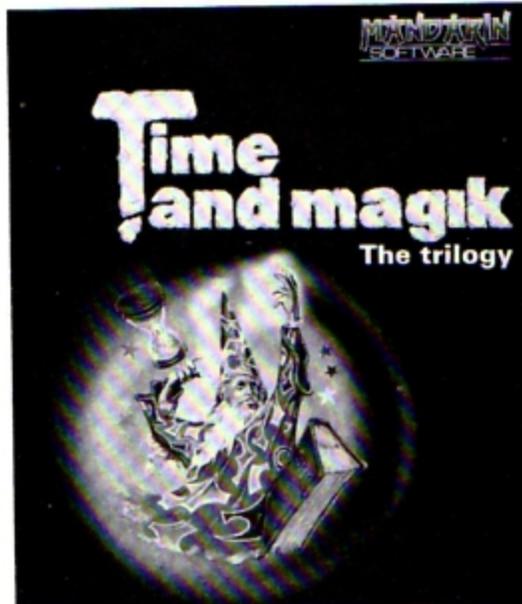
I wholly agree that this swan song from AI is an appalling excuse for an adventure and should never have been released by a company with a previously unblemished reputation for top notch games.

The only adventures I can recall with as many bugs as Bukaroo Banzai were Samurai's Castle of Skull Lord and Melbourne House's over-rated BBC Micro version of Lord of the Rings, but at least with those games the grammar and spelling were sound.

Finally, this month's featured map is of the openings to the granddaddy of them all: Classic Adventure. This map of the initial locations should also prove useful to wayfarers who are tackling Level 9's Colossal Adventure.

Next month I continue this popular series with map number 15 – a guide to the openings to Robico's excellent Blood of the Mutineers.

- That's it for this month, so until the hares regain some sanity, happy adventuring.



# Shadow of the Sphinx

Sphinx Adventure raises its inscrutable head once again. In my postbag this month was an intriguing letter from Mrs E. Rignall of Crawley in Sussex who has completed the game in only 116 moves – which beats the efforts of Ciaron Drain published in the September 1989 issue of *Electron User*.

I should at this point apologise that the last few moves in Ciaron's solution were mistyped by my monks and thus ensure that you end up lost in the desert. The clerics concerned have been duly flogged.

However, I have thoroughly tested Mrs Rignall's route and found it successful, but like all short cuts it provides only minimum reward – 290 points out of a possible 800. Anyway, 116 moves is quite some achievement isn't it?

Well I thought so, until I searched back through my Sphinx Adventure file and discovered a solution dated April 1988 from Warren Goodwin of Buxton, who completed the game in only 108 moves. In fact if you subtract the turns made for rubbing the lamp and killing that pesky dwarf, Warren's route takes only 100 moves.

It's eat your heart out time – here is Mr Goodwin's pride and joy: North, North, in, take lamp, out, South, take bottle, East, East, down, light lamp, South, West, South, take sword, down, take food.

West, take water, South, throw sword, take sword, South, take wand, North, East, throw water, East, wave wand, go bridge, East, take books, up, West, North, East, South, South, feed crocodile, East.

South, South, up, wave wand, rub ring, North, East, East, go bridge, East, South, South, pay troll, go bridge, West, South,



Larsoft games ...still in demand

North, East, East, throw sword, up, East, South, kill dragon (with hands), take teeth, North, West, Down, North.

East, North, down, wave wand, go bridge, West, West, throw teeth, West, North, East, North, South, East, West, East, South, North, South, East, West, East, South, North, East, West, East, South, North, kneel, wave wand.

I have tried and tested Warren's trail many times, and indeed know the innards of Sphinx Adventure better than almost any other adventure ever released.

After much dabbling I can only reduce the listed steps by one – by not taking the books – and can't see how the route can be beaten without cheating. Does anybody else know better?

A parchment also arrived from Steve Gray of Crayford, who kindly enclosed a detailed solution to Tynesoft's Super Gran in return to

answers to some questions. I have not played Super Gran since its release some four years ago, and have been without a full solution until now – thank you, Steve.

Steve asks where he can get hold of all the Larsoft games, where he can buy back issues of *Electron User* and whether Heyley adventures are available on 5.25in disc for the Electron.

As you probably know, Larsoft ceased trading almost two years ago, but its games are sometimes still available through third party distributors such as Mithras Software and Towerhill Computers. Back issues of *Electron User* can be ordered from our back issues department at Database Direct – see the form on Page 45. Finally, Heyley does produce 5.25in disc variations of its games. These can be bought either directly from Heyley or via its distributor, Pres.

## Readers' Hall of Fame

### Achton Bob Purder

Go to the LS room, then to the Alchemy room and transmute. Return to the Toll Hall, drop the quartz and take the topaz. SAY ZOOGE, drop the opals, brooch, jade, gold, sword and topaz.

Take the keys and the Habergeon. Go West, West, West, open the door, go North and wave the amulet. Now take the clock, roc and draden and drop all in Star-room 3.

SAY ZOOGE and go South-East, Down, East, North and North. Collect the stamp and the scroll. Now drop the stamp, scroll and amulet in the Star-room. SAY ZOOGE and go to the Slab room.

Take the scissors and rod, and drop the keys above ground. Now turn the lamp off. SAY EXAKCIP and collect the diamond, rhodium and silver. Turn your lamp on, go below ground and visit the idol.

Look in his eye, turn your lamp off and find the rear of the safe and the skull. SAY ANON, open the safe safely. Take the garnet, turn your lamp on, go back to the surface, go South and West and take the Habergeon. Now journey East, East, drop

the salt, go down, South-East and take the agate. Now more travelling: North-West, Up, North-West, South, South-East, South, South and Down to the Slab room.

Turn your lamp off, SAY ZOOGE, turn your

lamp on, drop the garnet, agate, plate, palantir, mink, and gloves. Now go and drop the Habergeon in the Slab room.

(To be concluded next month)

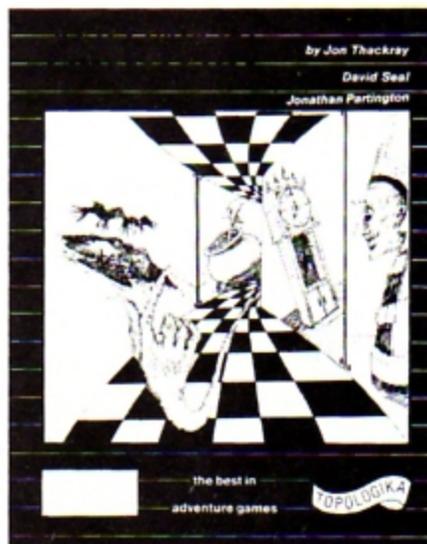
### The Axe of Kolt Harry Bastien

Begin part three by going Down, South-East, South-West, South and In. Examine the debris until you find a tinderbox. Go Out, East, South-East and look around.

Travel South, Examine the planks, look down and you fall – don't worry. You must now act decisively, so grab the rope, feel around and jump East. Now go East, feel around, South, feel around again, get the helmet, feel it, light the lamp and wear the helmet.

Continue by going North, East, North and East, and a rat will appear. To avoid the rat you must run west, South, West, West and grab the bar. Go East, East, North, East, North, examine the boxes and get the explosive.

Journey South and examine the equipment. Go West, North, examine the rubble and get the chisel. Carry on South, South



# Opening Gambit Map No. 14 CLASSIC ADVENTURE



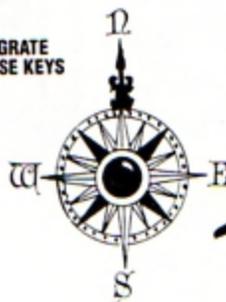
electron  
user

TAKE THE BIRD TO THE SNAKE

WAVE ROD AT THE FISSURE

GET BIRD  
CAGE

GRATE  
USE KEYS



BIRD

AXE

ROD

DOWN

30' chamber

East/West  
canyon

XYZY  
room

Cobbled  
crawl

Chamber

and East, then examine the rotten beam in the roof. Go South, examine the floor, get the fuse, go North and attach the fuse to the explosive.

Go East, examine the wagon and get the sledgehammer.

Continue East, get the shovel, make a hole and insert the explosive. Quickly go West and West again, and drop the tinderbox, chisel and shovel. Now West, North, East.

Get the beam, go West, South, East, prop up the roof, get the shovel and tinderbox. Travel East twice and light the fuse. Continue West, West, South, North, East, East and enter the hole. Examine the crates, get the staff, examine it and also doors.

Go South and throw the sledgehammer. Now get the sledgehammer, open the doors, go South, look up, push the door, go South and examine the throne.

Get the key and axe, go North, North, North, unlock the door and open door. Go North, Up, North and smash the wall.

Dig the earth, enter the tunnel. Go East, North and North-East to the conclusion of

this part of the adventure. You now discover the code for part four, which is: TRAP TSAL.

(Continued next month)

### Blood of the Mutineers *Barbara Gibb*

Start by closing the door and then bolting it. Go West and Up, get the bolster and key and go back down. Unlock the cabinet with the key, open and examine it. Get the irons and arm, go East and push the table.

Clamp the iron to the handle, examine the table, get the hanky and tricorn and journey West. Search the bed thoroughly, examine the drawer and daisy, press the androecium and open the drawer. Examine the drawer and get the map.

Continue East, open the East door and get the candle. Return West, open the window and put the candle in the tricorn. Now wear the tricorn and drop everything except the arm. Hook the arm to the rail and remove the tricorn.

Get the candle, rub the pulley with it, GET IN, rub the pulley with the candle again and lower the boat. GET OUT, go North and GET ALL. Return South, GET IN and raise the

boat. Put the tricorn on the bolster.

Remove your coat and put it on the bolster also. Now drop the bolster, go out, lower the boat and cut the rope with your cutlass. Go down, down, in and wait. Continue out and North, examine the cook, get the bag and colander, go up, up, up and in. Get the spyglass, search the crows nest, get the large lens and empty the bag into the colander.

Go out, down, down, down, North, North and climb the rigging. Go Down, Down and wait until cloud covers the moon. Then cut the rope with cutlass, WAKE and remove the boat.

Bail the boat with the boot, put the large lens in the spyglass and look through it. Now continue bailing the boat with the boot - if you see the message "A cold wind turns the boat around" you will be back in the same location.

Go North-West and East until you find the arm in the ocean. Return North-West twice, continuing to look through the spyglass until you see land to the North.

(Continued next month)

# SPHINX ADVENTURE

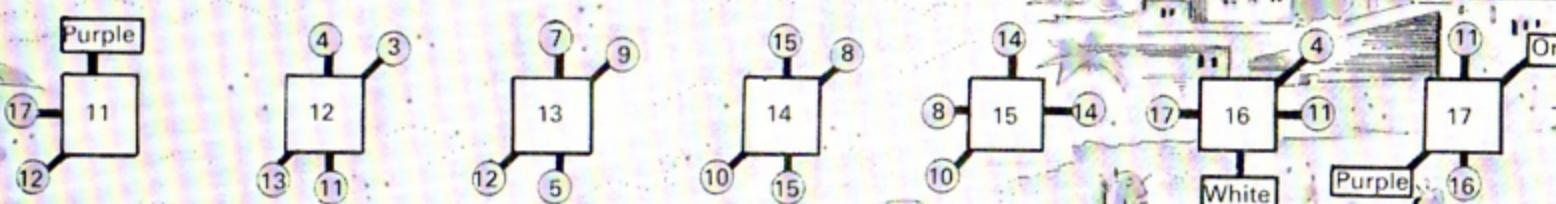
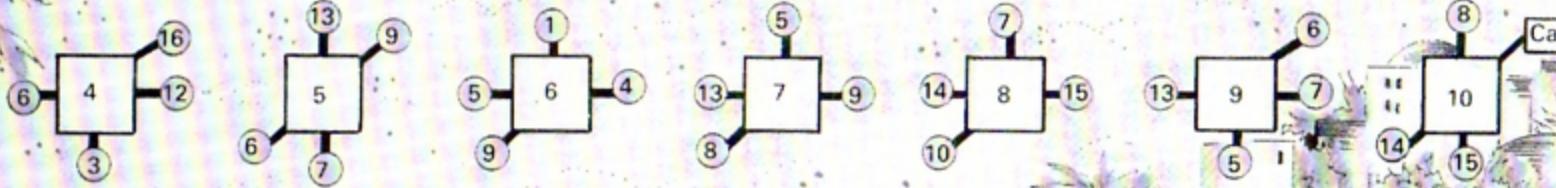
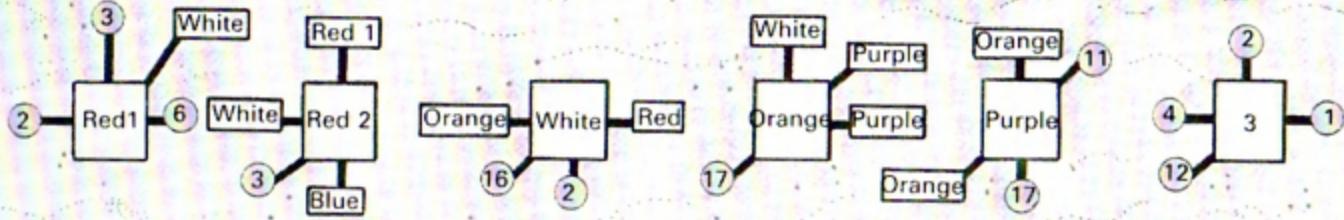
Maze No.1

*Coloured Rooms and Iron Passages*

Bear's cave

Blue

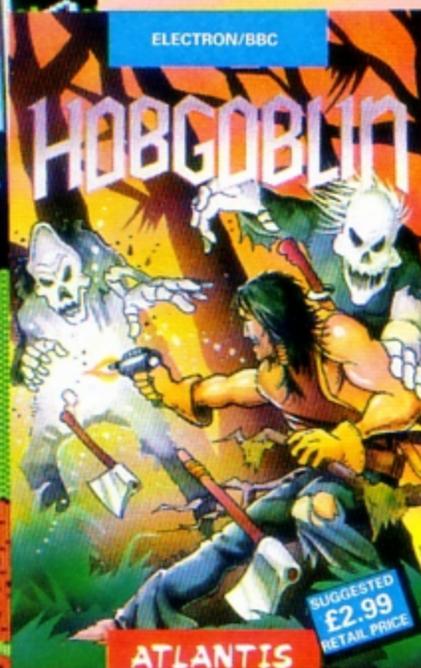
Red 2



Castle hill

Orange





# Ghosts and goblins

Product: *Hobgoblin*  
 Price: £2.99  
 Supplier: Atlantis, 28 Station Road, London SE25 5AG.

ARCADE adventures are becoming increasingly popular on the Electron, and this budget priced offering from Atlantis will keep enthusiasts of the genre amused for many an hour as they try to solve its many mysteries.

*Hobgoblin* is set in the far off fantasy world of Altoris. This land that time forgot is surrounded on all sides by dense woods and foul smelling swamps. In it lived a peaceful race of people who were ruled by the good and kindly King Garath.

It was however, under consantnt attack by the vicious, devilish hobgoblins and ghosts from the Swampland kingdom, but fortunately, the power of the Golden Orb kept the people safe with its protective aura.

Catastrophe strikes – the Golden Orb is stolen, and with it, goes its protective power. Doom and gloom descend on the land of Altoris. King Garath summons his son, Zanak, a great warrior, and instructs him to go forth and recover the missing Golden Orb in order to restore peace and tranquility to the land of Altoris.

You take on the role of Zanak and your quest is to recover the Golden Orb. You travel far and wide in this arcade adventure and you battle with many demons. Ghosts

and hobgoblins can kill simply by touching you, and skeletons of long dead creatures are reincarnated to battle with you. And phantom bowmen armed with countless arrows take pot shots at you.

The controls are walk left or right, jump and fire. Your firepower can be increased by collecting a glowing dagger or five treasures such as jewels, coins or treasure chests. Your weapon's range is increased by collecting a glowing arrow and an extra life is awarded for collecting three glowing skulls.

*Hobgoblin* isn't up to *Citadel* standard, but it is an exciting fantasy trip into the world of the arcade adventure which will keep you glued to your TV screen for many hours.

Julie Boswell

Sound .....	6
Graphics .....	9
Playability .....	9
Value for money .....	10
Overall .....	9

## Second Opinion

*Hobgoblin* is firmly set in the arcade adventure tradition and if you've seen – and enjoyed – the likes of *Citadel* and *Palace of Magic*, then you'll love this offering from Atlantis.

The dozens of screen to map and explore,

objects to collect and nasties to zapp make this a game that you won't complete quickly. At only £2.99 you won't need to break into your piggy bank so it represents excellent value for money.

Roland Waddilove

# Four square collection

Product: Sam 12

Price: £9.95

Supplier: Superior Software, PO Box 6, Brigg, S. Humberside DN20 9NH.

Tel: 0652 58585

THE rate at which SAM is churning out compilations is phenomenal and he is now up to number 12. Unlike previous offerings, this latest four-game box of fun does not feature anything new, and all the games have at some time been released before. In fact, some are quite recent releases.

The first game, **Skirmish**, is a trip into a fantasy world in which you sit astride a giant ostrich and engage in medieval-style jousting contests with opponents riding giant buzzards. Weird!

It sets itself apart from other games by taking the idea of a two player game one stage further – you play not only against another human player, but also against a number of other computer opponents. Thus half a dozen combatants can be on the screen at once.

To joust you must fly into an opposing player making sure your lance is higher than his. A vanquished human opponent loses a life and reappears somewhere else on the screen. A computer opponent however, falls off his mount and turns into an egg, while his riderless buzzard flies off into the distance. You must grab the egg quickly or it will hatch spawning a rider of the next grade.

Skirmish features three different types of computer controlled rider – the bounders, wearing armour, are easy to defeat; the hunters are more cunning and the shadow lords are almost impossible to dismount.

When all the computer controlled riders have been dismounted the next wave begins. Later stages add even more nasties: The lava troll that stalks along the bottom of the screen ready to grab any foolhardy contestant who comes too close. And the indestructible pterodactyl that flies backwards and forwards until the wave has ended.

The controls are simple: Left, right and flap. The last command causes your bird to flap its wings once. Press it repeatedly to hover and for all your worth to gain height.

**The Last Ninja** is a story of jealousy, power and revenge – of good verses evil and one man's struggle against overwhelming odds. It is easily the best martial arts cum adventure on the market (except for recently released *The Last Ninja 2*).

An evil Shogun slaughtered the Ninja community on its once-a-decade visit to the sacred island of Lin Fen. A solitary Ninja had been left behind to guard the shrine, feed the cat and other such tasks. Now he has sworn to avenge the deaths of his comrades and re-build the Ninja empire.

You play Armakuni as he begins his assault on Lin Fen. There are 16 locations on the island and you must kill every guard and collect all available objects on each level before moving on to the next.

Level one is set in the wilderness, a barren wasteland of rocks, bushes and paths, but it is patrolled by the Shogun's warriors. Initially unarmed, you must pummel your opponents using only your fists and feet.

