

A Database Publication

# electron

## user

Vol. 6 No. 4 January 1989 £1.25

**ELKVIEW**  
Display your  
own 300-page  
noticeboard



### REVIEWS

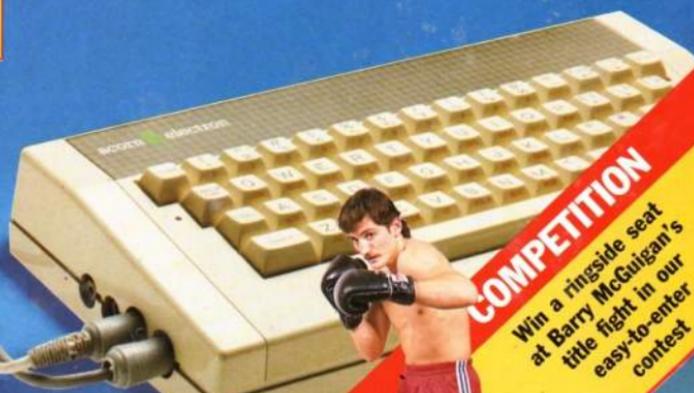
*Pegasus disc interface,  
By Fair Means or Foul,  
Play it Again Sam 3,  
Golden Figurine on test*

### UTILITIES

*Add an ADFS \*WIPE  
command, scroll  
screens, and print  
holder listings*

### GAME

*Sheep dog trials:  
Type-in listing*



**COMPETITION**  
Win a ringside seat  
at Barry McGuigan's  
title fight in our  
easy-to-enter  
contest

T H E · L A S T

# NINJA



LEVEL 1



LEVEL 2



LEVEL 5



LEVEL 6

## THE LAST NINJA ... THE STATE OF THE MARTIAL ARTS

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, magnificent gardens then descend into the direst dungeons before the final confrontation . . . You cannot fail. You are the Last Ninja.

BBC Micro Cassette ..... £9.95 Acorn Electron Cassette ..... £9.95  
 BBC Micro 5 1/4" Disc ..... \$11.95 BBC Master Compact 3 1/2" Disc ..... \$14.95

(Compatible with the BBC B, B+ and Master Series computers)

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

THE LAST NINJA, one of the greatest No. 1 hits on the Commodore computer, is now available for the BBC Micro/Master and Acorn Electron computers, under licence from System 3/Activision (UK) Ltd.

**SUPERIOR SOFTWARE**  
 Limited

**ACORNSOFT**



**OUR GUARANTEE**

- All mail orders are despatched within 24 hours by first-class post.
- Postage and packing is free.
- Faulty cassettes and discs will be replaced immediately.

(This does not affect your statutory rights.)

24 HOUR TELEPHONE ANSWERING SERVICE FOR ORDERS



# CONTENTS

## Cover Story

### 28 ElkView

Create your own colourful noticeboard and information service containing up to 300 pages of text and graphics with this handy utility.

### 5 News

News of the latest software and hardware soon to be revealed, a show report plus the latest Gallup Chart.

### 8 Hardware Projects

Joe Pritchard continues with his series constructing useful DIY add-ons for your Electron.

### 11 Discovery

This month's article in the series investigating discs adds a \*WIPE command to the ADFS.



### 14 Software

Our panel of critical experts casts its eyes over *Play It Again Sam 3*, *By Fair Means or Foul* and *Golden Figurine*.

### 19 In Action

We present a flexible utility to help you plan for your retirement.

### 24 Competition

Win a ringside seat at Barry McGuigan's title fight in February for yourself and a friend in our easy-to-enter contest.

### 25 Pegasus

This brand new disc interface for Plus 1 and Rombox owners is given a thorough workout. We are very impressed.

### 31 Specialist

A powerful utility to enable you to print out program listings in a variety of styles.

### 37 Arcade Corner

More hints, tips, cheats and pokes for top chart-busting arcade games – including *Blogger* and *Life of Repton*.

### 39 Micro Messages

The pages you write yourselves. A selection from the lively letters you have been sending us over the past few weeks.

### 47 Scroller

This short program demonstrates how to smoothly scroll the screen horizontally one pixel at a time.

### 48 Pendragon

He's been away for a spell, but now he's back with more help for lost adventurers everywhere.

### 51 Sheep Dog Trials

Don't ewe sit there looking sheepish – round up your friends and see if they can pen those wayward woolly jumpers.

Published by  
Database  
Publications Ltd  
Europa House,  
Adlington Park, Adlington,  
Macclesfield SK10 4NP.  
Tel: 0625 878888  
(Editorial, Admin, Advertising),  
0625 879940 (Subscriptions)

T Gold Mailbox: 72 MAG001  
Printer: 61456383  
Telex: 931218888 DB



22 033 Jan-June 1988

Managing Editor  
Derek Meakin

Group Editor  
Alan McLachlan

Features Editor  
Roland Waddilove

Production Editor  
Peter Glover

Reviews coordinator  
Pam Turnbull

Promotions Editor  
Christopher Payne

Advertising Sales  
John Snowden  
Peter Babbage

News trade distribution:  
Diamond Europress Sales & Distribution, Unit 1, Burgess Road, Ivyhouse Lane, Hastings, East Sussex TN35 4NR, Tel: 0424 430422

Printed by Carlisle Web Offset

Electron User is an independent publication. Acorn Computers Ltd. are not responsible for any of the articles in this issue or for any of the opinions expressed.

Electron User welcomes program listings and articles for publication. Material should be typed or computer-printed, and preferably double-spaced. Program listings should be accompanied by cassette, tape or disc. Please enclose a stamped, self-addressed envelope, otherwise the return of material cannot be guaranteed. Contributions accepted for publication will be on an all-rights basis.

ISSN 0952-3057

© 1989 Database Publications Ltd. No material may be reproduced in whole or in part without written permission. While every care is taken, the publishers cannot be held legally responsible for any errors in articles or listings.

Database Publications is a division of Europress Ltd.

## Back to school

10 educational games for the Electron for just £5.95

Learning has  
never been  
such fun!

fun

DATABASE  
EDUCATIONAL  
SOFTWARE

school

2

A computer is an ideal teaching tool for young children – if you have the right software.

Fun School 2 is available for three age groups: Under-6s, 6-8 years and Over-8s. Each pack consists of eight colourful and exciting programs carefully designed by a team of educationalists.

The computer itself monitors the child's progress. The skill level – initially set by parents – is automatically adjusted to suit the child's ability.

Now children can enjoy using their parents' computer while they learn at their own pace.

*You can give your children an unfair advantage with Fun School 2 – it's the ideal way to introduce youngsters to the joys of using computers.*

Detailed instructions are supplied with each pack giving educational help to parents and teachers, together with full instructions for each program.

A colourful  
button badge  
with each  
package!



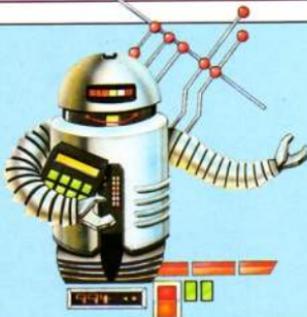
**Fun School 2 for 6 to 8 year olds contains:**

- **Number train:** Calculations made enjoyable
- **Shopping:** Which shops for which products?
- **Maths Maze:** Fun improving arithmetical skills
- **Treasure Hunt:** Introduction to coordinates
- **Bounce:** Get to grips with angles
- **Packing:** Discover tessellating shapes
- **Caterpillar:** Word building challenge
- **Number jump:** Have fun practising tables



**Fun School 2 for Under-6s contains:**

- **Shape Snap:** Colourful shape recognition
- **Find the Mole:** Experiment with number sizes
- **Teddy Count:** Ideal introduction to numbers
- **Write a Letter:** Creative fun at the keyboard
- **Colour Train:** Play at spotting colours
- **Pick a Letter:** Word building made easy
- **Spell a Word:** Enjoy naming the pictures
- **Teddy Bears Picnic:** Move around a maze



**Fun School 2 for Over-8s contains:**

- **Build a Bridge:** Shape-fitting challenge
- **Passage of Guardians:** Enjoy anagrams
- **Unicorn:** First steps in problem solving
- **Logic Doors:** Mapping made easy
- **Souvenirs:** An introduction to travel
- **Code Boxes:** Discover binary arithmetic
- **Mystery machine:** Have fun breaking codes
- **Escape:** A final check on progress

**ORDER FORM**

Please supply Fun School 2 for the Electron

Ages	Tape £9.95*
Under-6	
6-8 years	
Over-8s	

\* Add £2 Eire/Europe, £4 Overseas

- Cheque payable to Database Software  
 Please debit my Access/Visa card no:

Expiry date: /

Name \_\_\_\_\_

Address \_\_\_\_\_

Postcode \_\_\_\_\_

Signature \_\_\_\_\_

**SEND TO:** Database Educational Software, FREEPOST, Europa House, Adlington Park, Adlington, Macclesfield SK10 4YB.

Order Hotline: 0625 879920 (Credit card only)

EU1

## Slogger settles in

AFTER making the long trek from Kent, Slogger is settling into what managing director Andrew Hildig describes as prestigious premises in Bristol.

"Electron users may be aware that we've had problems recently due to the lack of qualified staff following the move", he added. "But I'm pleased to say everything is fine now.

"After lengthy discussions, Project Expansions which was based in Hampshire has joined us to provide a very effective force dedicated to the Electron market.

"This gives us the services of Chris Rudge who was responsible for the four-channel sound and user port cartridge a year ago, and the Pluscom rom.

"Chris has already been helping us produce the Rx Remote Expansion and Plus 2 interface board. We're all settled in now and working well together, which bodes well for the future".

## Breakthrough boosts Electron's prospects

AN important breakthrough that promises to extend the useful life of the Electron saw its launch at the Electron & BBC Micro User Show.

Surrey based Pres (0276 72046) featured its Advanced File Manager, described by owner John Huddleston as "the ultimate front end system for disc users". He heralded AFM as "the major software contribution of the show for the Acorn range".

A year of work went into the launch of AFM which runs on the Electron, BBC Micro, BBC Master 128 and Compact with second/co-processors and Acorn compatible versions of DFS and ADFS.

"The most powerful part of Advanced File Manager is its copy routines which allow the user to copy files between different drives - DFS and ADFS - by highlighting filenames on

screen", said John.

AFM follows the Pres masterplan of upwards compatibility and it has been allocated a special orsword call by Acorn to allow easy access to loading routines.

One of the strongest features of AFM is its two-stage copy routine. With both source and target directories shown on screen the files to be copied are marked and the computer can then be left to get on with it.

Electron specialist Slogger (0272 745244) used the show to highlight its long-awaited Remote Expansion (Rx). This offers a low cost way of upgrading to a 3.5in or 5.25in disc system with add-ons contained in the custom built case.

The Rx comes complete with mains on/off switch and internal power supply and is quite capable of holding the weight of a

monitor or TV.

To complement the Rx, Slogger also launched its Plus 2 interface. Fully compatible with the Rombox Plus and Plus I, it offers two more cartridge slots, three rom sockets, the RS423 interface and user port.

Completing the Slogger showcase were its analogue interface for the Rombox Plus and its joystick interface.

It does not need a Rombox Plus or Plus I unit.

## FACSIMILE FACILITATED

MICROLINK subscribers have been spared the problems reported by bewildered users of Telecom Gold's new fax service Mailfax.

Up to 30 per cent of messages were reportedly being addressed to invalid numbers because users experienced considerable difficulty understanding what to do.

But MicroLink (0625 878888) has come up with a simplified method for using the facility, called Easy Fax.

"People were being asked to key in all sorts of different sequences in order to send fax messages", said MicroLink systems manager Tim Clarkson. "Even I found Mailfax difficult to use.

"But we've re-written the front end of the program for our own subscribers - now all they need do is type in the telephone number of the fax machine they want to send their message to".

## It's a family battle

FATHER and son programming team Ake and Henrik Andersson devised the latest Electron game from CDS Software (0302 21134).

Tankattack is an interactive computer game follow-up to the pair's successful board game. It can involve two, three or four players.

Each player takes the role of a Tank Corps general commanding one or more armoured divisions. The objective is to capture the enemy's headquarters or destroy all his forces by strategic deployment of

your weaponry.

Weather, morale, foresight, skill and judgement can all affect the outcome. Careful management of repair facilities also helps, along with a degree of good fortune.

The computer issues all movement orders, results of fire duels, status of each unit and even a daily newspaper, War News, which gives a full report of each day's fighting and the weather prospects for future battles.

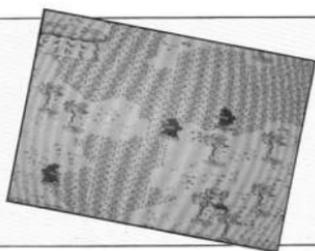
"We've taken a great deal of time and made a huge investment to ensure the



Tank Attack authors Ake and Henrik Andersson plan their strategy

success of Tankattack", said CDS sales director Martyn Wilson.

# Gallup Software Chart



THIS MONTH	LAST MONTH	TITLE (Software House)	COMMENTS	PRICE
1	◁ 1	FRANKENSTEIN 2000 <i>Atlantis</i>	Still heading the charts. If you enjoy things that bump in the night combined with science fiction like Inner Space this is one for you.	1.99
2	◁ 2	SOCCER BOSS <i>Alternative</i>	There are not many totally new titles in the charts this month and this has been around for quite a while. Good value though.	1.99
3	●	COMMANDO <i>Encore</i>	Highest new entry this month is this repackaged title. Excellent value and one you should buy if you haven't already.	2.99
4	●	JOE BLADE 2 <i>Players</i>	The sequel follows close on the heels of the original and is an excellent game in its own right. Well worth buying.	1.99
5	●	JOE BLADE <i>Players</i>	Single colour Mode 4 screens and very little sound, but a very enjoyable game which will keep you playing for many hours.	1.99
6	●	PRO GOLF <i>Atlantis</i>	Back again, this simulation has good clean graphics and does both the golf enthusiast and budget player proud.	2.99
7	●	GRID IRON <i>Top Ten</i>	A quick trip across the Atlantic leaves you with another sport simulation - this time American football with all its associated pitfalls.	2.99
8	●	MONKEY NUTS <i>Bug Byte</i>	A new entry from Bug Byte, a name which hasn't been in the charts for a while now. No full-priced games from them though.	1.99
9	●	PLAY IT AGAIN SAM 3 <i>Superior</i>	Sam compilations are planned to reach the round dozen this year. The third offering gives you Commando, Palace of Magic, Killer Gorilla I and II.	9.95
10	●	GOLDEN FIGURINE <i>Atlantis</i>	A simple but excellent way to discover the puzzles and problems of arcade adventures. Fast-moving and challenging.	1.99
11	●	PLAY IT AGAIN SAM 4 <i>Superior</i>	The fourth in the series gives you Frak, the new Cosmic Camouflage, Guardian and Spellbinder to come to grips with.	9.95
12	●	CHUCKIE EGG <i>A &amp; F</i>	Cast your mind back and you will remember the egg shaped fiend in his toil through this platform and ladders game.	9.95
13	●	FOOTBALLER OF THE YEAR <i>Gremlin</i>	Football games seem to retain their popularity and this full priced offering, first released several years ago, is no exception.	9.95
14	▽ 7	REPTON THROUGH TIME <i>Superior</i>	A must for ardent Repton fans. As you would expect, there are plenty of puzzles from the prehistoric to the modern.	9.95
15	▽ 4	COMBAT LYNX <i>Alternative</i>	This wartime helicopter simulation sets a mission for the adventurous. A good introduction to the world of flight simulators.	1.99
16	●	FLIGHT PATH 737 <i>Anco</i>	Another airborne offering, this time aboard a commercial liner. A different type of simulation with a new set of considerations.	2.99
17	▽ 11	GOLF <i>Blue Ribbon</i>	Not one to help with your swing perhaps, but it is still reasonably absorbing and requires a certain amount of skill.	1.99
18	●	REPTON 3 <i>Superior</i>	There is little else to be said about Repton - this is a superb series of games that all Electron users should have.	9.95
19	▽ 14	DARTS <i>Blue Ribbon</i>	Three different games to choose from: 501 and Cricket are the most worthwhile. Simple graphics and little sound.	1.99
20	●	AROUND THE WORLD IN 40 SCREENS <i>Superior</i>	Repton Infinity is about to make its debut, but you can take your green friend on a tour via the Oceans and the Arctic in the meantime.	6.95

★ ★ ★  
**AMAZING**

**SOFTWARE**  
*Bargains*

★ ★ ★  
**OFFERS!**

## JOYSTICKS

**VOLTFACE DELTA  
3B TWINS**

(for use with Plus 1 or BBC)  
Normally £24.95 -  
NOW £19.95!

**ELECTRON JOYSTICK  
INTERFACE & SOFTWARE**  
£14.95

**QUICKSHOT II TURBO  
JOYSTICK**  
£13.95

Buy both for only £24.95!

**SALE**

Quickshot I ..... £4.95  
Quickshot II ..... £11.95  
Cheetah 125 ..... £9.95

## SPECIAL OFFER

Cricket	Uranians
Skyhawk	Hunkydory
Jack Attack	Star Force Seven
Ice Hockey	Plan B
Tennis	Squakaliser
Roboto	Savage Pond
Twin Kingdom Valley	

Or £2.35 Each **ANY 5 FOR £9.95** Or £2.35 Each

## SUPERIOR DEAL!

Deathstar	Repton 2
Mr Wiz	Repton 1
Chess	Draughts
Tempest	Overdrive
Fruit Machine	Stranded
Invaders	

Or £2.35 Each **ANY 5 FOR £9.95** Or £2.35 Each

Acornsoft Hits 1 ..... £4.95  
Acornsoft Hits 2 ..... £4.95  
Karate Combat ..... £4.50

## EDUCATION

Maths with a Story 1	RRP	Offer
Maths with a Story 2	10.95	8.95
Answer Back Junior Quiz	9.95	7.95
Answer Back Senior Quiz	9.95	7.95
Map Rally	9.95	7.95

## ELECTRON SPECIALS

**ELECTRON COMPUTERS** ..... £59.95  
(includes power supply aerial lead & 90 day warranty)  
**PLUS ONE INTERFACE** ..... £49.95

### PACKAGE ONE

**PLUS 1, VIEW & VIEWSHEET** ..... £69.95

### PACKAGE TWO

**ELECTRON COMPUTER, PLUS 1 & VIEW ONLY** ..... £109.95

### PACKAGE THREE

**VIEW & VIEWSHEET ROMS** ..... £21.95

### PACKAGE FOUR

**LOGO, VIEW, VIEWSHEET for** ..... £49.95

And get **Lisp Rom** **FREE**

### PACKAGE FIVE

**PLUS 1, VOLTFACE 3B TWIN JOYSTICKS with VIEW or VIEWSHEET** ..... £79.95

### PACKAGE SIX

**PLUS 1, LOGO, VIEW, VIEWSHEET** ..... £109.95

And get **Lisp Rom** **FREE**

Felix in the Factory	£2.95	Swoop	£2.95
Croaker	£2.95	Jetpower Jack	£2.95
Bumble Bee	£2.95	Galactic Commander	£2.95
Gauntlet	£2.95	Moonrider	£2.95
Killer Gorilla	£2.95	Bandits at 3 O'Clock	£2.95
Rubble Trouble	£2.95	Adventure	£2.95
Electron Invaders	£2.95	Swag	£2.95
Felix Fruit Monsters	£2.95	Escape from Moon Base	£7.95
Chess	£2.95	Ghouls	£2.95
Danger LXB	£2.95	The Mine	£2.95
Franny	£2.95	Gyroscope	£2.95
Felix meets the Evil Weevils	£2.95	Cybertron Mission	£2.95
Stock Car	£2.95		

Any Five for Only £7.95

## HOME INTEREST

Crazy Tracer	£2.99	Desk Diary	£2.99
Snapper	£2.99	Graphs & Charts	£2.99
Boxer	£2.99	Theatre Quiz	£2.99
Turtle Graphics	£2.99	Watch Your Weight	£2.99
Chess	£2.99	The Complete Cocktail Maker	£2.99
Business Games	£2.99	Sci Fi Quiz	
Crime and Detection	£2.99	Dating Game	
Music Quiz		Royal Quiz	

Any Five for Only £7.95

Lloytron

**DATA  
RECORDERS**  
Only £19.95

Lead supplied **FREE**

Starstore ..... £1.95 (ROM)

StarWord .... 24.95! (ROM)

Electron Power Supply	£9.95
View	£14.95
VIEWSHEET	£14.95
Logo	£24.95
Lisp (Rom)	£9.95
Lisp (Cass)	£2.95
Mini Office I	£4.45
Advanced User Guide	£2.95

## RECENT RELEASES AT SPECIAL PRICES

Barbarian	Cass	3.5" Disc
Bone Cruncher	7.45	-
By Fair Means or Foul	7.45	-
Codename Droid	7.45	11.50
Crazee Rider	7.45	11.50
Elkr	7.45	-
Exile (NEW)	9.95	-
Life of Repton	5.95	-
Palace of Magic	7.45	-
Pipeline	7.45	11.50
Play it Again Sam	7.45	-
Play it Again Sam II	7.45	-
Play it Again Sam III	7.45	-
Play it Again Sam IV	7.45	-
Quest	7.45	-
Repton Infinity	9.95	-
Repton Thru Time	7.45	-
Spellbinder	7.45	-
Spycat	7.45	-
Shykers Run	7.45	-
Superior Col 3	7.45	-

## MORE GAMES AT SPECIAL PRICES

The Hunt	RRP	Offer
Village of Lost Souls	9.95	6.95
War Wizard	9.95	6.95
Skirmish	9.95	6.95
Kourtyard	9.95	6.95
Gold Run	9.95	6.95
Tarzon	9.95	6.95
Boulderdash	9.95	7.45
Breakthrough	9.95	7.45
Despatch Rider	9.95	7.45
Future Shock	7.95	5.95
Jet Set Willy 2	7.95	5.95
Phantom	7.95	5.95
Phantom Combat	9.95	7.45
Colossus 4 Bridge	11.99	9.50
Colossus 4 Chess	9.95	7.45
Psycharia	7.95	5.95
Strip Poker 2	7.95	5.95
Brian Cloughs F/Ball	14.95	11.50

**THOMSON**  
12" Screen  
High Resolution  
**MONITORS**

Now only £69.95

BBC or Electron lead supplied

**FREE**

## EDUCATION SPECIALS

Unword Spanish	Maffs O' Level 1
Unword Italian	Where?
Talkback	Biology
Workshop	English
Maffs O' Level 1	

ANY 2 £3.95!

\* Please add 95p P&P (Overseas £4.50).  
Make cheques/PD payable to Software Bargains  
\* All prices include VAT  
\* Goods despatched within 48 hours - subject to availability  
\* Out of hours answerphone: 0532 687735

**W**E built the output port for the Electron in the October 1988 issue, so this month we'll construct the input port – a simple matter of adding a further chip to the board we constructed last time and making a few extra connections.

Figure I shows the circuit diagram of the input port. The logic gates shown as IC1c, IC2c and IC2d are unused portions of the gates we used last time to generate the select signal for the project's output section. To generate a select signal for the input section, we need to have a signal present when a read is being attempted from any address in Page & FD.

These three gates generate this signal and apply it to the input buffer, IC4. This is a 74LS245 chip, a rather special device called a tri-state buffer. We can't just connect the I0 to I7 input lines to the data bus of the computer as this would cause the machine to crash. The reason is that the signals put on to the data bus by the input lines would conflict with data bytes that the CPU is trying to read from memory.

In microprocessor circuits, it is crucial that at any one instant only one device, be it an address in memory or a peripheral, is trying to make a byte available to the CPU. For this reason, when an input device is connected to the data bus it is connected through a tri-state buffer. When this buffer is not selected by a select signal, it's as if the input device doesn't exist as far as the CPU is concerned.

### CPU in the dark

In our case, when the 245 chip isn't selected the signals on the I0 to I7 lines are not passed on to the data bus and the CPU is oblivious to the presence of whatever devices we have got connected to I0, I1, and so on. However, as soon as

# Yet more good port

## Joe Pritchard continues development of the input/output port

the device is selected, these signals are passed on to the data bus to be read by the CPU.

Each input line, I0 to I7, is connected to 0V by a 1k resistor. This pull down resistor, forces the input lines to assume a logic zero in the absence of any input signal. If these resistors are omitted, the input lines will float at a voltage level that depends to a great extent on the particular 245 chip.

The practical result is that the value read from an unconnected input signal may fluctuate between logic zero and one at random. Not very desirable. I had one such circuit that fluctuated when I touched the input lead with my finger. The pull downs force uncommitted inputs to assume a logic zero.

Figure II shows the additional construction information needed. It shows the connections needed to get the input circuit working, but doesn't include the connections shown last time for the output circuit. No further connections are needed to the edge connector.

Don't forget to connect a 1k (1/8 or 1/4 watt)

resistor between each of the input lines and 0V – only one such resistor is shown on the diagram for clarity. Note that these resistors are connected to the input lines of the 245 chip, not the data lines of the Plus 1.

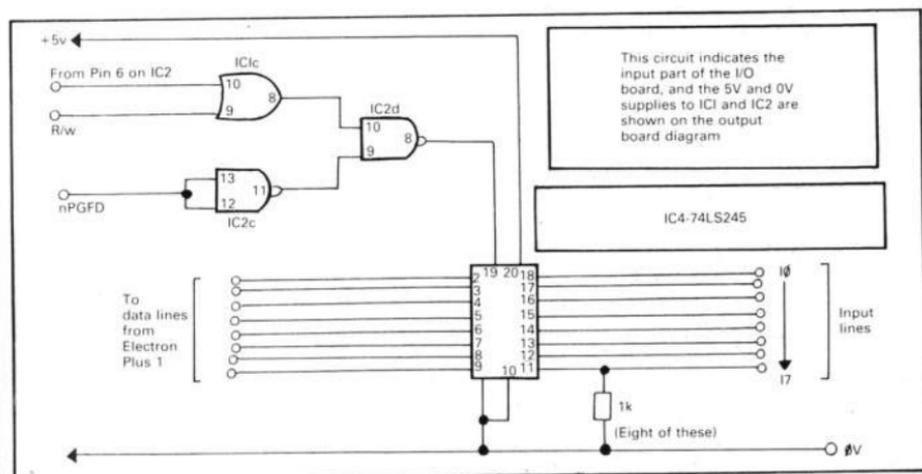
The veropins marked Input are for incoming electrical signals. For now, solder a piece of flexible wire to the 5V line and bare the other end. We will use this to test the input port.

### Testing, testing

Check all the wiring carefully, especially that to the Plus 1 data lines. Make sure that there are no blobs of solder or whiskers of wire between veroboard tracks. Turn the Electron off, remove or turn off any peripherals that use Page & FD and then insert the edge connector into the cartridge slot nearest to the keyboard, taking care to get it the right way around.

Now turn on the Electron on. If the normal start up message does not appear within a second or so turn off immediately. If the start up message doesn't come up, unplug the edge connector (there's enough room to get a grip on the edge connector without yanking it out by the ribbon cable) and check the wiring.

Once a start up message has appeared, type in



The input part of the I/O board

Program 1 and run it:

```
10 REPEAT
20 PRINTTAB(10,10);%F000;
30 UNTIL FALSE
```

Momentarily connect each of the input pins to 5V with the flexible lead you soldered to the 5V line. You should see the number displayed change each time, as like this:

Input connected to 0V	Display
None connected	0
ID7	128
ID6	64
ID5	32
ID4	16
ID3	8
ID2	4
ID1	2
ID0	1

Remember that these are the input veropins, not the pins connected to the ribbon cable and hence to the cartridge slot data lines. Those pins should never be connected directly to 0V – it would crash the Electron and could possibly damage it.

Should this test work, congratulations, you've got the input port working. Now we can finish it off. The circuit can be built up in a plastic case available from such companies as Tandy and Rapid Electronics.

A slot can be cut in the side for the ribbon cable, and the cable should be stuck to the inside of the box with epoxy resin to prevent it being yanked off the circuit board.

### Making the terminals

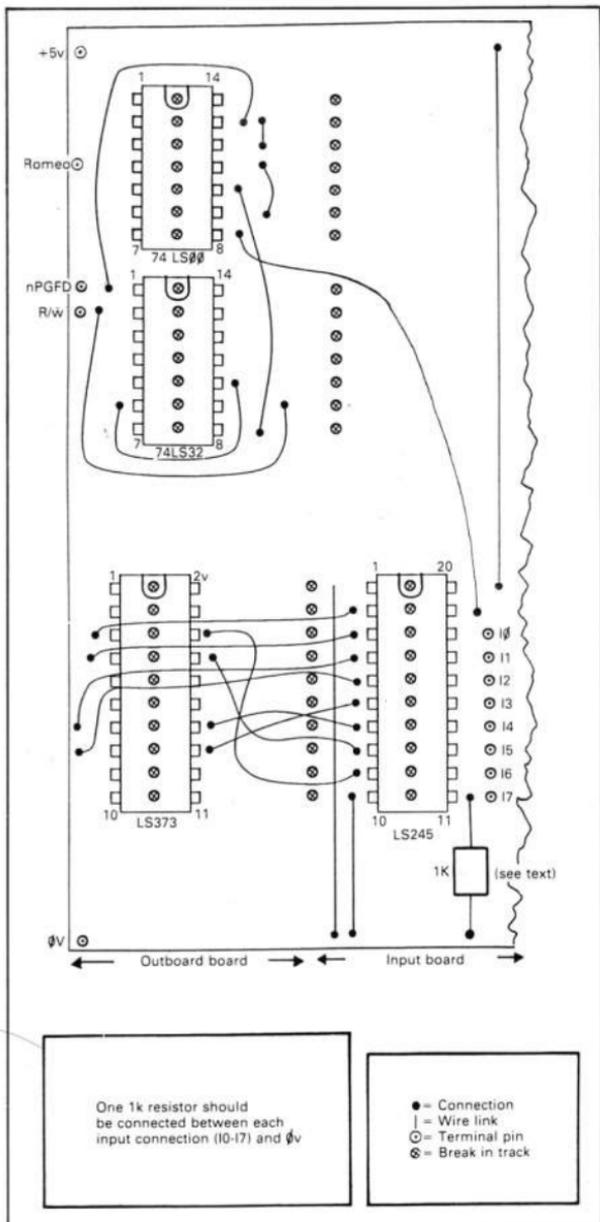
I used a big lump of Blue Tack to stick the board to the bottom of the box. The output, input and 0V lines can then be taken to some terminals on the front or top of the box. Here are two suggestions:

**4mm screw terminals:** These are available from Rapid Electronics and you will need nine of them. You could use red ones for output, green for input and a black one for the 0V line. These can be fixed to the top of the box by drilling a couple of rows of holes for the screws of the terminals, and then pushing a terminal in to each hole and tightening up the supplied nut.

