

# COMPUTING

WITH THE

# AMSTRAD

# CPC

The independent magazine for Amstrad CPC users

INCORPORATING  
**AMTIX!**

**LISTINGS**

**ICBM DEFENDER  
3 GREAT UTILITIES**

**ON TEST**

**CP/M ROM • PROTEXT OFFICE**

**WIN A  
TOSHIBA CD  
PLAYER**

**AMTIX!  
Acadade**  
**SPY v SPY  
TRILOGY**  
**CYBERNOID**



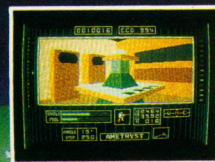
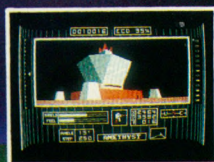
FROM THE **MAJOR DEVELOPMENTS** TEAM.  
CREATORS OF THE AWARD WINNING *DRILLER*

# DARK SIDE

**MISSION:** Locate & destroy Zephyr One weapon on Dark Side. Avoid Plexor tanks. Disable Matrix ECO's, use tunnel network and jet pack to best advantage. Time is short. END

FEATURING

## FREESCAPE™



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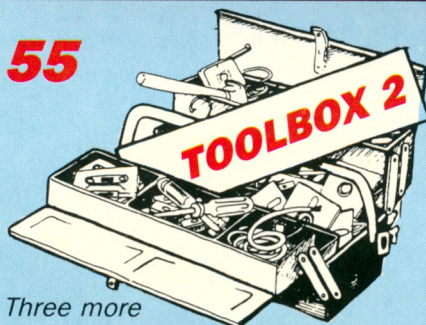
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Hundreds of deadly missiles are zeroing in on the USA. Only one person can stop them – you!

## UTILITIES

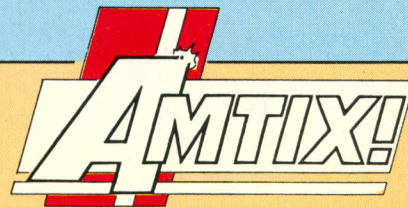
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Three more useful utilities including a Basic line mover and a saved screen processor for the Multiface 2.



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COMPUTING WITH THE  
**AMSTRAD CPC**

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Our first visit to the fabulous Great Hall at Alexandra Palace was an OUTSTANDING success.

*So for our May show there'll be . . .*

- ★ **More stands** (lots more to try and buy)
- ★ **More space** (a much bigger floor area)
- ★ **More savings** (special offers galore)

**THURSDAY**  
MAY 26  
10am-6pm

**FRIDAY**  
MAY 27  
10am-6pm

**SATURDAY**  
MAY 28  
10am-6pm

# AMSTRAD<sup>TM</sup> COMPUTER SHOW



Help celebrate Amstrad's 20th anniversary at the 10th Amstrad Computer Show – the biggest event of its kind ever held. This is the show where both beginners and experienced users can find the answers to all their questions. A **Computerised Product Locator** will give visitors an instant guide to which stands have products they want to see. An **Expert Advice Centre** will be staffed by some of Britain's top computer professionals. And **Demonstration Areas** will enable you to see the very latest software in action.

**A great day out for all the family!**

*The NEW Alexandra Palace is at the heart of a vast leisure complex, with a magnificent panoramic view over the capital. While you're at the show the rest of the family can enjoy the wooded park, the boating lake, the children's play centre and zoo, and the park's own garden centre. And new facilities completed since the last show include a large, fully-licensed restaurant, bars and snack areas, and the tropical Palm Court leisure area with its exotic trees and fountains. There's extensive car parking too – and all of it is free.*

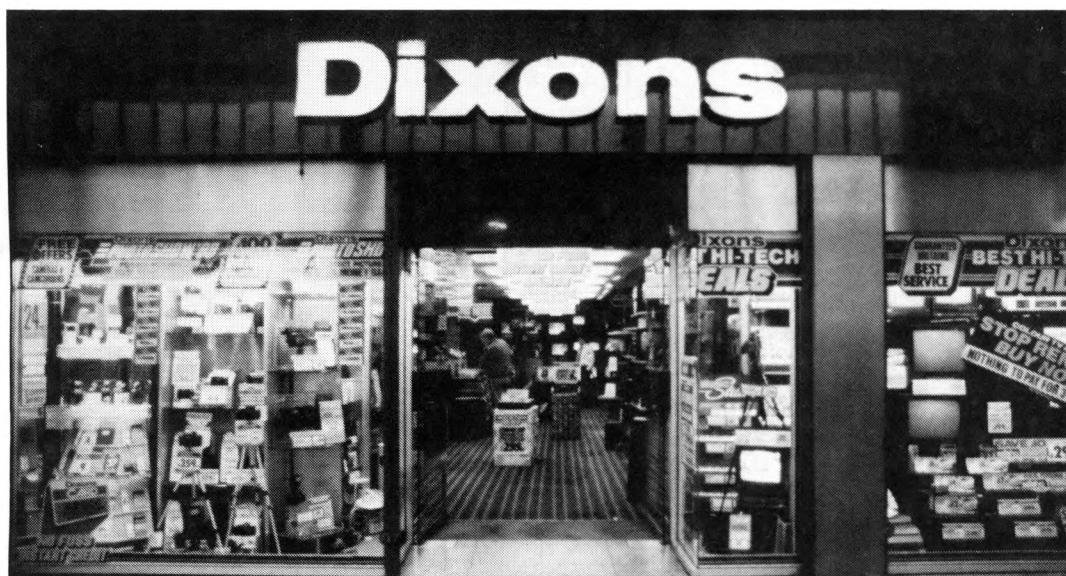
Bring this coupon to the Show to get 50p per person off the normal admission price of £3 (adults), £2 (children).



10am-6pm Thursday, May 26  
10am-6pm Friday, May 27  
10am-6pm Saturday, May 28

## AMSTRAD<sup>TM</sup> COMPUTER SHOW

The Great Hall  
Alexandra Palace, London N22



HIGH Street stores Dixons and Currys have announced that they are to cease stocking Amstrad's range of CPC computers until the autumn.

One reason for the decision is thought to be the seasonal drop in sales which affects all brands.

The shock announcement comes at a time when the Official Amstrad User Club is dealing with record numbers of requests from CPC owners who wish to join.

"I can't understand what Dixons and Currys are up to", said club chairman Eric Innes.

"If sales were as poor as they are making out then

## Dixons dump CPC until the autumn

where are all these applications coming from?

"Obviously CPCs are still being sold in large numbers. If Dixons and Currys got their act together perhaps they could get a larger slice of the market rather than waiting for the prime picking season", he said.

Although both companies may be temporarily pulling out of the leisure computer market there will be no bargain offers. Dixons is still

continuing to sell the CPC at its normal retail price while Currys has recalled stocks to its central stores office at Winsford in Cheshire.

## Every one a winner

TO mark the UK launch of Loricels and its Straight Six compilation, our March issue offered readers the chance to win a miniature TV set.

It was clever tiebreakers which separated the winners of the three top prizes - Mary Claire Ward of Luton who receives the Casio TV1500, Mrs D W Bostock from Urmston who won the Casio TV400, and Michael Punch of Coventry who won the Casio TV200.