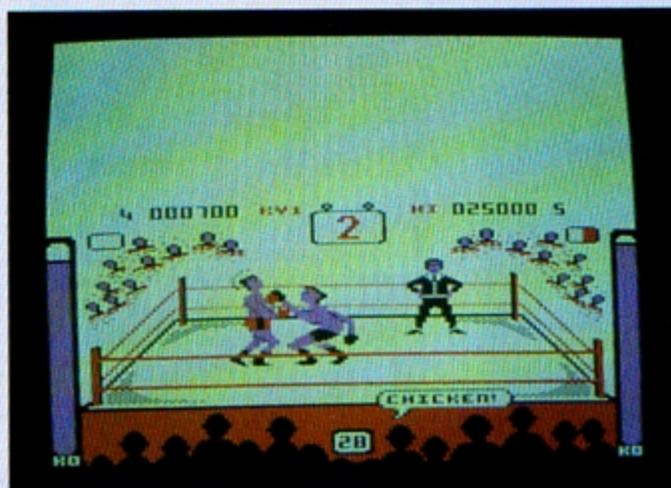
Things become a bit easier as you round



Ouch! That hurts...



Buzzing around in Skirmish



the first corner and find an abandoned sword – the first of five weapons. The instructions advise you to use the same weapon as your opponent, but I found the sword to be effective against most adversaries.

The Last Ninja is quite a departure from programmer Peter Scott's traditional style – the prolific author of countless cute platform games has really come up with the goods this time. Ninja is fast, furious and totally addictive.

In spite of its rather peculiar title, **By Fair Means or Foul** (BFMOF) is in fact, a boxing game. It allows you to execute a variety of boxing moves, including body blow, uppercut, standard punch and duck punch.

You can also move backwards and forwards and block your opponents blows by engaging either a high guard or a low guard. These are the fair moves, but you can also execute foul ones – head butt, knee kick and groin punch.

The fights are supervised by a referee who will try to ensure a good clean fight. However, there are times when his attention wanders, so if you want to play dirty, that's the time to act.

The probability of executing a foul move without attracting the referee's attention is indicated by the colour of a box below your score. If it is red then you will almost certainly be spotted, while red/white indicates that you stand a reasonable chance of getting away with it. A white silhouette gives

the all clear for all manner of foul deeds.

Rounds are one minute long, and the time can seem to go very quickly when you are losing. If neither player manages a knockout, the one with the higher energy level at the end of the round is the winner. The defeated player loses a life. If you manage to defeat your opponent five times you go on to fight a tougher opponent.

The ring scene graphics are not particularly impressive and the game seems rather devoid of colour. However, the animation of the two boxers is very lifelike, as they swing their arms and jump around on their toes.

**By Fair Means or Foul** is the result of a well-used idea approached from a different direction and, as such, has been implemented well.

Feel in the mood for a bit of theiving? Like to rob a safe or two? Well **Blagger** gives you the chance. This is by far the oldest game in the compilation, first reviewed in the September 1984 issue of *Electron User*.

As Roger the Dodger, intrepid master burglar, you have four lives and 20 different screens to search for golden keys in houses, shops and banks. It's nothing if not addictive and a great deal of patience and thought are required in order to work out how to get through each scene.

Some surfaces melt as you walk over them, mysterious gooseberry-like objects kill you if you touch them and sundry nasties such as space ships, humbugs, gnashing teeth, locomotives and RG signs (the

## PLAY IT AGAIN SAM 12



THE LAST NINJA



BY FAIR MEANS OR FOUL



SKIRMISH



BLAGGER

SUPERIOR SOFTWARE

ACORN SOFTWARE



Captions

author's initials) must be avoided.

After collecting all the keys on the screen you make your way to the safe which will then open and let you move on to the next screen. However, this is difficult if you have eroded away the only escape route while collecting the keys. There is also a time limit in which to complete the screen.

The game is a winner and is very much a just-one-more-go piece of software. The program makes good use of colour and graphics, though the sound can sometimes be a bit irritating. **Blagger** is very enjoyable and sure to give many hours of entertainment.

Overall, this is yet another winning compilation from the Superior stable. The individual games were all once full priced and sold extremely well. As part of a compilation they are unbeatable.

Julie Boswell

Sound .....	6
Graphics .....	10
Playability .....	10
Value for money .....	10
Overall .....	9

## Second Opinion

Once more Superior Software has produced a compilation of superb quality. The games can't be faulted and for just under a tenner represent good value for money.

The only cloud on the horizon is that as these games were so popular when first released, you may already have one, two or even all four of them. Each game that you already have diminishes the value of this unimaginative Sam 12 compilation.

Roland Waddilove

# New fonts

In the April 1987 issue of *Electron User* Roger Price presented several Basic programs to print out modified versions of the standard Electron character set. Although these programs were short and gave good visual results, they were very slow in operation.

A machine code version however, would solve this irritating problem and so I set about converting the Basic code that manipulates the characters.

The bulk of the program is the assembly language which produces the fonts. The first few lines of the listing contain the demonstration screen that displays a sample of the new fonts.

Using the program is quite straightforward. To print a line of text the procedure PROCprint is used. This requires the following parameters: *x*, *y*, *style*, *dir*, *height* and *string* where *x,y* are the print coordinates, *style* is the style of text, *dir* is the direction of text, *height* indicates either single or double height and *string* is the string to be printed.

The style is a single byte whose bits have been attributed thus:

Bit	Description
0	Underline
1	Bold
2	Light
3	Thin
4	Italic
5	Not used
6	Not used
7	Not used

When a bit is set, the program manipulates the character data accordingly. The

```
10 REM Extra Fonts
20 REM By Richard Blythe
30 REM (c) Electron User
40 ON ERROR MODE6:PRINT:REPORT
:PRINT " at line ";ERL:END
50 PROCAssemble
60 MODE 4
70 VDU 23,1,0;0;0;0;
80 TIME=0
90 PROCprint(2,1,24,0,0,"Here'
s a taster of the new fonts:-")
100 PROCprint(2,3,2,0,0,"Heavy
text")
110 PROCprint(2,5,4,0,0,"Dimmed
text")
120 PROCprint(2,7,8,0,0,"Thin t
ext")
130 PROCprint(2,9,16,0,0,"Slant
ed text")
140 PROCprint(2,11,4,0,0,"Any c
an be combined...")
150 PROCprint(2,13,18,0,0,"For
example heavy slanted text!")
160 PROCprint(2,15,8,0,1,"Doubl
e height too!")
170 PROCprint(0,13,0,1,0,"Upwar
ds!")
```

# for bold

**Spruce up your  
Electron's text output  
with Richard Blythe's  
new font styles**

direction parameter is a byte that is set as follows:

Value	Direction
0	Left to right (normal)
1	Bottom to top (upwards)
2	Right to left (backwards)
3	Top to bottom (downwards)

Not only is the text printed in the appropriate direction, it is also rotated so that it reads right, too. This is ideal for labelling charts and so on, when there is not enough space horizontally.

The *height* flag is straightforward: Zero means normal height, one means double height. Note that if you have double height going upwards or downwards, the characters do in fact look as if they are double width due to the rotation technique.

The program does not use any VDU 23s in the program at all. How is this possible? I made sure that the data that is manipulated is held at memory location &908. By temporarily setting the 128 to 159 character location bit in page three to &09, the micro thinks that characters 129 and 130 are at &908 and &910 respectively.

This means all that is required is to change these locations accordingly, and just issue a VDU 129 to print the character, followed by 130 if it is double height. Furthermore, the font location bit is reset at the end of the routine, so you can still use characters 128 to 159 as usual.

The only restriction is that the code must start at the beginning of the page. The advantages of doing it this way are speed and less code to type in. The speed can be

seen quite clearly as the complex demonstration screen takes only 1.5 seconds to print. It will also work in any screen mode.

The manipulation routines are also quite easy to achieve. Underlined is achieved by EORing the bottom byte of the character with 255, therefore reversing it.

The bold text is produced by shifting the whole character right by one bit and ORing with the old character. This means that any bits set in the old version or the new one are included on the final one, producing a heavy type effect.

The thin text is achieved in a similar way. Rather than ORing the shifted character, it is ANDed instead, masking off all bits that are not present in both versions. This means that all vertical lines are stripped by one pixel, producing a thin effect.

Light text is achieved by ANDing each byte of the pattern with &55 (01010101) which means that only every other pixel is

retained. Italic text is achieved by simply shifting the top four rows of the character left one bit (pixel).

Rotated text is a bit more complex. Each different rotation is handled by a different routine, so speeding up the program without a lot of branching routines. They work by looking at each bit in turn and storing them in the correct position on the second character grid.

Double height is produced by copying bytes &908 to &90F to &908 to &917. This has to be done backwards, otherwise the original character is overwritten before all its bits are manipulated.

The table near the beginning of the program contains the direction the cursor has to move; after each normal character; after the first double height character; and after the second double height character. This is needed because double height printed in strange directions might otherwise look a bit odd.

## Slanted text

Any can be combined...

For example heavy slanted text!

Double height too!

And even backwards!

Any point can be Underlined.

And finally, a multi-combination!

Upwards!

```

180 PROCprint(38,1,24,3,1,"Down
wards")
190 PROCprint(20,18,2,2,0,"And
even backwards!")
200 PRINTTAB(2,20);"Any point c
an be"
210 PROCprint(19,20,9,0,0,"Unde
rlined.")
220 PROCprint(2,22,23,0,0,"And
finally, a multi-combination!")
230 PROCprint(2,24,8,0,0,"The c
ode is fast - this screen")
240 t$=STR$(TIME DIV100)+". "+ST
R$(TIME MOD100)
250 PROCprint(2,25,8,0,0,"took
"+t$+" secs to print!")
260 PROCprint(2,28,2,0,1,"BYE B
YE... Press ESCAPE")
270 REPEAT UNTIL 0
280 END
290 :
300 DEF PROCassemble
310 DIM str &FF
320 FOR ix=0 TO 2 STEP 2
330 ow=&FFEE
340 Px=&900
350 C OPT ix
360 .stl EQUB 0 \style byte
370 .x EQUB 0 \copy of x re
g
380 .and EQUB 0 \} used in
390 .a2 EQUB 0 \} rotate rou
tine
400 .stc EQUB 0 \copy of stl
410 .siz EQUB 0 \single/doubl
e ht
420 .dir EQUB 0 \direction fl
ag
430 .char EQUB 0 \char no.
440 .dat EQUB 0
450 EQUB 0
460 EQUB 0
470 EQUB 0
480 \new char data - now
490 \char nos 128 and 129
500 .tab EQUB&0A080B09
510 EQUB&000B0B0B
520 EQUB&00000B00
530 \data for print direc
tion
540 \
550 \ main print routine
560 .pr
570 LDA #dat DIV 256
580 STA &36B
590 LDA &367
600 ORA #8
610 STA &367
620 LDA stl
630 STA stc
640 LDX #0
650 .loop
660 LDA stc
670 STA stl
680 LDA str,X
690 STA char
700 CMP #13
710 BEQ rts
720 STX x
730 JSR process
740 JSR print
750 LDX x
760 INX
770 JMP loop
780 .rts
790 LDA #12
800 STA &36B
810 \
820 \process bit pattern

```

830 .process	1630 LDA dat,Y	2450 BNE u2
840 LDA #8A	1640 LSR A	2460 DEX
850 LDX #char MOD 256	1650 AND dat,Y	2470 LSR and
860 LDY #char DIV 256	1660 STA dat,Y	2480 BNE u1
870 JSR &FFF1	1670 JMP c4	2490 .trans
880 LDY #0	1680 \	2500 LDY #0
890 \	1690 \bold text	2510 .u3
900 \ different styles?	1700 .bld	2520 LDA dat+8,Y
910 .c6	1710 LDA dat,Y	2530 STA dat,Y
920 LDA stl	1720 LSR A	2540 INY
930 AND #16	1730 ORA dat,Y	2550 CPY #8
940 BNE slnt	1740 STA dat,Y	2560 BNE u3
950 .c5	1750 JMP c2	2570 RTS
960 LDA stl	1760 \	2580 \
970 AND #8	1770 \underlined text	2590 .down
980 BNE thin	1780 .und	2600 LDA #128
990 .c4	1790 LDA dat+7	2610 STA and
1000 LDA stl	1800 EOR #&FF:STA dat+7	2620 LDX #0
1010 AND #4	1810 JMP c1	2630 .d1
1020 BNE lite	1820 \	2640 LDA #0
1030 .c3	1830 \print double height chars	2650 STA dat+8,X
1040 LDA stl	1840 .dblh	2660 LDA #1
1050 AND #2	1850 LDX #7	2670 STA a2
1060 BNE bld	1860 LDY #14	2680 LDY #0
1070 .c2	1870 .h1	2690 .d2
1080 INY	1880 LDA dat,X	2700 LDA dat,Y
1090 CPY #8	1890 STA dat,Y	2710 AND and
1100 BNE c6	1900 STA dat+1,Y	2720 BEQ nom2
1110 LDA stl	1910 DEY	2730 CLC
1120 AND #1	1920 DEY	2740 LDA a2
1130 BNE und	1930 DEX	2750 ADC dat+8,X
1140 \	1940 BNE h1	2760 STA dat+8,X
1150 \divides style code by 64	1950 LDY dir	2770 .nom2
1160 .c1	1960 LDA #129	2780 INY
1170 LSR stl	1970 JSRow	2790 ASL a2
1180 LSR stl	1980 LDA #10	2800 BNE d2
1190 LSR stl	1990 JSRow	2810 INX
1200 LSR stl	2000 LDA #8	2820 LSR and
1210 LSR stl	2010 JSRow	2830 BNE d1
1220 LSR stl	2020 LDA #130	2840 JMP trans
1230 LDA stl	2030 JSR ow	2850 \
1240 JSR rotate	2040 LDA tab+4,Y	2860 .under
1250 RTS	2050 JSR ow	2870 LDY #0
1260 \	2060 LDA tab+8,Y	2880 LDX #7
1270 \print the character	2070 JSR ow	2890 .n1
1280 .print	2080 LDA #8	2900 LDA #0
1290 LDA siz	2090 JSR ow	2910 STA dat+8,X
1300 AND #1	2100 LDA tab,Y	2920 LDA #128
1310 BNE dblh	2110 JSR ow	2930 STA and
1320 \branch to double height?	2120 RTS	2940 LDA #1
1330 \	2130 \	2950 STA a2
1340 LDA #129	2140 \checks for rotated text	2960 .n2
1350 JSR ow	2150 .rotate	2970 LDA dat,Y
1360 LDA #8	2160 DEC stl	2980 AND and
1370 JSR ow	2170 BEQ up	2990 BEQ nom3
1380 LDY dir	2180 DEC stl	3000 CLC
1390 LDA tab,Y	2190 BEQ under	3010 LDA a2
1400 JSR ow	2200 DEC stl	3020 ADC dat+8,X
1410 RTS	2210 BEQ down	3030 STA dat+8,X
1420 \prints single height	2220 RTS	3040 .nom3
1430 \	2230 \	3050 LSR and
1440 \slanted text	2240 .up	3060 ASL a2
1450 .slnt	2250 LDA #128	3070 BNE n2
1460 CPY #4	2260 STA and	3080 DEX
1470 BMI nos	2270 LDX #7	3090 INY
1480 LDA dat,Y	2280 .u1	3100 CPY #8
1490 LSR A	2290 LDA #0	3110 BNE n1
1500 STA dat,Y	2300 STA dat+8,X	3120 JMP trans
1510 .nos	2310 LDA #128	3130 J
1520 JMP c5	2320 STA a2	3140 NEXT
1530 \	2330 LDY #0	3150 ENDPROC
1540 \light text	2340 .u2	3160 :
1550 .lite	2350 LDA dat,Y	3170 DEF PROCprint(x%,y%,st%,d%,
1560 LDA dat,Y	2360 AND and	h%,s%)
1570 AND #855	2370 BEQ nom1	3180 \$str=s\$
1580 STA dat,Y	2380 CLC	3190 ?stl=st%+(d%*64)
1590 JMP c3	2390 LDA a2	3200 ?siz=h%
1600 \	2400 ADC dat+8,X	3210 ?dir=d%
1610 \thin text	2410 STA dat+8,X	3220 PRINT TAB(x%,y%);
1620 .thin	2420 .nom1	3230 CALL pr
	2430 INY	3240 ENDPROC
	2440 LSR a2	

# DIY INVADERS



## Design your own space invader games with Neil Davidson's DIY game creation utility

**O**VER the years many variations of the space invaders game have been published for the Electron. However, none have contained a built-in editor to allow you to create your own waves of marauding aliens – but this version does!

Using the editor you can alter the existing invasion patterns, create entirely new ones, set the ferocity of the alien attack and their minimum attack height. What's more, you can also save your masterpiece and swap with friends' patterns, so effectively creating new games.

The opening menu offers of five options. If you simply want a game of Galaxy Invaders press the 5 key to enter the battle. Use Z and X to move your missile base left and right and Return to fire missiles.

If you manage to survive the 10 waves of invading alien fleets and want a new challenge – or just want to reduce the difficulty level – select option 1 from the menu. You'll be asked which wave you want to edit – select from A to J.

The pattern that the aliens follow onscreen is displayed in a textual form. There are up to 14 commands specifying a direction, such as up, down, left or right, and each command can be repeated up to 999 times.

The 14 commands are labelled A to N onscreen so press a letter to edit a command. Now you can press L, R, U, D, A or N for Left, Right, Up, Down, Again (repeat the whole pattern again), or New (new alien). Press a letter to set the direction of travel, to send an alien back to the beginning or add a new one. Press Return when you have finished.

By typing in a three digit number you can

now specify how many times this command is repeated. If you entered R for the direction, you could, for instance, enter 005 to make the alien move right five times. Press Return when you have finished.

After designing your alien wave pattern press the spacebar. You will be prompted to set the start X and Y coordinates of the pattern, with 0,0 being in the top left hand corner of the screen.

When you have done this, enter the invaders' firing frequency at the prompt, followed by the minimum height below which they can't fire. This is to prevent them firing

at point blank range, giving you little chance of dodging their bullets.

The final option is to set the number of aliens in the wave.

After passing on all this information you'll be taken back to the main menu. From there you can select Play and test your creation.