The connections to the circuit can then be made with flexible copper wire, soldering the wire to the metal pin of the screw terminals.

**Terminal blocks:** A couple of three amp screw terminal blocks, available from electrical shops, can be used, with the wires from the circuit board screwed into one side of the block and the other side being left for your connections. The blocks can be secured to the lid of the plastic box using small nuts and bolts.

● Next month we'll look at the basic use of the port, and examine how a variety of devices can be connected to it. We'll also start on some projects that will make use of this or any other 8 bit I/O port.



Adding components to the output board to make the input board

**Everything you ever wanted to know about your  
Electron but were afraid to ask is in these  
back issues of Electron User magazines  
and on the associated tapes**

ONLY  
**£5.95**  
per  
bundle

electron  
user

**BACK ISSUE BUNDLES**

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 these back issue bundles. Each one is packed with games, utilities, features and programming tutorials.

*Here's what you'll find in the  
July-December 1988 bundle:*

**July 1988 issue:**

*Games:* Knockout Whist, Randall Rabbit, Tilley the Train, Tennis. *Utilities:* Shadow ram filing system, machine code score routines, Easy Reader. *Reviews:* Advanced Plus, Spycat. *Features:* Machine code tutorial, adventures, Memory Map part 3.

**August 1988 issue:**

*Games:* Fox and Geese, Solitaire. *Utilities:* Mini Prolog, disassembler. *Reviews:* E00 ADFS, Repton Thru Time, Barbarian, Romplus-144. *Features:* Machine code tutorial, adventures, Memory Map part 4.

**September 1988 issue:**

*Games:* Fire!, Bulls and Cows, Crypton, Oxo. *Utilities:* Sprite routines, Listif. *Reviews:* Anarchy Zone, Stranded, Round Ones, Times Computer Crosswords, Advanced User Guide. *Features:* Basic rom routines revealed, adventure tips.



**October 1988 issue:**

*Games:* Pistol Shooting, Spencer Spider, Gobbler. *Utilities:* Scroller, Rom Manager. *Features:* Rom routines revealed, adventure tips, Plus 1 hardware project. *Reviews:* Music 5000, Shark, Breakthrough, Plane Crash, Golf, Darts, Control Applications of Micros.

**November 1988 issue:**

*Games:* Rally Driver, Bomber. *Utilities:* Elite Cheat, Disc and rom routines. *Features:* Using the Hybrid Music System, Adventure tips, Heyley interview. *Reviews:* Triple Deckers, Cheat it again Joe, Pipeline, Rebel Planet, In Search of Atahaulpa, DIY service manual.

**December 1988 issue:**

*Games:* Santa's Warehouse, Blow football, Senet board game. *Utilities:* Cut phone bills, Predict the pools. *Features:* Tape problems cured, Osfile routines explained, Floating point maths made easy. *Reviews:* Sam 4, Joe Blade, Frankenstein.

electron  
user

**CASSETTE SURPRISE BUNDLES**

For just £9.95 we'll send you a bundle of FIVE assorted tapes packed full of some of the best programs featured this year in *Electron User*.

Give your fingers a break and save yourself hours of typing by getting these special tapes with all the listings from the magazine ready for you to load and run.

5 tape  
bundle  
**£9.95**



*Some of the programs on recent tapes:*

**June 1988:**

Fibonacci, Nim, Bomb Alert, Procedure and function lister, car route database, scrolling map routines.

**July 1988:**

Knockout Whist, Randall Rabbit, Tilley the Train, Tennis, machine code score routines, Easy Reader.

**August 1988:**

Fox and Geese, plus Solitaire board games, Mini Prolog, machine code disassembler.

**September 1988:**

Crypton, Fire, Oxo, Lister, sprite utilities, Listif.

**October 1988:**

Aussie Suds Part 1, Pistol Shooting, Spencer Spider, Gobbler, rom routines.

**November 1988:**

Arcade action in Rally Driver and Bomber. Elite cheat utility. Disc and rom routines.

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

**In Part 3 of his floppy disc series Roland Waddilove invites you to add an extra \*WIPE command to your ADFS**

**T**HE advanced disc filing system used in the Acorn Plus 3 and Pres AP3 has an excellent range of commands for loading, saving and deleting files on disc, plus a whole host of sundry general housekeeping utilities. On the whole, it is a far more flexible and much improved filing system than its predecessor the DFS.

There is, however, one area where the old DFS still wins hands down, and that's when it comes to deleting files. The most commonly used DFS command for erasing a file is \*WIPE. This prints the name of each file on the screen and prompts for Y or N to indicate whether you want that particular file deleted.

The ADFS alternatives are either \*DELETE or \*DESTROY. Erasing several files in one go can be frustrating, as the former command will only delete a single file, and the latter, although it will accept wildcards, often can't be used as the filenames are too similar.

For instance, try erasing the following three programs without touching Prog2:

```
Prog1
Prog3
Prog4
```

You must type in three separate \*DELETE commands like:

```
*DELETE Prog1
*DELETE Prog3
*DELETE Prog4
```

You can't use \*DESTROY, as:

```
*DESTROY Prog*
```

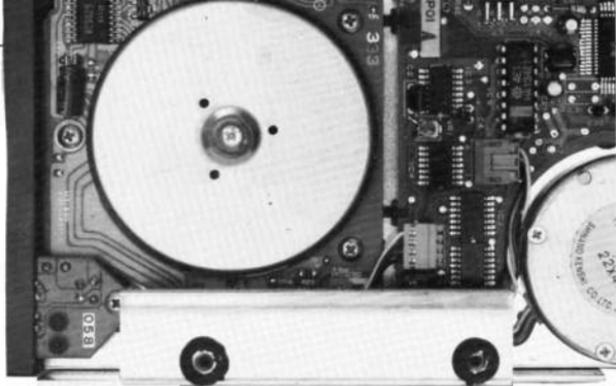
would also erase Prog2 as well as it also fits the wildcard specification. DFS users however, would simply type:

```
*WIPE Prog*
```

and press N when prompted to delete Prog2.

The utility presented here adds an extra command to the ADFS which emulates the DFS's \*WIPE facility. It will also work with the DFS, but as there's already a built-in command that does exactly the same job there's not much point in using this program).

There are two versions, a Basic and a machine



# Disc wipe-out

code listing. The two programs are identical apart from the language they are written in. Enter and save Program I, the Basic version. Using it couldn't be easier—just chain it or load and run it. Each file in the currently selected directory will be printed on the screen and you have the opportunity to press Y or N to indicate whether you want it to be deleted.

Program II creates an identical machine code version which is automatically saved to disc with the filename WIPE. Save the assembly language source code program as well, but under a different name. With this version you just type \*WIPE to call it up.

The advantage over the Basic listing is that it won't affect any program in memory, in fact you don't even need to be in Basic to use it. For instance, try it from View's command screen, or while Lisp programming.

It works by making use of yet another operating system call only available to disc users—osgbpb, which is located at &FFD1 in the os rom. Like the osfile routines that we looked at last month, this single call is able to perform quite a wide variety of functions.

The one we are interested in is osgbpb with the A register set to eight, which enables us to read the directory off a disc. This contains a list of all the files present, so once we have this information we can display each one and delete it if requested.

The routine makes use of the parameter block

shown in Table I, and this must be set up before it is called. The first byte, which holds the currently selected directory's master sequence number, isn't of interest to us. Bytes one to four hold the address of a buffer where data is to be transferred to, and bytes 9 to 12 are used by osgbpb as a pointer into the directory.

At the start of the WIPE utility—line 70 in the Basic listing—the directory pointer at byte nine is set to zero so that the routine starts reading the directory from the beginning. The address of the buffer is stored at byte one and the number of files to read is also set to one. The operating system is then called with the X and Y registers holding the address of the parameter block.

A single file is read from the directory and its name is displayed on the screen by copying it from the buffer. (The first byte, by the way, tells you how long the filename is.) The program then waits for you to press Y or N, and if you press Y a

**Turn to Page 12 ▶**

```
>CAT Utilities Disc
Drive:0
Dir. $
DataFile HR (33)
M-WIPE HR (38)
SpreadSht HR (32)
VvSysHelp L (81)
>
*WIPE
DataFile :N
Invaders :N
M-WIPE :N
SCR0 :N
SpreadSht :N
WIPE :N
VvSysHelp :N
>
```

```
(36)
Option 00 (Off)
Lib. "Unset"
Invaders HR (36)
SCR0 HR (35)
WIPE HR (30)
```

Byte	Use
0	Important
1	Pointer to memory area to transfer data to
5	Number of filenames to read
9	Pointer into the directory

Table I: The osgbpb parameter block

```
10 REM ADFS *WIPE comand
20 REM By R.A.Waddilove
30 REM (c) Electron User
40 DIM block 13
50 DIM buffer 11
60 osgbpb=&FFD1
70 block!9=0
80 REPEAT
90 TX=block!9
100 block!1=buffer
110 block!5=1
120 AI=8
130 YZ=block MOD 256
140 YZ=block DIV 256
150 CALL osgbpb
160 IF block?5<=1 PROCDelete
170 UNTIL block?5=1
180 END
190
200 DEF PROCDelete
210 file$=""
220 FOR i=1 TO ?buffer
230 file$=file$+CHR$(buffer?i)
240 NEXT
250 PRINT file$;";
260 key=GET AND 80F
270 IF key=ASC("Y") PRINT "Y:OSCLI'D
ELITE "file$;block!9;TX ELSE PRINT"
280 ENDPROC
```

Program I

◀ From Page 11

\*DELETE is executed using the OSCLI command. The next filename is read and the process is repeated.

Fundamentally, it is a straightforward program which repeatedly reads a single filename and deletes it if requested until there are no more. You can tell when this is by checking the one

stored at byte five of the *osgbpb* parameter block. If this remains a one there are no more files to read, otherwise it is altered by the call.

One other point to watch out for is that when a file is deleted the remaining filenames in the directory are shuffled up to fill the gap. This means that the pointer into the directory - which is automatically incremented for you every time *osgbpb* is called - must be restored to the

previous value, or the next file will be skipped.

One enhancement you may like to attempt is to replace the OSCLI command in the machine code version with the *osfile* call to delete a file which was demonstrated in last month's article.

● And with that little poser, I'll leave you till next month where I'll be examining some of the other powerful *osgbpb* functions available to the disc drive owner.

```

10 REM ADFS *Wipe command
20 REM By R.A.WaddiLove
30 REM (c) Electron User
40 osgbpb=&FF01
50 osasci=&FFE3
60 oscli=&FFF7
70 FOR pass=0 TO 2 STEP 2
80 PI=&900
90 C OPT pass
100 Loop
110 LDA block+9 :STA temp
120 LDA block+10:STA temp+1
130 LDA #buffer MOD 256
140 STA block+1
150 LDA #buffer DIV 256
160 STA block+2
170 LDA #1
180 STA block+5
190 LDA #8
200 LDX #block MOD 256
210 LDY #block DIV 256
220 JSR osgbpb \read directory
230 LDA #1
240 CMP block+5 \file to delete?
250 BNE delete
260 RTS
270
280 .delete
290 LDY #1
300 .loop1
310 LDA buffer,Y
320 STA string+6,Y \copy name
330 JSR osasci \print name
340 INY
350 DEC buffer
360 BNE loop1 \more characters?
370 LDA #ASC'C'
380 JSR osasci
390 LDA #80D
400 STA string+7,Y
410 JSR &FFED \GET character
420 AND #8F
430 CMP #ASC'Y' \pressed Y?
440 BNE skip
450 LDX #string MOD 256
460 LDY #string DIV 256
470 JSR oscli \oDELETE file
480 LDA temp:STA block+9
490 LDA temp+1:STA block+10
500 LDA #ASC'Y'
510 JMP exit
520 .skip
530 LDA #ASC'N'
540 .exit
550 JSR osasci
560 LDA #80D \CR/LF
570 JSR osasci
580 JMP loop
590
600 \temp store for file counter
610 .temp
620 EQU 0
630
640 .block
650 EQU 0 \not important
660 EQU 0 \buffer address
670 EQU 0 \files to read
680 EQU 0 \file counter
690
700 \11 byte filename buffer
710 .buffer
720 EQU "*****"
730
740 \OSCLI string
750 .string
760 EQU "DELETE *****"
770 J
780 NEXT
790
800 as="SAVE WIPE 900 "+STRS"PI
810 PRINT "w";as
820 OSCLI as
830 PRINT "done..."
    
```

Program 11



'This must be the best adventure ever for the Electron' (Electron User)

# THE LOST CRYSTAL

A full-scale GRAPHIC adventure with 400 locations

The Rainbow Crystal, which has protected the people of Zaloria for many years, has been shattered into seven pieces by a mysterious bolt of lightning. Your task is to seek out the missing pieces and find a way to re-create the magical Rainbow Crystal.

- 400 locations, each one depicted in colourful high-resolution graphics.
- Graphics and text are displayed at the same time; no need to switch between text and graphic screens
- Intelligent moving characters with whom you may communicate and interact
- Advanced language and speech interpreters capable of accepting complex commands in plain English
- Fast position-save to tape/disc or memory
- No frustrating mazes or illogical puzzles

Please send me  
The Lost Crystal (Tick Box)

• Electron Twin Cassette Pack **£11.95**

• BBC B/B+//Master Twin Cassette Pack **£11.95**

• BBC B/B+//Master 5¼" Disc Pack **£13.95**

Each game contains Instruction Book and Help Book

ALL ORDERS DESPATCHED WITHIN 24 HOURS BY 1ST CLASS POST.

## ORDER FORM

Send to:  
EPIC SOFTWARE  
13 The Paddock,  
Kibworth Beauchamp,  
Leicester LE8 0JJ.

NAME .....

ADDRESS .....

..... POST CODE.....

I enclose Cheque/Postal Order for \$.....  
(Please add 70p P&P) payable to 'EPIC SOFTWARE'  
SEND LETTER IF YOU DON'T WANT TO CUT MAG.



# NEW! TEN of the BEST! EDUCATIONAL GAMES

Packed full of some of the best educational games from the pages of *Electron User*, the new Ten of the Best Educational Games is the ideal way for your children to learn about maths, spelling, anagrams, telling the time, general knowledge, and even the rudiments of running a business!

Specially compiled by the *Electron User* team to give a good grounding in all aspects of learning, and at the very special price of only £5.95 on tape, or £6.95 on 3.5in disc, this collection is a treat you and your children cannot afford to miss!

*Give your children hours of fun, and help them to learn the easy way by ordering your copy today.*

## THE PROGRAMS

**Company Count** – Work your way up through the company starting off as a messenger, and ending up as president!

**Hungry Harry** – Find out what it's like to be an assistant in a busy shop. Can you work out the correct change to give the customers?

**Lemonade Stall** – Try your hand at running a lemonade stall at a popular seaside resort.

**Dozer Disorder** – Fill in the

missing letters after they are bulldozed into a pit.

**Crocodile** – Unscramble the letters of a word before the crocodile gets you.

**Snail Trail** – See how good you are at general knowledge in this trivia quiz.

**Hiss** – Improve your spelling by guiding a snake round the garden eating up words in the right letter order.

**Maths Fun** – Test your powers of mental arithmetic.

**Odd One Out** – Pick the object that doesn't fit from the list of five.

**Yule Spell** – Guess the hidden word or you'll lose your Christmas presents!

Tape

£5.95

Disc

£6.95

Order your copy today, using the form on Page 45

# SOFTWARE • REVIEWS

**T**HE SAM 3 compilation includes two games that did not originate in the Superior stable – Elite's *Commando* and Micro Power's *Killer Gorilla*. *Commando* is the officially licensed home computer version of the arcade machine game of the same name. For the information of anyone who has not been in an amusement arcade in the last few years, or who missed the game on its initial release for the Electron, *Commando* is another of the one-man-against-the-odds combat games that have become so popular in recent years.

You are Super Joe, the commando of the title. Armed only with a submachine gun and half a dozen grenades, you must penetrate the enemy defences and destroy the fortress. Easy to describe, but of course, much less easy to do.

*Commando* features a number of different screens. Once you have fought your way from the bottom of one screen to the top it scrolls down to reveal new hazards. You thus get the impression of fighting one continuous battle.

Every new screen brings a fresh horde of enemy soldiers streaming from all quarters. Your machine gun makes short work of them, and your grenades come in handy when their numbers become too great, but remember that they are equipped with similar weapons. One stray bullet or grenade can prove fatal, so keep a sharp eye about you.

This re-released *Commando* incorporates one key improvement. When playing the original game you sometimes could not determine from the screen display when you had been killed. Now there is no doubt. A blinding white flash



*Commando*



heralds your call-up to the ranks of the ex-commandos.

I have never been particularly impressed by *Commando*. Its main drawback is that it comes off very badly from the dilemma that faces every programmer – weighing up the pros and cons of each screen mode and the conflicting features of screen resolution, screen size and available number of colours.

*Commando* runs in Mode 5 which allows only four colours on screen at any one time. I found that many graphic features tended to merge into one another. Nevertheless, if you're a fan of shoot anything that moves games you could do worse than pick this one.

*Killer Gorilla* will need little introduction to the

majority of Electron owners. It is an excellent implementation of the ever-popular arcade machine game *Donkey Kong*. Although it was released in the relatively early days of the Electron, I have never seen another version that surpasses it in quality and playability. When an officially licensed version did the rounds of the popular home computers a few years ago I was interested to see that no Electron version ever appeared – *Killer Gorilla* got it right first time.

The game was inspired by the 1933 film *King Kong*. You play the part of Mario, a humble carpenter whose girlfriend the evil Kong has carried off to the top of an unsteady tower of scaffolding. You have to climb it to rescue her.

You scale each section of scaffolding, avoiding the barrels that Kong throws in an attempt to dislodge you. Unfortunately, these barrels are by no means your only problems – fireballs and custard pies also threaten to send you to a sticky end.

However, help is at hand. Large hammers hang above your head at intervals. Jump up and grab one and you can destroy any moving hazard that comes within reach. However, their effectiveness quickly wears off, often at fatally inconvenient moments. Moreover, Kong will not willingly surrender your lady; just as you catch up with him at the top of one section he whisks her up to the next.

**PLAY IT AGAIN SAM 3**

**Acorn Electron Cassette £9.95**

**SUPERIOR SOFTWARE Limited**

**ACORN SOFTWARE**

## Blast from the past

Program: *Play It Again Sam 3*  
Price: £9.95 (tape)  
Supplier: Superior Software, Regent House, Skinner Lane, Leeds LS7 1AX.  
Tel: 0532 459453

The game features four screens, each more difficult than the last. The first is a straight climb from the bottom to the top of the screen, the second introduces conveyer belts that keep changing direction. The third features lifts made of pieces of girder, and bouncing girders that can quickly cut down an inattentive carpenter.

The fourth and last screen looks perfectly straightforward, but is rapidly overrun with deadly fireballs. However, the screen also includes two hammers, and if you can reach them in time they will make short work of your fiery adversaries.

After you have completed this level and defeated the gorilla, you return to the first screen to find that things have changed, for the worse. The first screen now features gaps in the framework of girders – and you have to jump for your life. The conveyers on screen two move more quickly than before, as do the lifts on screen three. In all, the game has 15 increasingly difficult levels, enough to test even the most ardent hero. Killer Gorilla is a classic game that still provides hours of amusement.

Just as Killer Gorilla is an implementation of the arcade machine game Donkey Kong, Killer Gorilla II is a version of the arcade follow-up, Donkey Kong Junior. Older players may remember the game's original release, under the name of Zany Kong Junior. Unfortunately, that release had to be withdrawn for copyright reasons – I suspect that it was too good a copy of the arcade original.

In Killer Gorilla II the roles have been reversed. Mario – now called Morris – has defeated Kong and rescued his girlfriend; however, in an act of revenge he has captured Kong. You, Kong Junior, must rescue your elder.

As in Killer Gorilla Mark I, you must make your way from the bottom to the top of successive screens, but there the similarity ends. You start off in the jungle, and manoeuvre yourself around a network of platforms, vines and creepers, to the top of the screen where your caged parent sits helplessly. However, no sooner do you reach the brutal Morris and the cage than they are gone. The chase is on.

Like its predecessor, Killer Gorilla II features four different screens that repeat with increased difficulty. Unlike the original, the four screens don't follow a consistent theme. The first requires you to swing around a network of vines bridged by brick platforms.

## Second Opinion

The SAM series of compilations are simply superb value for money. The games were rated very highly when originally released and the quality is top notch. They provide endless hours of enjoyment for all the family.

The only problem with it (and this goes for all compilations) is that you may already have one or more of the games. However, even if you have two originals, the other two games still work out at under a fiver each which can't be bad.

Janice Murray



Killer Gorilla

Unfortunately, as usual, the screen is far from deserted. You soon discover that a number of disembodied snapping heads are travelling up and down the vines at great speed and doing their best to find out what baby gorilla tastes like. A single bite is fatal.

Pieces of fruit hang from the vines at regular intervals. You can buy time for yourself and for your cause by dislodging them at opportune moments and crushing any hapless creature that may be underneath.

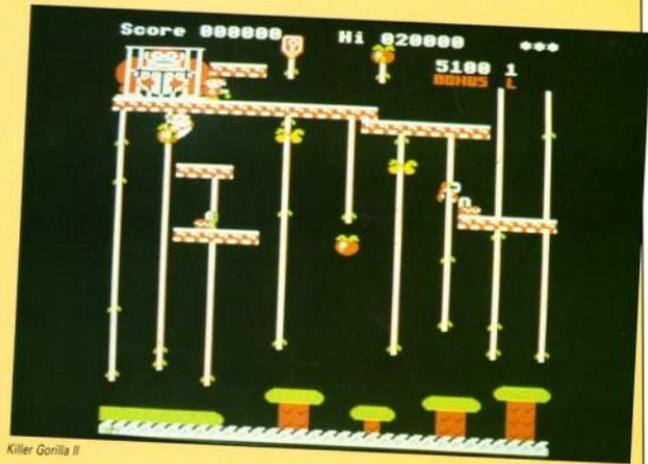
The second screen is totally different: the only way to reach the trailing chains way out of reach above your head is to bounce on a spring just in front of you. That obstacle cleared, you must now contend with a stream of giant parrots that home

in on you relentlessly. Luckily there are a couple of usefully placed pieces of fruit to hand.

The third screen depicts the generator room where you scramble along electrical cables, avoiding the high voltage sparks that race around the circuit. This screen can be very difficult for so many sparks are speeding in different directions that even a small gorilla cannot evade them for long.

When you reach the fourth screen you look up to see Kong Senior's cage sitting on a girder high above your head where it is held in place by six ropes locked to the girder. The six keys are attached to chains hanging from the girder.

Turn to Page 16 ▶



Killer Gorilla II

## ◀ From Page 15

Collect all six to release your parent.

You must now contend with both the snapping heads from the first screen and the giant parrots from screen two. As in *Killer Gorilla I*, once you have completed this screen, you are returned to a more difficult screen one to perform your feats of heroism all over again.

I found *Killer Gorilla II* much more difficult than its namesake, but it certainly adds a bit of variety to a well-established formula.

The last title in the collection is *Palace of Magic*, an arcade-adventure with more than 100 screens; it is very similar in appearance to Superior Software's classic *Citadel*. *Palace of Magic* does not attempt to disguise the source of its inspiration – quite the reverse in fact. The plot of the game is that you have offended the evil wizard Caldeit – try rearranging the letters and see what comes out – who has shrunk you to the size of a dwarf

and imprisoned you in the *Palace of Magic*. Your escape will not be easy.

As in *Citadel*, you have but one life and only a limited amount of energy. This is depleted whenever you spend too long under water or when you come into contact with any flames or any of the *Palace's* animated inhabitants. You can, however, replenish your energy by collecting magical top hats dotted around and about.

I have heard that the more awkwardly-placed hats give greater rewards, but this may be nothing more than a rumour. One point worth noting is that your energy level cannot be increased beyond its initial level. Do not pick up a top hat until you really need it, or you will waste some of its magic.

Like *Citadel*, *Palace of Magic* features a number of adventure-style puzzles to be solved in the correct order before you can get into some of the more remote areas of the *Palace* and surrounding landscape.

For example, you may find that your path is blocked by a blue and cyan door. Before you can progress any further you will need to find a blue and cyan key. Of course, you may need to solve other puzzles before you can get to the key. What must you give to the vicar before he will let you into the chapel? Who can you bribe with the gold bar? It is essential to plan ahead. As with any adventure, drawing a map will help.

If you like games that require a combination of logical thought and manual dexterity, *Palace of Magic* will provide a considerable test of both skills.

Martin Reed

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

## Beware the deadly trap

Product: *The Golden Figurine*

Price: £1.99 (tape)

Supplier: Atlantis Software, 28 Station Road, London

SE25 5AG

Tel: 01-771 8642

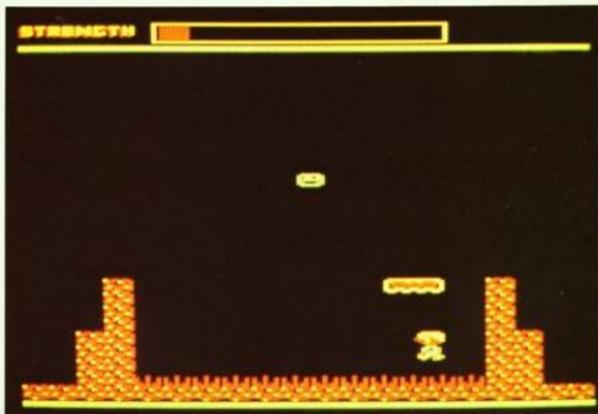
TAKE a portion of *Citadel* and mix it with a touch of *Jet Set Willy* and you end up with the latest, budget priced arcade adventure from Atlantis Software. The rules are simple. Your aim is to recover the golden figurine, a family heirloom which has been stolen by the evil wizard Morthond. The game controls are left, right and jump, and these suffice to get you around the 57 rooms of the wizard's castle, picking up and using objects as you go.

The castle is populated by Morthond's mutant servants. Bumping into them will reduce your strength, as will collisions with spikes or water. Your strength can be replenished by eating the food left scattered around. Nice for mice.

If you can keep up your strength you will have to cope with the problem-solving parts of the game. Without giving too much away, you will need to find something hot to melt the snowman that blocks your path, and don't try to use a boat while it has a leaky hull – mend it first. The trampoline will have a number of uses, but great care will be needed to do things in the correct order.

Experienced arcade adventurers will not find these puzzles too much to cope with – in fact they could be an ideal introduction for the novice. The skilful timing needed to prevent loss of strength presents much more of a problem, because your character has incredibly fast movement. This leads to the one major difficulty.

There are many places where one false move topples you into a pit from which there is no



escape. Death comes quickly in these cases, and I would have liked a *Citadel*-like routine which moves you to comparative safety. To get the *You have failed in your quest* message after a long session of adventuring is a bit too frustrating.

Despite that criticism, *Golden Figurine* is addictive and fun to play. It is well worth getting for your Christmas stocking.

Rog Frost

Graphics	8
Sound	7
Playability	9
Value for money	10
Overall	9

## Second Opinion

Atlantis is well known for its budget titles, and among them are some real gems. This *Citadel/Palace of Magic* clone could have been another, but just misses that accolade by being too difficult. The problem is that it's far too easy to get stuck in a deadly trap with no hope of getting out – just one slip and your goose is cooked. You then have to return to the beginning and start all over again.

If you like a challenge, have nerves of steel and lightning reactions look out for this enjoyable, but frustrating arcade adventure.

Janice Murray

# Clogger



## CLOGGER - The State of The Art

*In a strange and mystical land, many years ago, lived a peaceful race of beings known as the Cloggers. Cloggers were unusual creatures with 3 feet and no head but with strange powers that enable them to perceive their environment in a way that is incomprehensible to man.*

*Cloggers also have a great love of art and in order to achieve the status of Master Clogger must prove their artistic appreciation. To do this all young Cloggers must undertake a series of cunningly conceived tests. These consist of reassembling various pieces of artwork which are scattered around dangerous landscapes in the hidden valleys of Clogland.*

*Few Cloggers ever reach the status of Master Clogger. The task is truly awesome with countless problems to be solved and pitfalls to overcome. The time taken to complete each landscape is also critical but the*

*powers that be have kindly left a little extra food. However this should be eaten with moderation as guzzling it down can lose some of its energy value.*

*Each of the 18 landscapes becomes progressively more complex with increasing numbers of individual tests of initiative.*

*There are drills to be found which can be used (sparingly!) to create essential passageways; powerful lawnmowers to clear the deadly Cloggrass; plus springs, rebounding gyroscopes and buffers which all hinder your progress.*

*One ill-considered action can render your whole future worthless.*

**Would you have become a Master Clogger?**

### HOW TO ORDER

Simply fill in the coupon and send with a cheque or postal order to Impact Software.

