

Games
galore and prizes
plenty must be won
your favourite monthly
CPC extravaganza

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ACU

MAY 1991

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EXTERMINATE!

Conniving creepy-crawlies get their come-uppance at last in Abdiogenic's outrageous Exterminator

LINK-UP

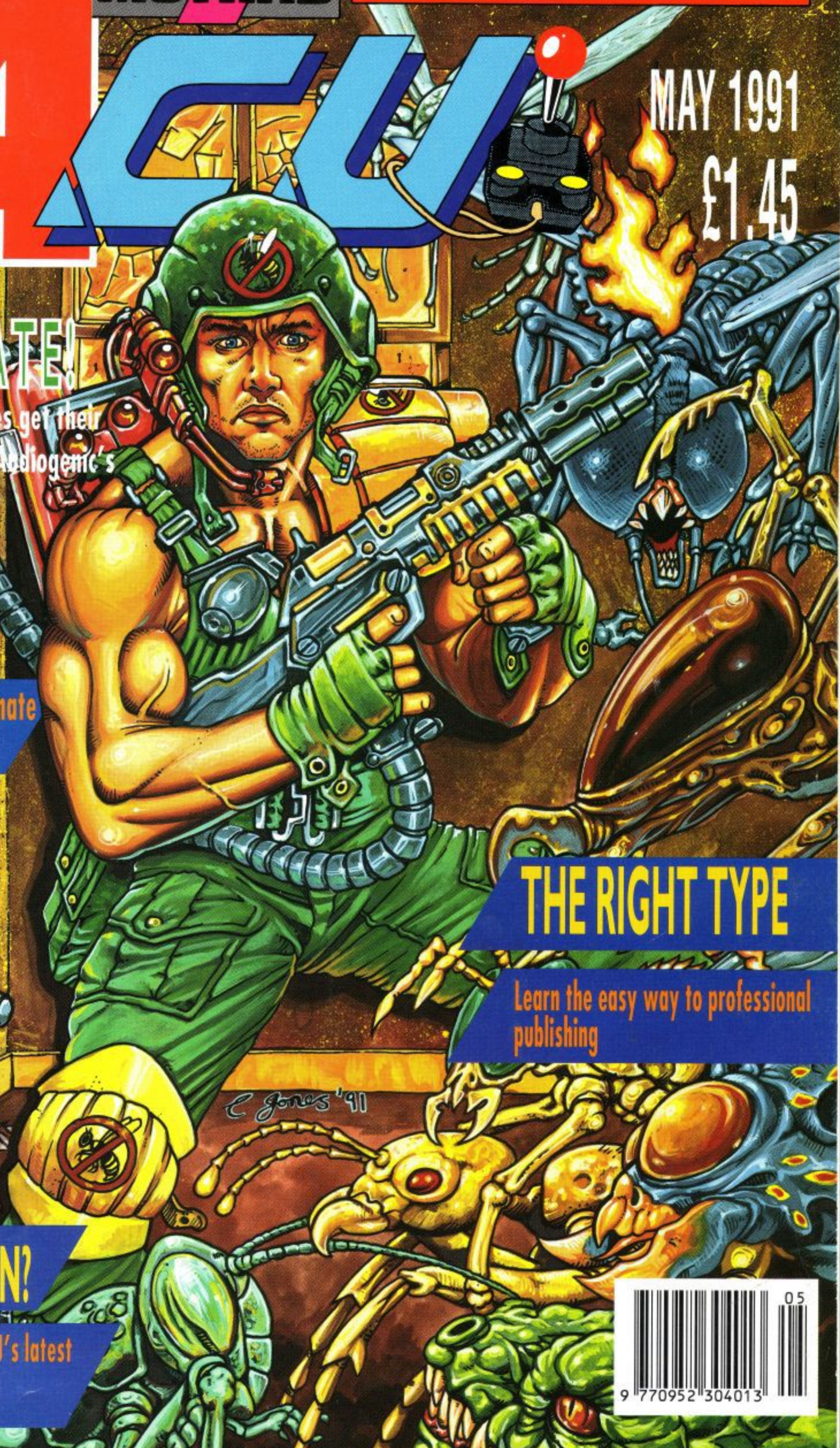
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THE RIGHT TYPE

Learn the easy way to professional publishing

FACT OR FICTION?

MYTH becomes reality in ACU's latest cartoon walk-through epic



e Jones '91



AVAILABLE
ON CPC



THERE WILL BE MOMENTS WHEN YOU'LL WISH YOU HADN'T TAKEN OFF!

'F-16 Combat Pilot pulls out all the stops'
- game of the month, The Games Machine.

'The mix between action and realism is terrific'
- ACE rated 952 - Advanced Computer Entertainment.

'F-16 Combat Pilot wins hands down'
- 5 star game - New Computer Express.

I'm primed for action as my F-16 leaves the runway. This time my mission is to destroy a battalion of tanks. Suddenly, threat warning - interceptors closing fast! I quickly select dogfight mode and arm a Sidewinder. We both fire at the same time - chaff and a high-g turn out manoeuvres his missile. A loud explosion tells me he's not so lucky.

SPECTRUM: cassette £14.95, disc £19.95



ATARI
SCREENS

ATARI ST: £14.95, IBM PC/LINEX/MS-DOS: £19.95 (available on 5.25" or 3.5" disc) £24.95 COMMODORE 64: cassette £14.95, disc £19.95

F-16 COMBAT PILOT

Flying fast and low, I turn my F-16 towards my target. Time to switch on the ground radar and arm the laser-guided Mavericks. I fire six missiles in quick succession, Lantirn automatically locking on to each tank. With flak bursting around me I dive for cover and head for home. Approaching base, I contact the tower and request a talkdown for my night landing.

Order your F-16 Combat Pilot now, simply telephone (0276) 684959 quoting VISA or ACCESS credit card number, name and address.

**BLACK
BOX**


Digital Integration
The Real World of Simulation

Digital Integration Limited
Watchmoor Trade Centre
Watchmoor Road, Camberley,
Surrey, GU15 3AJ

'F-16 Combat Pilot is a milestone in C64 programming - a true achievement'
- 88% - Your Commodore

NEW - 800K SOFTWARE - FREE

We are proud to announce MS800, the NEW STANDARD in 800k per disk software, and doubly proud to be giving it FREE with our 3.5" DUAL DRIVE. It is no longer necessary to pay an extra £20 to £30 for additional 800k software. Our new MS800 software is all you need to store up to 800K on each 3.5" disk. FEATURES INCLUDE: select 360k or 400k per side or even 2 x 180k per side (allows MULTIFACE II users to save to 3.5" disks in the B drive); choice of 64 or 128 directory entries; verify disks, CPM compatible; 464/6128 PLUS compatible and more.

MS800 can be bought separately for £9.95

THE NEW STANDARD IN 800k STORAGE

Formatting up to 400k on each disk side needs a SIDE SWITCH to be fitted to the drive. Our drives already have one fitted but for £3 we can supply a kit and instructions to fit one to any double sided 80 track 3.5" or 5.25" drive.

3 1/2" DUAL MODE DISK DRIVE £79.95

**800K STORAGE PER DISK PLUS £3 CARRIAGE
FREE MS800 OR FREE MAXIDOS - YOU CHOOSE**

Not only are our drives the best selling for both CPC's and PLUSs but they are:-

The **MOST RELIABLE** 3.5" disk drive available (TEAC); the **MOST COMPACT** drive of any size (4" x 6.75" x 1"); the **BEST PRICE** by far of any 3.5" drive; easily the **BEST FREE SOFTWARE** (the major utilities, Maxidos and Procopy, were until recently, sold at £13.75 each!); **FORMAT TO 800K** on each disk (MS800, ROMDOS, RAMDOS or RODOS is needed for this); **UNIQUE SIDE SWITCH** allows you to use the drive as a **STANDARD B DRIVE**, formatting to 178K free on each side of the disk. Everything that can be done with an FD1 can be done with our 3.5" drive. Now you can choose **NORMAL OR 'BIG DISK'** mode.

Supplied ready to plug in and use. Please state 464, 664, 6128, 6128 PLUS

BONZO SUPER MEDDLER.....£13.75
now includes the **BONZO HACKPACK - free!** The most comprehensive tape to disk utility. Supplied on disk with a huge database of verified transfers. Produces stand-alone transfers.
"A real alternative to a Multiface" - Amstrad Action
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BONZO BLITZ£13.75
now includes **BONZO'S DOODAH and 4 adventure games - free!**
Tape to disk transfers. Deals with all forms of Speedlock. Works on all CPCs. Huge database of verified transfers.

BONZO'S BIGBATCH.....£10.00
Fast, flexible DATABASE, superb FOOTBALL POOLS PREDICTOR plus a user-friendly, memory saving SCREEN & SPRITE DESIGNER.

BONZO'S FLASHPACK£10.00
Simply too much to list. Please send for details. "Best all round basic extension program" WACCI

DDI-1 DISK DRIVE £79.95 464 PLUS VERSION - £84.95

The DDI-1 is the only 1st drive for the 464
(please add £3 carriage)

FILE TRANSFERS - CPC TO/FROM PCs, PCWs, and OTHERS

2IN1 - £24.95

Moonstone's 2IN1, the Rolls-Royce of CPC/PC file transfer utilities, not only allows the transfer of files by copying to and reading from PC disks but it also allows the same data disk to be used in both machines. FORMAT, COPY, CAT, IDENTIFY FORMAT etc. PC disks on your CPC. Full range of utilities - fully menu driven. When compared to the rest AA said "Quite simply, it knocks the competition into a cocked waste paper basket".

MFU - £29.95

Transfers files easily to and from PC's, various CPM format machines (e.g. PCW), BBC's, Osborne and other computers. Its PC transfer is the basic 2IN1 program but without all the facilities. When MFU's PC transfer capability was compared with all the alternatives (except 2IN1), it was judged by AA to be "head and shoulders above the rest".

GENERAL

If you just want PC transfers then 2IN1 is by far the best. If you also need transfers to/from the other machines, then MFU is the one to have.

MAXIDOS (with free PROCOPY) £13.75

**THE MOST COMPREHENSIVE & EFFECTIVE GENERAL
DISK UTILITY AVAILABLE FOR THE CPC**

Fully compatible with **RAMDOS, ROMDOS, AMSDOS** and CPM formats!
COPY files/disks; **VERIFY** disks; **RESURRECT** erased files; **FAST FORMAT** Amsdos/Ramdos/Romdos; **IDENTIFY** format; CAT files (inc. erased ones) optional status/address/length/etc; alter **USER AREAS**, make/unmake system or read only, **DISPLAY** or **PRINT** files...**AND MUCH MORE!** **BEST SECTOR EDITOR EVER** for the CPC. All standard editing facilities **PLUS FILE MAPPING** to screen or printer, auto step by step movement through a file, string and byte **SEARCH** through file/disk. **FILE ARCHIVER** backs up disks to tape: variable baud rates. **SPEED UP YOUR DISKS!** unique **OPTIMISE** re-arranges your 'crowded' disks, making them load up to 50% faster.

OTHER ITEMS

64k DKtronics RAM PACK.....38.99
FD1 DISK DRIVE (See below)59.95
RAMDOS (disk)24.95
ROMDOS (rom)29.95
3.5" DISKS (branded bulk) 10 for 7.50
30 for 20.00
3" DISKS (Amsoft).....10 for 20.00
3.5" DISK BOX lockable, holds 40...7.00
PRINTER LEAD (CPC or PLUS) 6' ...8.00

Please add £3 p&p to disk drives
FD1 - state 464, 664, 6128 or 6128 PLUS

32k RAMROM - £13.95!!

The latest addition to our range is a little gem. It is 32k of RAM which can be loaded with 1 or 2 (yes two!) ROM programs. After which it behaves exactly like 1 or 2 ROMs. It plugs onto the computer so a romboard isn't needed. You can select a rom slot for each 16k bank or choose to have both banks on the same slot switching between them at will. Complete with through connector and type-in software, it is now available for an amazing £13.95. Send s.a.e. for fuller details or a cheque to get yours now.

EPROM PROGRAMMER only £30 inc. p&p

Transfer your favourite programs (Basic/Machine code) onto rom. Programs 8k, 16k, 21v and 12¹/₂v eproms. Powerful but easy to use software, rom to rom copy, editing, verification, single byte or block programming. Blank 16K eproms ... £3.50 each or 5 for £15.00

464 PLUS/6128 PLUS ADD-ONS

464 1st disk drive (DDI-1).....£74.95*
includes adaptor - ready to use
FD1 3" B drive (464 & 6128).....£59.95*
3.5" B drive (464 & 6128).....£79.95*
See above for full details
Printer lead (6ft).....£8.00
Plus to edge adaptor.....£8.50
Allows CPC add-ons to be used on the PLUS computers

Bonzo Super Medler..... See Above
Bonzo Blitz..... See Above

*Please add £3 p&p on disk drives
PLUS OWNERS WATCH THIS SPACE
We will add more items for your computer as quickly as we test them.



MICROSTYLE



DEPT. ACU, 212 DUDLEY HILL ROAD,
BRADFORD, W. YORKS BD2 3DF.
Tel: 0274 636652 (after 2pm).

Prices include VAT and carriage unless otherwise stated.

BrunWord

BrunWord Elite £55

Most word processors, including BrunWord 6128, are able to drive both daisy wheel and dot matrix printers. This creates the need for a style of printer control that is acceptable to two very different types of printers. BrunWord Elite does not have this restriction as it is specifically written to be used only with dot matrix printers. This gives it a unique advantage over other word processors and as a result it is able to provide much more advanced printer control. This is taken even further, as BrunWord Elite is supplied with an 8 Bit Printer Status Port which allows the programme to continuously monitor the status of the printer, (and provides the missing 8th bit for the original CPC6128). This enables the programme to respond in a more sophisticated way than normally possible. It will wait for ON LINE or <ESC> if the printer is initially OFF or OUT OF PAPER but automatically returns to the editor if the printer is turned OFF.

BrunWord 6128 £30

BrunWord 6128 is a complete word processing package with word processor, spelling checker and card filing programme. BrunWord 6128 out performs all other word processors for the CPC6128. It has its own high speed screen routine, giving it a very fast screen response and the editor features are logically arranged to be easy to learn. The spelling checker, with its dictionary, load into memory at the same time as the word processor, making access very convenient and exceptionally fast. It is supplied with an introductory tutor file.

BrunWord Features

*40, 80 or 128 column display. *Touch typing speed over 200 words/min. *True insert or overwrite. *Justify or unjustify paragraph or whole text. *Justified text has balanced appearance. *Instant word wrap. *Block save, move, copy, insert and delete. *Local editing with word delete/undelete. *Adjustable margins and TABs. *Column/Line/Page display with file name. *True word count. *Find and replace. *Help menus. *Memory filing system. *Single character embedded printer commands (18 with 3 codes and 21 with 10 codes). *Page throw markers. *Multiple copies. *Odd/even page headers/footers with page numbers. *Multi file printing (new page or continuous). *Print specified pages. *Works with any printer. *True display superscript and subscript numbers. *User defined print characters. *Load/Save ASCII files from/to other word processors. *Files can be encrypted. *Maximum file size about 9 pages of text.

BrunSpell Features

*Memory resident. *Checks 4,000 words/min. *30,000 word dictionary. *No American spellings. *Add up to 5,000 of your own words. *Instant lookup. *Helps to find correct spelling. *Automatic correction.

DataFile Features

*Alphabetical, numerical, date sorting. *User defined headings. *Search routine. *Data merging. *Label printing.

Free Booklet

Our 16 page free booklet explains all about our programmes. No need to write a letter, just send a large (A4 size) SAE to 'BrunWord & Printer', Brunning Software, at the address below.

Comparisons

We have tested BrunWord 6128, Prottext and Tasword 6128 with the same file of 3366 words.

The first test was to compare the scrolling speed of the screen, using line by line scrolling. This is a vital performance test as the CPC6128 tends to be naturally slow at this task. BrunWord scrolled 40% faster than Prottext which in turn scrolled 19% faster than Tasword.

Prottext was the fastest to justify but used a simple process that added spaces at the centre of each line, giving the middle of the text a bulging appearance. It did not display as it went along and so needed a separate operation to see the result. BrunWord displayed as it justified and produced the best appearance of all three. BrunWord was 30 times faster than Tasword.

Our simulated typing test achieved 218 words per minute. Both BrunWord and Prottext had no trouble at this speed but Tasword was very slow inserting text into the start of a paragraph and could only handle 16 words per minute.

The spelling test checked all 3366 words. BrunSpell took 52 seconds and needed no disc changes. Prospell took 6 min 24 sec and needed 8 disc changes. Taspell took 18 min 46 sec and needed 3 disc changes.

Info-Script £50

Info-Script is a complete data processing package and includes all the features of BrunWord 6128 and BrunSpell. The word processor and database can be resident together giving the speed and convenience of access to both programmes with no disc delays.

Database Features

*Very fast (e.g. takes 1 second to search 2000 addresses for surname 'Smith', initial 'B'). *Specific field search and/or progressive general search. *Instant sort on any field, alphabetical, numerical, date or reverse order (takes no time as the data does not move). *3 sets of user defined headings for each file. *4 markers for instant selection, plus one temporary marker. *Markers can be cleared or inverted and any pair can be added (allows complex searches to be quickly and easily performed). *No setting up of field type or length. *Efficient storage. *Relational records, Parents, Sons and Daughters. *Simple field to field arithmetic with running total. *Direct data merging into BrunWord. *Easy direct label printing, 1 across, 2 across, left of 2 or right of 2. *Single or multi-step.

Data Merging Features

*Simple intelligent system, &N &A &D construct full name, full address and date. *&1 &2 etc specify individual fields. *Insert or fixed format merging. *Automatic justify after merging. *Single step (see before printing) or multi-step. *Stop any time, go to word processor, restart same place. *Merge data from several records for summary, invoice, purchase order etc. *Simple arithmetic. *Running total. *Running VAT total. *Conditional loading. *Conditional printing. *Repeat patterns.

Quotes

"It may seem that I have just written a very long advert for BrunWord 6128 but I haven't, I'm just so impressed." (Phil Craven, ACU Feb 90, page 25).

"One such is Peter Brunning's BrunWord 6128 which is without doubt in my mind, the most powerful and friendly word processor available for the 6128 today, with the possible exception of.... BrunWord Elite!" (David Dorn, ACU July 90, page 43).

How They Compare

	BrunWord 6128 & BrunSpell	Prottext Disc & Prospell	Tasword 6128 & Taspell
Typing into 241 word paragraph	218 w/m	218 w/m	16 w/m
Typing into start of text	218 w/m	218 w/m	150 w/m
Scroll to end, line by line	1 min 27 sec	2 min 2 sec	2 min 25 sec
Justify paragraph of 241 words	1 sec	0.2 sec	34 sec
Change appearance to format and Appearance to Format	17 sec	17 sec	53 sec
Spelling check 3366 words	52 sec	6 min 24 sec	18 min 46 sec
Average speed	3883 w/m	526 w/m	179 w/m
Disc changes	None	8	3
Spelling help 'NECESERY'	1 sec	12 sec	Not possible
Spelling check word at cursor	0.5 sec	Not possible	Not possible
Screen format - columns	40, 80, 128	40 or 80	80 only
Page boundaries	Shown	Not shown	Shown

24 Pin Fonts

Before we designed the fonts for BrunWord Elite, we studied several good magazines. Fineline and Finetype are our variations of the two styles commonly used. Fineline is supplied in 3 sizes and Finetype in 2 sizes. To these we added a display font in computer style and a straightforward 'Heavy' font. Altogether there are 7 fonts supplied, 4 are full 24 pin, 2 are middle size 21 pin and one is a small size 16 pin font.

BrunWord Elite Features

BrunWord Elite has all the features and speed of BrunWord 6128 and BrunSpell, plus:-

*Print in columns *Specify page layout *Use special high quality proportional fonts *Use advanced micro justification with proportional text *Set printer margins independently *Move print head up or down paper, specified in inches from top *Set micro line spacing within text *Print line or box by specifying size and line thickness *Use absolute TABs with proportional text *Download a file directly from disc during printing. *Can be supplied with Info-Script for data merging.

Headline

Headline is a print enhancement utility for use with low cost 9 pin printers. It enables virtually all the features of BrunWord Elite, including the 24 pin fonts, to be used with any 9 pin Epson compatible printer with quadruple graphics (that's all well known modern 9 pin printers). Features include micro justification of proportional text, single, double or eight times height and 1 to 9 times width.

9 Pin Elite

The Elite system for 9 pin printers consists of BrunWord Elite, BrunSpell, Headline, 8 bit printer status port and 7 'type setting' fonts (fonts are 24 pin in size but only for 9 pin printers). Total price £55.00 inclusive.

9 Pin Elite+Info

The Elite system as above but including Info-Script and a backup disc. Total price £92.00 inclusive.

24 Pin Elite+Info

BrunWord Elite, BrunSpell, Info-Script, back up disc, 8 bit status port and 7 'type setting' fonts for downloading to a 24 pin printer. Total price £90.00 inc.

Send cheque/PO/Access number/Visa number to:

Brunning Software

138 The Street,
Little Clacton, Essex, CO16 9LS
Telephone (0255) 862308



BrunWord 6128 with BrunSpell & DataFile. . . £30.00
Info-Script with BrunWord 6128 & BrunSpell. . £50.00
9 Pin BrunWord Elite £55.00
9 Pin BrunWord Elite with Info-Script. £92.00
24 Pin BrunWord Elite with Info-Script. £90.00
100 Letters (needs Info-Script). £15.00
Supplied on 3in Disc for CPC6128 or CPC6128 Plus.
You must state which computer.

All prices are inclusive for UK. Overseas orders sent insured air mail - Europe add £2.50 : Rest add £7.50

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Editorial enquiries:
Tel: 0726 850539
All other enquiries:
Tel: 071 490 7161

Editor

Chris Knight

Group Technical Editor

John Taylor

Columnists

John Cook

Vyk Olliver

DM

David Dorn

Designers

Paul Ellis

Adrian Hulf

Illustrator

Julian Sharp

Advertising Executive

Adrienne Gilliver

Production Controller

Jayne Penfold

Production Assistant

Rachel Dixon

Deputy Managing Director

Ray Lewis

Managing Director

Peter Welham

Subscriptions

LAZAHOLD

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Ian Waugh rounds up ACU's excellent feature on music with some clever little routines to set your feet a-tapping

STAR AWARDS

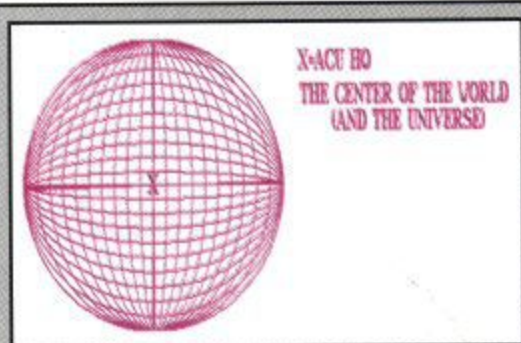
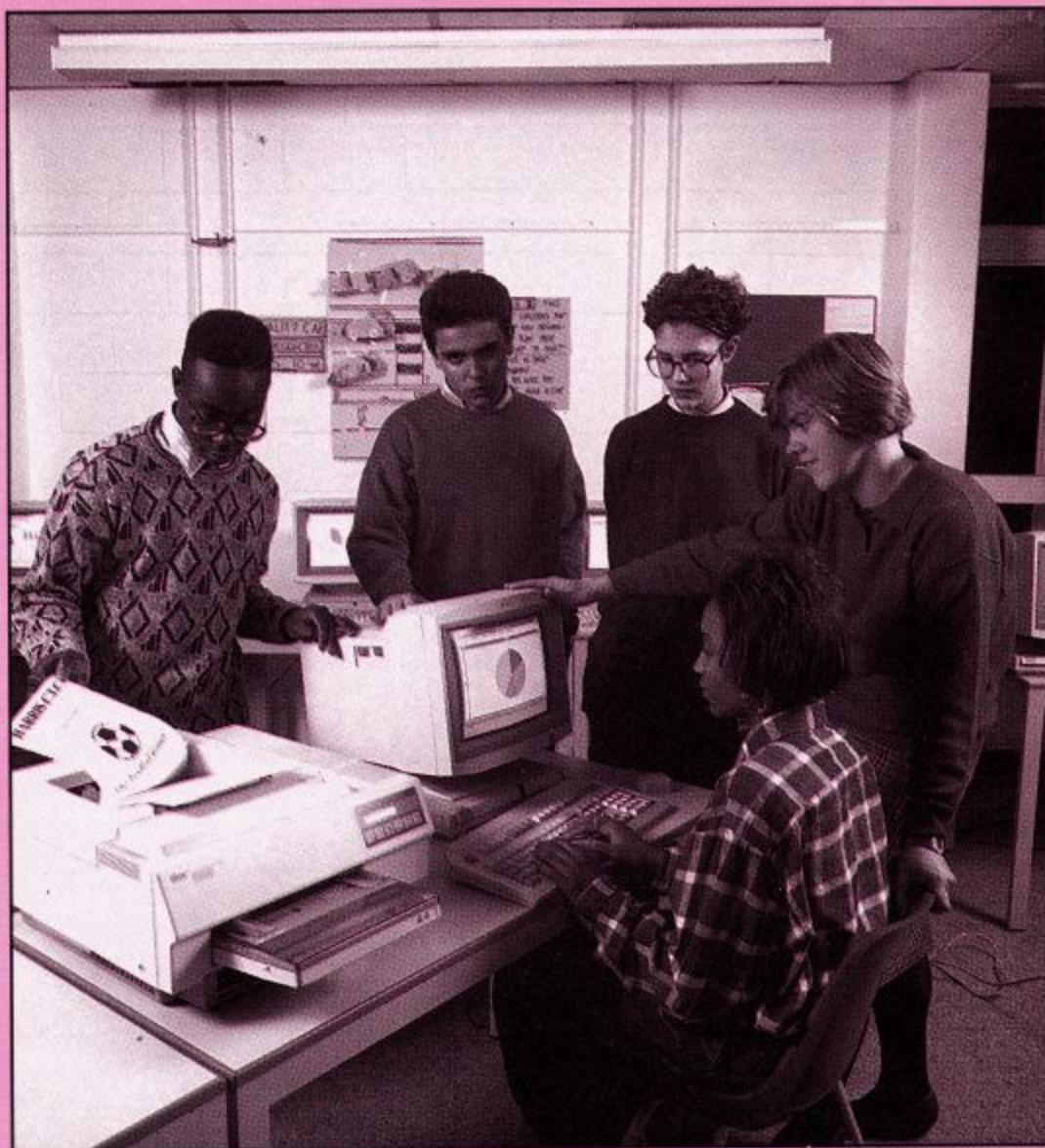
Over six thousand schools have recently been contacted to take part in the first stage of a new annual environmental competition to promote awareness amongst 16-18 year olds of the world around us.

Sponsored by Star Micronics, the youngsters will tackle projects on Global Warming and World Resource Use amongst other green topics, with oodles of computing equipment being given away to the regional winners.

Pretty soon, those winners will be taking on teams from all over the world to find the outright winner of the World and our Future award.

So, let's hear a rousing cheer of encouragement for those schools taking part and, if any of those regional winners are out there, let us know how your trials are going on the way to the final.

If you want to know if there's still a chance of entering, get in touch with Star at The World and our Future, Byron House, Wallingford Road, Uxbridge, Middx. UB8 2RW and go gunning for the prizes. Well done Star.



X MARKS THE SPOT

Remember that little compo we ran alongside the 3D World 10-liner proggy by Alan Scully? Well, here's the first entry we received, from Colin Sandiford of Leyton in London, who correctly placed the ACU team slap bang in the centre of the universe, though what they're doing there is anybody's guess.

Anyway, well done Colin, you should find a little goodie on it's way to you very soon for your prompt reply. Thanks to everyone else who wrote in, but unfortunately, there could only be one winner.

FIVE ALIVE!

If you haven't read any of the fabulous Famous Five adventures by Enid Blyton, then you simply haven't lived. If that's the case, then the chance to rectify that unfortunate situation is coming up very shortly with the release of the Famous Five computer game, based upon the books, from Enigma.

All of your favourite characters will spring to life on the screen, with more adventures to be had than you can handle without lashings of Ginger Beer to keep you going.

To coincide with the release, Enigma are offering a superb collection of prizes to those of you who can answer the simple questions below. For the lucky winner, there's a complete set of Enid Blyton's Famous Five epics, with 10 fantastic copies of the computer game going to the runners-up.

1. What is the name of the dog in the Famous Five?
2. Which was the first of the Famous Five adventures?
3. Who did the Five go to stay with in the summer holidays?

If you think you know the answers, then you could be in for the excellent prizes, but don't forget to state which format you want the game on with your entry.

When you've done, send your entry to ACU Famous Five Quiz, c/o Enigma Variations, 13 North Park Road, Harrogate HG1 5PD and then keep your eyes glued to the mailbox to see if you've won.

SHOPPING DATES

Here's an important date to stick in your diary if you want to keep up to date with the latest on the computer scene.

On May 10-12, the Spring Computer Shopper Show opens its doors at the Great Hall, Alexandra Palace, Wood Green in London.

Tickets are on sale at £6 for adults and £4 for children, though if you order in advance, you'll get a discount.

Special family tickets are also available for this ever-popular show for all the latest developments in computer software, hardware and peripherals.

DOUBLE CROSS

Here's a little something from Wiltshire based Parimgold that'll put an end to many a programmer's headache.

Kwikref/x is a low cost and easy to use cross-referencing system enabling users to pinpoint programming errors swiftly, compiling a sequenced list of variables and line numbers to the screen in a matter of seconds.

Value changes are listed and further tables show lines in which other lines are referred to, providing a total cross-referencing grid that should sort out



most, if not all teething problems on new programs.

For just £12.95, Kwikref/x is available from Parimgold Ltd., 45 Newtown, Hullavington, Wilts., SN14 6EL. Contact them now on 0666 837215 for more information.

MORE CLIPPINGS

SD Microsystems are proud to announce a brand new offer to CPC freaks. Yes, more fantastic clip-art at knock down prices. Using a special process, special picture discs including over 100 different drawings can be used with SD Microsystems' Page Publisher DPT package.

The art is taken from the public domain and the excellent cost of £12.50 per disc is set to cover conversion and postage costs only.

With the new Mouse Update, enabling Page Publisher to be used with the AMX Mouse, now available for just £5, prettifying up your publishing couldn't be much simpler.

To get your hands on the clip-art or the mouse update, contact SD Microsystems at PO Box 24, Hitchin, Herts, or ring them on 0462 422897.

ALL CHANGE

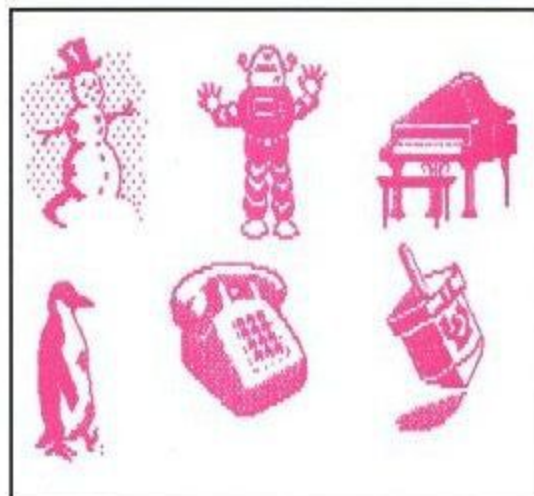
Ever get tired of lugging your hand-held joystick around? Or do you wish



you could grab your joystick off the table and get mobile? With the latest development from Gwent based KPK, you can now get the best of both worlds with the Converta, a joystick aimed for use both as a hand-held, or table top, use.

Using cleverly hinged doors on the underside of the device, the Converta is easily swapped around to provide comfortable zapping from any position.

On top of that, the microswitches inside are designed to be self-cleaning, ensuring positive action at all times. With the easily accessible handle mounted fire buttons, the Converta is well worth a try out on your next visit to the shops and, at under £10 a shot it looks like excellent value for money.



SCREEN HEROES

by Jules

THE DAME WHO BREEZED INTO MY OFFICE LOOKED DISTRESSED...



PRIVATE DETECTIVE

IT WAS A CASE OF MISSING DOCUMENTS...