One potential problem is that if you aren't careful when designing the pattern the aliens can disappear off screen. For instance, if you set a starting point at the left hand edge of the screen and then tell them to fly left they will promptly disappear from sight – which won't be much fun to play.

```

10MODE6:DIMchar 150
20PROCdata:PROCCassem:ENVELOPE2
,1,2,0,-1,2,0,4,126,0,0,-126,126,
126:VDU23,224,&FFFF;&FFFF;&FFFF;&
FFFF;:*FX229
30ONERROR IF ERR=17 THEN GOTO
40 ELSE REPORT:END
40MODE5:VDU23;8202;0;0;0;
50VDU19,3,4;0;0
60PROCprt(8,1,"Menu",1,2):PROC
prt(1,5,"1. Edit a wave",2,1):PR
Cprt(1,7,"2. Save a wave",2,1):PR
OCprt(1,9,"3. Load a wave",2,1):P
ROCprt(1,11,"4. Play a wave",2,1)
:PROCprt(1,13,"5. Play from start
",2,1):REPEAT:A=GET-48:UNTILA>0 A
ND A<6
70IFA=1 PROCedit
80IFA=2 MODE6:PROCsave
90IFA=3 MODE6:PROClload
100IFA=4 PROCplwave
110IFA=5 PROCplay(0)
120GOTO40
130DEFFPROCedit
140CLS:PROCprt(0,5,"Edit : wave
(A-J)?",1,2):REPEAT:AS=CHRS(GET
AND 223):UNTILAS>="A" AND AS<"K":
PROCchdata(ASC(AS)-65):ENDPROC
150DEFFPROCplwave
160CLS:PROCprt(0,5,"Play : wave
(A-J)?",1,2):REPEAT:AS=CHRS(GET
AND 223):UNTILAS>="A" AND AS<"K":
PROCplay(ASC(AS)-65):ENDPROC
170END
180DEFFPROCplay(WAVE%)
190!score=0
200VDU26:COLOUR128:CLS
210PROCprt(0,1,STRINGS(20,CHRS(
224)),2,3)
220PROCprt(6,1,"INVADERS",2,1)
230PROCeor(3,30,0):PROCeor(6,30
,0):PROCeor(9,30,0)
240LX=4
250ZX=1
260REPEAT
270PROCwave(WAVE%,RND(6))
280IF?finish=1 THEN SOUND0,-15,
100,10:LX=LX-1:VDU19,0,1;0;0:TIME
=0:REPEAT UNTILTIME>10:VDU19,0;0;
0;:IFLX>0 THEN PROCeor(3*LX,30,0)

290IF!score>85000*ZX AND?finish
=0 THEN ZX=ZX+1:IF LX<5 THEN LX=L
X+1:PROCeor(LX*3-3,30,0):ZX=ZX+1:
PROCprt(4,15,"A Bonus Life",1,2):
TIME=0:REPEAT UNTILTIME>100
300IF?finish=0 THEN WAVE%=(WAVE
X+1)MOD 10
310UNTILLX=0
320*FX15
330COLOUR128:VDU28,3,27,16,4:CL
S:PROCprt(4,15,"Press Any Key",2,
1):*FX15
340REPEAT UNTILGET:ENDPROC
350DEFFPROCdata
360RESTORE
370FOR XX=0 TO 143 STEP 4
380READa$:XX!char=EVAL("&"+a$)
390NEXT

```

```

400DIMdata 370
410RESTORE 3060
420FORXX=0 TO 371 STEP4:READa$:
XX!data=EVAL("&"a$):NEXT
430ENDPROC
440DEFPROCdcode(NX)
450ptr=pat1+7:FORXX=0 TO 6:pat1
?X=(data+NX*37+XX):NEXT:FORXX=0
TO 13:act=(data+7+XX*2+NX*37):n
o=(data+8+XX*2+NX*37):FORYY=1 TO
no:ptr=act:ptr=ptr+1:NEXT:NEXT:
ENDPROC
460ENDPROC
470DEFPROCprt(X,Y,MS,AX,BX)
480XX=X*64:YY=1024-Y*32:GCOLD,A
X:VDUS:MOVEXX-8,YY-4:PRINT;MS:MOV
EXX-8,YY+4:PRINT;MS:MOVEXX,YY+4:P
RINT;MS:MOVEXX,YY-4:PRINT;MS:MOVE
XX-8,YY:PRINT;MS:MOVEXX+8,YY:PRIN
T;MS:MOVEXX+8,YY+4:PRINT;MS:MOVEX
X+8,YY-4:PRINT;MS:GCOLD,BX:MOVEXX
,YY:PRINT;MS
490VDU4:ENDPROC
500DEFPROCeor(XX,YY,CX)
510SX=XX*8+8140*YY+85800:DX=cha
r+CX*16:?cpos=DX MOD 256:cpos?1=D
X DIV 256:?spos=SX MOD 256:spos?1
=SX DIV 256:CALLprint:ENDPROC
520DEFPROCcassem
530spos=870:cpos=872
540tpos=874:npos=877:ypos=879
550x=878:y=87C
560pat=87E:stpos=880
570XX=20:YY=25*2:SX=85800+XX*8+
YY/2*8140
580DIM QX 2115
590FORI=0 TO 2 STEP 2
600PX=QX
610COPTI
620.print
630SEI
640LDA$pos:STAtpos:LDA$pos+1:ST
Atpos+1
650LDY#0:LDX#0:LDA#2:STAtpos+2:
.loop
660LDA(cpos),Y:EOR(spos),Y:STA(c
spos),Y
670INCcpos:BNE1:INCcpos+1:.n1
680LDA$pos:AND#7:CMF#7:BNE7
690LDA$pos:CLC:ADC#8:STAspos
700LDA$pos+1:ADC#1:STAspos+1:.n
7
710INC$pos:BNE2:INC$pos+1:.n2
720INX:CPX#8:BNEloop
730CLC:LDA$pos:ADC#8:STAspos
740LDA$pos+1:ADC#0:STAspos+1
750LDX#0
760DEctpos+2:BNEloop
770CLI
780RTS
790.k LDY#&FF:LDA#129:JSR&FFF4:
CPY#0:RTS
800.move
810LDA#char MOD 256:STAcpos:LDA
#char DIV 256:STAcpos+1:LDAypos:S
TAspos:LDAypos+1:STAspos+1:JSRpri
nt
820LDA#char MOD 256:STAcpos:LDA
#char DIV 256:STAcpos+1:LDAnpos:S
TAspos:STAypos:LDAnpos+1:STAspos+
1:STAypos+1:JSRprint
830RTS
840.keys
850LDX#(-74 AND &FF):JSRk:BEQns
hoot:JSRgengun:.nshoot
860LDX#(-67 AND &FF):JSRk:BEQnr
ight:LDAx:CMF#32:BEQnright
870CLC:LDAypos:ADC#8:STAnpos:LD
Aypos+1:ADC#0:STAnpos+1:JSRmove
880INCx:RTS:.nright
890LDX#(-98 AND &FF):JSRk:BEQnl

```

```

eft:LDAx:CMF#6:BEQnleft
900SEC:LDAypos:SBC#8:STAnpos:LD
Aypos+1:SBC#0:STAnpos+1:JSRmove
910DECx:RTS:.nleft
920RTS
930.init
940LDA#SX MOD 256:STAypos:STAsp
os:LDA#SX DIV 256:STAypos+1:STAsp
os+1:LDA#char MOD 256:STAcpos:LDA
#char DIV 256:STAcpos+1:JSRprint
950LDA#XX:STAX:LDA#YY:STAY
960JSRinitbul
970JSRinitgun
980LDA#0:STAFinish
990RTS
1000.game
1010JSRinit
1020.mloop
1030LDA&240:.frame CMP&240:BEQfr
ame

```



```

1040JSRmval
1050JSRkeys
1060JSRmbul
1070JSRmgun
1080LDA#0:BNEn:LDAtpal:JSR
genal:.fine
1090LDA#finish:BNEnquit
1100LDA#2:BEQquit
1110LDX#(-113 AND &FF):JSRk:BEQm
loop
1120.quit
1130RTS
1140.genal STAtype:LDA#0:CMF#5
:BEQnomore
1150LDA#pass:BEQnomore:DEC$pos
s
1160LDY#0:.loop
1170LDA#aldat,Y:CMF#0:BEQndspc
1180CLC:TYA:ADC#6:TAY:JMPLoop
1190.fndspc INCnoal
1200TYA:TAX:LDY#0:LDA(pat),Y:STA
aldat,X
1210INY:LDA(pat),Y:STAaldat+1,X:
INY:LDA(pat),Y:STAaldat+2,X:STAsp
os:INY:LDA(pat),Y:STAaldat+3,X:ST
Aspos+1
1220INY:LDA#0:STAaldat+4,X:LDAty
pe:STAaldat+5,X
1230ASLA:ASLA:ASLA:CLC:ADC#
char MOD 256:STAcpos:LDA#char DIV
256:ADC#0:STAcpos+1
1240JSRprint
1250.nomore
1260RTS
1270.xc EQU00:.yc EQU00:.pc EQUW
0:.pp EQU00:.cc EQU00:.atype EQUW
0:.stx EQU00:.sty EQU00:.npc EQUW
0:.type EQU00
1280.inital

```

```

1290LDY#4:LDA(pat),Y:STArnd
1300INY:LDA(pat),Y:STAmih
1310INY:LDA(pat),Y:STAalpass:STA
alp2
1320LDA#0:STAnoal
1330STAcnt
1340STA&240
1350LDY#0:.loop
1360LDA#0:STAaldat,Y:CLC:TYA:ADC
#6:TAY:CPY#(6*6):BNEloop:RTS
1370.mval
1380LDX#0:.loop
1390LDAaldat,X:BNEymove:JMPnmove
:.ymove
1400STAX:LDAaldat+1,X:STAY:LDA
aldat+2,X:STAP:LDAaldat+3,X:STAP
c+1:LDAaldat+4,X:STAPP:LDAaldat+5
,X:STAcc
1410ASLA:ASLA:ASLA:CLC:ADC#
char MOD 256:STAtype:LDA#char DI
V 256:ADC#0:STAtype+1
1420LDApc:STAnpc:LDApc+1:STAnpc+
1
1430LDApc:CLC:ADC#7:TAY:LDAcc:CM
P#7:BCSskip7:JMPskip6:.skip7 LDA(
pat),Y
1440AND#128:BEQnmvl:SEC:LDAnc:S
BC#8:STAnpc:LDAnc+1:SBC#0:STAnpc
+1:DECxc:.nmvl
1450LDA(pat),Y:AND#64:BEQnmvr:CL
C:LDAnc:ADC#8:STAnpc:LDAnc+1:AD
C#0:STAnpc+1:INCxc:.nmvr
1460LDA(pat),Y:AND#16:BEQnmvd:LD
Apc:AND#7:CMF#4:BNEncj:CLC:LDAnc
:ADC#8:STAnpc:LDAnc+1:ADC#1:ST
Anpc+1:.njp CLC:LDAnc:ADC#4:STAn
pc:LDAnc+1:ADC#0:STAnpc+1:INCyc:
.nmvd
1470LDA(pat),Y:AND#32:BEQnmvu:LD
Apc:AND#7:BNEncj2:SEC:LDAnc:SBC#
8:STAnpc:LDAnc+1:SBC#1:STAnpc+
1:.njp2 SEC:LDAnc:SBC#4:STAnpc:L
DAnc+1:SBC#0:STAnpc+1:DECyc:.nmv
u
1480INCcnt:LDAcnt:CMPrnd:BNEnmfr
:LDA#0:STAcnt:LDAyc:CMPrnd:BCSnm
fr:STXstx:STYsty:JSRgenbul:LDXstx
:LDYsty:.nmfr
1490LDA(pat),Y:AND#2:BEQngen:STY
sty:STXstx:LDAcc:JSRgenal:LDXstx:
LDYsty:.ngen
1500LDA(pat),Y:AND#1:BEQnrep:LDA
#255:STApp:.nrep
1510LDAxc:STAx1:LDAyc:STAY1:LDAx
:STAx2:LDAy:STAY2:LDAx1:CMF#2:BCC
noswap:LDAx:STAx1:LDAxc:STAx2:.no
swap SEC:LDAx2:SBCx1:CMF#2:BCSnoh
it
1520LDAy1:CMF#2:BCCnoswap2:LDAy:
STAY1:LDAyc:STAY2:.noswap2 SEC:LD
Ay2:SBCy1:CMF#2:BCSnohit
1530LDA#1:STAFinish
1540.nohit
1550INCp
1560.skip6
1570STXstx:STYsty
1580LDApc:STAspos:LDApc+1:STAspo
s+1:LDAatype:STAcpos:LDAatype+1:S
TAcpos+1:JSRprint
1590LDAcc:CMF#7:BCnend2:JMPnend
:.nend2
1600LDX#0:.loop2 LDAgundat,X:BEQ
nguns:CMF#0:BEQyposs:SEC:SBC#1:CM
P#0:BNEngposs:.yposs LDAgundat+1,
X:SEC:SBCyc:CMF#2:BCSngposs:LDA#0
:STAgundat,X:LDAgundat+2,X:STAsp
os:LDAgundat+3,X:STAspos+1:LDY#0
:LDA(stpos),Y:EOR#01:STA(stpos),
Y
1610DECcnogun:LDA#7:STAcc:LDA#0:S
TA&240:LDX#snd2 MOD 256:LDY#snd2

```

```

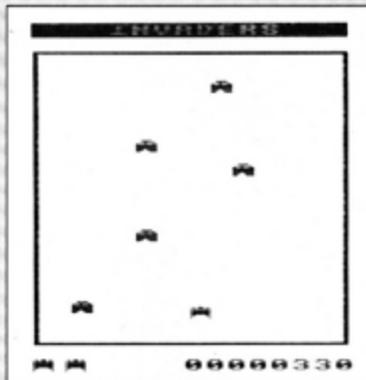
DIV 256:JSRsound:JSRscore:JMPskip5:ngposs:nguns INX:INX:INX:CPX#(5*4):BNEloop2
1620LDAXC:CMF#5:BEQyend:CMF#33:BEQyend:LDAYC:CMF#10:BCCyend:CMF#53:BCSYend:JMPnend:yend LDA#0:STAXC:DECnoal:DECALP2:JMPskip:nend
1630LDA&240:CMF#250:BCSYadd
1640LDA#0:STA&240
1650LDACC:CMF#8:BNENexpl:LDA#0:STAXC:DECnoal:DECALP2:JMPskip:nexpl
1660LDACC:AND#1:BNENadd:DECcc:JMPyadd:nadd INCCc:yadd
1670.skip5
1680LDACC:ASLA:ASLA:ASLA:ASLA:CLC:ADC#char MOD 256:STACpos:LDA#char DIV 256:ADC#0:STACpos+1
1690LDANPC:STASpos:LDANPC+1:STASpos+1:JSRprint
1700.skip
1710LDXstx:LDYsty:LDAXc:STAaldat,X:LDAYc:STAaldat+1,X:LDANPC:STAaldat+2,X:LDANPC+1:STAaldat+3,X:LDAPP:STAaldat+4,X:LDACC:STAaldat+5,X
1720.nmove
1730CLC:TXA:ADC#6:TAX:CPX#(6*6):BEQloop:JMPloop:.eloop
1740RTS
1750.initbul LDY#0:.loop:LDA#0:STABuldat,Y:INY:INY:INY:INY:CPY#(5*4):BNEloop:STANobul:RTS
1760.genbul LDANobul:CMF#5:BEQnfire:LDX#0:.loop LDABuldat,X:CMF#0:BEQybul:INX:INX:INX:INX:JMPloop:nfire RTS
1770.ybul LDAXc:STABuldat,X:LDAYc:STABuldat+1,X:LDANPC:STABuldat+2,X:STASpos:LDANPC+1:STABuldat+3,X:STASpos+1:INCnobul:LDY#0:LDA(stpos),Y:EOR#&10:STA(stpos),Y:RTS
1780.mvbul LDY#0:LDX#0:.loop LDABuldat,X:BNENobul:JMPnbul:.okbul STAXc:LDABuldat+1,X:STAYc:LDABuldat+2,X:STASpos:LDABuldat+3,X:STASpos+1:INCyc
1790LDASpos:STASpos:LDASpos+1:STASpos+1:LDASpos:AND#7:CMF#4:BNENjp3:CLC:LDASpos:ADC#&38:STASpos:LDASpos+1:ADC#1:STASpos+1:njp3 CLC:LDASpos:ADC#4:STASpos:LDASpos+1:ADC#0:STASpos+1
1800LDA(stpos),Y:EOR#&10:STA(stpos),Y
1810LDAYC:CMF#53:BCCoks:DECnobul:LDA#0:STAXc:JMPskip2:oks
1820LDAXC:CMF#5:BEQposs:SEC:SBC#1:CMF#5:BNENposs:poss LDAYC:CMF#5:BEQposs:SEC:SBC#2:CMF#5:BNENposs:LDA#1:STAFinish:nposs
1830LDA(tpos),Y:EOR#&10:STA(tpos),Y
1840.skip2
1850LDAXC:STABuldat,X
1860LDAYC:STABuldat+1,X:LDATpos:STABuldat+2,X:LDATpos+1:STABuldat+3,X
1870.npbul
1880INX:INX:INX:INX:CPX#(5*4):BEQloop2:JMPloop:.eloop2
1890RTS
1900.initgun LDY#0:.loop:LDA#0:STAGundat,Y:INY:INY:INY:INY:CPY#(5*4):BNEloop:STANogun:RTS
1910.gengun LDANogun:CMF#3:BEQnfr:LDX#0:.loop LDAGundat,X:CMF#0:BEQygun:INX:INX:INX:INX:JMPloop:nfr RTS
1920.ygun LDAX:STAGundat,X:LDAY:

```

```

STAGundat+1,X:LDAYpos:STAGundat+2,X:STASpos:LDAYpos+1:STAGundat+3,X:STASpos+1:INCnogun:LDY#0:LDA(stpos),Y:EOR#&01:STA(stpos),Y:LDX#snd MOD 256:LDY#snd DIV 256:JSRsound:RTS
1930.mvgun LDY#0:LDX#0:.loop LDAGundat,X:BNENogun:JMPngun:.okgun STAXc:LDAGundat+1,X:STAYc:LDAGundat+2,X:STASpos:LDAGundat+3,X:STASpos+1:DECyc
1940LDASpos:STASpos:LDASpos+1:STASpos+1:LDASpos:AND#7:BNENjp4:SEC:LDASpos:SBC#&38:STASpos:LDASpos+1:SBC#1:STASpos+1:njp4 SEC:LDATpos:SBC#4:STASpos:LDATpos+1:SBC#0:STASpos+1
1950LDA(stpos),Y:EOR#&01:STA(stpos),Y
1960LDAYC:CMF#10:BCSokg:DECnogun:LDA#0:STAXc:JMPskip3:.okg
1970LDA(tpos),Y:EOR#&01:STA(tpos),Y
1980.skip3
1990LDAXC:STAGundat,X
2000LDAYC:STAGundat+1,X:LDATpos:STAGundat+2,X:LDATpos+1:STAGundat+3,X

```



```

2010.npgun
2020INX:INX:INX:INX:CPX#(5*4):BEQloop3:JMPloop:.eloop3
2030RTS
2040.ascore SED:CLC:LDAScore:ADC#&10:STAScore:LDAScore+1:ADC#0:STAScore+1:LDAScore+2:ADC#0:STAScore+2:LDAScore+3:ADC#0:STAScore+3:CLD:JMPpscore
2050.pscore LDA#31:JSR&FEE:LDAScore+3:JSR&FEE:LDAScore+2:JSR&FEE:LDAScore+1:JSR&FEE:LDAScore:JMPpnum
2060.pnum PHA:AND#&F0:LSRA:LSRA:LSRA:LSRA:CLC:ADC#48:JSR&FEE:PLA:AND#&0F:CLC:ADC#48:JMP&FEE
2070.nogun EQU0
2080.y1 EQU0:.y2 EQU0:.x1 EQU0:.x2 EQU0
2090.eor
2100.sound LDA#7:JMP&FFF1
2110.snd EQUW1:EQUW2:EQUW10:EQUW1
2120.snd2 EQUW0:EQUW-15:EQUW100:EQUW1
2130.typal EQU0
2140.flag EQU0
2150.score EQU0
2160.rnd EQU0
2170.cnt EQU0
2180.minh EQU0
2190.noal EQU0
2200.nobul EQU0
2210.finish EQU0
2220.alpass EQU0:.alp2 EQU0
2230.buldat EQU0 STRINGS(5,"ABCC")