Each of the following runners-up will get a copy of the Straight Six compilation:

Krystina Gibbons, Bargoed; S Nicholson, Liverpool; J Grees, Hull; Chris Cooper, Guildford; Debbie Bainbridge, Harrogate; Keith Welch, Banbury; Nick Lee, Putney; Mark Barnes, Hucknall; Cpl Butler, BFPO; Jane Banks, Luton; T Denyer, Lockalsh; John Waterman, Polegate; I Dauby, Corby; Tomas Ward, County Donegal; R Tabb, Baddesley; J Morgan, South Benfleet; A Chambers, Gateshead; Malcolm Cunniffe, East Wemyss; A Thomson, Cheshunt; J O'Connor, Portsmouth.

## No drama

**DESPITE** the world shortage of dram chips which has forced computer prices to spiral upwards, the CPC range is to maintain its current price levels.

The news comes hot on the heels of Amstrad's announcement of significant price increases for its PCW and PC computers.

A spokesman for the company said: "Because the CPC range of computers is selling in such large quantities it has enabled us to keep the cost down to the end user.

"We have no plans at present to increase the basic price of CPC machines, but should the dram shortage get worse we will have to review the situation".

## Live and let die is back

THE classic 1973 James Bond film Live and Let Die will re-emerge as a game on the CPC this month.

A spokesman for Bond-based games pioneer Domark (01-947 5622) promised: "Live and Let Die will undoubtedly be the most thrilling 007 entertainment package yet seen".

Crocodiles, voodoo, zombies and the fiendish Kanga are among adversaries the player has to contend with while piloting a power boat through the Louisiana swamps and rivers.

Price £9.95 on cassette, £14.95 on disc.

## Forest of fantasy

A MAGICAL game of fantasy is how Elite (0543 414188) describes its latest release Beyond the Ice Palace.

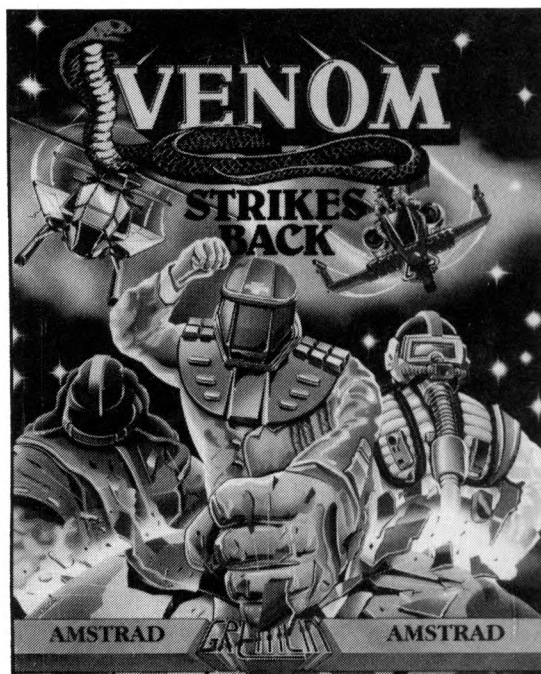
Your quest in a battle between good and evil forces is to rid the forest of harmful spirits and return the land to peace and normality. Price £9.99 on cassette, £14.99 on disc.

## Way to market

FOR budding CPC programmers intent on making their first million, actually getting their products taken up by a marketing company can be pretty daunting.

Now, thanks to Marjacq Micro (01-724 0565) a programmers' agency run by Jacqui Lyons, all the hassle involved in finding markets and negotiating contracts is being made a lot easier.

For a flat rate of 15 per cent the agency will do all the leg work involved in finding a company to publish new programs.



Latest from Gremlin...Venom Strikes Back

## Taking the tedium out of loading

A METHOD to take the frustration out of getting multi-load games up and running has been developed by Gremlin (021-356 3377).

Flexi-Load – implemented on Gremlin's latest release, Skate Crazy – allows the player to load the main data for a game, then load the associated maps as and when he wants to play them.

The order in which maps or sections are selected is not dictated by the computer and this new approach certainly offers more freedom to players.

Skate Crazy is described as "an outdoor pursuit simulation with a difference". The "difference"

lies in that in addition to proving their roller skating skills, players also have to gain "street cred" to amass points.

Street cred is acquired by playing the poseur – and lost when attempted feats don't quite come off: Bumps and grazes are measured on the Ouch-O-Meter.

The flip side of the Skate Crazy disc carries more maps and scenarios. Price £14.99 on disc, £9.99 on cassette.

Also new from Gremlin – and available at the same price – is Venom Strikes Back. The third in the top-selling Mask series, Venom Strikes Back looks set to head straight for the charts.

## ACCENT ON ACTION

LATEST releases for the CPC on budget label Zeppelin Games are Sabotage and Frontline, price £2.99 each, and Codename Mat, price £1.99.

Previously released on Commodore, Sabotage is a fast-paced shoot-'em-up which Zeppelin has "improved and refined" for

the CPC. Frontline arms the player with machine gun, grenades and mines in a wartime simulation.

"Manoeuvres are played out against a wonderfully atmospheric set of graphics with very realistic representations of tanks, jeeps and buildings", says Zeppelin (091-281 4401).

# THE GALLUP CHART

# TOP 20

CPC SOFTWARE

THIS MONTH	LAST MONTH	TITLE (Software House)	PRICE
1	10	GHOSTBUSTERS <i>Mastertronic</i>	1.99
2	●	STEVE DAVIS SNOOKER <i>Blue Ribbon</i>	1.99
3	1	WAY OF THE EXPLODING FIST <i>Mastertronic</i>	1.99
4	6	TRAP DOOR <i>Alternative</i>	1.99
5	4	PRO SKI SIMULATOR <i>Code Masters</i>	1.99
6	13	BMX SIMULATOR <i>Code Masters</i>	1.99
7	8	3D STARFIGHTER <i>Code Masters</i>	1.99
8	3	OUT RUN <i>US Gold</i>	9.99
9	2	PLATOON <i>Ocean</i>	9.95
10	5	GRAND PRIX SIMULATOR <i>Code Masters</i>	1.99
11	8	LA SWAT <i>Mastertronic</i>	2.99
12	7	SKATE ROCK <i>Mastertronic</i>	1.99
13	●	SUPER STUNTMAN <i>Code Masters</i>	1.99
14	●	PREDATOR <i>Activision</i>	9.99
15	●	FRUIT MACHINE SIMULATOR <i>Code Masters</i>	1.99
16	14	JET BIKE SIMULATOR <i>Code Masters</i>	4.99
17	11	DIZZY <i>Code Masters</i>	1.99
18	12	POPEYE <i>Alternative</i>	1.99
19	20	SOCCER BOSS <i>Alternative</i>	1.99
20	16	GHOST HUNTERS <i>Code Masters</i>	1.99

Four new titles make their entrance this month. The highest entry – Steve Davis Snooker – is a re-release from Blue Ribbon and goes straight in at number two just in time for the snooker championships. Code Masters is very well represented with nine games in the Top 20, including new arrivals Super Stuntman and Fruit Machine Simulator. Jumping in at number 14 is Activision's Predator.

### Prime mover

It has happened! The old MicroLink computer, a Prime 850, has been honourably retired and a new Prime 9955 with brand new software eased in in its place. It is traditional that such undertakings never go entirely smoothly, and this one was no exception. On the morning of the Friday the old machine crashed (was it sulking?), and only managed to work for about an hour before being turned off for good. It was a long weekend for many MicroLink subscribers.