...AND I'D BEEN CHOSEN FOR THE JOB

OKAY, JENNY - IF YOU HAVEN'T WIPED IT, IT'S GOT TO BE IN HERE SOMEWHERE. LET'S TRY AGAIN



THANKS ZIGGY - DO YOU WANT SOME MORE COFFEE?

A SMALL SELECTION FROM OUR WAREHOUSE

AMSOFT 3" DISCS BOX 10 + FREE DISC BOX £15.99 + 2.30

MULTIFACE 2	£45.23 + 1.15
MULTIFACE 2 FOR CPC PLUS (MF-2E)	£47.95 + 1.15

FED UP WITH YOUR OLD CPC TAPES? HERE'S YOUR ANSWER

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PACK 7 ONLY £4.50 + 3.45 p&p

BOTH PACKS ARE EXCELLENT VALUE FOR MONEY

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GREEN SCENE

I am writing on behalf of the Scalby School environmental group 'Earthsavers', to ask if your mega mag could use recycled paper for all the pages, and then print on at least one page that the mag is printed on recycled paper.

Stephen Patterson, Burniston, N.Yorks.

Ziggy: Well Stephen, the ACU team wishes it could use recycled paper, though at the moment, much of the paper that is recycled is too fragile for magazine use and tears too easily, while the more durable stuff is quite expensive.

Indeed, even many of the nature magazines haven't been able to use recycled paper as yet but, with technology advancing at the rate it does, you can be sure that when it becomes viable, both financially and in terms of quality, ACU will be fighting to be one of the first to become fully environmentally friendly.

FIRM SOLUTION

Last year in your October issue, Mr Bennett was offering to send copies of some of the Amstrad's ROM routines

to people who requested them. In your reply, you said that ACU was working on a permanent solution to the lack of Firmware manuals.

May I ask if this is still going to happen and, if so, when it will be released? Also, what sort of price would it sell for?

I ask all this as many aspiring machine code programmers, like myself, are finding themselves grinding to a halt with no Firmware manuals to tell them what they desperately need.

James Cundle, Wadhurst, East Sussex.

Ziggy: ACU is indeed still working to rerelease the old Firmware Guide for programmers, but negotiations are still taking place as to the minutiae. In the meantime, why not hunt through our Bits 'n' Pieces section, to see if you can't find one there.

DEAR ED

During the reign of some of your predecessors, it would seem that the Amstrad Computer User had no 'writers' guide' available. If you now have one, please let me have a copy.

What I would like to know is the kind of readership you aim at; what sort of length of article you are looking for; whether you are looking for an article which would spread over more than one issue of the magazine. It would be helpful, to both writer and editor, if the

guide gave information of the preferred physical aspects of the submitted material: paper size, type size, layout of the text, presentation of any diagrams or computer programs etc. Also of great interest would be payment rates.

Thomas Betts, West Wickham, Kent.

Ziggy: First and foremost, ACU's readership varies greatly from youngsters to O.A.P.'s, from beginners to experienced programmers, so as far as a writer's guide on that count goes, feel free to send in anything that you think will be of interest to CPC freaks, whether it's serious or lighthearted, just as long as it's informative.

Any format of copy, hard or on disk, can be accepted, although double line spacing on hard copy is preferable, and payment rates are usually negotiated per page or per 1,000 words, depending on space used for diagrams or listings. Fair enough?

BOOK BLUES

As a regular reader of your magazine, I would appreciate if you could let me know how I can obtain a book which will explain in simple terms the Amstrad CPC6128.

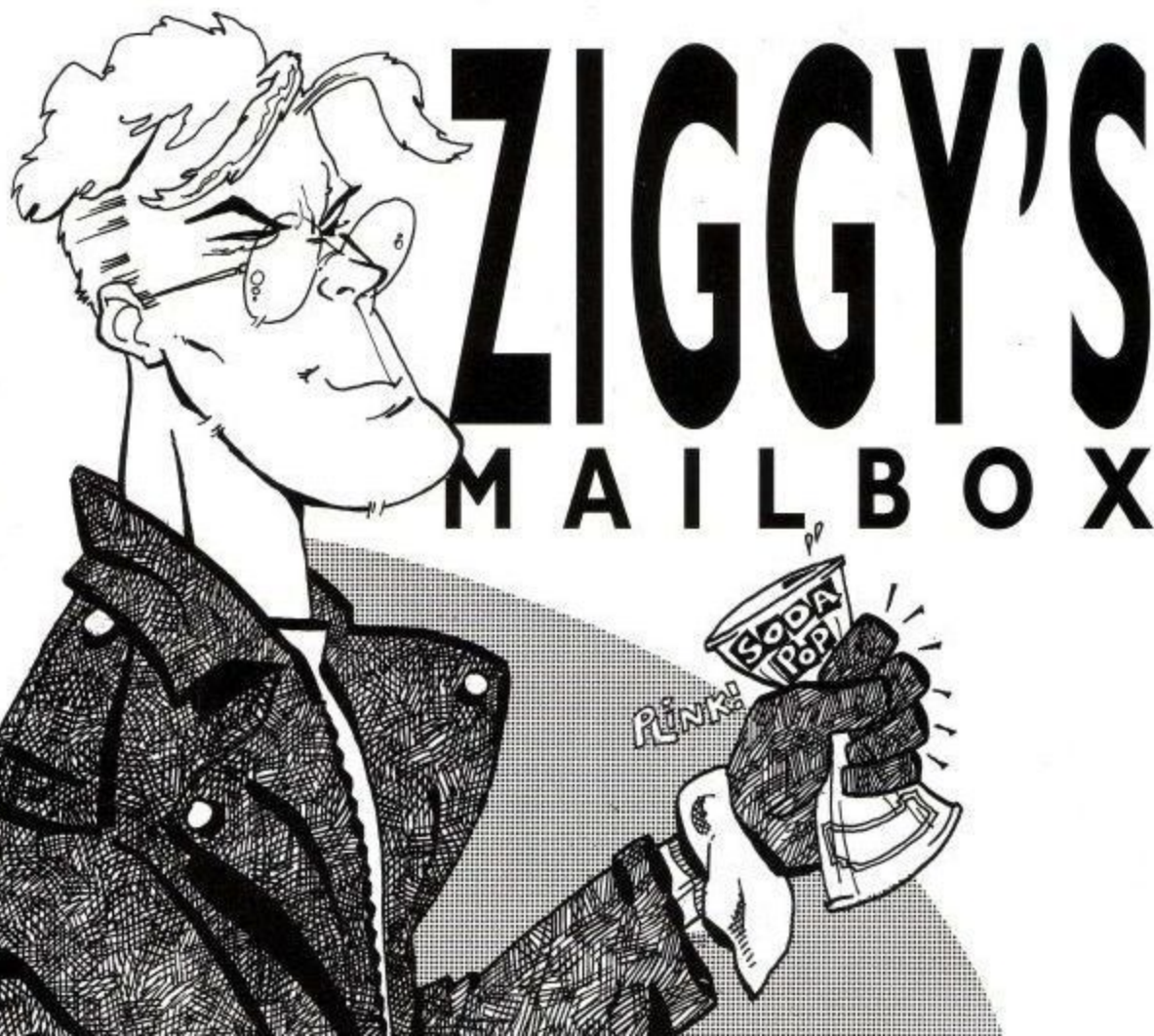
At present, I can only operate the computer with the aid of Mini Office 2 and would like to be able to use CP/M and understand how to use other software.

My computer is a few years old but works perfectly. I have the Amstrad User instructions but have not had the time to go through the whole book, which I find difficult to understand.

Peter Brinson, Brockley Rise, London.

Ziggy: Here are a couple to try out: *Introducing CP/M*, which has the ISBN number 0-00-383309-7, *Your First Amstrad Program*, by Rodney Zaks: ISBN 0-94788-800-4 and the *Amstrad Operator's Guidebook*: ISBN 0-434-90-321-3.

If you can't find these in your local bookshop, get along to the next All Formats Show at the New Horticultural Halls in Victoria, or the Spring Computer Shopper Show at Wood Green (see news pages for details), where you should find these and other books specially written to help new users get to grips with their machines.



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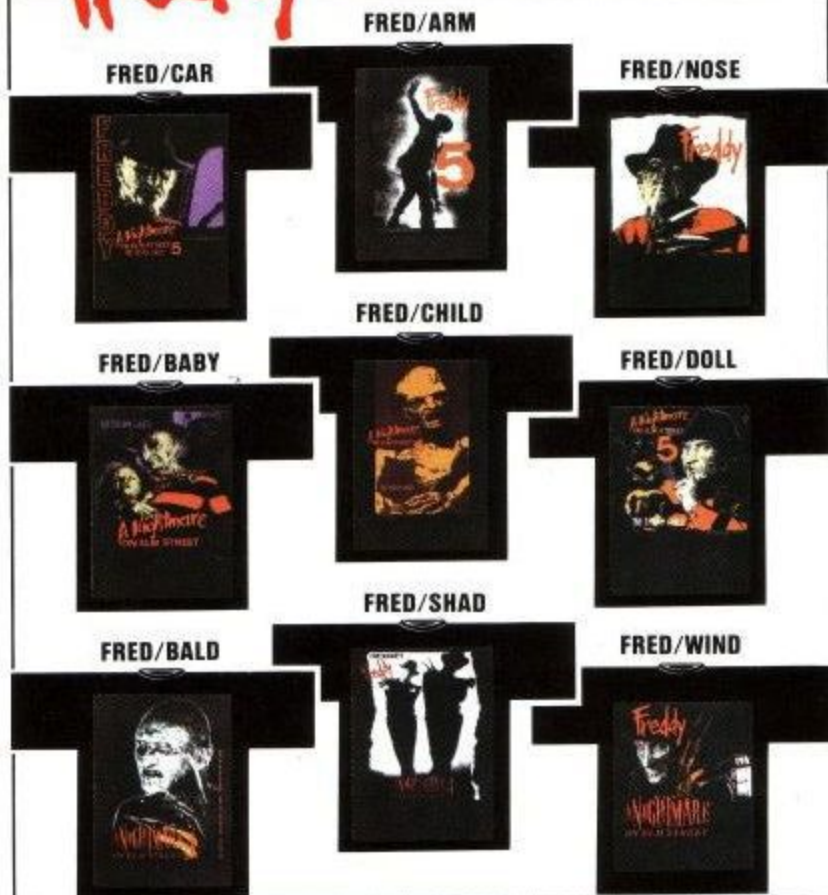
We've got a real wacky giveaway this month to coincide with our review of Audiogenic's epic Exterminator. Yes, you've guessed it, your very own set of controllable rubber exterminator hands. Switch them on and watch them wriggle and writhe to your command. Quite gruesome really. To get your hands (if you'll pardon the pun) on this excellent first prize, just answer the simple questions below and don't forget to state which format you want the game on with your entry. For the lucky runners-up, there are 10 superb copies of the Emlyn Hughes Arcade Quiz up for grabs, so get those entries in quick to grab the goodies.

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In my last piece I tried to set out the background to the 'attributes' every CP/M file has - its 'user area', its 'Sys(tem)' or 'Dir(ectory)' status and whether it is a 'Read/Write' or a 'Read Only' file. Now I would like to explain how to handle these and one other attribute, for which you will need CP/M Plus, but all of which can safely be used on AMSDOS discs. As I explained last time, you will need SET.COM. Enter

SET d:filename.Ext[sys]

to make a file a 'Sys' file and

SET d:filename.ext[ro]

to make a file 'Read Only'. Replace 'sys' with 'dir' and 'ro' with 'rw' (for 'Read/Write') to return a file to its original status.

A 'Read Only' file cannot normally be deleted or altered unless you use SET to change it to 'Read/Write' status. There are, however, two exceptions to this rule. If you FORMAT a disc, you destroy the directory as well as the files on the disc so the information about which files are 'Read Only' is destroyed at the same time. If you use PIP (the

PIP to 'read' a 'Sys' file. Another thing PIP assumes is that you will rarely want to copy files between different user areas. So while PIP will happily copy and link together files from several different disc drives as long as the user area is the same, it needs to be told very clearly to 'go to user area 3 with the file you got from user area 5' if you want to copy a file between different user areas. To do this with PIP Version 3 loaded and the * showing, you would enter:

b:[g3]=b:filename.ext[g5]

However, PIP always leaves the original file where it found it so you end up with two copies in different user areas. Locomotive Software, who created AMSDOS, came up with a different solution if you only want to move a file from one user area to another using AMSDOS,

REN,"0:filename.ext","5:filename.ext"

will 'rename' the file's user number, so effectively moving it from user area 5 to user area 0.

Finding out where files are is fairly easy with CP/M Plus; use your system

logs you on to user area 3 and drive B: and the prompt changes to 3B>. Though CP/M Plus does not show it, a simple A> or B> stands for 0A> or 0B> and to

BACKING UP AMSDOS FILES

CPC6128 owners who never normally use CP/M Plus will find it worthwhile using PIP Version 3 for backing up AMSDOS files. Simply load CP/M from your system disc, enter PIP and wait for the *. You can then remove your CP/M Plus disc and put it away. Put the disc to be backed up in drive A and the backup disc in drive B (or wait until you are prompted to swap disks if you only have a single drive). Then enter:

b:=a:*. *[aov]

After a few moments PIP will begin listing each file as it copies it; when it has finished, it will offer you the *. You can then replace both discs with another disc to be backed up and its backup disc. If you enter <control-W>, the formula above will reappear; press <return> and the whole process will be repeated. You can carry this on as long as you want. When you have finished, simply press <return> at the asterisk and PIP will disappear.

Just in case you get the discs the wrong way round, you may wish to open the 'Write Protect' hole on each of the discs you want to back up but make sure it is closed on your backup discs. If you do this and get them the wrong way round, PIP will recognise that a mistake has been made, put up an error message and offer you the asterisk once more. You can then put the discs in the right way round and continue.

Doing this the first time, particularly if you only have a single drive, will be fairly tedious as PIP copies everything. But the next time PIP will recognise which files you have changed since the last backup session and only copy those.

Incidentally, unlike DISCKIT, PIP also tidies up files as it copies. If you have a long file that has been through several revisions, it will probably be scattered over several different sectors of a disc. PIP always tries to copy files into a better sequence. So, if you are getting 'Read fail' messages on a fairly full disc, it is always worth using PIP to copy all the files to a new disc. Use the same formula as above except for the [aov] which should be just [ov]...

SETTING THINGS UP

John Hudson

continues his CP/M+

surgery to help you

help yourself

'Peripheral Interchange Program') to copy files, you cannot normally copy a new version of a file over its old version if the old version is 'Read Only'. PIP will stop and issue an error message. However, you can override this by adding [w], meaning 'write in any case', to the end of your instructions to PIP.

PIP also assumes that you will not normally be copying 'Sys' files; it will therefore stop and tell you politely that the file was 'not found' - unless you add [r] to indicate that you really do want

disc (your backup, not the original!) to load CP/M Plus and then, with the disc you want to examine in drive B: or, if you have a single drive, with it ready for the prompt to swap discs, enter:

DIR B:[user=all]

You can enter a user area with 'USERn' where 'n' is the user number but it is usually easier, particularly if you are changing disc drive at the same time, to put the user number in front of the disc drive label. So

USER 1

or

1A:

logs you on to user area 1, drive A and the A> prompt changes to 1A> while:

3B:

Figure 1 Output of DIR [full] showing 'Archive' attribute
Directory For Drive A: User 0

Name	Bytes	Recs	Attributes	Name	Bytes	Recs	Attributes
AMSDOS	COM	1k	8	Dir RW	BANKMAN	BAS	1k 7 Dir RW
BANKMAN	BIN	2k	12	Dir RW	C10CPM3	EMS	25k 200 Dir RW
DATE	COM	3k	23	Dir RW	DEVICE	COM	8k 58 Dir RW
DIR	COM	15k	114	Dir RW	DISCKIT	COM	6k 48 Dir RW
ED	COM	10k	73	Dir RW	ERASE	COM	4k 29 Dir RW
GET	COM	7k	51	Dir RW	KEYS	CCP	1k 3 Dir RW
KEYS	WP	1k	3	Dir RW Arcv	LANGUAGE	COM	1k 8 Dir RW
PALETTE	COM	1k	8	Dir RW	PIP	COM	9k 68 Dir RW
PROFILE	FR	1k	1	Dir RW	PROFILE	SP	1k 1 Dir RW
PROFILE	UK	1k	1	Dir RW	PUT	COM	7k 55 Dir RW
RENAME	COM	3k	23	Dir RW	SET	COM	11k 81 Dir RW
SET24X80	COM	1k	8	Dir RW	SETDEF	COM	4k 32 Dir RW
SETKEYS	COM	2k	16	Dir RW	SETLST	COM	2k 16 Dir RW
SETSIO	COM	2k	16	Dir RW	SHOW	COM	9k 66 Dir RW
SUBMIT	COM	6k	42	Dir RW	TYPE	COM	3k 24 Dir RW
Total Bytes = 148k				Total Records = 1095 Files Found = 30			
Total 1k Blocks = 148				Used/Max Dir Entries For Drive A: 31/64			

get back to user area 0 on drive A: from another user area, you need to enter

OA:

A simple 'A:' does not change the user area, only the disc drive.

Though this is mainly about CP/M Plus, it may be worth adding a couple of points about AMSDOS which is, in effect, an 'improvement' on CP/M version 2.2. Instead of having a 'system area', AMSDOS allows users to use programs and data in any user area by simply adding the user number to the filename; so

run '6:myprog

will run the program 'MYPROG.BAS' in user area 6 and you can save and load data to and from any user area so long as its user number is specified in the command. So AMSDOS users can also make full use of user areas to group their files. the AMSDOS command to change to another user area is:

|USER,n

where 'n' is the new user area. If you use this and then enter 'CAT', the preface to the catalogue will say 'User area n' and the amount of free space will take into account the files in other user areas.

There is one more 'attribute' to describe - the Archive attribute. This is only available with PIP Version 3 supplied with CP/M Plus but can be used on AMSDOS discs. Try this: using your system disc (your backup, not the original!), load PIP and copy KEYS.WP from wide 1 to any other disc adding [a] at the end of the PIP command line, as in

b:=a:keys.wp[a]

Then repeat the command and you will get a very unhelpful 'File not found' from PIP. But, if you exit PIP and enter

DIR

you will find the file is still on drive A: Entering:

DIR [full]

shows that KEYS.WP now has 'Arcv' after 'Dir RW' (Figure 1). KEYS.WP will lose this attribute when the file is amended and then the command 'PIP b:=a:keys.wp[a]' will result in a copy of the amended file being made. The Archive attribute can be turned off with

SET KEYS.WP [archive=off]

If you use [a] every time you back up data, PIP will copy only those 'Dir' files which have been changed since the disc was last backed up. Add [r] or [g] if backing up a file with the 'Sys' attribute or one in a different user area.

Three final points: firstly, most older programs, like Supercalc, do not understand user areas but, if you make all the Supercalc files in user area 0 into 'Sys' files with:

SET B:SC2*.*[sys]

(either by using a separate drive B: or by swapping discs as requested), you can then log onto a different user area and run Supercalc from within a different user area. All your data files will be saved to this user area but, if you exit Supercalc and change the user area again, Supercalc will still run from the new user area but your old data files will be inaccessible in the previous user area until you exit Supercalc and log back into the previous user area again.

Secondly, you will find that some directory displays may look rather odd because CP/M uses the 'eighth bit' of certain characters in a filename to record some of the attributes. Since each character in a filename only needs seven bits, CP/M interprets the eighth bit separately from the first seven. But

older programs interpret the eighth bit as part of the letter and display funny characters on the screen.

Thirdly, every time you save a new version of a 'Sys' file CP/M resets the 'Sys' attribute to 'Dir' and leaves it in the current user area. This happens whenever I add a new word to the supplementary dictionary in my spelling checker because the program rewrites the whole supplementary dictionary with the new word in the correct alphabetical sequence. In order to access the supplementary dictionary from all user areas, I have to reset the 'Sys' attribute for this one file and, in some cases, copy it back to user area 0 after I have added a new word. I use a SUBMIT file to carry this each time but more recent programs cope with this automatically.

Everything I have talked about so far can be done on standard data format discs which can be used by both AMSDOS and CP/M. But when Digital Research decided to replace version 2.2 with version 3, or CP/M Plus as it later became known, it knew it had to offer better directory facilities. This meant re-writing the information stored on the directory tracks of the discs.

The new directory tracks could not be read by version 2.2 but many users would want to continue using discs on both version 2.2 and version 3 machines. So CP/M Plus was written to be able to read both the older and the newer format discs. AMSDOS follows the older format used by versions 2.2 so 6128 owners can choose either format. DISCKIT in fact only produces old format discs. To create a new format disc, you must take an existing old format disc and use INITDIR (for 'Initialise Directory') to create the new format. Once you have done this, a whole new world of attributes, including disc labels, date and time stamps and passwords, becomes available to you. That is the subject of my next piece.

... If PIP encounters a 'Read fail', your disc is definitely corrupted; PIP will tell you which file has been corrupted but you cannot use the same formula to get at the rest of the files. You will know from PIP which files have been successfully copied; you will need to use DIR to identify the remainder, reload PIP and then enter their names individually.

My experience has been that PIP doesn't usually encounter a 'Read fail'. I would therefore always try this before suspecting a hardware fault.

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CAPS ON

By Thomas Betts



Hip, hip, hooray for Thomas with this nifty caps on/off routine. It's very straightforward, so we won't bore you with details. Just run it and it'll sure come in handy.

```

1 REM   An all-BASIC Caps lock
2 REM   module offered to ACU
3 REM   and the public domain
4 REM   by Thomas Betts.
5 REM
6 REM   n=0 for   Caps off.
7 REM           Hip,hip,hoorah!
8 REM   n=1 for   Caps on.
9 REM
10 GOSUB 20:END
20 RESTORE 70
30 FOR ascicode=97 TO 122
40 READ keynum
50 KEY DEF keynum,1,ascicode-n*32
60 NEXT
70 DATA 69,54,62,61,58,53,52,44,35
80 DATA 45,37,36,38,46,34,27,67,50
90 DATA 60,51,42,55,59,63,43,71
100 RETURN
  
```



PATTERN

By David Hall

Run this neat little proggy from Mr Hall and you can use your joystick to create just about any pattern you like, be it your name, password, or simply a masterpiece. Whatever, it's all good, clean fun.

```

10 INK 0.0:BORDER 3:DIM a(15):MODE 0:FOR t=1 TO 15
:READ a(t-1):INK t,a(t-1):NEXT:x=10:y=10:col=2:v=0
:hu=col:GOSUB 100:DATA 14,15,10,6,26,19,16,12,1,7,
19,20,23,8,21
20 IF INKEY(74)=0 AND x>1 THEN hu=v:GOSUB 100:x=x-
1:v=TEST(x*16,400-y*12):hu=col:GOSUB 100 ELSE IF I
NKEY(72)=0 AND y>1 THEN hu=v:GOSUB 100:y=y-1:v=TES
T(x*16,400-y*12):hu=col:GOSUB 100
30 IF INKEY(73)=0 AND y<32 THEN hu=v:GOSUB 100:y=y
+1:v=TEST(x*16,400-y*12):hu=col:GOSUB 100 ELSE IF
INKEY(75)=0 AND x<38 THEN hu=v:GOSUB 100:x=x+1:v=T
EST(x*16,400-y*12):hu=col:GOSUB 100
40 IF INKEY(39)=0 AND col>0 THEN col=col-1:hu=col:
GOSUB 100 ELSE IF INKEY(31)=0 AND col<15 THEN col=
col+1:hu=col:GOSUB 100
50 IF INKEY(76)=0 THEN PRINT CHR$(7):v=col
60 IF INKEY(60)=0 THEN SPEED WRITE 1:SAVE "!patter
n",b,&C000,&4000
70 IF INKEY(36)=0 THEN LOAD "!pattern"
80 IF INKEY(47)<>0 THEN 20
90 BORDER 0:WHILE col<>100:v=a(1):FOR t=1 TO 14:a(
t)=a(t+1):NEXT:a(15)=v:FOR t=1 TO 15:INK t,a(t):NE
XT:WEND
100 MOVE x*16,400-y*12:FOR t=1 TO 6:DRAWR 12,0,hu:
MOVER -12,-2:NEXT:RETURN
  
```

EFFECT

This gem from the Hall catalogue will help all you budding game programmers to get a very professional touch. Run it and you'll know you've seen this smart inter-screen effect on some of the big name games themselves.

By David Hall

```
1 ' Any key = stop program
2 '
10 FOR t=40 TO 1 STEP-1:GOSUB 50:NEXT
20 INK 0,RND*25:FOR t=0 TO 40:GOSUB 50:NEXT
30 FOR j=1 TO 1000:NEXT
40 i$=INKEY$:IF i$="" THEN 10 ELSE INK 0.0:END
50 CALL &BD19:OUT &BC00,1:OUT &BD00,t:RETURN
```



FOREST

Hats off to Mr Watson for adding to our environmentalist bent. Using clever fractals, watch as the lush rain forest comes into view. A very neat graphics demo.

By Simon Watson

```
1 ' Fractal Forest
2 ' By Simon Watson
3 ' (c)1991
4 '
10 MODE 2:INK 1,22:DIM x(16),y(16),d(16)
20 x(0)=50:y(0)=50:x(1)=590:y(1)=50:d(0)=5:n=0
30 GOSUB 60:n=n+3:IF d(n)>0 THEN GOTO 30
40 n=n-3:MOVE x(n),y(n):FOR p=1 TO 4:DRAW x(n+p),y
(n+p):NEXT
50 IF n=0 THEN END ELSE n=n-1:GOTO 30
60 xd=x(n+1)-x(n):yd=y(n+1)-y(n):x=xd/50:y=yd/50
70 x(n+4)=x(n+1):y(n+4)=y(n+1):x(n+1)=x(n)+(15.666
*x)
80 y(n+1)=y(n)+(15.666*y):x(n+2)=x(n+1)+x-(20*y)
90 y(n+2)=y(n+1)+y+(20*x):x(n+3)=x(n)+(17.666*x)
100 y(n+3)=y(n)+(17.666*y):d=d(n)-1:FOR a=n TO n+4
:d(a)=d:NEXT:RETURN
```

INTEREST

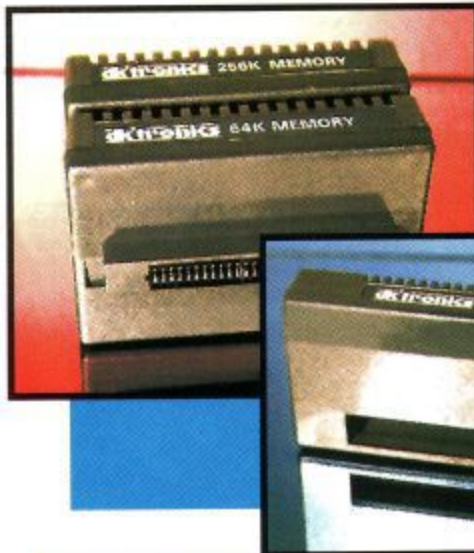
By David Hall

Have you ever wanted to know just how much that little lump sum of yours could make over a few years? Using this intelligent interest calculator, you'll be able to see at a glance where your money is going to earn the best using variable rates. A nice little earner, in fact.

```
10 MODE 0:INK 0.0:PAPER 0:CLS:PRINT
20 PEN 11:PRINT "* VERY INTERESTING *"
30 LOCATE 1,9:PEN 6:INPUT "Amount £",a
40 PRINT:PEN 7:INPUT "Time (years) ",t
50 PRINT:PEN 3:INPUT "Interest in % ",r
60 PRINT:PEN 1:PRINT "(C)ompound/(S)imple"
70 i$=INKEY$:z$=LOWERS$(i$):IF z$="c" THEN 90
80 IF z$<>"s" THEN 70 ELSE p=(a*r*t)/100:a=a+p:GOT
O 100
90 m=a*((1+r/100)^t):a=m
100 PEN 15:LOCATE 2,21:PRINT "Total=";USING"££££££
££..££";a:PEN 1:PRINT:END
```



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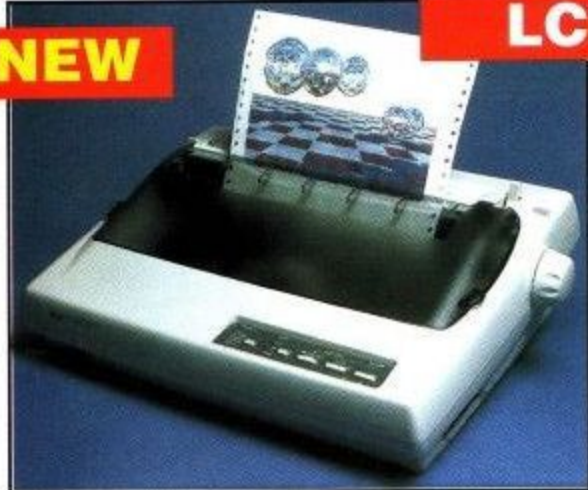
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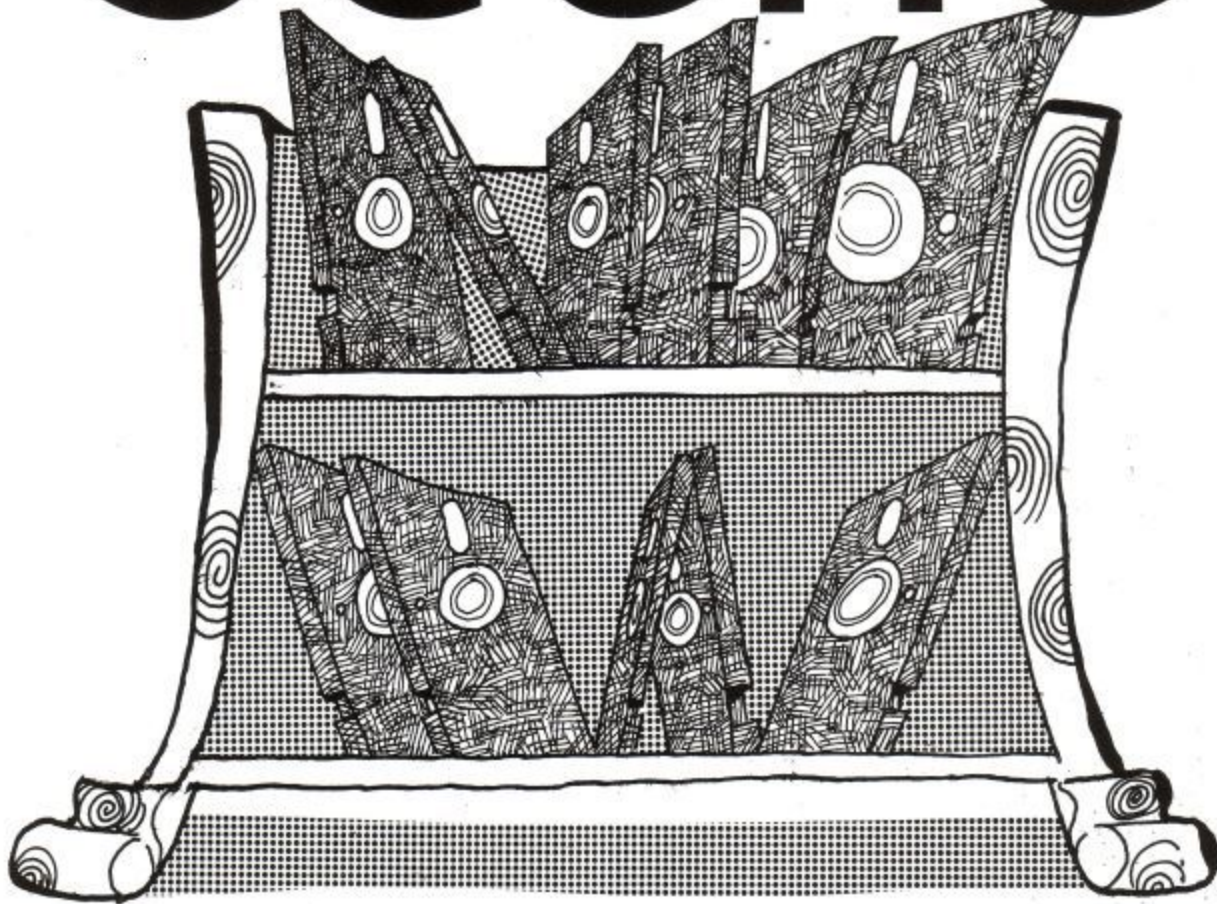
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PD Scene



PD maestro Paul Tint
tells us how our long
suffering Arnold's
finally get a chance to
talk back!