```

```

2240.gundat EQU0 STRINGS(5,"ABCC")
2250.aldat EQU0 STRINGS(6,"ABCCDE")
2260.pat1 EQU0 STRINGS(300," ")
2270J
2280NEXT
2290ENDPROC
2300DEFPROCwave(WX,TX)
2310COLOUR128:VDU28,3,27,16,4:CLS
2320GCOLOR,2:PROCbox(3*64-8,1020-28*32,14*64+16,24*32+8)
2330GCOLOR,3:PROCbox(3*64-16,1016-28*32,14*64+32,24*32+16)
2340GCOLOR,0:PROCbox(3*64-24,1012-28*32,14*64+48,24*32+24)
2350PROCprt(7,15,"Wave "+STR(WX+1),1,2)
2360TIME=0:REPEATUNTILTIME>150:CLS
2370PROCcode(WX)
2380?pat=pat1 MOD 256:pat?1=pat1 DIV 256:AX=TX
2390CALLinital
2400CALLgenal
2410COLOUR2:COLOUR128:VDU26:CALLpscore
2420?typal=TX
2430*FX178,0,0
2440CALLgame
2450*FX178,255,0
2460ENDPROC
2470DEFPROCbox(X,Y,XL,YL)
2480MOVEX,Y:DRAWX+XL,Y:DRAWX+XL,Y+YL:DRAWX,Y+YL:DRAWX,Y:ENDPROC
2490DEFPROCchdata(NX)
2500VDU26:COLOUR128:COLOUR3:CLS
2510PROCprt(0,1,"Editing Wave "+STR(NX+1)+" ":1,2)
2520PROCprt(0,3,"Space to finish ":2,1)
2530FORDX=7 TO 33 STEP2:PROCprt(2,dX-2,CHR((dX-6)/2+65)+" ":2,1)
2540PROCprt(14,dX-2,"x",2,1)
2550B=dX?(data+N*37)
2560PRINTTAB(5,dX-2);FNdir(B);TAB(16,dX-2);RIGHTS("000"+STR(dX?(data+N*37+1)),3);
2570NEXT
2580REPEAT
2590REPEAT:*FX15
2600AS=CHR(GET AND 223):UNTIL AS="A" AND AS<="N" OR INKEY(-99):IFINKEY(-99) THEN flag=1:GOTO2660 ELSE flag=0
2610OX=2*(ASC(AS)-65)+7:B=OX?(data+N*37):COLOUR130:PRINTTAB(5,OX-2);FNdir(B);
2620REPEAT:AS=CHR(GET AND 223):I=INSTR("LRUDFN",AS):IFI>0 THEN B=B-EOR(2*(8-I)):PRINTTAB(5,OX-2);FNdir(B);
2630UNTIL AS=CHR(13):OX?(data+N*37):B=COLOUR128:PRINTTAB(5,OX-2);FNdir(B);COLOUR130
2640OX=OX?(data+N*37+1):PRINTTAB(16,OX-2);B=FNrot(B,3)
2650OX?(data+N*37+1)=B
2660UNTILflag=1
2670REPEAT
2680CLS:PROCprt(0,1,"Starting xc o (6-30)",2,1):PRINTTAB(9,3);X=FNrot?(data+N*37),2)
2690UNTILX>5 AND X<31
2700REPEAT:CLS
2710PROCprt(0,1,"Starting yco (12-50)",2,1):PRINTTAB(9,3);Y=FNrot?(data+N*37+1),2)
2720Y=(Y AND &FE)
2730UNTILY>11 AND Y<51

```

```

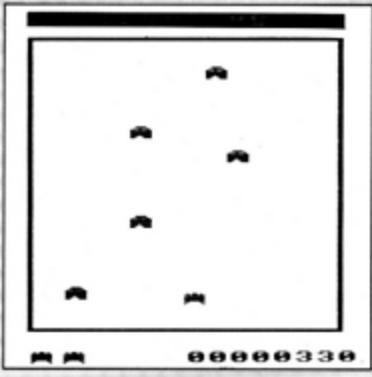
2740?(data+Nx*37)=X:?(data+Nx*37
+1)=Y:Sx=X*8+Y*8140/2+85800:?(dat
a+Nx*37+2)=Sx MOD 256:?(data+Nx*3
7+3)=Sx DIV 256
2750REPEAT:CLS
2760PROCprt(0,1,"Fire freq. (5-2
00)",2,1):PRINTTAB(9,3):F=FNrot(
205-?(data+Nx*37+4),3):UNTILF>4 A
ND F<201:?(data+Nx*37+4)=205-F
2770REPEAT:CLS:PROCprt(0,1,"Min
fire ht (5-40)",2,1):PRINTTAB(9,3
):F=FNrot(45-?(data+Nx*37+5),2):
UNTILF>4 AND F<40:?(data+Nx*37+5)
=45-F
2780REPEAT:CLS:PROCprt(0,1,"No i
n wave (5-200)",2,1):PRINTTAB(9,3
):F=FNrot(?(data+Nx*37+6),3):UNT
ILF>4 AND F<201:?(data+Nx*37+6)=F
2790ENDPROC
2800DEFFNrot(Fx,Nx)
2810FS=RIGHTS("00000"+STRSFX,Nx)
2820XC=POS:YC=VPOS:COLOUR 130:PR
INTTAB(XC,YC);FS;:REPEAT:*FX15
2830A=GET-48:IFA>-1 AND A<10 THE
N FS=RIGHTS(FS,Nx-1)+STRS(A):PRIN
TTAB(XC,YC);FS;
2840UNTILA=-35:COLOUR128:PRINTTA
B(XC,YC);FS;
2850=EVAL(FS)
2860DEFFNdir(A)
2870CS=""
2880IF(A AND 128) THEN CS=CS+"L"
ELSE CS=CS+" "
2890IF(A AND 64) THEN CS=CS+"R"
ELSE CS=CS+" "
2900IF(A AND 32) THEN CS=CS+"U"

```

```

ELSE CS=CS+" "
2910IF(A AND 16) THEN CS=CS+"D"
ELSE CS=CS+" "
2920IF(A AND 8) THEN CS=CS+"F" E
LSE CS=CS+" "
2930IF(A AND 2) THEN CS=CS+"N" E
LSE CS=CS+" "
2940IF(A AND 1) THEN CS=CS+"A" E

```



```

LSE CS=CS+" "
2950=CS
2960DEFFPROCsave
2970CLS:INPUT"Saving waves : Fil
ename ... "fs
2980OSCLI"SAVE "+fs+" "+STRS"dat
a+" "+STRS"370
2990ENDPROC
3000DEFFPROCload
3010CLS:INPUT>Loading waves : Fi
lename ... "fs
3020OSCLI"LOAD "+fs+" "+STRS"dat

```

```

3030ENDPROC
3040DATA 79695A14,80C4F7B,E969A5
82,1032FED,F0C34330,E0F0F0F0,F096
86C0,3070F0F0,F0961630,C0E0F0F0,F
03C2CC0,70F0F0F0,34120508,8051234
,C2840A01,10A84C2,341E0100,11E34,
C2870800,887C2,4B4B0D09,1032543,4
A40602,88448,43250301,90D484B,48
840800
3050DATA 2064A4A,11442288,885566
,22CC8822,228844,442288,881100,22
880022,228844
3060DATA 64B01406,403C2378,20036
007,A201A002,801E1001,60041005,F4
00A,0,0,70220600,3727376B,6640B44
,3A40126,3940484,3540514,40105,40
004,40004,1E062805,26196AFD,120F1
028,44035401,20036003,44036420,10
035003,400050A,0,805Dc00,53624010
,5443723
3070DATA B440146,2140254,1084029
4,2140294,1050254,40004,9A060004,
60F00E06,503C2837,54015605,601680
10,140B8416,3C,4000400,0,4E000400
,70320607,46286C77,1260824,424016
4,2240164,A440164,A440504,2140154
,2884,C120C08,23056010,16051464,9
0141001
3080DATA 44061408,A0062010,41E24
07,0,4000400,608C000,F623010,2410
6328,1420540,14201440,1011880,0,0
,0,7E090000,61000E08,14642269,100
11208,A40F4406,1010D,4000400,0,40
00400,32000000,F0E060A,5A285060,
1420640,2101240,2101980,20101040,
1E400F00
3090DATA 0,0,3A30F00A

```

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# rcade C O R N E R

**P**ride of place in this month's Arcade Corner is Superior Software's controversial *Barbarian II*. This excellent hack and slay game caused quite a rumpus when it was released, partly due to the barbaric theme and partly to Maria Whittaker's scarcely concealed assets.

Cast aside these moral arguments and dig out that classic game for a bash at this solution provided by Martin Bastable of Stafford, Staffordshire. He has provided a guide to the maze of tunnels and caves that should help enormously, but you'll also need a fair amount of combat skill to fight the many adversaries you'll meet on your travels.

### Level 1

Go left from the start until you reach a screen with a skull. Collect the skull and then travel right to the next screen and enter the cave you discover there.

On emerging at the other exit, go left, which should bring you out by the shield. Go left again and you will come out of a cave, then keep on walking right until you find the orb: Go left once, then right and jump over the pit. Enter the cave by the pit and then go right to complete the level.

In short, go L, L, L, R, U, L, L, R, R, L, R, U and then R.

### Level 2

First travel right for one screen and then up into the cave you find there. Then walk left and go into the cave behind the pit. Go left twice which should then bring you out by another pit, then left twice again and up into the cave. Jump over the pit and enter the cave by it where you should discover a jewel.

Go right - back where you have just been - then left and enter the cave. Keep traveling to your right until you find a potion. Now journey left as far as possible and enter the cave. Take the skull you find there and then enter the next cave.

Cross the stream and enter the cave nearby. Go right one screen and step into the cave by the pit. Go up and then left three times, which should bring you out of a cave, and then go right once. Go up and left to complete the level.

In short, go R, U, L, U, L, L, L, U, U, R, L, U, R, R, R, L, L, U, U, U, R, U, L, L, L, R, U and then L.

## Going back to 1,000,000 BC

### Level 3

Travel left four times and you should come out of a door. Now turn right which brings you out by a pit thing. Go right and get the key then retrace your footsteps back to the start - left, up, up, and then right as far as you can go.

When you get back to the start, go through the door there and then travel right until you meet another pit thing. Go right and take the axe you find there. Go up through the locked door - you have the key - and then left twice. Go up again to emerge beside another pit thing.

Now travel left twice and enter the locked door. Go up again and you should find yourself beside two streams. Now walk right twice and up to complete the level.

In short, go L, L, L, R, R, L, U, U, R, R, R, U, R, R, U, L, L, U, R, U, L, L, U, L, U, R, R and U.

### Level 4

First screen : Charge and chop! Second screen : Try a flying neck chop or low chop. Third screen : Stay just out of reach and then chop low down.



**Featuring stunning graphics and original gameplay, this fun educational game was written by Andrew and Stephen Weir for young children aged seven and upwards**

# Sub

# search

**T**HE rich and famous mathematician Sir Addsumore accidentally washed his entire collection of rare and valuable numbers down the sink. So he called on you, the one and only owner of a yellow submarine, to retrieve his priceless collection before it is lost forever.

Your job won't be easy. Beneath the city lies a tangled network of pipes into which the numbers have been washed. You must guide your submarine through them first to identify and then retrieve the numbers one by one.

However, beware! Not all the numbers you find will belong to Sir Addsumore's lost collection.

Picking up the wrong number will have disastrous consequences.

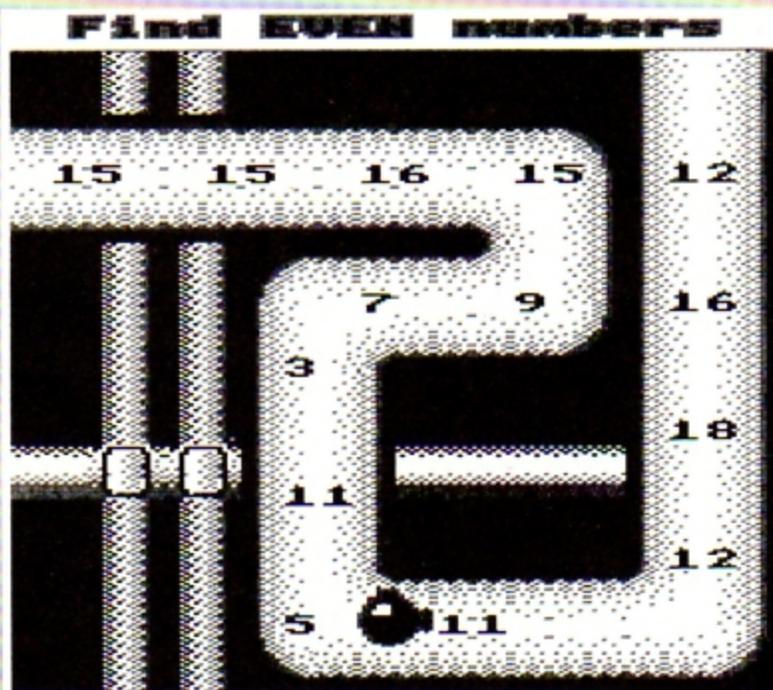
To help in your mission, at certain points within the pipe network you will be told how to identify the correct lost numbers. So move carefully, pick your numbers wisely, and may the sea gods be with you.

Take care that you type in the program exactly as listed, with no extra spaces at the end of each line.

The program contains quite a large amount of machine code, and although encoded to save space, the listing is still quite long.

The simple answer is to delete all the data and assembler sections when the machine code has been set up.

This is automatically done by the program - so don't run it unless you have saved it, as half of it will disappear.



```

10REM Sub Search
20REM By A & S Weir
30REM (c) Electron User
40IFPAGE>8E00 PROCr
50MODE5:HIMEM=84ABF
60PROCrl
70PROCi
80PROCm
90CLEAR:GOT070
100DEFPROCi IX=RND(-TIME)
110PROCt
120OSCLI"fx178":OSCLI"fx200,1":
OSCLI"fx4,1":OSCLI"fx12,1":OSCLI"
fx11,1":OSCLI"fx19":VDU23,254,255
,255,255,255,255,255,255,23;8
202;0;0;0;:ENVELOPE1,2,2,12,12,50
,50,50,0,0,0,0,0,0:ENVELOPE2,5,1,
-1,0,1,1,0,0,0,0,0,0:DIM fx(3):
nums=8860
130PROCsv:ENDPROC

```

```

140DEF PROCn(iX,jX,kX) ?(numS+i
X*10+jX)=kX:ENDPROC
150DEF FNN(iX,jX)=?(numS+iX*10+
jX)
160DATA &5B90,&5F80,&60C0,0,&60
A0,&5AAB,&5AB0,&5AB8,&7C70,&7CAB,
&7CB0,&7CB8,&6840,&5CE0,&5E20,0,&
5BC0,&7C20,&7AE0,0,&7B00,&5B88,&5
B90,&5B98
170DATA &5AF0,&5A88,&5A90,&5A98
,&7C50,&5A88,&5A90,&5A98,&7C50,&6
BE0,&6D20,0,&7240,&6460,&65A0,0,&
6480,&7C88,&7C90,&7C98,&5AD0,&696
0,&6820,0
180DEF PROCm bX=0:PROCF:PROCTp:
PROCI:REPEAT ?c=-1:colX=0:ovX=FA
LSE:REPEAT ?c=?c+1:IF(?c MOD 3)=0
colX=colX+1:PROCCsc(colX)
190IFcolX=1 bX=2 ELSEIFcolX=2 b
X=6 ELSEIFcolX=3 bX=5 ELSEIFcolX=
4 bX=1
200PROCF:PROCMaps:PROCSq;!a=n:C
ALLS:VDU19,1,3;0;19,2,0;0;19,3,4;
0;:PROCTo:GCOL3,3:FORiX=0T05:MOVE
0,960:MOVE0,1023:PLOT85,1279,1023
:MOVE1279,960:MOVE1279,1023:PLOT8
5,0,960:SOUND1,-10,200,1:FORjX=1T
0500:NEXT:NEXT:GCOLD,0:PROCT
210OSCLI"fx178,255":PROCPplay:OS
CLI"fx178":IF?c=11 ovX=TRUE
220IFNOTovX IF sX=1 PROCOv:ovX=
TRUE:UNTILFALSE
230UNTILsX=1 OR ?c=11:IF?c=11 A
ND sX<>1 PROCIwin ELSEPROCclose
240ENDPROC
250DEF PROCwin ?c=12:PROCF:CALL
pm:n=&6C0D:!a=n:CALLS:COLOUR130:P
RINTSTRINGS(40," ")VDU19,1,3;0;1
9,2,0;0;19,3,4;0;19,0,5;0;:OSCLI"
fx178,255":tgX=0:fX(1)=&5C18:fX(2
)=&5D58:fX(3)=0:PROCPplay:PROCC:PR
OCs("Well Done!",584,932,8):*FX21
260OSCLI"fx178,255":PROCTo:REST
ORE1230:PROCMusic(1):PROCT:*fx178
270PROCTo:n=&738D:!a=n:CALLS:F0
RIX=1T018:CALLright:SOUND1,-15,10
0,1:OSCLI"FX19":OSCLI"FX15":NEXT:
FORiX=1T015:CALLmove:SOUND1,-15,1
12,1:OSCLI"FX19":OSCLI"FX15":NEXT
:FORiX=1T018:CALLright:SOUND1,-15
,100,1:OSCLI"FX19":OSCLI"FX15":NE
XT
280X=4:Y=24:CALLr:key=INKEY(4
00):PROCT:ENDPROC
290DEF PROCbox(aX,bX,cX,dX) wX=
24:GCOLD,0:MOVEaX,bX:MOVEaX,dX:PL
OT85,cX,dX:MOVEcX,bX:MOVEcX,dX:PL
OT85,aX,bX:GCOLD,2:MOVEaX+8,bX+4:
MOVEaX+8,dX-4:PLOT85,cX-8,dX-4:MO
VEcX-8,bX+4:MOVEcX-8,dX-4:PLOT85,
aX+8,bX+4
300GCOLD,3:MOVEaX+wX,bX+wX:MOVE
aX+wX,dX-wX:PLOT85,cX-wX,dX-wX:MO
VEcX-wX,bX+wX:MOVEcX-wX,dX-wX:PLO
T85,aX+wX,bX+wX:ENDPROC
310DEFPROCclose PROCbox(200,316,
1076,900):PROCS("That was the",24
8,840,1):PROCS("wrong",478,784,9)
:PROCS("number!",430,692,9):PROCS
("You have",380,560,1):PROCS("dro
wned in",312,500,1):PROCS("Sector
"+CHR$(64+colX),384,432,9)
320OSCLI"fx178,255":OSCLI"fx21"
330PROCTo:RESTORE1220:PROCMusic
(2):PROCT:key=INKEY(500):OSCLI"fx
178":ENDPROC
340DEFPROCplay REPEATfin=INT(EV
AL(STR$a)/&10000):yX=(fin-&5800)