- All "Cloggers" despatched by 1st Class Post on same day as order. (Unparalleled Service).
- Free postage and Packing.

**IMPACT**  
Software

Impact Software  
Neepsend House  
1 Percy St.  
Sheffield S3 8AU  
Tel. (0742) 769950

To: Impact Software, Neepsend House, 1 Percy St., Sheffield, S3 8AU.

(BLOCK CAPITALS PLEASE)

Please send me the following:

**CLOGGER** Electron/BBC Cassette @ £4.95

**CLOGGER** BBC B/Master 5 1/4" disc @ £4.99

**CLOGGER** Master Compact 3 1/2" disc @ £6.95

I enclose a cheque/PO (made payable to Impact Software) for

£

Name .....

Address .....

.....

Postcode .....

(N.B. if there are any other games you would also like to order at the same time please see the comprehensive Impact Games Club advert elsewhere in this magazine).

Program: *By Fair Means or Foul*  
 Price: £9.95 (tape)  
 Supplier: Superior Software, Regent House, Skinner  
 Lane, Leeds LS7 1AX,  
 Tel: 0532 459453

In spite of its rather peculiar title, *By Fair Means or Foul* (BFMOF) is in fact a boxing game in the mould of Tynesoft's *The Big KO*. I first became aware of the game's development well over a year ago, and I was just about to consign it to legend when it dropped through my letterbox.

Like *The Big KO* and the various karate games that have appeared on the Electron, BFMOF allows you to execute a variety of boxing moves. These include a body blow, uppercut, standard punch and duck punch – all perfectly legal manoeuvres. You can also move backwards and forwards and block your opponent's blows by engaging either a high guard or a low guard. These are the fair moves. You can however, also execute four foul moves – head butt, knee, kick and groin punch – hence the name of the game.

Like any boxing match, 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, strike quickly.

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 you will certainly be spotted, and red/white indicates that you stand a reasonable chance of getting away with it. A white silhouette gives the all clear to any dirty move.

The referee's attention is constantly changing, so he may be watching one competitor with an eagle eye while the other may be able to execute all kinds of ungentlemanly moves. You start off with five lives and will lose one if you are caught attempting an illegal move.

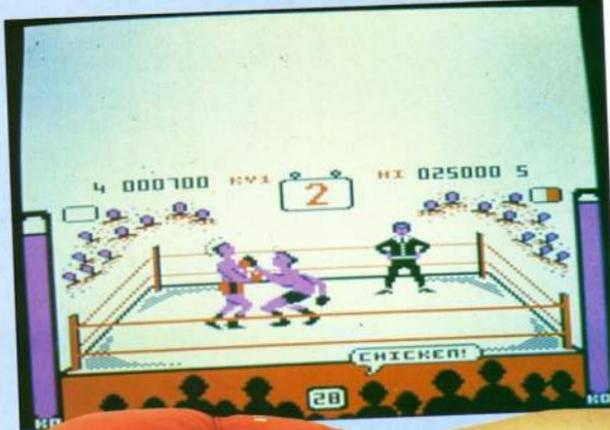
Each player – you can square up to another human or the computer – has an energy level which falls every time your opponent lands a punch. When it reaches zero you lose a life. Fortunately, your energy builds up gradually, but you will have difficulty in avoiding your opponent for any length of time. Your energy is restored to maximum at the end of each round, so you can sometimes hang on long enough to fight another day.

Rounds are one minute long, and the time can seem to go very quickly if 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 for a more imposing title against a tougher adversary. Needless to say, the game will come to an end if you lose your lives first.

Like author Michael Simpson's other game, *Way of the Exploding Fist*, BFMOF pits you against a number of increasingly skilful and vicious opponents. Your first only knows a few moves and is a fairly clean fighter. Later ones can call on a wider range of skills and manoeuvres and do not hesitate to use them.

The ring scene graphics are not particularly impressive, and the game seems rather devoid of colour – a stark contrast to *Exploding Fist*.



# It's a knockout



However, the animation of the two boxers is very lifelike, as they swing their arms and jump around on their toes.

The crowd certainly believes in audience participation. If you manage to land a punch, a little "Get him!" or "Again!" speech bubble appears in the air behind you. If you manage to win a round, your fans go wild and celebrate with a deafening roar.

However, they are not particularly patient, and will soon start to shout "Chicken!" if you are seen to be avoiding the action. The referee is a little more subtle – he just goes to sleep. Above all, the audience likes to see clean fighting, and if you or your opponent stoop to ungentlemanly tactics, the audience will soon voice its disapproval by booing the offender.

The players can be controlled using either the keyboard or joysticks, and the controls can be selected individually – one player can use the keyboard and the other a joystick.

You can switch the sound on or off at will, and if you don't like the crowd encouraging or booing you, simply turn them off as well. The game features a demonstration mode that can give you a good idea of strategy and gameplay. Watch it closely.

*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.

Martin Reed

## Second Opinion

*I'm not one to stop up till three o'clock in the morning just to see Mike Tyson slogging it out with some other prizefighter, however, I did quite enjoy this computer conversion of the popular blood sport.*

*The graphics are quite good, though they certainly aren't the best I've seen. The animation is reasonably fast and the sound is OK. Overall, a competent arcade combat game that deserves to do well.*

Janice Murray

Sound	6
Graphics	7
Playability	8
Value for money	8
Overall	8



# 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

This detailed guide to the Electron's operating system is packed full of invaluable information. It shows you how to:

- Implement the powerful \*FX/OSBYTE calls
  - Write your own paged roms
  - Program the ULA
  - Make every byte count where program space is tight
  - Use the Electron's exciting capabilities to the full by following the complete circuit diagram
- ...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.*

Only  
£7.95 for all three



SAVE  
£12.50



Buy your copies NOW, using the order form on page 45

# £3.99

## FUN PACKED EDUCATIONAL SERIES ELECTRON/BBC/MASTER

# £3.99

### Fun Words (Early Reading) Age 4-6 yrs.

**FUN WORDS** consists of four programs, specially devised to build your child's sight vocabulary.

1. Transport
2. In My House
3. Clothes
4. Build a House

Each program is played on its own and the child does not need to master the words in the first program before tackling the next.

All objects illustrated are very familiar to children and frequently occur in other reading schemes

Cheshire Cat **FUN WORDS** includes:-  
Learn Word – sight vocabulary.

Word Game – an exciting test of the words presented so far.

Big/Little – an extension of sight vocabulary.

Big/Little Game – an easy review and test on the previous concept.

Lots of – introducing plurals

### Fun Sums (Maths Level 1) Age 4-6 yrs.

Sixteen flexible exercise programs of games for up to four children are contained on twin cassettes or disk programmed for the home computer.

Each child's name is entered at the start and a complete record of results kept. All games can be set at two ability levels with any number of games for each exercise.

Right answers to a problem brings a Cheshire Cat grinning from the screen, a correct tick and a happy tune. Wrong answer and the program gives the unsuccessful child extra help.

Includes:-

Counting: Keep count of Kicker Kangaroo's goal scoring

Number Recognition: Sail the required number of boats into harbour

Sorting: Put the right coloured shapes into sets

Addition: An easy introduction to sums and to those + and = symbols-coloured beads give a visual aid.

Patterns: A fun hello to the important concept of sequences

Tallest: Spot the highest flower an exercise in visual perception  
and much, much more...

### Adder Sums Age 7-8 yrs.

A sixteen flexible exercise program of games for up to four children are contained on twin cassette or disk programmed for your home computer.

Each child's name is entered at the start and a complete record of results kept. All **ADDER SUMS** games can be set at one of two ability levels with up to any number of tries per child in each.

Right answers bring a Cheshire Cat grinning from the screen, who quickly steps in to help the child in difficulty.

Cheshire Cat **ADDER SUMS** includes:-

Multiplication: Calculate the cost of items shown in the grocer's shop window.

Addition: Correctly total the shopping bill from the grocers

Division: Share out the biscuits using the simple technique provided.

Time: Learn to tell the time of day, days of the week and the months of the year.

Tables: Make a start or improve on those important times tables.

### Sum Takeaway (Maths Level 2) Age 6-7 yrs.

Nineteen flexible exercise programs of games for up to four children are contained on twin cassettes or disk programmed for your home computer.

Each child's name is entered at the start and a complete record of results kept. All games can be set at two ability levels with up to 100 games for each exercise.

Right answers bring a Cheshire Cat grinning from the screen, a correct tick and a happy tune. Wrong answer and the program gives the unsuccessful child extra help.

Cheshire Cat **Sum-Takeaway** includes:

Addition: Full hello to sums.

Subtraction: Starts with differences and introduces Take Away.

Charts: Ways of recording information. A vital concept in the child's future

Tens & Units: Delightful visual hello to numbers over nine.

Multiply: First step in those times tables and the 'X' sign.

### Sum Measure Age 9-13 yrs.

Six programs with a choice of 5, 10 or 20 questions are contained on twin cassette or disk programmed for your home computer.

Two chances are given to achieve the correct answer, but don't worry extra help is provided for a child in difficulty.

At the end of each run the results are displayed thereby facilitating the monitoring of the child's progress

Cheshire Cat **SUM MEASURE** includes:-

Length: Work out the length of a line in centimetres or millimetres.

Area: Find the area of a rectangle using cm<sup>2</sup>.

Volume: Give the volume of a cuboid in cm<sup>3</sup>.

Temperature: Work out the temperature shown on the thermometer.

Mass: Read the correct balance scale.

Capacity: Measure the amount of liquid in the cylinder.

### Sum Times (Maths Level 4) Age 8-9 yrs.

Nineteen flexible exercise programs of games for up to four children are contained on twin cassettes or disk programmed for your home computer.

Each child's name is entered at the start and a complete record of results kept. All games can be set at two ability levels with up to 100 games for each exercise.

Right answers bring a Cheshire Cat grinning from the screen, a correct tick and a happy tune. Wrong answer and the program gives the unsuccessful child extra help.

Cheshire Cat **Sum Times** includes:

Tally & Bar Charts: An easy introduction to graphs.

Time: A moving clock for digital time.

Tens & Units: Addition & Subtraction of numbers over nine.

Symmetry: Lines of symmetry.

Co-ordinates: Important for reading maps and graphs

Square Units: Invaluable for calculating areas etc.

and much, much more...

EACH PACK CONTAINS TWO CASSETTES  
PLUS PARENTS' GUIDE



# TOWERHILL COMPUTERS LTD

Unit 5, Acacia Close, Cherry Court Way Ind. Est.

Leighton Buzzard, Beds.

Telephone: Leighton Buzzard (0525) 385329/383074



# Software at Bargain Prices.

## LATEST TITLES

Spycat .....	£7.50
Repton thru Time .....	£5.50
Barbarian .....	£7.50
Salgon .....	£7.50
Play it again Sam II .....	£7.50
Summer Olympiad .....	£7.50
Breakthrough .....	£7.50

**FREE XMAS  
PRESENT**  
for every £10 spent  
(software  
orders only)

## TRIPLE DECKERS

### 3 Games on 1 Cassette for £1.99

1. Grand Prix/Day at the Races/Manic Mole
2. Invasion Force/Haunted/Parachute
3. Lunar Invasion/Lander/Jam Butty
4. Howzat/Fishing/Golf
5. Starflight/Skramble/Karate Warrior
6. Cavern Capers/Snap Dragon/Castle of Sand
7. Atom Smash/Knock Out/Reaction Tester
8. Grebit/Mr. Freeze/Fruit Worm
9. Break Free/Missile Jammer/Code Breaker



## ACORNSOFT TITLES

Talkback .....	£1.50
Workshop .....	£1.50
Sphinx Adventure .....	£1.00
Starship Command .....	£1.00
Hopper .....	£1.00
Chess .....	£1.00
Desk Diary .....	£1.00
Business Games .....	£1.00
Boxer .....	£1.00
Me and My Micro .....	£1.00
Snapper .....	£1.00
Complete Cocktail Maker .....	£1.00
Watch Your Weight .....	£1.00
Linkword Italian .....	£2.25
Linkword Spanish .....	£2.25
Turtle Graphics .....	£2.25
Advanced User Guide .....	£3.25
Lisp .....	£1.99

## BUDGET TITLES

Stix .....	£1.99
Ravage .....	£1.99
Diamond Mine .....	£1.99
Joey .....	£1.99
Pengwyn .....	£1.99
Xanagrams .....	£1.99
Stock Car .....	£1.99
Mini Office .....	£4.95
Dog Fight .....	£2.99
Combat Lynx .....	£2.99
Warehouse .....	£2.99
Cascade (50 Games) .....	£2.99
Daredevil Dennis .....	£1.99
Snooker (Steve Davis) .....	£1.99
Tarzan (Martech) .....	£2.99
Football Manager .....	£2.99
Microvalue 1 .....	£3.99
Microvalue 2 .....	£3.99
Microvalue 3 .....	£3.99
Grid Iron .....	£1.99

## CURRENT TITLES

Elite .....	£9.95
Bonecruncher .....	£7.50
Last of the Free .....	£3.99
Acornsoft Hits 1 .....	£3.99
Acornsoft Hits 2 .....	£3.99
Five Star Games Vol 3 .....	£7.50
10 Computer Hits Vol 4 .....	£7.50
Life of Repton .....	£5.50
Omega Orb .....	£6.25
Dispatch Rider .....	£6.95
Ransack .....	£7.50
Ziggy .....	£6.95
Impact .....	£7.50
Graham Gooch Cricket .....	£7.50
Play it again Sam .....	£7.50
Collosus 4 Chess .....	£7.50
Superior Hits Vol 3 .....	£7.50
Around World 40 Screens .....	£5.50
The Lost Crystal .....	£9.95
The Hunt .....	£7.50
Village of Lost Souls .....	£7.50
Spy v Spy .....	£7.50
Five Star Games Vol 1 .....	£7.50
Five Star Games Vol 2 .....	£7.50
10 Computer Hits Vol 2 .....	£7.50
10 Computer Hits Vol 3 .....	£7.50
Winter Olympiad 88 .....	£7.50
Star Wars .....	£7.50
Spycat .....	£7.50
Boulderdash .....	£7.50
Indoor Sports .....	£7.50
Phantom Combat .....	£2.99
Repton II .....	£2.99
Karate Combat .....	£2.99

## EPIC ADVENTURES

Wheel of Fortune .....	£4.95
Castle Frankenstein .....	£4.95
Quest of the Holy Grail .....	£4.95
Kingdom of Klein .....	£4.95

## ROM CARTRIDGES

Viewsheet .....	£11.95
Lisp .....	£7.75
Logo .....	£28.80

## BACK IN STOCK

Monsters (Acomsoft) .....	£2.50
Arcadians (Acomsoft) .....	£2.50

## NEW XMAS RELEASES NEW

Commando .....	£2.99
Joe Black .....	£1.99
Indoor Soccer .....	£1.99
Play it again Sam V .....	£7.00
Repton Infinity .....	£9.95
Play it again Sam III Superior .....	£7.00
Exile Superior .....	£9.95
Play it again Sam IV Sup. .....	£7.00
Pipeline Sup. .....	£7.00
Fair Means or Foul Sup. .....	£7.00
Shark Audiogenic .....	£7.00



# TOWERHILL COMPUTERS LTD

Unit 5, Acacia Close, Cherry Court Way Ind. Est.  
Leighton Buzzard, Beds.

Telephone: Leighton Buzzard (0525) 385329/383074



# Software at Bargain Prices

## BUGBYTE

AT £2.75 EACH

Uranians  
Hunkydory  
Tennis  
Savage Pond  
Cricket  
Starforce  
Ice Hockey  
Twin Kingdom Valley  
Jack Attack  
Temptation  
Dunjuz  
Squeakalizer  
Sky Hawk  
Plan B II

## ALTERNATIVES AT £1.99

Dead or Alive  
Mineshaft  
Video Pinball  
Microball  
Rik the Roadie  
Soccer Boss  
Olympic Spectacular  
Craze Erbert  
Licence to Kill  
Confusion  
Night Strike

## CDS BLUE RIBBON AT £1.99

Bar Billiards  
Mango  
3D Dotty  
Trapper  
Return of R2  
Video Card Arcade

## COLOSSUS BRIDGE

Allows one player to play Bridge with the computer, Blackwood, Stayman & Baron conversions

£8.50

## GIDDY GAME SHOW

Four great games designed to help children recognise letters and associate them with everyday objects

£4.95

## STRIKE FORCE HARRIER

Bomb the enemy HQ whilst defending yourself from enemy aircraft and ground forces – Great Game

£3.99

## POWER PACK 1

7 Great Games Includes: Zelda, Ultron, Wizzys Mansion, Wongo, Bugeyes 2, Space Ranger, Caveman Capers

£4.50

## ATLANTIS

League Challenge	£2.99
Survivors	£2.99
Panic	£1.99
Cops and Robbers	£1.99
Creepy Cave	£1.99
Pro Golf	£2.99
Frankenstein 2000	£1.99
Golden Figurine	£1.99

## Bargains of the Month

Pedro	£1.99
Xor	£3.50
Elixir	£5.99
Spellbinder	£5.99
Palace of Magic	£5.99
Quest	£5.99

## SUPERIOR at £1.99 each

Fruit Machine	Percy Penguin
Invaders	Alien Dropout
Draughts	World Geography
Reversi	Centi Bug
Stranded	Overdrive
Mr. Wiz	Tempest
Chess	Death Star
Smash 'n' Grab	Repton I

## SPITFIRE 40

Flight Simulator with practice level, practice combat and full combat levels

£4.50

## POWER PACK 2

Another 7 Great Games Includes: Psycastris, Thunderstruck, Stix, Saracoid, Last of the Free, Froot Raid, Drain Mania

£4.50

## TETRIS

A very highly addictive game yet simple to play

£2.99

## BRIAN CLOUGH FOOTBALL FORTUNES

with Board Game

£4.99

## VIEW

Back in stock £11.95

ALL PRICES INCLUDE V.A.T. AND P&P  
OVERSEAS ORDERS ADD £1.00

# FAIR COMPETITION

**£500 IN PRIZES**  
(Including a unique opportunity)

This is your opportunity to see not only a professional boxing match, but one in which Barry McGuigan will be challenging for the World Super Featherweight Title.

The fight will take place in early February at the London Arena – newly built as part of the London Docklands complex – and this will be the first contest to be held there, creating worldwide interest and comment. Love it or hate it boxing is an ancient sport and Barry McGuigan is one of its most respected exponents. Definitely a fight not to be missed.



## 1st PRIZE

Two tickets for you and a friend to see this world class bout

**PLUS** A signed copy of  
By Fair Means or Foul

**PLUS** Any other two Superior  
Software games.

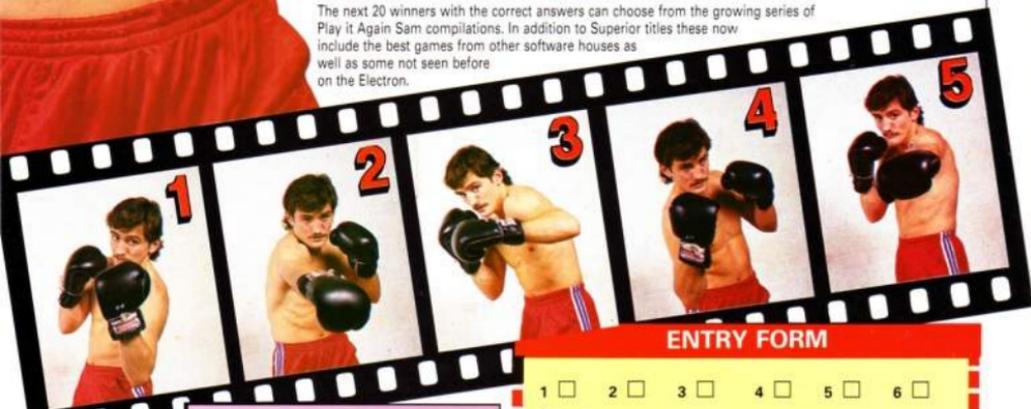
## 2nd PRIZE

The next four correct entries to be pulled from the sack will each receive a signed copy of this excellent boxing game – which allows you to cheat as long as the referee doesn't catch you!

**PLUS**  
You can also choose one more title from the superb array of games now available from Superior Software.

## RUNNERS UP PRIZES

The next 20 winners with the correct answers can choose from the growing series of Play it Again Sam compilations. In addition to Superior titles these now include the best games from other software houses as well as some not seen before on the Electron.



### THE ANSWERS

- A. Right Punch
- B. Left Punch
- C. Right Hook
- D. Left Hook
- E. Left Uppercut
- F. Right Uppercut

### WHAT YOU HAVE TO DO

Above are five poses of classic boxing moves. All you have to do is match these with their correct terms. The first entries with the right answers will be the winners.

If you think that picture A is a Right Punch then mark an A in the first box in the entry coupon. When you have completed all the boxes add your name, age, address and send it to us to arrive no later than January 20 1989.

### ENTRY FORM

1  2  3  4  5  6

Name: .....

Address: .....

..... Postcode:.....

Tel: ..... Age:.....

Now send to Fair Competition, Electron User, Europa House, Adlington Park, Adlington, Macclesfield SK10 4NP.

**T**HE Pegasus 400, from that well known supplier of quality add-ons Slogger, is a new disc interface for the Electron. During the past three years well over half a dozen disc filing systems in various interfaces have appeared – and some have now disappeared too. So what has Pegasus to offer that hasn't been seen before?

The strongly constructed Acorn cream interface is in the form of a large cartridge that plugs into the Plus 1 or Rombox Plus. To make use of it you'll also need to buy either a 5.25in or 3.5in disc drive with a built in power supply.

The interface contains an E00 1770 DFS, which means that it is compatible with the BBC Micro's disc filing system. So you can pop a BBC Micro disc in and read it without any problems (though actually running BBC Micro programs is an entirely different kettle of fish).

Also PAGE is kept firmly at &E00, so you don't lose any of your valuable ram when you upgrade to discs. Compare this to the Plus 3's ADFS which rather greedily demands 3.5k of workspace for its own exclusive use. The upshot is that you won't experience any difficulty running long tape-based programs that you have transferred to disc.

#### Functions and utilities

Present are all the standard DFS functions and utilities for formatting discs, renaming, locking, wiping, destroying and deleting files, selecting

the drive, directory and library, and copying files or discs. The figure below shows the full command list.

An unusual addition is TYPEAHEAD, a command unique to Pegasus. Normally when the Electron accesses the disc drive it switches off all interrupts, so anything typed at the keyboard is ignored, which can at times be a frustrating

waste of time. However, this command enables interrupts providing you have fitted a Slogger Turbo Driver or Master Ram Board and you can type away while the disc is being accessed.

Another nice addition to the range of commands is MCOPY, which is like the normal COPY

**Turn to Page 26 ▶**

```

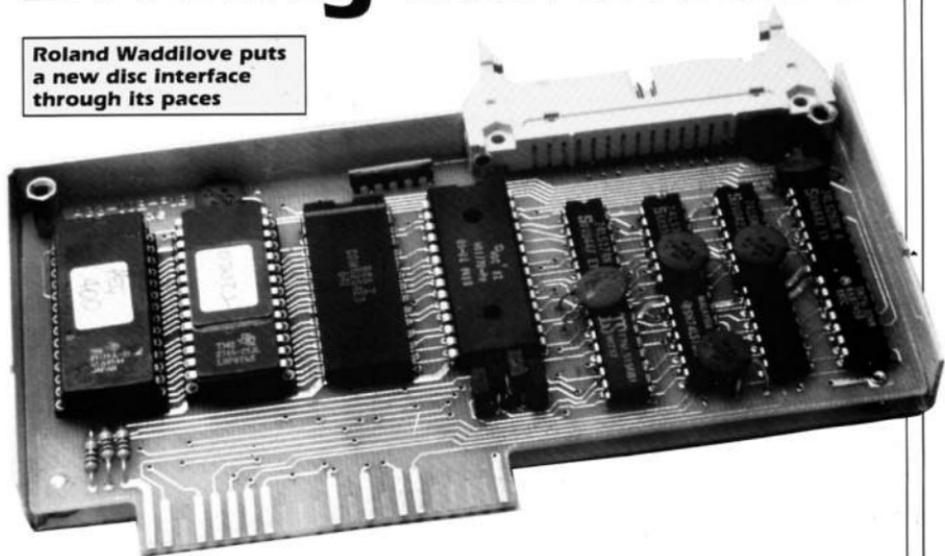
Slogger PEGASUS 400 1.01
ACCESS      <afsp> (L)
BACKUP      <src drv> <dest drv>
COMPACT     <<drv>>
COPY        <src drv> <dest drv> <afsp>
DELETE      <fsp>
DESTROY     <afsp>
DIR         <<dir>>
DRIVE       <<drv>>
ENABLE
INFO        <afsp>
LIB         <<dir>>
MAP         <<drv>>
MCOPY       <src drv> <dest drv>
RENAME      <old fsp> <new fsp>
RUNPROT     <fsp>
STAT        <<drv>>
TITLE       <title>
TYPEAHEAD   <argument>
WIPE        <afsp>

OS 1.00
  
```

*The Pegasus DFS command list*

# Driving hardware

**Roland Waddilove puts  
a new disc interface  
through its paces**



◀ From Page 25

command except that it copies as many files as it can fit in memory, rather than one file at a time. This is most useful for single drive owners, as it cuts down disc swaps to a bare minimum.

RUNPROT is used in conjunction with T2PEG4 – the tape to disc transfer utility. It runs a transferred program straight from disc with the advantage of not requiring any ram for its workspace (T2PEG4 needs 256 bytes).

STAT is another name for the more familiar FREE which tells you how much of the disc has been used and how much space is left.

The usual DFS tools are all present and correct

– BUILD, DISC, FORMAT, LIST, TYPE and VERIFY. An addition to this list is FDCSTAT, which returns the error of the last disc operation if something went wrong.

The table below shows how the performance of the Pegasus 400 compares to its rivals the AP4 and AP3/Plus 3. The bench tests reveal that there's little difference between it and the AP4, but both offer significant speed improvements over the AP3/Plus 3.

The reason, of course, lies in the filing systems. The AP3/Plus 3 uses the advanced disc filing system (ADFS) whereas the Pegasus and AP4 are DFS. Where the ADFS scores is in storage space, offering over half as much again per disc.

The Pegasus manual is excellent, being large, well written, full of technical information containing many useful examples and everything is clearly explained. It takes you right from first principles up to the osword & F calls for directly accessing the disc controller. It is a model for others to emulate.

**Conclusion**

Slogger's Pegasus 400 is very similar to Pres' AP4 in many ways, and there is little to choose between them. The AP4 is fractionally smaller and £5 cheaper, but the Pegasus has a couple of extra useful, though not essential, commands.

Bench test	Pegasus DFS	AP4 DFS	Plus 3 ADFS
1. SAVE 16k	4.72	3.40	3.41
2. LOAD 16k	3.6	3.52	2.65
3. OPENIN x 1000	7.07	9.51	31.38
4. OPENOUT x 1000	21.93	21.71	6.49
5. PRINT# 1000 numbers	10.28	10.42	15.43
6. PRINT# 100 strings	3.44	3.98	6.28
7. INPUT# 1000 numbers	6.31	9.73	9.43
8. INPUT# 100 strings	2.88	3.51	3.40
9. BPUT# 1000 bytes	4.59	4.51	6.43
10. BGET# 1000 bytes	3.49	3.89	4.26
11. Move PTR# forward x 1000	3.86	3.38	7.55
12. Move PTR# backward x 1000	3.67	3.42	7.64

Disc filing system bench tests

```

Slogger PEGASUS 400 1.01
BUILD      <fsp>
DISC
DUMP      <fsp>
FORMAT    <<drv>>
FDCSTAT
LIST      <fsp>
TYPE      <fsp>
VERIFY    <<drv>>

OS 1.00
    
```

The DFS tools

TWO WAYS TO ENSURE  
YOU GET

**electron**  
user

EVERY MONTH

1. Complete and mail subscription form on Page 45
2. Hand this form to your newsagent.

Please reserve me a copy of Electron User magazine every month until further notice.

- I will collect  
 I would like it delivered to my home.

Name \_\_\_\_\_

Address \_\_\_\_\_

Note to newsagent: Electron User should be obtainable from your local wholesaler, or contact Mike Rice Circulation Manager on 0424 430422

**ELECTRON SALE  
STOCK  
CLEARANCE**

- Electron Computer .....£45.00
- Plus 1 .....£30.00
- Rombox Plus .....£40.00
- Acorn Data Recorders .....£25.00
- Joystick Interface .....£10.00
- Starword Wordprocessor Rom .....£15.00
- Starstore 2 Database Rom .....£15.00
- Disc Interface Roms ..... All £15.00 each (T2P3, T2CU, T2P4, T2PEG, T2SD)
- Star Graph, Starmon, Printer Roms .....£10 each
- Advance User Guides .....£2
- Electron User Guides .....£1

Prices include P&P, VAT  
Product available until stock exhausted  
Orders processed on first come, first served basis  
Computers are ex demo/shop soiled  
For 24 hour delivery add £8 per order

**! FREE GAMES IF COMPUTER AND RECORDER  
ORDERED TOGETHER !**

Send cheque/P.O. with order to:

**M&S ASSOCIATES**

40 Meyrick Drive, Wash Common, Newbury,  
Berks RG14 6SX. Tel: (0635) 45774

# PLAY IT AGAIN SAM

# 6

NEW  
RELEASE



### GALAFORCE 2 A New Release from Superior Software

Everything that Galaforce was, and more - more stars, more planets, more speed, more features including destructible objects - some hard, some hidden, excellent sound effects and music. A wonderful shoot 'em up - fast, fun, and beautifully designed and stunningly competitive. This will be one of the top three BBC games of the year - *1 Computer*.  
A & B Computing (September 1992)



NOW ALSO  
AVAILABLE  
FOR THE  
ELECTRON



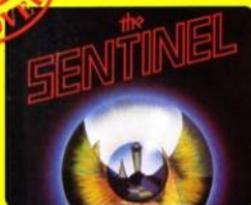
### HUNCHBACK Superior's Authentic Arcade Conversion

This superbly addictive and amusing arcade conversion is now available again for the BBC Micro and is destined for the first time ever for the Electron.  
This game has excellent graphics and sound - a great addictive factor and is fun for the "beginner" - *Micro User*



### HOPPER Acornsoft's Classic Hit

The best implementation of the "hopper" game (ever) better than Superior's own version! Fast-moving with generous, beautiful graphics. Features include diving turtles, poisonous snakes and projectiles. It's great fun - an excellent example of the arcade theme. Highly recommended - *Micro User*



### THE SENTINEL Firebird's Revolutionary Game

Absorb your way through 16,000 different 3D landscapes. Gain height by absorbing the trees and the sentries, and finally defeat the Sentinel.  
The Sentinel is the best BBC Micro game ever - an entirely new concept. The graphics are amazing! Buy it! - *Acorn User*



## PLAY IT AGAIN SAM 6 for the BBC Micro and Acorn Electron

Superior Software has combined a top-quality brand-new release with three great classics (one new to the Electron). The result is one of the best ever four-game BBC/Electron compilations. Don't miss it for your collection!