The system got a severe test on the Monday evening, as everyone came on to find out how much better things were. Of course, with so many people on line the effects were somewhat diluted, but as things have settled down, things like directory searches are much faster, logons take less time and some of the really bad delays of old should just be memories. Not all commands show equal improvement, however.

It's early days yet for the new computer, but over the next month MUG will be comparing the performance

of the system with the old figures. As MicroLink expands, we'll need all the speed and space we can get...

### The moving cursor writes...

...but on the bulletin board you can always DELETE one of your own messages. Some people have complained to MUG about blank messages, which look like someone has REPLY'd to an entry by mistake without meaning to say anything.

It's a good idea if you do this, to go back on to the bulletin board and read through until you find your message. After reading it, typing DELETE will remove it as if it had never been sent.

### Not just a number

BEFORE the upgrade most people were known on the system by just their account numbers.

Now MAG95816 isn't the most memorable way to address someone, so it was possible to have your name added to the system directory so that other users could send mail to you in a slightly more natural manner.

However, the way to get this done was never documented, and most people didn't avail themselves of the facility.

Since the upgrade, things are much better. Everyone now has a name, and by using the FIND command it takes a few seconds – again, a vast improvement over bygone days – to locate someone's ID by name.

And whereas even if you did have a name in the past it was backwards (as in GOODWINS.RUPERT), now it's a more legible FRED-BLOGGS. Which should go some way to making mail easier to address.

There's now even an opportunity for oneupmanship, as those who had their names before keep the original format.

So on any list of users the old hands stand out from the crowd, backwards but proud of it.

### Online alternatives

THE last MUG newsletter mentioned the bulletin board. This is unique to MicroLink, but other Telecom Gold systems have similar areas, one of which MicroLink shares. That's the

Noticeboard, and it differs from the bulletin board by being much more basic – it's impossible to SCAN or REPLY to messages, for example.

But lots of different systems on Telecom Gold can use it, so it's a good way to converse with someone who isn't a MicroLink subscriber but does use Gold. Typing >NOTICEBD will reveal both the good and the bad points of the area.

Also on MicroLink is the Memopad. This is yet another shared message system, with different categories to the BB and fewer options. Once you've tried both it and the BB it becomes clear why the former isn't used very much!

### Garbage...

...or, as we British say, rubbish. Between your modem and the MicroLink computer are many opportunities for strange characters to introduce themselves into your call. For many, the problem is no worse than the occasional squiggly bracket turning up in a mail message. But sometimes the problem is persistent and debilitating. MUG has received some queries on how to solve this.

Firstly, if at all possible, try your equipment (especially the modem) on someone else's telephone line. Then try different telephone numbers for MicroLink. This all helps to amass proof to give to the BT engineer when he calls to check your line.

If the problem won't go away, then slower speeds can help. It's unlikely that a line which is unusable at 1200 baud will miraculously become crystal clear at 300, but for cases of intermittent corruption, dropping the baud rate can make a big difference.

## Time, gentlemen, please

EVEN with the new computer, the speed at which commands are processed can vary considerably. Knowing what the factors are which govern this can lead to faster service and thus a reduced bill; something few MicroLinkers are averse to.

The biggest single-Prime knobbling factor is the number of users on the system at the time. You can find this out by typing >USERS, and the more

people are about the slower things will be.

Peak time for MicroLink is from about 7 till 11 in the evening, as most non-business users take advantage of cheap telephone and MicroLink rates. But if you can hold out until midnight, then things ease up a lot.

From about two in the morning security backups are made – copies of all the data that's been added to the computer by users since yesterday. This is the other big

slowing factor, and many a small hours user has been surprised by a sluggish response when there's nobody else about.

The very best time to use MicroLink is between five and seven in the morning. More often than not you can be the only person using half a million pounds' worth of computer and network, and the speed of response is only matched by the feeling of power and the nagging need to sleep.

# ADVENTURE

## Getting your act together

### Gandalf on the world of adventures

**A**S regular readers will know, I always try to encourage the smaller and home-brew software houses. Much like children at school, they are the lifeblood of the future and many major software companies started out in this way. However, as in any commercial enterprise, some standard of professionalism is required before a game can be considered seriously.

I have received a review copy of an adventure – Mad Jock's Family Reunion – supplied on a Boots C15 cassette. This isn't unusual, but what is odd is that the program had been recorded over two sides of a tape, blocks 1-17 are on one side, and blocks 18-21 on the other. I dare say you won't be surprised to learn that I couldn't load it.

Having returned it to the author – Dented Designs – I was amazed to have the same tape sent back to me with a note to the effect that Dented Designs hadn't had any problems, and that the tape deck in my CPC probably needed re-alignment. The program had been re-recorded, and it was hoped that I wouldn't have any further trouble.

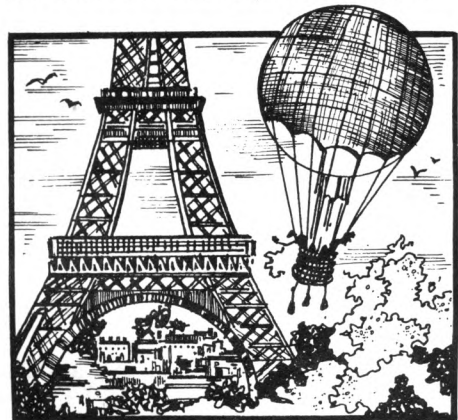
Despite the fact that the game now loads and is reasonably good, I shall not be reviewing it. My reasons? Simply put, Dented Designs has not treated the marketing of its program seriously enough. And if Dented Designs doesn't treat it seriously, why should you or I? If by reviewing a program I give it credibility so that you send money away, I have to be sure that the people on the receiving end have a professional attitude.

All of which serves to illustrate one point. No writer should penalise a program because it does not come in fancy packaging, unless the price warrants it. But if you send a pre-production copy of a game in for review, at least make sure that it is

presented as well as possible. The money Dented Designs has saved by not using a longer tape is likely to be a lot less than it would have made had the game been reviewed.

By all means send in your games for review, as I have said, the future lies very much in your hands. But, YOU have to treat yourselves and your product seriously if you want anyone else to.

On to a letter from Jo Miller, who is in trouble in **Spy Trek**. To progress with the balloon at the Eiffel Tower: Enter



the balloon, up, (you return to the base of the tower), unlock the gate, up, enter balloon, up. Keep repeating this process until the balloon goes up instead of down.

In **The Colour of Magic** she is having trouble getting past the troll. Can anyone help out? Jo would also like to know where to obtain a copy of **The Big Sleaze**. Try contacting Macmillan (Computer Software), 4 Little Essex Street, London WC2R 3LF. Tel: 01-836 6633.

My thanks to Graham Wheeler, Joel Kenyon, T. A. Gammon, Ric Lumb and Darren Stephens for the tips, maps, and solutions they have sent in.



# HALL OF FAME

## A chat with Cap

**Gnome Ranger – Part I** of a serialised solution by Graham Wheeler

### Part I

Examine the door, read the note, knock on the door, wait, follow the centaur. Examine Cap, and say hello to him. He offers you one item if you will deliver an envelope. Get the envelope, get the shovel, leave, open the envelope, read the letter. It tells you that Cap is sending you to a witch to be turned into a garden gnome.