```

```

DIV&140:xX=(fin-&5800) MOD&140 D
IV8:OSCLI"fx21":key=INKEY(0)
350IFkey=138 IF FNW(xX,yX+1)<>2
IF FNW(xX,yX+1)<8 IF NOT(FNW(xX
,yX)=&A AND xmX=0) IF NOT(yX=29AN
DymX=0) IF NOT(FNW(xX,yX+1)=&C AN
D xmX>0) IF NOT(FNW(xX,yX+1)=&C A
ND xmX=0 AND ymX>0) CALLdown
360IFkey=139 IF yX>2 IF NOT((F
NW(xX,yX)=1 OR FNW(xX,yX)=6) AND
ymX=1) IF NOT((FNW(xX,yX)=9 OR FN
w(xX,yX)=&B) AND ymX=0 AND xmX=0)
IF NOT(FNW(xX,yX-2)=4 AND xmX>0)
CALLmove
370IFkey=137 IF FNW(xX+1,yX)<>4
IF FNW(xX+1,yX)<5 IF FNW(xX,yX)
<>&C IF NOT(xX=36ANDxmX=0) IF NOT
(FNW(xX,yX)=&B ANDxmX=0ANDymX=0)
IF NOT(FNW(xX+1,yX)=&C ANDxmX=0AN
DymX=1) CALLright
380IFkey=136 IF NOT((FNW(xX,yX)
=&6 OR FNW(xX,yX)=&3)ANDxmX=1) IF
NOT((FNW(xX,yX)=&A OR FNW(xX,yX)
=&9)ANDxmX=0ANDymX=0) IF NOT(FNW(
xX,yX)=&A ANDxmX=1ANDymX=1) IF N
OT(xX=0ANDxmX=0) CALLleft
390sX=0:finX=-1:IFfin<fX(1) IF
fin<fX(2) IFfin<fX(3) finX=0
400IFfinX IF tgX>0 THEN finX=0
410IF INKEY(-99) sX=FNok(xX,yX)
:IF sX=2 PROCw
420UNTILfinXOR(INKEY(-113)ANDIN
KEY(-2)ANDINKEY(-106))ORsX=1
430IFsX=1 PROCC
440ENDPROC
450DEF PROCw
460PROCTo:SOUND1,-10,150,2:X=4
:Y=24:CALLr:GCOLD,3:PROCPf(FNN(a
xX,ayX),axX,ayX):X=4:Y=24:CALLS
:PROCN(axX,ayX,0):tgX=1:PROCT
470ENDPROC
480DEF PROCc PROCTo:SOUND0,-15,
6,10:X=4:Y=24:CALLr:FORiX=0T010
:CALLS:X=4:Y=24:CALLr:NEXT:key=
INKEY(100):OSCLI"fx15":PROCT:ENDP
ROC
490DEF FNok(iX,jX) numX=0:KX=-3
:REPEATKX=KX+1:wX=FNW(iX+KX,jX):I
FaxX=<=8IFFaxX<=8 numX=FNW(axX,ayX)
:IFnumX<10IFKX<0 numX=0
500UNTIL KX=1 OR numX>0 OR axX>
8 OR ayX>8
510IFnumX=0 THEN =3
520=FNok2(numX)
530DEF FNok2(numX) IFqX=1IFnumX
MOD2=0 =2
540IFqX=2IFnumXMOD2=1 =2
550IFqX=3IFnumX<numX =2
560IFqX=4IFnumX>numX =2
570IFqX=5IFnumXMODnumX=0 =2
580IFqX=6IFnumXMODnumX=0 =2
590IFqX=7IF FNP(numX) THEN =2
600=1
610DEF FNP(nX) RESTORE620:REPEA
T READiX:UNTILiX=100 OR nX=iX:IFn
X=iX THEN =-1 ELSE =0
620DATA 2,3,5,7,11,13,17,19,23,
29,31,37,41,43,47,53,59,61,67,71,
73,79,83,89,97,100
630DEF PROCs(AS,xX,yX,cX):LOCAL
aX,bX:VDU5,18,0,2:IFcX=9 xX=8 ELS
EzX=4
640FORaX=xX-8T0xX+8STEP8:FORbX=
yX-zXT0yX+zXSTEPzX:MOVEaX,bX:IFcX
>5 PROCBig(AS) ELSEPRINTAS
650NEXT:MOVEaX,yX:IFcX>5 GCOLD
,9-cX:PROCBig(AS) ELSEGCOLD,cX:PR

```

```

INTAS
660VDU4:ENDPROC
670DEF PROCsce(AS,yX,cX):PROCS(
AS,640-(LENAS*32),yX,cX):ENDPROC
680DEF PROCsc(colX) IFcolX=1 bX
=2 ELSEIFcolX=2 bX=6 ELSEIFcolX=3
bX=5 ELSEIFcolX=4 bX=1
690PROCF:PROCbox(330,432,950,81
2):PROCS("Entering",384,752,1):PR
OCs("Pipe",512,692,1):PROCS("Sect
or",448,632,1):PROCS(CHR$(64+colX
),608,548,9):VDU4,19,1,3;0;19,2,0
;0;19,3,4;0;:PROCTo:SOUND1,1,1,24
:OSCLI"fx178,255":OSCLI"fx21"
700keyX=INKEY(400):OSCLI"fx178"
:PROCT:OSCLI"FX15":ENDPROC
710DEF FNV(xX,yX) axX=xXDIV4:ay
X=(yX-2)DIV3:whX=scr0+(?c)*50+ayX
*5+axXDIV2:wX=?whX:IFxMOD8>4 wX
=wX AND &F ELSE wX=wX AND &F0:wX=
wXDIV&F
720ymX=(yX-2)MOD3:xmX=xXMOD8MOD
4
730=wX
740DEF PROCmaps
750RESTORE160:FORscrX=0T0?c:REA
Dn,fX(1),fX(2),fX(3):NEXT
760?w=0
770CALLpm:VDU17,3,31,0,0:PRINTS
TRINGS(40,CHR$254);:GCOLD,2:MOVE0
,958:DRAW1280,958:MOVE0,954:ENDPR
OC
780DEFPROCf:VDU17,128,12:FORi=0
T03:VDU19,1,bX;0;:NEXT:ENDPROC
790DEFPROCtp FORj=1T03:VDU19,j,
0;0;0;:NEXT:bX=2?c=12:CALLpm:VDU
17,2,31,0,0:PRINTSTRINGS(40,CHR$
254);:PROCS("SUB SEARCH",578,932,8
):VDU17,0,17,131,31,1,29:PROCS("B
y A&S Weir",64,100,1):VDU19,2,0;0
;19,3,5;0;
800VDU19,0,3;0;19,1,3;0;:OSCLI"
fx178,255":OSCLI"fx21":RESTORE119
0:PROCMusic(1):OSCLI"fx178":ENDPR
OC
810DEF PROCin VDU19,0,6;0;17,12
8,28,12,26,19,11,12,28,0,31,19,26
,12,26:PROCS("Keys",908,602,1):!a
=&70B0:CALLS:GCOLD,2:MOVE888+32,3
58
820PLOT0,-32,0:PLOT81,0,16:PLOT
0,32,0:PLOT81,0,-16:PLOT0,-32,-16
:PLOT0,-32,24:PLOT81,32,24:PLOT0,
-48,16:PLOT1,102,0:PLOT1,0,-80:PL
OT1,-102,0:PLOT1,0,80
830MOVE1132,358
840PLOT0,32,0:PLOT81,0,16:PLOT0
,-32,0:PLOT81,0,-16:PLOT0,32,-16:
PLOT0,32,24:PLOT81,-32,24:PLOT0,4
8,16:PLOT1,-102,0:PLOT1,0,-80:PLO
T1,102,0:PLOT1,0,80
850MOVE984+32,450:PLOT0,0,32:PL
OT81,16,0:PLOT0,0,-32:PLOT81,-16,
0:PLOT0,-16,32:PLOT0,24,32:PLOT81
,24,-32:PLOT0,16,48:PLOT1,0,-102:
PLOT1,-80,0:PLOT1,0,102:PLOT1,80,
0:MOVE984+32,286
860PLOT0,0,-32:PLOT81,16,0:PLOT
0,0,32:PLOT81,-16,0:PLOT0,-16,-32
:PLOT0,24,-32:PLOT81,24,32:PLOT0,
16,-48:PLOT1,0,102:PLOT1,-80,0:PL
OT1,0,-102:PLOT1,80,0
870PROCS("Collect",366,148,1)
880PROCS("Number",382,88,1):VDU
5,18,0,2:MOVE868,126:PROCBig("SPA
CE"):MOVE852,142:DRAW1200,142:DRA

```



**H**AVE you ever fancied your chances at writing a game, in the hope of getting it released? If you like the idea of a pushover job, with the reward of instant fame and fortune, forget programming. Most ideas never get further than the drawing board, and of those that do, very few make a mint.

But if you're prepared to settle for the fame of seeing your name on someone else's screen, perhaps I can give you a few pointers in the right direction. One of the first things you must consider is the language in which to write your game. Make a list of everything it is will incorporate, including graphics, joystick or keyboard control, animation and available memory. If the language you had in mind cannot cope with some of these, you'll have to either look for another or redesign the game.

The next step is to develop the game ideas. Plan it out, preferably with a storyboard of cartoons, describing exactly what's happening at each stage. The best thing to do now is take a break for a couple of weeks, so when you come back to it you can easily spot the weak points before wasting valuable time and money.

In order to sell your game it must appeal to a particular section of the market. Maybe it could include brilliant graphics, amazing sounds, novel gameplay or a mixture of all these and more.

You might lean heavily on humour, with all the descriptions, puzzles and graphics having a humorous slant so the whole feel of the game comes together. Remember, the atmosphere of a game can determine its success or failure.

Don't try to compete in an already overcrowded market, as yet another version of Chess or Pacman would have to be exceptional to succeed. Likewise, don't fall into the trap of producing something nobody wants anyway.

A good hint is to ask yourself, friends, family and anyone who'll talk to you, would you buy this game? If the answer is No, start

# So you want to be a programmer..

## Chris Jones explains the pitfalls and rewards of producing your own software

again. If your idea needs graphics, they must be of a high standard. Most people are used to a level of sophistication unheard of a few years ago, but it's well to remember that some of the best concepts rely on few, if any graphics at all. Some games, such as Tetris, have sold thousands on their addictive gameplay rather than fancy pictures and sprites.

Few good programmers can produce quality drawings, so look around for someone who can. Whatever you decide, you'll need outside help eventually, so why not get together from the start and sort out all the problems at the beginning?

You can now start the job of writing the program. Spend as much time as possible on it, keeping notes of everything, and try several ways of achieving the same result. Just because the first method works, it isn't necessarily the best.

Try to keep your ideas innovative, and don't re-use existing routines in new clothing. If you do, there's a good chance that potential buyers will recognise them, and the original author may get a little upset. Also make sure the program is user-friendly,

which not only makes it easier to play, but more fun as well.

When you eventually emerge from the attic with a working prototype, let someone else play it. You'll be so indoctrinated by knowing the program backwards, you may never try doing the silly things novices are prone to.

After the few bugs have been removed, and the whole thing tidied up, you may end up with a product that you have enough confidence in to start seriously thinking about marketing. Get expert help if you can. Even small towns have a local computer shop, so try selling it to them. Give them a few copies, along with a demonstration, to try out on their customers.

You could also try sending copies to all the major software houses, but don't expect an immediate reply, as they're probably inundated with other folks' efforts.

Before having thousands of copies produced, try sending the final game to magazines, as they may decide to review it for you.

Deciding on the packaging and inlay design is the next big hurdle, but don't be tempted to go straight for the least expensive, as this could leave your otherwise excellent program looking rather cheap. Choosing the right price can be bewildering. Weigh up how long it has taken to write, and give yourself a reasonable rate of pay. Also take into account costs, including advertising and copying, and then take out the distributor's slice, not forgetting a discount for large orders.

Do not be talked into large production runs and expensive advertisements, as any well produced, thought-out and attractively presented program should sell reasonably well without having to spend too much in the first place. Shop around for the best deals, and work to a tight budget.

Don't have too many copies produced at first, otherwise you could find yourself with masses of unsold games and nothing coming in but bills. Plan well in advance. There's no point in trying to get a release date for Christmas in October, as you won't get it advertised and it won't sell. Many magazines have a small backlog of games to be reviewed, so be prepared to wait.

As you can see, it's certainly not a get rich quick operation. Don't be disappointed if in two years you're not a millionaire. If it were that easy everyone would be doing it.



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# Maths Mania

**Brush up on your mental arithmetic with this handy tester by Robin Langridge**

**M**ATHS Mania is a short educational program for children aged seven years and upwards. It is designed to improve their mental arithmetic skills by providing a series of simple practical exercises.

The wide range of difficulty levels built in to the program ensures that children of all abilities can make use of the program, but before moving on to that, your first task is to enter and save the program listing.

When you run Maths Mania you'll be presented with a menu consisting of four options: Addition, Subtraction, Multiplication

## Maths Test!

Choose one of these:

1. Addition.
2. Subtraction.
3. Multiplication.
4. Division.

Press 1-4.

*The main menu*

and Division. On selecting an option you are then asked to enter the difficulty level, ranging from one (easy) to nine (difficult). Then you're on to the questions.

After each question you are told whether you answered correctly, and if not, the right answer is displayed and your running score is printed. After 10 questions your final score

Division.

Question no.9

5 divided by 2

What is the remainder?

Your answer #

Wrong!! The answer was 1.

Score so far:

Correct :7 Wrong :2

Press space to continue.

*This is division at its easiest*

and rating – ranging from pathetic to brilliant – is displayed. You are then returned to the main menu. From there you can choose the same topic again or a new one.

And that all there is to it – a simple program that won't take long to type in, which is easy to use and provides sound practice with mental arithmetic.

```

10 REM Maths Mania
20 REM By Robin Dunmow
30 REM (c) Electron User
40
50 REPEAT
60 RESTORE
70 MODE 4
80 PROCc1s
90 VDU 23;8202;0;0;0;19,0,4;0;
100 PROCbig("Maths Test!",2)
110 PROCbig("Choose one of these",6)
120 FOR WX=1 TO 4
130 READ AS
140 PROCbig(STR$(WX)+". "+AS,8+(WX*3))
150 NEXT
160 PROCbig("Press 1-4.",24)
170 REPEAT
180 S=GET-48
190 UNTIL S>0 AND S<5
200 RESTORE
210 FOR B=1 TO S
220 READ WS
230 NEXT
240 PROCc1s
250 PROCbig(WS,1)
260 PROCbig("Select Difficulty (1-9)",4)
270 PROCbig("1 is Easy, 9 is hard.",7)
280 REPEAT
290 D=GET-48
300 UNTIL D>0 AND D<10
310 C=0
320 FOR Q=1 TO 10
330 PROCc1s
340 PROCbig(WS,1)
350 PROCbig("Question no."+STR$(Q),4)
360 IF S<4 PROCa ELSE PROCd
370 INPUT"" Your answer "P
380 PROCs
390 NEXT
400 PROCc1s
410 RESTORE
420 FOR Z=0 TO C+4
430 READ AS
440 NEXT
450 PROCbig(WS,1)
460 PROCbig("You scored "+STR$(C)+" out of 10.",4)
470 PROCbig("Which is "+AS,8)
480 PROCbig("Play again?",20)
490 REPEAT A=GET
500 UNTIL A=89 OR A=78
510 UNTIL A=78
520 PRINT""
530 END
540
550 DEF PROCa
560 RESTORE 840
570 FOR M=1 TO S
580 READ AS
590 NEXT
600 A=RND(10*D*D)
610 B=RND(10*D*D)
620 IF S<4 PROCbig("What is "+STR$(A)+AS+STR$(B)+" ?",10):IF S=1 AN=A+B ELSE IF S=2 AN=A-B ELSE AN=A*B
630 ENDPROC
640
650 DEF PROCd
660 A=RND(10*D*D)
670 B=RND(3*D*D)
680 W=RND(2)
690 PROCbig(STR$(A)+" divided by "+STR$(B),10)
700 IF W=1 AN=A MOD B:PROCbig("What is the remainder?",13) ELSE IF W=2 AN=A DIV B:PROCbig("How many times does it divide?",13)
710 ENDPROC
720
730 DEF PROCs
740 IF AN=P PROCbig(STR$(P)+" is correct!",18):C=C+1:FOR AX=0 TO 20 STEP 20:SOUND 1,-15,AX,2:NEXT ELSE PROCbig("Wrong!! The answer was "+STR$(AN)+".",18):SOUND 0,-15,4,10:SOUND 0,-15,5,10
750 PROCbig("Score so far:",21)
760 PROCbig("Correct :"+STR$(C)+" Wrong :"+STR$(Q-C),24)
770 PROCbig("Press space to continue.",27)
780 REPEAT
790 UNTIL GET=32
800 PROCc1s
810 ENDPROC
820
830 DATA Addition.,Subtraction.,Multiplication.,Division.,Pathetic.,Useless.,Awful.,Very bad.,Bad.,Reasonable.,Okay.,Good.,Very Good.,Excellent.,Brilliant!
840 DATA " plus "," minus "," times "
850
860 DEF PROCbig(AS,YX)
870 X1=(39-LENAS)/2
880 VDU 31,X1,YX
890 FOR I1=1 TO LEN AS
900 ?890=ASC(MID$(AS,I1,1))
910 AX=10
920 X1=890
930 YX=0
940 CALL &FFF1
950 FOR J1=0 TO 1
960 VDU 23,255
970 FOR K1=2 TO 9
980 VDU ?(890+4*J1+K1DIV2)
990 NEXT
1000 VDU 255,10,8
1010 NEXT
1020 VDU 11,11,9
1030 NEXT
1040 ENDPROC
1050
1060 DEF PROCc1s
1070 CLS
1080 DRAW 0,1023
1090 DRAW 1278,1023
1100 DRAW 1278,0
1110 DRAW 0,0
1120 ENDPROC

```

# 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.

## Electron Advanced User Guide

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...and much, much more.

This essential handbook will help you to exploit the full potential of your Electron. And for just £2.95, saving £6.50 off the recommended price, can you afford not to miss this offer?