Thomas is a version of the famous artificial intelligence program Eliza. It is a conversational program allowing you to talk with the computer. The computer responses are determined by keywords in the last sentence you typed in.

But, not only can you now converse with your CPC, you can be insulted by it too! Thomas is the most insulting piece of software I have ever met. The person who wrote this program must

have a very twisted mind!

Obviously, this type of program on a CPC is not going to be as good as on a MAC mainly because of the lack of memory. However, that said, Thomas is still good fun for an hour or two. After a few turns, you can make the program talk to you by using words that you know it recognises. And, since it is written in Basic, you can expand it adding even more insult to injury!

A sample conversation with Thomas could go something like this:

ME: Hello Thomas.

TH: I was told never to speak to strangers who say 'hello'. For all I know, you could be a dirty old man

ME: Ah, but you're a computer so it doesn't matter.

TH: Computers are very nice but personally I would rather be a Chinese hamster..

ME: So you want to be a cross between a dirty old man and a Chinese hamster?

TH: Hi? You mean like high & low right?

ME: That doesn't make sense!

TH: You don't make a lot of sense yourself!

ME: Do you like insulting people?

TH: Oh, I'm sorry I insulted you. Please take my apology.

ME: You should be sorry too!

TH: Please! I know I should.

ME: OK, you can get up off your knees now!

TH: I don't know. Maybe you should ask the author of this program.

ME: What a dumb answer!

TH: I can't stand you! Why should I answer properly?

ME: Because computers are supposed to be intelligent.

TH: Because this, because that: stop trying to bore me.

ME: Me bore you, hah, that's a laugh!

TH: I really can't stand you at all!

ME: How rude you are.

TH: Am I being rude? Sorry I didn't notice.

...And it goes on, I'm sure you get the general picture.

For the limited K available on the CPC. Thomas is really good. Although it is not very useful, it is fun. Who know, someone might program a 128K version and then no CPC owner would be safe (perish the thought!)

More Adventures

Lost Shadow is a text adventure program using the Quill. In the adventure you take the role of a great professor in the small town of Centerly. When trying

Where To Go

To get some PD on your CPC, then contact any, or all, of the following libraries:

● **Scull PD Library, 9 Barra Wynd, Broomlands, Irvine KA11 1DB.**

Now relocated in Irvine, Scull PD has over 70 disks of PD software including Pagemaker Plus (last month) plus non PD games at PD prices! The concise stocklist/newsletter is free to anyone who sends an SSAE (or 30p). To sample their varied wares, send £1, a disk, and SSAE. Please make cheques and postal orders payable to 'Alan Scully'.

● **Data PD Library, 202 Park Street Lane, Park Street, St albans, Herts AL2 2AQ.**

Send an SSAE or 30p to receive a copy of the free Data Stock List cum Newsletter. Alternatively you can send a disk/cassette, 50p and SSAE to receive the 'Data PD Starter Pack' which contains a mixture of programs to get you started. Data supports both cassette and disk PD, and overseas orders are welcome (send £3.50 extra for disk and postage is to be supplied).

● **Adventure PD, 10 Overton Road, Abbey Wood, London SE2 9SD or Phone Debby on 081 310 9877.**

Adventure PD is more than just a PD library. It offers a help service, maps, solutions and non PD programs. Send an SSAE for a copy of the free catalogue. Prices are £1 per selection (one side of a disk or C60 cassette). Disks can be supplied for £2.50 each.

Get In Touch!

Is your library hotter than the back of my 25 year old TV? Does your software burn a hole in your computer? If so, then I want to hear from you pronto. In fact, even if your programs are worse than 'Bridge-It' I want to hear from you. So pop a disk or cassette (disks have a better chance of review), your stocklist and all relevant details to me (Paul Tint, in case you've forgotten), via ACU. Send an SSAE if you want your thingies returned.

You don't have to run a PD library to get in touch either. Perhaps you're selling some programs at PD prices, have comments on my column or PD in general. Whatever you've got to say, pop me a line. It's nice to know I'm loved (ahem!).



An alien friend of yours, Largo Grann, has absconded with the DUVILUS QUANTUM THRUSTING DEVICE (DQTD). The galactic committee has declared Largo 'WANTED' under the crime of theft. You must find Largo and the DQTD before he is found and executed (more)

to prepare an invisibility potion you drink a little to see if it has side effects... Unfortunately (for you!) it does... it makes you totally mad! You storm through your lab smashing bottles of everything in sight. It's not long before you set fire to your lab and the solution to your problem.

Eventually you calm down and rest a safe distance from the burning build-

ing. But there is still one major problem, you're invisible! Don't worry though, all is not lost. You have, in your pocket, a list of the ingredients. Quickly you search your jacket. Unable to find the list you realise you must have dropped it. Perhaps if you can find it again, and then all the ingredients on the list, you may just be able to return to normal.

The Search for Largo Grann is a graphical adventure that starts within

the hangards of Vesper space stztion. Your task is to find Largo Grann, an alien friend of yours, who has absconded with the Duvilus Quantum Thrusting Device (DQTD). You must find Largo before he is executed by the imperialist law enforcement agencies, not an easy task.

The last adventure I'm going to mention is called Storm Mountain. This is another Quilled text adventure and is written by Tony Kingsmill of Data PD.

Many people lived on Storm Mountain until disaster struck. The sky exploded and the earth split, turning the mountain into a death zone. Tribes believed this was the work of the gods and very few dared return which is why the mountain is still full of treasures today.

Few people live in the mountain today, and much of the treasure is still hidden. Many people still fear that the gods may strike them if they go near the treasure. Are you brave (or stupid) enough to look for it?

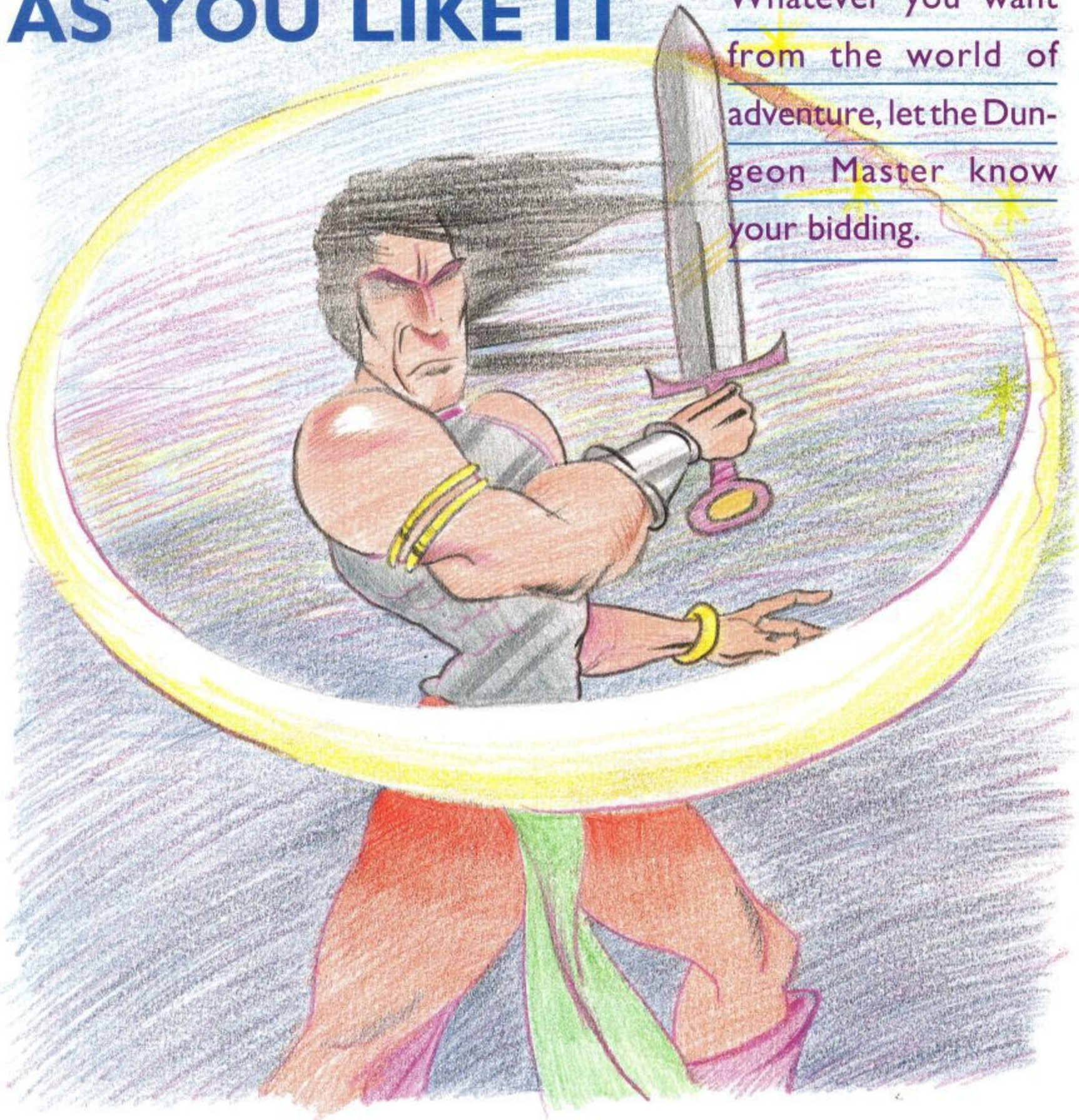
BY TONY KINGSMILL

You must take the role of the great professor in the small town of Centerly. You were trying to perfect one of the desired wants by humans, to become invisible. As you prepared your final solution, you drank a little to see its effects. You instantly become invisible! But, you discover it also does something else - it makes you totally mad! You storm through your science lab smashing bottles of chemicals and damaging apparatus. It isn't long before you set fire to the lab, with the solution to return you to normal inside!

PRESS ANY KEY

AS YOU LIKE IT

Whatever you want from the world of adventure, let the Dungeon Master know your bidding.



First of all this month, I would like to express my thanks to all of the readers that have written in to say how much they are enjoying the new adventure column. Bearing in mind the delay between the writing of this column and it actually appearing in print, these particular writers have been very quick off the mark. So thank you to everybody for your letters and if you haven't yet written, don't delay any longer because I would love to hear from each and every one of you.

You can write to me about any adventuring topic. It could be about the type of adventure you enjoy the most, a

personal review of your latest purchase or exploit, or perhaps a recollection of your favourite game, a sort of "Blast from the past". Lists of tips and hints, full solutions or cries for help, are also welcome. I intend that the future content of these pages will be filled with the type of material that you want to read but I can only guarantee that, if you write in and tell me what it is you would like.

First letter to arrive was from a very famous lady adventurer, Joan Pancott. Apart from saying some very nice things about the new column, (thanks Joan,) Joan has also got some terrific news for

all CPC adventurers. WoW Software is a company which she has formed, to promote adventures which may have been over-looked when the 8 bit market was being flooded by the major software houses. Now that these com-

A little homework

panies have deserted the 8 bit computer (that's us folks), Joan feels that this is the ideal time to take a look at some of these games. Although the tag "Home-grown" can in some peoples' minds equal "inferior", this is often far from the truth. There are many excel-

lent adventure writers who, for one reason or another, have never wanted to get involved with a major publisher, preferring to write games purely as a hobby and to sell their games by mail-order. Joan has played all these games in the past and she is now building a catalogue of the titles that she was impressed by and feels deserve a wider audience. And that's not all. WoW are also publishing some new adventures that have not been available previously. In fact as I write this, news is coming in of additional titles being added almost daily, so to obtain the latest information, I suggest you write to: WoW Software, 78 Radipole Lane, Weymouth, Dorset. DT4 9RS. Prices vary on cas-

Tinker's Paradise

sette from £1.50 to £2.25 which is excellent value for money. They can also be supplied on disc. When space permits, I will be including some reviews of the games received so far.

The term "Home-brew" may be unknown to some readers, so let me explain. A lot of games programmers began their careers, tinkering away in their bedrooms, usually on Spectrums



because the CPC had not been invented at that time. Large software houses and dedicated computer software shops, did not exist either. These early programmers sold their games through classified ads, etc. As they became more proficient and the consumer demand increased, so it naturally followed that small businesses were set up to handle the marketing and distribution. It also naturally followed, that some of the small businesses grew to be the giants that we have today.

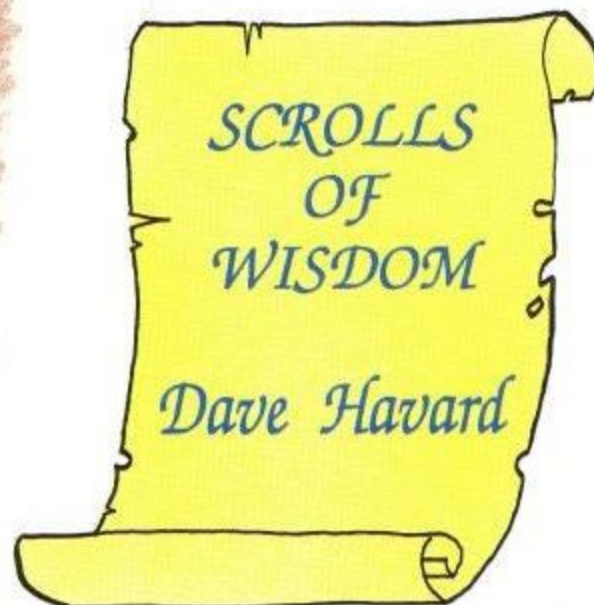
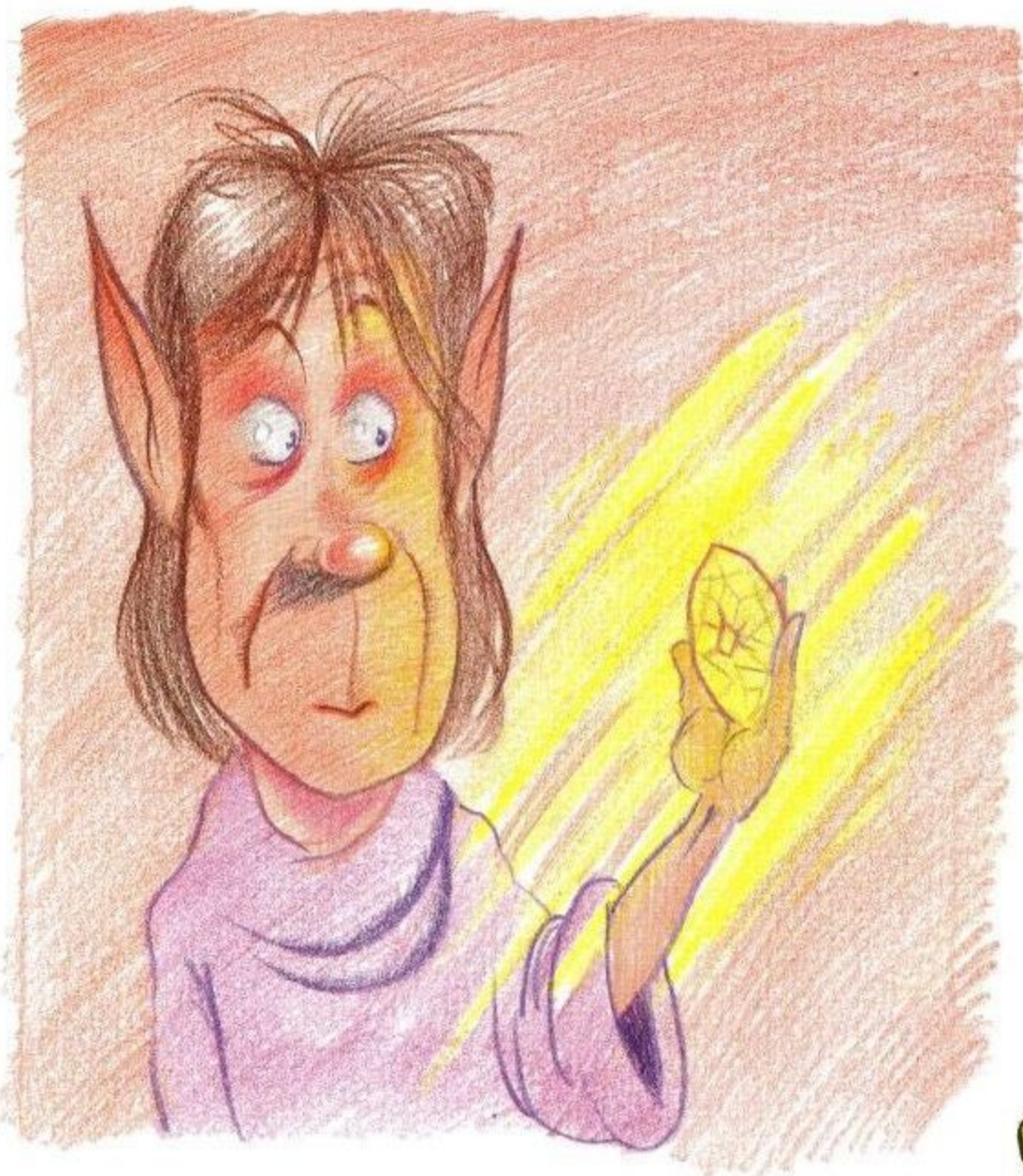
When the CPC arrived in 1984, a lot of the software companies were already established, with a string of successful games released on the Spectrum and BBC, already behind them. To convert a text adventure from one computer

format to another is a fairly simple exercise, so the new CPC owner was greeted almost immediately with a large choice of adventures to choose from, as the established houses converted their old titles across to the CPC. This meant that the Amstrad owner was very lucky and on the whole, avoided the then usual experience, of owning a new machine but without having any software to run on it.

We are now starting to turn full circle as the major software producers are concentrating their output on the lucrative, ie more profitable, 16 bit machines. This is beginning to leave a gap on the software shop shelves but once again, the programmers are tinkering away in their bedrooms. (Make of that whatever you will!) This means that the CPC adventure market, is as alive and well as ever before but the games are now being supplied by mail-order, via classified ads or through the specialist adventure magazines, like Adventure Probe. I cannot say that every home-grown game is excellent but then neither was every release from Level 9 or Magnetic Scrolls either. Neither are you likely to receive your game in a glossy box complete with a full length novel, free cuddly toy and a badge. But you will on the whole, receive a very play-able adventure at a remarkably low price. Which would you rather have?

I will be doing my best through this column, to keep you informed of what games have been released and what I think of them. Provided of course, that the adventure authors send them into ACU for my review.

Finally, Dave Havard has offered to keep us supplied with Infocom tips and maps, etc. This offer is most gratefully accepted and any similar offers of help would be most welcome. I think we will devote a small area to helpful adventurers, called "Scrolls of Wisdom". So Dave is the first name on our scroll. Will your name be on it next month?



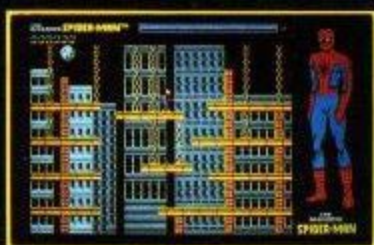
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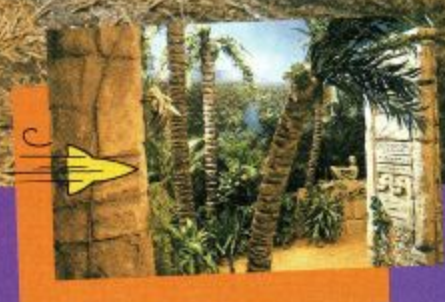
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THE AMAZING SPIDER-MAN WILL HAVE YOU CLIMBING UP THE WALL



COMBAT ZONE



If there's anything more depressing than Blackpool out of season, just don't tell me about it! Like a scene out of a 70's disaster movie, empty streets and deserted arcades make you think that maybe a mystery virus has wiped out the inhabitants. It's cold, damp and windy – but in the famous Winter Gardens, all is sweetness and light, 'cos there are thousands of vids, all on freeplay. We selected the wheat from the chaff, just for you!

Were you one of the chosen who stayed up to the wee hours watching the Super Bowl in January? Weren't we all rewarded with a cliffhanger of a game that set the pulse racing the breath holding and the Budweiser flying, eh?

OK, so Buffalo lost – I can take de-

This month ACU's coin-op correspondent John Cook gets himself down to the Blackpool seafront to visit the recent arcade exhibition and gets to visit the Crystal Maze!

feat, humiliation and the consequent transfer of funds that ensued, particularly now that I can go down to the local arcade and replay the whole thing, only make sure I don't miss the 48 yard field goal.

It has to be said that decent American Football games have been a little thin on the ground recently though. A few years back we had **10 Yard Fight** and the multi-player fans were treated to **Temco Bowl** in '88, but, y'know, there's never really been one that stood out as completely marvellous. Until now.

Enter please, from Williams, **High Impact** – the game that, so they claim, "brings football to life with the energy and strategy of a non-stop highlight film!" It certainly looks like someone has taken the production and presentation values of something like Cinemaware's **TV Sports Football** and transferred them to the coin-op area, with the extra graphics and sound that can be used therein. Good stuff, you might think and you'd be right.

High Impact makes an impression because Williams has packed megabytes worth of digitised graphics into the machine and uses these images in favour of the usual sprite technology. This gives the main playfield – a scrolling left/right screen – a very distinctive look that grabs the eye immediately.

But what about the gameplay? Well, it's not too difficult to pick up, assuming you are conversant with the rules and subset of English language used in the game. The **Blitz** option, for example, does not necessitate dropping large amounts of high explosive on the London Metropolitan area – but ends up being almost as violent and just as noisy.

Play selection is made via some easy to use sub-menus and then you – or you plus a friend – control a nominated player on the field. Snap the ball and the usual free-for-all ensues, with a digitised, animated ref calling the shots and likewise a Head Coach jumping up and down, expressing strong emotions over each decision. Nice stuff.

With up to 4 players catered for, bags of humour, sound and gameplay, this is the nearest any of us are likely to get to the Superbowl. If you enjoy watching American football and like the idea of playing it for real, save yourself severe physical punishment and go for High Impact.

Atari's new game, Ramparts, which we mentioned briefly last time was on display again and after some extensive playtesting our initial giggles and barely suppressed mirth have grown into a

sneaking intrigue and curiosity. Personally, I still think that whoever authorised burning those ROM's needs intensive therapy involving extended bed rest and consumption of much Lucozade, but still there do seem to be those that enjoy playing this hybrid.

A cross between Missile Command and Tetris? Well, that's the simple way to explain things – probably worth a try if only to see a quintessentially Californian mind at work.

One of the few new coin-ops on display was the long awaited Robocop II from Data East. The bad news, they seem to have put a new graphic artist on the job. Yes, sadly, rather as the follow-up movie was a bit dull compared to the original, the follow-up coin-op doesn't offer anything new – in fact could be said to be a little inferior, on initial play.

Sure, there have been some additional gameplay features added – now as well as a horizontal scroll there are times when your sprite faces into the screen and fires at targets, similar to games like Cabal. You can also have the satisfaction of picking enemies up by the throat.

But when it comes down to simply delivering the goods – Robocop II just doesn't manage to do like the original did. On the positive side, there's a lot of use of good digitised pictures and sound from the movies – but if you feel the need to check it out for yourself, expect some disappointment.

Finally, in a month that's brought little new to the arcades, how about playing a game of Crystal Maze as a coin-op? Interested? Then maybe Blackpool has something for you after all.

Crystal Maze is, of course, a game show that consistently topped the Channel 4 charts, by running teams of yuppies through different Zones, with co-operative puzzles in each Zone. Now you can do it for real, thanks to a company called Cyberdrome, in a unique computer moderated environment.

Like the TV series, there are four zones, but instead of Richard O'Brien leading you from game to game (there are about 40 in all, half based on computer – coded by industry veterans Level 9 Computing – half physical), your progress is monitored by a central system that keeps track of you and



your team by the use of a magnetic card.

Your team pays its money (in the region of £2-3 each which gives you around 30 mins of play) and is given a coded card. Insert it in the nearest slot and you are told which game you are to play first – and hurry!

Success at the games gives you Crystal credits that you can convert into prizes when you've finished. With around £500,000 spent on the system, initial tests report that the standard of themeing and sound effects are extremely high and many of the games, highly original and fun.

For example – one of you is crawling around a maze, with your progress being monitored by pressure sensors and displayed on a TV screen outside. But there is an invisible monster in the maze that you can't see – although it shows up on the monitor outside! Guided by the incoherent screams of your companions, you have to find a way around the monster to get the Crystal, then escape!

David Owers of Cyberdrome is confident that Crystal Maze will be a success – and is also currently looking for backers for other Crystal Maze projects at other sites around the country. If you've got cash to invest in a hi-tech project, then call him on 0253 711811.



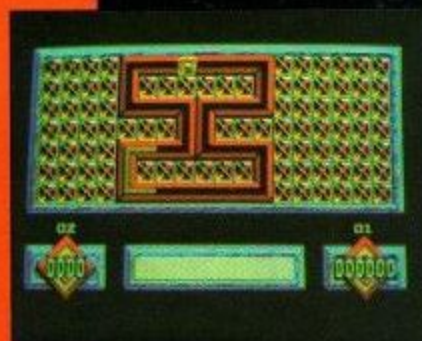
Get your blasting hands ready as ACU takes on the Chicago creepy crawlie brigade in Exterminator, goes totally loopy over Loopz and picks up the gauntlet thrown down by the epic Chip's Challenge

GAMEPLAN



EXTERMINATOR

Zap the bees, crush the frogs and clear out if you can



LOOPZ

It's a mad, mad, mad, mad, mad world. Or so they say.



CHIP'S CHALLENGE

Are you good enough to join Melinda's Bit Busting squad?

PLUS

Find illumination in The Light Corridor, sink to the depths of Welltris, stand up and be counted in Line of Fire and try the might of five more superb blasts from the budget basement.

T20P

- 1 (1) Teenage Mutant Hero Turtles
Mirrorsoft
- 2 (2) Double Dragon
Mastertronic
- 3 (10) Operation Wolf
Hit Squad
- 4 (13) Dizzy Collection
Code Masters
- 5 (5) Target Renegade
Hit Squad
- 6 (3) Quattro Adventure
Code Masters
- 7 (16) Yogi and the Greed Monster
Hi Tec
- 8 (7) Out Run
Kixx
- 9 (NE9) F1 Tornado
Zepellin
- 10 (6) Quattro Arcade
Code Masters
- 11 (8) R-Type
Hit Squad
- 12 (11) Barbarian 2
Kixx
- 13 (NE) Top Cat in Beverly Hills Cats
Hi Tec
- 14 (NE) Batman (The Caped Crusader)
Virgin
- 15 (NE) Silkwork
Mastertronic
- 16 (NE) Big Box
Beau Jolly
- 17 (NE) Tomahawk
Byte Back
- 18 (NE) Return of the Jedi
Hit Squad
- 19 (NE) Fighter Pilot
Byte Back
- 20 (NE) Treasure Island Dizzy
Code Masters

Last month's position in brackets



Mystical

Assuage the wizard's anger or forget your diploma for good.

Life as a trainee wizard has its bad moments. By sheer coincidence you have just encountered one of these. There you were, testing out your hard-earned skills on a door opening exercise, when suddenly and quite by accident, you manage to fling every single phial and scroll belonging to the great wizard through a strange portal that you happened to open up into a parallel universe.

Not something that happens every day, admittedly, but when it does, you can be

sure that your master is going to be pretty sore. In fact, he's so sore, that if you don't get out there and recover his valuables, you'd better forget being a magician and take up window cleaning.

so, as you might have guessed, the object of Mystical is to go out and take on everything this weird and

wonderful parallel world can fling at you in a desperate bid to find the phials, and it's not half a bad adventure either.

Starting out in this one or two player game, your character is followed by a dark shadow; the Golem. If you want a friend to play, hit fire before he disappears and you're both on your way.

If you're on your own, the Golem can come in very handy in helping to get rid of the many adversaries you will meet upon your way. By jumping up and down, he can crush many a nasty you might have missed with your spells.

By avoiding or killing the host of baddies, be they wicked clerics or goofy ghoulies, you must collect as many phials and scrolls as you can. Pressing space as you pass over spells will allow you to store them in your pouch. If not, a few seconds after you pass over them, you can use the spell to eliminate your opponents.

As you near the end of each stage, you will encounter a

small pentacle. Getting into this is a necessity to move on. However, blocking your way at every level, is a fiendish god of this parallel universe, cram-packed with magic and not afraid to use it on you.

Defeating the gods is really a matter of trial and error. Select the appropriate spells from your pouch using the space bar and fire away.

All in all, there are 12 different stages of this superb action/adventure, set over four very different worlds, each with its own particular brand of hostiles.

Throughout the game, the Grand Wizard is watching over you, ready to grant some

very handy extra lives and to transport you between dimensions when necessary. However, don't rely too much on his help. Mess up and you're in big trouble.

At the end of each world, take a stock of your spells, using the inventory and trust your own judgement as to which ones you will need in the next stage.

All in all, Mystical is a very enjoyable offering. The graphics are exceptional and the vertical scrolling is smooth. There are some neat sound effects and for those of you who like your action at a fairly leisurely pace, Mystical should fit the bill nicely.

Not too fast and never boring, Mystical is fun in a sort of cutesie way that should appeal to most serious gamers.

John Taylor



ROUND-UP			
NAME	Mystical		
FROM	Infogrames	PRICE	Disk £14.99 Cassette £9.99
GRAFFIX	SONIX	PLAYABILITY	VERDICT
82%	78%	79%	

Puzzles, puzzles and more puzzles. Yet this one will have you going around in circles at no small rate. Loopz is the name and making loops is the game, with three different formats to choose from and varying difficulty levels from easy-peasy to take me away now, please.

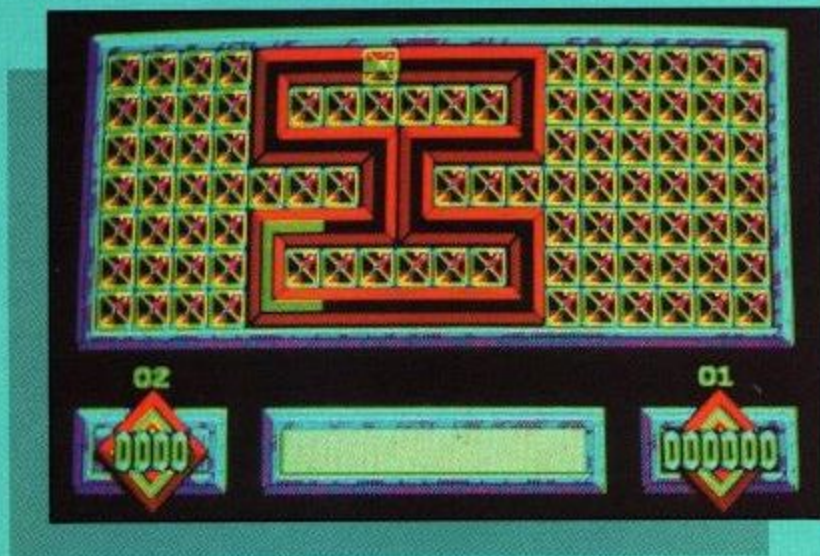
Yep, real brain-bashing stuff here, but it all seems so harmless to start off with.

Set the difficulty level to 0 on game A and you start off with the smallest of loop sections. All you have to do is manoeuvre it around the

plenty of practice before you challenge a friend.

Obviously, the larger the loop you create, the more points you score. Indeed, there are numerous Bonus games interwoven into each of the different stages, which will give you handy top up lives as well as extra points.

A staggering 100,000 points can be earned if you manage to complete a loop covering all 126 tiles on the board at level 9. Sound impossible? Well, it sure ain't easy. Clearing the board completely will also give you extra points, which vary on



Loopz

Get yourself out of this little fix if you can.

complete to earn the goodies.

As you might have guessed, Game 3 consists of 50 screens of random loopz. Each time you see one, certain parts of it will disappear, leaving you to carefully reconstruct it within the allotted time.

Playing Loopz on your own is a reward in itself, just as long as you don't panic when

things start hotting up. The graphics are clean and the neat background music won't drive you to distraction.