BBC Micro Cassette ..... **£9.95**      Acorn Electron Cassette ..... **£9.95**  
BBC Micro 5 1/4" Disc ..... **£14.95**      BBC Master Compact 3 1/2" Disc ..... **£14.95**

(Compatible with the BBC B, B+ and Master Series computers)  
Please make cheques payable to "Superior Software Ltd".

### ACORN ELECTRON VERSION

Unfortunately it is not technologically possible to produce an Acorn Electron version of THE SENTINEL. The four games on the Acorn Electron version of PLAY IT AGAIN SAM 6 are:

GALAFORCE 2, HUNCHBACK, HOPPER and VIDEO'S REVENGE.  
VIDEO'S REVENGE - An action-packed, fast-moving alien blaster from Budget Software. If you can imagine Defender heated on its side with the mentality of Rambo in a bad mood then you are getting close to the destruction possible in Video's Revenge. Sprites are fast and furious... sound is wonderful!... - *Micro User*

**SUPERIOR SOFTWARE**  
Limited

**ACORNSOFT**

(Acornsoft is a registered trademark of Acorn Computers Ltd. Superior Software Ltd is a registered user.)  
Dept 6PS4, Regent House, Skinner Lane, Leeds LS7 1AX. Telephone: (0532) 459453

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



24 HOUR TELEPHONE ANSWERING SERVICE FOR ORDERS

**OUR GUARANTEE**  
• All mail orders are despatched within 24 hours by first-class post.  
• Postage and packing is free.  
• Faulty cassettes and discs will be replaced immediately.  
(This does not affect your statutory rights)

# DIY noticeboard

**O**VER the past few years Teletext televisions have become increasingly popular. These sets have the ability to decode and display the many hundreds of pages of information produced by the Ceefax and Oracle services and transmitted along with the normal TV picture.

The BBC Micro has always had the enviable ability to show these pages using its special Teletext Mode 7 display. The humble Electron can in

**Roland Waddilove presents a utility to enable you to create your own electronic information service**

fact also reproduce these pages, but it requires extra hardware and software which these days

can cost more than the micro itself. So, the facility is there if you are willing to pay for it, but is there a cheaper alternative?

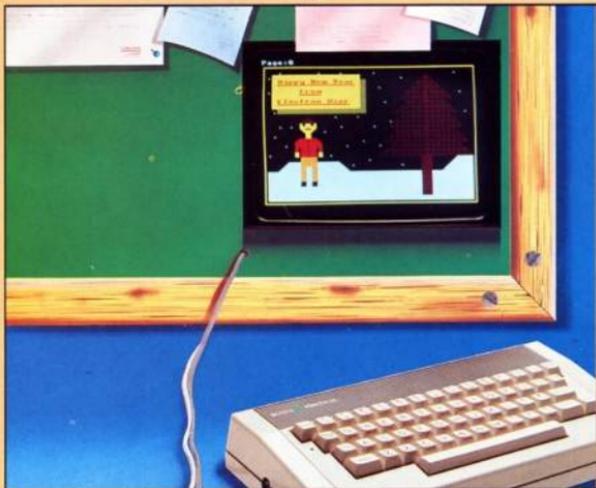
EikView – the utility presented here – provides you with the facility to set up your own rival display system similar to Ceefax and Oracle. Unfortunately, it won't enable you display Teletext pictures, but it will let you create your own. The only restriction is that you must have a disc system.

Using the built in editor you can create and store up to 300 pages of information containing both text and graphics. Then using the display facility you can show them in sequence on a carousel or select and directly go to a particular page of interest. A moment's thought will reveal that there are dozens of uses for EikView – shop window adverts, a company information service, a school magazine or newsreel, library and museum information services and so on.

Although the chunky graphics are crude by today's computer standards, as you can see from the screen dumps, like Ceefax and Oracle, the pages produced can be quite attractive – it's all down to your own creative and artistic ability. The screen mode used is four-colour Mode 1 and in addition to all the keyboard characters, there are 32 pre-defined graphics characters.

The program is in two parts and you need to enter and run the first before the second can be used. Program 1 simply defines the 32 graphics characters used so enter and save this to disc with the filename View1. Now enter Program 2 – the edit and display utility – and save it with the name View2. To run EikView, chain or load and run Program 1. This will define the characters then automatically load and run the main program.

You'll first be asked for the name of an EikView



## Program 1

```

10REM EikView Characters
20REM By R.A.Waddilove
30REM (c) Electron User
40VDU23,224,240,240,240,0,0,0,0
50VDU23,225,15,15,15,15,0,0,0
60VDU23,226,0,0,0,0,15,15,15,15
70VDU23,227,0,0,0,0,240,240,240,240
80VDU23,228,240,240,240,240,15,15,1
5,15
90VDU23,229,255,255,255,255,0,0,0,0
100VDU23,230,15,15,15,15,15,15,15,15
110VDU23,231,255,127,63,31,15,7,3,1
120VDU23,232,1,3,7,15,31,63,127,255
130VDU23,233,0,0,0,0,0,0,255,255
140VDU23,234,255,255,0,0,0,0,0,0
150VDU23,235,192,192,192,192,192,192
,192,192
160VDU23,236,3,3,3,3,3,3,3,3
170VDU23,237,204,204,51,51,204,204,5
1,51
180VDU23,238,204,204,51,51,0,0,0,0
    
```

```

190VDU23,239,0,0,0,0,204,204,51,51
200VDU23,240,170,85,170,85,170,85,17
0,85
210VDU23,241,170,85,170,85,0,0,0,0
220VDU23,242,0,0,0,0,170,85,170,85
230VDU23,243,0,1,2,5,10,21,42,85
240VDU23,244,170,84,160,80,160,64,12
0,0
250VDU23,245,120,64,160,80,160,84,17
0,85
260VDU23,246,170,85,42,21,10,5,2,1
270VDU23,247,0,0,0,0,255,255,0,0,0
280VDU23,248,0,0,0,0,31,24,24,24
290VDU23,249,0,0,0,0,248,248,24,24
300VDU23,250,24,24,24,248,248,0,0,0
310VDU23,251,24,24,24,31,31,0,0,0
320VDU23,252,24,24,24,24,24,24,24
330VDU23,253,1,3,6,12,24,48,96,192
340VDU23,254,120,192,96,48,24,12,6,3
350VDU23,255,0,4,6,255,255,6,4,8
360CHAIN "View2"
    
```

## Program 2

```

10REM EikView
20REM By R.A.Waddilove
30REM (c) Electron User
40ON ERROR CLOSE#0:OSCLI'FX4':MODE6
:REPORT:PRINT' at Line';ERL:END
50MODE#PROCInitialise:MODE1:#FX16
60PRINT'Edit or Display (E/D)?';
70IF GETS="D" PROCview
80BPROCedit
90END
100
110DEF PROCview
120INPUT "First page to display"
:first
130INPUT "Last page to display";la
st
140page=first
150REPEAT
160PROCLoad(page):VDU23,1,0;0;0;0;0;0
170page=page+1
180ks=INKEYS2000
190IF ks>="0" AND ks<="9" REPEAT:PRI
NT TAB(0,1)Page to go to";ks;ks=ks+G
ETS:UNTIL RIGHTS(ks,1)=CHR13:page=VAL
ks
200IF page>Last page:first
210UNTIL 0
    
```

## PROCEDURES

edit	Enter the page editor
save	Save the current page
load	Load a new page

write	Print the current graphic character
initialise	Define the variables and arrays
char	Increment the graphic character



This is a utility which enables you to create pages of information containing both text and graphics, and then display them in any sequence or go to a particular page.

Up to 388 pages can be stored on disc (depending on what system you're using). Here is just a small sample of what can be done...

Character:"J"

Ascii:224

The EkView editor

A flashing cursor around the text and graphics

file. Enter a filename and if the file already exists on the disc it will be opened for editing or displaying, otherwise a new file with blank pages will be created and opened. The first time you run the program you'll have to create a new file in which to store your pages of information.

After entering the filename you'll be asked if you want to edit or display the pages. Press E to select the editor and the first page (zero) will be loaded ready for editing. The controls are quite simple: Press C to change the pen and paper colour, I to input text, S to save the page and L to load another. Use the cursor keys to move the

flashing cursor around the screen.

To input text tap I (Caps Lock must be on) and enter your text. Press Return to exit this mode. Note that you can only enter one line of text at a time. The colour - selected by pressing C - is shown in the top right hand corner of the screen. The first digit is the pen colour and the second is the paper.

The currently selected graphics character is shown at the bottom left hand corner of the screen, and its Ascii code is shown to the right. To flick through the graphic character set press the spacebar, and to copy the character to the current cursor position press Copy.

### VARIABLES

first	First page to display
last	Last page to display
char	The current graphic character
page	The current page number
X%,Y%	Cursor coordinates
S%	Copy of the screen characters
C%	Copy of the screen colours

### EDITOR CONTROLS

L	Load a new page
S	Save the current page
I	Input text (until Return is pressed)
C	Choose the pen and paper colour
Space	Select graphic character
Copy	Copy graphic character to cursor position
Cursor keys	Move the cursor
Escape	Quit and close file

```

22BENDPROC
23DEF PROCedit
24X%:=0;Y%:=0;char:=224;col:=3
25BPROCload(0):PROCchar(0)
26BREPPEAT:FXZ02,32
27BPRINT TAB(X%,Y%+2);
28CK%:=GET
29IF KI=ASC" I":REPEAT:KI:=GET:PROCwr
ite(KI):UNTIL KI=13
30IF KI=135 PROCwrite(char)
31IF KI=ASC" C":col:=(col+1)MOD16:P
ROCchar(0)
32IF KI=32 PROCchar(1)
33IF KI=ASC" L":PROCload(FNinput("lo
ad")):PROCchar(0)
34IF KI=ASC" S":PROCsave(FNinput("sa
ve")):PROCchar(0)
35BX%:=X%+(KX=136ANDX%>0)-(KX=137ANDX
%<39)
36BY%:=Y%+(KY=139ANDY%>0)-(KY=138ANDY
%<28)
37UNTIL FALSE
38BENDPROC
39DEF PROCwrite(NX)
40IF N%>31 AND N%<=127 ?(S%+X%+Y%+4
0):N%:(C%+X%+Y%+40)col:=COLOURcolMOD
V4:COLOUR128+colMOD4:VDU NX:=X%-CX%

```

```

<39)
41BENDPROC
42DEF FNinput(a$)
43COLOUR128:COLOUR3:PRINT TAB(0,1)S
PC(20)TAB(0,1)"Page to 'a$";
44INPUT N%:=N%
45DEF PROCchar(NX)
46BREPPEAT
47char:=char%+NX
48IF char:=256 char:=224
49COLOUR colMODV4:COLOUR 128+colMOD
04:VDU 31,13,31,char%
50COLOUR3:COLOUR128
51BPRINT TAB(2,3)"Character":CHR$3
4;CHR$9;CHR$34;TAB(28,3)"Ascii":char
%";TAB(31,1)"Colour":colMODV4:col%LM
04
52UNTIL INKEY$=""
53BENDPROC
54DEF PROCsave(NX)
55IF N%>last N%:=last
56BPTRF%:=40+29+N%+2
57FOR IX=0 TO 40+29-1:BPUTFX,FX,CX%I
X%:BPUTFX,SX%IX:NEXT

```

You can't use Delete to erase text or graphics. To do this either set the pen and paper to zero and press Copy, or press I and input a blank space. To copy one page to another press S and save the page with a different page number. When you have created and saved all the pages for your EkView file press Escape to close the file and exit the program.

Run EkView again, and this time when you are asked if you want to edit or display the file press D to display it. At the appropriate prompts enter the number of the first page to display followed by the last. The pages will be loaded and displayed in sequence with a delay of about 20 seconds in between each one.

You can enter a page number to go to if you don't want to see them in order - just tap in the number and you'll jump straight to that page. You can also move on quickly to the next by pressing the spacebar.

The program is currently set for a maximum of 25 pages, but you can alter this by changing the variable *last* in line 680 to the number you want. Each page requires just over 2k of disc space, so how many you can fit on your disc depends on your system. Forty track DFS discs can store around 45, and double sided 80 track ADFS discs can handle around 300.

```

58BPRINT TAB(0,1)SPC(20)TAB(0,1)Pag
e:;N%
59BENDPROC
60DEF PROCload(NX)
61VDU22,6:PRINT "Page:":N%
62IF N%>last N%:=last
63BPTRF%:=40+29+N%+2
64FOR IX=0 TO 40+29-1:CX%I:=BGET#FX
:SX%I:=BGET#FX:NEXT
65VDU22,1:PRINT TAB(0,1)"Page:":N%
66FOR IX=0 TO 40+29-1:COLOUR CX%I%
MOD4:COLOUR 128+CX%I%MOD4:VDU SX%I%:NEX
T
67BENDPROC
68DEF PROCinitialise
69last:=25:FX%,1
70BPRINT TAB(0,2)"EkView"
71BPRINT "-----"
72DIM SX 40+29,CX 40+29
73BINPUT "File to create/edit/disp
lay:files"
74FX%:=OPENUP files:IF FX ENDPROC
75FX%:=OPENOUT files
76FOR IX=1 TO 40+29+(last+1)
77BPUTFX,0:BPUTFX,32
78BNEXT
79BENCLOSE#0
80FX%:=OPENUP files
81BENDPROC

```

If you want to start doing more with your micro than just playing games, this package is your ideal introduction to the four most popular applications for professional computers. All the programs have been designed for simplicity, so even a child can use them. Yet they include advanced features not yet available on programs costing many times as much!

**Finalist for the Home Software  
of the Year Award**



**Contains 32 page booklet giving clear,  
easy-to-follow instructions on all 4 programs**

**Word Processor:** Ideal for writing letters and reports. There is a constant display of both time and word count, plus a words-per-minute display to encourage the budding typist! A unique feature is the double-size text option in both edit and printer mode —perfect for young children and people with poor vision.

**Database:** You use this for storing information, just like an office filing cabinet. Facts you have entered can be quickly retrieved by just keying in a word or part of a word. They can be sorted, replaced, saved for future use or printed out.

**Spreadsheet:** Enables you to use your micro for home accounts or pocket money records. It creates a display of numbers in rows and columns. Continuous updating is possible, and a changed figure can be instantly reflected throughout the rest of the spreadsheet. Your results can be saved, to be used for future updates, or can be fed into its associated program...

**Graphics:** Part of the spreadsheet section, it lets you draw bar charts, pie charts and histograms to give a graphic presentation of your statistics. Helps to give life and colour to the duller figures!

- ☆ Word Processor
- ☆ Database
- ☆ Spreadsheet
- ☆ Graphics

**Now they're  
all together -  
in ONE simple  
package**

Four full-scale  
programs for  
an incredible  
low, low price!

**£5.95**  
cassette

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

# All is revealed



**John Geraghty presents SpecialList, a handy little utility to improve your program readability**

It can be quite difficult and time-consuming hunting through program listings trying to find a particular command, function or procedure. Now such toils are a thing of the past, thanks to SpecialList, which is designed to greatly improve readability of both on-screen and printed listings.

When the routine is enabled all Basic keywords are printed in bold, line numbers are italicised and assembler labels are underlined.

This also applies to printouts, making listings much clearer and easier to read than before. Using SpecialList is a piece of cake: Enter and run

The printed output

the listing to create, save and enable the short machine code utility. It's also a good idea to save the Basic listing. Once this is done it can be called into action with commands like:

```
LIST:ON
```

to list the whole program on screen, and:

```
LIST 100,200:ON
```

to list just part of a program — lines 100 to 200 in this case. You aren't restricted to listing just the program currently in memory, as you can type NEW and enter another, or load one from disc or tape. To obtain a printed output simply press Control+B before entering the LIST:ON command and press Control+C afterwards. If you want to disable the utility enter:

```
LIST:OFF
```

The machine code routine that performs SpecialList's functions is automatically saved when the program is run. It can be reloaded and enabled with:

```
*LOAD SPLIST  
CALL &B00
```

To quote an old cliché: "You'll wonder how you ever managed without it".

```
10 REM SpecialList
20 REM By John Geraghty
30 REM (c) Electron User
70 MODE6
80 IF %20F<&B0 PRINT"Reset before RUNNING":END
90 PROCassemble
100 PRINT" To save code and see demo,"
    OSCLI"SAVE SPLIST B00 "+STR%P%
120 :
130 CALL intercept
140 REM set LIST01...
150 %1F=1
160 %3700="LIST440,610:ON"
170 FOR I%=0 TO 14
180 OSCLI"FX130,0,"+STR%(3700+I%)
190 NEXT:END
```

```
10 REM SpecialList
20 REM By John Geraghty
30 REM (c) Electron User
70 MODE6
80 IF %20F<&B0 PRINT"Reset before
e RUNNING":END
90 PROCassemble
100 PRINT" To save code and see dem
o,"
110 OSCLI"SAVE SPLIST B00 "+STR%P%
120 :
130 CALL intercept
140 REM set LIST01...
150 %1F=1
160 %3700="LIST440,610:ON"
170 FOR I%=0 TO 14
180 OSCLI"FX130,0,"+STR%(3700+I%)
190 NEXT:END
200 :
210 DEF PROCassemble
220 REM %37 contains the byte of Bas
ic program being Listed...
230 char=&B37
240 REM block for Oswald &A...
250 block=&BCF7
260 space=&B20
```

```
270 list.tkn=&C9
280 on.tkn=&EE
290 off.tkn=&87
300 osword=&FFF1
310 osbyte=&FFF4
320 wrchv=&20E
330 mode=&355
340 style=&70
350 label=&72
360 bracket=&73
370 print_flg=&74
380 :
390 REM escape sequence for Epson-ty
pe printers...
400 bold%=&CHS27+&CHS53+&CHS27+&CHS4
5+&CHS48+&CHS27+&CHS71
410 ita.l%=&CHS27+&CHS72+&CHS27+&CHS4
5+&CHS48+&CHS27+&CHS52
420 und%=&CHS27+&CHS72+&CHS27+&CHS5
3+&CHS27+&CHS45+&CHS49
430 norm%=&CHS27+&CHS72+&CHS27+&CHS5
3+&CHS27+&CHS45+&CHS48
440 :
450 FOR pass=0 TO 2 STEP2
460 P%=&B00
```

```
470 [OPT pass
480 .intercept
490 LDA wrchv+1
500 BPL changed
510 SEI
520 STA oswrch+2
530 LDA wrchv
540 STA oswrch+1
550 LDA #main MOD&100
560 STA wrchv
570 LDA #main DIV&100
580 STA wrchv+1
590 CLI
600 .changed
610 RTS
620 :
630 .main
640 STA block
650 LDA mode
660 CMP #7
670 BEQ exit2
680 TXA
690 PHA
700 TYA
```

Turn to Page 32 ▶

◀ From Page 31

```

710 PHA
720 L&B; &B;C points to &700 when in
command mode, but not when Listing;
730 LDA &B;C
740 CMP #&B;7
750 BNE list.chk
760 /read if printer enabled;
770 LDA #&75
780 JSR osbyte
790 TXA
800 AND #1
810 STA print_flg
820 BEQ no_print1
830 LDA #bold DIV&100
840 STA style+1
850 .no_print1
860 LDA #0
870 STA bracket
880 BEQ exit
890 .list.chk
900 LDX #&FF
910 JSR spaces
920 CMP #list_tkn
930 BNE exit
940 .chk2
950 INX
960 LDA &700,X
970 CMP #&B;D
980 BEQ exit
990 CMP #ASC:"
1000 BNE chk2
1010 JSR spaces
1020 CMP won_tkn
1030 BEQ listing
1040 CMP #ASC:"
1050 BNE off_chk

```

```

1230 PLA
1240 TAX
1250 .exit2
1260 LDA block
1270 JMP oswrch
1280 :
1290 .spaces
1300 INX
1310 LDA &700,X
1320 CMP #space
1330 BEQ spaces
1340 RTS
1350 :
1360 .disable
1370 SEI
1380 LDA oswrch+1
1390 STA wrchv
1400 LDA oswrch+2
1410 STA wrchv+1
1420 CLI
1430 BRK
1440 EQUB 100
1450 EQU$ 'SPECIALIST disabled'
1460 BRK
1470 :
1480 .listing
1490 LDA block
1500 CMP #46
1510 BCC exit
1520 CMP #123
1530 BCS exit
1540 CMP #ASC:"
1550 BEQ exit
1560 CMP #ASC"Y
1570 BEQ exit
1580 :
1590 LDA char
1600 BMI token
1610 PLA
1620 PSA
1630 BEQ lineno
1640 :
1650 LDA block
1660 /check for square brackets;
1670 CMP #91
1680 BNE not_assem_start
1690 STA bracket
1700 .not_assem_start
1710 CMP #93
1720 BNE not_assem_end
1730 STA bracket
1740 .not_assem_end
1750 LDA bracket
1760 CMP #91
1770 BNE exit
1780 LDA block
1790 CMP #ASC,"
1800 BNE not_label_start
1810 STA label
1820 .not_label_start
1830 LDA label
1840 BNE over
1850 JMP exit
1860 /over
1870 LDA print_flg
1880 BEQ no_print3
1890 LDA #underlined MOD&100
1900 JSR printer
1910 .no_print3
1920 JSR getdef
1930 LDA #170
1940 ORA block+8
1950 STA block+8
1960 BNE new_char
1970 :
1980 .token
1990 LDA print_flg
2000 BEQ no_print4
2010 LDA #bold MOD256
2020 JSR printer
2030 .no_print4
2040 JSR getdef
2050 LDX #1
2060 .loop1
2070 LDA block,X
2080 ASL A
2090 ORA block,X
2100 STA block,X
2110 INX
2120 CPX #9
2130 BNE loop1
2140 BEQ new_char
2150 :
2160 .lineno
2170 LDA print_flg
2180 BEQ no_print5
2190 LDA #itallics MOD256
2200 JSR printer
2210 .no_print5
2220 JSR getdef
2230 LSR block+1
2240 LSR block+2
2250 ASL block+6
2260 ASL block+7
2270 .new_char
2280 LDA print_flg
2290 BNE printer_enabled
2300 LDA #159
2310 BNE new_char_end
2320 .printer_enabled
2330 /normal to printer only, modify
d to screen only;
2340 LDA #1
2350 JSR oswrch
2360 LDA block
2370 JSR oswrch
2380 LDA #3
2390 JSR oswrch
2400 LDA #159
2410 JSR oswrch
2420 LDA #2
2430 .new_char_end
2440 JSR oswrch
2450 PLA
2460 TAY
2470 PLA
2480 TAX
2490 RTS
2500 :
2510 .oswrch
2520 JMP &FFFF /dummy address
2530 :
2540 .getdef
2550 LDA #&B;A
2560 LDX #block MOD256
2570 LDY #block DIV256
2580 JMP osword
2590 :
2600 .printer
2610 CMP style
2620 BEQ printend
2630 STA style
2640 LDY #0
2650 .printloop
2660 LDA #1
2670 JSR oswrch
2680 LDA (style),Y
2690 JSR oswrch
2700 INY
2710 CPY #7
2720 BNE printloop
2730 .printend
2740 RTS
2750 :
2760 .bold EQU$ bold$
2780 .itallics EQU$ itals
2800 .underlined EQU$ unde$
2820 .normal EQU$ norm$
2840 J: NEXT: ENDPROC

```

To save code and see demo,  
 >LIST 140,618:0H  
 450 FOR pass=8 TO 2 STEP 2  
 460 PX=&B;80  
 470 /OPT pass  
 480 /interopt  
 490 /DR wrchv+1  
 500 /BPTI changed  
 510 /BPTI changed  
 520 /BPTI changed  
 530 /BPTI changed  
 540 /BPTI changed  
 550 /BPTI changed  
 560 /BPTI changed  
 570 /BPTI changed  
 580 /BPTI changed  
 590 /BPTI changed  
 600 /BPTI changed  
 610 RTS  
 >SAVE SCREEN 5000 8000

```

1060 LDA #91
1070 STA bracket
1080 BNE listing
1090 .off_chk
1100 CMP #off_tkn
1110 BEQ disable
1120 .exit
1130 LDA print_flg
1140 BEQ no_print2
1150 LDA #normal MOD&100
1160 JSR printer
1170 .no_print2
1180 LDA #0
1190 STA char
1200 STA label
1210 PLA
1220 TAY

```

# PRES

TEL: 0276 72046  
FAX: 0276 51427

Now available through PRES **Advanced Computer Products** range of software products

## ADVANCED CONTROL PANEL

(20) M/B/E/C £30 ex VAT £34.50 inc VAT  
ACP is a front end control panel language providing a sophisticated yet friendly interface between user and computer for access to Languages, MOS functions and the users own file utility etc. Main features include pull down windows, simple to change MOS configure, floating point calculator, file manager, SW ROM's facilities

(16K EPROM + FULL MANUAL)

"It's very easy to create an entire customised front end for your own use." - Acorn User, August 1987.

"ACP is much better than any of the other front end systems I've seen." - Acorn User, August 1987.

"I can recommend it to anyone who wants easy access to the Electron's functions." - Electron User, August 1987.

ACPs main features are:-

- \* Pull down windows operate throughout
- \* Users can create their own windows
- \* Simple to change MOS-s configure options
- \* Easy entry to other languages
- \* Floating point calculator
- \* File manager
- \* Floating point calculator

## ADVANCED DISC TOOLKIT

(01) M/B/E/C £30 ex VAT £34.50 inc VAT

Any Acorn user including Master, BBC B+, Electron, DFS, 1770 DFS, ADFS, 2nd & co-processors A.C.P.'s BEST SELLING product containing over 30 commands inc.: powerful memory & disc editor, search memory/ds/obsc, catalogue/unplug ROMS, load/run programs below page, automatic menu, file transfer (inc. locked cassette files), ADFS utils etc, etc ("It's superb"... Database Pubs. - "A top-class toolkit - I have no hesitation in recommending it. ... Acorn User Nov. 86)

(16K EPROM + FULL MANUAL)

## ADVANCED ELECTRON DFS E00

(14) E+A/S/R £17.98 ex VAT £19.99 inc VAT

An alternative to the DFS on rom for Plus 3 and ABR users. This optional alternative DFS is designed for use in Sideways RAM (ABR) and allows the user to operate a disc filing system & E00 when using the Plus 3 (in ADFS page would normally be &1D0e). The DFS is simply loaded using the software supplied with the ABR from disc. (3.5" ADFS disc + manual)

## ADVANCED ELECTRON DFS

(08) E/ £21.00 ex VAT £24.15 inc VAT

Electron & Plus 3 users... gain BBC compatibility by adding the Advanced Electron DFS (1770 DFS) this is the same disc filing system supplied with the BBC B+. Now you can produce and access (compatible) BBC disc based software. We can also supply 5.25" disc drives to add to your Plus 3 (inc. 2nd. drive adapter). \*ACP has produced another superb ROM for the Electron\*. ... Electron User Feb '86 (supplied on 16K EPROM + DFS MANUAL)

## ADVANCED DISC INVESTIGATOR

(06) M/B/E/C £25 ex VAT £28.75 inc VAT

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)

## ADVANCED 1770 DFS

3 versions ADM/C(11) - ADB(12) ADE (13) £30.00 ex VAT £34.50 inc VAT

ACP have totally re-written the Acorn 1770 DFS, enhancing existing features & adding new ones. The result is a very fast and powerful disc filing system with the ability to operate in double density occupying both sides of a disc (640K). Automatic file relocation, improved file handling, 62 file catalogue and Swags RAM can be used as a fast RAM DISC. (16K EPROM + comprehensive manual)

# PRES - ADVANCED FILE MANAGER

The ultimate "front-end" for ADFS and DFS includes:

- Menu - infinitely expandable
- Delete - deletes any number of files
- Rename - rename multiple files using wild-cards
- Copy - extremely comprehensive file copier

Advanced File Manager 1.04 (C) PRES 1986.

Source	Advanced Disc FS: 11.8 Software AFM on ABR	change	change	change
FILE	RENAM	DEL	CPY	CHG
DIR	DIR	DIR	DIR	DIR
PRINT	PRINT	PRINT	PRINT	PRINT
Target: Advanced Disc FS: 11.8 Software AFM on ABR				
DIR	DIR	DIR	DIR	DIR
DIR	DIR	DIR	DIR	DIR
Change Dir Follow: Dir Other: On	10551 bytes free	18 marked		
0% noted for copying to Advanced Disc FS: 11.8 Software AFM on ABR				
0% noted for copying to Advanced Disc FS: 11.8 Software AFM on ABR				
0% noted for copying to Advanced Disc FS: 11.8 Software AFM on ABR				

Screen picture shows AFM in Copy mode on Master Turbo

AFM follows the PRES 'Master Plan' of upwards compatibility - it runs on Electron, BBC B+, B+128, Master 128 and Compact, with Second/Co-processors and Acorn-compatible versions of DFS & ADFS.