## Electron Assembly Language

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.*

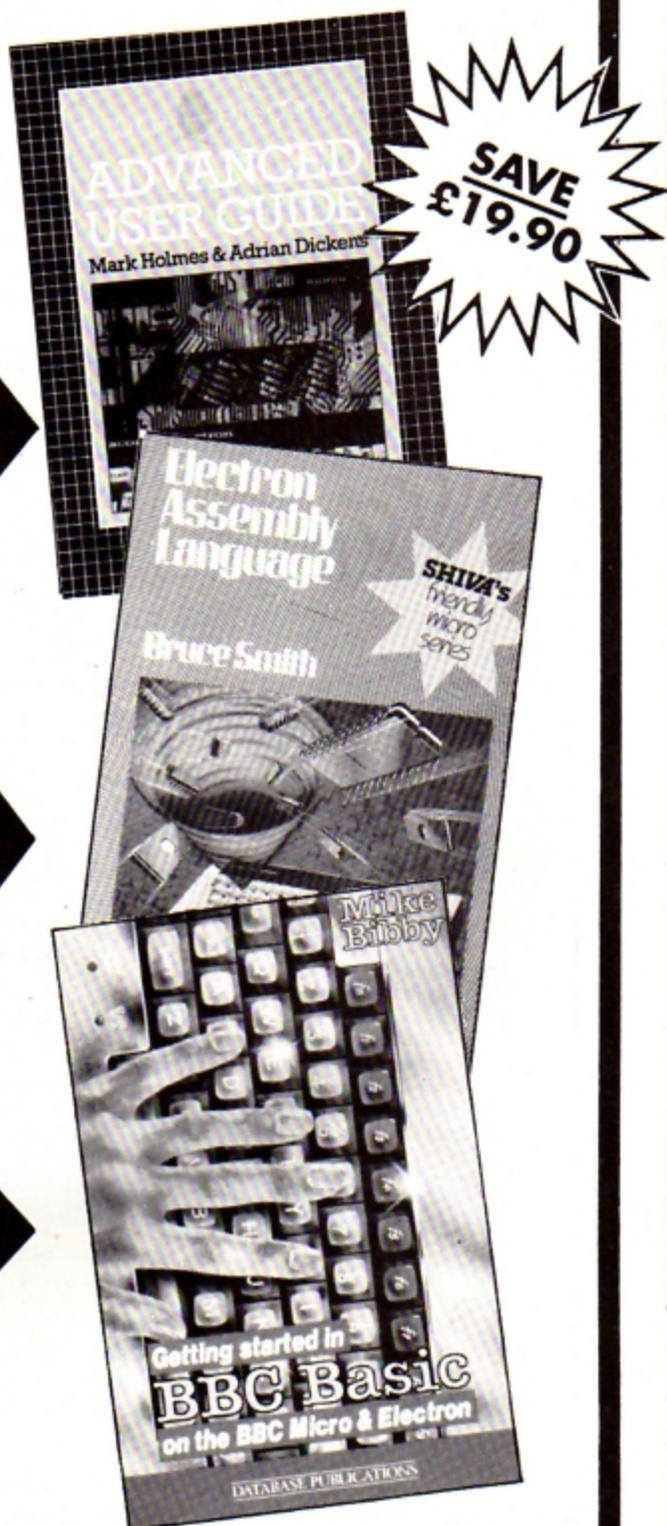
## Getting started in BBC Basic on the BBC Micro & Electron

This is the ultimate guide available on BBC Basic. Written by a leading expert on the language, it will lead you through each Basic function in a simple, easy-to-follow style.

Whether you are a beginner or more advanced, there are examples of commonly-needed routines and neat tricks you can use to make Basic jump through hoops.

By working through its many examples you will gain a clear insight into structured programming and will quickly acquire the ability to use structured techniques in creating your own programs. *Save £3 off the recommended retail price.*

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£7.95 for all three



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

# Now here's a really lucky break..

**Peter Dew shows  
how not to get your  
variables in a twist**

**W**HEN you have finally completed your programming masterpiece, or perhaps simply typed in a listing out of *Electron User*, you must test it. One of Sod's many laws states that a program will never run first time, so you must track down those elusive bugs - which usually turn out to be just typing errors.

This can be difficult if a program freezes with no way out, or disables the Escape key so you can't stop and examine the listing. The solution is to tap the Break key, but this has the unfortunate effect of making the Electron forget all the program variables, and even the program itself.

To the rescue comes a short, but useful utility called Recover. Written in 6502 machine language, this handy program resides in an unused part of the Electron's memory and keeps an eye on the Break key. When the key is pressed the program leaps into action and restores program variables that are normally wiped out.

This means that you can press the Break

key to interrupt a program while it is running, and then print out the contents of the variables, perhaps to track down a bug.

As usual, type in and save the program, but don't use the filename RECOVER, as when you run the program a machine code file will automatically be saved with this

name. To install the machine code utility type:

```
*RUN RECOVER
```

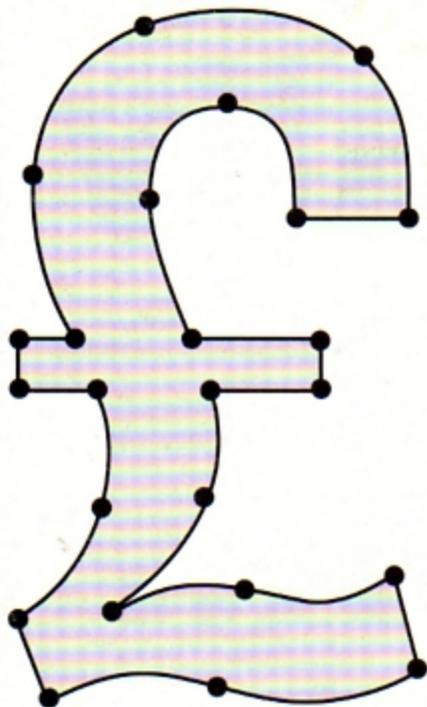
Once this is done it will stay in memory until you switch off.

```

10 REM Variable Recovery
20 REM By Peter Dew
30 REM (C) The Electron User
40 MODE 6
50 PRINT "Assembling...";
60 FOR p=0 TO 2 STEP 2
70 PX=&900
80 [OPT p
90 .break
100 LDA &79
110 CMP #&AA
120 BEQ exit
130 LDA #&AA
140 STA &79 \Flag set if alre
ady run
150 LDA #247
160 LDX #&4C
170 JSR &FFF4
180 LDA #248
190 LDX #entry MOD 256
200 JSR &FFF4
210 LDA #249
220 LDX #entry DIV 256
230 JMP &FFF4
240 .entry
250 BCC exit
260 LDX #0
270 LDY #&FF
280 .loop
290 INY
300 LDA &482,Y
310 STA buffer,Y
320 CPY #115
330 BNE loop
340 LDA &2
350 STA buffer,Y
360 INY
370 LDA &3
380 STA buffer,Y
390 LDA &220
400 STA &77
410 LDA &221
420 STA &78
430 LDA #1 MOD 256
440 STA &220
450 LDA #1 DIV 256
460 STA &221
470 LDA #10
480 STA &76
490 LDA #14
500 LDX#4
510 JMP &FFF4
520 .exit:RTS
530 .recover
540 LDX #0
550 LDY #&FF
560 .loop
570 INY
580 LDA buffer,Y
590 STA &482,Y
600 CPY #115
610 BNE loop
620 LDA buffer,Y
630 STA &2
640 INY
650 LDA buffer,Y
660 STA &3 \VARTOP
670 RTS
680 .i
690 PHP
700 PHA
710 TXA
720 PHA
730 TYA
740 PHA
750 DEC &76
760 LDA &76
770 CMP #0
780 BNE exiti
790 LDA #13
800 LDX #4
810 JSR &FFF4
820 JSR recover
830 LDA &77
840 STA &220
850 LDA &78
860 STA &221
870 .exiti
880 PLA
890 TAY
900 PLA
910 TAX
920 PLA
930 PLP
940 RTS
950 .buffer
960 J
970 NEXT
980 PRINT''
990 OSCLI"SAVE RECOVER 900 "+ST
RS"(PX)
1000 PRINT"Type *RUN RECOVER to
run the program!"

```

# More pins for your pounds



**Francis Botto tries an up-market dot matrix printer that features good quality output**

**I** DO not think that printers suffer from anxiety, but I certainly think they are carriers. Printers cause frustration, headaches and, of course, bank overdrafts.

Anxiety, because no sooner do you buy one printer but the makers abandon it for another; frustration, because you never seem to be able to get the optimum machine anyway; headaches, because some printers are not supplied with ear muffs. And bank overdrafts speak for themselves.

Today, however, I am inclined to believe that the underlying technologies used to produce our hard copies have matured into obliging desktop companions. I say this with

dot matrix printers in mind, where output is gradually becoming less and less "dotty" as more pins come into play.

At one time all dot matrix printers used a nine pin print head. Now however, 24 pin printers are becoming increasingly popular because the more pins you have, the better the output quality.

When I came across the 24 pin Panasonic KX-P1124 I was initially attracted because it has no DIP switches and it has a strange front feeding capability.

Stylish, compact and Japanese are just three words I would use to describe the physical appearance of the KX-P1124. I say

Japanese because there is definitely something linear about Japanese design.

Physically it is 430 x 359 x 143 mm, and weighs 8.5 Kg. Unfortunately it comes with one of those manuals that gives technical writers a bad name. Not that it is bad, but for someone who is not interested in the more technical side of the printer, it can be discouraging as there is a great deal of in-depth discussion for programmers and the like.

The ribbon is compact and can be reinked using a ballpoint pen, which is pretty convenient. According to the manual, it has a lifespan of three million characters in draft mode. But who's counting?

It has five fairly smart NLQ fonts and two draft. It can emulate both the Epson LQ-2500

and IBM Proprinter X24 and can print up to 192 cps (characters per second) draft and up to 63 cps NLQ.

When you first switch on it makes quite a clatter and beeps a bit. If you are like me you will want to switch off the loudspeaker. Nowadays, you don't have to go disconnecting speaker leads, as manufacturers have at long last discovered potentiometers and on/off switches.

Everything seems to be within easy reach. Placed on a desktop, you find that you do not have to leave your seat to operate it.

Fonts, letter pitch, margins and so forth are set from the EZ control panel - a kind of columnar arrangement where you select items according to rows and columns of LEDs.

As with most printers there is a self test to make sure everything is operating correctly. This is invoked by switching on while pressing the LF (line feed) button.

The NLQ fonts are quite attractive and the Script font is good for personal letters.

Besides the fact that cut sheets can be fed from the front, the KX-P1124 also accepts continuous stationary from a slot in the front or from the back. Feeding via the slot in the front is a convenient feature, as you don't get the normal mass of paper being fed in an almost figure-of-eight fashion.

## Conclusions

The KX-P1124 is fairly inexpensive and offers solutions to many of the flaws associated with conventional printer designs.

However, there are a great many other 24 pin printers currently on the market. With stiff competition like this there can be just this advice: Look before you leap.

### Draft

```
!"£$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKL
!"£$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLM
!"£$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN
```

### Courier

```
!"£$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKL
!"£$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLM
!"£$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN
```

### Prestige

```
!"£$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKL
!"£$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLM
!"£$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN
```

### Bold PS

```
!"£$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKL
!"£$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLM
!"£$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN
```

Some of the many typestyles available with the Panasonic

Product: Panasonic KX-P1124  
 Price: £399.00  
 Supplier: Watford Electronics, Jessa House,  
 250 Lower High Street, Watford WD1 2AN.  
 Tel: 0923 37774



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- ★ Earphone socket
- ★ Automatic tuning
- ★ External power supply socket
- ★ Takes four standard AA size batteries

Because of a breakthrough in technology you can now watch your favourite TV programmes anytime, anywhere – and in full colour with the new pocket-sized Colour TV400 which features a revolutionary high quality matrix LCD display – giving crisp, bright pictures.

Measuring just 5 x 3 x 1 inches, the TV400 sits snugly in the palm of your hand, or you can use the built-in rest to place it on most surfaces – at just the right angle for optimum viewing. The screen itself measures 2 inches diagonally.

When the TV400 was designed, part of the specification was that it should be useable virtually anywhere. As a consequence it has a built-in signal amplifier which can pick up some far away stations your ordinary TV can't! Plus it has automatic tuning, so at the touch of a button the TV400 scans through the band and quickly locks into all receivable broadcasts.

We have tested the pocket TV in trains, on buses, in cars, indoors and outdoors, and in most cases the picture remained sharp and clear. However, reception could vary depending on obstacles in the way of the signal like large buildings and hills.

Whether for yourself, a member of your family or friend, the TV400 makes an excellent present which will give entertainment and pleasure for many years to come.

Due to our purchasing power we can make the TV400 available to you at the exceptionally low price of just £94.95\* – a saving of £20 off the normal price. We have not seen the TV as cheap as this anywhere else – including the High Street stores.

*And remember, you can buy with complete confidence as the TV400 comes with a full one year guarantee for parts and labour (in normal use).*

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\* Plus £1.50 post and packing  
Please note: The TV400 is tuned for UK PAL broadcasts. Therefore we can only accept orders from the UK

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This amazing device will completely charge four standard AA size rechargeable batteries in under 2 hours and each battery can be recharged at least 1,000 times.

Further, for a limited period we can sell the charger and four rechargeable batteries at the staggeringly low cost of £19.95 (plus £1.00 p&p). It will pay for itself within weeks.

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# THE 4TH



**U.I.M.**

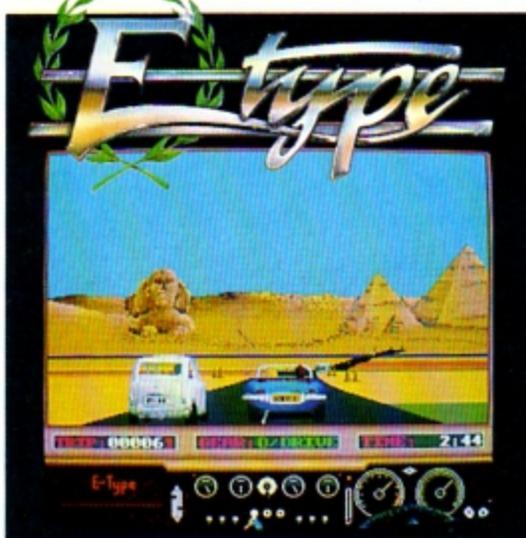
U.I.M. is a massive 3D arcade adventure set in the future. 2 1/2 years of dedicated design and programming have produced this massive game. The "greenhouse" gases melted the icecaps and all life now exists in the oceans. There are over 65000 underwater ports each with their own colonies.

You must travel the oceans, trading in commodities, shares and currency. There are over 250 missions to complete before you will find your goal - the U.I.M. - created to be almost a god! Your craft is a highly manoeuvrable (and expandable) futuristic submarine named Black Satyr.

On your travels you will encounter many submarine types. Many of the most advanced and aggressive submarines do not appear until you reach later networks of ports. In addition you will also meet the Replicants - man-made underwater machines which have gone "renegade" and are capable of reproduction.

As you progress it is therefore essential to avail yourself of the highly sophisticated range of combat and defensive equipment available. The quest for the U.I.M. will be long and involved, the dangers intense, but the reward priceless!

U.I.M. is disc only and will run on BBC B or B+ with 16K of sideways RAM, BBC Master series and all Archimedes Computers.



**E-TYPE**

Take control of £70,000's worth of gleaming "E-Type" and head off for the drive of a lifetime. Hear the digitised roar of the 5.3 litre 12 cylinder engine as you tear along lanes, motorways and desert tracks at over 150 mph.

"E-Type" takes racing simulations into the world of 32-bit RISC processing and gives you smoother, faster and more detailed graphics than you are even likely to see in the arcades.

If you're new to driving you can take the easy-to-drive automatic for a spin but experienced drivers can optimise their performance in the faster 5 speed manual "E-Type". There are hazards galore including other cars, roadworks, trees, rocks, bushes, billboards oilspills, etc. etc.

"E-Type" has been produced by the highly acclaimed and experienced Gordon Key who also produced the best-seller Holed Out.

### E-Type Designer

Design your own "E-Type" tracks with this highly advanced but simple to use designer. It is enormously flexible to produce an endless variety of tracks to challenge you and your friends. (N.B. You need the original E-Type in order to use this designer).



**WHITE MAGIC**

White Magic is a unique arcade adventure in which you control 4 varied adventures:-

Kaldor the Leprechaun,  
Chesyl the Titan, Moriana The  
Warrior and Mandrake the  
Enchanter.

You can transform between all 4 characters at will and use their much needed special abilities.

It features 32 massive action-packed levels filled with aggressive guards and trolls, haunting ghosts and spectres, curious objects to find and use, and much more .....

White Magic is not a game for the faint-hearted; it is a fast-action game which requires fierce hand-to-hand combat and frantic weapon fire.



**BBC**



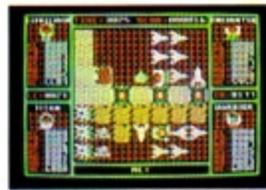
**BBC**



**ARCHIMEDES**



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*The Fourth Dimension*

PRICES AND AVAILABILITY	ARCHIMEDES 3 1/2" DISC	BBC MASTER 5 1/4" DISC	BBC AND ELECTRON CASSETTE	MASTER COMPACT 3 1/2" DISC
U.I.M.	29.95*	19.95	-	21.95
E-Type	19.95	-	-	-
E-Type Designer	16.95	-	-	-
The Olympics (6 Events)	19.95*	-	-	-
White Magic	19.95	12.95	9.95	13.95
White Magic 2	19.95	12.95	9.95	13.95
Holed Out	19.95	14.95	12.95	15.95
Holed Out Extra Courses 1	16.95	11.95	9.95	12.95
Holed Out Extra Courses 2	16.95	11.95	9.95	12.95
Holed Out Designer	19.95	-	-	-
Arcaide Soccer	19.95	12.95	9.95	13.95

All the above Archimedes games will work on A3000, 310 and 400 series computers.

# DIMENSION

ARCHIMEDES  
BBC MICRO  
ELECTRON



## WHITE MAGIC 2

This includes 32 brand new and highly dangerous levels plus a complete level designer.

The level designer is a doddle to use and can be used to alter or design levels from scratch.

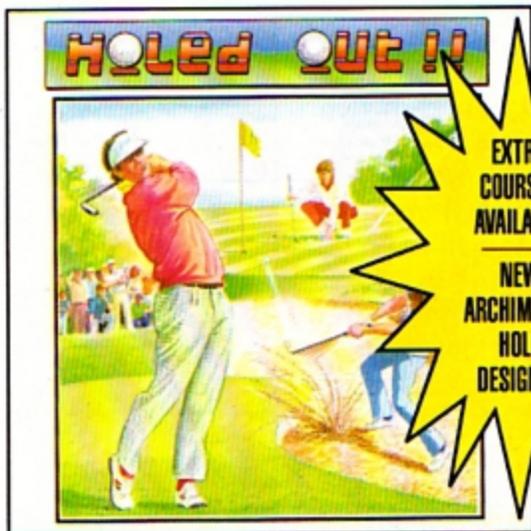
An extra invisible feature in White Magic 2 will really confuse our adventurers!

### Reviews of White Magic

"The graphics are superb .... An absolute winner"  
*Electron User Golden Game August '89.*

"Playability is good and I had to tear myself away in order to write this update review."

*Archie review - The Micro User, October 1989.*



## HOLED OUT

The most comprehensive, realistic and highly acclaimed golf simulation on the market today. This volume contains the original 2 contrasting 18 hole courses and comes complete with an easy to follow 16 page manual.

"I play golf and this game is the closest thing I've seen to the real game on a computer".  
*Archive, June 1989*

"I wouldn't have thought it possible to get a better simulation out of the beeb".  
*BBC Acorn User, June 1989*

"The 3D perspective graphics are stunning". *Electron User GOLDEN GAME June 1989*  
"Holed Out is great .... The game plays very well and the graphics are superb".  
*Popular Computing Weekly, March 1989*

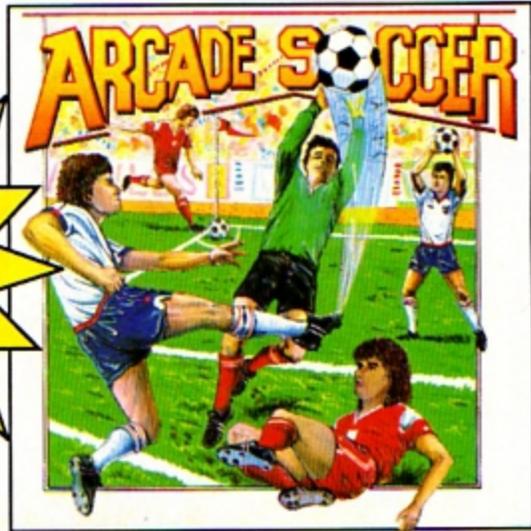
"The Electron version is brilliant - it's almost the same as playing at Gleneagles. Unreservedly recommended". *A & B Computing Game of the Month, June 1989*

### HOLED OUT EXTRA COURSES

In response to your many requests we have now produced 2 volumes of extra courses. Each volume contains 2 superbly designed brand new courses plus the original Holed Out program; therefore you do not need the original Holed Out to play them. Each course has been meticulously created to test your golfing abilities to the limits. The holes are very varied and even Nick Faldo would need to use his skills to keep up his recent record.