However, for a real hum-dinger of a battle, you'll certainly get the best out of Loopz by playing it with a friend.

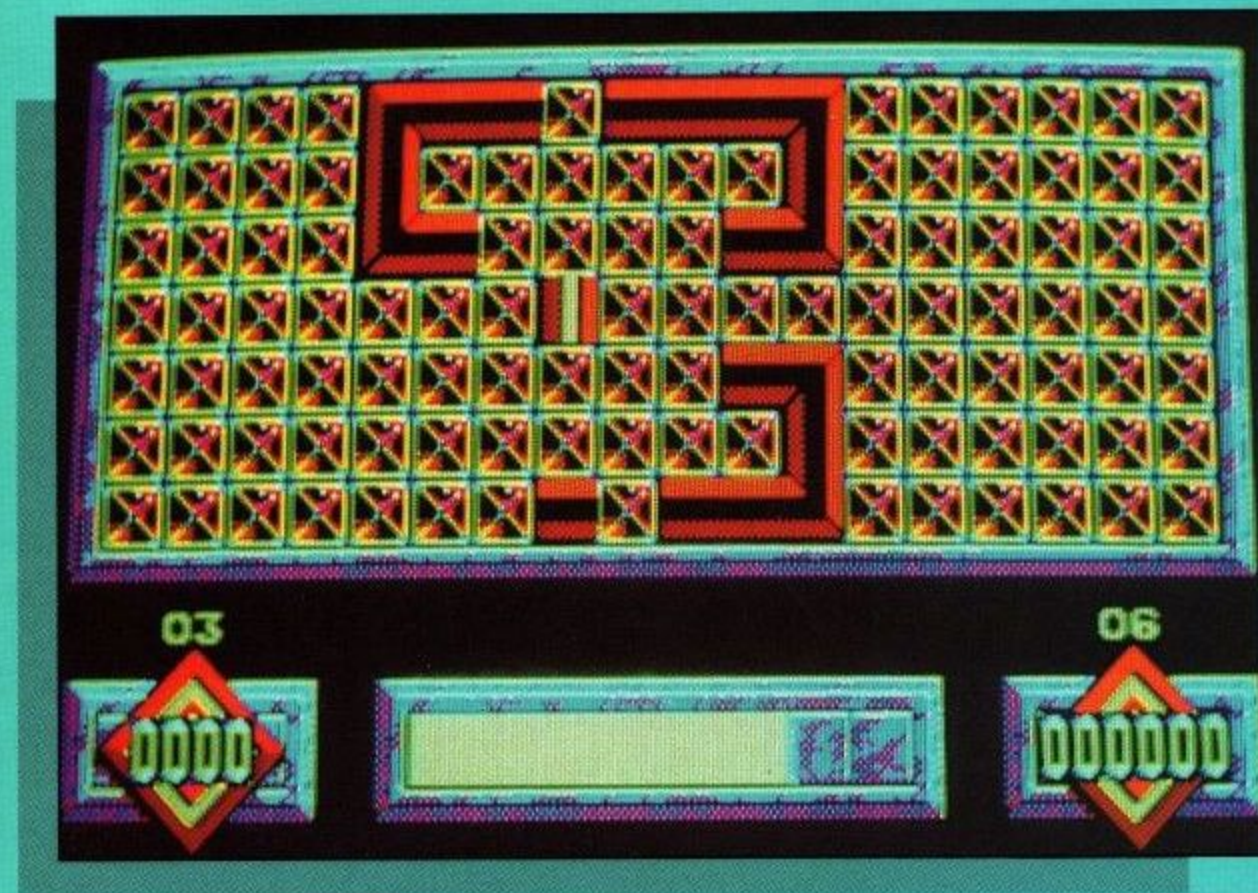
Taking alternative turns in Games A and C and battling together in Game B to create your masterpieces is superb fun and infuriatingly addictive.

The more you play, the more you will become accustomed to the playing pieces,

so you'll know just where to leave gaps and what sizes to put aside. Don't rely too much on luck, though. It does you no good to have too many spare pieces lying around taking up valuable space and clogging up your playing area.

Make good use of the Gophers that come up from time to time. They'll help to correct any mistakes you've made and enable you to go on to even better things in this excellent offering.

Jim Johnson



playing board until you've found a pretty spot for it, twist it around, using the joystick, and then add other bits to it to form connecting loops. Piece of cake.

Not surprisingly, the pieces do become a little more irregular as you play and the time you are allowed to mess around with each piece gets smaller, so put in

the target set by the multiplier in the bottom left hand corner.

In game B, the level you play at will increase for every 10 loopz you complete. Tricky, but if you manage to complete a loop filling 63 tiles, you can qualify for another bonus game which takes a random puzzle from Game C and gives you a set time to

ROUND-UP			
NAME	Loopz		
FROM	Audiogenic	PRICE	Disc £14.99 Cassette £9.99
GRAFFIX	84%	SONIX	82%
PLAYABILITY	92%	VERDICT	

Alexey Pajitnov has got a lot to answer for you know. Having brought us all to our knees with the brain-numbing exercise of Tetris, he's now gone one step further and thrown us all down a well without a rope to climb out with. Well, play a few rounds of Welltris and that's how you'll feel.

Welltris

Fathom out the intricacies of the Russian mind if you can.

If you have already mastered Tetris, then the ground rules of its successor will be all too clear to you. If you haven't, then I suggest a lot of practice is in order.

First of all, though, you'll have to leaf through the manual to get through the protection sequence by correctly inputting data about Russian Republics. Right, now on with the fiendish game itself.

The idea, of course, is to manipulate playing blocks down the sides of the well

into which you are peering, so that they fit alongside other pieces at the bottom.

Form a vertical or horizontal line and it disappears, giving you room to do more of the same.

The playing blocks themselves can consist of two, three, four or five segments, depending on the difficulty level you have selected. For novices, forget about the five segment pieces to start with and stay firmly on difficulty level one.

Another firm suggestion would be to stick to the lowest speed possible until you have built up a bit of confidence. You can also cheat a little by pressing NEXT, which allows you a sneak preview of the next piece you have to fit into your schemes, although it does subtract from your score.

Play around with the

or you manage to block all four walls, the game is over.

Basically, make sure you've got your thinking noddle on before even thinking about giving Welltris a spin. It can be over all too quickly for the unprepared but, take it easy, think about where each block will stop along the bottom and prepare moves in advance, and you could well see things beginning to shape up nicely.

Build wisely and you should be able to remove many lines at once and, if you always prepare for the larger

pieces, you should find the smaller ones falling nicely into place between them.

Lesson over, now it's up to you. Welltris is superbly presented, with some excellent decorative backdrops and easy to understand menu beside the playing arena. They won't, thankfully, disrupt your concentration and you can toggle off the sound for optimum effects.

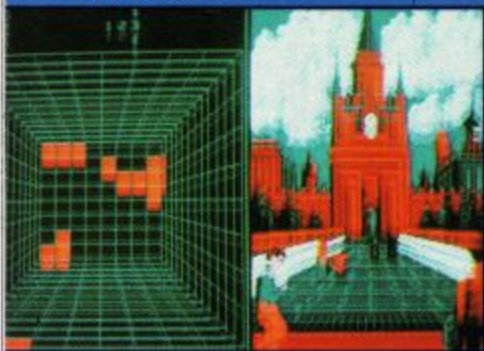
If you like the attraction of an ongoing strategy to blow your mind, Welltris should fill the void left after Tetris very nicely indeed.


John Taylor



If you're not careful, a segment of the block will be left protruding up the wall, and what happens then? It freezes you out. The wall is then out of bounds for three turns, making things decidedly difficult.

The more walls you block, the more impossible it becomes to make even your best strategies work out and, if the blocks build up too high,

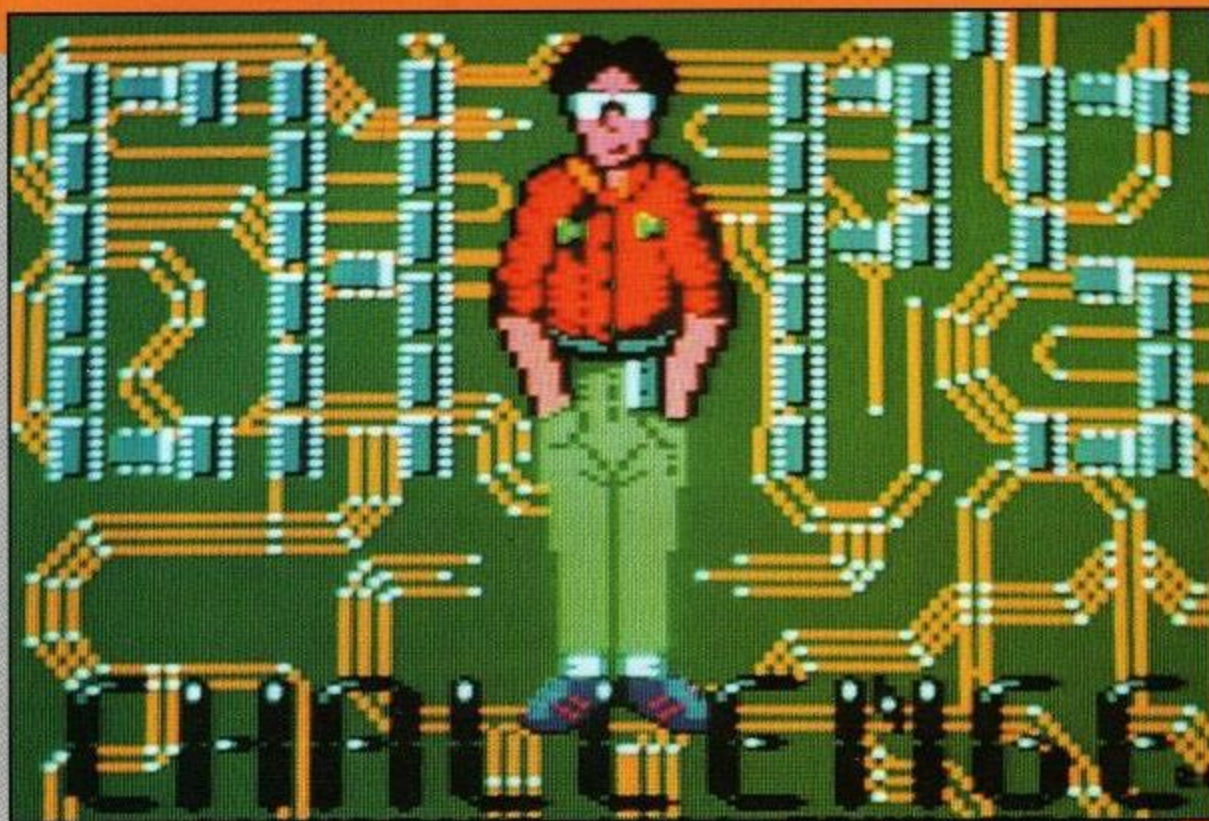
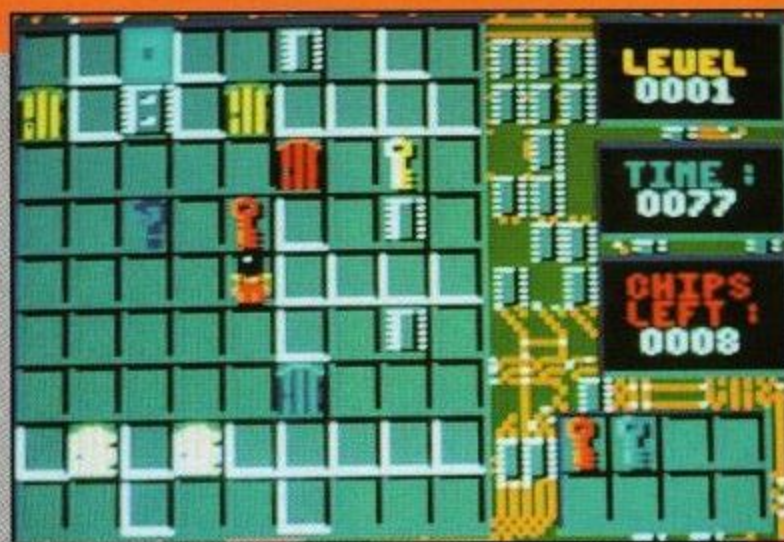


ROUND-UP			
NAME	Welltris		
FROM	Infogrames	PRICE	Disk £14.99 Cassette £9.99
GRAFFIX	84%	SONIX	80%
PLAYABILITY	88%	VERDICT	

Poor old Nerdy Chips McCallahan. He just can't seem to do anything right. All he wants to do is make friends, especially with Melinda the Mental Marvel, and he'd give his left arm to be able to join the elite Bit Busters Club.

Can you help him out? I think so, and it won't just be a labour of love either.

From the very start, Chip's Challenge will have you wanting more of the same, but don't worry, you'll get it.



The aim of the game is to overcome a series of tests laid down by the club. Sort out the puzzles and you might get to be a member.

Lesson one is a doddle to lead you in to the proceedings. Just collect the appropriate keys, open the doors, pick up the microchips and move towards the big blue, flashing finishing post.

Done it? I thought so, but don't get too confident, this is only just the beginning.

As you move onwards, the puzzles become more and

more intricate, and, to make matters worse, on many of the levels, there are set ways of achieving success. Work them out and you're through, get it wrong and it's back to

Chip's Challenge

Come on nerdy, you'll have to do better to get into the Bit Busters club.

the beginning again, Nerdy!

Each of the staggering 144 levels is set against the clock, which is easy to beat at the start. Finish a level first time around and you get full bonus points but, each time you have to restart, the bonus drops, so make a map, or keep a careful check on where you went wrong.

To make matters worse,

some levels include transparent walls, traps, monsters, forcefields and walls of fire and water. Admittedly, you can find protection against many of them scattered around, but you may have to find them in the right order, or a very unhelpful thief could steal your gear and leave you stranded.

Pushing black blocks onto water will create mud banks to help you through various obstacles, so try not to push them into inaccessible corners.

It really is a matter of carefully does it. Experiment with toggle switches and trip buttons to knock out clones and try to make your quotas of chips.

By about level eight, things should start to hot up a bit and this is where the game is

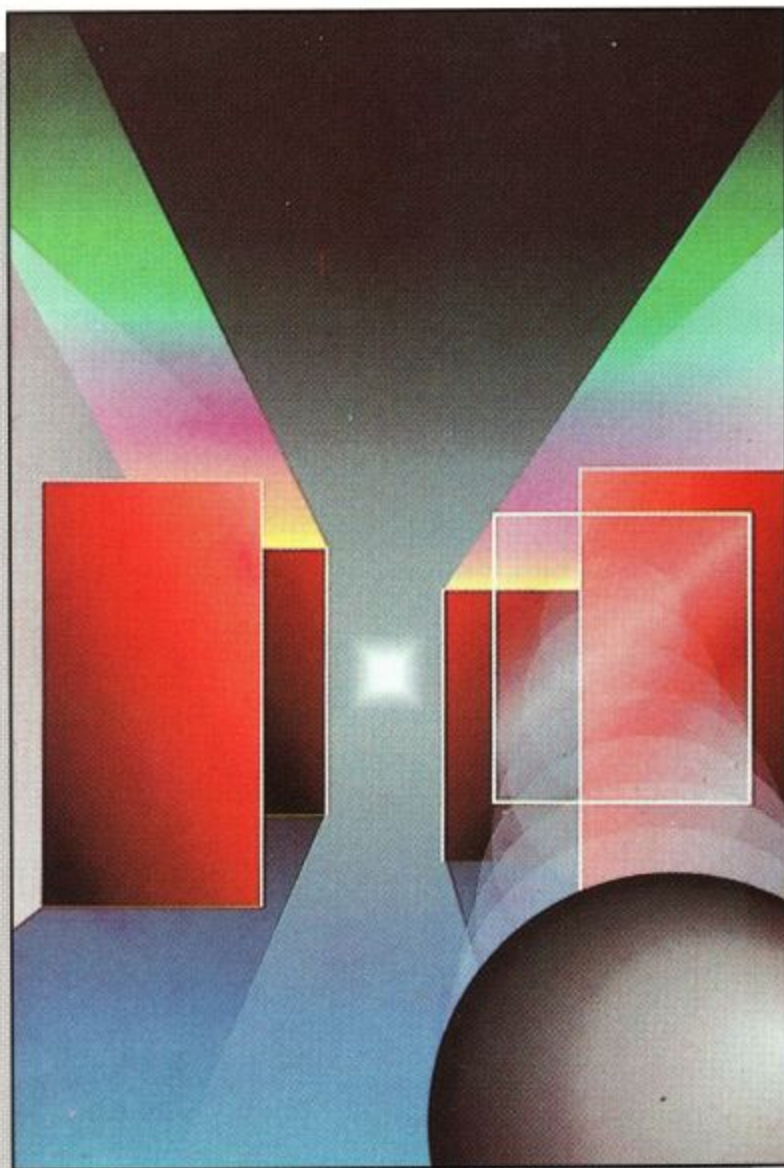
at its level best. The puzzles are very tricky and you might have to come up with some bizarre solutions to get through.

Your overall view of proceedings may be a little on the small side, but the graphics are marvellously clear and the scrolling is pretty smooth. The soundtrack is very jolly, although it may get a little too much after a while but, above all else, the gameplay of Chip's Challenge is brilliant and totally addictive. If at first you don't succeed, you're going to want to keep on trying until you do.

You certainly won't get bored with this one for some time, so for exceptional value for money, go out and take up the challenge now.

Brad Fisher

ROUND-UP			
NAME	Chip's Challenge		
FROM	US Gold	PRICE	Disk £14.99 Cassette £9.99
GRAFFIX	89%	SONIX	88%
PLAYABILITY	95%	VERDICT	



The Light Corridor

Find enlightenment in the shape of a ball and a racket.

“Get ready!” Equipped with some marvellous speech samples, The Light Corridor is one of those very highly polished offerings that has you appreciating the programmer’s work at the same time as trying desperately to defy it.

The game objective itself couldn’t be simpler; all you

have to do is guide your ball down the corridor, between obstacles, using your racket and, for the first few levels, it’s a pushover.

With only a couple of barriers to avoid, knocking the ball around doesn’t cause too much of a problem. Pick up the special bonuses for extra lives and dual racket play and you’ll soon find yourself advancing at a rate of knots.

The first level is relatively easy, just hit the target square within the time limit and you’re through. From here on in, you’re on your own.

As with most simple games, The Light Corridor is incredibly addictive, but what gives it the edge over many other games, is the host

of options for you to play around with.

Naturally, you can alter the speed of your progress, but apart from that, there is a very handy level change option. If you can remember the four digit code of each level, which is displayed shortly after starting it, you can restart at that level again if you happen to get caught short, which you undoubtedly will once you start progressing.

On top of that, there is the two player option, allowing you to challenge a friend to this epic offering, using two joysticks or joystick and keyboard.

If, by any remote chance, you should get bored with the existing corridor, or if you manage to conquer the wily programmer’s layout, the corridor editing option will allow you to build your own, with all of the obstacles

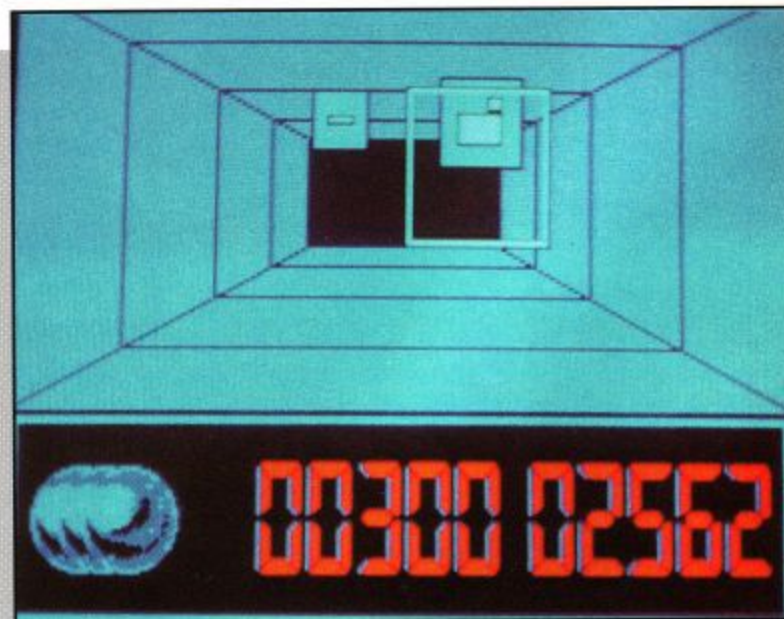
There’s even a separate scoreboard to mark your progress on your own creations, though getting all of

the high scores without any competition might get a little monotonous.

No, The Light Corridor is all about challenges. Take up the gauntlet yourself first and see how far you can get, then take on a friend and then set your own limits for the ultimate enjoyment.

Using excellent 3D graphics, with some smart sound effects and digitised speech, The Light Corridor is a joy to play. Simplistic in its outlook, the game has many hidden secrets which need to be uncovered before you can finally reach the ultimate illumination at the end of the tunnel.

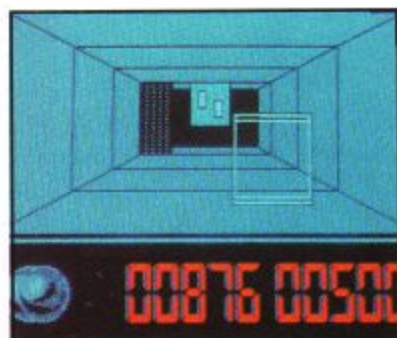
For sheer all round enter-



at your disposal to make it as easy or excruciatingly difficult as you like. The choice is yours. Save it and let your friends have a blast at it.

tainment, this is one offering that will be very hard to beat. Get it now and start challenging.

Chris Knight



ROUND-UP			
NAME	The Light Corridor		
FROM	Infogrames	PRICE	Disk £14.99 Cassette £9.99
GRAFFIX	SONIX	PLAYABILITY	VERDICT
88%	88%	94%	GOLD

"If it moves, shoot it!" Sound advice from the US Gold crew in this all-action race to get back to the safety of your own camp.

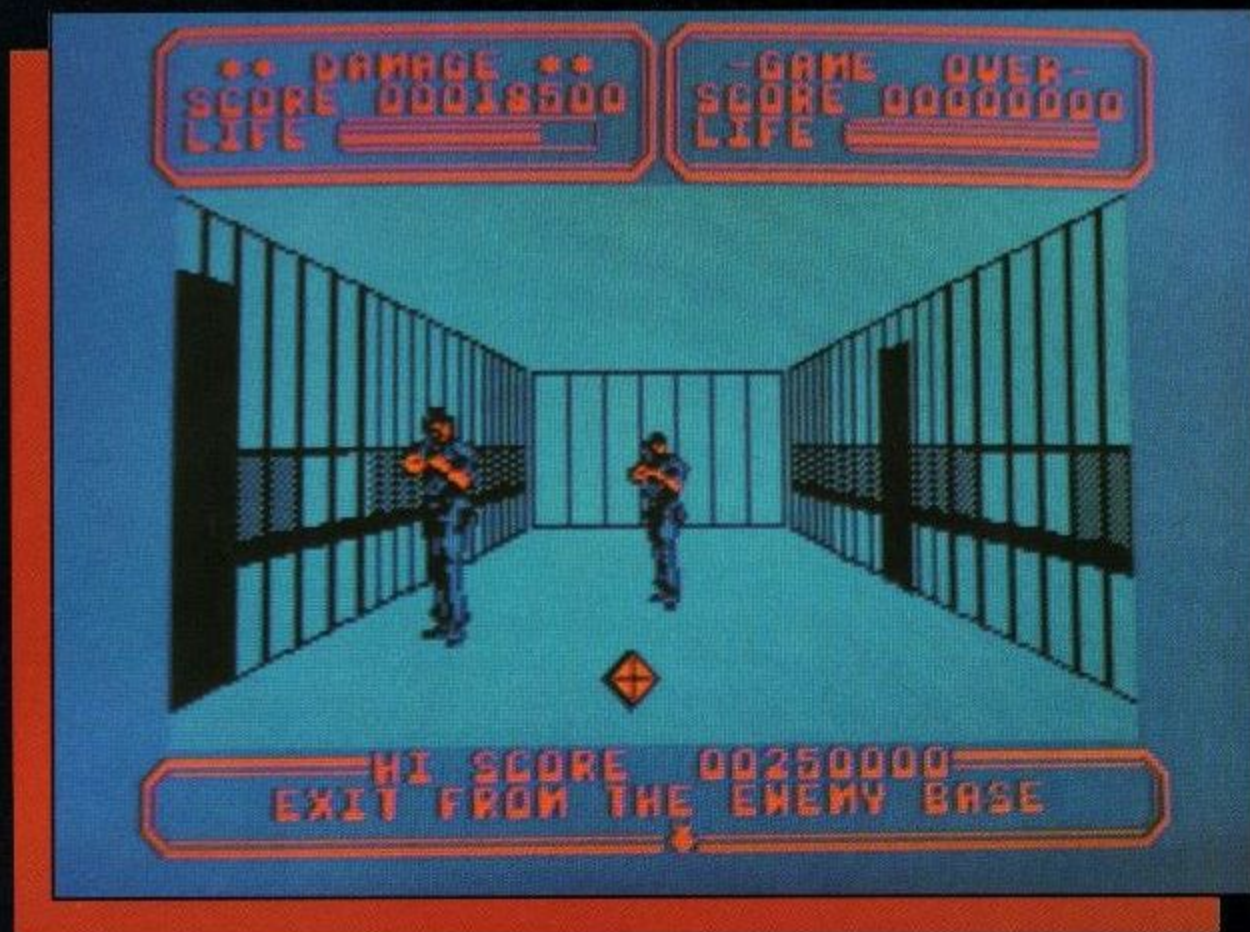
I've got no sympathy for you, though. I mean, you were the one who volunteered to go in behind enemy lines to steal that Rapier machine gun from the terrorists weren't you? What do you mean, you only went to the shops to buy the game? I don't believe that for a second.

Anyway and whatever, you are now stuck well and truly behind enemy lines, and only

sheer fire power as well as a fair bit of ducking and weaving is going to see you through this pretty fair shoot-em-up.

Level one has you in possession of the all-important gun inside the enemy camp and, with unlimited fire power, take a deep breath, yell: "Gun Ho!" as loud as you can and let 'em have it.

Twist and turn through the



Line of Fire

Out with brains and in with brawn on a blast-em-up back home.

jets, then head for the jungle again, where the enemy missiles, their last line of defence, are waiting for you.

Line of Fire is a superb offering because of its sheer scope and variety. There's plenty to see and do, without getting overly repetitive. The graphics are fair and the sound effects nicely realis-

get to the trigger first.

Along the same lines, the shoot-out in the ruined city is all about speed again. Beware of snipers hidden behind barrels and in doorways; if they reach the trigger first, it's all over.

We're getting pretty close to home now, so you'll have to be particularly on your guard. There's nothing worse than getting wiped out just before the end and missing out on the medals.

Jump aboard your plane and high-tail it out of that god-forsaken place. Avoid the

tic. If you get into too much bother, don't forget your grenades, while the red cross boxes should sort out the minor injuries.

The gameplay is fast and, above all, Line of Fire is fun. There's no worrying about strategy, just pure, unadulterated blast action, which should keep you busy long enough to make it well worth getting hold of.

Brad Fisher



alleyways, blasting the opposition as you go and make your way to the jeep that's waiting to take you over the next arduous stage in the jungle

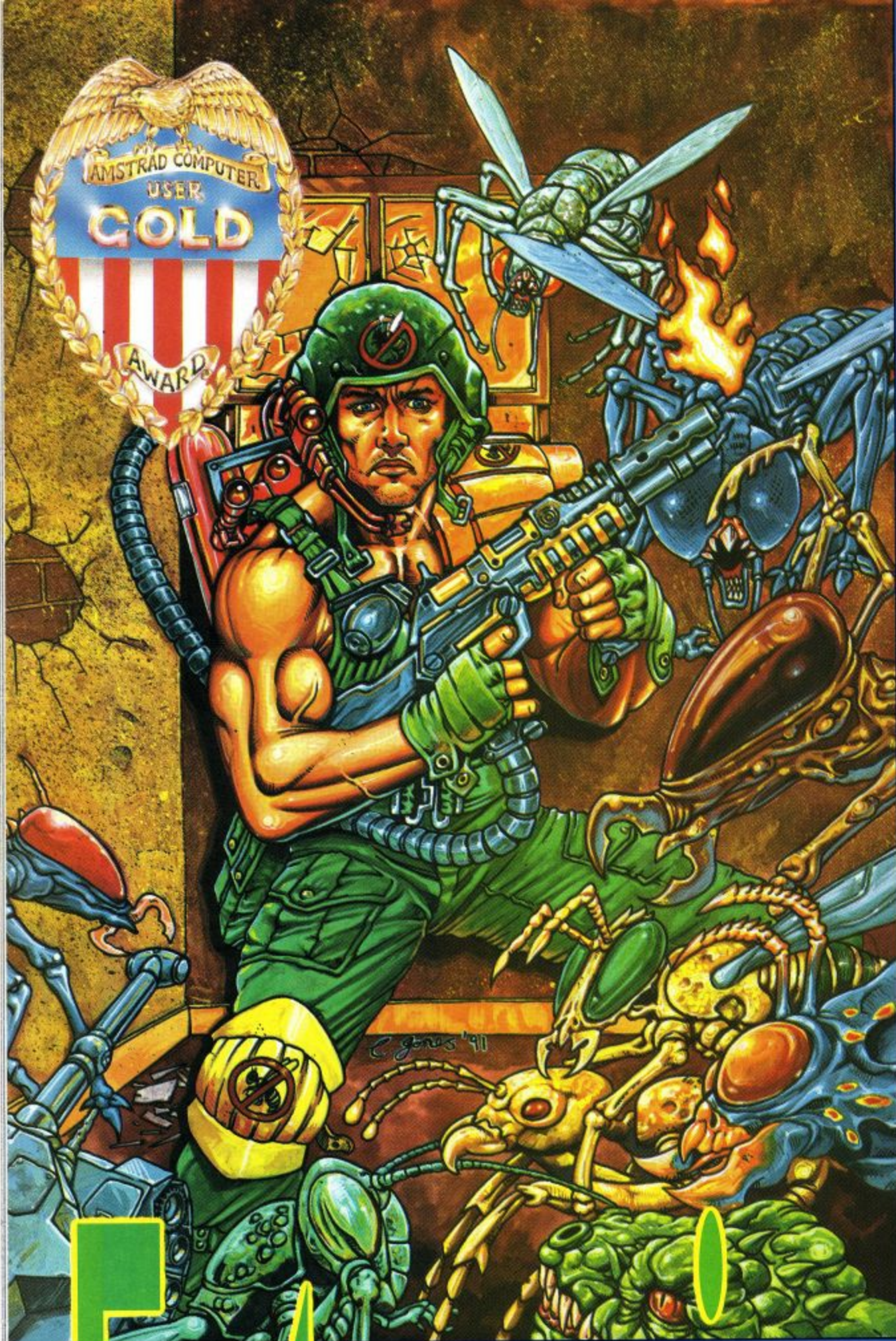
It's tough going, especially as you have to take out the enemy bombs from the planes and helicopters, as well as dealing with the soldiers in the bush.

Get to level three and the action is getting pretty fierce

out there. Trade your jeep for a speed boat and attack the white waters, watching out for rocks as the terrorists continue their aerial and ground onslaught.

Survive the perils of the water and you're doing pretty well, but can you cope with the crevices of the rocky canyon? There's a potential assassin waiting behind every rock and you'll need to be quick with your sights to

ROUND-UP			
NAME	Line of Fire		
FROM	US Gold	PRICE	Disk £14.99 Cassette £9.99
GRAFFIX	80%	SONIX	82%
PLAYABILITY	78%	VERDICT	



Before playing this exceptional blast from Audiogenic, I feel a brief word concerning the problem of psychosomaticism is in order. What that long word, which I won't repeat, means, is the outbreak of injuries and illnesses caused by the mind thinking about them. For example, if you see a nasty injury, you can make yourself believe you've got it too by thinking too much about it.

Now, if you feel you are one of those people who might be affected by this, then you'd better get yourself a large can of hand cream now, otherwise you'll be in all kinds of trouble after a couple of levels of Exterminator.