Go to the cottage, West, examine the rock, drop all, lift the rock, get the bridle, get all again, go to the cave and enter it. Say hello to the llama, examine the llama, get the flower, go to the forest, wait three times, give the flower to the nymph and say hello to her. Tell her to go to the marsh, and follow her.

Get all. You now follow the nymph back to forest. Tell her to follow you, go to the stream, give the shovel to the nymph, tell her to go East and dig. Wait, East, get the crock, and give it to the leprechaun. He is happy to have his crock back, and tells you to snap your fingers to call him.

Find the eagle. You may need to do this several times because she moves around. Say hello to her. Repeat this until she carries you to her nest. Look until the chicks peck you. Hit the chicks. The eagle is grateful for some peace, gives you a bell to call her, and returns you to the pinnacle.

Tell the nymph to follow you, go to the cottage, examine the gate (don't enter), ring the bell, tell the eagle to get the peg (which frees the dog), wait. Follow the dog. He goes to the swarm of dogs who are happy to see him back and give you a whistle to blow.

Look, blow the whistle, and tell the swarm to find the unicorn. Once again, you may have to repeat the command several times. As soon as the unicorn and nymph meet they fall in love, and you are given some pipes to call the unicorn. Go to the cottage, in, NE, NW, (outside back door) play pipes, tell the unicorn to break the door.

Snap your fingers, and tell the leprechaun to follow you, in, wait (until the witch enters the room), tell the leprechaun to break the wand – end of Part 1 – score 300 points.



### Part II

Get the tea leaf. The bush dies and Ingrid is blamed. Get the elderberry, thistle flower, rowan berry and mint leaf, go to the library, and read the book. Keep doing this until you have seen them all. Go to the kitchen, examine the pot, put the elderberry, thistle flower, rowan berry and mint leaf into the pot. You now have a potion.

Get the bulb and the seed, and go to the garden. Plant the bulb and seed. You grow a greenslave and two telelillies. Pour the potion on the greenslave. It comes to life. Tell it to follow you, get the white and blue telelillies, the thistle flower, elderberry, mint leaf and rowan berry, go to the kitchen, put the thistle flower, elderberry, rowan berry and mint leaf in the pot. You now have some weedkiller.

Go to the hedge, and put the weedkiller on Ingrid. East, drop the white telelily, East, put the blue telelily in the pond, West (water is coming out of telelily), Wait twice. When enough water has poured on to the beanstalk it will explode and destroy the wall. Up, examine frond, get fern shoot, examine rock, tell the greenslave to wait, then to push the rock twice. Push the rock yourself twice (so that you are doing it together), go to the garden, get the compost, up. You find you are in a treehouse.

Tell the treehouse to go North, Northwest and East, down, Northeast, drop the compost (because trees cannot go on to roads), Southwest, up. Tell the treehouse to go Northeast, down. Tell the treehouse to hold its mouth open (this is not really a cave, it is a flytrap), in (you will be asked if you wish to continue), yes, tell the greenslave to wait then go West, and get the stinkwort shoot.

East (you must be outside), wait until the cave spits out the greenslave. Tell





## HALL OF FAME



him to give you the shoot (sometimes he may have to re-enter to get it and may need to be asked for it more than once), go to the garden, get the mint leaf and elderberry, go to the kitchen. Put the fern shoot, mint leaf, stinkwort shoot and elderberry in the pot. You now have an antidote. Drink the antidote, go to the cave, up, tell the treehouse to go East, East and East again.

Examine the plant (you see an air plant but it is frightened of Ingrid), down, tell the greenslave to wait three times, and get the air flower. Tell the treehouse to wait, lift the greenslave up

and then wait again. South, South (Ingrid must not be close to the flower). Wait (until the greenslave comes), tell him to give you the air flower, go to the garden, get the mint leaf, rowan berry and elderberry.

Go to the kitchen, put the mint leaf, rowan berry, elderberry and air flower in the pot (you now have some fertiliser), go to the garden, put the fertiliser on the tea bush, get the tea leaf, mint leaf, rowan berry and thistle flower. Go to the kitchen, put the mint leaf, rowan berry, tea leaf and thistle flower in the pot. You have now made tea. The alchemist returns and you drink tea together. End of Part II – score 600 points.

# To boldly go...

*Hitchiker's Guide to the Galaxy – Part II of a serialised solution by D. P. Francis*

Against all probability, Heart of Gold just happens to be in the neighbourhood and picks you up. So there you are again – in the dark. Watch the display until it no longer says you can't hear. Then listen and you will hear the sound of the star drive. The program will lie to you now by saying that there is an exit to port.

Ignore it and go aft into entry bay 2. Ignore the brochure and go aft again to the fore end of the corridor. Here Ford will find you and take you up to the bridge where you meet Zaphod and Trillian. While you listen to them talk you can drop the plotter, screwdriver, gown, and signalling device.

Move down then keep going aft to the engine room. You will be told there is nothing to see, but keep looking and you will find some tools and a spare improbability drive. Take it and return to the fore end of the corridor. From there travel to port to the nutrimat. Try asking the guide about it. Touch the pad, and take the cup to the bridge.

Drop the cup and drive. Take the small plug and plug it into the small receptacle. Put the plotter's dangly bit into the tea substitute. Push the switch, and once again you will be in the dark.

There are five such scenarios to be completed. They come in random order, and each one has its own little section of the walkthru. The lead-in to each of

them is the dark area, and you have to wait in each one until one of your senses is working again. You will also be in the dark scenario when the section ends, and will have to listen for the drive sound which will bring you back to the Heart of Gold.

Also, be aware that there are times when you may briefly go back to one of the scenarios that you have already completed. You tend to bounce in and out of these, but do have to spend time waiting in the dark. It is also worth saving the game after each section has been completed.

When you come out of the dark you will find yourself in the Bugblatter Beast's lair. Consulting the guide tells you the Bugblatter Beast is incredibly stupid, so as soon as you have run East away from it you should cover yourself with the towel. Since you cannot now see the beast, it assumes it cannot see you either.

This subterfuge will not last long, and you must pick up one of the sharp stones and use it to carve your name on the beast's memorial. The beast will now assume it has already eaten you, leaving you free to re-enter the lair and move Southwest. Here you find an interface card. Take it and wait until you are captured. Eventually you will be freed and will again find yourself in the dark.

When you get back to the Heart of Gold you can drop the asteroid paint chipper and the interface card in the fore end of the corridor. Now go back up to the bridge and push the switch again.

# Rigellian ruses

**Rigel's Revenge – A complete solution by Graham Wheeler**

## Part I

Get and wear the goggles. You see Elliot who starts to give you a message, then dies. Examine Elliot, get satchel (you automatically bury Elliot), E, E, N, E, down, N, examine unit, get medikit, up, firmly pull bars, remove suit, wear medikit, and press red button. You feel strong.

Bend bars, remove medikit, put all through window (you are now thin enough to get through it), out, get all. Wear the suit, medikit and satchel. W, W (you feel drained), press green button, open door, S, W, W, W, untie wire (hotel door handle is booby-trapped), open door (you enter), push bed twice, get shape (empty stun gun), open door, W, W, W, get bone.

Follow tracks (to get out of desert), E, E, E, E, up, give bone to dog, up (or any input), up, W, S. The tank fires at dogs who are chasing you. SW, up, S, press green button, jump gap, down, E, N, N, N. A helicopter chases you back to the crossroads.