£25 ex VAT - £28.75 inc VAT

## AFM has four distinct modes:

**MENU** - allows browsing through the files and directories on a disc. Files are started from a menu of up to 7 options chosen for a selected RCM. Loaders are provided for Basic, The Basic Editor, View, ViewSheet, ViewStore, ViewSpell, Edit, Wordwise (+) and InterWord. This list can be expanded infinitely using an Acorn-approved OSWORD call... full details and example in the manual.

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

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

Large files can be split across several discs, and recombined. As much as possible of the computer's memory is used for copying files, including unused parts of shadow screen memory, sideways ram banks (inc. AP7), ram cartridges (inc. ABR 32K) and AQR (256K), tube memory (up to 61K), B+ - paged ram (12K) and unused parts of the Slogger Master Ramboard (Electron).

Comprehensive error trapping and recovery is provided, so a copying run will rarely have to be aborted unfinished! And there's much, much more.

## DATABASE PUBLICATIONS: Electron software now available exclusively through PRES on 3.5" disc

Electron User 1988 Monthly Disc	£4.75	10 of the Best Vol 2	£6.95
Fun School	£5.95	10 of the Best Vol 3	£6.95
*Arcade Game Creator	£5.95	10 of the Best Vol 4	£6.95
Nursery Rhymes	£6.95	Classic Card & Board Games Vol 1	£7.95
10 of the Best Vol 1	£6.95	Classic Card & Board Games Vol 2	£7.95

5.25" disc versions available only  
\*Arcade Game Creator £5.95  
Knightwear Designer £9.95  
\*Back issues of Electron User required, see Database Publications own advertisement

# PRES

## THE ADVANCED PLUS 3

Now you can turn your Electron +1 into a full disc system - no more waiting for tape loading or 'bad block'/data? messages. A.P.3 gives you:

1. A fully Acorn compatible 1770 interface
2. 80 track 3.5" disc drive, as used by Acorn (320k capacity)
3. Separate PSU
4. Acorn ADFS
5. Welcome disc
6. Utilities
7. Full documentation
8. All the advantages of the original Plus 3 PLUS extra ROM socket.

UNBEATABLE PRICES

OUR TOP SELLING PRODUCT

All this without dramatically increasing the required desk space! Now well into the SECOND THOUSAND production.

Remember - 2nd drives (3.5 or 5.25) can be added and the AP3 drive can be used on a BBC or Master computer! Also most Electron disc-based software is supplied on 3.5" ADFS discs.

The only fully compatible disc upgrade running Acorn's own preferred filing system (supplied on: Plus 3, Master 128, Master Compact and now the Archimedes)

3 games on disc - SNAPPER - DRAUGHTS - REVERSI

COMPLETE PACKAGE ONLY  
£99.00 excl VAT; £113.85 inc VAT

## ADVANCED PLUS 5

A unique interface for those wanting the maximum expansion from just one slot in the Plus 1. AP5 contains: a User port for connecting peripherals such as a mouse, 1 MHz bus allowing Music 5000(E), prommers and various control devices to be added, Tube interface for connecting an Acorn 2nd processor or even a Master Turbo board (through a 'Go-Pro Adaptor') - & TWO spare ROM sockets (1 high priority). All hardware connections are Acorn compatible thereby allowing many BBC products to be added (remember that some software modification may be necessary for the Electron). So although some expansion options may appear expensive on an Electron you do have upward compatibility.

£58.00 Ex VAT; £68.24 Inc VAT

**ADVANCED PLUS 1** - The plus 1 is the main expansion for the Electron. It provides the Centronics parallel printer port, joystick interface and 2 cartridge slots into which go ROM cartridges including ViewSheet, Pascal, Logo and our own popular range of disc upgrades. £43.43 excl VAT; £49.95 inc VAT

**ADVANCED PLUS 6** - a fully buffered 6 ROM expansion module for the Electron user. AP6 is fitted inside the advanced Plus 1 or a modkit (available). All sockets are designed to accept either ROM/EPROMS or RAM chips. A further feature is the optional AP7 upgrade. "A marvellous piece of design - don't hesitate, buy it!" - EU, May '88

£33.00 excl VAT; £37.95 inc VAT

**UPGRADE SERVICE** for the original Acorn Plus 1 or Advanced Plus 1 and AP6. This will provide all the benefits of AP6 and also includes the printer circuit modification for some modern printers. (AP6 can be fitted to original Plus 1 by users with soldering experience) for upgrade service add £7.00 + VAT to AP6 price ie

£40.00 excl VAT; £46.00 inc VAT

Incl. Mod. Fitting + Testing & Carriage Send to  
P.R.E.S. Service Department, PO Box 34, Shipley BD17 6DE

## ADVANCED ROM ADAPTER 2

An Acorn approved cartridge containing a card with special 'zero' profile sockets that allow you to fit compatible 8k or 16k EPROMS/ROMS. The cartridge is fully enclosed providing complete protection for your ROMS. Simple to use - No switching - complies fully to the Acorn (sideways) Rom filing system.

"The best ROM cartridge is by far the APA 2." - A&B Dec 86  
£13.00 excl VAT; £14.95 inc VAT

## ADVANCED BATTERY-BACKED RAM

A standard Acorn approved cartridge but containing 32k (2 x 16k) of sideways RAM. The added bonus is the battery-backed feature which holds the RAM contents when the power is switched off! Different ROM images can be loaded into either bank from ROM images previously saved. The banks can also be loaded to imitate ROM use. Now it is possible to have View & ViewSheet in one cartridge every time you switch on. Other uses include &E00 ADFS, printer buffer, ROM image development. The use of ABR is simplified by the newly written PRES software utilities which include: SaveROM, LoadROM, Lock, Unlock, Printer Buffer, Zero and MakeROM a new utility to put your own software from disc or tape into ABR & use the ROM filing system. All software is supplied in ABR with a simple menu to transfer the utilities to your own media. No hardware switching - totally software controlled. Instructions for using supplied software and necessary information for users developing their own applications.

"It's a superb add-on and a must for all serious Electron users." - Electron User

£34.77 excl VAT; £39.95 incl VAT

## DISC INTERFACES (Plus One required)

**AP3 INTERFACE:** As supplied with AP3 package. A fully Acorn compatible disc interface that will accept any standard 5.25" or 3.5" 80T drive with PSU. It runs Acorn's ADFS (as supplied on Acorn Plus Three, Master 128, Master Compact and now the Archimedes) supplied with A.D.F.S. manual and welcome disc + Utilities and 3 bonus games (please specify 3.5" or 5.25" 80T format). Also provides a spare 16K rom socket. Price £52.00 ex VAT £59.80 inc VAT

**AP4 INTERFACE:** A fully Acorn compatible disc interface that will accept any standard 5.25" or 3.5" drive with PSU. It runs the 1770 DFS (as fitted in the BBC 'B' and Master) keeps pace at &E00 - has utilities in rom and provides a spare 16K rom socket (DFS manual included). Price £60.83 ex VAT £69.95 inc VAT

**AP3A INTERFACE:** Get the best of both filing systems. Now available from PRES the ultimate interface. Fitted with both Acorn approved filing systems. - Acorn's current standard ADFS and Acorn 1770 DFS (which can be run at &E00) ADFS and DFS manuals supplied + ADFS welcome disc with utilities. Price £69.55 ex VAT £79.98 inc VAT

Please state 5.25" or 3.5"

## ADVANCED PLUS 2 ROM

We feel this is one of the best, low cost, additions we have produced for the Electron +1 user, especially for Plus 3, AP3 & ABR users. Now with this easy to fit upgrade you can add:

1. Fix for tape filing system in Hi-res screen modes.
2. \*ROMS - to display all ROMs/ROM images present on the system.
3. \*UNPLUG - disable ROM/RAM image.
4. \*INSERT - enables or inserts a previously unplugged ROM.
5. \*KILL - to totally disable the Plus 1.
6. \*LOCK - to lock a sideways RAM bank in ABR, AQR, AP7.
7. \*LROMS - to lock all sideways RAM banks found.
8. \*UNLOCK - to unlock a sideways RAM bank in ABR, AQR, AP7.
9. \*UROMS - to unlock all sideways RAM banks found.
10. \*SAVEROM - saves a copy of a ROM image to the current filing system.
11. \*LOADRUN - loads a ROM image from the current FS into a RAM bank.
12. \*FORMAT - will format an ADFS disc for Plus 3 or AP3
13. \*VERIFY - reads and tests every sector on an ADFS disc.
14. \*VFORMAT - formats and verifies an ADFS disc in one command.
15. \*BUILD - creates a text file that can be used by \*EXEC (ie 'BOOT').
16. \*LIST - displays a numbered listing of a text file.
17. \*TYPE - displays a file on screen with no line numbers.
18. \*DUMP - to view a file's contents on screen.
19. \*LANG - selects a default language to be booted on <CTRL-BREAK>.
20. \*HELP - provides a full 'help' list on all the ROM's commands  
\*\*STOP PRESS\*\*
21. \*AQRPAGE - selects the specified page in any AQR present.

Now there is no need to search for your utilities disc every time you want to Format/Verify a disc, Build a 'Boot file' or Lock/Unlock/Load a ROM image into ABR/PLUS much more - the ideal companion for the company that produces the Acorn Plus 1.

£11.00 ex VAT; £12.65 inc VAT

"The AP2 is the definitive Plus 1 Rom - I'm not sure what I'd do without it... Like all of PRES's other products it's been well worth waiting for." EU July '88

## PRES ABR SOFTWARE

The new PRES ABR software now available separately containing: SaveROM, LoadROM, Lock, Unlock, Printer Buffer, Zero and MakeROM a new utility to put our own software from disc or tape into ABR & use the ROM filing system. Supplied on 3.5" ADFS or 5.25" DFS disc.  
3.5" £9.99 ex VAT; £11.49 inc VAT  
5.25" £8.99 ex VAT; £10.34 inc VAT

## ADVANCED PLUS 7

An internal battery-backed RAM upgrade for the Advanced Plus 6. TWO 16K pages of Sidedwards RAM, battery-backed and featuring full write protect facility. Just like ABR but fitted internally & vacating a cartridge slot. This product is compatible with all Acorn BBC/Master & Electron computers. £39.00 ex VAT; £44.85 inc VAT

## \*\* USER PORT \*\*

A new low cost unit for those who just require a user port interface. Supplied in a standard size Acorn approved cartridge, with the standard connector on top. Inside is a spare ROM socket which can also be configured for high priority use such as mouse software.

£19.99 ex VAT; £22.95 inc VAT

## DUE TO INCREASED COSTS SOME PRICES WILL ALTER IN THE NEW YEAR - SO ORDER NOW

### ADFS VERSION 1.1

Suitable for existing Plus 3 or A.P.4 users. This new version has the software fixes for Zsysheip, write protect disable & compaction. Also Winchester code has been replaced with the necessary driving software to handle AQR as a 256k RAM DISC. Please note - ADFS is Acorn's adopted standard filing system supplied on the Plus 3 Master 128, Master Compact & now the Archimedes. Supplied on 16k ROM with Welcome disc & utilities. Please state 3.5/5.25 welcome disk.

**£14.95 ex VAT; £17.19 inc VAT**  
(ADFS manual supplied separately)

### ADFS E00

For Electron users with either Plus 3 or A.P.4 and 32k of S/W RAM i.e. ABR. All the benefits of ADFS but without all the loss of RAM includes all the software 'fixes' as in version 1.1 as well as the AQR/RAM DISC code and an 'FX' call for managing the new & original ADFS. One of the most frequent questions we are asked: "How do I get back the memory lost on my Plus 3 system?" Answer: PRES ADFS & E000 gains 3.75k leaving page @ &E00 the same as Tape!

ADFS E00 supplied; 3.5" ADFS (manual available separately)

**£14.95 ex VAT; £17.19 inc VAT**

5.25" ADFS (manual avail. sep.) **£14.00 ex VAT; £16.10 inc VAT**  
5.25" DFS (2 discs + ADFS manual) **£19.00 ex VAT; £21.85 inc VAT**  
(See Special Package Prices)

### AP4 MOD

This converts an AP3 to an AP34 (i.e. DFSE00) supplied as a two chip set, full documentation & fitting instructions.

**£21.74 ex VAT. £25.00 inc VAT**

### ADVANCED GAMES COMPENDIUMS - ON DISC

With so many of our products providing more 'serious' add-ons for the Elk, we thought it was time to allow easy access to some of the favourite games ON DISC! ... Three volumes of popular games, previously only available on tape, now 'instantly' loadable from menu on disc. Each volume contains EIGHT menu selectable games. Available on 3.5" ADFS or 5.25" ADFS.

Vol. I	Vol. II	Vol. III
Invaders	Felix and the Fruit	Danger UXB
Jet Power Jack	Monsters	Ghouls
Killer Gorilla	The Mine	Felix and the Evil Weevils
Stock Car	Rubble Trouble	Adventure
Bandits @ 3	Swag	Pestron
Battle Bee	Cybertron Mission	Swoop
Chester	Moonrader	Cheers
Felix in the Factory	Frenzy	Galactic Command
	Escape Moonbase Alpha	

**3.5" £9.99 ex VAT each volume; £11.49 inc VAT**  
**5.25" £8.99 ex VAT each volume; £10.34 inc VAT**

### NEW ELECTRON VERSION OF A.L.P.S. NEW

(Adventure Language Programming System)

Well received on the BBC now available for Electron users on a 16k Rom and utilities disc either: 3.5" ADFS or 5.25" DFS

**£25.17 ex VAT £28.95 inc VAT**

### DISC DRIVES \*\*NEW LOW PRICES\*\* Ex VAT +VAT

Cumana 5.25" dbl/sided 40/80 track, swichable, inc. psu. ....	£113.00	£129.95
Cumana 5.25" sing/sided 40 track, inc. psu. ....	£112.17	£129.00
Cumana 3.5" dbl/sided 80 track, inc. psu. ....	£112.17	£129.00
PRES special 3.5" sing/sided 80 track, inc. psu. ....		
	*ONLY*	£59.00 £67.85

DISCS		
3.5" 10 in plastic library box - ideal for Plus 3 users .....	£19.95	
5.25" 10 dbl/sided dbl/dens .....	£12.99	
5.25" 10 sing/sided sing/dens .....	£8.99	
5.25" Twin Gift Pack .....	£14.49	

VIEW CARTRIDGE the Acornsoft word processor for the Electron and Plus 1. Inc. full documentation. ....	£14.95
VIEWSHEET CARTRIDGE the Acornsoft spreadsheet for the Electron and Plus 1. Inc. full documentation. ....	£14.95
VIEW & VIEWSHEET both products as above *special price* .....	£22.00

### MUSIC 5000

Turns your Electron into a computerised music production studio in which you can take a piece of music all the way from a sheet score, an idea of your own or one of the supplied examples, through entry, arrangement, replay and 'live' mix-down to a finished performance complete with custom instruments and studio effects.

MUSIC 5000 is supplied as a powerful, stereo, digital, eight voice, 16 channel synthesiser with ROM software (containing the AMPLE language), disc software containing the example music files and full documentation.

The requirement for Electron Music 5000 is ... Electron, Plus 1, disc system (3.5 or 5.25 drive) running DFS or ADFS (preferably @ &E00) i.e. Acorn Plus 3, A.P.3 or A.P.4, 1 MHz bus (best option A.P.5), and hi-fi amplifier or similar (Music 5000 has a standard 5-pin DiN audio connector for sound output). (Please state disc size & FS when ordering) **£99.00 (ex. VAT) £113.85 (inc. VAT)**

Please send order to:

P.R.E.S. LTD,  
6 Ava Hoese, High Street,  
CHOBHAM, Surrey, England  
GU24 8LZ. Tel: 0276 72046 (24 hr).  
Fax: 0276 51427  
(Mail order only)  
All our prices include  
UK delivery & VAT.

  
(In event of any query -  
please include your tel. no.)

### SPECIAL PACKAGE PRICES

AP1 + AP3	£130.39 ex VAT	£149.95 inc VAT
AP1 + AP6	£69.52 ex VAT	£79.95 inc VAT
ABR + 3.5" ADFS E00	£44.30 ex VAT	£50.95 inc VAT
ABR + 5.25" ADFS E00	£43.33 ex VAT	£49.95 inc VAT
ABR + 5.25" DFS (ADFS E00)	£47.78 ex VAT	£54.95 inc VAT
AP5 + Music 5000	£152.17 ex VAT	£175.00 inc VAT
AP7 + 3.5" ADFS E00	£49.52 ex VAT	£56.95 inc VAT
AP7 + 5.25" ADFS E00	£48.65 ex VAT	£55.95 inc VAT
AP7 + 5.25" DFS (ADFS E00)	£52.13 ex VAT	£59.95 inc VAT
AP4 + CS400	£147.78 ex VAT	£169.95 inc VAT
AP1 + AP4 + CS400	£182.60 ex VAT	£209.99 inc VAT

### ACCESSORIES

#### ELECTRON POWER SWITCH

For those who are fed up with removing the power connector every time when resetting the computer or for those whose jack-plug connector has become unreliable by removing the power at random! This useful accessory provides a double-pole in-line switch with a new power jack-plug already attached; just connect to the existing lead, having removed the old jack-plug. **£3.96 ex VAT; £4.55 inc VAT**

#### AP3 2nd DRIVE LEAD

Replaces existing drive cable with one containing an extra connector for adding a second drive configured as Drive 1.

**£5.96 ex VAT; £6.85 inc VAT**

#### PLUS 3 2nd DRIVE ADAPTOR

Converts the fitting at the back of the original Acorn Plus 3, to take a standard disc drive connector when adding a second drive which has been configured to Drive 1.

**£6.91 ex VAT; £7.95 inc VAT**

#### Panasonic KX-P1081 Printer Ribbon

**£5.50 ex VAT; £6.32 inc VAT**

A.D.F.S. Guide Manual ..... **£5.00**

ELECTRON ADVANCED USER GUIDE ... further reading and information for the Electron user ..... **£3.95**

### ADVENTURE GAMES ON DISC

5 adventures available on disc for Electron users. Each game is sold separately on disc: Ultimate Prize, Dreamtime, Pirates Peri, Taroda Scheme and Stranded.

**3.25" ADFS £6.95 ex VAT per Disc; £7.99 inc VAT per Disc**

### PRINTER

Printer ideal for Electron Plus 1. Panasonic KX-P1081 Graphic Epson Compatible NLQ ready to connect including cable, delivery and VAT

**£155.65 ex VAT £179.00 inc VAT**

### COMING SOON

ADVANCED BASIC EDITOR+ ... an exciting new product based on Acorn's original Basic Editor. It contains all the original features plus enhancements that make it one of the most powerful basic editors available. Supplied as a 32K ROM module or a cartridge with spare ROM socket.

1MHz BUS ... a new low cost unit for those who just require a 1 MHz Bus interface. Supplied in a standard size, Acorn approved cartridge, with the standard connector on top. Inside is a spare ROM socket for any application.

Product	Qty	@	Total
Name			
Address			
Postcode			
Tel:		I enclose payment for £	(Ref E1)
Credit Card No.		Exp date	

## New Educational Bundle

For a limited period we are offering ALL THREE Fun School 1 tapes AND Nursery Rhymes in a special educational bundle for just £9.95 – saving you well over £10!

# FUN SCHOOL!

### Ages 2-5

Alphabet  
Colours  
Counting  
House  
Magic Garden  
Matchmaker  
Numbers  
Pelican  
Seaside  
Snap



**PELICAN**  
Teach your children to cross the road safely at a Pelican crossing

### Ages 5-8

Balance  
Castle  
Derrick  
Fred's Words  
Hilo  
Maths Test  
Mouser  
Number Signs  
Seawall  
Super Spell



**NUMBER SIGNS**  
Provide the correct arithmetic sign and aim to score ten out of ten

- Use your Electron to teach and amuse your children at the same time.
- Three packages crammed full of educational programs – and so easy to use!
- Each program has been educationally approved after extensive testing in the classroom.

RRP £20.80

OUR PRICE

**£9.95**

### Ages 8-12

Anagram  
Codebreaker  
Dog Duck Corn  
Guessing  
Hangman  
Maths Hike  
Nim  
Odd Man Out  
Pelmanism  
Towers of Hanoi



**HANGMAN**  
Improve your child's spelling with this fun version of the popular game

## NURSERY RHYMES

# 5

fun-packed educational programs . . . for young children everywhere

This delightful collection of programs is based around children's favourite Nursery Rhymes. There's plenty of sparkling colour, sound and captivating animation to keep them riveted – and as they play they'll be learning all the way.

- ★ Tell the time with Hickory Dickory Dock.
- ★ Assemble the jigsaw in Humpty Dumpty.
- ★ Learn to spell with Jack and Jill.
- ★ Match the animals in See Saw Marjory Daw.
- ★ Play an exciting game in Hey Diddle Diddle.



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

# electron user

## ARCADE CORNER

Compiled by MARTIN REED

**T**HE Slogger Turbo Driver has turned a number of BBC Micro games that were once unplayably slow on the Electron into great games in their own right. Software Invasion's Attack on Alpha Centauri is an example.

It has to be admitted that the speed of our beloved Electron—at least in its basic form—does not quite match that of its big brother. Programmers have used a number of techniques to get round this. One is to make the graphics slightly smaller and to use Mode 4 or 5—if there's less to move, it can be moved faster.

However, some native Electron games, such as Bonecruncher, feature graphics identical to those of the BBC Micro version, with a corresponding decrease in speed. The Turbo Driver now comes into its own, restoring the game to full speed, with a keyboard response to match. Arcade Corner accordingly recommends the Turbo Driver to all keen Electron arcade enthusiasts.

This month's goodies come from Christopher Seatory from Washington, Tyne & Wear, Alix Jones from Bellingdon, Bucks and Pam Milne from Warrington, Cheshire.



### An easy life

Life of Repton  
Superior Software

To follow on from the August 1988 column in which we revealed the passwords and edit codes for Around the World in Forty Screens, here are the equivalent details for Life of Repton:



Baby	School	Teens	Work	OAP
A BABY 1589B	SCHOOL 36216	TEENS 61268	WORK 21812	OAP 2891B
B KEYHOLE 44287	ADVANCE 14562	TURBINE 32854	INCLINE 7814	UNAWARE 1876B
C FAILURE 58847	BAPTISE 49514	WEAKEN 51857	HOSTAGE 68159	SOAKING 5702B
D GADGETS 24882	LESSONS 39008	CHEARLY 53452	TWISTED 9677	EVOLVES 21489
E REACTOR 61197	ZIPPERS 21622	OVERLAP 22868	TAXABLE 14439	QUIBBLE 52892
F REUNION 19847	BLEAKLY 27442	PADLOCK 43672	WARTIME 21383	NATIVES 30995
G OBSERVE 5867	CORPSES 4831	DIALLED 13517	ALGEBRA 57802	JUMPING 21164
H DIVERGE 3644B	ZYGOTES 21882	CIRCLES 4485	BETTING 996	SHALLOW 35864

### Passing the word

Bonecruncher  
Superior Software

HERE are the passwords for the 24 levels of Superior's Bonecruncher:

- 1 No password
- 2 BEGINNER
- 3 ATOMIC
- 4 COMPLEX
- 5 ANIMAL
- 6 NOMINAL
- 7 SCORPION
- 8 TOLERANCE
- 9 SCAREY
- 10 CRAZY CAVE
- 11 LEPPARD
- 12 SNAKE
- 13 PEWTER
- 14 DRAGON
- 15 CHAMBER
- 16 DUNGEON
- 17 TORTURE
- 18 SLIMEY
- 19 ULTIMATE
- 20 SLIPPERY
- 21 COUNTDOWN
- 22 FATIGUE
- 23 DANGEROUS
- 24 DARKNESS
- 25 EXCALIBUR



### Dodgy poke

Blogger  
Alligata

SINCE I published in the November 1987 column an infinite lives poke for Alligata's Blogger, it has been brought to my attention that the poke may not work on later versions of the game — notably the one on Beau Jolly's 10 Computer Hits Volume 4.

To make amends for owners of that version, I have devised the following. Put the fully rounded tape into the recorder and type:

\*LOAD EBLAG1  
?&382A+460:CALL &3000

Wait until all the files have loaded, then enter any of the following pokes:

!&2913=&000801A9 : REM infinite lives  
?&28EF=4 : REM number of lives 1-255  
!&28F4=&068DEAEA : REM start screen

and finally CALL &2872 to start the game.



## Achieving the impossible

### Impossible Mission US Gold

The following extremely useful routine gives infinite lives and snoozers on Impossible Mission – a game so good I once considered buying a Commodore 64 just to play it. Luckily the game came out on the Electron just in time!

Enter Program I and save it on a blank tape as IMC. Then press Break and type in and run Program II. Put the Impossible Mission tape in the recorder fully rewound and press Play. Wait until the IM1 file has loaded, then save the modified version of this file on your own tape after IMC.

Press Break then chain IMC. When the message Searching appears after the IMCheat file has loaded, replace your tape with the original Impossible Mission tape and press Play. The GAME?? and GAME2?? files load as usual, but you now have infinite lives and snoozers.

```

10 REM Impossible Mission Cheat
20 REM by Chris Seatory
30 REM (C) Electron User
40 REM
50 C3=0:FOR AX=8100 TO 8134 STEP 4
60 READ AS:IA3=EVAL('8'+AS):C3=C3+
!AX
70 NEXT:IF C3=<88AEF6C66 VDU 7:PRI
NT Data incorrect' ELSE *RUN IMCheat
80 DATA 01A02AA2,78FFF720,04B016A9
90 DATA 8DB1A902,4C500205,A949BE00
100 DATA 09BB8030,8009B000,04A9B00E
110 DATA 4C685785,2E4C0B47,45404147
120 DATA 207F8232,00308034
    
```

Program I

```

10 REM Impossible Mission Converter
20 REM by Chris Seatory
30 REM (C) Electron User
40 REM
50 I&100=&2903CAAD:I&104=&3CA8DFE:?
&108=96
60 I&220=0:I&221=1:*FX14,4
70 *LOAD IM1
80 I&1676=&3E0D2B:*FX13,4
90 *SAVE IMCheat:1400*301 400 400
    
```

Program II



**MAIL ORDER OFFERS**

**MAIL ORDER OFFERS**

## Cheat it Again, Joe



Volumes  
1 and 2

Only  
**£2.99**  
each volume

Programs available  
only on cassette

### Volume 1

Elite	Repton 1	Boreouncher	Starship Command
Cradle	Repton 2	Killer Gorilla	Arcadians
Ravenhill	Star Wars	Elien	Kourtyard
Thrust	Quest	Living Daylights	Despatch Rider
Plan B	Thundertruck 2	Deathstar	Phantom

### Volume 2

Repton 3	Combat Lynx	Palace of Magic	Rensack
Around the World	Paperbits	Icarus	Imogen
Life of Repton	Sargon	Impact	Urdum
Plan B2	Soyrat	Magic Mushrooms	Karate Combat
Codenamed: Droid	Spellbinder	Planetoid	Repton 3 passwords

**The cheats**

Place your order today, using the form on Page 45

# MICRO MESSAGES

## Advanced machine code technique

THIS may seem a slightly dated question as it concerns your first series on writing arcade games which started in July 1985, but as I have only just got around to learning machine code I have only recently been able to read and understand them. I must first say I've found them a great help and I've learnt quite a bit, although on reading the article in the November 1985 issue, I came across something I did not quite understand. On looking over the listing, I found these two lines which caused some difficulty:

```
480 .olddata LDA &3000:EOR (old),Y
STA (old),Y
490 INC olddata+1:BNE pl:INC olddat
a+2
```

I can't work out why line 480 contains LDA &3000 and not LDA &C00, which is where the character data is stored. You said in the program description that olddata actually points to the first byte of the LDA opcode, so one is added to get the olddata low byte and two to get the high byte.

My query is: What has the address &3000 got to do with the location of the data, and what does INC olddata+1 and INC olddata+2, actually increase? I know these questions probably seem daft to you, but when it comes to machine code I always seem to run into problems or forget about most of the stuff I've read about, and have to go over it again. — Colin Harris, London.

● This is quite an advanced technique, but one well worth getting to grips with. The assembler will assemble the code to produce something like this:

```
900 .olddata
900 AD 00 30 LDA &3000
905 51 70 EOR (old),Y
905 EE 01 09 INC olddata+1
900 00 03 BNE pl
908 EE 02 09 INC olddata+2
```

The label *olddata* is set to &900, and the opcode for LDA — &AD — is stored at &900. The low byte of the address &3000 is stored at &901 and the high byte is at &902. Before the print routine is called the address of the sprite data is stored at *olddata+1* — &901 — overwriting the &3000. The increment commands increment *olddata+1* and *olddata+2* — &901 and &902 — the sprite data address. The &3000 is a dummy address and isn't used.

## Summer smash hit

TYNESOFF has done it again! *Summer Olympiad's* fantastic graphics, animation, sound, music, title screens and gameplay makes it even better than *Winter Olympiad 88*, and my personal

all-time favourite game. Particularly good features of the game are the lighting of the Olympic flame in the opening ceremony and the replay option after each event.

The game requires a lot of skill and strategy. After much practising I have won gold medals in fencing (9.0), triple jump (17.53m) and skeet shooting (64.02), but a 110m hurdles or a diving medal still eludes me.

I am now eagerly awaiting the future release of *Superman*, and *Circus Games* (which includes lion taming). Finally, congratulations are in order for making *Electron User*, especially the software reviews, even better. Well done! — Paul Sanderson, Chesterfield, Derbyshire.