Lesson over, on with the blast.

Set in futuristic Windy City, Chicago, certain cul de sacs have been overrun by vermin, insects and rodents of all shapes and sizes. No common or garden pest killer could cope with this little

lot. No this is a job for the big guy himself and it's up to you to make sure that he does it.

As a one player game, Exterminator is a blast'em-up with a difference. Your screen view has you looking down the length of the particular infested room you find yourself in, with just your hand in front of you for protection.

Exterminator

Are you a common or garden pest killer? If so, you're in big trouble.



fyng the end of the level.

Apart from the bonus levels, there are various other goodies to be had. Picking up the can of insect repellent will boost your life points, as will the glowing timebombs if you get to them before they explode, that is.

Before each level, you are given a run down of the pests you can expect to encounter when you enter the room.



Pay careful attention to the notes, otherwise you'll be mixing up your wasps and mosquitoes and getting into awful bother.

As you progress, be prepared for the sticky spider's web and that particularly horrible juice can which has got its sights firmly set on you.

In most rounds, timing of pounds is all-important, so make sure you have a play

of stray tank bullets as you move in for the kill, whilst keeping your other eye firmly on that pesky wasp.

Taking on the first few houses isn't overly difficult, but things do get red hot on the way to the Ultimate Challenge at the end of the street. Conserve your life points very carefully and make sure you make a grab for any bonuses you set your eyes on.

For one player, there's more than enough action for you to handle but, as a two player game, Exterminator is an absolute must.

Pressing both fire buttons, if you have the two joystick ports, will enable you and a friend to get both of the Exterminator's hands up and running in a dual-play challenge of superb proportions.

Working together can clear up a multitude of pests, making the game faster and much more enjoyable, though racing your partner for the bonuses can create a nice competitive element as well.

Using some clever graphics, Exterminator is a must for shootie freaks. It is certainly that little bit different from the run of the mill and, despite the music being a little lacklustre at times, the gameplay should hook you well and truly.

Admittedly, the vermin can get a little repetitive in the early stages but, as the pace begins to increase along with the variety of opponents, you'll begin to realise that Exterminator was worth every penny you spent on it.

So, if you fancy an excellent few hours of solid blasting, look no further.

Jim Johnson

Admittedly, your hand does pack some powerful punches (if you'll pardon the expression), but considering the opposition it's got to face, that's only fair.

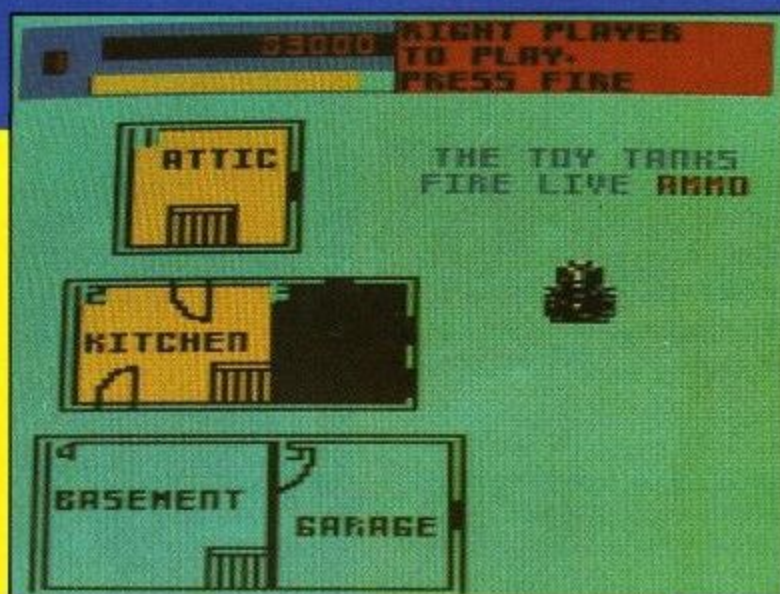
As you've probably guessed by now, your task is to enter each house in the street one at a time and pick off the pests from each room.

There are usually five rooms to each house, ranging from the attic to the cellar and, as you progress down the street, the vermin get nastier and bigger.

To start off with, you can expect cats, rats, tanks, frogs, tomatoes and a fair few others to do away with. And how do you do that?

With some deft use of the joystick, moving to the left hand side allows you to shoot at baddies in the distance. You'll also need to be quick with the bullets on the bonus rounds in each house.

To grab baddies in front of you, press fire when you're away from the side, but make sure you don't grab the nasty old wasp. A bad sting could cost valuable life points. A



quick waggle on the joystick should shoo the wasp away for a while, but be watchful for his return!

Now comes the best part. Easily does it. Wait for the baddies to get to the front row on the pretty floor tiles, position yourself above them and then pull down the joystick whilst firing to pound them into a pulp.

Pounding is very satisfying and, for every pest pounded, floor tile sections change colour until you complete a row of tiles, signi-

around with the controls before you get down to serious business. Avoid the frog tongues and stay well clear

ROUND-UP			
NAME	Exterminator		
FROM	Audiogenic	PRICE	Disc £14.99 Cassette £9.99
GRAFFIX	90%	SONIX	78%
PLAYABILITY	95%	VERDICT	

XENON

Hold on to your hats and get set for a non-stop, all-action futuristic blast-'em up of mega proportions.

Carefully, chopping and changing between your turbo land cruiser and your mach speed jet fighter, your task is to battle through an incredible alien onslaught



Penguin out of business again. Inside a mock umbrella factory, take on the robotic penguins in a dramatic bid to locate the master control computer, using all the clues you can find to help you.

In the second game, The Joker has run off with Robin and, if you don't find him in time, the whole caper's gonna get blown sky high. It's up to you.

Using excellent speech captions and utility screens, there are numerous puzzles to solve in this very interactive, comic-style yarn. The presentation is superb and the gameplay itself is



then just get out onto the five different levels and beat the hell out of anyone who comes near you.

Good scrolling, nice atmospheric sound effects and more action than you can handle, make this blast worth every single penny of its budget price.

out into the air, or on the ground, depending on who's in the helicopter and who's in the jeep, and blasting hell out of the revolutionary forces. Watch out for bombs and traps and pay special attention to the Gooseneck helicopters, in this fast-moving action blast.

At the end of each level, you need to blow up successive generals to survive, but if you do, it's worth it to make your mark on history.

Budget Basement

Five more pocket money blasts from the heart of the popularity charts.



over sixteen zones, at the same time collecting essential supplies to rescue Captain Xod's Federation Ship.

Keep a close eye on the terrain, as you'll need to swap crafts very quickly indeed to pick off the different enemy forces, as well as to pick up much needed weaponry along the way.

Halfway through each section, approach the Sentinel with care. He's not easy to kill. Nor is the end of level Sentinel. There's only one way to destroy it, so attack with care.

The scope and presentation of Xenon are both excellent, making it a superb bargain on the budget label for shootie freaks.

BATMAN

You get two incredibly good games in one with this superb offering. Using arcade style adventure icon menus, with a fair amount of action as well, your first job as the Caped Crusader is to put the

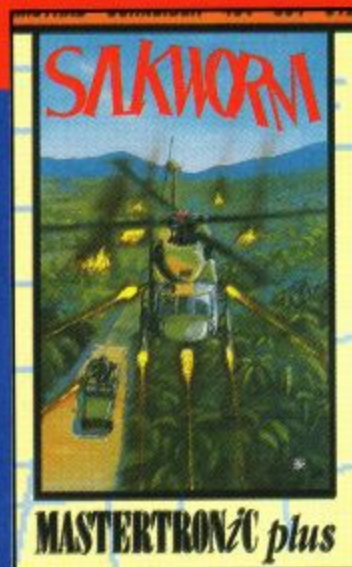
totally addictive.

As a genuine mix of adventure and arcade action, Batman - The Caped Crusader, will be hard to beat.

DOUBLE DRAGON

Not much to be said about this one, except that it's a brilliant beat-'em up for one or two players with a great need to let off steam.

Learn the moves, keep your eyes open for any type of weapon on the floor and



SILKWORM

So you wanna be a hero? Here's your chance. The future of the world is hanging on a thread after a threatened military coup by futuristic generals.

Only you and/or a friend can save the day by getting

AFTER BURNER

From helicopters to high speed fighter jets, After Burner features some stunning aerial graphics as you take on the challenge to become number one ACE.

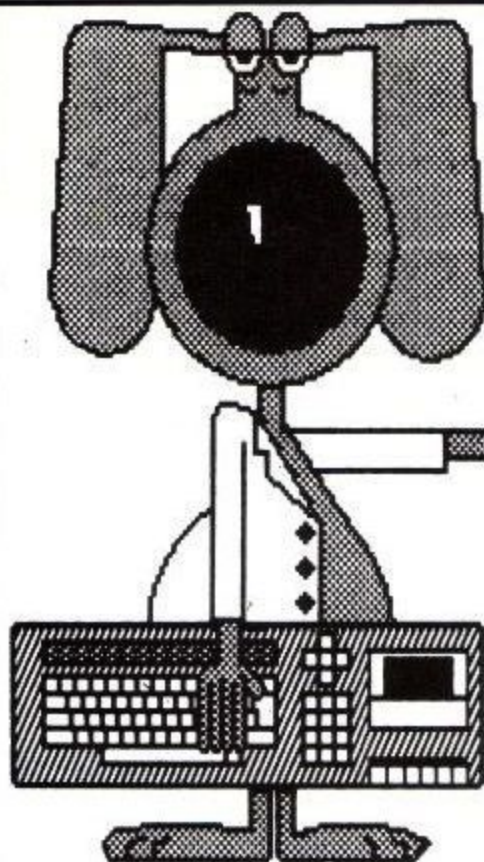
Master the controls, set your air speed and get running for the opposition, using your automatic cannons and guided missile systems.

You'll need to be pretty handy with the old joystick to shake off pursuers, so take care when the warning light starts flashing and make sure you tee yourself up properly for refuelling, or you'll run short on missiles.

After Burner is high speed action at its best, with plenty of variation to keep you hooked for a fair old while.



Xenon	Mastertronic	£2.99	78%
Batman	Hit Squad	£2.99	88%
Double Dragon	Mastertronic	£2.99	80%
Silkworm	Mastertronic	£3.99	76%
After Burner	Hit Squad	£2.99	90%



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cial, but they do print beautifully!

Allied to its near typesetting quality, the program allows the drawing of boxes, and vertical or horizontal lines of variable thickness. It also has the ability to print any number of columns, in any position. A final (vital) feature is the ability to 'reset' the printer - at any stage during printing - to any specified point on the paper.

A word processor program with such a multitude of features can obviously be used for a multitude of tasks. It can even rival DTP packages, available on a PC, when its advantages are exploited, and when used within its limitations. Fanzines produced with *Elite* can look artistic and professional. Letterheads, if designed with care and printed professionally are almost indistinguishable from a commercially produced item. My own uses include the design of business invoices and statements etc. I produce two Newsletters for motoring journalist's organisations and these are similar to the *Brunword* advertisements, because they share an identical layout (cribbed from the program examples!) Finally, all manner of personal printing such as disc and cassette labels, colour slide captions and file titles make use of various fonts in appropriate sizes.

Using the program requires some effort and no-little time, but if you take pride in good presentation this becomes a 'labour of love'. However, there are a number of shortcuts and one of them is to make use of the supplied examples. Simply, load the page layout you'd like to duplicate; delete the Brunning text and save the instructions as a template. All you have to do then is type-in your

own text and, hey presto, a perfect layout with no tears!

If you prefer to create your own page designs be prepared to waste a few sheets of tractor-feed paper. *Elite* is not a WYSIWYG program. Columns are created by reversing the printer at the bottom of each page, but the command for doing this is placed at the top. Printing boxes and vertical lines is best accomplished after printing all text. Getting these features positioned correctly requires some thought or planning. The secret is accurate measurement from a 'dead zero' position in the top left corner of the page.

The method I now use has saved me considerable time and paper, and is extremely simple. First, make sure that each sheet of paper is loaded in precisely the same position. Create a template by typing in all commands such as number and starting point of each column; justification and line spacing; position of boxes and vertical lines and, all margin off-sets. The final command should be 'Reset To Zero'. With this done, type in a full point and print the result. You now have 'dead zero' and all measurements can be taken from this point. Check and adjust any measurements you may have got wrong and save the result as a template.

Brunword Elite can be further expanded by the use of the new *Headline* extension. Designed primarily for 9 pin printers, it can also be used with 24 pin versions. Seven new fonts are supplied and a number of new commands help to extend the host program's versatility even further. *Headline* is loaded into *Elite* as an option and to make room for it *Brunspell* is cleared. The spell-checker can be reloaded at anytime by the same procedure.

Headline is switched 'on' and 'off' (within *Elite*) as and when required. This allows a tremendous variety of print styles and sizes to be used on any single document. Sizes up to 16 times normal can be specified as well as the option to use a multi-strike feature. The trade-off is a loss of printer speed when *Headline* is running. This is because it was designed to use standard 8 pin quad graphics. However, if the program is used only for headings and display-type, this need not be a problem as you will immediately switch *Elite* back on. If you don't mind waiting a while, *Headline* prints beautiful 'body copy'. It will also produce great letterheads and compliment slips, and truly excellent artwork for business cards.

If you wish to produce any of the items above, simply create your artwork (on clean, white paper) at twice

DESTINATION: The Winnock Hotel
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PETROL: No Problems!
NOTES: Don't attempt if you arrive at
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before GOUROCK. (WESTERN FERRIES depart
every 30 mins.)

0.5m DRYMEN "0"
A858
12m <-----|
1m Balloch
A811
14m <-----|
A82
11m TARBET
A83
10m |----->
18m Strachur
A815
HUNTER'S QUAY----->
*** ferry ***
14m GOUROCK
25m Largs
A78
7m MONKTON
A77
19m AYR ----->
15m Dalmellington
14m Moniaive
A729
2m <-----NEW BRIDGE
A76
20m DUMFRIES----->
A75
GRETNA

READING THIS ROUTE CARD

Start at bottom and work up. Arrows indicate direction to bars. If no arrow is shown, continue straight on. Place names in lowercase indicate towns to pass through - no route change. Approximate mileage is on left.

TRIM ROUTE CARD AND STICK TO TANK.

DISC LABEL

This is in COMPUT. It took less than an hour and was right first time.

MSS/COPY:7

Articles for MCR/ACU & FL
* BRUNWORD *

[A]

MSS/COPY:7 - PROMO/PR

[B]

PROMO/PR

* BRUNWORD *
Press Releases/Mail Shots

ROUTE CARD

The top section is in SLIMLINE from the *HEADLINE* extension and the main text is, the soon to be released, CLACTON font. At the bottom, HEAVY condensed was used.

Apart from the map reading (!) this took about half-an-hour and required one print-out to get it right!

the height and twice the width of the finished product, though 'same size' repro is also excellent. For the ultimate result take to a *Kall-Kwick*, or *Prontoprint*, ask them to do a half-size PMT (Photo Mechanical Transfer) and then print in your favourite colour. You'll save about £20-£25 on their artwork charges!

I guess I must have spent hundreds of hours 'playing' with the *Brunword* suite. It has all been worthwhile though, because I am now producing better looking letters and documents than the majority of my clients!

Max Chat

Gordon gets logged-on to his fave BBS and peruses the chat that's going on. Adventures seem to be the thing...

I spent a while checking the messages out on the CPC section of the Maxwell House BBS - isn't it amazing how much interest Adventuring generates. Anyway, for your delectation, and just to show you what you're missing, I've followed three chaps through a loooooong conversation, and thrown a few other bits and bobs for good measure!

Here they go!!

From: CHRISTOPHER SMITH
Subject: Help Please

Hi there! Just a quick question - does anyone out there know how to get MEX (CPC-MEX) on the CPC6128 to be able to delete on this board. At the mo, my delete key just refuses to do anything, which is rather annoying. Thanks, Chris.

From: JOHN PRIESTLEY
Reply-To: CHRISTOPHER SMITH, "Help Please"

Subject: Delete key
The delete key sends an ASCII character 127 and the board doesn't recognise this as a delete but uses cursor left which sends an ascii character 8. So press cursor left to delete. I don't know about MEX but some software can let you toggle the ascii character of the delete key to 127 or 8.

Hope this will help you.
John

From: JOHN PRIESTLEY
Reply-To: ALFRED DALTON, "my last phone bill was 7.33 (seven pound)"
Subject: Phone bill
What did you do? Reverse charges?
John

From: CHRISTOPHER SMITH
Reply-To: JOHN PRIESTLEY, "Delete key"

Subject: Delete key
Hi there! Thanks for the help, but on MEX the left cursor key doesn't do the job either! Oh well, I'll have to take a look through the manual again, and see if there is ANYTHING in it that might help! Thanks, Chris.

From: BOB ADAMS
Subject: Adventures

Hi everybody, it's nice to see this board being used regularly. Are there any/much adventure players logging on. Anybody with problems or opinions on the state of the CPC adventure scene? Look forward to hearing from you. Cheers, Bob.

From: GEORGE HO-YOW
Reply-To: BOB ADAMS, "Adventures"

Subject: Adventure Games
There seems to be a lack of support for adventure help and a forum for exchanging ideas and successes in ACU. I know Adventure players are a minority, but if sufficient replies to Bob's request is observed, perhaps ACU may restart an Adventurer's Column. I would dearly like to see Adventuring taking off.
George

From: CHRISTOPHER SMITH
Reply-To: GEORGE HO-YOW, "Adventure Games"
Subject: Me too

Hi there . Hmmm, I'd like to see a bit more adventuring around the Amstrad scene soon, things do seem to be dying out these days! Thanks, Chrs.

From: GEORGE HO-YOW
Reply-To: CHRISTOPHER SMITH, "Me too"
Subject: Three for Adventuring
Hiya Chris, It's nice to see another adventurer. I suspect that adventurers with modems must be even a minor minority of all the Amstrad Adventurers. Perhaps the Sysop may create a separate section for Adventure help and comments. Like everything else it would need a dedicated and enthusiastic 'editor' to keep the section alive. Providing we were to get a section, that is. Regards George

From: BOB ADAMS
Subject: Adventuring
Wow, I didn't expect such an immediate or enthusiastic response to my adventure message. Thanks guys. Now how can I help you in return? Cheers, Bob.

From: CHRISTOPHER SMITH
Reply-To: GEORGE HO-YOW, "Three for Adventuring"
Subject: Adventuring
Hi there. Well, I hope we get somewhere with the adventuring, I haven't actually BOUGHT a new one since the good old Time & Magick package, not including the Colossal Cave Adventure, of course. Thanks, Chris.

From: GEORGE HO-YOW
Reply-To: CHRISTOPHER SMITH, "Adventuring"
Subject: Adventuring
It's good of you to reply Chris, I play FED2, which you may know is an on-line Multi User Game. However I've reached a point where the entertainment versus cost makes me think twice about continuing. I much preferred SHADES and BLOODSTONE. As far as specific games for the CPC is concerned, I enjoyed Time and Magic like you, also the PAWN, I have the Hobbit Trilogy? but it's on tape, well you know when u have a disc, one is loathe to use tapes. Have fun!
Regards George.

Incidentally I would reply quicker if

I didn't have to keep swapping modems. My old 1200/1200 doesn't latch on to MAX's carrier. So I have to revert back to v23. Bye Chris and maybe Bob might like to comment as well.

From: BOB ADAMS
Subject: Adventuring and stuff
To: George Ho-Yow.

Hi George. Thanks for your messages, both public and private. I've been having trouble logging on here for the last few days, so sorry for the delay. Have fun with The Hobbit & Co but I'm afraid they're all full of bugs (some fatal!). I withdrew Hobbit and L.o.t.Rings from my helpline, as I never met anybody that had played the game the same as I had, so I could never help them. It became embarrassing, always writing back to some lost soul, "Sorry, but that never happened to me!" I never really cared much for either game. Too random and I HATE interactive characters. Probably explains why I don't like MUGS either. Well now that I've totally rubbished your adventures, what are we going to talk about now? Cheers, Bob.

From: GEORGE HO-YOW
Reply-To: BOB ADAMS, "Adventuring and stuff"
Subject: A little MUG
> Go East *> You are stood on a soap-box and feel a strong urge to speak! > shout "I wish adventure games were classified, so I wouldnt buy the one suited for experienced players, and spend hours getting no where, then losing interest. Also I wish adventure games were not so similar, and seem to be an alternative to crytic crosswords. *> A heckler rails "Crosswords, I'll give you crosswords, *!@+*, he he!" > shout "And perhaps cater for a wider range of tastes!" *> There's loud clapping... of thunder. And as the heavens open everyone rushes for cover > quit

From: BOB ADAMS
Subject: Adventure Corner
Nice one George! To continue your theme:- *Examine Soap-box. It is a cardboard box, large enough to hold an Infocom game and the all free bits and comics, etc. You can also see a label. *Read label. The label says "Expert level." *Say #\$\$%&! You can't.

Okay, I know I've chosen the only Software house that ever did grade their adventures but at least it has been

done. My own advice and also the exact way I got started myself, is to hunt for all the CPC adventures that were written around 1985/6. These are often only Verb/Noun type inputs but are still pretty good adventures and lead you into problem solving gently. You can concentrate on the adventure and not the "wonderful" parser/utility/system or graphics.

From: GEORGE HO-YOW
Reply-To: BOB ADAMS, "Adventure Corner"

Subject: Adventure Corner
Hello Bob, thanks for your helpful tips. I believe there are also adventuring by post, and I dare say there could well be adventuring by mailbox. However I don't think this is the place to continue our little game. Incidentally, are you the Bob A. who wrote the review on A... in Wa... Dont want to give a free plug to anyone. He He! I was reading Artificial Intelligence and Computer Games by R Bartle. It makes interesting reading. If only I could implement some of his ideas! I feel it would be possible to open a different approach to the present games on the market. What are your views on RPG, such as the BARD. I must confess I haven't even bought the game, much less playing it. Anyway bye for now George. Ps I hope I haven't monopolised this BB, Perhaps this should have been a private message. Anyone out there think so?

From: JIM CARTER
Forwarded From: SYSOP
Subject: Mex and the CPC6128
Having just got Mex configured for a Datachat 1223 modem and Spectre Comms Pack I appear to be having problems losing the first character in each line on the screen, which can make life difficult when it comes to menu's. Being completely lost with CP/M, can anybody tell me what I am doing wrong. Jim.

From: GEORGE HO-YOW
Reply-To: GEORGE HO-YOW, "Adventure Corner"

Subject: ADVENTURE AND GAMES CORNER

10 ' How to kill two birds with one stone. 20 ' ===== Write a progette to simulate the 30 ' |8|7|6| hand-held game for moving tiles 40 ' |5|4|3| to a new arrangement. In this case 50 ' |2|1| | ascending order. The prog should ask 60 ' ===== for a no. to move, then validate the no. 70 ' and move the "tile". Only 3 or 1 can move initially. 80 ' You

should be able to write the game in 10 lines or less. 90 ' Feel free to submit it for 10-liner publishing in ACU. 100 ' And may the best prog win!

From: GEORGE HO-YOW
Subject: Downloading Files using XMODEM

I've just downloaded some files from the CPC area, and noticed that after completion of each file xfer the cursor on my terminal just blinks at me. Sending <control f> appears to tell MAX that the file xfer has been completed. I think this is a problem with the PACE Xmodem s/w called Honeyterm. George

From: TONY WALKER
Reply-To: JIM CARTER, "Mex and the CPC6128"

Subject: Mex and the CPC6128
Hi Jim, Regarding your problem with mex loseing characters. Try putting ESC 0 in your Profile.Sub file just before it calls up Mex. I used to have the same problem but since I did this it now works okay>.

Regards Tony.

From: GEORGE HO-YOW
Subject: ansiterm
Hello Bob, I'm using Ansiterm which was downloaded from the CPC area. IT offers quite a difference in approach to what I have been used to. But I wouldn't like to say whether it's better or not than the standard Amstrad S/W. Regards George. Ps If I had a colour monitor, perhaps it would make quite a difference Also I noticed some graphics as well.

From: BOB ADAMS
Subject: Adventure Corner
Hi Adventurers, There are a lot of "new" adventures available from Public Domain libraries, all of a sudden. They vary in quality from "naff" to "not bad at all". I find this renewed interest in adventures very encouraging. A couple of Libraries to try are SCULL PD & ADVENTURE PD. I have the addresses if you would like them. Cheers, Bob.

Well - that lot took only a very short time to go up and down, and I daresay the three adventurers will be great friends should they ever meet at a show somewhere. That's the great thing about comms! Seeya next month.

Gordon Bates.

Welcome back to the fiddle factory folks, you just caught me in mid-fiddle while eating a quick snack chilli out of what was a patterned bowl. I think I overdid the homegrown chilli powder.

No matter, you're not interrupting anything, in fact I was just about to show you a few multiface pokettes, like these ones here that Darren Casey sent in for the Midnight Resistance disc:

Address Poke

What it does &46D4 201

Never die &47

DC 00 Never lose a life

&470F/10/11

00

Keep keys when hit

&48ED 1-3 T

ype of gun

&48DC 1-3

Type of backpack &19BA

1-255 Number of keys &0E28

1-255 Number of lives &4F1B

1-255 Amount of ammo &4F1C

1-255 More ammo &4F2C

1-255 Amount of ammo for backpack

&0E33-&0E39

Roll-your-own score.

Use 48 for a "0", 57 for a "9", and all shades between.

Busy bloke that Darren Casey feller, keen fan of the Turtles too. Once you've shelled out for your fabuloso (tm) Turtles disc, do a LOAD "TUNE2000", &2000 to get the tune program into memory. Now you want to save it all out to disc again (oh yes you do), and you do that like this: SAVE "TUNE2000",b,&2000,&fa0

OK, all you need to do now to make the turtle music play in the background is add a wee programette to your reper-

toire, and make sure that anything you tack onto it doesn't overwrite the music:

```
1 'Music-Turtle music loader 2
'Hacked by Darren Casey 3
'10 MEMORY &1FFF
20 EVERY 1,1 GOSUB 120
30 LOAD "TUNE2000",&2000
40 POKE &2000,1
50 POKE &2005,15 60 REM
70 IF INKEY$="" THEN GOTO 60
80 EVERY 1,1 GOSUB 130
90 PRINT CHR$(7)
100 END 110 RETURN
120 CALL &2006
130 RETURN
```

Let's hear it; Teenage mutant ninja turtles. Truly awesome, dudes. There's more too, just to keep you occupied when eating (or "scarfing," as our green, reptilian friends would say) your tuna,

Greetings from

More hints to make the big time,

banana and chocolate fudge pizzas. First some useful addresses. Hang on, I can't put that sort of thing in the Hacker's Haunt, you'll have to have these handy routines instead and roll your own pokes:

&0904

Amount of wrong answers to password &868B

Amount of time left on level 3 &EF0D

A call to here switches on the cheat mode &EF1A

A call to here switches off cheat mode &0AAD

Calling this bit gives the Shredder message &626E

This is the routine that decreases the timer in level 3

And while you're doing all that, I'm going to scarf some more chilli before it dissolves

the rest of the bowl. I see, unable to roll your own poke, even when equipped with a multiface are we? Oh hum, here are the useful bits to poke at with your multiface:

Address	Poke	What she does
&0A88	0D	These turn on cheat mode if you stuff the password 3times
&0A89	EF or &0A88AD	As

above, but the game just starts.

&0A89 0A

&627500 Timer in level 3 never runs out.

I think there's going to be more from Darren next month, but meanwhile Darren, watch the letterbox in case the tortoise - sorry - postman drops something through it. Hopefully not a poll tax demand.

Guess what's next? You peeked!

Tom Hackland

from Mr Cheat himself, The Vax.



Should've poked, but never mind. Yes, it's a Girvingram. John "I'm a saucepan" Girvin has been at it again. Not only that but he's sent in the odd pokeykins or two as well, on tape and paper. His printer looks suspiciously like my German one that died recently under equally suspicious circumstances mit kaput Spiringenvork, bowen Fusen und Spitzensparken.

In his own words (well, more or less),

here are John's pokes:

The first victim this time around is Dominator, which us lot sent him that for being a 'generally awesome hacker' (his quote), closely followed by Gemini "impossible to play on a green-screen" Wing by System 3 and Virgin/Mastertronic respectively.

Dominator "eats hack" first: you get the option of infinite lives, no low-flying bad guys, no bad guys on the walls, and a generous helping of invulnerability.

It's not all yer proverbial bed of roses though. If you select invulnerability you can't pick up any bonus icons that appear, and if you get rid of the flying bad guys, no bonus icons will appear at all! Can't have everything you know, but you can have the pokette:

```

1 'DOMINATOR hacks
2 'By John Girvin
3 ' 10 MODE 0:OPENOUT"d"
20 MEMORY &6A9D:CLOSEOUT
30 LOAD"!dom",&6A9E
40 addr=&BE80:RESTORE
50 READ byte$
60 IF byte$="INDIGESTION" THEN
CALL &BE80
70 POKE addr,VAL("&"+byte$)
80 addr=addr+1:GOTO 50
90 **** LEAVE 100-180 IN ***
100 DATA 21,9e,6a,11,9e,9a,01,44
110 DATA 0f,ed,b0,3e,c3,21,99,be
120 DATA 32,16,bd,22,17,bd,c3,9e
130 DATA 9a,cd,37,bd,21,00,00,22
140 DATA 4b,a6,21,b1,be,22,4e,a6
150 DATA c3,08,a6,a4,48,4c,46,0a
160 DATA 89,dd,21,b8,a8,11,ab,00
170 DATA cd,47,a8,21,c4,be,22,61
180 DATA a9,c3,e2,a8 190 'Inf. lives
200 DATA af,32,36,07 210
'Invulnerability
220 DATA 3e,c3,32,18,24 230
'No flying bad guys
240 DATA 3e,c9,32,d4,18 250 'No bad
guys on walls
260 DATA 3e,c9,32,b4,1c
270 **** LEAVE
280 IN ***
280 DATA c3,00,05,INDIGESTION
    
```

Gemini Wing is made slightly more survivable on any kind of monitor with the addition of a few special weapons of his own. The first addition is infinite lives, followed closely by invulnerability to everything (except the barriers

on levels 3 and above), removal of small aliens (the "bringers" and guardians are still there), and a finger paralysar for alien trigger fingers (they stop firing).