E, up (into a tank), press dipswitch (to close hatch and open cupboard). Get mine detector, wear headphones, press dipswitch, out, get rubble, W, S, S, S, S, up. You climb a lamppost and see a bright light to the East. E until you see a screwdriver. Get screwdriver, put it in your satchel, remove goggles, E, throw rubble at light, wear goggles, E, get Rigellian uniform.

W, W, W, W, N, W, N. The chase will stop. Wear uniform, drop suit, N, N, turn dial (detector is set to bomb), E (you see a crater), down, get bomb. It is a talking bomb and will threaten to blow up, but don't worry, it won't. Up (you slide back down), up, turn dial. The detector is now set to mine.

E, examine sign, E (you are now in a minefield – directions vary slightly – go

E and SE until you are east of a hut), E (guards come out of hut), say gub (or anything), say gub (bomb wakes up), introduce bomb. It talks in Rigellian. Guards steal mine detector and run away. Score 50 – end of part I.

## Part II

Remove goggles. Put goggles in satchel, get bomb, N, drop bomb, S, wait. The bomb really does explode this time. N (hut door is blown off), N, examine apparatus, examine plug, plug stun gun, pull lever, unplug stun. Your gun is now charged.

S, S, E, E, E, E, E, look under bench, get can, put can in satchel, W, W, N, in, get rifle, examine seat, get documents. Watch out for wandering guards. Out, S, E, examine documents, put documents in satchel, look, get card (it fell out of the documents), W, S, W, examine dustbin. You find a case.

Open case, look in case, get flare, E, N, E (fountain), wait until you hear guards marching to the west, then join them. W, S, S, E, E, follow troops. You pass a checkpoint. E, E, E (soldiers will now be busy loading ships), W, W, N, read name, S, S, dig, drop rifle.

Get light guide, examine light guide, press memory (Elliot gives you a message), put light guide in satchel, get can, and shake it. W, S, examine android, spray paint on lens. Android can't see and falls into canal. Drop can, S, insert card. The gate opens and you can enter.

Drop card, SE, examine ivy, get screwdriver from satchel, unscrew grille, drop screwdriver, in, crawl N (do this eight times until you reach the junction), down, down, examine opening, push mesh, crawl N, open trapdoor, down, get goggles and wear them, wait until a monster comes. Fire flare at monster.

Up, remove goggles, put goggles in satchel, drop flare, get light guide, enter opening, up, up, crawl W twice, examine opening. You see a soldier. Fire stun at soldier. He is now unconscious. Push mesh, crawl N, drop stun, examine soldier, get scrap, examine scrap, examine cube, open panel, examine slot, connect light to slot.

Press 1, press 3, press 4, press Execute. The program starts. Wait three times. Black sphere pops out. Get sphere, enter opening, crawl E twice, down twice, crawl N, drop sphere, get goggles and wear them. Get sphere, E, N, S (you see a rockfall), S (you meet Japu). Score 100 points – end of game.

## NOTES

- Watch out for soldiers at the start of Part II. Keep saving the game until you are ready to follow them.
- In the sphere room, if you hear a knock, enter the opening, wait once and then return.
- Ignore the dinghy and patch.

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## Super Robin Hood

(Code Masters)

Twang... thunkkkk! Here we get a speeded-up Robin, and the collision detection has been taken out. Thanks to Lee Thacker of Dover for this.

```

10 ' Super Robin Hood
20 ' By LEE THACKER
30 ' (c) CWTA/CPC
40 DATA CD,37,BD,AF,3C,CD
50 DATA 6B,BC,06,00,11,00
60 DATA AC,CD,77,BC,EB,CD
70 DATA 83,BC,23,E5,CD,7A
80 FOR s=&BE80 TO &BEAC
90 READ p$:b=VAL("&"+p$)
100 v=v+b:POKE i,a:NEXT
110 IF v=5920 THEN CALL &B
E80
120 PRINT"Typing Error":LI
ST 130-
130 DATA BC,21,A0,BE,22,92
140 DATA AC,C9,AF,32,22,61
150 DATA 3E,C9,32,97,6C,C3
160 DATA D0,76,6A
    
```

## Zolyx (Firebird)

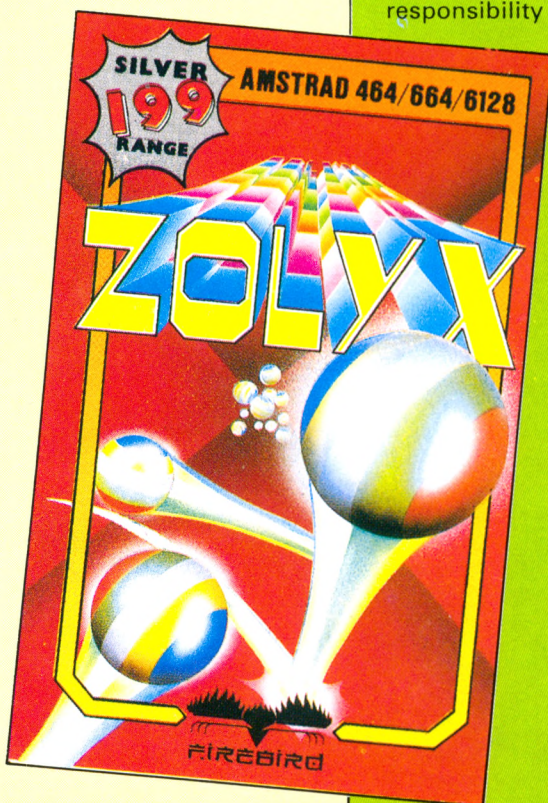
Geoff Tideswell reckons this is an awful conversion infested with bugs and sporting extra-specially flickery sprites.

So to get the game over with as quickly as possible he's come up with 255 Zollies, infinite Zollies, stopped the balls bouncing, and made them stick to the walls.

Delete the lines of data corresponding to features you don't want, run the poke, and press Play. Don't select non-bouncing and sticky balls at the same time, as the effect is disastrous.

```

10 ' ZOLYX by
11 ' Geoff Tideswell
12 ' Ripley
13 ' (c) CWTA / CPC
14 ' - The Loader -
15 DATA 2A,38,BD,22,00,BE
16 DATA 2A,01,BB,22,38,BD
17 DATA 3E,C3,21,1A,BE,32
18 DATA 0E,BC,22,0F,BC,C3
19 DATA 00,11,2A,00,BE,22
20 DATA 38,BD,CD,37,BD,AF
21 ' - The Cheats -
22 DATA 32,90,43
23 ' Inf Zollies
24 DATA 32,e2,3e
25 ' Make Balls Stick To
26 ' Wall
27 DATA 3e,34,32,d1,3d
28 ' Stop Balls
29 DATA 3e,ff,32,b6,41
30 ' 255 Lives
31 DATA af,c3,0e,bc,x
32 ' Leave above Line
33 OPENOUT!":MEMORY &10FF
34 LOAD!zolyx1
35 MODE 1
36 WINDOW #1,1,20,3,3
37 WINDOW #1,1,20,5,5
38 FOR t=&BE00 TO &BE23
39 READ g$:g=VAL("&"+g$)
40 POKE t,g:f=f+g:NEXT
41 IF f<>3362 THEN 45
42 READ a$:IF a$="X" THEN
CALL &BE00
43 POKE t,VAL("&"+a$)
44 t=t+1:GOTO 42
45 PRINT"Error In Loader."
    
```



Hi gang. Now this isn't really my department, but I hate to see a grown man cry – or is he laughing? Whatever he's doing, our glorious leader is doing it over two 10-Liners published in the March and April issues. The authors were Michael Wilcox, and another who shall remain nameless because at the time of writing he's the only one honest enough to return his cheque. It was bad enough finding out that the programs were ripped off from the CPC464 user manual, but then we noticed that they were the same routine doctored to give a different pattern. It was almost funny.