## Colourful characters

HOW do you produce multi-coloured user defined characters? I am writing a Hangman program and need this technique for graphics. I am not quite sure if I have seen this before in *Electron User*, but if it has been published previously, could you please tell me in which issue? And if not, how can this be achieved? — Carl Hether-

ington (Aged 10), Ashby-de-la-Zouch, Leicestershire.

● To print multi-coloured characters you need to print at the graphics cursor by using VDU5. Here is a short program to demonstrate this technique:

```
10 REM Multi-Coloured
20 REM Characters
30 MODE 2
40 VDU 5
50 MOVE 640,512
60 GCOL 0,1
70 PRINT "1"
80 MOVE 640,512
90 GCOL 0,2
100 PRINT "1"
110 MOVE 640,512
120 GCOL 0,3
130 PRINT "1"
140 VDU 4
```

For a three-colour character you need to print three characters in three colours one on top of the other.

You normally need to define a separate graphics character for each colour, but the program here displays an underlined X using the built-in character set.

First enable printing at the graphics cursor using VDU 5, then MOVE to the position you want the character to be printed. Select the colour of the first character with GCOL and print it. MOVE back to the same position, set the next colour and print the next character. Repeat the process for the third colour.

## Moving the screen down

I WOULD like to thank Keith Watts of Watford (Micro Messages, November 1988) for his cure for lock-ups. I recently bought a second hand 32k Electron, and when I plugged it in it did just the same thing Keith's did. The following day one of my friends brought a copy of *Electron User*, and as I was reading the mail section I saw Keith's letter and followed his example. It did the job! Thanks Keith.

Is there any way to move the screen down a line? On the BBC Micro either \*FX144,255 or \*TV255 will accomplish this, but neither seem to work on the Electron. Finally, does anyone know

## Apply some Turbo pressure

I HAVE just bought a Slogger Master Ram Board for my Electron and when flicking through some back issues of *Electron User* I noticed an advertisement for it. It says you can run Acornsoft's *Aviator Flight Simulator* when in Turbo mode. Is this true, and if so, is it worth getting?

Now on to 64k games. Come on *Electron User* readers, if you have a Master Ram Board please start pressurising Superior Software to release 64k games using both this and the Turbo Driver as well. It could put them on the B side of the normal Electron games — more likely to if everyone writes in.

Also the new look of the magazine is great, but I would like to see more reviews for games. — Christopher Illidge, Holmes Chapel, Cheshire.

● Aviator does run in Turbo mode, but whether it is worth getting is a matter of personal opinion. Although quite old now, when it was released it was rated as one of the best flight simulators around.

Turn to Page 40 ►

#### ◀ From Page 39

where I could get a copy of the Forth language on cassette? Keep up the good work! - R. Webb, Thurstroft, Rotherham, S. Yorks.

● The Electron hasn't got a software command to move the screen down a line like a BBC Micro can. However, a TV engineer can easily adjust the screen height for you.

Acornsoft used to produce an excellent Forth package on tape, but we can't find anyone currently supplying it. Can any readers help?

## Disc upgrade no problem

I AM an English boy living in Holland, and I own an Electron, Plus 1 and Cub colour monitor. I'm thinking of upgrading my Electron with a disc system. I can get a Cumana disc drive from my uncle's work place, because he uses BBC Micros. Can I still get the Cumana disc interface - and where from, or will the disc drive work with the AP4 or AP3 interface?

I would also like to ask if there is an Electron User club? Your magazine is great, keep up the good work. R. S. Warren, Lelustad, Holland.

● A BBC Micro disc drive with its own power supply will work perfectly well with an Electron. You'll need a disc interface such as the AP3, AP4, Cumana or Pegasus. The AP4 and Pegasus use BBC Micro compatible discs so in your case, these are probably better than the AP3 or Cumana. There isn't an official User Club.

## The way to high speed

PLEASE don't succumb to the people who want more software reviews and cheats. The magazine stalls are full of magazines which have nothing but this in them. I think the layout of Electron User is fine as it is.

Enough of that. I am writing to ask which microprocessors would be compatible with the Electron instead of the 6502. I am looking to speed up my machine and do not want the expense of a Master Ram Board or Turbo Drive. There was a letter in the November 1988 issue of Electron User concerning the computer looking-up. I had an identical problem with my machine, and following what your reader did I have now cured the fault. Thank you Keith Watts.

Please could you stop quoting old back issues in reply to queries, as far as I'm concerned, they're unobtainable.

Which do you think would be the best disc interface to get - Pegasus from Slogger, or Plus 3, Plus 4 or Plus 34 all from Pres? - Gareth Boden, Southport, Lancashire.

● Unfortunately you can't gain speed by replacing the 6502 with another chip, as there isn't another one suitable for the Electron. A Turbo is the only solution.

All our early issues have sold out and are no longer available, but many readers do have back

issues, so find the references very useful.

All Electron disc systems are excellent, and there's little to choose between them. The AP34 enables you to access both ADFS and DFS discs and is the most flexible system.

## Driver for Star printer

IN reply to S.E. Stevenson's letter published in the October 1988 issue of Electron User regarding the use of the Star LC-10 with the Electron: Yes, the printer driver from the August 1987 issue does work with the LC-10.

The codes needed are in appendix B of the printer manual. The table below shows some examples:

Print style	On	Off
Italic	27,52	27,53
Emphasised	27,69	27,70
Double-strike	27,71	27,72
Underlining	27,451	27,45,0
Superscript	27,83,0	27,84
Subscript	27,83,1	27,84
Double-height	27,119,1	27,119,0

Star LC-10 print codes

I don't bother with NLQ highlights, as it is easier to set them from the control panel - which is one of the best things about the LC-10. Another tip regarding the printer driver that may interest readers is that it is possible to get 32 different print, pitch, and character set effects using the driver by ignoring the off codes and using the off to switch something else on. Obviously this is fairly impractical and hard to keep a track of, but I did find it useful when I had to do a bibliography that contained many different European characters. I was able to switch between all the character sets and still use various print enhancements all in one driver. So thank you very much Electron User and Julie Boswell for a very useful utility.

Also a thank you to Ian Booth for his label printer for View published in the October 1987 Electron User.

However, I would like to know if it is possible to print out all the addresses in a file at once, rather than one at a time? I feel this would greatly increase the usefulness of this utility.

If it is possible to publish an upgrade I would be

very grateful.

One more thing about the label printing: I noticed that in Mini Office II there is a label printing program. I have Mini Office I on cassette, so is it possible to exchange this plus cash for Mini Office II on disc or is this just for the BBC Micro? I have a Pegasus 400 system (5.25in disc).

If Mini Office II is not available on 5.25in disc for the Electron and it is not possible to upgrade your October 1987 label printer, do you, or your readers know of a good database label printer for the Electron either on disc or ram? - Richard Douglas, Leicester.

● We'll look into the possibility of upgrading the View label printer. Unfortunately, Mini Office II is not available for the Electron, and the BBC Micro version will not work. Can any readers suggest a good database and label printer?

## Picture is worth 1,000 words

NEARLY two years ago I received my Electron as a Christmas gift and have happily played on it, but recently I have decided to branch out. At first I decided to get a printer, but soon realised it wasn't as easy as it sounded. So I began to read the various advertisements in Electron User.

All seem to say something about the Plus 1 - please not more mathematics - but really I was confused. I didn't have the slightest clue as to what it was used for, so I thought that was the end of that.

But when I opened my September 1988 issue of Electron User, I was greeted by a simple diagram provided by Pres, and several questions which I now know the answer to. I would like to thank the Pres team for this simple guide. I have now decided to get the AP1 (yes I do know what it's used for) and the AP3 for the special package price of £149.99. But I still have a couple of queries about it.

Once I have received my AP1 and AP3 can I use it straight away or do I need special leads not included in the package? Finally, how easy is it to convert some of my own programs and some that are published in Electron User so they can be used on disc? - Kelvin Bierton, Hemel Hempstead, Herts.

● Unless stated otherwise, it can be assumed

## Word processing on an Electron

I OWN an Electron and cassette recorder. I would like to upgrade it as follows: I want to use a disc drive and printer, and also use it as a word processor.

Could you please tell me what I need to buy in order to do this, and the cost. Would it be possible for me to fit the additional pieces myself, or do I have to take it to a special centre? - Neil Hennessy, Blyth, Worksop, Notts.

● There is quite a choice of disc systems for the Electron - Pres AP3, AP4 and AP34, and Slogger Pegasus 400. All are excellent products, but the most flexible is probably an AP34 with one 80

track 3.5in drive and one 80 track 5.25in drive. This will enable you to use BBC format DFS and Plus 3 format ADFS discs. The cheapest system is the Pres AP3 at £113.85.

To use a printer you'll need a Slogger Rombox Plus at £54.95 or Pres AP1 at £49.95. View (£14.95 from Pres) or Starword (£19.95 from Slogger) are two excellent word processors. Use Starword with the Rombox Plus, and View with either the AP1 or Rombox.

You can fit all of these yourself as they are straightforward plug-in units requiring no specialist fitting knowledge, and you won't need to open your micro.

that all *Electron User* listings work just as well, if not better, on disc. In fact, some utilities are specifically for discs. No leads are necessary as they both plug into the back of the Electron.

## Down in the dumps

IN ANSWER to John Young's letter in the September 1988 issue of *Electron User*, here is a procedure for graphics on a TRS-80:

```
1000 DEFPROCskdump
1010 REM CALL printer
1020 REM Switch to graphics mode
1030 VDU 29,0;0;
1040 VDU 2
1045 VDU 1,10
1050 VDU 1,18
1060 FOR Y1=1023 TO 0 STEP-28
1070 FOR X1=0 TO 1279 STEP 4
1080 byte=fl
1090 FOR Y2=27 TO 0 STEP-4
1100 byte=byte+2
1110 IF POINT(X1,Y1-Y2)>fl byte=byte+1
1120 NEXT
1130 byte=byte+128
1135 VDU 1,byte
1140 NEXT
1150 VDU 1,10
1160 NEXT
1170 VDU 1,30
1180 VDU 3
1190 ENDPROC
```

This does take a long time to print a picture, but if the result is colour it's well worth waiting for. If any reader can speed it up, both Mr. Young and myself would very probably sit up and take notice.

The procedure does work, as I have a Radio Shack TRS-80 DMP100 (Radio Shack Jack for short) and it prints a black and white picture of any colour/black and white picture on the screen.

I have also discovered a fault in the Mini Office word processor. The time clock skips numbers. For example, the clock will go 0.00, 0.01, 0.02, 0.04, 0.05, 0.07, 0.08, 0.09, 0.011. This doesn't cause other faults, but for people who use the clock and trust it, this fault really does bungle the program up. — Mathew Charman, Hordean, Hants.

● Thanks for the screen dumps, it is sure to be appreciated by all TRS-80 owners. We don't think the Mini Office clock is wrong, it simply isn't updated frequently enough to display every second. Occasionally two seconds may have passed by the time it is printed, so the time appears to skip a second.

## Upgrade dilemma

FULL marks for your new magazine design. It is definitely more colourful, and is clearer to read. But what I am writing about is that I don't know whether to buy an Archimedes or add-ons for my

## Mystery error message

I HAVE had my Electron for nearly four years now, and have been very pleased with it. Recently I typed in the following short program:

```
10 *KEY10 *FX229,1;MOLD;MRUVIN
20 *FX229,1
30 CLS
40 PRINT
50 PRINT"Acorn Electron" ; "BASIC"
60 INPUT">X8:GOTO 60
```

I ran the program, and as soon as the > sign

```
*KEY1 *KEY1 PRINT;MPRINT;M
```

came up I pressed Break. I got the error message Key in use at line 10. I looked through appendix B in the user guide, but could not find this error message. Can you tell me what it means? — Barry Young, Holywell Bay, Nr. Newquay, Cornwall.

● This is a very unusual error message, and one that should not occur in this program. The only time it arises is when you try to define a function key within a function key like:

*Electron. I don't know which is the better disc size 3.5in or 5.25in — and who makes the best drives? Also, can you tell me if all the BBC Micro games will work on the Electron with the Master Ram Board fitted?*

Could everyone please get in touch with US Gold and ask them if they can convert *Out Run* for the Electron, BBC Micro and Archimedes. — John Tweede, Castlemilk, Glasgow.

● It is always very difficult to advise which upgrade path to take. An Archimedes will cost you at least £800, but a disc system and Master Ram Board for your Electron will only come to around £200. If you are basically quite satisfied with your Electron then a few inexpensive add-ons like a disc system and Master Ram Board will probably be sufficient for your needs for quite some time to come.

The best disc size is probably 3.5in. There is no difference between different makes of drive.

## Elite cheat

I RECENTLY read in your excellent magazine a plea for anyone having hints or tips for *Elite*. A couple of years ago I remember that published in *The Micro User* was a listing called *Elite Cheat*. This enabled you to program your own commander.

The program was written for a BBC Micro with a disc system, but it works 99 per cent perfect on the Electron, the other 1 per cent accounts for the double height text. — M. Trowsdale, Marden-Ash, Ongar, Essex.

● You'll find a full Electron version of this program in the November 1988 issue of *Electron User*.

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

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

## Cost-effective memory

HAVING recently obtained the excellent AP3 disc system, I am now interested in adding usable memory to my Electron. Can you suggest the most cost-effective way of achieving this? In which issue did you review the Advanced Battery Backed Ram? — L.G. Wilson, Farnborough, Hants.

● The only way of adding ram to the Electron is with a Slogger Master Ram Board costing £59.95. The Battery Backed Ram cartridge was reviewed in June 1987.

## Satisfied customer

PLEASE pass on my thanks to Keith Watts of Watford for his letter in the November 1988 issue of *Electron User* concerning a sick machine and the ULA chip. I recognised the symptoms as those of my first Electron, which had been relegated to the loft in disgust after £20 had been spent with an Acorn dealer trying to find the fault — he couldn't discover anything wrong.

As nothing ventured ... I decided to have a go, I had not opened up the machine before, but soon found the carrier and slid the chip backwards and forwards as Mr Watts directed. The result is that I now have a games machine for the children which has had two days of pounding without going wrong. Previously it went between 20 minutes and an hour before freezing up. Thank you *Micro Messages!* — Brian L. Giggins, Towcester, Northants.

certainly be the result of your own typing mistakes.

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

## FREE HELPSHEETS/MAPS

Spend over £4 on games and you may choose ONE of the following helpsheets/solutions and maps absolutely FREE

Spend over £10 and you may choose any TWO FREE :-

Shark.....(map)	The Hobbit.....(Solution)	Thunderstruck 2.....(Solution + map)
Special Plan B.....(map)	Chick.....(Solution + map)	Kouryaz.....(Helpsheet + map)
Zanzibar.....(Solution + map)	Plan B2.....(Solution + map)	Dunjuz.....(Helpsheet + 25 maps)
Straker's Run.....(Helpsheet)	Spy vs Spy.....(Helpsheet)	Sabotage Castle.....(Solution + map)
Zephy.....(Solution + map)	Elkar.....(Solution + map)	Palace of Magic.....(Solution + map)
Yugy.....(Solution + map)	Paperboy.....(Solution + map)	Impact.....(Helpsheet + password)
Armed.....(Solution + map)	Half-Kingdom Valley.....(Solution + map)	Islands.....(Helpsheet + 18 maps)
Return of R2.....(Map + tape)	Colossal Orb.....(Solution + map)	Sphinx Adventure.....(Solution + map)
Big Bug 52.....(Map)	Tarzan.....(Solution + map)	Anarchy Zone.....(Helpsheet + password)
Moorea.....(Solution)	Colombus' Drad.....(Solution + map)	Galbar.....(Helpsheet + 18 maps)
The Lost Crystal.....(Solution + map)	Stranded.....(Solution + map)	Bonecrusher.....(Password + 10 maps)
Imogen.....(Solution + 18 maps)	Thundershock.....(Solution + map)	Skinnish.....(Helpsheet)
Quest.....(Solution + map)	Suits.....(Solution + map)	Chick.....(Helpsheet)
Ravenall.....(Solution + 4 maps)	Phosphor's Quest.....(Solution + map)	Quest for Freedom.....(Solution + map)
Last of the Free.....(Solution + map)	Rick Hanson.....(Solution)	Kaylin.....(Solution)
Shark.....(Helpsheet + map)		Rick Hanson 2.....(Solution)

Extra helpsheets/solution and maps are available for only 50p each

## SUPERFAST SERVICE

Buy with confidence :

1. Over 300 titles always in stock.
2. Over 98% of orders despatched the day they are received by 1st class post.
3. We immediately replace any faulty games purchased from us.
4. Prices are fully inclusive - nothing else to pay.
5. We'll send you a free copy of our club magazine with lots more games, game reviews and bargains galore.

Over 10,000 Regular Satisfied Customers Can't Be Wrong!!!