As usual you type in the program and type "RUN" with the fully rewound game tape in the tape unit (it'd look silly in a disc drive). The programs are also on this tape after this program:

```

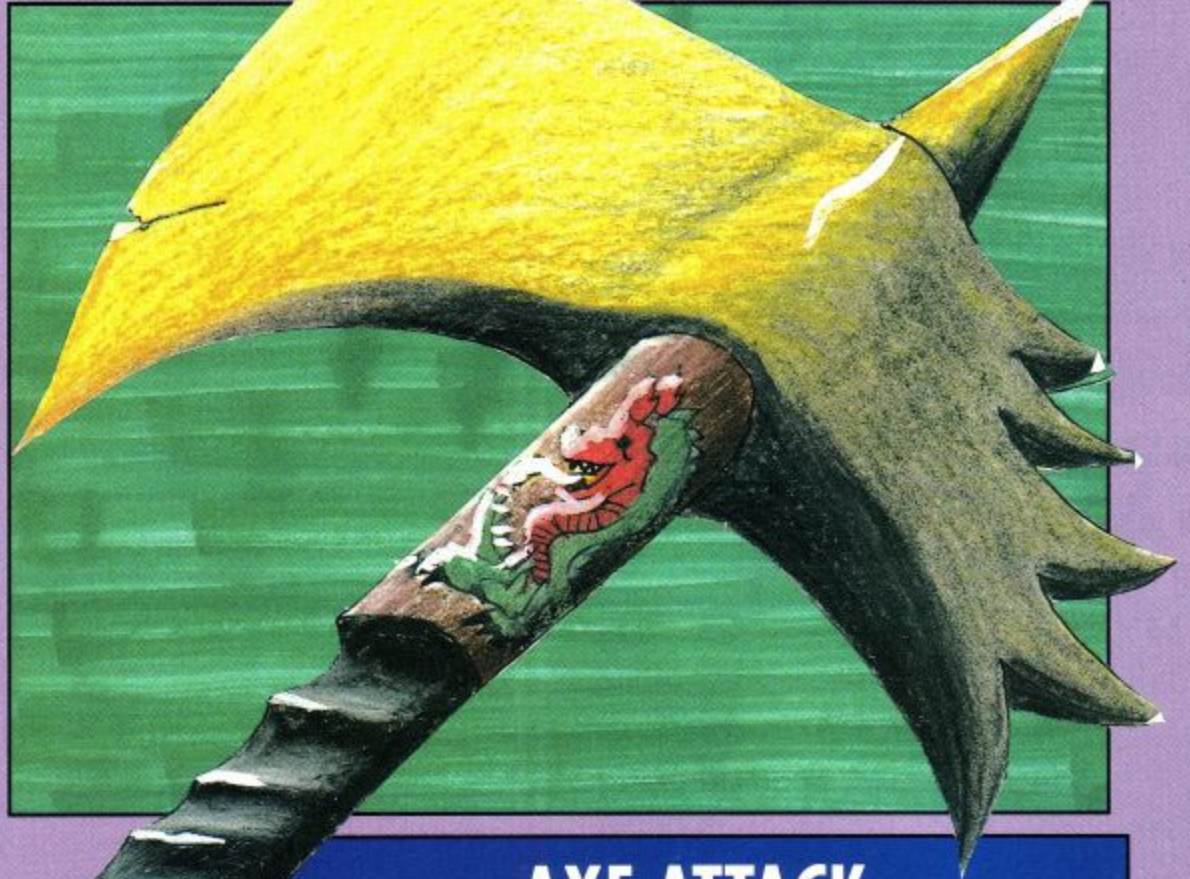
1 'GEMINI WING hacks 2
'By John Girvin 3
' 10 MODE 0:OPENOUT"d"
20 MEMORY &6A97:CLOSEOUT
30 LOAD"!gemini",&6A98
40 addr=&BE80:RESTORE
50 READ byte$
60 IF byte$="IMASPUD" THEN CALL
& BE80
70 POKE addr,VAL("&"+byte$)
80 addr=addr+1:GOTO 50
90 **** LEAVE
100-180 IN ***
100 DATA 21,98,6a,11,98,9a,01,4a
110 DATA 0e,ed,b0,3e,c3,21,9f,be
120 DATA 32,16,bd,22,17,bd,c3,98
130 DATA 9a,a4,48,4c,46,0a,89,cd
140 DATA 37,bd,21,00,00,22,4b,a6
150 DATA 21,b1,be,22,4e,a6,c3,08
160 DATA a6,dd,21,b8,a8,11,ab,00
170 DATA cd,47,a8,21,c4,be,22,61
180 DATA a9,c3,e2,a8 190 'Inf. lives
200 DATA af,32,3b,44
210 'Invulnerability
220 DATA 3e,18,32,20,5c
230 'No small aliens
240 DATA 3e,c9,32,68,61
250 'Stop aliens firing
260 DATA 3e,c9,32,0c,6c
270 **** LEAVE 280 IN ***
280 DATA c3,15,58,IMASPUD
    
```

He's also managed to uncover the passwords for all levels of Gemini Wing (clever sausage). They are, and pay attention now:

"THESTART", "EYEPLANT", "WHATWALL", "GOODNITE", "SKULLDUG", "BIGMOUTH" and "CREEPISH" in that order. Congratulations on the 9 GCSEs too, and I'll give you something to look forward to so you can feel even more incredibly smug.

Oh well, that's it for another month, and I've gotta leave as the chilli is starting to take effect. I couldn't think of a quick way to round the column off, so I took a sneaky look at the magazine. It finished like this: Edam is made backwards.

Luv 'n' stuff, Vax, Suz, Brats & other well-fed creatures



AXE ATTACK

Here they are at last, the long-awaited results of our fabulous Golden Axe competition. We certainly had some excellent offerings in our bulging mailbag, but there could only be 10 winners unfortunately so, without further ado, here's a list of those lucky people: Paul Martin of Warley, West Midlands; Michael Moore of Adlington, Lancs; Johnathan Ryans of Doncaster; Graham Tarran of Manchester and Daniel Pilling of Chester, who will all receive a superb boxed copy of the Games Workshop's *Dungeon Quest*.

Five lucky runners-up will also find copies of the mammoth Golden Axe winging their way to them in the post very shortly. In the meantime, sit back and enjoy the excellent artwork of our winners and then get thinking about this month's fabulous competition on page 12.



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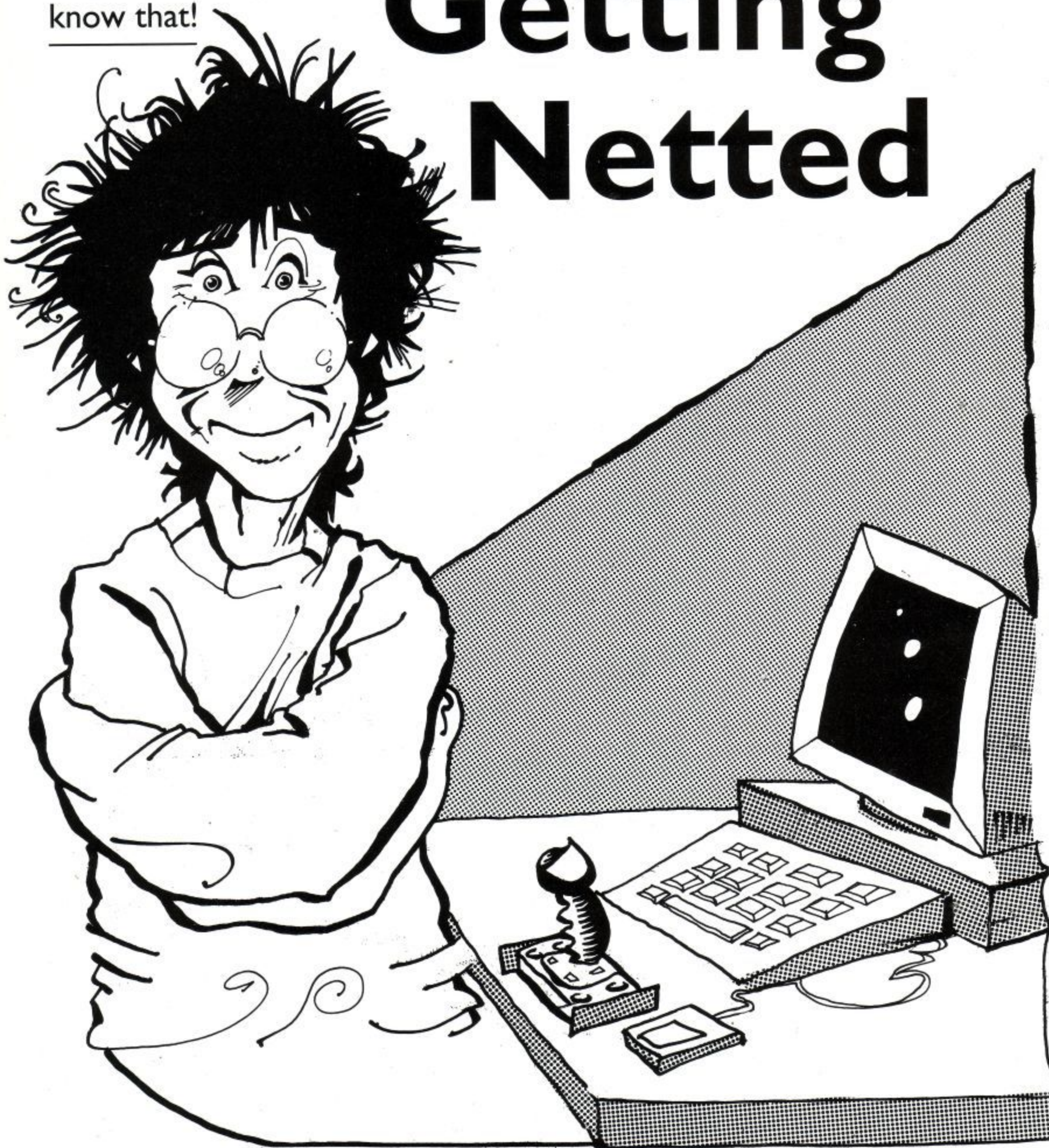
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The CPC is a serious machine, so says the Doc, which is capable of being networked.
Not a lot of people know that!

Hands up everybody that knows anything about networks. Hmm. Not a lot of you. OK, in this article I'm going to be explaining what a network is, how it works, and how it can be useful for the CPC owner/user. Now, it may seem to you that the good ol' Arnold isn't anything but a

games machine, and, I suppose, for a great many people that's perfectly true. But it can be put to sterling service in the small business environment - you've just got to look at the number of so-called 'serious' packages available for it, and it's a fact that some of the best wordprocessors around run on our fa-

Getting Netted



avourite machines.

However, not many people successfully exploit the connectivity that the Amstrad machines are capable of. I know, there are plenty that have modems hanging from the backs of their machines, but the CPC is also a neat machine for using in a network.

So what's a Network?

The simplest way of describing a network is to say that it's a means of sharing resources between machines. Networks come on a number of levels, the first of which I'll call the ambulant format.

This is the simplest way of file sharing there is. You pop a disc out of your drive, amble to your mate's machine, and slip it into his drive. Bingo - instant file sharing. Printer sharing works the same way - you whip the printer off your desk, and carry it over to another machine to be used. No problem.

The trouble with this is, the machine that your mate/colleague has may not be able to read your disc - it could be a tape based 464, it might be a PC, it could be an Amiga (who he??). So, the ambulant network works best when compatible machines are being used.

The next step up is the two-machine RS232C network. In this format, two machines at any one time can be connected together to exchange files - much like using a modem. In fact, it's the commonest method of file exchange between machines that are not at the same site. Again, though, it has its limitations - the files aren't being shared at all, merely exchanged, and two machines are tied up when neither needs to be.

Let me explain this sharing concept a little more fully - you're probably not too aware of how it works. We'll take a database file as an example.

Let's say that Fred and Joe both need access to the same contacts list, held in a database file. Under normal, non-networked, conditions, each has his own copy, which he updates as he goes. No problem, you might think, but there is a hitch.

Fred might insert a contact that he's got that Joe needs to use. At the same time, Joe inserts another contact that Fred will need to use. Each has it on his personal copy of the database file. Let's say company policy is to have only one file, such that each employee has access to all contacts (an eminently sensible arrangement). Who has it? Is it Joe, or Fred, since each now has a different file.

What needs to be done is to merge the two files, so that all new entries, from both Fred and Joe, are in it. That,

of course takes time, and since both Fred and Joe are double glazing salesmen, their time costs money, so it's a waste of time.

Now, if Fred and Joe were part of a network - if their CPCs were networked together with another machine or more, they could keep the database file on ONE machine, and each could look at it whenever he needed to. He could also add to it as a new entry needed to be made, and the other would be able to see it immediately.

In this case, Fred and Joe would SHARE the file, rather than having to keep their own separate copies and swap notes each night. As either Fred or Joe updated it - either inserted a new record or deleted one - the other would be kept apprised, as they both use the same file.

It's a very simple concept, but it only works when some kind of network is running. Now, the ambulant network I spoke of earlier could work in this way, and work quite satisfactorily in a network of similar machines. All it would entail would be ONE disc with the file on it being passed around from pillar to post here there and everywhere, with an obvious consequence.

It's going to get lost, or some bright spark is going to decide that rather than go hunting for it, he'll make a copy and use that. Eventually, the shared file isn't kept updated, and people revert to having their own copies.

If, however the machines are networked, all machines (stations, we call them) have access to the central file, and everything's hunky dory.

Now, at this point, I can just imagine that you're sitting there saying 'What on earth has this do do with the CPC?'. Quite a lot, actually. Remember, at the top of this article I said that the CPC is capable of being networked, and it is,

courtesy of those nice people at Nine Tiles, who actually produce a CPC network called Superlink, which I'll be reviewing in two parts next month and the month after. (I bet 9T get a phone call from another mag now!)

So, now that you know we're not just talking theory, how do these here network thingies work?

Topology.

It's actually quite simple. On the CPC, every data signal inside the machine is duplicated at the expansion port. If you so desired, you could knock up a super-swish keyboard and interface it to your machine via the port, and not bother

using the built-in one. So, the port is capable of input as well as output - but you knew that already, didn't you? Didn't you????!! Well it is!

If it's capable of input as well as output, there's no reason on earth why it couldn't accept signals from another machine, or even a number of other machines, and share information with them. And here's the beauty, those other machines don't HAVE to be CPCs. They can be PCs, STs, Amigas, whatever, as long as they have the same capabilities.

If you only have two machines talking to each other like this, there are few problems - one talks, the other listens, and if the 'conversation' is slow enough, both can talk and listen at once - much like people can. That's called 'DUPLEXING', and it's fairly straightforward. Introduce a third machine, though, and things start to get hairy.

In this case, assume we've got three machines, A, B and C. Both A and B want to talk to C at the same time. If they do, C will get confused, since it won't know which is saying what. To fix it, A and B assemble their information into small chunks called PACKETS, and put their signature on them

(their NETWORK ID). A has a look at the network to see if anything is happening, and, if it's clear, sends a packet to C. Meanwhile, B has a look, and sees that A is sending, so waits. As soon as it's clear, B sends its packet.

C, on the other hand, sits there waiting, and is informed that a packet is coming for it, so it reads the network ID of the sender, and stores it away. When it gets the packet from B, it stores that separately, and acknowledges both packets as received.

Once C receives all the packets that A has to send, it acts on the instructions, and similarly with B. Thus, all three can talk together, with the network controlling whose turn it is to speak at any given time.

Now, this isn't an exhaustive treatise on networks - we haven't looked at the various topologies that exist, for instance. But, it ought to make the Superlink review a little easier to understand when you come to read it next month.

To give you a little foretaste, the network under test consists of two CPC6128 machines and an Amstrad 3386SX PC. I'll be slotting a 6128 PLUS into the net if I can as well. Thus far, it works beautifully - next month, all will be revealed.

BITS 'n' PIECES

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SENSATIONAL SOUND SAMPLER Analyser, editor for the CPC 6128, 464, 664 on 3" disc for £10 or cassette for £5. Send cheque/PO and SAE to Peter Wilkins, Pen-Y-Bryn, Engedi, Bryngwran, Anglesey LL65 4SW. Please state disc or tape.

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HELP NEEDED for Treasure Island Dizzy (i.e. positions of all thirty coins) and I wouldn't mind a Multiface poke for Rick Dangerous II. L. Young 20, Newton Avenue, Cullercoats, North Shields, Tyne and Wear NE30 3ND.

GAMES WANTED: Ashkeron, Brainless, Castle Dracula, Castle of Eagles, Colditz Escape, Faerie, Ice Station Zero, Island of

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EXCHANGE Pandora and Pipe Mania (disc) for Soft 968 Firmware Manual. Also Homebrew software wanted with right to distribute (Sprites Alive games etc...) Enclose SAE for return disc/tape. R. Dillon, 70 Highfern Gardens, Belfast BT13 3RE.

BEGINNERS GUIDE to machine code book wanted. Will swap for Easi-Amstrad tape. Any hints or tips on machine code gratefully accepted. J. Smallshaw, 85 Wotherell Road, Victoria Park, London E9. 081 533 3793.

I WOULD APPRECIATE HELP in search of Maxam 1.5 and help in how to use it. Also wanted, poke for Arkanoid. Contact Marilyn Hanson, 4 Maytree Lane, Waterthorpe, Sheffield S18 6HA.

INFINITE LIVES desperately needed for Arkanoid and hints for CRL's Rocky Horror Show would be gratefully accepted. Please write to Peter, 66 Sherwood Road, Rooklea, 4106 Brisbane, Queensland, Australia.

DECENT MACHINE CODE TUTORIAL books wanted for the CPC. Also wanted, an adventure writer such as Gac or Quill. B. Saunders, 70 Margeholes, Carpenders Park, Watford, Herts WD1 5AR.

WANTED PENFRIENDS to swap games, cheats and pokes. I have a 464 with extra 64K and Genius Mouse. Alwyn Williams, Swn-Y-Gwynt, Bodffordd, Anglesey, Gwynedd LL77 7DZ.

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CONVERT your 464 to 6128. Keep 464 equipment and buy 6128 programs. Both will work. Microchip conversion carried out. All you need is disc drive. Contact R.J. Amison, 56 Drubbery Lane, Burton, Stoke-On-Trent. 0782 318548.

I HAVE STARTED A BUSINESS for people who want tailor-made programs for all CPC's.

Also, does anybody have a Firmware Guide for the 464 to lend? Contact Mr Manning, 8 Steerforth Street, London SW18 4HH.

Fanzines

CPC FANZINE called Play Mates, issue seven due soon, full of reviews, tips, pokes and bonzo news with P&P just £1. Carl Surrey, 37 Fairfield Way, Barnet, Herts. EN5 2BQ.

AOK Fanzine, issues 2 and 3 out now. Includes features, reviews, type-ins, small projects and more. Send 60p (includes P&P) to Paul Escott, 31 Colebrook Road, Shirley, Solihull, West Midlands B90 2LB.

Penpals

CPC PENPALS wanted to swap games or demos on disc or tape. Send your lists to Carl Wilson, 64 Fishponds Road, Kenilworth, Warks., CV8 1EZ. Greetings to NWC and CBS!

PENPALS WANTED to swap games and demos on disk. Any age, any country. Help also given on new and old games. Write to Richard Wildey, 41 Enmore Gardens, London SW14 8AF.

There you go folks, more goodies from yourselves, for yourselves. There's plenty more in the pipeline, but we can't fit them all in at the same time, unfortunately. Don't forget, if the service is working for you, let us know, so that we can make room for more. If it isn't tell us and we'll make sure we put it right. It's all absolutely free, and the PIECES section should be up and running very shortly as well, so keep your eyes glued to this page for more details. Keep 'em coming folks.



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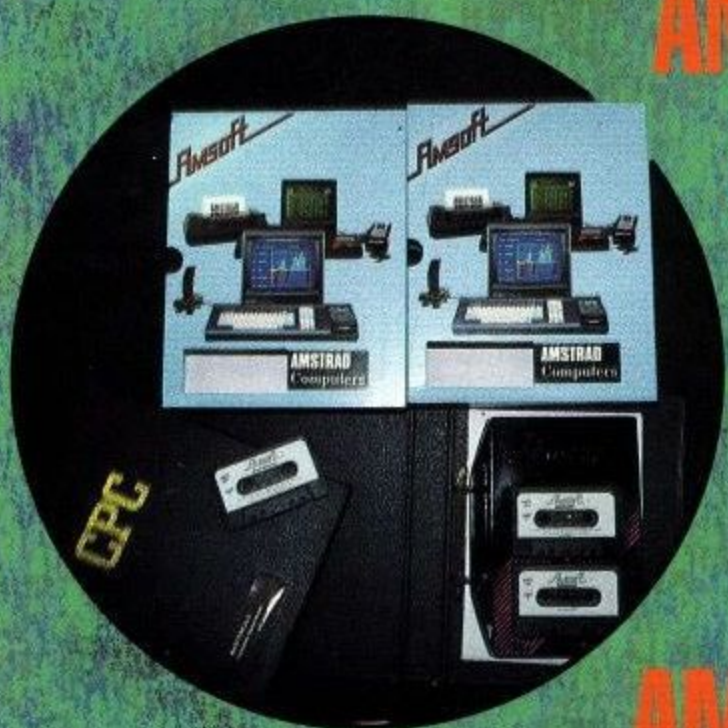
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First in with a serious letter from HK Martin from Manchester. I don't intend to reproduce it in full, since, in some part, it's quite personal, and certainly shocking (no pun intended).

HK has a 13 year old grandson who enjoys playing Operation Wolf on his machine. He had complained of elec-

it is possible, then how could this be done, and what software would be needed. The other question is about printer drivers. Is there a printer driver for the 6128 which will drive an HP Deskjet 500 for text and graphics?

First things first. The serial link is a doddle - it's something I do on an almost daily basis, as I edit most of my

The Doc handles a couple of queries, and waxes lyrical about those machines that cause our readers the most problems - printers!

Printer Paradoxes

tric shocks in his fingers, but the next found him prostrate on the floor after 15-20 minutes of play.

The ensuing hospitalisation resulted in a diagnosis of 'Space Invader Convulsions', a condition the doctors described as being often found in young computer gamers. The lad has to return to hospital for a brain scan.

HK asks 'I wonder whether you have come across this condition, and whether you can shed any light on its causes? I believe it may be caused by certain colours flashing at a critical frequency, but I have not seen the game to confirm this.'

Well, I do know, from personal experience, that flickering lights at the right frequencies can cause blackouts and unconsciousness, not dissimilar from epileptic fits. It's one of the reasons that I never go to disco-type environments,

purely because I've been carried out of too many after they've started their lights flashing and whirling. The point is, the frequency of the flashes is what causes the problem, and the critical frequency is different for individuals, although the range is not too large.

I haven't come across the condition you mention, but I feel that it's something we might investigate further, as it may have relevance to a sizable number of people. Thanks for the letter, and please give our regards and best wishes to your grandson.

Serial Links

Next on the line, a letter from Richard Keeton, from Beaulieu (Byoooly!) in Hants...

'Is it possible to link an IBM PC compatible and a CPC 6128 together via a serial link in order to transfer text and graphics files to and from each one? If

text on my PC machines. The simplest way is to have comms software at either end of a null modem lead 'twixt the two machines and use Xmodem or Zmodem (in MEX or ZPMPC under CP/M) to transfer the files. I run the link at 9600 baud, and have very few problems. However, there is another way, if it's something you need to do on a regular basis.

As you'll see from my article on Networks elsewhere in this issue, Nine Tiles have a system that will allow you to network your CPC into an IBM PC compatible, and thus do away with serial links altogether. It also has the double advantage that you can then store all your files on the PC's hard disk (assuming it has one). Keep reading for the next two issues to find out how it works, and whether it's a good buy.

Now, to your Printer problem. I don't know of a specific DJ500 driver for the CPC, but, if memory serves me right, the printer does have an Epson emulation - and quite a good one at that - built in. If you read further in this column, I think you'll discover that you will probably manage to drive it as far as text is

concerned, but I doubt that you'll have much success with the graphics side of things. Why? Read on!!

In the beginning...

And it came to pass that Man created the typewriter, and Man was pleased with his work, and saw that it was good. But all in the Garden was not peace and light, for in the bosom of the tree of

knowledge resided a foul creature, one with impious designs on Man, for whom he had no love.

And that creature created the printer, and was pleased with his work, and saw that it was, well, sort of OK, if you knew how to work it, if you see what I mean. And on the next day did he create his most impious design, the Printer Manual, and cackled with glee, for this was to be Man's undoing, as it spoke in tongues unknown to all men.

Apocryphal? Maybe. Accurate? Almost certainly. Printers and their associated problems generate more letters for this column than any other single item of kit or software - and when you think about it, you soon realise why.

Firstly, there's a factor of diversity. There are probably more printer types that you and I have had hot dinners (and I don't eat much salad!) Broadly speaking, there are Dot Matrix Impact, Dot Matrix Thermal, Daisywheel Impact and the Laser derivatives. Each of these can be driven either from a Serial (RS232C) or Parallel (Centronics) port. And then there are the emulations.

Emulation Working

Oh, boy do these cause trouble. There are two common types in Dot Matrix printers - IBM Proprinter and Epson. Epson what? Ah, well, that's the \$64,000 question. You see, Epson have probably churned out more printer standards than anyone else - few of which are truly compatible with each other, and it's fairly easy to understand why.

When the first DMP came out, there was no requirement for high quality printing, italics, bold print, graphics and so forth - if you wanted a letter

typed, you had your secretary do it on the office Remington. Printers back then were just for churning out parts lists, inventories and so on - very dotty, slow, and not too reliable.

Thus was the first standard formulated. Nine pins, no frills. But then some bright spark realised that things could be improved, and so various knobs and whistles got added, and each time, Epson, the market leaders in printer technology for many years, produced a machine to fit the bill. So, you have FX80, EX80, LX80, JX80, GQ, ELP, the list goes on and on and on...

Other manufacturers, never really wanting to re-invent the wheel, looked at what Epson did, saw that it was good, and decided that, since so many people actually bought the things, and so many software houses made their programs work with the Epson printers, they would copy, or emulate, the way the Epson printers worked.

Now, that would be fine, if Epson had stuck rigidly to their own standards. To a large extent, they did, for the basic functions. But as facilities increased, so did the number of ways they approached the problem of how to tell the printer to do something.

And all of this was before 24 pin printers were even thought of. As you can imagine, another 15 pins simply compounded the problem. Now, not only did you need another lot of com-

mands to do hoopy things with the extra resolution, people STILL wanted to be compatible with the older Epson models - even though they were inferior in every way. Why? Because their software was set up to use them, and we all know that the price of your computer and printer is soon outstripped by the cost of the software you gather (have a look at your own collection and add up the RRP's - you'll see what I mean).

To make matters even worse, IBM (who had been a typewriter firm for aeons) took their usual attitude, and re-invented the wheel just for the hell of it, creating yet another set of standards (remember, up until relatively recently, nobody ever got fired for buying IBM - so lots of IBM printers got sold). The result? Two sets of disparate standards, some of which weren't all that standard even in their own camps.

The final confusion comes from manuals. These were (some still are) written by the people that designed and engineered the software and hardware that makes up a printer. That pre-

supposes that they KNOW how to work the damned things. I have no problem with that. However, I'm sure we've all come across people who are absolute whizz-kids in their field, but can't explain what they do for toffee. Why, oh why is it always THOSE people that write printer manuals??

The resultant tomes are inevitably a tangled mass of cross references, indecipherable code and terms that aren't explained anywhere in the same booklet. For years, printer manuals were printed in Japlish (a hybridisation of Japanese and English, with lots lost in translation) and had rotten line drawings that didn't tally with what you had in front of you.

And out of all of this, we poor users had to make some sense and get the things actually working. I well remember my first printer, a lowly 50CPS (Characters Per Second) Tandy DMP105 that was compatible with absolutely nothing but itself. Its manual went to great lengths to explain how its graphics mode worked, and I spent months (I kid you not) writing a BASIC program to perform a screen dump to it, taking shading and so forth into account to represent colours.

The task was not made any easier by the information in the manual, in fact it was made harder, since the version of BASIC it used was peculiar to the Tandy computers - again incompatible with anything you'd ever come across, and with commands I couldn't hope to emulate with a single line of code in Amstrad Basic (or any others I had, and I had a few).

The final code took roughly an hour to run and finish, and the output wasn't that startling, much to my chagrin, but I learned a lot about reading printer manuals and how to find out how the actual machines work. I also went through lots of ribbons (and they weren't cheap then, either), and made a few more discoveries along the way.

Like, did you know that the more a ribbon cassette is designed to prevent you getting your hands dirty, the dirtier your hands get when you change it?? Like, did you know that there are more ribbon cassette types than there are printer types, and no matter how hard you look, you can never buy the one you need when you want it, but when you do find them, and buy half a dozen (having travelled from Edinburgh to London to do so) the shop round the corner from you suddenly gets hundreds in stock at a quarter of the price you've just paid for yours?

And there's more! Are you aware that your continuous paper is cunningly designed to be just that little bit longer

than your printer thinks it is (or shorter)? And that the printer's shortest paper advance is not a sub-multiple of that discrepancy, so you can never get your output to start at the same place on two consecutive sheets.

And what about DIP switches? Why

are they never marked with 'ON' and 'OFF'. Why are they always positioned under concealed covers that break your nails when you try to shift them? And why does the point of the pencil always snap when you try to adjust the microscopic little beggars?

Colour

And then we come to colour. Another set of standards, another set of headaches, and even more gobbledygook in the manuals. You can bet your last beer token that the colour printer you've just bought isn't supported explicitly by your software, simply because the software authors went out of business two years before the machine was invented. That's par for the course. The emulation factors get worse, purely because Epson didn't get in first (or at the right price, anyway), and the ribbons can cause major headaches.

For instance, I've discovered that fabric colour ribbons are good for one decent printout, and rapidly go downhill after that. Why? because of the way they work.

There are four bands on the ribbon, Cyan, Yellow, Magenta, and Black on the one I've had most recently, or sometimes Yellow, Red, and Blue (with black). When the pins fire through the ribbon, they pick up some ink, and transfer it to the next colour up it. Also, when the second colour is printed over the first, the ribbon picks up bits of damp ink from the page.

The result is plain to see - a muddy green yellow, a purple red, a blue that's a dark green, and only the black re-

mains unscathed (until it, too, goes a muddy khaki colour), and that's only the ribbon! Hard copy degenerates into an artist's nightmare, more suited to Andy Warhol and Salvador Dali than the pristine vision you've got onscreen - and that's assuming you've managed to get it out to the printer.

Oh, yes, I LOVE printers - they keep me in work!! See you next month, and I bet there'll be a printer related problem or two in there!

A sequencer is a device which can be programmed with a set of notes and used to control a synthesiser module to produce a repeating riff or sequence of notes. Sequencers vary in their sophistication – some can only store a dozen notes, others can store several thousand.

As most synthesisers control pitch by voltage, ie the higher the voltage the higher the pitch, many sequencers actually store a list of voltages. These can be used to control any voltage controllable part of the synthesiser. Most synthesiser modules are designed

Ian Waugh gets down to the low point of the series and shows you how to put the deep notes into last month's sequencer.

Slappa dat Bass.

to be governed by voltages and are called such things as VCO (Voltage Controlled Oscillator), VCA (Voltage Controlled Amplifier) and VCF (Voltage Controlled Filter). Every time we use a DATA statement to read in a string of notes we are, in effect, using a sequencer.

We can add a Bass Sequencer to the last program, which will play a riff and allow us to improvise over the top of it. This is common in electronic music and the use of sequencers has been popularised by such musicians as Tangerine Dream, Kraftwerk and Jean-Michel Jarre. The listing shows the lines we must add to last month's Program.

Commentary

The sequencer uses ENV 15 and ENT 15 which are defined in lines 60 and 70. The main routine, from lines 2010 to 2050 is as simple as can be – read note and play it. It uses ON SQ GOSUB which is primed in line 80 and rearmed at line 2040.

The program will run by itself if you add:

```
85 WHILE -1:WEND
```

Sequence data is terminated by two 0s.

Altering the bass riff

Extra sequences have been included in lines 2090 to 2110 for you to experiment with and new ones can easily be added. Try the sequence in line 2100 with a longer envelope such as:

```
ENV 15,1,15,1,1,-2,10,13,-1,15
```

Alter the tone envelope to suit.

The riffs in the program are quite simple but could be extended to any length by adding more data. You could even program the sequencer to play

the complete bass line of a tune.

Developing the sequencer

You could add a rhythm to the sequencer based upon the ideas in Program 7.2 but you would lose the chorus facility. This would be quite interesting.

Apart from adding more envelopes, rhythms, sequences and effects, you might like to put a memory capability into the program so it remembers what you have played and can play it back. This could be very useful. If you are improvising and play a good sequence of notes it is not always easy to remember later what notes you played.

To accomplish this it would be necessary to include an incrementing variable in the program and to record the variable's value whenever a key is pressed or released. The notes would be stored in an array, the variable providing the subscript.

Taking the program even a stage further, if you added editing facilities, allowed envelope changes during playback and had facilities for altering pitch and tempo you would be on the way to a miniature recording console. It is certainly a worthwhile exercise.

If you want to control and alter music to such a fine degree, the difficulty of playing the QWERTY keyboard does not make your job easy. Perhaps a better and more suitable solution is to preprogram the entire piece and let the computer manage the difficult passages.

To play two- or three-part tunes; if the notes of all the channels have the same duration a simple program will do the trick, ie read notes and play them. Problems arise, however, when each channel contains notes of differ-

ent durations.

The solution is to store the notes in arrays from which we can read and play a note when it's required. The ON SQ and rendezvous commands make our task quite easy.