Even as I write Nixon, who collates the 10-Liners page, is rolling round the office. Well his head is. Now the Ed, scruffy devil, has a lot more hair than the last one, but not for much longer at this rate because things like this make him pull it out. So chaps, if you can't program, don't sell other people's work as your own, OK?

Not that I'm overly pleased with the Ed. Last month I put together four pages of pokes to make up for the issue before, and he zapped half of them at the last minute when space got a bit tight. Grrrr! If anybody has an anti-editor infinite pages poke, let me know!

Thanks for all the letters in support of my little dig at US Gold last month. I hope it has the right effect with the people it was aimed at. Anyway, on with the show...

*Tiffany*

## Gauntlet II (US Gold)

Be warned, this one doctors your disc and I take no responsibility for anything

whatsoever. It works OK on mine, and once done, I have infinite health. The poke also has a facility to restore the disc. Niall Brady of Sligo in Eire is the man to thank for this one.

```

1 ' Gauntlet II - Disc
2 ' Infinite health
3 ' by Niall Brady
10 DATA CD,96,BE,21,00,40,1E,00,2A0
20 DATA 16,11,0E,17,DF,A6,BE,3A,2C9
30 DATA A4,BE,32,18,41,C9,21,A5,37C
40 DATA BE,CD,D4,BC,22,A6,BE,79,51A
50 DATA 32,A8,BE,C9,C9,84,00,00,3AE
60 n=8:a=&BE80:l=10
70 WHILE l<60:GOSUB 80:WEND:GOTO 140
80 cs=0:FOR x=1 TO n:READ v$
90 v=VAL("&"+v$):POKE a,v
100 cs=cs+v:a=a+1:NEXT
110 READ c$:c=VAL("&"+c$)
120 IF c<>cs THEN PRINT"Check ",l:END
130 l=l+10:RETURN
140 MODE 2:INK 0,0:BOARDER 0:INK 1,26
150 INPUT"Do You Want To Restore Or A
lter The Gauntlet II disc (R/A):",cho
ice$
160 choice$=UPPER$(choice$):IF choice
$="A" THEN 210
170 PRINT"Restoring Disc":POKE &BEA5,
&84:POKE &BEA4,&7E
180 GOSUB 190:PRINT:PRINT"ALL Done...
":END
190 PRINT"Please Insert GAUNTLET II d
isc and press any key"
200 CALL &BB06:CALL &BE80:POKE &BEA5,
&85:CALL &BE80:RETURN
210 GOSUB 190:ICPM
    
```

## Classic Muncher

(Bubble Bus)

Here's a multifeature megapoke by Cas Cooper of Exeter. You can have 255 or infinite lives, the collision detection is removed, and there are no ghosts.

game is speeded up too. You won't want all the features at once, so remove the lines of data in the poke that correspond to features you don't need. Then run it and press Play.

```

10 ' Classic Muncher
11 ' By Cas Cooper
12 ' (C) CwtA CPC
13 DATA 06,00,11,00,C0,CD
14 DATA 77,BC,AF,CD,0E,BC
15 DATA 21,00,01,CD,83,BC
16 DATA CD,7A,BC
17 DATA 3e,ff,32,f3,13
18 ' 255 Lives
19 DATA 3e,c9,32,71,04
20 ' Remove Coll. Det.
21 DATA 3e,c9,32,c8,05

22 ' No Ghosts
23 DATA 3e,c9,32,98,0d
24 ' Speed Up
25 DATA 3e,c9,32,e9,0e
26 ' Inf. Lives
27 DATA c3,03,10,MU:'Leave
28 i=&BE00
29 READ a$
30 IF a$="MU" THEN CALL &B
E80
31 POKE i,VAL("&"+a$)
32 i=i+1:GOTO 29
    
```

## Arkanoid

(Magnificent 7)

Jason Brooks strikes again with a poke for Imagine's compilation version. You

can have infinite bats or 10 bats - take your pick and scrub the line you don't want. Then run the poke, and press Play. CPC464 owners should omit the colons and REMs after the data.

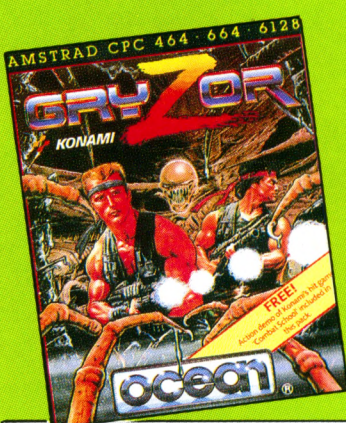
```

10 ' ARKANOID Cheat
15 ' by Jason Brooks
20 MEMORY &3000:LOAD"!
30 POKE &39E2,&C3:POKE &39
E3,&1F
40 POKE &39E4,&BE:i=&BE00
50 READ a$:IF a$="ARK" THE
N CALL &BE14
60 POKE i,VAL("&"+a$):i=i+
1:GOTO 50
70 DATA F3,DD,21,00,BF,11,
4F
80 DATA 00,CD,67,BB,21,2C,
BE
90 DATA 22,4D,BF,C3,00,BF,
21
100 DATA 40,00,E5,21,00,BB
,E5
110 DATA C3,B7,39,3E,45,32
,4B
    
```



```

120 DATA 00,3E,99,32,4E,00
,F3
130 DATA F1,C9
140 DATA af,32,f3,02:' Inf
. Bats
150 DATA 3e,0a,32,56,02:'1
0 Bats
160 DATA c3,e5,45,ARK:Lea
ve this line
    
```



## Gryzor

(Imagine)

This is the game we're all playing at lunch times - and whenever the Ed goes out. Andrew Marsden of Retford is the man to thank for this infinite lives poke. As usual, rewind the tape, press Play, and run.

```

10 'GRYZOR (TAPE)
20 '
30 MEMORY &2000:MODE 0:sum
=0
40 FOR n=&BE00 TO &BE4D:RE
AD
a$
50 a=VAL("&"+a$):POKE n,a
60 sum=sum+a:NEXT
70 IF sum<>6958 THEN PRINT
"ERROR in Data":END
80 LOAD!":CALL &BE00
90 DATA 2A,0F,BC,22,1D,BD,
3E,C3,21,14
    
```

```

100 DATA BE,32,0E,BC,22,0F
,BC,C3,1E,32
110 DATA 3E,00,CD,1C,BD,3A
,4B,BE,3C,32
120 DATA 4B,BE,FE,02,C0,21
,2A,BE,22,5A
130 DATA 34,C9,DD,21,5B,A6
,11,00,01,CD
140 DATA EA,A5,21,3D,BE,22
,00,A7,C3,85
150 DATA A6,3E,00,06,07,21
,26,15,77,23
160 DATA 10,FC,C3,19,04,00
,00,00,00,00
    
```

## Renegade

(Imagine)

Here's how to get the blood back in Renegade. At the start of the game press Esc to pause the action, and press the following keys simultaneously: W,A,D,S spacebar, and 0..Enter on the keypad.

that while trying to kill Big Bertha. He reckons that if you kill her gang, you can keep doing flying kicks until her energy drops. Be careful not to be too close or too far away from her. When all her strength has gone, run away, and when you are far enough away she will give chase. Now do a flying kick, and thud, down she goes.