TITLE & PUBLISHER	BBC or Casse	BBC 1.1 or 2.1	Matter Disc	TITLE & PUBLISHER	BBC or Casse	BBC 1.1 or 2.1	TITLE & PUBLISHER	BBC or Casse	BBC 1.1 or 2.1	
<b>M = Master Compatible</b>			<b>M = Master Compatible</b>			<b>M = Master Compatible</b>			<b>BUDGET CASSETTES BBC B or Electron</b>	
<p><b>IMPACT SOFTWARE (Discs are BBC B &amp; Master Compatible 405S)</b></p> <p>                     Gogger M 4.95 4.99 5.95                      Canon M 2.99 4.99 -                      Cheat It Again, Joe 1 2.99 4.99 -                      Cheat It Again, Joe 2 2.99 4.99 -                      Cheat It Again, Joe 3 2.99 4.99 -  <b>SUPERIOR</b>                      Reaction Infinity M 10.35 11.95 15.95                      Play It Again Sam 5 M 7.50 9.50 11.95                      Zippy M 7.50 9.50 11.95                      By Fair Means or Foul M 7.50 9.50 11.95                      Play It Again Sam 4 M 7.50 9.50 11.95                      Play It Again Sam 3 M 7.50 9.50 11.95                      Pipeline M 5.50 6.35 10.50                      Reaction Time M 7.50 9.50 11.95                      Gaster M 7.50 9.50 11.95                      Sycot M 7.50 9.50 11.95                      Play It Again Sam 2 M 7.50 9.50 11.95                      Bonecrusher M 7.50 9.50 11.95                      Spelunker M 7.50 9.50 11.95                      Play It Again Sam 1 M 7.50 9.50 11.95                      The Elder of Reaction M 5.50 6.35 7.50                      Palace of Magic M 7.50 9.50 11.95                      Reaction Around the World M 5.50 6.35 7.50                      Create Rider M 7.50 9.50 11.95                      CodeName: Dope (Slyk/M) M 7.50 9.50 11.95                      Grand Prix Con. Set M (BBC only) 7.50 9.50 11.95                      Rives &amp; Tracks (BBC only) M 10.35 11.95 15.95                      Elton M 10.35 11.95 15.95                      Irons Hits Vol 1 or 2 M 7.50 9.50 11.95                      Sup. Coll. 1 or 2 (BBC only) M 7.50 9.50 11.95                      Super Coll. 3 (BBC only) M 7.50 9.50 11.95                      Speech (BBC only) M 7.50 9.50 11.95                      Classic M 7.50 9.50 11.95                      Ravenall M 7.50 9.50 11.95                      Thrust M 7.50 9.50 11.95                      Galaxora M 7.50 9.50 11.95  <b>TINESOFT</b>                      Summer Olympiad M 7.50 11.95 11.95                      Sargon M 7.50 11.95 11.95                      Winter Olympiad '88 M 7.50 11.95 11.95                      Spy vs Spy M 7.50 11.95 11.95                      The Big F.C. M 10.35 10.35 10.35                      Boulderblast M 7.50 11.95 11.95                      Indoor Sports M 7.50 11.95 11.95                      Phantom M 7.50 11.95 11.95                      Outrigger M 6.35 - -                      Commonwealth Games M 6.35 10.35 10.35                      Future Shock M 7.50 11.95 11.95                      Microvial 1 (4 games) 3.99 - -                      Microvial 2 (4 games) 3.99 - -                      Microvial 3 (4 games) 3.99 - -                      Microvial Gold 3.99 - -  <b>MICROPOWER (State 40 or Trak when ordering Discs)</b>                      Trak (BBC only) M 4.95 4.99 6.95                      Dr Who (BBC only) M 5.95 - 6.95                      Micropower Magic 1 M 5.95 5.95 6.95                      Micropower Magic 2 M 5.95 5.95 6.95                      (BBC only)  <b>GODAE</b>                      Skinnish M 4.95 4.99 6.95                      Kouryaz M 4.95 4.99 6.95  <b>DATABASE SOFTWARE</b>                      Min Office (BBC only) 4.95 - -                      Spargake (BBC only) M 7.50 9.50 -                      Min Office 2 (BBC ONLY) 11.95 11.95 11.95                      Min Office 1 (Master Disc) 11.95 11.95 11.95  <b>A &amp; F</b>                      Chuckle Egg 4.95 - -  <b>ACCOMPLISH</b>                      Sphinx Adventure (Elec Only) 4.95 - -                      Rives &amp; Tracks (BBC Only) 4.95 4.99 -                      Shark M 7.50 9.50 -                      Breakthrough M 7.50 9.50 -                      Impact M 7.50 9.50 -                      Powerpack 1 (7 games) / Elec Only 4.95 - -                      Zippy M 4.95 6.75 -                      Canyack M 4.95 6.75 -                      Thunderbolt M 6.95 7.95 -                      Sphere of Destiny M 6.35 9.50 -                      Omega Orb M 2.99 4.99 -                      Galton Goodie Test Crocker M 3.50 6.90 -  <b>BBC SOFT</b>                      Benark (BBC Only) M - 11.95 -                      Back Queen (BBC Only) M - 11.95 -                      White Knight 12 (BBC Only) M - 11.95 -  <b>BEAU JOLLY</b>                      Five Star Games 1 (5 games) 4.95 - -                      Five Star Games 2 (5 games) 7.50 - -                      Five Star Games 3 (7 games) 7.50 - -                      Computer Hits 4 (10 games) 4.95 - -                      Computer Hits 4 (10 games) 7.50 - -                      Computer Hits 5 (5 games) 4.95 - -  <b>BIGBITS</b>                      Bugbyte Comp 1 (4 games) M - 4.99 -                      Bugbyte Comp 2 (4 games) M - 4.99 -                      Dunjuz M 2.99 4.99 -  <b>CD-ROMS</b>                      Football Director M 5.50 10.35 -                      Cosmos Bridge M 5.50 10.35 -                      Cosmos Chess M 7.50 11.95 -                      Save Dave Snooker M 1.99 4.99 -                      Ruler Group Football M 7.50 9.50 -  <b>CODA SOFTWARE (State 40 or 80 track)</b>                      Headbook M - 14.95 -  <b>CREATION PEOPLE</b>                      Sirk The Sirkam M - 8.95 -                      Tanks M 7.50 10.35 -                      Elk Adventure (BBC Only) M 7.50 10.35 -  <b>DOMICK</b>                      Romack Combat M 2.99 4.99 -  <b>DRAGON</b>                      Engine Strike Back (BBC Only) M 11.95 10.35 -                      Not a Penny Home (BBC Only) M 11.95 10.35 -                      Star Wars M 11.95 10.35 -                      Living Daylight (BBC Only) M 11.95 10.35 -                      Initial Pursuit (BBC Only) M 11.95 10.35 -                      Genus Edition M 11.95 10.35 -                      Young Players M 11.95 10.35 -                      Baby Boom M 11.95 10.35 -                      Bulls Eye (BBC Only) M 11.95 10.35 -                      Countdown (BBC Only) M 6.35 - -                      Treasure Hunt (BBC Only) M 7.95 10.35 -                      Bookbusters (BBC Only) M 7.95 10.35 -  <b>ELITE</b>                      BBC SOFTWARE                      The Lost Crystal M 9.50 10.95 -  <b>ELK ADVENTURE CLUB</b>                      The Ase of Kilt 4.95 - -                      Starship Quest 3.95 - -                      Magnetic Moon 3.95 - -  <b>FIREBIRD</b>                      Sentinel (BBC Only) M 7.50 11.95 -                      Choke (BBC Only) M - 14.35 -  <b>GRAND SLAM</b>                      World War 1 (BBC Only) M - 9.95 -  <b>GRAND CRUISE</b>                      Knockout (BBC Only) M 7.50 11.95 -  <b>HEWSON</b>                      Evening Star M 7.50 11.95 -  <b>HELIX SOFTWARE</b> State 40 or 80 Tracks (All BBC Only)                      The Ultimate Prize M - 6.35 -                      Prizes Part 1 M - 6.35 -                      Dream Time M - 6.35 -                      The Tarotia Scheme M - 6.35 -                      Stranded M - 6.35 -  <b>INCENTIVE</b>                      Moon Cruise 1.99 4.99 -  <b>NON-COMMERCIAL</b>                      Apocalypse (BBC Only) 7.50 11.95 -  <b>LOGOTRON</b>                      Xoy M 7.50 - -  <b>LEISURE GENIUS</b>                      Scribble (BBC Only) 10.35 11.95 -                      Monopoly (BBC Only) 10.35 11.95 -  <b>LYONS</b>                      Roundheads (BBC Only) M - 9.95 -  <b>MANDARIN</b>                      Lanoxit (80 Track Only BBC B with adware/adaptor RAM, B+ Master) M 7.50 9.50 -                      Icarus M - 4.99 -                      Time and Magic (80 Track Only BBC B with adware/adaptor RAM, B+ Master) M - 11.95 -  <b>MARTIN</b>                      War (BBC Only) M - 4.99 -  <b>MIRROSOFT</b>                      Mastermind &amp; Quizmaster 3.99 - -                      Teles M 2.99 4.99 -                      Sorfite 40 M 4.95 4.99 -                      Skies From Harrier 6.95 9.95 -                      SOSAS - - -                      Yes Prime Minister 11.95 15.95 -  <b>ROBICO (State 40 or 80 Track when ordering Discs)</b>                      Enfar Games M - 14.35 -                      Island of Xaan (BBC Only) M 7.50 10.35 -                      Rick Hanson Trilogy M 17.50 20.95 -                      Princes Theatru M 15.95 19.95 -                      Myrrom M 7.50 10.35 -                      The Hunt M 7.50 10.35 -                      Village of Lost Souls M 7.50 10.35 -  <b>TOPADOLGOS</b>                      Topolopolgia 514* State 40 or 80 Tracks 6.35 - -                      Return to Doom M - 10.35 -                      Kingdom of Hallel M - 7.95 -                      Countdown to Doom M - 7.95 -                      Adreth M - 7.95 -                      Philosopher's Quest M - 7.95 -  <b>ROBICO (State 40 or 80 Track when ordering Discs)</b>                      Enfar Games M - 14.35 -                      Island of Xaan (BBC Only) M 7.50 10.35 -                      Rick Hanson Trilogy M 17.50 20.95 -                      Princes Theatru M 15.95 19.95 -                      Myrrom M 7.50 10.35 -                      The Hunt M 7.50 10.35 -                      Village of Lost Souls M 7.50 10.35 -  <b>TOPADOLGOS</b>                      Topolopolgia 514* State 40 or 80 Tracks 6.35 - -                      Return to Doom M - 10.35 -                      Kingdom of Hallel M - 7.95 -                      Countdown to Doom M - 7.95 -                      Adreth M - 7.95 -                      Philosopher's Quest M - 7.95 -  <b>ELITE</b>                      BBC SOFTWARE                      The Lost Crystal M 9.50 10.95 -  <b>ELK ADVENTURE CLUB</b>                      The Ase of Kilt 4.95 - -                      Starship Quest 3.95 - -                      Magnetic Moon 3.95 - -  <b>FIREBIRD</b>                      Sentinel (BBC Only) M 7.50 11.95 -                      Choke (BBC Only) M - 14.35 -  <b>GRAND SLAM</b>                      World War 1 (BBC Only) M - 9.95 -  <b>GRAND CRUISE</b>                      Knockout (BBC Only) M 7.50 11.95 -  <b>HEWSON</b>                      Evening Star M 7.50 11.95 -  <b>HELIX SOFTWARE</b> State 40 or 80 Tracks (All BBC Only)                      The Ultimate Prize M - 6.35 -                      Prizes Part 1 M - 6.35 -                      Dream Time M - 6.35 -                      The Tarotia Scheme M - 6.35 -                      Stranded M - 6.35 -  <b>INCENTIVE</b>                      Moon Cruise 1.99 4.99 -  <b>NON-COMMERCIAL</b>                      Apocalypse (BBC Only) 7.50 11.95 -  <b>LOGOTRON</b>                      Xoy M 7.50 - -  <b>LEISURE GENIUS</b>                      Scribble (BBC Only) 10.35 11.95 -                      Monopoly (BBC Only) 10.35 11.95 -  <b>LYONS</b>                      Roundheads (BBC Only) M - 9.95 -  <b>MANDARIN</b>                      Lanoxit (80 Track Only BBC B with adware/adaptor RAM, B+ Master) M 7.50 9.50 -                      Icarus M - 4.99 -                      Time and Magic (80 Track Only BBC B with adware/adaptor RAM, B+ Master) M - 11.95 -  <b>MARTIN</b>                      War (BBC Only) M - 4.99 -  <b>MIRROSOFT</b>                      Mastermind &amp; Quizmaster 3.99 - -                      Teles M 2.99 4.99 -                      Sorfite 40 M 4.95 4.99 -                      Skies From Harrier 6.95 9.95 -                      SOSAS - - -                      Yes Prime Minister 11.95 15.95 -  <b>ROBICO (State 40 or 80 Track when ordering Discs)</b>                      Enfar Games M - 14.35 -                      Island of Xaan (BBC Only) M 7.50 10.35 -                      Rick Hanson Trilogy M 17.50 20.95 -                      Princes Theatru M 15.95 19.95 -                      Myrrom M 7.50 10.35 -                      The Hunt M 7.50 10.35 -                      Village of Lost Souls M 7.50 10.35 -  <b>TOPADOLGOS</b>                      Topolopolgia 514* State 40 or 80 Tracks 6.35 - -                      Return to Doom M - 10.35 -                      Kingdom of Hallel M - 7.95 -                      Countdown to Doom M - 7.95 -                      Adreth M - 7.95 -                      Philosopher's Quest M - 7.95 -  <b>ELITE</b>                      BBC SOFTWARE                      The Lost Crystal M 9.50 10.95 -  <b>ELK ADVENTURE CLUB</b>                      The Ase of Kilt 4.95 - -                      Starship Quest 3.95 - -                      Magnetic Moon 3.95 - -  <b>FIREBIRD</b>                      Sentinel (BBC Only) M 7.50 11.95 -                      Choke (BBC Only) M - 14.35 -  <b>GRAND SLAM</b>                      World War 1 (BBC Only) M - 9.95 -  <b>GRAND CRUISE</b>                      Knockout (BBC Only) M 7.50 11.95 -  <b>HEWSON</b>                      Evening Star M 7.50 11.95 -  <b>HELIX SOFTWARE</b> State 40 or 80 Tracks (All BBC Only)                      The Ultimate Prize M - 6.35 -                      Prizes Part 1 M - 6.35 -                      Dream Time M - 6.35 -                      The Tarotia Scheme M - 6.35 -                      Stranded M - 6.35 -  <b>INCENTIVE</b>                      Moon Cruise 1.99 4.99 -  <b>NON-COMMERCIAL</b>                      Apocalypse (BBC Only) 7.50 11.95 -  <b>LOGOTRON</b>                      Xoy M 7.50 - -  <b>LEISURE GENIUS</b>                      Scribble (BBC Only) 10.35 11.95 -                      Monopoly (BBC Only) 10.35 11.95 -  <b>LYONS</b>                      Roundheads (BBC Only) M - 9.95 -  <b>MANDARIN</b>                      Lanoxit (80 Track Only BBC B with adware/adaptor RAM, B+ Master) M 7.50 9.50 -                      Icarus M - 4.99 -                      Time and Magic (80 Track Only BBC B with adware/adaptor RAM, B+ Master) M - 11.95 -  <b>MARTIN</b>                      War (BBC Only) M - 4.99 -  <b>MIRROSOFT</b>                      Mastermind &amp; Quizmaster 3.99 - -                      Teles M 2.99 4.99 -                      Sorfite 40 M 4.95 4.99 -                      Skies From Harrier 6.95 9.95 -                      SOSAS - - -                      Yes Prime Minister 11.95 15.95 -  <b>ROBICO (State 40 or 80 Track when ordering Discs)</b>                      Enfar Games M - 14.35 -                      Island of Xaan (BBC Only) M 7.50 10.35 -                      Rick Hanson Trilogy M 17.50 20.95 -                      Princes Theatru M 15.95 19.95 -                      Myrrom M 7.50 10.35 -                      The Hunt M 7.50 10.35 -                      Village of Lost Souls M 7.50 10.35 -  <b>TOPADOLGOS</b>                      Topolopolgia 514* State 40 or 80 Tracks 6.35 - -                      Return to Doom M - 10.35 -                      Kingdom of Hallel M - 7.95 -                      Countdown to Doom M - 7.95 -                      Adreth M - 7.95 -                      Philosopher's Quest M - 7.95 -  <b>ELITE</b>                      BBC SOFTWARE                      The Lost Crystal M 9.50 10.95 -  <b>ELK ADVENTURE CLUB</b>                      The Ase of Kilt 4.95 - -                      Starship Quest 3.95 - -                      Magnetic Moon 3.95 - -  <b>FIREBIRD</b>                      Sentinel (BBC Only) M 7.50 11.95 -                      Choke (BBC Only) M - 14.35 -  <b>GRAND SLAM</b>                      World War 1 (BBC Only) M - 9.95 -  <b>GRAND CRUISE</b>                      Knockout (BBC Only) M 7.50 11.95 -  <b>HEWSON</b>                      Evening Star M 7.50 11.95 -  <b>HELIX SOFTWARE</b> State 40 or 80 Tracks (All BBC Only)                      The Ultimate Prize M - 6.35 -                      Prizes Part 1 M - 6.35 -                      Dream Time M - 6.35 -                      The Tarotia Scheme M - 6.35 -                      Stranded M - 6.35 -  <b>INCENTIVE</b>                      Moon Cruise 1.99 4.99 -  <b>NON-COMMERCIAL</b>                      Apocalypse (BBC Only) 7.50 11.95 -  <b>LOGOTRON</b>                      Xoy M 7.50 - -  <b>LEISURE GENIUS</b>                      Scribble (BBC Only) 10.35 11.95 -                      Monopoly (BBC Only) 10.35 11.95 -  <b>LYONS</b>                      Roundheads (BBC Only) M - 9.95 -  <b>MANDARIN</b>                      Lanoxit (80 Track Only BBC B with adware/adaptor RAM, B+ Master) M 7.50 9.50 -                      Icarus M - 4.99 -                      Time and Magic (80 Track Only BBC B with adware/adaptor RAM, B+ Master) M - 11.95 -  <b>MARTIN</b>                      War (BBC Only) M - 4.99 -  <b>MIRROSOFT</b>                      Mastermind &amp; Quizmaster 3.99 - -                      Teles M 2.99 4.99 -                      Sorfite 40 M 4.95 4.99 -                      Skies From Harrier 6.95 9.95 -                      SOSAS - - -                      Yes Prime Minister 11.95 15.95 -  <b>ROBICO (State 40 or 80 Track when ordering Discs)</b>                      Enfar Games M - 14.35 -                      Island of Xaan (BBC Only) M 7.50 10.35 -                      Rick Hanson Trilogy M 17.50 20.95 -                      Princes Theatru M 15.95 19.95 -                      Myrrom M 7.50 10.35 -                      The Hunt M 7.50 10.35 -                      Village of Lost Souls M 7.50 10.35 -  <b>TOPADOLGOS</b>                      Topolopolgia 514* State 40 or 80 Tracks 6.35 - -                      Return to Doom M - 10.35 -                      Kingdom of Hallel M - 7.95 -                      Countdown to Doom M - 7.95 -                      Adreth M - 7.95 -                      Philosopher's Quest M - 7.95 -  <b>ELITE</b>                      BBC SOFTWARE                      The Lost Crystal M 9.50 10.95 -  <b>ELK ADVENTURE CLUB</b>                      The Ase of Kilt 4.95 - -                      Starship Quest 3.95 - -                      Magnetic Moon 3.95 - -  <b>FIREBIRD</b>                      Sentinel (BBC Only) M 7.50 11.95 -                      Choke (BBC Only) M - 14.35 -  <b>GRAND SLAM</b>                      World War 1 (BBC Only) M - 9.95 -  <b>GRAND CRUISE</b>                      Knockout (BBC Only) M 7.50 11.95 -  <b>HEWSON</b>                      Evening Star M 7.50 11.95 -  <b>HELIX SOFTWARE</b> State 40 or 80 Tracks (All BBC Only)                      The Ultimate Prize M - 6.35 -                      Prizes Part 1 M - 6.35 -                      Dream Time M - 6.35 -                      The Tarotia Scheme M - 6.35 -                      Stranded M - 6.35 -  <b>INCENTIVE</b>                      Moon Cruise 1.99 4.99 -  <b>NON-COMMERCIAL</b>                      Apocalypse (BBC Only) 7.50 11.95 -  <b>LOGOTRON</b>                      Xoy M 7.50 - -  <b>LEISURE GENIUS</b>                      Scribble (BBC Only) 10.35 11.95 -                      Monopoly (BBC Only) 10.35 11.95 -  <b>LYONS</b>                      Roundheads (BBC Only) M - 9.95 -  <b>MANDARIN</b>                      Lanoxit (80 Track Only BBC B with adware/adaptor RAM, B+ Master) M 7.50 9.50 -                      Icarus M - 4.99 -                      Time and Magic (80 Track Only BBC B with adware/adaptor RAM, B+ Master) M - 11.95 -  <b>MARTIN</b>                      War (BBC Only) M - 4.99 -  <b>MIRROSOFT</b>                      Mastermind &amp; Quizmaster 3.99 - -                      Teles M 2.99 4.99 -                      Sorfite 40 M 4.95 4.99 -                      Skies From Harrier 6.95 9.95 -                      SOSAS - - -                      Yes Prime Minister 11.95 15.95 -  <b>ROBICO (State 40 or 80 Track when ordering Discs)</b>                      Enfar Games M - 14.35 -                      Island of Xaan (BBC Only) M 7.50 10.35 -                      Rick Hanson Trilogy M 17.50 20.95 -                      Princes Theatru M 15.95 19.95 -                      Myrrom M 7.50 10.35 -                      The Hunt M 7.50 10.35 -                      Village of Lost Souls M 7.50 10.35 -  <b>TOPADOLGOS</b>                      Topolopolgia 514* State 40 or 80 Tracks 6.35 - -                      Return to Doom M - 10.35 -                      Kingdom of Hallel M - 7.95 -                      Countdown to Doom M - 7.95 -                      Adreth M - 7.95 -                      Philosopher's Quest M - 7.95 -  <b>ELITE</b>                      BBC SOFTWARE                      The Lost Crystal M 9.50 10.95 -  <b>ELK ADVENTURE CLUB</b>                      The Ase of Kilt 4.95 - -                      Starship Quest 3.95 - -                      Magnetic Moon 3.95 - -  <b>FIREBIRD</b>                      Sentinel (BBC Only) M 7.50 11.95 -                      Choke (BBC Only) M - 14.35 -  <b>GRAND SLAM</b>                      World War 1 (BBC Only) M - 9.95 -  <b>GRAND CRUISE</b>                      Knockout (BBC Only) M 7.50 11.95 -  <b>HEWSON</b>                      Evening Star M 7.50 11.95 -  <b>HELIX SOFTWARE</b> State 40 or 80 Tracks (All BBC Only)                      The Ultimate Prize M - 6.35 -                      Prizes Part 1 M - 6.35 -                      Dream Time M - 6.35 -                      The Tarotia Scheme M - 6.35 -                      Stranded M - 6.35 -  <b>INCENTIVE</b>                      Moon Cruise 1.99 4.99 -  <b>NON-COMMERCIAL</b>                      Apocalypse (BBC Only) 7.50 11.95 -  <b>LOGOTRON</b>                      Xoy M 7.50 - -  <b>LEISURE GENIUS</b>                      Scribble (BBC Only) 10.35 11.95 -                      Monopoly (BBC Only) 10.35 11.95 -  <b>LYONS</b>                      Roundheads (BBC Only) M - 9.95 -  <b>MANDARIN</b>                      Lanoxit (80 Track Only BBC B with adware/adaptor RAM, B+ Master) M 7.50 9.50 -                      Icarus M - 4.99 -                      Time and Magic (80 Track Only BBC B with adware/adaptor RAM, B+ Master) M - 11.95 -  <b>MARTIN</b>                      War (BBC Only) M - 4.99 -  <b>MIRROSOFT</b>                      Mastermind &amp; Quizmaster 3.99 - -                      Teles M 2.99 4.99 -                      Sorfite 40 M 4.95 4.99 -                      Skies From Harrier 6.95 9.95 -                      SOSAS - - -                      Yes Prime Minister 11.95 15.95 -  <b>ROBICO (State 40 or 80 Track when ordering Discs)</b>                      Enfar Games M - 14.35 -                      Island of Xaan (BBC Only) M 7.50 10.35 -                      Rick Hanson Trilogy M 17.50 20.95 -                      Princes Theatru M 15.95 19.95 -                      Myrrom M 7.50 10.35 -                      The Hunt M 7.50 10.35 -                      Village of Lost Souls M 7.50 10.35 -  <b>TOPADOLGOS</b>                      Topolopolgia 514* State 40 or 80 Tracks 6.35 - -                      Return to Doom M - 10.35 -                      Kingdom of Hallel M - 7.95 -                      Countdown to Doom M - 7.95 -                      Adreth M - 7.95 -                      Philosopher's Quest M - 7.95 -  <b>ELITE</b>                      BBC SOFTWARE                      The Lost Crystal M 9.50 10.95 -  <b>ELK ADVENTURE CLUB</b>                      The Ase of Kilt 4.95 - -                      Starship Quest 3.95 - -                      Magnetic Moon 3.95 - -  <b>FIREBIRD</b>                      Sentinel (BBC Only) M 7.50 11.95 -                      Choke (BBC Only) M - 14.35 -  <b>GRAND SLAM</b>                      World War 1 (BBC Only) M - 9.95 -  <b>GRAND CRUISE</b>                      Knockout (BBC Only) M 7.50 11.95 -  <b>HEWSON</b>                      Evening Star M 7.50 11.95 -  <b>HELIX SOFTWARE</b> State 40 or 80 Tracks (All BBC Only)                      The Ultimate Prize M - 6.35 -                      Prizes Part 1 M - 6.35 -                      Dream Time M - 6.35 -                      The Tarotia Scheme M - 6.35 -                      Stranded M - 6.35 -  <b>INCENTIVE</b>                      Moon Cruise 1.99 4.99 -  <b>NON-COMMERCIAL</b>                      Apocalypse (BBC Only) 7.50 11.95 -  <b>LOGOTRON</b>                      Xoy M 7.50 - -  <b>LEISURE GENIUS</b>                      Scribble (BBC Only) 10.35 11.95 -                      Monopoly (BBC Only) 10.35 11.95 -  <b>LYONS</b>                      Roundheads (BBC Only) M - 9.95 -  <b>MANDARIN</b>                      Lanoxit (80 Track Only BBC B with adware/adaptor RAM, B+ Master) M 7.50 9.50 -                      Icarus M - 4.99 -                      Time and Magic (80 Track Only BBC B with adware/adaptor RAM, B+ Master) M - 11.95 -  <b>MARTIN</b>                      War (BBC Only) M - 4.99 -  <b>MIRROSOFT</b>                      Mastermind &amp; Quizmaster 3.99 - -                      Teles M 2.99 4.99 -                      Sorfite 40 M 4.95 4.99 -                      Skies From Harrier 6.95 9.95 -                      SOSAS - - -                      Yes Prime Minister 11.95 15.95 -  <b>ROBICO (State 40 or 80 Track when ordering Discs)</b>                      Enfar Games M - 14.35 -                      Island of Xaan (BBC Only) M 7.50 10.35 -                      Rick Hanson Trilogy M 17.50 20.95 -                      Princes Theatru M 15.95 19.95 -                      Myrrom M 7.50 10.35 -                      The Hunt M 7.50 10.35 -                      Village of Lost Souls M 7.50 10.35 -  <b>TOPADOLGOS</b>                      Topolopolgia 514* State 40 or 80 Tracks 6.35 - -                      Return to Doom M - 10.35 -                      Kingdom of Hallel M - 7.95 -                      Countdown to Doom M - 7.95 -                      Adreth M - 7.95 -                      Philosopher's Quest M - 7.95 -  <b>ELITE</b>                      BBC SOFTWARE                      The Lost Crystal M 9.50 10.95 -  <b>ELK ADVENTURE CLUB</b>                      The Ase of Kilt 4.95 - - </p>										



# How's this for an incredible deal?



**Magazine +  
monthly tape**

Usual  
price **£50**

**OFFER PRICE**

**£19**

*For details of the  
Cheat it Again  
compilations,  
please turn to  
Page 25*

Subscribe to *Electron User* for a year and we'll send you the monthly tape absolutely FREE! Plus you can buy any of the Cheat it Again Joe tapes for only 99p!

That's right, our tapes have proved so popular we've decided to make them available to EVERYONE who subscribes – totally free. And that adds up to massive saving of £31!

Just think, not only will you get your favourite magazine delivered to your door before it's on sale in the newsagents, you'll also get a free tape each month containing all the listings from that issue – plus the occasional extra.

And when you subscribe, you can buy any one of the three Cheat it Again, Joe compilations shown on Page 25 for just 99p.

*So, subscribe today for only £19, and as well as ensuring you get Electron User each month, with the free tape you'll save the wear and tear on your fingers, and get programs that work correctly – the first time!*

**Subscribe today, using the form opposite**

All prices include postage, packing and VAT  
Overseas orders sent exclusively by Air Mail

Valid to January 31, 1989  
Please enter number required in box

Some Electron User disc products are now available from P.R.E.S. through their advertisement in this issue.  
All software on this form is available only on tape

**Annual subscriptions** (see opposite) £ p  
Includes FREE monthly tape (UK only)

MAGAZINE	UK £19	3001	NEW	3002	RENEWAL
Europe (incl. Eire)	£23	3003	<input type="checkbox"/>	3476	<input type="checkbox"/>
Overseas	£38	3004	<input type="checkbox"/>	3477	<input type="checkbox"/>

Commence with \_\_\_\_\_ issue \_\_\_\_\_

Get either of these for only

**99p each**  
when you subscribe

(see page 46)

Cheat it again Joe 1 3078   
Cheat it again Joe 2 3077

**Surprise Bundle of 5 Tapes** **NEW**

(see page 10)

£9.95 3078

**Fun School 2** **NEW**

(see page 4)

Under 6 £9.95 3087   
6-8 £9.95 3088   
Over 8 £9.95 3089

**Educational Bundle** **NEW**

Including ALL THREE Fun School 1  
AND Nursery Rhymes

(see page 36)

£9.95 3084

Add £3 for Europe & Eire/£7 Overseas

**Cheat it again Joe** **NEW**

(see page 46)

Volume 1 £2.99 3094   
Volume 2 £2.99 3095

**Back Issue Bundles** **NEW**

(see page 10)

January-June 1988 £5.95 3085   
July-December 1988 £5.95 3086

Add £6 per bundle Europe & Eire/£12 Overseas

**Mini Office** (see page 30) £5.95 3062

Add £1 for Europe/Overseas

**Ten of the Best Educational Programs** **NEW**

(see page 13)

£5.95 3063

Add £1 for Europe/Overseas

**Magazine binder** £3.95 3059

Add £3 for Europe & Eire/£7 for Overseas

**Books** (see page 20)

All three books £7.95 3061

Add £3 for Europe/Overseas

TOTAL

Readers in Europe (inc Eire) add £2. Overseas add £5 per item unless otherwise indicated

Send to: Database Publications, FREEPOST,  
Macclesfield, Cheshire SK10 4YB

(No stamp needed if posted in UK) Please allow 28 days for delivery

Order at any time of the day or night

Telephone Orders: 0625 879920

Fax Orders:  
0625 879966

Orders by Postal:  
Key '89, then 614568383

MicroLink/Telecom Gold  
72:MAG001

Don't forget to give your name, address and credit card number

Payment: please indicate method (✓)

Access/Mastercard/Eurocard/Barclaycard/Visa

Expiry Date

No.

Cheque/Eurocheque made payable to Database Publications Ltd.

Name \_\_\_\_\_ Signed \_\_\_\_\_

Address \_\_\_\_\_

Post Code \_\_\_\_\_

Tel \_\_\_\_\_ EU10

All prices include postage, packing and VAT  
Overseas orders sent exclusively by Air Mail

Valid to January 31, 1989  
Please enter number required in box

Some Electron User disc products are now available from P.R.E.S. through their advertisement in this issue.  
All software on this form is available only on tape

**Annual subscriptions** (see opposite) £ p  
Includes FREE monthly tape (UK only)

MAGAZINE	UK £19	3001	NEW	3002	RENEWAL
Europe (incl. Eire)	£23	3003	<input type="checkbox"/>	3476	<input type="checkbox"/>
Overseas	£38	3004	<input type="checkbox"/>	3477	<input type="checkbox"/>

Commence with \_\_\_\_\_ issue \_\_\_\_\_

Get either of these for only

**99p each**  
when you subscribe

(see page 46)

Cheat it again Joe 1 3078   
Cheat it again Joe 2 3077

**Surprise Bundle of 5 Tapes** **NEW**

(see page 10)

£9.95 3078

**Fun School 2** **NEW**

(see page 4)

Under 6 £9.95 3087   
6-8 £9.95 3088   
Over 8 £9.95 3089

**Educational Bundle** **NEW**

Including ALL THREE Fun School 1  
AND Nursery Rhymes

(see page 36)

£9.95 3084

Add £3 for Europe & Eire/£7 Overseas

**Cheat it again Joe** **NEW**

(see page 46)

Volume 1 £2.99 3094   
Volume 2 £2.99 3095

**Back Issue Bundles** **NEW**

(see page 10)

January-June 1988 £5.95 3085   
July-December 1988 £5.95 3086

Add £6 per bundle Europe & Eire/£12 Overseas

**Mini Office** (see page 30) £5.95 3062

Add £1 for Europe/Overseas

**Ten of the Best Educational Programs** **NEW**

(see page 13)

£5.95 3063

Add £1 for Europe/Overseas

**Magazine binder** £3.95 3059

Add £3 for Europe & Eire/£7 for Overseas

**Books** (see page 20)

All three books £7.95 3061

Add £3 for Europe/Overseas

TOTAL

Readers in Europe (inc Eire) add £2. Overseas add £5 per item unless otherwise indicated

Send to: Database Publications, FREEPOST,  
Macclesfield, Cheshire SK10 4YB

(No stamp needed if posted in UK) Please allow 28 days for delivery

Order at any time of the day or night

Telephone Orders: 0625 879920

Fax Orders:  
0625 879966

Orders by Postal:  
Key '89, then 614568383

MicroLink/Telecom Gold  
72:MAG001

Don't forget to give your name, address and credit card number

Payment: please indicate method (✓)

Access/Mastercard/Eurocard/Barclaycard/Visa

Expiry Date

No.

Cheque/Eurocheque made payable to Database Publications Ltd.

Name \_\_\_\_\_ Signed \_\_\_\_\_

Address \_\_\_\_\_

Post Code \_\_\_\_\_

Tel \_\_\_\_\_ EU1A

ACCESS &amp; VISA

HOTLINE



# 21st. Software

MAIL ORDER

ONLY



Tel: JACQUI 0625 528885—Queries Ring 6p.m.—8p.m.

## COMPILATION TAPES:

5 Star Games vol. 3	7.25
Computer Hits 4	7.25
Play It Again Sam	7.25
Play It Again Sam II	7.25
Super Hits vol. III	7.25
Micro Value Gold	3.50
Micro Value	3.50

## NEW RELEASES:

Summer Olympiad	7.50
Repton Thru Time	5.50
Shark	7.50
Breakthrough	7.50
Barbarian	7.50
Pipeline	7.75
Saigon	7.50
Play It Again Sam III	7.50
Shark	7.75
Breakthrough	7.75
Fair Means or Foul	7.50
Exile	7.50
Play It Again Same IV	7.50
Play It Again Same V	7.50
Play It Again Same VI	7.50
Repton Thru Infinity	5.95

Incentives Adventure Creator 6.50

## UNDER A FIVER:

Nightmare Maze	1.99	Condition Red	1.99
Castle Assault	1.99	Mini Office	4.95
Astro Plumber	1.99	Micro Olympics	4.95
Diamond Mine	1.99	Hex	3.65
Diamond Mine II	1.99	Puppet Man	3.65
Darts	1.99	The Rising of Salandra	4.55
Joey	1.99	Wychwood	3.65
Ravage	1.99	The Nine Dancers	3.65
Bar Billiards	1.99		

Now from Tynesoft (Out 27th Nov) CIRCUS GAMES

7.75

## PRES:

Advanced Plus 2	11.50	ADT	32.50
Advanced Plus 6	35.95	AEDFS Eoo	18.99
Plus 1	47.95	AEDFS	22.15
Advanced Battery Backed Ram	37.99	ADI	26.75
ACP's Advanced Control Panel	32.50		

Colossus Chess IV	8.45
Brian Clough's Fortunes	12.95
Paperboy	7.75
The Lost Crystal	10.50
French Mistress A or B	7.95
German Master A or B	7.95
Spanish Tutor A or B	7.95
Italian A or B	7.95
Answer Back Jun. or Sen.	8.95
Answer Back Sport	8.95
Identify Europe	6.95
Spycat	7.75
Around World 40 Screens	5.95
Strykers Run	7.50
Codename Droid	7.50
Crazy Rider	7.50
Palace of Magic	7.50
Play It Again Sam	7.50
Elixir	7.50
Spellbinder	7.50
Life of Repton	5.95
Bonecruncher	7.95
Winter Olympiad 88	7.50
Indoor Games	7.95
Boulderdash	7.95
Micro Value Gold	3.99
Spy vs Spy	7.75
Oxbridge	6.75

Phantom	6.75
Microvalue	3.49
The Big K.O.	6.75
Futureshock	6.75
Jet Set Willie II	6.75
Goal	6.75
Commonwealth Games	6.50
Icarus	7.75
Tetris	7.25
Spitfire 40	7.95
Harrier Strike Force	7.95
Rick Hanson	7.75
Project Thesis	7.75
Myorem	7.75
The Hunt	7.95
Village of Lost Souls	7.95
Supergolf	6.50
Trafalgar	7.00
Cashcare	10.65
VAT Care	13.65
Building Society Care	8.95
Investment Care	12.95
TV Director	11.65
Squirrels Nuts Pack	7.95
Repton 3	7.75

## FACT FILE SERIES

(Must be used with Answer Backs)  
Arithmetic (6-11 years) 4.25

Spelling (8-12 years)	4.25
Natural History (10+)	4.25
English Words (12+)	4.25
First Aid (12+)	4.25
General Science (14+)	4.25
Know England (12+)	4.25
Know Scotland (12+)	4.25
Supersport (14+)	4.25
20th Century History (12+)	4.25
Association Football (14+)	4.25

## KOSMOS SOFTWARE:

French A&B	18.65
German A&B	18.65
Italian A&B	18.65
Spanish A&B	18.65
Ans. Back Sen.	11.65
Ans. Back Jun.	11.65
Ans. Back Sport	11.65
Any Facfile	7.45

## SUPERIOR SOFTWARE:

Superior Hits III	12.75
Codename Droid	12.75
Craze Rider	12.75
Palace of Magic	12.75
Play It Again Sam	12.75
Elixir	12.75

EDUCATIONAL &amp; GOVERNMENT ORDERS WELCOME

ALL PRICES ARE INCLUSIVE OF VAT AND CARRIAGE

OVERSEAS ORDERS PLEASE ADD £1.00 PER ITEM. INCLUDES INSURANCE

Please send me: Cass  Plus 3 Disc 

1.	£	
2.	£	
3.	£	
4.	£	

TOTAL £

Please make cheques payable to:

21st Software Ltd

Access No

 Visa, Mastercard, Eurocard  
Card holders name

Send Orders to:

 21st SOFTWARE LTD, Dept EU  
Cheyne House, 56 Stylal Road, Wilmstoad  
SK9 4AQ

Name \_\_\_\_\_

Address \_\_\_\_\_

Post Code \_\_\_\_\_

Tel. No (STD) \_\_\_\_\_

# Scroller

Scrolling the screen is easy with the aid of Paul A. Clarke's interesting utility

## Messages that creep up on you

**T**HIS short program demonstrates how to scroll a message across the screen. Regular *Electron User* readers will observe: "But that's been done umpteen times before!". And so it has, but never this smoothly.

What the program does is to scroll a line of text on the Mode 4 screen one pixel at a time. Previous scrolling message utilities could only jerkily move whole characters. The routine also includes wraparound so that pixels disappearing off the left-hand edge of the line reappear at the right.

Program 1 is a Basic implementation of the scroll routine, and this was used to check that the

algorithm developed was correct. Having verified this, it was converted to the machine code shown in Program 2.

The technique is to shift eight memory locations left one bit by multiplying each byte by two, the carry bits being temporarily stored.

Then blocks of eight bytes are shifted to the left by multiplying by two and their carry bits are

added to the previous block of eight bytes at bit zero. This continues until the end of the line, where the stored bits are added to the final block of eight bytes at bit zero.

The Basic scroller isn't a great deal of use because of its lack of speed, but it does give a sort of slow motion action replay of the super-smooth machine code version.