### ARCHIMEDES HOLE DESIGNER

Create your own golf courses with this easy - to - use yet highly sophisticated hole designer. Its flexibility allows you to define all aspects of the holes from their pars to the position and size of the lakes. It will keep you enthralled for years.



## ARCADE SOCCER

Arcade Soccer really is football action at its very best.

Using an overhead view to make game play as exciting as possible it features everything that you could want in a football game. Corners, sliding tackles, throw-ins, goal kicks, dribbling, shooting, passing and much more. But not only does Arcade Soccer give you Total Action it also puts you in Total Control.

Firstly you can play with either keyboard or joysticks, against the computer and/or with up to 23 friends. The options are almost limitless; you can choose the skill of the goalkeepers, the speed and length of the game, play "friendlies" or tournaments and even enter the most coveted of championships - the World Cup.

"The game is very playable and you do get a feeling of involvement as you knock the ball into the corner of the net straight past the diving goalie. It's definitely one to play again, and if you've enough friends it could make for a good day of enjoyment - and not a lot of games can do that. Value for money ... 10 out of 10".  
*The Micro User, October '89.*



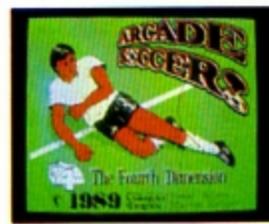
## ELECTRON



## BBC



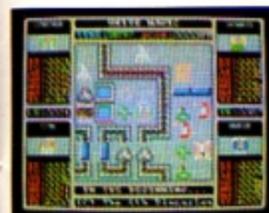
## ELECTRON



## BBC



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## ARCHIMEDES



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## BBC

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ONLY**

**Barry Woods time travels back five years into the Electron's past**

**F**IVE years may not be a long time to you or me, but to a micro it is a lifetime, in fact, some computers have been born, lived and died in much shorter time spans. The Electron however, proudly continues ever onwards, and though it may now be in its twilight years, it has outlasted many competitors.

Five years ago this month the Electron was at its peak. The good news from Acorn was that it had just slashed the price of its baby Beeb by £70 to £129. This was expected to be a shot in the arm to sustain the current high level of sales and followed news that 100,000 Electrons had been sold in the previous Christmas sales period.

Also reported in *Electron User's* March 1985 news pages were Interflora's plans to place special terminals based on the Electron's motherboard in each of its 2,500 shops. The aim was to replace the telephone for transmitting orders around the country. The machine had a built in auto-dial, auto-answer modem, VDU, dot matrix printer and associated software.

It sounds like a sure-fire recipe for a successful micro and it's a pity it was never made available to the public.

Mini Office, the chart topping business software package had just been released for the Electron and was selected as a national teaching aid. It was to be incorporated as part of a series of special courses held throughout the UK to link education with industry.

Acorn had just released the Plus 3 disc expansion unit which sported two revolutionary features that were to pave the way for future Acorn developments - the 3.5in disc drive and ADFS (advanced disc filing system). Both of these have since been incorporated in Acorn products, but at the time they were completely new ideas.

The Master, developed later, incorporated the ADFS and the Master Compact also had 3.5in discs too. The new Archimedes also sports ADFS and 3.5in discs and can read and write to those Electron Plus 3 discs created way back in 1985.

Good news for games players - software

# TIME WARP 1985

was flooding onto the market at a tremendous rate, with excellent titles such as Overdrive and Smash and Grab from Superior, Wongo, Ultron, Warp 1, Merry Christmas Santa, Spacestation Alpha and Zorak the Conqueror from Icon, Frenzy from Micropower, Mr Men from Mirrorsoft and many more titles.

Pete Bibby's marathon running Introduction to Programming had reached Part 14 with an examination of logical operators. Roland Waddilove reviewed a cut down version of Pascal from Acornsoft and Roger Frost presented an entertaining game called Percy's Panic.

One of the most popular features of *Electron User* back in March 1985 was Scrapbook, a compilation of short, entertaining and interesting programs. It was a forerunner of the 10 Liners feature in today's magazine.

Below I have reproduced Eye by P. Charlesworth of West Yorkshire from March 1985 Scrapbook. It uses MOVE and DRAW commands to produce a fascinating pattern.

● *And that rounds up this month's trip down memory lane. Next time I'll set the time controls for April 1984. Can you recall what was making the news back then?*

```
10 REM Eye
20 REM By P. Charlesworth
30 REM (c) Electron User
40 MODE 4
50 VDU 19,1,0;0;
60 VDU 19,0,6;0;
70 VDU 23,1,0;0;0;0;
80 VDU 29,139;11;
90 MOVE 0,0
100 DRAW 0,1000
110 DRAW 1000,1000
120 DRAW 1000,0
130 DRAW 0,0
140 FOR A=1 TO 1000 STEP 40
150 MOVE 0,A
```

```
160 DRAW 1000-A,0
170 NEXT A
180 FOR A=1000 TO 1 STEP -40
190 MOVE 1000,A
200 DRAW 1000-A,1000
210 NEXT A
220 FOR C=0 TO 2*PI STEP 0.15
230 MOVE 650,500
240 DRAW 500+COS(C)*200,500+SIN(C)*200
250 MOVE 350,500
260 DRAW 500+COS(C)*200,500+SIN(C)*200
270 NEXT C
280 VDU 7
```

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 September 1989 - February 1990 bundle:

**September 1989 issue:**

*Game:* Snakes. *Reviews:* Keyword, Basic Editor Plus, Ballistix, Sam 10. *Features:* Arcade Corner, Electron history. *Utilities:* Attribute editor, magazine database.

**October 1989 issue:**

*Game:* Spinning frustration, Jet Bike, Robokill. *Reviews:* Rodeo Games, Hi Q Quiz, Spooksville, Rombard. *Features:* Exile solution, Electron carrying case. *Utilities:* Elkpaint, Disc Menu.

**November 1989 issue:**

*Game:* Storker's Run, Shopping Spree, Dollar Dash, Octavia. *Reviews:* Arcade Soccer, White Magic 2, Citizen printer. *Features:* Exile solution, Flowcharts, buyer's guide to printers. *Utilities:* Scroller.

**December 1989 issue:**

*Games:* Wishing Wells. *Reviews:* Ricochet, Play It Again Sam II, System 80, Superior Soccer, Sign Writer, Time Lines. *Features:* Ravenskull solution, American Suds map, Break key protector. *Utilities:* Word square solver, screen faser, calendar maker, extended renumber.

**January 1990 issue:**

*Games:* Bounce. *Reviews:* Subway Vigilante, Blast, Tomcat, AC Datalink. *Features:* Elite playing guide, Time Warp 1985, adventure tips. *Utilities:* Disc/Taper Index, Sunburst, Pie Chart, graphics compiler, DFS and ADFS disc editors.

**February 1990 issue:**

*Games:* Life, Deflector. *Reviews:* Last Ninja 2, Fab Four. *Features:* Ring of Time map, Logo, discs and drives explored. *Utilities:* Remsave, system variable lister, graph plotter.

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# Poking around in programs

**Spruce up your Basic listings by adding control codes using Neil Davidson's useful utility**

**V**DU Poker is a moderately short but very useful utility designed to produce Basic REM statements containing control codes. Although this is possible using other methods, such as using a series of pokes typed in directly from the keyboard, none are as easy to use or user friendly as this program.

There are two reasons why you might want to insert control codes into Basic listings – for program protection and to make listings more readable.

For instance, if you insert an Ascii code of 21 into the first line of a program – the most convenient line would be a REM statement – the Electron will be almost completely disabled when the program is listed. In addition, the screen will remain blank so you can't read through the program listing.

The solution would be to start listing from just after the first line, but you could always add more REMs and control codes to counteract this. Using this method you could protect your programs from prying eyes – yours included unless you keep a back up of the programs without the control codes, so take care!

If program protection isn't your primary concern, control codes can be inserted to change mode, alter the colours, set up windows and so on. For instance, the following sequence of codes changes to Mode 6 and sets the background colour to blue, making listings easy on the eye: 22,6,19,0,4,0,0,0.

You could also set up a window, draw a box or print a heading, all using simple Ascii codes inserted into a REM statement at the start of a program. When it is listed the codes are executed and the rest of the program listed afterwards.

To use VDU Poker, first enter and save it to tape or disc. Run it and you'll be prompted to input a series of codes. All that is required is that you enter the codes as you would using the Basic VDU command – without the need for VDU of course. You could, for instance, enter the sequence given above.

When you have finished you enter a blank line by pressing Return. You'll be prompted

for a line number – this will be the REM statement in which the codes will be stored. The REM will be added to the program (it doesn't need to be an existing line).

To add this REM to your own programs, enter a line number below 10 and when the program has finished, delete the rest of the VDU Poker program with:

```
DELETE 10,10000
```

Then you can either type in your own program from the keyboard or merge in a Basic listing with:

```
OSCLI "LOAD ""MYPROG""+STR$(TOP-2)
```

You need to know about three extra features. The first is that a semicolon denotes a 16 bit number, just as in normal VDU commands. This means that the sequence 23;8202;0;0;0; will switch the cursor off, as it would do in a Basic VDU command.

If D is entered followed by a number that number of Ascii 127s will be added to the REM statement. As you probably know, this code is the backspace and delete character, so it could be used to delete a line number or hidden message.

Finally, if you are at all unsure as to what the effect each of these Ascii codes will have, enter Q followed by a control code. You'll then be told what effect that code has.

```
10 REM VDU Poker
20 REM By Neil Davidson
30 REM (c) Electron User
40 MODE 6
50 PRINT ' STRINGS(40,"*");
60 PRINT ' FNctr("Vdu Poker")
FNctr("by")'FNctr("Neil Davidson")
)'FNctr("(c) Electron User 1990"
)
70 PRINT TAB(0,9);STRINGS(40,"
*");
80 VDU 28,0,24,39,12
90 PROCpoke
100 END
110
120 DEF FNctr(AS)
130 PRINT TAB(20-LENAS/2);:=AS
140 DEF PROCvdu(vdu$)
150 ZX=LEN vdu$-1
160 IF RIGHTS(vdu$,1)="$" THEN
total$=total$+LEFT$(vdu$,ZX):ENDP
ROC
170 IF RIGHTS(vdu$,1)=";" THEN
EX=EVAL(LEFT$(vdu$,ZX)):total$=to
tal$+CHR$(EXMOD256)+CHR$(EXDIV256
):ENDPROC
180 IF LEFT$(vdu$,1)="D" total$
=total$+STRINGS(EVAL(RIGHT$(vdu$,
ZX)),CHR$127):ENDPROC
190 IF LEFT$(vdu$,1)="Q" EX=EVA
L(RIGHT$(vdu$,ZX)):PRINT"VDU ";E
X;": "'vdata$(EX)':ENDPROC
200 total$=total$+CHR$(EVALvdu$
)
210 ENDPROC
```

\*\*\*\*\*

Udu Poker  
by  
Neil Davidson  
(c) Electron User 1998

\*\*\*\*\*

```
VDU =>Q2
VDU 2 :
Enable printer
VDU =>22,6,19,0,4,0,0,0
VDU =>
Line number .:5
```

*An example of the type of input possible with VDU*

## VDU Poker listing

```

➤
220
230 DEF PROCnewline
240 INPUT"Line number ..."LX
250 total$=CHR$34+total$
260 ?&A00=LEN total$:?&A01=tota
l$
270 OSCLI"KEYO "+STR$LX+"REM"+S
TRINGS(LEN total$," ")+"|MPROCvdu
it|M"
280 *FX138,0,128
290 END
300
310 DEF PROCvduit
320 TX=PAGE+3
330 IF ?(TX-2)*256+?(TX-1)<>LX
THEN TX=TX+?TX:GOTO 330
340 FOR GX=TX+2 TO TX+?&A00+1
350 ?GX=?GX-TX-2+&A01
360 NEXT
370 END
380
390 DEF PROCinput
400 total$=""
410 REPEAT
420 INPUT LINE"VDU =>"AS
430 IF AS="" THEN 560
440 LX=LEN AS
450 VX=0
460 REPEAT
470 SX=VX
480 REPEAT
490 VX=VX+1
500 CS=MIDS(AS,VX,1)
510 UNTIL VX>LX OR CS="" OR CS
=","
520 GS=MIDS(AS,SX+1,VX-SX-1)
530 IF CS=";" THEN GS=GS+CS
540 IF GS<>" THEN PROCvdu(G$)
550 UNTIL VX>LX
560 UNTIL AS=""
570 ENDPROC
580
590 DEF PROCpoke
600 PROCdata
610 PROCinput
620 PROCnewline
630 ENDPROC
640
650 DEF PROCdata
660 DIM vdata$(255)
670 FOR GX=0 TO 32
680 READ vdata$(GX)
690 NEXT
700 FOR GX=33 TO 126
710 vdata$(GX)=CHR$(GX)
720 NEXT
730 READ vdata$(127)
740 FOR GX=128 TO 255
750 vdata$(GX)="User definable"
760 NEXT
770 ENDPROC
780
790 DATA Nothing,Send character
to printer only,Enable printer,Di
isable printer,Write text at curs
or,Write text at graphics cursor,
Enable vdu output (undoes VDU21),
Beep,Backspace cursor one charact
er,Forward character one place
800 DATA Move cursor down one l
ine,Move cursor up one line,Clear
text area (CLS),Move cursor to s
tart of current line,Page mode on
,Page mode off,Clear graphics are
a (CLG),"Define text colour (VDU1
7,colour) : COLOUR"
810 DATA "Define graphics colour
r (VDU18,GCOL1, GCOL2) : GCOL"
,"Define logical colour (VDU19,Lo
gical colour,actual colour;0;)"
,"Restore default logical colours
,Disable vdu output (opposite of
VDU6),"Select screen mode (VDU22,
mode)"
820 DATA "Redefine character (V
DU23,character,n1, n2,n3,n4,n5,n6
,n7,n8).To eliminate cursor
: 'VDU23;8202;0;0;0;' .To create
cursor : 'VDU23,1,1;0;0;0;',"Def
ine graphics window (VDU24,x1;y1;
x2; y2;)"
830 DATA "Plot K,x,y (VDU5,K,x;
y;) : K=4 - Move ; K=5 - Draw (se
e User Guide for others),"Restore
default windows,Escape code (pri
nter),"Define text window (VDU28,
x1,y1,x2,y2),"Define graphics or
igin (VDU29,x1;y1;x2; y2;)"
840 DATA Home text cursor to to
p left,"Move text cursor to posit
ion on screen (VDU31,x,y) : PRINT
TAB(x,y),"Space,Backspace and de
lete

```

## Sub search listing

◀ From Page 26 |

```

FFF,FDF7FEFF,F7FBF6FF,FFDF5FA,70F
,3C3C1616,FB5F279,F5FEFBF6,FFDF
FFF,FFFFFFF7,FFFFFFF7,FB5FBF6,FB
F7FAF7,FFDFFE,FBFFFB,FFFFFFF7
,FFFFFFF7,FFF7DF,FFBFFB,FFDF
FFF,FFFFFFBF,FFFFFFF7,FFFFFFF7,F7
FFFFFF
1470DATAFFFFFFF7,FFFFFFF7,FFFFFF
FF,FFFFFFF7,FFFFFFF7,FFFFFFF7,F7F
FFFFFF,FFFFFFDF,F6FBF6F5,79F2F5B,
16163C3C,FFFFFFF7,FFFFFFF7,FBFFFB
FB,FEFFDF,77FAF7FB,F6FBF5FB,FFF
FFFFFF,FFFFFFF7,FFBFFB,FFDFBFF,
FBFFFB,FFDF7F,FFFFFFF7,FFFFFF
FF
1480DATAFFFFFFF7,FFFFFFF7,FFFFFF
FF,FFFFFFF7,FEFFFB,FFFFFFF7,FFF
FFFFFF,FFFFFFF7,FFFFFFF7,FFFFFFF7,
FFFBFB,FFDFDF,FFDFDF,FFDFDF
FF,FFFFFFF7,FFFFFFF7,FDFAFD6,FD
EF5FE,FFBFFB,FFDFDF,FFFFFFF7,
FFFFFFF7,C3C38686,FDFAF4E9,FAF7FD
F6
1490DATAFFBFFB,FFFFFFF7,FFFFFF
FF,FFFFFFF7,FFFFFFF7,FFFFFFF7,FFF
FFFFFF,FFFFFFF7,FFFFFFF7,FFFFFFF7,
FFFFFFF7,FFDFDF,FFDFDF,FFDFDF
FF,FFBFB,FFFFFFF7,FFFFFFF7,FD
FFDF,77FBFB,FEF5FEF6,F6DFDF,
FFFFFFF7,FEFFFB,FFBFB,76DF7
FA
1500DATA9F4FAFD,8686C3C3,110111
01,11011101,11011101,11011101,110
11101,11011101,77D76BB,77D76BB,
77D76BB,77D76BB,77D76BB,77D76
BB,F4FAFDFA,F4FAFDFA,F4FAFDFA,F4F
AFDFA,F4FAFDFA,F4FAFDFA,80808080,
80808080,80808080,80808080,808080
80
1510DATA80808080,0,BBEE55AF,FFFF
FFFF,FBFEFF,FOFOFAF5,FOFOFOFO,0
,BBEE55AF,FFFFFFF7,FBFEFF,FOFO
AF5,FOFOFOFO,0,BBEE55AF,FFFFFFF7,
FBFEFF,FOFOFAF5,FOFOFOFO,0,BBEE
55AF,FFFFFFF7,FBFEFF,FOFOFAF5,F
OFOFOFO,11011101,66EEBB9D,EEEEEA
E
1520DATAE4EAE4E4,E4E4E4E4,FOFOFO
EO,FFDD76BB,FF777700,FFFFFFF7,FFF
7FEFF,FFFFFFF7,FF007477,FFFAFDFA,
F5EAE4E0,F4FAFDFA,F4FAFDFA,F5FBFD
FB,F400E0E0,88808080,6677DDAF,757
77577,72757277,70727075,FOFOFOFO,
A955218D,A021A20A,FFF12055,2A8D00
A9
1530DATA2017A955,2AADFFEE,20E009
55,2AADFFEE,AA0A0A55,BDE804A0,EE2
05521,FFEE20FF,EEF3D088,2AAD552A,
D002C955,B004A2D4,EE20552B,F710CA
FF,7360,63C603E,B02007C,E00A08E1,
FEFFFB,FEFFFB,FEFFFB,7477FF
FF,FDFAFFD0,EE00FFFA,FDFAF5EA,FD
AF4FA
1540DATAFDFFB4FA,E0EEF5FB,8080F4
00,DDAF8880,75776677,7277577,707
57275,FOFO7072,D00DF0FO,11340000,
34151111,A4222222,11D6D34,D3D34
94,D3427C2,340040D3,EE4EF3EF,40D3
0D34,D3D3400,D9411B1,272222D8,D0
4003,D64003D0,40031111,322C2D3,D0
40D340
1550DATA4EF34EE3,D34003FE,4EE3D0
40,3FE4EF3,D04019B1,702222D8,D000
00D0,1106D000,3151111,A42222C2,D0
0D4003,EF4EE334,400334FE,E334D00D
,34FE4FE,D00D4003,11460334,43039
411,32722C2,D04D43,151111D6,22C2D
361,4EF33CA4,193434FE,3434D040,34
D07022
1560DATAFEFEFE34,11D63434,D33494
11,342722C2,1111B1D3,2222D894,615
2722,A4D05011,D040CA03,4E4E334,4
3E334FE,193BFE4E,82D04043,D040732
2,4D191161,22223C0D,113B0D70,8211
1111,22222222,D0000000,EEEEEE34,34
EF,6134D0D0,94111111,2222223C,342
7
1570DATA113BDD0D,82D05D11,D04D2A
22,4F191111,222222FE,D334D07D,340
0D04D,5D1146D3,CA43D334,43D33440,
D3344043,34404389,407322D8,E3EFFF
34,11113B4E,22824019,702222,D0D0D
34,116134D0,3C341511,3BA42222,34
156194,A43C2782,3400D034,D3434,61
343434
1580DATA943B9411,8227223C,EEEE34
27,1561EEEE,3C5D1106,4FCAE3A4,43E
33434,334344F,3B344D43,34B14319,2
2782282,1111113B,222282D8,11614D2
A,3C4D1911,7D222222,11111161,2222
3C5D,EE344D2A,34B1E3EE,22080000,5
0113B,402A82D0,5311D0D0,2A5D11B1
1590DATA4D2A2248,1911B1E3,2222D8
4F,15617D22,3C5D1161,4D2A3CA4,334
3494,3434274D,3BEE4D03,4FE394,4D0
32782,19116100,223C004D,34EE7D22,
EFEFEE,D000034,D0003400,153B00D0,
8200D0D0,6D0D0A4,11D69411,D327C20
3,4003C2,4EE34D03,E34FF3EE,4F1911
B1
1600DATA222222D8,7D,1561D0D0,3C0
0D0D0,11116127,223C153B,34A48222,
94111561,22A43C34,34343427,349411
11,27222234,11113434,22349411,342
72222,1966663C