Lee Harland discovered

## Academy

(CRL)

Tak P. Cheung of Ipswich has infinite missiles and fuel for the tape version of Academy, CRL's one-man-against-a-planet 3D blast.

```

10 DATA 21,09,be,22,40,bf
20 DATA c3,02,bf,21,12
30 DATA be,22,af,00,c3,50
40 DATA 00,af,67,6f,32
50 DATA f3,8c,22,47,a0,32
60 DATA ec,8b,c3,35,05,1F
FANY
70 FOR addr=&BE00 TO &BE14
80 READ d$
90 d=VAL("&"+d$)
    
```

```

100 POKE addr,d
120 NEXT addr
130 READ d$
140 IF d$="TIFFANY" THEN R
UN:CALL &BE00
150 d=VAL("&"+d$)
160 POKE addr,d
170 addr=addr+1
180 GOTO 130
    
```

All contributions for AM-TIPS must be original material and accompanied by this form:

I certify that the attached submission is all my own work and has not been submitted to any other publication.

Signed \_\_\_\_\_  
 Name \_\_\_\_\_  
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The address to write to is:  
**Tiffany, Amtips, Computing with the Amstrad CPC, Adlington Park, Adlington, Macclesfield SK10 5NP.**

## Pro Ski Simulator

(Codemasters)

Having trouble on the piste? With this little gem from John Summers of Exeter player one can continue even though he's disqualified.

```
10 ' Pro. Ski Sim.
11 ' By John Summers
12 '
13 ' (C) CWTA/CPC
14 DATA F3,DD,21,00,BF,11
15 DATA 47,00,CD,67,BB,21
16 DATA 2C,BE,22,44,BF,C3
17 DATA 00,BF,21,40,00,E5
18 DATA 21,00,BB,E5,C3,E9
19 DATA 3A,3E,45,32,4B,00
```

```
20 DATA 3E,99,32,4E,00,F3
21 DATA F1,C9,Af,21,00,00
22 DATA 22,EC,7C,22,EE,7C
23 DATA 22,CF,7C,22,D1,7C
24 DATA 22,C1,7C,22,DE,7C
25 DATA C3,AB,7B,4A,41,59
26 MEMORY &3000:LOAD!"
27 MODE 1:POKE &3A76,&C3
28 POKE &3A77,&1F
29 POKE &3A78,&BE
30 POKE &3B22,&4B
31 FOR i=&BE00 TO &BE47
32 READ a$:a=VAL("&"+a$)
33 POKE i,a:s=s+a:NEXT
34 IF s=7940 THEN CALL &BE14
35 PRINT"Data Error !!!"
```

## Skate Rock Simulator

(Ricochet)

David Whitehead of Cardiff has added a keyboard option to SRS, given you infinite lives, and the ability to choose the starting screen.

```
10 ' Skate Rock Simulator
11 ' By DAVID WHITEHEAD
12 '
13 MEMORY 9999:LOAD!"
14 POKE &906F,&B4
15 POKE &9070,&BE
16 ' If Don't Want To Use
17 ' Keys Then Delete
18 ' Lines 19-21
19 POKE &BB24,&C3
20 POKE &BB25,&80
21 POKE &BB26,&BE
22 FOR i=&BE80 TO &BEBF
23 READ a$:c=VAL("&"+a$)
24 ch=ch+c:POKE i,c:NEXT
25 IF ch=6333 THEN CALL &9052
26 PRINT"Error in your Data!"
27 DATA DD,E5,DD,21,A9,BE
28 DATA 06,06,26,00,E5,C5
29 DATA DD,7E,00,CD,1E,BB
30 DATA C1,E1,DD,7E,01,20
31 DATA 0C,DD,23,DD,23,10
32 DATA EB,DD,E1,2E,00,7C
33 DATA C9,B4,67,18,F0,47
34 DATA 04,3F,08,13,01,16
35 DATA 02,12,10,00,AF,32
36 DATA 19,57,3E,07,32,2d
37 DATA 5e,C3,0A,40
38 ' Keys Are :-
39 ' Z=Left X=Right
40 ' J=Up l=Down
41 ' RETURN =Fire
```

## Vampire

(Code Masters)

Fangs to Rick Davis of Sheffield for infinite lives in Code Masters' toothy cheapie.

```
10 ' Vampire
11 ' Rick Davis
12 '
13 ' (C) CWTA/CPC
14 DATA F3,DD,21,00,BF,11
15 DATA 51,00,CD,67,BB,21
16 DATA 2C,BE,22,4F,BF,C3
17 DATA 00,BF,21,40,00,E5
18 DATA 21,00,BB,E5,C3,b7
19 DATA 39,3E,45,32,4B,00
20 DATA 3E,99,32,4E,00,F3
21 DATA F1,C9,21,00,00,22
22 DATA 5B,2D,22,5D,2D,C3
23 DATA 88,13
24 MEMORY &2000:LOAD!"
25 POKE &39E2,&C3
26 POKE &39E3,&1F
27 POKE &39E4,&BE
28 FOR i=&BE00 TO &BE37
29 READ a$:q=VAL("&"+a$)
30 s=s+q:POKE i,q:NEXT
31 IF s<>5457 THEN 33
32 CALL &BE14
33 PRINT"Misterk in Data!"
```

## Jet Bike Simulator

(Code Masters)

JBS is arguably the Oliver twins' best arcade game. Martin Hyson of Peterborough has fixed it so that you can play all eight courses, and qualify for the next round even though time ran out. Also, on the expert level two players can be on board continuously even though one failed. Therefore if there is only one player he is guaranteed to qualify.

The poke also fixes a bug. The Oliver twins obviously didn't think anybody would complete all eight screens, and the game promptly crashes when you do so. The fix doesn't print the Congratulations message, and you will restart at level one, but it's better than crashing.