Stereo positioning

I normally arrange the channels as follows:

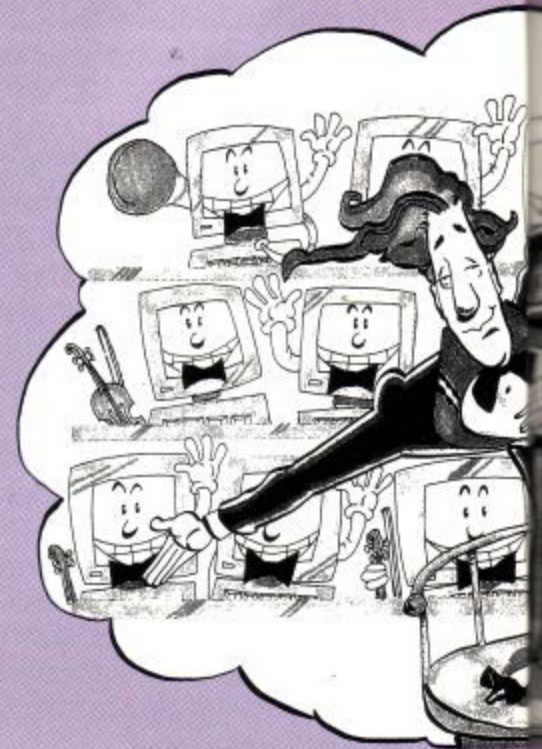
Channel A: Melody line. Channel C: Bass line. Channel B: Anything inbetween, often reinforcing the bass/accompaniment.

If the piece has a prominent bass line I sometimes program that first into channel A.

This tries to take into account the stereo positions of the voices. As some channels may be used to play more than one part, eg channel B, the stereo image may sometimes sound strange. The use of stereo is very effective and if you can connect the output to stereo speakers it is certainly worthwhile, not least for the increase in sound quality which larger speakers will bring. Even plugging in a pair of stereo headphones will enable you to appreciate the stereo effect. Generally, the melody will come from one side, the bass from the other and the inbetween parts from the centre.

The three voices are stored as independent sets of data and you can program any channel to play any voice. To experiment with stereo placings, read the data into different channels.

The melody and bass lines are the most important and set the character of the piece. I use channel B to fill in the harmony where required and it can switch from bass to melody as necessary. With this sort of arrangement, channels A and C will be dealt with before channel B, which may seem strange when you look through the listing.



The next program gives us control over five elements of each note. In practice, it is possible to employ some time-saving procedures – which I have done in certain cases – and you will find that you rarely have to enter five data items for each note.

Commentary

The variables pertaining to each channel are suffixed with their channel letter. I usually refer to the music parts as voices 1, 2 and 3 or A, B and C. The former seems more natural but the latter tells us which channel the voice will be played on.

va, vb and vc hold the number of notes in each voice. They refer to the number of notes per channel, not the number of data items.

Three arrays are dimensioned at lines 1130 to 1150 to hold information about each note. The first subscript refers to the following aspects of the note:

Subscript = 1: Status, ie channel number, rendezvous, flush, etc. Subscript = 2: Pitch number. Subscript = 3: Duration. Subscript = 4: ENV number. Subscript = 5: ENT number.

The tempo is set and envelopes are defined. The program links the volume and tone envelopes together so if a tone envelope is not defined it is good practice to reset it in case a definition has been left over from a previous program.

The next section sets the data into its relevant arrays and the process is repeated once for each channel. I have kept it this way to aid understanding although you might like to substitute a single array such as chan(3,5,n) to avoid the repetition. n would be the maximum number of notes in any channel, in this case equal to va. As the process is exactly the same for each channel we will only look at channel A in detail.

The screen is cleared and a message

printed to let you know the computer is doing something. Some tunes can take a minute or two to digest and it's comforting to know the computer hasn't locked up.

AFOR/NEXT loop runs through the data, once for each note. The first step is a call to the routine at line 1740. This 'cautiously' examines the first item of data. If it begins with an ampersand (&) it knows it is a channel instruction and evaluates it to produce the channel status. It then reads note\$ and dur. I have used hex notation to represent channel status because it is relatively easy to use and the ampersand tells us at a glance that this item is a status value. You could use decimal notation and ignore the ampersand. See Appendix II in the User Guide for further details of hex notation.

If the data item does not begin with an ampersand it is taken to be a note and a second item, dur, is read. As these have no specific status value, status is set to 0. This method of assigning status values saves us having to enter a status value for each note. We only include one if it's required. The channel status is assigned in line 1290 where the channel number is added, in this case, 1.

A call is then made to line 1780 to analyse the note. This is the same routine as the one in Program 9.1 with one small change. If note\$ is a rest, pitch is given the arbitrary value of 0: This shouldn't strictly be necessary but it may help in debugging if you scan through the arrays.

Next, note\$ is examined to see if it is an 'R' which I have used to represent a rest. If it is, the volume envelope, ev, is set to 0. This produces a sound at a volume determined by the V parameter of the SOUND command which, under envelope control, we set to 0 so no sound will be heard. Otherwise, ev is set to the required envelope number. You can see this more clearly in lines 1440 and 1570 where only one other envelope is used.

Line 1310 is arranged to give certain notes certain envelopes. This saves us having to include an envelope number with the note data which would be time-consuming and rather a wasteful exercise if the envelope only changes once or twice throughout the piece. The tone envelope, et, is set equal to the volume envelope in line 1320. A similar routine to the one in line 1310 could be used to vary the tone envelope.

The next lines copy all this information into the relevant arrays.

Line 1380 lets us know the channel data has been stored.

At the end of these three sections, the arrays are filled with figures which the SOUND command can work on directly although they can still be altered as we shall see.

Line 1660 sets three variables which are used to check the number of notes sent to each channel. The next three lines prime the ON SQ commands. As the first notes are all set to rendezvous, the tune will begin in sync. By the time the sound chip has played the first notes, the computer should have processed a few more so keeping the buffers full. An alternative way to start the tune would be to issue a hold on the channels, fill them with notes and then issue a RELEASE command.

The routines at lines 1890, 1950 and 2010 are similar. Each time the routine is called, it adds 1 to the value of the voc variable. If this is greater than the number of notes in the channel, the routine returns and, not having reprimed itself, is not called again. The next line simply issues the SOUND command and the following line reprimed the interrupt. Even at this stage, we control the speed of the piece with tempo.

The WHILE/WEND loop at line 1770 does nothing. It just keeps the program running while the interrupts do the work.

You can alter the tempo (if you wish) and play the tune again by entering:

GOTO 1660

Modifications, alterations and suggestions

Once you have this program you will be able to play almost any three-part tune by inserting new data and altering a few variables.

If you arrange the data in lines of one bar it will aid editing and debugging.

When programming other tunes, if all channels do not start together, ie each sound a note at the start of the piece, be sure to include rests in the channels which are not used to keep them together.

You will notice that only the very first notes have been rendezvoused. Normally, this will be enough to keep most tunes together but you could add more rendezvous commands if required. The ON SQ interrupts allow BASIC to process other commands while sounds are being played. In this program, the looping at line 1700 is wasted. If the program was doing something else, it may be necessary to include more rendezvous commands.

Envelope changes are often tedious to enter. If your program requires a lot of envelopes you could arrange a separate routine to take care of this.

continued on page 58 ▶



◀ Continued from page 57

When calculating the note durations, the important thing is to get the relationship between the notes correct. Adjustments to the variable, tempo, can be effective, too.

Listing 1.

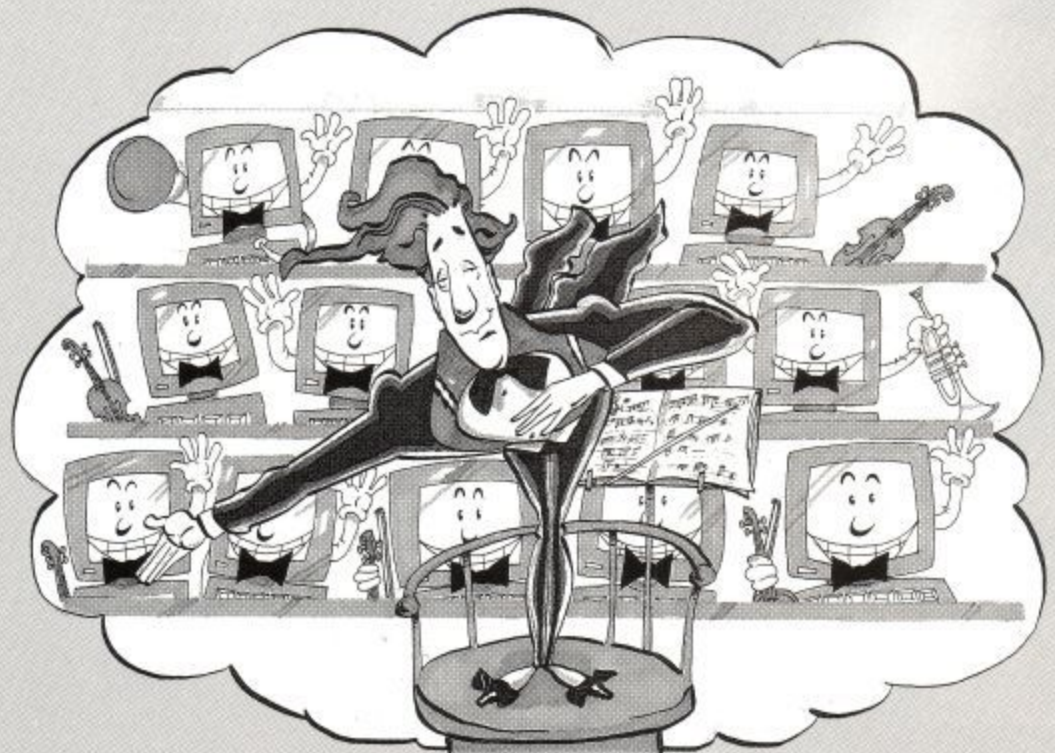
```
10 REM BASS SEQUENCER
20 REM Add these lines to last
  month's proggy
30 REM
40 REM
50 tempo=4
60 ENV 15,1,15,1,1,-2,2,13,-1,5
70 ENT -15,2,3,1,2,-6,1,2,3,1
80 ON SQ(4) GOSUB 2010
90 :
2000 REM Sequencer routine
2010 READ pit,dur 2020 IF pit=0
  THEN RESTORE 2070:GOTO 2010
2030 SOUND 4,pit,dur*tempo,0,15,15
2040 ON SQ(4) GOSUB 2010
2050 RETURN
2060 :
2070 DATA 804,6,
758,6,956,6,1073,12,1073,12,
1136,6,1073, 12,1073,6, 1136,6,1073,
6,1136,6,1073,6,956,6
2080 DATA
804,6,758,6, 956,6,1073, 12,1073,
12,1136,6,1073,12,1073,6,1136,6,1073,
24,0,0
2090 DATA 638,6,536,6,402,6,
426,6,0,0
2100 DATA
638,24,536,24,568,24,602,24,0,0
2110 DATA 638,6,638,6,536,6,470,
0,0
```

Listing 2.

```
1000 REM listing 2
1010 REM Mozart's
  Rondo Alla Turca
1020 REM Using 3
  Channels
1030 : 1040 va=4 6:vb
  =29:vc=30
1050 : 1060 REM 1st Sub-
  script refers to:
1070 REM 1=status
1080 REM 2=pitch
1090 REM 3=dur
1100 REM 4=ENV
1110 REM 5=ENT
1120:1130 DIM chana(5,va)
1140 DIM
  chanb(5,vb)
1150 DIM
  chanc(5,vc)
1160:1170 scale$="C C#D D#E F F#G
  G#A A#B"
1180 tempo=4
1190 ENV
  1,1,15,1,3,-1,4,12,-1,8
1200 ENT 1
1210 ENV
  2,3,5,1,1,0,8,1,-2,4,13,-1,8
1220 ENT
  -2,1,1,3,1,-2,3,1,1,3
1230 ENV
  3,1,15,1,3,-1,2,12,-1,6
1240 ENT 3
1250 :
1260 CLS:PRINT "Reading in note
  data..."
1270 FOR n=1 TO va
1280 GOSUB
  1740:REM Check Channel
  Status
1290 chana(1,n)=status+1
1300 GOSUB
  1780:REM Analyse Note
1310 IF
  note$="R" THEN ev=0 ELSE IF
  n=5 OR n=11 OR n=25 OR n=30 OR n=36
  OR n=42 THEN ev=2 ELSE ev=1
1320
```

```
et=ev 1330 chana(2,n)=pitch
1340 chana
  (3,n)=dur
1350 chana(4,n)=ev
1360 chana(5,n)=et
1370 NEXT n
1380 PRINT "Channel A Complete"
1390 :
1400 FOR n=1 TO vc
1410 GOSUB
  1740:REM Check Channel Status
1420
  chanc(1,n)=status+4
1430 GOSUB
  1780:REM Analyse Note
1440 IF
  note$="R" THEN ev=0 ELSE ev=3
1450 et=ev
1460 chanc(2,n)=pitch
1470
  chanc(3,n)=dur
1480 chanc(4,n)=ev
1490 chanc(5,n)=et
1500 NEXT n
1510 PRINT "Channel C Complete"
1520 :
1530 FOR n=1 TO vb
1540 GOSUB
  1740:REM Check Channel Status
1550
  chanb(1,n)=status+2
1560 GOSUB
  1780:REM Analyse Note
1570 IF
  note$="R" THEN ev=0 ELSE ev=1
1580 et=ev
1590 chanb(2,n)=pitch
1600
  chanb(3,n)=dur
1610 chanb(4,n)=ev
1620 chanb(5,n)=et
1630 NEXT n
1640 PRINT "Channel B Complete"
1650 :
1660 voca=0:vocb=0:vocc=0
1670 ON
  SQ(1) GOSUB 1890
1680 ON
  SQ(2) GOSUB 1950
1690 ON
  SQ(4) GOSUB 2010
1700 WHILE
  voca<va OR vocb<vb OR vocc<vc:WEND
1710 END
1720 :
1730 REM Check Channel Status
1740
  READ note$:IF LEFT$(note$,1)="/" THEN
  status=VAL(note$):READ dur
1750 RETURN
1760 : 1770 REM Analyse Note
1780 IF
  note$="R" THEN pitch=0:RETURN
1790
  length=LEN(note$):IF length<2 OR
  length>4 THEN PRINT "Error in Note";n;
  note$:STOP
1800 IF
  length=2 THEN name$=LEFT$(note$,1):
  oct=VAL(RIGHT$(note$,1)):GOTO 1830
1810 IF
  length=4 THEN name$=LEFT$(note$,2):
  oct=VAL(RIGHT$(note$,2)):GOTO 1830
1820 IF
  MID$(note$,2,1)="-" THEN name$=LEFT$(
  note$,1):oct=VAL(RIGHT$(note$,2))
  ELSE name$=LEFT$(note$,2):oct=VAL(
  RIGHT$(note$,1))
1830 note=INSTR(scale$,name$)/2
1840 freq=440*
```

```
(2^(oct+(note-10)/12))
1850 pitch=
  ROUND(125000/freq)
1860 RETURN
1870 : 1880 REM Channel A
1890
  voca=voca+1:IF voca>va THEN RETURN
1900 SOUND
  chana(1,voca),chana(2,voca),chana(3,voca)*
  tempo,0,chana(4,voca),chana(5,voca)
1910 ON
  SQ(1) GOSUB 1890
1920 RETURN
1930 : 1940 REM Channel B
1950
  vocb=vocb+1:IF vocb>vb THEN RETURN
1960 SOUND
  chanb(1,vocb),chanb(2,vocb),chanb(3,vocb)*
  tempo,0,chanb(4,vocb),chanb(5,vocb)
1970 ON
  SQ(2) GOSUB 1950
1980 RETURN
1990 : 2000 REM Channel C
2010
  vocc=vocc+1:IF vocc>vc THEN RETURN
2020 SOUND
  chanc(1,vocc),chanc(2,vocc),chanc(3,vocc)*
  tempo,0,chanc(4,vocc),chanc(5,vocc)
2030 ON
  SQ(4) GOSUB 2010
2040 RETURN
2050 : 2060 REM Voice 1
2070 DATA
  &38,B0,3,A0,3,G#0,3,A0,3
2080 DATA
  C1,6,R,6,D1,3,C1,3,B0,3,C1,3
2090 DATA
  E1,6,R,6,F1,3,E1,3,D#1,3,E1,3
2100 DATA
  B1,3,A1,3,G#1,3,A1,3,B1,3,A1,3,G#1,3,A1,3
2110 DATA
  C2,12,A1,6,C2,4,G1,1,A1,1
2120 DATA
  B1,6,A1,6,G1,6,A1,4,G1,1,A1,1
2130 DATA
  B1,6,A1,6,G1,6,A1,4,G1,1,A1,1
2140 DATA
  B1,6,A1,6,G1,6,F#1,6
2150 DATA
  E1,12
2160 : 2170 REM Voice 2
2180 DATA
  &38,R,12
2190 DATA
  A-1,6,C0,6,C0,6,C0,6
2200 DATA
  A-1,6,C0,6,C0,6,C0,6
2210 DATA
  A-1,6,C0,6,A-1,6,C0,6
2220 DATA
  A-1,6,C0,6,C0,6,C0,6
2230 DATA
  E-1,6,B-1,6,B-1,6,B-1,6
2240 DATA
  E-1,6,B-1,6,B-1,6,B-1,6
2250 DATA
  E-1,6,B-1,6,B-2,6,B-1,6
2260 DATA
  E-1,12
2270:2280 REM Voice 3
2290 DATA
  &38,R,12
2300 DATA
  R,6,E0,6,E0,6,E0,6
2310 DATA
  R,6,E0,6,E0,6,E0,6
2320 DATA
  R,6,E0,6,R,6,E0,6
2330 DATA
  R,6,E0,6,E0,6,E0,6
2340 DATA
  R,6,E0,6,E0,6,E0,6
2350 DATA
  R,6,E0,6,E0,6,E0,6
2360 DATA
  R,6,E0,6,R,12
2370 DATA
  R,12
```



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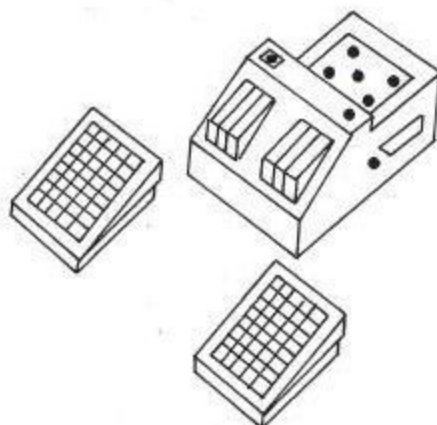
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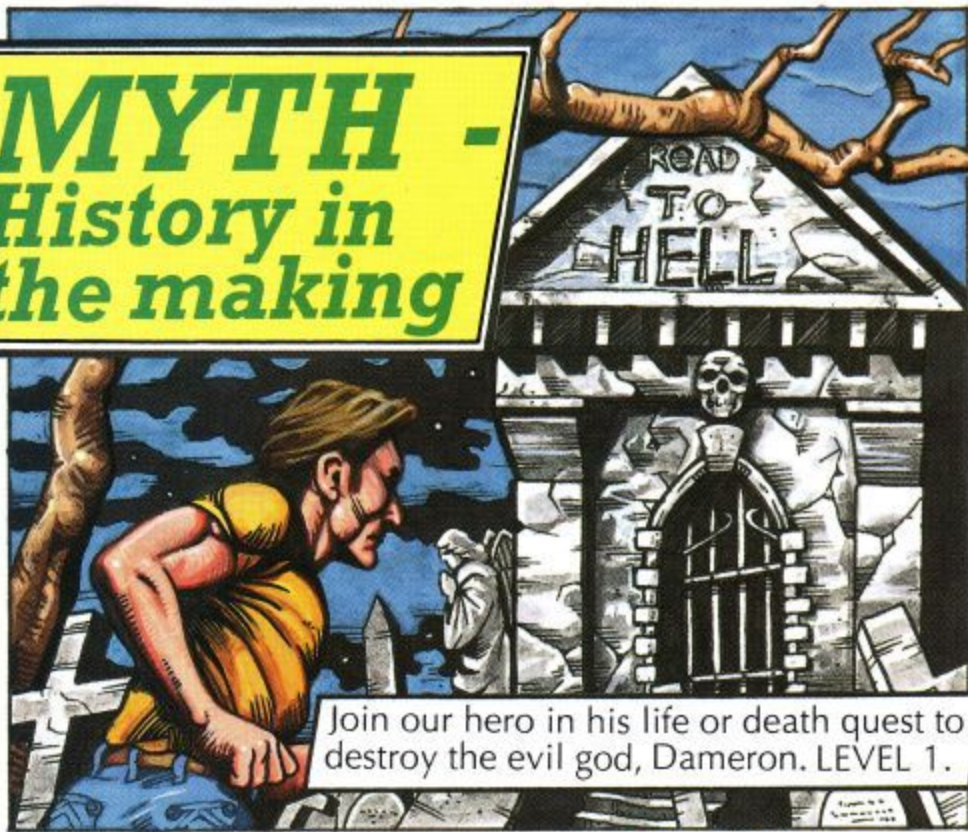
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Underground

...or I'll never get out alive!



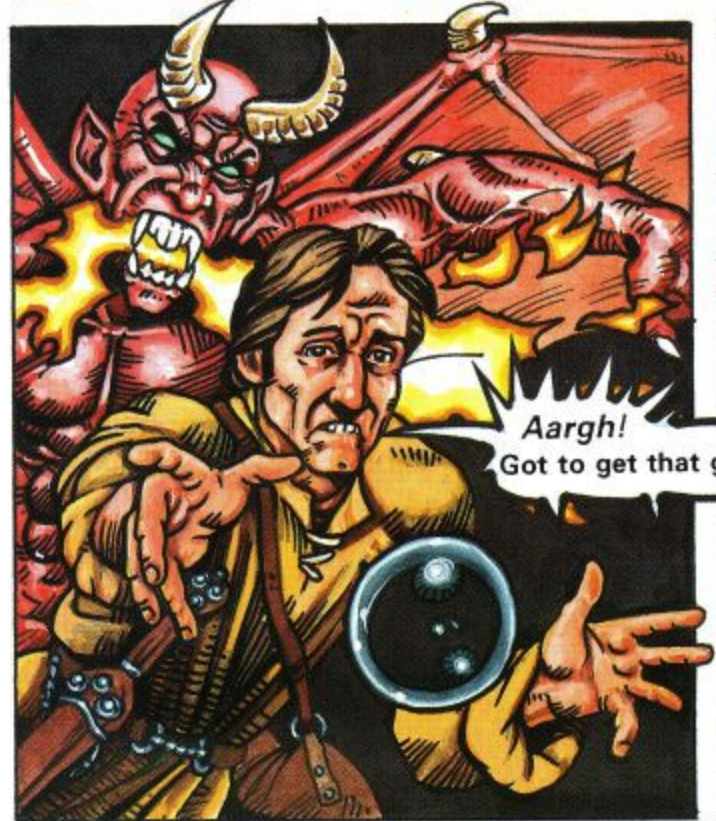
The skeletons attack

Nnngh!
Try these fireballs for size.

These skulls could come in handy later on.



The Guardian of the Globes.



Aargh!
Got to get that globe!



At the firepit.

What happens if I drop the skulls in here, I wonder.

The beast is awoken.

I wished I'd never asked!

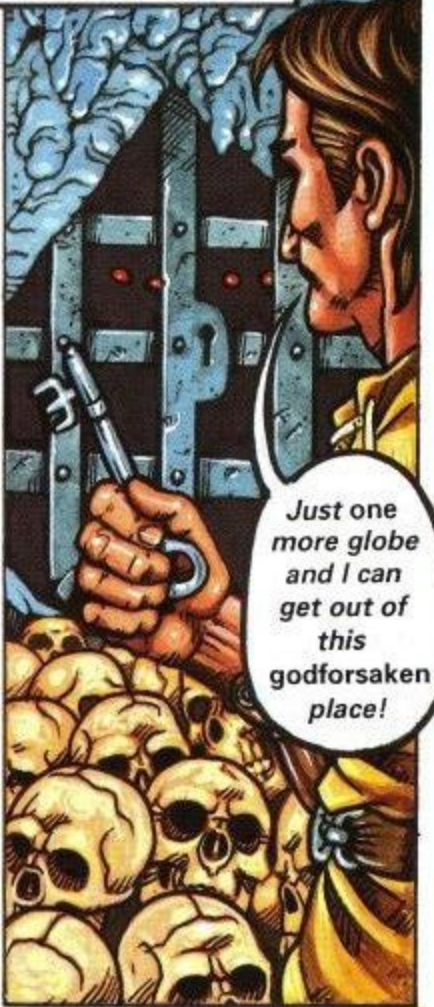


What a pushover!



Guh! I've got to get to that key.

The Gateway to Hell



Just one more globe and I can get out of this godforsaken place!

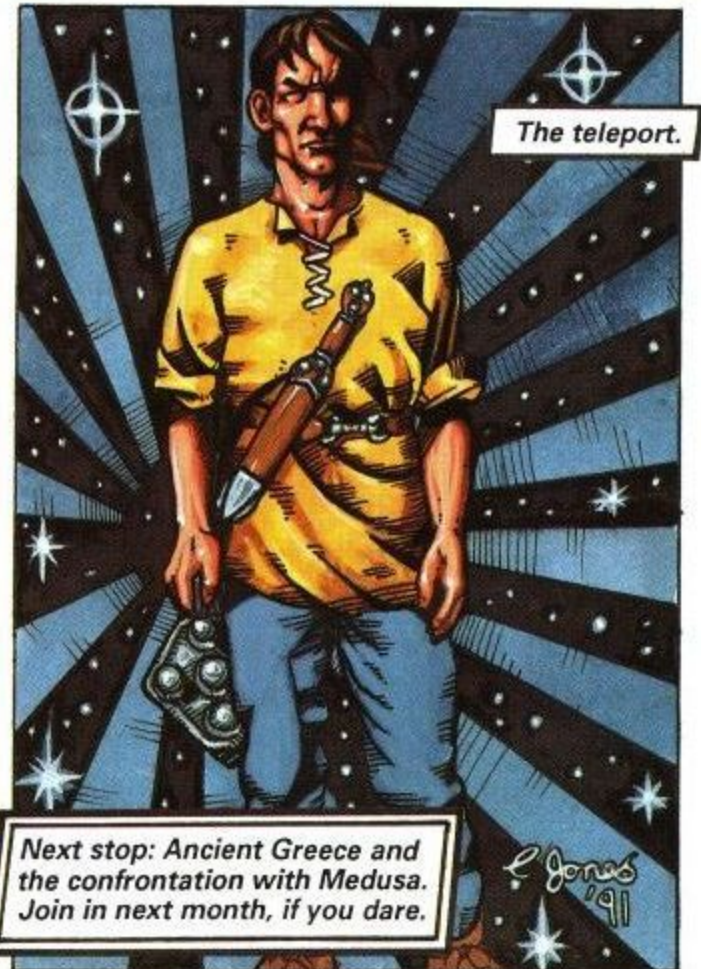
Enter the dragon.



Gulp! Thanks to the gods. Now to find the teleport pod and escape.

The elixir of life.

The teleport.



Next stop: Ancient Greece and the confrontation with Medusa. Join in next month, if you dare.

e Jones '91

```

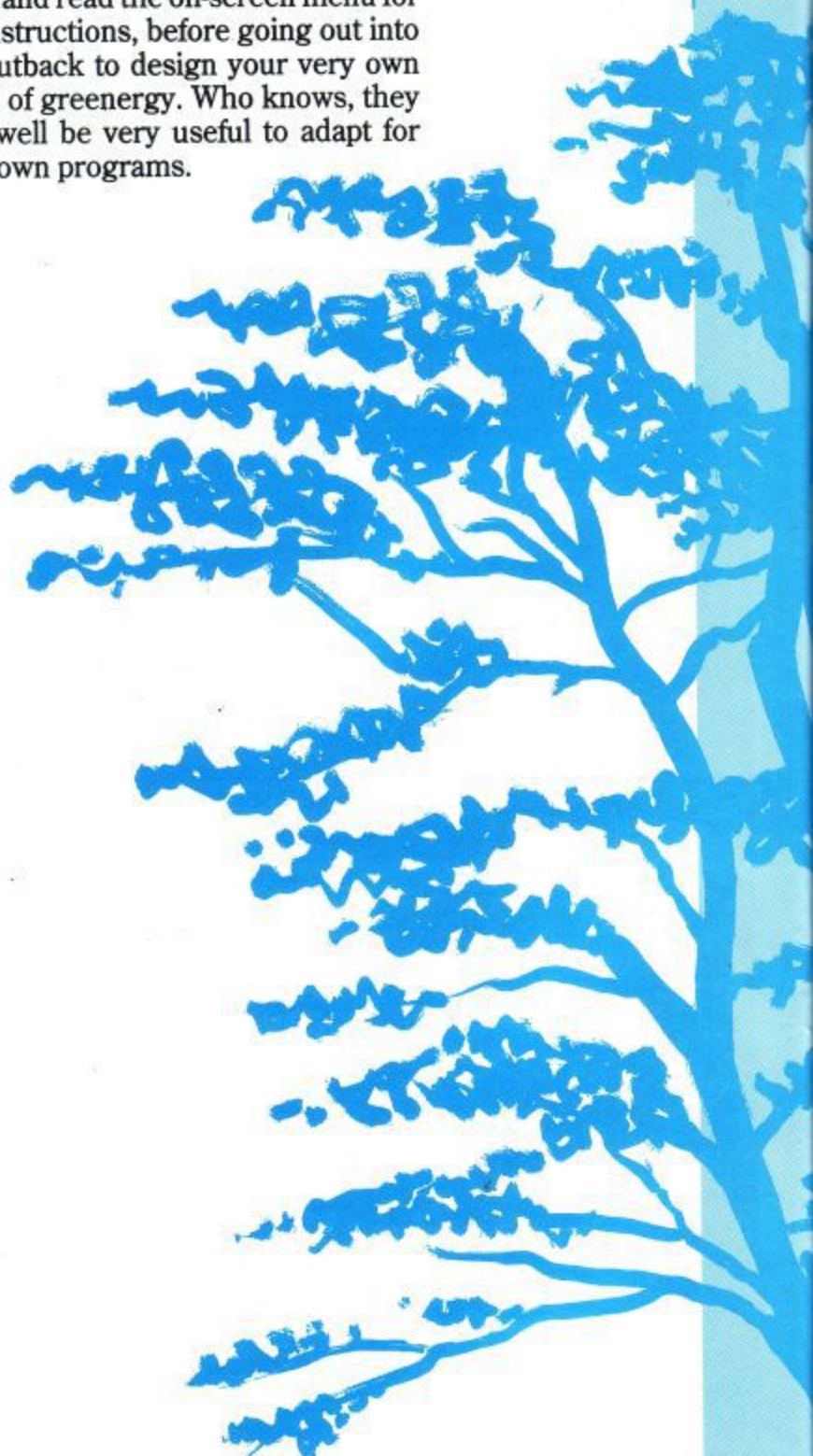
1 ' Trees
2 ' by Simon Watson
3 ' (c)1991
4 '
10 ON ERROR GOTO 1490
20 DEG
30 POKE &4000.0
40 POKE &5000.255
50 POKE &9000.0
60 POKE &9001.0
70 GOSUB 250
80 --- Menu ---
90 CLS: PEN 1
100 LOCATE 16.3:PRINT"Main Menu"
110 LOCATE 16.4:PRINT"-----"
120 PEN 2
130 LOCATE 12.7:PRINT"(1) Create a Tree"
140 LOCATE 12.9:PRINT"(2) Load a Tree"
150 LOCATE 12.11:PRINT"(3) Save Current Tree"
160 LOCATE 12.13:PRINT"(4) View Current Tree"
170 LOCATE 12.15:PRINT"(5) Exit Program"
180 PEN 3
190 LOCATE 11.22:PRINT"By Simon Watson (c)1991"
200 GOSUB 1510
210 IF z<1 OR z>5 THEN 200
220 IF z>2 AND z<5 AND PEEK(&5000)=255 THEN 200
230 ON z GOTO 440,1250,1290,1400,1450
240 --- Initialise ---
250 MODE 1:PAPER 0:BORDER 0
260 INK 0,0:INK 1,26:INK 2,19:INK 3,10
270 PAPER 1:PEN 2
280 LOCATE 18.1:PRINT"Trees"
290 WINDOW 1,40,2,25
300 WINDOWE1,1,40,7,25
310 WINDOWE2,15,25,8,8
320 PENE2,2:PAPER 0
330 IF PEEK(&4000)=&21 THEN 420
340 MEMORY &3FFF
350 RESTORE 390
360 FOR n=&4000 TO &4017
370 READ a$:POKE n,VAL("&"+a$)
380 NEXT
390 DATA 21,00,c0,11,00,50,01,00
400 DATA 40,ed,b0,c9,21,00,50,11
410 DATA 00,c0,01,00,40,ed,b0,c9
420 store=&4000:view=&400C
430 RETURN
440 --- Create a Tree ---
450 CLS: PEN 1
460 LOCATE 14.3:PRINT"Create a Tree"
470 LOCATE 14.4:PRINT"-----"
480 PEN 2
490 LOCATE 14.7:PRINT"(1) Skeletal 1"
500 LOCATE 14.9:PRINT"(2) Skeletal 2"
510 LOCATE 14.11:PRINT"(3) Normal"
520 LOCATE 14.13:PRINT"(4) Bushy"
530 LOCATE 14.15:PRINT"(5) Extra Bushy"
540 LOCATE 14.17:PRINT"(6) Previous Menu"
550 GOSUB 1510
560 IF z=6 THEN 80
570 IF z<1 OR z>5 THEN 550
580 type=z:CLS&1
590 FOR n=1 TO 220:NEXT
600 LOCATE 14.7:PRINT"(1) Random"
610 LOCATE 14.9:PRINT"(2) Regular"
620 LOCATE 14.11:PRINT"(3) Previous Menu"
630 GOSUB 1510
640 IF z<1 OR z>3 THEN 630
650 IF z=3 THEN GOTO 440
660 IF INKEY(57)>-1 THEN GOTO 440
670 r=z-1
680 MODE 2
690 RESTORE 1150
700 FOR n=1 TO type
710 READ p1,p2,p3,p4,p5
720 READ h,r1,r2,r3
730 NEXT
740 a(0)=(p1/(p3-1))/p4:b(0)=h
750 FOR n=1 TO p5-1
760 a(n)=a(n-1)*p4
770 b(n)=b(n-1)*p2