```

# MiCRO MESSAGES

## Plea from Poland

*I AM the owner of an Acorn Electron which I received a year ago. I now think that I am a rather serious user as I have written some machine code programs like a disassembler, memory monitor and a very good copier. I wrote my own version of the game Tetris.*

*Because it is virtually impossible to get Electron software in Poland, I would like to swap any programs and experiences with English users. I own an Electron without any peripherals, though I have made myself a joystick interface. I have collected about 100 games and about 20 useful programs.*

*I will reply to every letter and I can send a cassette or a hand written listing of programs. — Piotr Sliwinski, Lokietka st. 7/2, 98-200 Sieradz, Poland.*

## If in doubt, throw it out

*I HAVE the same problem with my cassette recorder as S.H. Braithwaite in January's Micro Messages and I can't load any previously saved data.*

*After hours of fiddling with the insides of the tape recorder following your instructions, nothing has changed. Is there anything else I can do?*

*I also used to have problems with my Electron locking up, but you gave me the solution to that in past issues. That solution also brought a friend's Electron out from under the stairs.*

*Unfortunately it went straight into another cupboard because when playing a game no sounds are present except for the occasional crackle of static like on a radio. Can you explain the reason, and offer a cure?*

*Thank you for a brilliant magazine, although it would be even better with more software reviews and 10 liners. I also think you should include more type-ins from back issues. — Daniel B. Johnson, Fleet, Hampshire.*

● The problem is to find out whether the micro, the cassette recorder or connecting lead is at fault. Will the cassette record music OK? If it will then it should record the

Electron's sound output.

Try a new connecting lead to see if that cures the problem. After eliminating all other possibilities, try your recorder and lead on a friend's micro. If it is OK then your micro must be at fault.

The lack of sound from your friend's micro could be due to a faulty ULA as that was also causing the locking up.

## Key to the problem

*TAKING up your renewal offer I received a copy of Keyword. I have followed the instructions and find that the program doesn't respond in the way the instructions describe.*

*Typing in LEARNING followed by Return twice makes the computer respond with a list of words beginning with "a". Following the instructions down, the word KNOWLEDGE is supposed to appear.*

*Typing in KNOWLEDGE and pressing Return twice does give a list and in this is LEARNING. Yet searching for LEARNING without first searching for KNOWLEDGE fails. Using the scanning option in "a"*

## Waste not, want not

*SADLY my Electron burnt out a short while ago, leaving me with several items of unused hardware. If anyone is interested in obtaining any of the following will they please let me know: Plus 3 disc drive, First Byte joystick interface and joystick, Slogger Rombox and T2P3 rom, Voxbox speech synthesiser.*

*They are all in good condition with instructions and original packaging. — Tariq Kurd, 8, The Coppings, Hoddesdon, Hertfordshire.*

● Instead of selling good equipment, why not ring around the dealers and see if anyone has an old Electron sitting on the back shelf in their storeroom. You might be able to pick one up for under £50 — if you can find one.

*seems successful, but "b" eventually fails with pages and pages of bul@. Scanning "c" to "k" fails altogether.*

*Some of the words when following avenues of thought bear no resemblance to the root word and some are not real words at all.*

*Either I am doing something seriously wrong or there is some sort of bug in the program. The disc is 40 track, 5.25in. I have tried unplugging the ADT rom, but have assumed that the Plus 1 is compatible. — D.J. Ludbrook, Leeds.*

● You are using the software incorrectly, but that doesn't explain all the faults, so it is possible that you have a faulty disc which will need to be replaced. Before you do that however, check that you are using it correctly.

Keyword does not expect whole words to be entered and when you typed LEARNING and pressed Return it resounded with nothing at all. Pressing Return a second time — with no input — makes the system display the whole list of words starting with "a".

What you should do is type in just part of a word, for instance, LEARN. Keyword will then respond with LEARN, LEARNER and LEARNING. On selecting LEARNING you will get KNOWLEDGE and LEARNING, and on selecting the former you will see a list of more than 35 related words displayed.

## Disc or disk, that is the question

*THE sending of a tape with the magazine each month is very much appreciated when someone like myself, due to age and poor eyesight, finds the printed program listings difficult to read.*

*As a number of programs do not include instructions in the listing I have to refer frequently to the magazine and I was pleased to find in the latest issue an Index program which would enable me to make quick reference to the issue required.*

*I am sorry to find that there is a mistake in this program. If you wish to save and press T it will save on tape, but if you press D it comes up with Bad command at line 1630.*

*I have checked the program against the magazine listing, but cannot get it to run. I would very much appreciate your help in*

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## WHAT REVIEWERS SAY

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– The Micro User

"There is no doubt that this is a useful and powerful piece of software... Give me convenience every time."  
– Electron User

"Keyword will interest anyone who uses a word processor for more than notes to the milkman."  
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USER GUIDE

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➤  
solving my problem. — D.A. Pacy, Bexhill on Sea, East Sussex.

● The problem is a very simple one of the wrong disc command for your disc filing system. The command listed in the magazine is \*DISK, however, some DFS disc filing systems require the alternative spelling of \*DISC and the ADFS requires the completely different \*ADFS.

Replace the command in the listing with the one appropriate for your disc filing system — you don't say what it is so we can't tell you which one you require.

## Vigilante victory gains high scores

I AM 11 years old and have just recently bought an Electron. I have got a few games and have found out how to get a high score on Subway Vigilante. All you have to do is stay in the right hand corner and wait until the enemy walk over. Kick and punch the enemy, wait until they get up then kick and punch them again. — Martin Burke, Portsmouth.

## More power to the micro

IN response to Anne Dunn's question in the January issue of Electron User, some of my friends and myself have also had the problem of our computers resetting themselves. We found that this was not the fault of the power supply or plugs, but the power board inside the micro.

Open up your Electron — make sure the power is first switched off of course — and then turn over the small board on the right where the power goes in. In the corner by the socket there are two largish blobs of solder and we have found that the one nearest the socket had a small crack in it. This can be seen by pushing the small plug into the socket and wiggling it about.

This crack, which can be caused by plugging and unplugging the power lead a great many times, can be cured by resoldering it.

Anyone who has seen files zero bytes

long, or filenames with spaces in them may have wondered how to produce them. It is quite simple. When you have typed in your Basic program, first find out how long it is by typing:

```
PRINT TOP
```

Then save the program like this:

```
*SAVE "filename" FFFF0E00 FFFF(va  
lue of TOP) FFFF8023
```

Where it says filename enter a name of up to 10 letters. Spaces can be added and if you want a quote then enter three of them like:

```
*SAVE ""My Prog"" .....
```

The FFFF0E00 is the start address of the program you are saving and the FFFF(value of TOP) is the length to save. If you want the file to be zero bytes long then substitute the value of TOP with the same value of the starting address.

Saving a file with a value of TOP less than the start address makes the micro save forever. — Martin Bastable, Stafford, Staffordshire.

## No fun with Mystery Machine

I WAS interested to read Shelley Gibson's assessment of Fun School 2 in the August 1989 issue of Electron User.

I bought these discs a year ago and Mystery Machine has lived up to its name ever since: I cannot run the game because for some incomprehensible reason it is the only one of the lot that is incompatible with the Electron. I have attempted many times to insert the five-line Basic routine which

accompanied the article into early lines of the file MACHRUN as was suggested by customer services. Running this amended program just dims the screen and produces the unhelpful information Searching. Where have I gone wrong? — Miles Golding, London.

● Unfortunately, Mystery Machine will not run on the Electron with a disc system due to memory clash problems.

## More arcade conversions

I HAVE been reading your magazine for quite a while now. Recently a friend bought an ST and one of the games included in the package was R-Type. This is not the first time I have seen this game, but it is the first time I have played it.

I believe that R-Type would be easy to convert to the Electron as many other arcade games, like Barbarian II, include a multi-load feature. If the conversion was done in Mode 5 I think it would be a brilliant game.

Also, if anyone has a solution for Project Thesus, please send it in.

Now for something completely different. Here is a way of retrieving a program from cassette with damaged or corrupt blocks. Type:

```
*OPT2,0
```

and load the program. This simply ignores all error messages. — Stuart Fuller, East Sussex.

● R-Type is a very complex game which would be very difficult to convert to the Electron. Can anyone prove us wrong?

## What's on the disc menu?

I HAVE an Electron with a recently added disc drive, but had started a subscription to the magazine and cassette tape before obtaining the disc drive. However, with the help of one of the tape to disc transfer programs published in your magazine I have been able to transfer the monthly programs on tape to 5.25in disc.

Unfortunately, I find that I cannot load the various programs from the menu loading screen HEADER, because after selecting from the menu the machine reverts to tape loading.

Each of the programs can be loaded by CHAIN "filename", but this somewhat defeats the advantage of quicker access by disc.

Attempts to list HEADER will not list all the program, but one line contains the \*TAPE command. Changing this to disc and then resaving corrupts the program entirely.

When loading from tape HEADER is about 16 blocks long, but the altered program when resaved is less than one block. Can you explain why and if permissible, tell me how I can use the

menu screen with my discs? — J. Darlington, Locksheath, Southampton.

● Although the HEADER program is very short, it contains much hidden data which is stored after the program listing. What you can see when you list the program is just a tiny fraction of the whole code. Altering the program — the bit you can see — makes the Electron forget all the hidden code, so when saved the program is reduced in length. It is best to forget the tape menu and use a purposely written disc menu instead, such as the one in our October 1989 issue.

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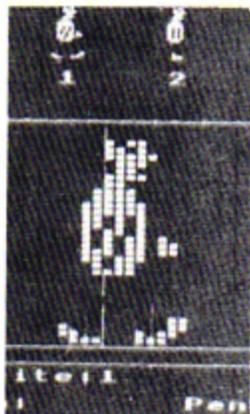
## ARCADE GAME Creator

Taken from the pages of *Electron User*, Arcade Game Creator 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:

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- Map generators that will squeeze a Mode 5 screen into 8 bytes!
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# 5

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Unless stated all software on this page is on tape.

Some of the products mentioned are also available on disc from P.R.E.S. through their advertisement in this issue.

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(see page 42)

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Can you work your way up from Harmless to Elite by flying from planet to planet, selecting goods at the best prices and trading them for a profit on other planets?

Will you survive the hectic space flights and docking procedures, all shown in superb 3D?

If you don't already own a copy of Elite, this is one game you simply MUST have in your collection!

## Barbarian

Barbarian is a fierce game of combat which will tax your skill and reflexes to the limit.

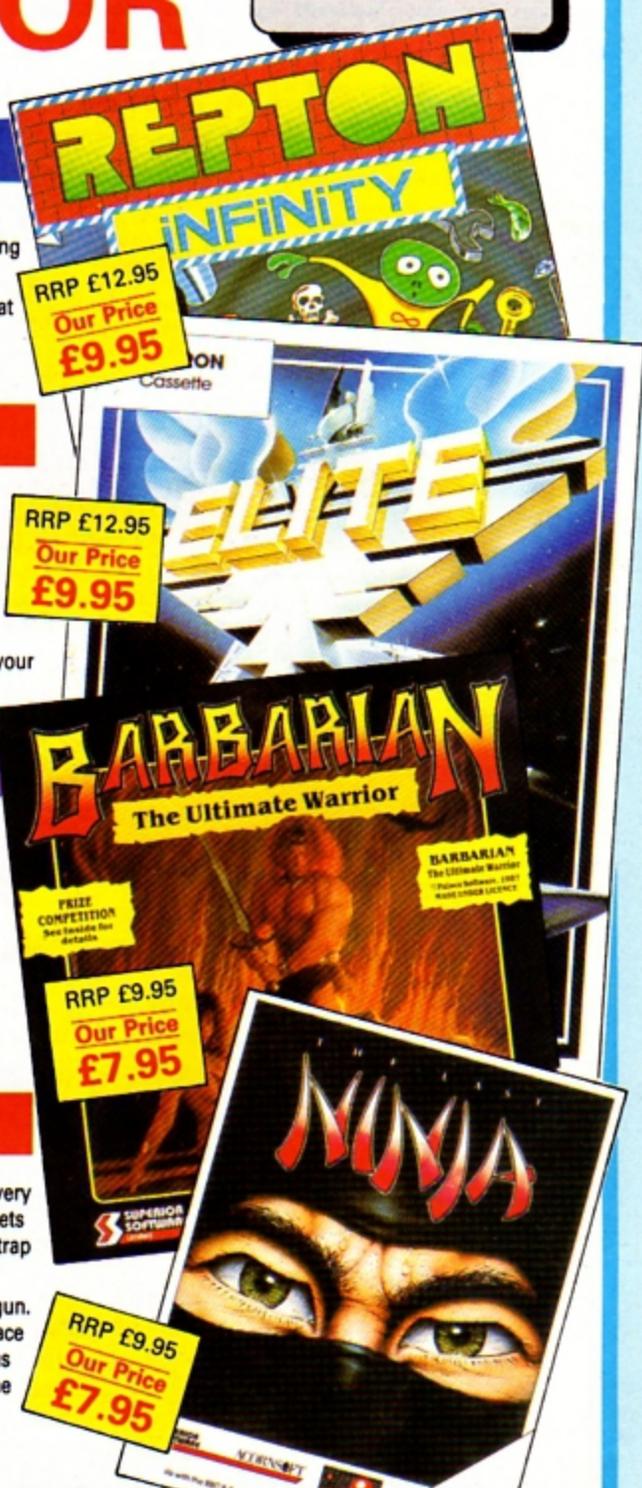
It is a game for one or two players in which you have to hack and slay your way through dozens of punishing screens on your way to saving the beautiful Mariana, abducted by Drax.

But be careful, you'll need all your wits about you to have any chance of success against your dastardly opponent.

## The Last Ninja

The secrets of the Ninjitsu way had been jealously guarded for centuries, only once every decade were the scrolls seen at the ritual of the White Ninja. None coveted these secrets more than the evil Shogun. Seizing the opportunity of the ritual he sprang a fiendish trap that destroyed the brotherhood, except for one... You. The Last Ninja.

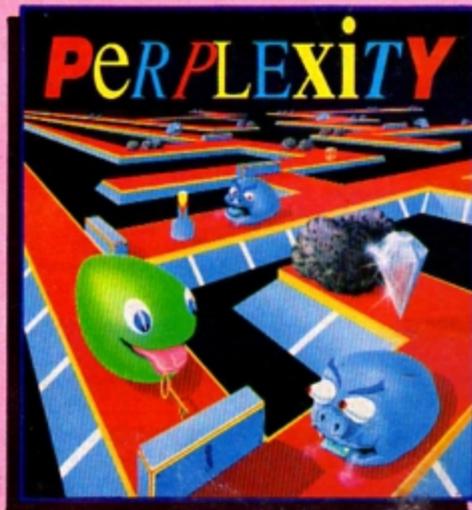
Your sworn oath is to recover the scrolls, you travel to the mystical lands of the Shogun. Already his guards are mastering the ways of the Ninjitsu. To reach the Shogun's Palace you must use all your weapon craft and fighting skills as you travel through dangerous wastelands and magnificent gardens, then descend into the direst dungeons before the final confrontation.



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On-screen information includes a constantly up-dating scanner/map, which allows you to plan your route, a score-line and timer/status icons. Passwords allow you to skip completed levels.

PERPLEXITY combines the best puzzling features of REPTON games with superb 3D graphics, to give a highly addictive and visually brilliant game. Are you ready to face the challenge?

(The Electron version has the same graphics as the BBC Micro version.)

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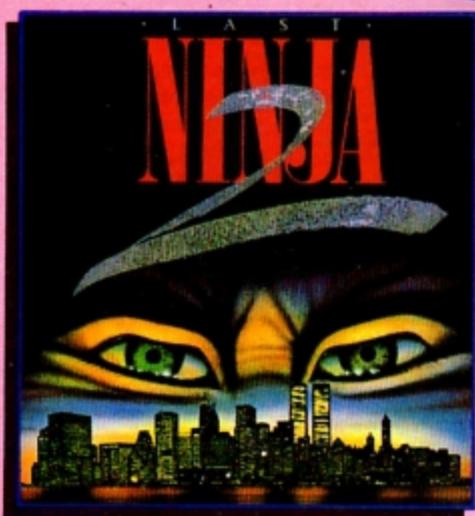
*'The game is a winner... very enjoyable, sure to give many hours of entertainment'...*Electron User



The Last Ninja



Skirmish



A Thug in the Cellar



Mugged on the Street

## LAST NINJA 2 - Back with a Vengeance!

Born in a time of peace, lived in a time of war; the shadow warrior returns. Leaping the abyss of time he comes to fulfill his destiny!

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(The screen pictures show the BBC Micro versions of the games.)



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