### Program 1

```
10 REM Basic scroller
20 REM By Paul A. Clarke
30 REM (c) Electron User
40 MODE 4
50 start=87898
60 PRINT TAB(4,26)Written by Paul
  A. Clarke
70 FOR TS=0 TO 7
80 NI=?*(TS+start)
90 IF NI>127 THEN TS?&70=1 ELSE TS?
&70=0
100 ?(TS+start)=NI*2
110 NEXT
120 FOR TS=0 TO 255
130 NI=?*(TS+start)
140 IF NI>127 THEN ?(TS+start-8)=?(T
I+start-8)+1
150 ?(TS+start)=NI*2
160 NEXT
170 FOR X=1 TO 7
180 IF ?(&70+X)=1 THEN ?(start+248+X
)=?(start+248+X)+1
190 NEXT
200 GOTO 70
```

### Program 2

```
10 REM Machine code scroller
20 REM By Paul A. Clarke
30 REM (c) Electron User
40 MODE 4
50 start=87898
60 FOR I=0 TO 2 STEP 2
```

```
70 PI=6900
80 [OPT1
90 LDx=0
100 .loop1 LDA start,X
110 CLC
120 CMP#128
130 BCSstore
140 LDx=0
150 STA&70,X
160 .ret1 LDA start,X
170 ASL A
180 STA start,X
190 INX
200 CPX#8
210 BNEloop1
220 .main LDx=8
230 .loop2 LDA start,X
240 AND#128
250 CMP#128
260 BEQadnext
270 .ret2 ROL start,X
280 INX
290 BNEloop2
300 LDx=0
310 .loop3
320 LD&70,X
330 CMP#1
340 BEQstoreend
350 .ret3 INX
360 CPX#8
370 BNEloop3
380 RTS
390 .store LDA#1
400 STA&70,X
410 JMPret1
420 .adnext CLC
```

```
430 LDA start-8,X
440 ADC#1
450 STA start-8,X
460 JMPret2
470 .storeend CLC
480 LDA start+248,X
490 ADC#1
500 STA start+248,X
510 JMPret3
520 J
530 NEXT
540 COLOUR TS:CLS:COLOUR 128
550 FOR I=0 TO 255 STEP 4
560 !(TS+start)=0
570 NEXT
580 PRINT TAB(4,26);Written by Paul
  A. Clarke;
590 ?&220=0:&221=9:&FX14,4
600 VDU 25,128,&F0F0:&F0F0:&F0F0:&F0
FB;
610 GCOL 0,0
620 COLOUR 129
630 COLOUR 0
640 PRINT TAB(0,0);"Scroller"
650 VDU5
660 X=72:Y=780
670 FOR T=1020 TO 992 STEP -4
680 FOR #=0 TO 256 STEP 4
690 X=X-16
700 IF POINT(M,T)=0 MOVEX,Y:VDU128
710 NEXT
720 Y=Y-32:X=72
730 NEXT
740 VDU4,23,1,0,0,0,0;
750 PRINT TAB(0,0);STRINGS(8,CHR$32)
760 REPEAT UNTIL 0
```

# Adventures

By Pendragon

## Christmas in Camelot

### Adventurer's Glossary

**Queen:** Be her champion and do as she commands.

**Quicksand:** You must cross it, but find a plank first.

**Rat:** Kill the vermin!

**Ravine:** Will surely need crossing, so look for a bridge.

**Ring:** Wear it with care. Remember Gollum!

**River:** Cross it by bridge or boat.

**Robes:** Try wearing them, but search the pockets first.

**Rocks:** Move them or climb them with care.

**Rope:** For climbing or tying to something.

**Rubbish pile:** Search it thoroughly, it may contain treasure.

**Ruby:** A treasure.

**Runes:** You will need to translate them before you can benefit from their immense knowledge.

**Rug:** Often a treasure, but may enable you to fly.

**A** LOT of the idle chatter among the mead swillers and serious port users at the Christmas festivities in Camelot this year will surely be concerned with the year which has almost passed. The passing moons have seen the Electron consolidate its position as a master among micros.

Nor does its popularity fade, as numerous adventure releases this year have proven. Just consider the goodies which have been released for the Electron during the past 12 months: *American Suds*, *Axe of Kolt*, *Hex*, *Blood of the Mutineers*, *Plane Crash*, *In Search of Atahualpa*, *Annabel Gray*, *Scoops*, *The Taroda Scheme*, *Stranded!* to name only a few.

Some cynics may question the Electron's future in an age of megabyte beasts, but they must consider the fact that thousands of Electron users have now upgraded their original machine with many powerful add-ons.

In the world of adventures the full range of BBC Micro Level 9 and Acornsoft games now unfold on Electrons fitted with either Slogger's Master Ram board or Jaffa's Mode 7 adapter. With adventure software houses such as Robico, Riverdale and Heyley continuing their support, the future has hardly ever been brighter.

In confirmation of the above, my mailbox has rarely been quite as bulging. Answering your letters is always a joy, but if you require a per-

This month's section has a distinctive flavour of readers scratching each others backs. Mrs A. Hawkins of Hinkley has kindly presented me with a complete solution to *Riverdale's Suds* which has enabled me to help David Noble who is experiencing problems in this game.

You will need to worm your way inside the chewing gum factory, David. That in turn should help you solve your other problem. The reservation number you require in the *Crosseyes* motel section can be discovered if you examine the scarecrow.

In return for her help, Mrs Hawkins asks for assistance with sticking points in *American Suds*. I had to turn to one of Paul Sanderson's maps to purvey the following information - one of the main pleasures in running this column is the way that readers use it as a forum for helping each other.

To open the safe in the den in part one of *American Suds* you must examine the painting and read the leaflet to discover the code. In part two, remove the loose bricks to

uncover the stetson, then paint the hat black before wearing it.

When you find yourself put into a pot in part three of the game, try eating the garlic. Also don't worry about being arrested for nudity in the final episode. Escape from the prison cell is a simple matter providing you are a jack of all trades.

Michael, of Hale in Cheshire, writes to ask for help in Larsoft's *Hex*. According to David Noble's solution to the game - see what I mean about helping each other - you must wait until the trinket shop opens. Then ENTER SHOP, EXAMINE SH, LF, EXAMINE URN, GET EARTH, LEAVE, DOWN, WEST and WASH EARTH. It is also a wise ploy to talk to the fisherman who you will find waiting outside the inn.

Elsewhere Simon Gumley's problem in *The Lost Crystal* is simply overcome if he continues to climb down the rope in the windmill.

Nick Rapson asks an age old question concerning *Twin Kingdom Valley*. He seems to be having difficulty with the dragon. I think

you will find the wooden staff ideal for bashing all manner of nasties like witches and dragons. Nick, Len Hughes finds that drinking in the inn leaves him very weak. One drink is good for you, Len, but the secret is not to have too much.

Meanwhile Nick Harrison is experiencing difficulties in another blast from the past, *Sphinx Adventure*. The ogre should be killed with the sword. Don't worry about the weapon melting after this bout.

The clumsy bear which seems to follow you everywhere will frighten the orc away and you will find the matches beyond the elephant. In the same game, Justin Anstey must retrieve the cheese from the goblins' dairy to catch the mouse.

Stephen Trumble is lost in the depths of the iron passages. You will need to adopt a drop and explore method if you are to map the maze, Stephen. This involves dropping a different object at each location to give each room a slightly different description. Try it and see.

## Problems

## Knights of the Round Table



This section is dedicated to experienced adventurers who offer their help and expertise to intrepid travellers who are stuck at various points in different adventures. Don't forget that if you write to one of my knights for help, please enclose a stamped self-addressed envelope.

Kneel and arise, Sir David Sheperdson, of 3 Tarn Villas, Cowpasture Road, Ilkley, West Yorkshire, LS29 8RH, who offers help with Adventureland, Voodoo Castle, Impossible Mission, Pirate's Cove, Mystery Funhouse,

Pyramid of Doom, Ghost Town, Robin of Sherwood, The Hulk, Spiderman, Golden Voyage, Golden Baton, Time Machine, Perseus and Andromeda, Arrow of Death and Sphinx Adventure.

Kneel and arise, Sir Timothy Wye of Horseshoes, Lenham Road, Headcorn, TN27 9TU, who can assist with: Kayleth, Golden Baton, Sphinx Adventure, Twin Kingdom Valley, The Hunt, Nine Dancers, Wychwood and The Puppet Man.

sonal reply, please include a stamped self-addressed envelope to cover the cost of return postage.

The yuletide gossip will also speculate on the presents we may be exchanging after the feast. My own Christmas list includes Blood of the Mutineers, Blazing Star, Annabel Gray and Reluctant Hero, each of which I will surely be playing into the golden hours of next year – long after the last hangover has cleared.

Then the New Year will bring promised releases of Riverdale's latest howler, Aussie Suds, and Labyrinth's ominous Quest for the Pendragon, both of which I await with excited expectation.

I must give very warm thanks to Ray Bay of Cheadle Hulme, Cheshire, for his explicit solution and map to Golden Voyage. If you would like to send me a list of your adventures Ray, one of my pigeons will return a suitable reward. Thanks also to Paul Sanderson for a whole bag full of solutions, all of which will be added to my monumental tomes of reference which now encompass the whole of the top floor of this

glorious castle.

The map this month concludes my series on mazes, and features a real twister from Oxbridge. I hope this helps some travellers stuck in this most perplexing game.

Many adventurers get stuck at the opening scenario to an adventure and give up too soon. Next month I will begin a series of maps of opening gambits which will hopefully put bewildered travellers on the right track. Next month's column will also feature the New Year Top 20 – watch this space.

● *That's it for this month, so until Santa becomes a myth, happy adventuring.*



## Readers' Hall of Fame

### Dodgy Geezers – Bill Zanzinger

You start in a cell. Travel East then South until you meet Bulletproof George, who will give you a slip of paper. Go West to St. Jude's Road, then North East to Pork Pie Parade. Continue North East to Electricity Street.

Go South into the Kafk and examine the paper. Phone 943-9999 and reply KEN when asked who you want. Journey North, East, East to the dog track and meet Tweedle. Things in Bags is the inside tip from Ken, so wait for the tip to win. Go West, West, North East, South, East and hang about, then go North into the Fish Finger pub at opening time. You will meet Tweedle again, who will hand over your winnings.

South, West, North then East will take you to the builder's yard where George is working. Hang about until the teabreak and get the pickaxe. Now journey West and drop both the money and the pickaxe.

Go South West, West into the Frog and Peach, then West again and get the box of matches. Examine the box before walking East, East, South East, South, North East and South into the warehouse. Examine the warehouse. A motor draws up, so you must hide. Listen to the conversation then lift the tarpaulin and examine the crates. Open the crates and get the nails. Go North, South West, North, North West and North East and get the money.

*(To be continued next month)*

## Solved

In *Enthar Seven* Neil Fawley can't understand the dwarf in the underground maze. It is something to do with a communication breakdown – try using the translator from the research centre.

In Robico's other classic, *Myorem*, Peter Davis is having problems leaving the mansion. Don't leave the house, but search for a secret passage through the fireplace to the garage. However, you will need to find some life saving artifacts before you attempt this.

In the same game Ian Short is very wet in the ditch and seems to be getting nowhere in particular. You must try to build a raft from the oil drum, a lid and some vine. Then, holding firmly on to the drum, jump into the culvert.

Robin Dixon appears to be floundering in the earlier *Saga of a Spy* adventures. You should read the messages you find and make a note of the anagrams and codes. A phone call will reveal very important information.

The newspaper in *Project Thesis* has stymied both James Donohue and Jatravartid

*Blot* – that must be a pseudonym. James explains the problem as follows: The official hint sheet asks me to imagine the newspaper code as a clock face where the numbers represent directions: 12 is North and three is East. It then illogically goes on to say that therefore 3.15 would be East and 3.00 would be North East.

The problem is not as illogical as it might first appear. The clockface represents the points of the compass so when both hands point towards the 12 they point North, both hands to the three they direct East and so on.

However, when one hand points to the 12 and the other to the three as in three o'clock you take the mean difference between them which lies between 1 and 2 on the clock face. Consequently you travel North East. Figure 1 hopefully shows this quite clearly.

Finally in *Melbourne House's* spoof on social climbing, *Hampstead*, John Butterfield can start his ascendancy by giving the lathe retaining bracket to the man on the train. But first make sure you get on the right train,

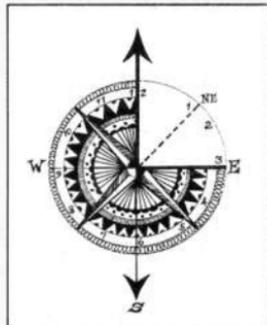
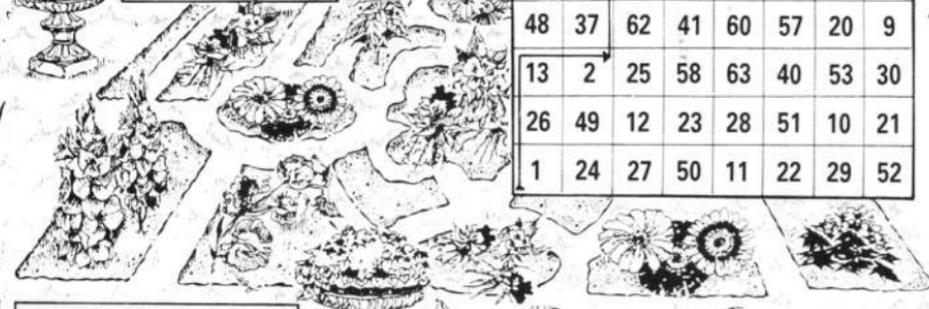


Figure 1: The newspaper code in *Project Thesis*

John. Then use your stolen credit card to improve your image at the gentlemen's outfitters.

# The Oxbridge Garden Maze



46	35	16	5	44	33	18	7
15	4	45	34	17	6	43	32
36	47	38	61	42	55	8	19
3	14	59	56	39	64	31	54
48	37	62	41	60	57	20	9
13	2	25	58	63	40	53	30
26	49	12	23	28	51	10	21
1	24	27	50	11	22	29	52

## Electron User Maze No. 6

This is a direct implementation of the classic Knight's tour chess problem. There are many possible solutions, and this is one of them.

**electron**  
user



## JAFAS SYSTEMS

Announce the latest addition to the Mode 7 product range

### MODE 7 SIMULATOR ROM

£25 Inc

The Mode 7 adaptor was acclaimed by reviewers: EU - "Very Impressive", A&B - "A Quality Product", AU - "Go on spoil yourself!"  
**Now, here is a SOFTWARE version, simulated in Mode 2.**  
 Gives FULL 8 COLOUR Mode 7 facilities  
 Includes Comms software for Prestel Use.  
 Still compatible with Wordwise, Teletext.  
 Compatible with Master RAM Board (HiMem at 5 Zc00)  
 Copies with direct screen pokes

Package includes Mode 7 screen editor on 3.5" disc or tape

### OTHER PRODUCTS STILL AVAILABLE

#### ROMPLUS-144

SIDEWAYS ROM CARTRIDGE With Printer Buffer and Filing System  
 Fits into Plus 1/Rombox plus slot - holds 7 ROMs plus 32k RAM. ROM's selectable from software on integral OS ROM. Compatible with PMS-NTQ, Wordwise, View etc.

Price £39 + £15 for RAM

#### MODE 7 ADAPTOR KIT

Bare PCB, ROM, Parts list and Layout £25 + £15 for Case

#### E2P SECOND PROCESSOR KIT

Original Version

Bare PCB, Construction Notes - With Software on tape ..... £15  
 Or on 3.5" disc or ROM ..... £20

All prices inclusive of post, etc. - Please allow 28 days for delivery

**JAFAS SYSTEMS**  
**9, LON-Y-GARWA**  
**CADERPHELLY**  
**MID-GLAMORGAN**  
**CF8 1NL**

**Telephone**  
**(Evenings & Weekends)**  
**0222 887203**



## MITHRAS SOFTWARE

Best selling software for your Electron at Bargain prices  
 New titles available from day of release

	RRP	Ours		RRP	Ours
Exile	12.95	9.95	Bonecruncher	9.95	6.95
Repton Infinity	12.95	9.95	Spellbinder	9.95	6.95
By Fair Means or Foul	9.95	7.50	Evening Star	9.95	6.95
Play It Again Sam Vol 5	9.95	7.50	Tetra	8.95	2.95
Shark	9.95	7.50	Skinner	9.95	4.95
Breakthrough	9.95	7.50	Kourtyard	9.95	4.95
Pipeline	9.95	7.50	Zoggy	8.95	4.95
Summer Olympiad	9.95	7.50	Quest	9.95	6.95
Winter Olympiad	9.95	7.50	Elkiv	9.95	5.95
Indoor Sports	9.95	7.50	Palace of Magic	9.95	5.95
Repton Shru Time	6.95	5.50	Xor	9.95	3.95
Life of Repton	6.95	5.50	5 Computer Hits	---	2.50
Around World in 40 Screens	9.95	5.50	Micro Value 1, 2 or 3 each	---	3.65
Five Star Games Vol. 3	9.95	7.50	Joe Blakes 1 or 2 each	---	1.99
10 Computer Hits Vol. 4	9.95	7.50			
Ecarius	9.95	5.50			
Barbarian	9.95	7.50	<b>ADVENTURELAND</b>		
Sargon	9.95	7.50	The Lost Crystal	11.95	9.95
Sivcat	9.95	7.50	The Hunt	9.95	7.50
Star Wars	9.95	7.50	Village of Lost Souls	9.95	7.50
Play It Again Sam	9.95	7.50	Project Thesis	9.95	6.95
Play It Again Sam Vol 2	9.95	7.50	Obnridge	7.95	6.25
Play It Again Sam Vol 3	9.95	7.50	Castle Frankenstein	4.95	4.50
Play It Again Sam Vol 4	9.95	7.50	Quest for Holy Grail	4.95	4.50
Demotrac Rider	8.95	6.95	Kingdom of Khan	4.95	4.50
Superior Collection Vol. 3	9.95	7.50	Rising of Salandra	---	4.50
Boulderdash	9.95	7.50	The Nine Dancers	---	3.65
Impact	9.95	7.50	The Puppet Man	---	3.65
Soy vs Soy	9.95	7.50	Hex	---	3.65
Colossus Chess	9.95	7.50	Wychwood	---	3.65
Colossus Bridge	9.95	7.50	Twin Kingdom Valley	---	2.95
Soccer Boss	---	1.99	Stranded	---	1.95
Steve Davis Snooker	---	1.99	Perseus and Andromeda	---	1.95
Football Manager	---	2.99	Escape from Pulsar 7	---	1.95
Golf	---	1.99	Waxworks	---	1.95
Mr Wizz	---	1.99	The Golden Baton	---	1.95
Perry Penguin	---	1.99	Perseus	---	1.95
Repton	---	2.99	Arrow of Death	---	1.95
Karate Combat	---	2.99	Scott Adams Scoops (3 adv)	---	1.95
Commando	---	2.99	The Quill	16.95	12.95

A full list of our Electron files is sent with each order  
 ALL PRICES INCLUDE VAT & P&P IN UK. ORDERS NORMALLY DESPATCHED THE SAME DAY BY FIRST CLASS POST BUT PLEASE ALLOW 7 DAYS  
 (Orders to Europe and Eire add £50 for each item. Worldwide add £1 for 1st and 50p for each other item. Please send cheque payable through a UK bank or give full details of your Visa, MasterCard or Eurocard)  
 Please Quote Electron (A BBC list is available on request) and send cheque. P.O.  
 Address or Visa number and cardholder's name to:

**MITHRAS SOFTWARE**  
 PO Box 151, Maulden, Bedford, MK45 2YH  
 Tel: (0525) 402630





**You won't have the wool pulled over your eyes when you play Steve Bissell's version of a classic arcade game**

ONCE again it is time for the annual sheep dog trials to start. Farmers have gathered from miles around, and together with their faithful dogs they wait to demonstrate their skill. Crowds of spectators surrounding the arena are eagerly awaiting the outcome. Who will be this year's supreme champion?

You are a bit apprehensive this time, and have had to train hard - your old border collie, Bob, isn't as fast as he used to be. Pity, it wasn't all that long ago that he would have run rings around this flock with one leg tied behind his tail.

There's a knack to controlling sheep, if only he can remember it today. No time to worry about that now though, the start has just been announced. As usual it looks easy, and you, in control of the dog, must drive the sheep upwards through the bottom gate and left to right through

PROCEDURES	
instructions	Print instructions and controls
init	Initialise game
screen	Draw screen
movedog	Move the dog
testsheep	Check for legal move
movesheep	Move sheep, check for score
score	Update score

the top gate, finally corralling them in the pen. Points are gained for each successful manoeuvre.

Sheep being the unpredictable creatures that they are, it's quite possible that they will run through a gate of their own accord. If this happens, you will be credited with the points automatically.

A time limit of eight minutes has been set, but the trial will be complete if you manage to pen all

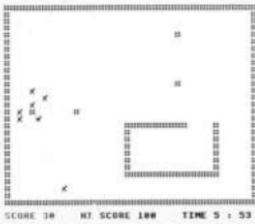
```

10 REM Sheep Dog
20 REM By Steve Bissell
30 REM (c) Electron User
40 IF PAGE=81100 GOTO 940
50 MODE1:=FX16
60 PROCInstructions
70 MODE M:
80 PROCInit
90 REPEAT
100 PROCscreen
110 TIME=0
120 REPEAT
130 TS=480-(TIME DIV 100)
140 PROCmovedog
150 PROCtestsheep
160 COLOUR 3:PRINTTAB(33,30);TXDIV60
: : ;TX MOD 60 ;
170 UNTIL :PI>5 OR TS<1
180 PROCgameover
190 UNTIL INKEY=86
200 MODE 6:END
210 DEFPROCInstructions
220 VDU 23,1,0;0;0;0;
230 COLOUR 129:COLOUR 2:PRINTTAB(10,
0)STRINGS(18,")TAB(10,1)" Sheep Dog
Trials TAB(10,2)STRINGS(18,")

```

**CONTROLS**

Z	Left
X	Right
*	Up
7	Down



```

240 COLOUR 128:COLOUR 3:PRINTTAB(0,5
)With your faithful border collie, yo
uTAB(0,6)have just 8 minutes in whic
h to driveTAB(0,7)some sheep around
a trials course.
250 COLOUR 2:PRINTTAB(0,9)Your score
points when a sheep passesTAB(0,10)'
upwards through the bottom gate, or fr
omTAB(0,11)'left to right through the
top gate.'
260 COLOUR 1:PRINTTAB(0,13)'the tria
l ends if you successfully penTAB(0,1
4)'all of the sheep, or the time runs
out.'
270 COLOUR3:PRINTTAB(0,16)'At the fi
nish you will be awarded - 50TAB(0,17
)'Points for each sheep enclosed withi
nTAB(0,18)'the pen. Plus, a time bonu
s.'
280 COLOUR 130:COLOUR 0:PRINTTAB(2,2
0)'Remember, sheep are unpredictable.
':COLOUR 128:COLOUR 3:PRINTTAB(3,23)
CONTROLS : Z = left X = rightTAB(
15,25)'* = up ? = down'
290 COLOUR 131:COLOUR 0:PRINTTAB(0,2
8)'Are you using a Turbo Driver? ( Y
or N ) ;
300 REPEAT:key=GET:UNTIL INKEY=69 OR
INKEY=86
310 IF INKEY=69 M:1:CX=2 ELSE M:=4:
CX=1
320 ENDPROC
330 DEFPROCInit
340 IF M:=1 VDU 19,2,2,0,0;
350 VDU 23,1,0;0;0;0;23,92,0,68,255,
68,68,255,68,68
360 VDU 23,91,196,71,124,124,124,
72,108,23,93,0,6,70,56,56,68,68

```

Turn to Page 52 ▶

VARIABLES	
AS(6),BS(28)	Screen data
S%(5,1)	X,Y coordinates of sheep
SX%,SY%	Temporary coordinates of sheep
X1%,Y1%	Movement of sheep
DX%,DY%	Coordinates of dog
H%,V%	Movement of dog
HI%	High score
YS%	Your score
P%	Sheep in pen
T%	Time

of the sheep within the time allotted. At the end you will be awarded 50 points for each sheep enclosed, plus a bonus for every second remaining on the clock.

Due to speed problems the program was originally written in two colour Mode 4. However, at the start of the program you will be asked if you are using a Turbo Driver. If so, typing Y will make the game run in four colour Mode 1.



**EXILE** is an even more enjoyable game to play than **ELITE** or **TARCH**.  
David Braben (co-author of Elite, author of Tarch)

**FREE TRIAL**  
Can You  
Beat Elite  
World Champion?

# EXILE



Leaving the Space Craft



Attacked by a Robot



Shooting the Mischievous Monkeys



Searching for Abandoned Weapons

### Have you the Skill and Cunning to Conquer the World of EXILE?

A Massive Arcade Adventure featuring Characters with Realistic Movements and Actions.

The planet Phoebus has been taken over by an exiled, evil Genetic Engineer, named Trax. In a complex world of caves, he has built an evil world inhabited by eccentric robots and strange mutated creatures, such as blue monkeys, giant wasps and sharp-toothed eyeless muggots. On the planet surface and around the caves are scattered the debris of a previous mission, and maybe some of the members of that ill-fated venture still remain.

Have you the skill and cunning to conquer the evil world of the exile? Are you of elite status? If you take up the challenge, you will have to carefully pick your way through the massive cave system, solving complex puzzles along the way and ruthlessly destroying the alien creatures, until finally you face the evil one himself.

### Each copy of EXILE includes:

- The Exile game programs, including an enhanced version which will run on the BBC Master series and BBC Micros with sideways RAM.
- A Novella, which sets the scene for the Exile game.
- An Instruction Manual.

The game was designed and written by Peter Irvin and Jeremy Smith.

BBC Micro Cassette ..... £12.95 Acorn Electron Cassette ..... £12.95  
BBC Micro 3 1/4" Disc ..... £14.95 BBC Master Compact 3 1/4" Disc ..... £19.95

(Compatible with the BBC B, B+ and Master Series computers)

Please make cheques payable to 'Superior Software Ltd'

(The screen pictures show the enhanced version of the games.)

**SUPERIOR SOFTWARE**  
Limited

**ACORNSOFT**

(Acornsoft is a registered trademark of Acorn Computers Ltd. Superior Software Ltd is a registered user.)  
Depot: EX1, Regent House, Skinner Lane, Leeds LS7 4AX. Telephone: (0532) 459453

Available from

**WHSMITH**  
and all major dealers



24 HOUR TELEPHONE  
ANSWERING SERVICE FOR ORDERS

### OUR GUARANTEE

- All mail orders are despatched within 24 hours by first-class post.
- Postage and packing is free.
- Faulty cassettes and discs will be replaced immediately.
- (This does not affect your statutory rights.)



# ZENON

1 or 2 Player Action  
Keyboard or Joysticks



Beaming down to start your mission

Alone in the thick of the action

Your jetpack boosts you away from the Terrapede

Together you can fend off attacks from front and rear

## ZENON - You wouldn't dare

Imagine a land so dangerous that only the most heroic of space explorers would dare to tread. A land filled with more evil foes than can possibly be overcome.

### Imagine Zenon .....

Zenon is total arcade action for one or two players. Playing alone is fantastic. Playing simultaneously with a friend is unbelievable.

Beaming down to the surface of Zenon from your intergalactic cruiser immediately puts you into the action amongst a host of deadly androids, meteorites, fireballs, missiles and other unforeseen perils. Set against a background of scrolling stars you must run for your life or boost into the air using your atomically-powered jetpack.

Initially you are armed with only a simple Repeat Laser which you will quickly find inadequate to deal with the sheer volume of enemies. Watch out for the opportunity to grab more powerful weaponry including the Twin-Shot Laser, Atomic Blaster and not forgetting the ultimate weapon - the lethal Machine Laser.

No space explorer has yet reached the heart of Zenon. There are 250 levels to be completed and new inconceivable monstrous androids will try to thwart you as you advance.

No one knows all of the aliens that await you, but many will undoubtedly require several hits to destroy them. Documented proof exists of only a few: the massive Terrapedes (snake-like androids), Orbitroids (giant steel eyes), Roomadrons (walking machines) and various types of Shapeoids; plus Rods, Zebbadoids, Packoids, Duckadrons and Rambadroids.

**Don't go alone.....**

### HOW TO ORDER

Simply fill in the coupon and send with a cheque or postal order to Impact Software.

- ▶ All "ZENONS" despatched by 1st Class Post on same day as order (Unparalised Service).
- ▶ Free postage and Packing.

**IMPACT Software**  
Impact Software  
Neepsend House  
1 Percy St.  
Sheffield S3 8AU  
Tel. (0742) 769950

To: Impact Software, Neepsend House, 1 Percy St., Sheffield, S3 8AU.

- Please send me the following:
- ZENON Electron/BBC Cassette @ £4.95
  - ZENON BBC B/Master 5 1/4" disc @ £4.99
  - ZENON Master Compact 3 1/2" disc @ £6.95

I enclose a cheque/PO (made payable to Impact Software) for £

(N.B. If there are any other games you would also like to order at the same time please see the comprehensive Impact Games Club advert elsewhere in this magazine.)

(BLOCK CAPITALS PLEASE)

Name .....

Address .....

Postcode .....

# THE MAGNIFICENT 7

## SUPERIOR

### PLAY IT AGAIN SAM 3



BBC Micro Cassette £9.95

## SOFTWARE

### PLAY IT AGAIN SAM 4



BBC Micro Cassette £9.95

## PRESENTS A

### PLAY IT AGAIN SAM 5



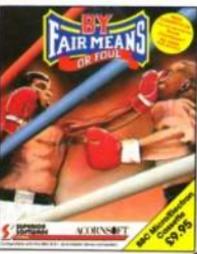
BBC Micro Cassette £9.95

FOUR HIT GAMES - Commando, Palace of Magic, Killer Gorilla, Killer Gorilla 2

Frisk, Spellbinder, Cosmic Camouflage, Grand Prix Construction Set (BBC Micro), Guardian (Electron)

FOUR CLASSIC GAMES - Imagen, Bug Blaster, Fortress (BBC Micro), Moonrider (Electron)

## MAGNIFICENT



BBC Micro Cassette £9.95

## CHRISTMAS



BBC Micro Cassette £9.95

## GAMES



BBC Micro Cassette £14.95

A realistic boxing simulation. You can even cheat. If the ref's not looking. Exciting and great fun!

A massive arcade adventure through pipeline complexes, with powerful games designer

"Exile is even more enjoyable to play than Elite or Zarch". - Dare you enter the World of Exile?

## Christmas Gifts

For someone else...

or treat yourself!

Play It Again Sam 3  
Play It Again Sam 4  
Play It Again Sam 5  
By Fair Means or Foul  
Pipeline

BBC Micro Cassette.....£9.95    Acorn Electron Cassette.....£9.95  
BBC Micro 5 1/4" Disc.....£11.95    BBC Master Compact 3 1/2" Disc.....£14.95

Exile  
Repton Infinity

BBC Micro Cassette.....£12.95    Acorn Electron Cassette.....£12.95  
BBC Micro 5 1/4" Disc.....£14.95    BBC Master Compact 3 1/2" Disc.....£19.95

**SUPERIOR SOFTWARE**  
Limited

**ACORNSOFT**

Superior Software Ltd., Dept M3, Regent House, Skinner Lane, Leeds LS7 1AX. Tel: (0532) 459453  
(Acornsoft is a registered trademark of Acorn Computers Ltd. Superior Software Ltd is a registered user)

## SELECTION



BBC Micro Cassette £14.95

The Ultimate Repton - four puzzling new games and a complete games designer.