```

TREES

BY SIMON WATSON

With the environment very much in mind, here's your chance to create new trees, not destroy them. Run the program and read the on-screen menu for full instructions, before going out into the outback to design your very own patch of greenery. Who knows, they may well be very useful to adapt for your own programs.



```

780 NEXT
790 nx(0)=320:ny(0)=0
800 nn(0)=p3-1:na(0)=90
810 xmin=640:c=0
820 PEN 1:LOCATE 1,1
830 PRINT"Drawing Tree - Please Wait"
840 PRINT"Press SPACE to abort"
850 RANDOMIZE TIME
860 ' --- Drawing Loop ---
870 MOVE nx(c),ny(c)
880 IF r=0 THEN a1=a(c)*(1-r3+(RND*r3*2)) ELSE a1=
a(c)
890 IF r=0 THEN a2=a(c+1)*(1-r3+(RND*r3*2)) ELSE a
2=a(c+1)
900 IF r=0 THEN b1=b(c)*(r1+RND*r2) ELSE b1=b(c)
910 nnx=nx(c)+b1*COS(na(c))
920 nny=ny(c)+b1*SIN(na(c))
930 DRAW nnx,nny
940 IF nnx<xmin THEN xmin=nnx
950 IF INKEY(47)>-1 THEN 1130
960 nn(c)=nn(c)+1
970 nx(c+1)=nnx:ny(c+1)=nny
980 na(c+1)=na(c)-(a2*(p3-1))/2
990 nn(c+1)=0:na(c)=na(c)+a1
1000 IF nn(c)=p3 AND nn(c+1)=p3 THEN c=c-1:GOTO 10
40
1010 IF nn(c)=p3 AND c=p5-1 THEN c=c-1:GOTO 1040
1020 IF c=p5-1 THEN 860
1030 c=c+1:GOTO 860
1040 IF c=-1 THEN 1060
1050 IF nn(c)<p3 THEN 860 ELSE 1000
1060 ' --- End of Drawing Loop ---
1070 LOCATE 1,1
1080 PRINT STRING$(26,32)
1090 PRINT STRING$(20,32)
1100 CALL store
1110 POKE &9000,INT(xmin/256)
1120 POKE &9001,xmin-(PEEK(&9000)*256)
1130 GOSUB 240:GOTO 80
1140 ' --- Tree Data ---
1150 DATA 70,0.6,3,0.7,5
1160 DATA 120,0.8,0.4,0.5
1170 DATA 80,0.8,5,0.8,4
1180 DATA 120,0.8,0.4,0.1
1190 DATA 120,0.65,3,0.8,6
1200 DATA 130,0.8,0.4,0.4
1210 DATA 110,0.8,5,0.8,5
1220 DATA 110,0.9,0.2,0.1
1230 DATA 110,0.8,7,0.8,5
1240 DATA 120,0.6,0.4,0.1
1250 ' --- Load a Tree ---
1260 GOSUB 1330
1270 LOAD f$,&5000
1280 GOTO 80
1290 ' --- Save Current Tree ---
1300 GOSUB 1330
1310 SAVE f$,b,&5000,&4002
1320 GOTO 80
1330 CLS:PEN 1
1340 PEN 1
1350 LOCATE 7,5
1360 PRINT"Enter Filename (max=8 chars)"
1370 INPUT&2,f$
1380 f$=MID$(f$,1,8)+".bin"
1390 RETURN
1400 ' --- View Current Tree ---
1410 MODE 2:PEN 1
1420 CALL view
1430 LOCATE 1,1:PRINT"Press SPACE to Continue"
1440 IF INKEY(47)=-1 THEN 1440 ELSE 1130
1450 ' --- Exit Program ---
1460 MODE 2:PEN 1
1470 PRINT"Bye!!":PRINT
1480 END
1490 ' --- Error Detected ---
1500 FOR n=1 TO 1000:NEXT:GOTO 80
1510 ' --- Keyboard Scan ---
1520 CALL &BB03
1530 z$=UPPER$(INKEY$)
1540 IF z$="" THEN 1530
1550 z=ASC(z$)-48
1560 RETURN

```

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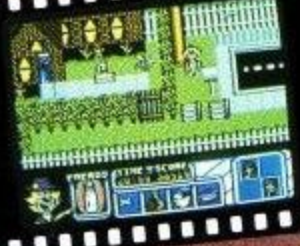
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Stringing along

Glynn Davies shows you how to get to grips with strings on the way to mastering BASIC.

It's easy. Just like that.

The manipulation of information within the computer is this month's subject. Most of the information taken into the computer is stored in strings, in most programs it will be necessary to extract part of the information held within these strings, this ability to interrogate a string is one of Basic's best features.

String Handling

A string is a series of characters, either alphabetical, numeric or a mixture of the two (alphanumeric). It is often necessary to search within a string for a certain character or word, perhaps, extracting part of the string. (i.e. Split a telephone number into the Std code, area code and number). The string handling functions within Basic are probably the most comprehensive of any computer language allowing database type programs to be created with ease.

NEW KEY WORDS

LEFT\$(word\$,5) Copy the first 5 characters from word\$.

RIGHT\$(word\$,3) Copy the last 3 characters from word\$.

MID\$(word\$,3,6) Copy 6 characters from word\$ starting at the third character from the beginning.

INSTR(word\$,search\$) If the string search\$ exists within word\$ the position is returned as a number, that number is the number of characters from the beginning of word\$. If 0 is

returned then search\$ can be one or more characters.

UPPER\$(word\$) Make a copy of word\$ in uppercase (Capital Letters)

LOWER\$(word\$) Make a copy of word\$ in lowercase.

VAL(word\$) Copy any number held at the beginning of word\$ and make it a numeric variable.

CHR\$(number) Return the CHARACTER represented within the computer.

ASC(character\$) Return the number with which the character is represented within the computer. (American Standards Code)

Examples. Program 1 (STRHAND1)

```
10 REM Demo of LEFT$, RIGHT$, MID$, UPPER$, LOWER$ AND INSTR
20 REM Manipulating strings
30 REM
40 MODE 1
5
60 name$="AMSTRAD":comp$="computer"
70 title$=name$+" "+comp$
80 LOCATE (40-LEN(title$))/2,2:PRINT title$:REM LEN is the length of the string
90 LOCATE 3,4:PRINT LEFT$(title$,3);" Three characters from the left"
100 LOCATE 3,6:PRINT RIGHT$(title$,5);" Five characters from the right"
110 LOCATE 3,8:PRINT MID$(title$,4,9);"Start four characters from the left and print the next 9 characters"
```

```
110 LOCATE 3,14:PRINT INSTR(title$,"om");"Prints the position of the second string within the first string"
120 LOCATE 3,18:PRINT UPPER$(title$);"Change the characters into upper case"
130 LOCATE 3,22:PRINT LOWER$(title$);"Change the characters into lower case"
140 END
```

Program 2 (STRHAND2)

```
10 REM **** LEFT$ and RIGHT$ *****
20 REM Using loops to manipulate strings
30 MODE 1
40 INPUT "Enter a small sentence";sen$
50 CLS
60 FOR n=1 TO LEN(sen$):REM LEN(sen$) means length of sen$
70 LOCATE 1,n:PRINT LEFT$(SEN$,N):REM print n characters from the right at position 39-n
90 NEXT
100 END
```

Program 3 (STRNUM)

```
10 REM * Strings to numbers and back *
20 CLS
30 REM Convert strings to numbers and set a string given a number
40 INPUT "Enter a four digit number";num$:REM The number is taken in as a string. Try Entering a six digit number
50 IF LEN(num$)>4 THEN num$=LEFT$(num$,4):REM When a number is held as a string the length of the number can be found. This sets the number to 4 digits
60 no=VAL(num$):REM Val extracts the number from the beginning of num$
70 PRINT "The number is ";no;" and the square is ";no^2:REM Notice when a number is set up a string a space is included at the front of the string, this may need to be removed
100 FOR n=1 TO LEN (square$)
110 PRINT MID$(square$,n,1):REM Print each character of the string
120 FOR w=1 TO 2000: NEXT:REM a short wait
130 NEXT n
140 END
```

Program 4 (SCROLLER)

```

10 REM Scroller
20 WHILE scroll$=""
30 MODE 1
40 LINE INPUT "Enter a name or
sentence"; scroll$
50 IF LEN (scroll$)>215 THEN
scroll$=LEFT$(scroll$,215): REM
ensure string keeps to 255 max
60 WEND
70 blkscr$=SPACE$(39)+scroll$:REM
add 39 spaces to the front of scroll$
80 k$="":WHILE k$="":REM While k$
is null
90 k$=INKEY$:REM Press any key to
stop
100 LOCATE 1,12: PRINT
LEFT$(blkscr$,40): REM Print 40
characters at the front of the string

```

```

110 add$=LEFT$(blkscr$,1): REM
Make a copy of the first character
120 blkscr$=RIGHT$(blkscr$,LEN
(blkscr$)-1)+add$: REM make a new
string missing the first character and
placing the first character on the end of
the new string.
130 WEND
140 END

```

The Character Set

When you switch on the machine the character set is copied from the ROM (Read Only Memory) to the RAM (Random Access Memory). This allows the programmer to change the character set. Each character is represented by eight numbers, each time the character is placed on the screen these eight numbers are used for the display, change the numbers and you change the display. The next program displays the standard character set.

Program 5 (CHARSET)

```

10 REM Standard character set
20 MODE 1:REM Set to 40x25
30 FOR code=32 TO 255: REM Ameri-
can Standards Code range from 32 to
127, codes below 32 can effect the
screen.
40 PRINT "The number is ";code;" the
character = ";CHR$(code)
50 REM use CHR$ to print any charac-
ters above 127
60 PRINT TAB(10); "Press a key to
continue": CALL &BB18:REM wait for
key press
70 NEXT code: END

```

Program 6 (ASCCODES)

```

10 REM ASCII codes of characters
20 MODE 1

```

```

30 WHILE k$<> " ":REM Place a space
between the inverted commas
40 k$=INKEY$:REM Scan keyboard
50 IF LEN (k$)>0 THEN PRINT "The
ASCII code for that key is ";ASC
(k$):REM If a key is pressed print its
ASC value
60 WEND:REM Press the spacebar to
leave the loop
70 END

```

ASCII codes below 32 are used to control the display, four useful codes are CHR\$(8) <Back space> CHR\$(9) <Forward space> CHR\$(10) <Down space> CHR\$(11) <Up space>, these move the cursor without removing any character below the cursor. You can use these CHR\$ codes to produce a string which will print vertically.

Program 7 (VERTICAL)

```

10 REM Print vertically using CHR$(8)
and CHR$(10) (back and down)
20 MODE 1:word$="VERTICAL"
30 downback$= CHR$(10)+CHR$(
8):REM Move the cursor down and
back when printed
40 FOR loop=1 TO LEN(word$)
50 vertical$=vertical$+MID$(word$,
loop,1)+downback$:REM Develop a
string V+CHR$(10)+ CHR$(8)+E+
CHR$(10)+CHR$(8)+R etc
60 NEXT
70 LOCATE 20,5:PRINT vertical$:
END:REM Change the program to print
up!

```

REDEFINING CHARACTERS**New Keyword**

SYMBOL code,L1, L2, L3, L4, L5, L6, L7, L8

Allows you to change the shape of the character with an ASC value (code), the eight numbers L1 to L8 are the binary shape from top to bottom

SYMBOL AFTER n You can redefine only 16 characters from 240 unless this

command is given. n is the ASCII code. If SYMBOLAFTER 32 is given all codes can be changed.

Program 8 (STRBLOCK)

```

10 REM Print a block using ABCD.
Usually characters above 127 would be
redefined.
20 MODE 0
30 SYMBOL AFTER 32
40 REM SYMBOL 65, Capital A - Use
the Redefine program below to design

```

a shape for these four letters so that when they are printed together they form a large shape.

50 REM SYMBOL 66, Capital B when you have placed the 8 numbers here remove the REM

60 REM SYMBOL 67, C

70 REM SYMBOL 68, D

80 sprite\$="AB"+CHR\$(10)+CHR\$(8)+CHR\$(8)+"CD":REM AB on top of CD

90 LOCATE 10,10:PRINT sprite\$

100 REM Run this program to see the result and then add 8 numbers separated with commas to each of lines 40,50,60,70 removing the REM in each case. Use the next program to decide the shape.

110 REM To return to normal ABCD reset the computer.

Space has beaten me this month I was hoping to cover arrays as well, I will have to cover them next month with

sorting routines, the next program is a useful program to help you design your own characters, as usual you should be able to understand some of the lines.

2 REM by GLYNNE DAVIES

5 REM Simple redefine character program

10 MODE 1:DIM t(8),t\$(8):REM DIM t(8), t\$(8) reserve space for eight numeric variable and 8 string variables

20 PAPER 0:REM set background to colour 0 (black)

20 PEN 2:x=1:y=1: REM Use colour 2, set variables x and y to 1

40 GOSUB 340: REM redefine character number 250 to a square for the cursor

50 FOR n=1 TO 8:REM begin loop from 1 step 1 to 8. loop ends at line 110

60 PRINT n:REM at each time around loop print the value of n.i.e. 12345678

70 FOR m=1 TO 8:REM start a loop inside the other loop (nested loop) from 1 to 8

80 PRINT CHR\$(233):REM print out a row of 8 square blocks when loop 70 to 90 is complete

90 NEXT:REM go back to 70. at line 70 if the value n goes above 8 the program flow goes to line 100

100 PRINT:REM move the cursor down a line

110 NEXT:REM repeat loop beginning at line 50

120 PRINT " 16318421":REM print these numbers under block

130 PRINT " 2426"

140 PRINT " 8"

```

150 PRINT CHR$(22); CHR$(1):REM
This code allows a character to be
printed on top of another without to-
tally removing the original
155 GOSUB 370:REM set up screen
160 WHILE fin=0:REM start of a loop,
fin is used as a condition, while fin
remains at 0 the loop will continue
170 PEN 0
180 LOCATE x+3,y:REM position the
cursor at x+3 (left-right) and y (down)
190 PRINT CHR$(250):REM print
redefined square
200 k$=INKEY$:REM If a key is pressed
set k$ to that key
205 IF k$="e" OR k$="E" THEN
fin=1:REM If E is pressed end the pro-
gram, at line 160 condition fin now
equals 1 and therefore the loop will be
missed and program flow go to line 335
210 IF k$="c" OR k$="C" THEN RUN:
REM If key C is pressed re-run the
program (cancel option)
215 REM line 220: If number 1 is pressed
see if the pixel at that position is colour
2 (TEST) and if so print a red square:
Do a sum and then use the sub-routine
at 370 which calculates the binary
number and redefines character
220 IF k$="1" AND TEST (16*
(x+2)+8,400-(y*16-8))-2 THEN PEN
3:LOCATE x+3,y:PRINT CHR$(
233):sum=(2^(8-x)):GOSUB 370

```

```

240 IF k$="." OR k$=">" THEN
x=x+1:REM If key > is pressed increase
x by 1
250 IF k$="," OR k$="<" THEN x=x-
1:REM If key < is pressed decrease x by
1
260 IF k$="1" THEN p=3
270 IF x>8 THEN y=y+1:x=1:REM move
cursor down a line set x to 1
280 IF x<1 THEN x=8:y=y-1:REM move
cursor up a line set x to 8
290 IF y>8 THEN y=8:REM restrict y to
a maximum of 8
300 IF y<1 THEN y=1:REM restrict y to
1
310 PEN 1:LOCATE x+3,y:PRINT
CHR$(250):REM print the cursor in
pen 1
320 FOR n=1 TO 10: NEXT:REM short
rest loop
330 WEND:REM send program flow
back to WHILE on line 160
335 CLS:PEN 1:PRINT "program
end":END
340 REM cursor data
350 SYMBOL 250,255,129,129,129,129,
129,129,255:REM Redefine character
250 to a box
360 RETURN
360 REM calculate addition
380 PEN 1
390 t(y)=t(y)+sum
395 REM line 400: sorts out symbol

```

```

print out data
400 FOR n=1 TO 8:t$(n)=STR$(n):t$(
n)=","+RIGHT$(t$(n),LEN(t$(n))-
1):NEXT n:REM sets up t$(n) to ",126"
etc adds a comma and loses a space
410 binary$=BIN$(t(y)):binary$=
STRING$(8-LEN(binary$),"0")+
binary$:REM add 0s to binary number
420 PRINT CHR$(22);CHR$(0):REM
switch back to normal printing
430 LOCATE 18,y:PRINT SPACES$(14)
440 LOCATE 18,y:PRINT binary$;
"t(y): REM print binary number
450 SYMBOL 255,t(1),t(2),t(3),t(4),t
(5),t(6),t(7),t(8):REM redefine charac-
ter 255
460 PEN 2:LOCATE 10,20:PRINT
CHR$(255);:PEN 1:PRINT SPACES$(
10); CHR$(255); CHR$(255);:PEN
3:PRINT SPACES$(9); CHR$(255):
REM print out examples of new charac-
ter
470 LOCATE 1,16: PRINT "The line
needed to re-define this shape"
480 LOCATE 1,22:PRINT SPACES$(
40): REM print 40 spaces
490 LOCATE 1,22:PRINT "SYMBOL
X"; t$(1);t$(2);t$(3);t$(4);t$(5); t$(7);
t$(8):REM print out symbol data
500 PRINT CHR$(22); CHR$(1):REM
re-set over-write mode
510 RETURN:REM end of sub-routine
go back to the end of the gosub line Z

```

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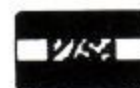
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Here it is at last: your chance to say what you think about ACU. Just fill in all the questions below, and your entry will be put into a special ACU prize draw, with an assortment of up to the minute games and serious software goodies going to the first entry pulled out of the sack. So get answering and send off your questionnaire now.

About You

1. If you have a company how many people does it employ

- Under 10
- 11-25
- 26-50
- 51-100
- 101-500
- over 500

2. What is your:

Age _____ Sex _____ Occupation _____

3. What is your annual income (if applicable)?

- At School/College
- Less than £5,000
- £5,000-£9,999
- £10,000-£14,999
- £15,000-£19,999
- £20,000-£24,999
- £25,000-£29,999
- £30,000-£40,000
- More than £40,000

4. What is your name and address? (This information will be used to notify you of any prize you may have won)

5. In which TV region do you live?

- Grampian STV Border Granada
- Yorkshire Tyne Tees Central Anglia
- TV South Thames TSW HTV (West)
- Ulster HTV (Wales) Any other

About your computer

6. What kind(s) of the following computer(s) do you own?

N.B. If you OWN more than one computer, please indicate which you bought first (1), second (2), etc.

- CPC 464
- CPC 6128
- 6128+
- Spectrum
- Atari
- Any other _____
- CPC 664
- 464+
- GX4000 console
- Commodore
- Amiga

7. What kind(s) of the following computer(s) do you have access to at work/school?

N.B. If you have access to more than one, please indicate which you use most (1), then the next (2), and so on.

- 464
- CPC+
- Commodore
- Amiga
- PCW
- Any other _____
- 6128
- Spectrum
- Atari
- PC
- Mac

8. The following is a list of features which could be important when buying a computer. Please indicate how important each is by ticking the appropriate box for each feature.

	Very	Quite	Fairly	Not at
				all
Price	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Speed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Backup and Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal recommendation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Magazine reviews	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your own computer experience?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Any other _____				

9. For how long have you owned your CPC?

- Less than 6 months
- 1 year - 2 years
- 6 months - 1 year
- More than 2 years

10. Do you use a printer?

- Yes
- No

If you answer yes, is it a:

- 9-pin (model _____)
- 24-pin (model _____)
- Ink jet (model _____)
- Laser printer (model _____)

11. Do you use a modem?

- Yes
- No

12. Which computer language do you use to write programs on your computer?

- Basic
- Machine Code
- Any other

13. Do you ever use public domain software?

- Never
- Seldom
- Often

Your computing activities

14. How do you usually buy your computer products?

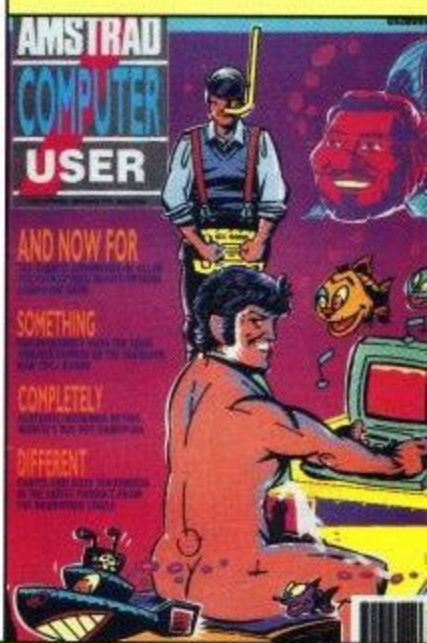
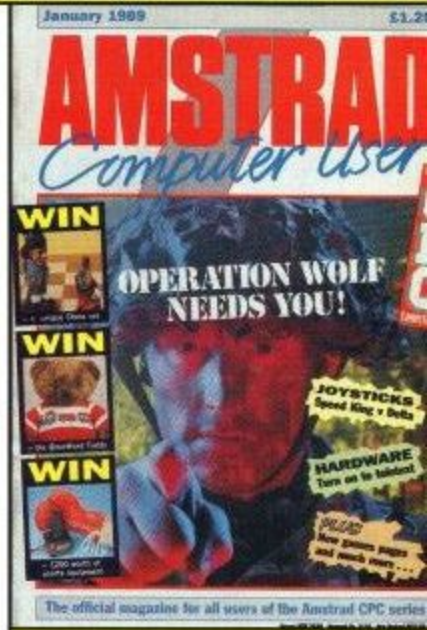
	Software	Hardware
By mail order	<input type="checkbox"/>	<input type="checkbox"/>
From computer shops	<input type="checkbox"/>	<input type="checkbox"/>
From high street stores	<input type="checkbox"/>	<input type="checkbox"/>

15. For each of the following applications, please indicate whether you own or otherwise have access to a particular program?

	Own	Have access to	Program(s) used (if applicable)
Communications	<input type="checkbox"/>	<input type="checkbox"/>	_____
Word processing	<input type="checkbox"/>	<input type="checkbox"/>	_____
Database	<input type="checkbox"/>	<input type="checkbox"/>	_____
Accounts	<input type="checkbox"/>	<input type="checkbox"/>	_____
DTP	<input type="checkbox"/>	<input type="checkbox"/>	_____
CAD	<input type="checkbox"/>	<input type="checkbox"/>	_____
Graphics	<input type="checkbox"/>	<input type="checkbox"/>	_____
Education	<input type="checkbox"/>	<input type="checkbox"/>	_____
Spreadsheet	<input type="checkbox"/>	<input type="checkbox"/>	_____
Leisure (games)	<input type="checkbox"/>	<input type="checkbox"/>	_____
Computer languages	<input type="checkbox"/>	<input type="checkbox"/>	_____
Integrated software	<input type="checkbox"/>	<input type="checkbox"/>	_____

16. In terms of CPC computing, how would you rate your knowledge?

- Expert
- Not Good
- Quite good
- Newcomer
- Average



17. Where do you do most of your computing:

- At work At home At school

18. Over the next 12 months, roughly how much do you think you will spend on:

	Software	Hardware
Nothing	<input type="checkbox"/>	<input type="checkbox"/>
Under £100	<input type="checkbox"/>	<input type="checkbox"/>
£500-£1000	<input type="checkbox"/>	<input type="checkbox"/>
Over £1000	<input type="checkbox"/>	<input type="checkbox"/>

About ACU

19. Do you obtain ACU from:

- A newsagent 'off the shelf'
 A newsagent on a monthly order
 A subscription from the magazine
 A friend

20. Do you often see ACU on your newsagent's stands?

- Yes No

21. Do you ever experience any difficulty obtaining ACU?

- Yes No

22. For how long have you been reading ACU?

- 0-3 months 3-6 months 6-9 months
 9-12 months 12-18 months +18 months

23. In general, how much do you like the following kinds of articles when they appear in ACU?

	A lot	Quite a lot	OK	Not much	Not at all
Software reviews	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hardware reviews	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Printer reviews	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Book reviews	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Games reviews	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Features on applications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
News pages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Technical pages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Programming tutorials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Programming hints and tips	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Program listings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Editorial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

24. Is there any kind of article you feel we don't cover frequently enough (if at all)?

25. Do you regularly keep back issues of ACU?

- Yes No
 If you answered YES, how often do you refer back to issues of the magazine?
 At least once a week
 Once every 2-3 months Less frequently
 About once a month never

26. For how long would you say you spend reading your copy of ACU?

- Less than ½ hour ½ hour - 1 hour
 1-1½ hours 1½ hour - 2 hours
 Over 2 hours

27. Does anyone else read your copy of ACU?

- No, only myself 3-4 others
 1-2 others More than 4 others

28. Why do you read ACU? Please indicate the importance of each of the following:

	Very	Quite	Fairly	Not at all
Because of its price	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To read the adverts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To find out about new products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To use as a guide for purchase	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To learn more about CPCs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To learn more about programming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It has bright covers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To learn more about operating systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To learn more about communications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To find out more about Amstrad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Because it's a good read	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

29. Which of the following would you most like to see featured with ACU:

	Def no	Prob no	Don't mind	Prob yes	Def yes
Cover mounted gifts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Additional supplements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Competitions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Money saving offers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cover mounted disk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

30. In general, do you find the content of ACU:

- Well balanced
 Often dwells too much in particular areas
 (which ones _____)

31. In general, do you find the articles in ACU:

- Too simple Too technical Just right

32. On a scale of 1 to 10, where 1 is poor and 10 is good, how do you rate

- The quality of presentation of ACU? _____
 The overall value of ACU? _____

33. Which of the following do you read:

	Never	Seldom	Monthly	Subscribe
PC Today	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PC Plus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PC User	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Which PC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal Computer World	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Byte	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

And finally...

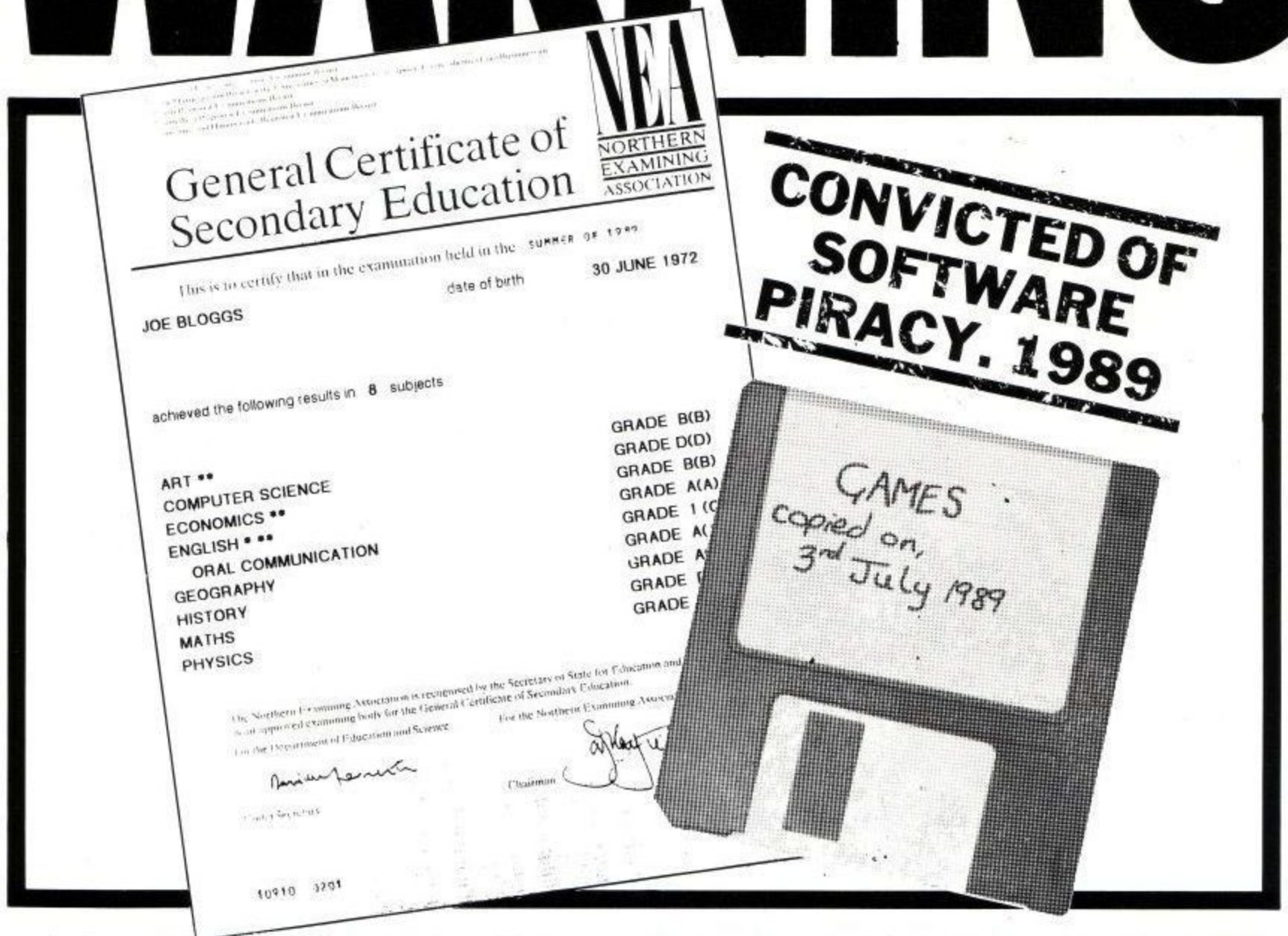
We have asked you a number of questions but may not have covered all the areas you feel are important. Are there any further points you would like to make about any aspect of ACU?

Thank you for your help

Please send your completed questionnaire to: The ed., ACU, Sunnyside Cottage, Carludon, St. Austell, Cornwall PL26 8TY and each copy will be entered into our special ACU prize draw.



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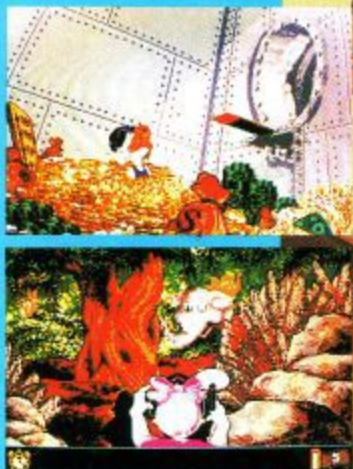
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