Just rewind your tape - either side - run the poke, and press Play.



```
10 ' JET BIKE SIMULATOR
11 ' BY MARTIN HYSON
12 ' Either STANDARD or
13 ' EXPERT
14 MEMORY &3000:LOAD!"
15 POKE &3A76,&C3
16 POKE &3A77,&1F
17 POKE &3A78,&BE
18 ' Patch
19 DATA F3,DD,21,00,BF,11
20 DATA 47,00,CD,67,BB,21
21 DATA 00,A4,22,44,BF,C3
22 DATA 00,BF,21,40,00,E5
23 DATA 21,00,BB,E5,C3,4B
24 DATA 3A,3E,45,32,4B,00
25 DATA 3E,99,32,4E,00,F3
26 DATA F1,C9,**
27 ' Cheat
28 DATA 3a,CE
29 DATA 66,FE,CD,28,18,AF
30 DATA 32,34,66,32,DD,68
31 DATA 32,BA,68,21,3C,A4
32 DATA 11,22,68,01,06,00
33 DATA ED,B0,C3,4E,65,AF
34 DATA 32,0A,6A,32,AF,67
35 DATA 32,2D,6A,3E,08,32
36 DATA 76,69,21,3C,A4,11
37 DATA 72,69,01,06,00,ED
38 DATA B0,C3,CE,66,E6,07
39 DATA 32,51,4C,18
```

```
40 FOR i=&BE00 TO &BE2B
41 READ a$:a=VAL("&"+a$)
42 POKE i,a:s=s+a:NEXT
43 IF s<>4534 THEN 51
44 RESTORE 28
45 FOR i=&A400 TO &A441
46 READ a$:a=VAL("&"+a$)
47 POKE i,a:s=s+a:NEXT
48 IF s=10820 THEN CALL &BE14
49 PRINT"Error In The Cheat"
50 END
51 PRINT"Error in The Patch."
```

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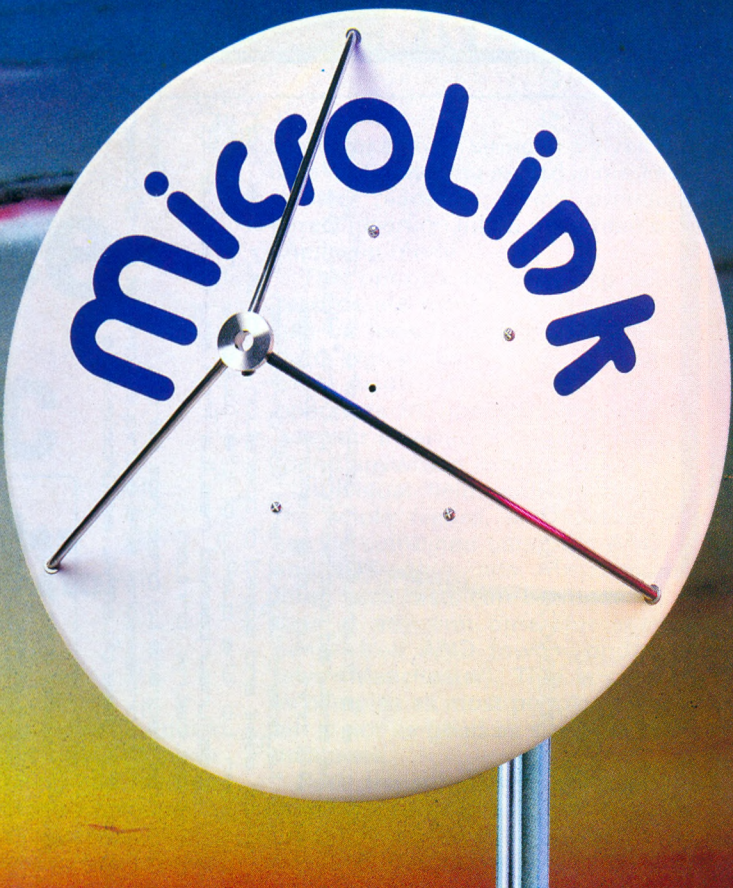
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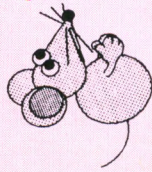
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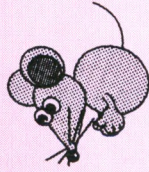
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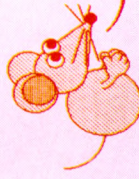
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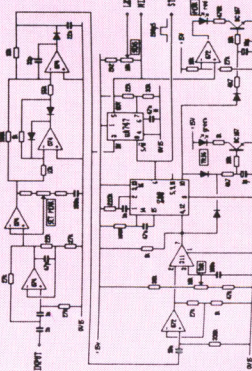
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Current datafile: address. Variable record length. 8 fields.

\*\*\* PROTEXT FILER MENU \*\*\* (v1.00)

F - Find single record  
 S - Select records  
 P - Print/display records  
 M - Mail merge  
 Z - Sort records  
 C - Count records  
 A - Add new records to update file  
 U - Merge update file into main file  
 L - List current file information  
 E - Edit current file information  
 D - Change current datafile  
 I - Initialise new datafile  
 O - Protex Office menu  
 Q - Quit

Enter option letter: █

\*\*\* PROTEXT OFFICE MENU \*\*\* (v1.00)

I - Print an Invoice  
 C - Print a Credit note  
 S - Print a Statement  
 N - Set invoice Number  
 D - Set current Date  
 R - Reprint document  
 E - Edit configuration settings  
 F - Filer menu  
 Q - Quit

Enter option letter: █

Protex Filer and Office main menus

## ◀ From Page 19

fields are the same alphabetically, the next field (such as customer account number) can be used to put these into numeric order and so on. One nice touch is that the program can bring to your attention apparent duplicate records within the file. It even does its best to identify records which are just very similar, to take account of small differences in the typing of a name and so on.

A mark of a useful program is that you constantly curse when you realise how much time was wasted on jobs in the past. An additional feature – a stroke of genius – is that any table of text or figures can be treated as a datafile. In this case each line is taken as one record, and individual fields must be separated by tabs. The table can then be sorted by any one of the columns of data, for example, in numerical order, or alphabetically. For many people this is just a luxury but if you have need of such a tool you are probably running to the shops already.

## Mailmerging

Once selected, and possibly sorted, the data may be required for mail merging. Arnor has recognised that some people find the mailmerge abilities of Protex rather complex, and Protex Office supplies you with simple menu-driven options and standard templates such as for address labels. Again these can easily be edited to meet your exact needs.

On its own Protex Filer costs £24.95. The £10 extra required for Protex Office with Invgen must be a bargain for any small business.

Invgen is really a specialised mailmerge program. It can read two data files – customer records and a product file giving information on the items the company deals with. Products can,

but need not, have one of five levels of VAT additions (to allow for future changes in the law) which are calculated automatically. Conversely different products or customers may qualify for different discounts on normal prices.

Invoices are generated from a standard editable template, and show customer address, account number, invoice number, the products ordered, the total charged (including VAT and so on) and a special message such as Merry Christmas. All of these options can be entered in their entirety from the keyboard in response to prompts, or taken from the disc files.

Some of the entries – such as VAT or invoice number – have default values, but these can be overridden. The program can also prepare credit notes or statements of the invoices sent out, including payment received and so on.

Most good stocktaking and sales accounting programs will of course do all of this, but they are expensive and few are as easy to use as Invgen. For many companies, particularly those that deal with services rather than products, such specialist programs usually constitute sledgehammer tactics and I am sure that Arnor's solution will be welcomed.

Various permutations of Protex and Protex Office are available for the CPC, and it is worth running through the possibilities. If you have Protex and Promerge on rom, you can run the Amsdos version of Protex Office with no trouble. Anyone with Amsdos Protex and Promerge on disc can run the Office programs, but the Fsort utility must be used separately, and one or two small features have been left out.

There is also a CP/M Plus version for those with the appropriate release of Protex. Memory limitations are no problem here because of the disc buffering of data files.

However, it is worth pointing out

that any version of Invgen works much better with two drives, not because it is memory-hungry but because it saves a copy of every invoice created and, together with the program files, these soon use up the 64 file limit on Amstrad 3in discs.

I found the two programs excellent value for money. Unlike many databases, Protex Filer is quick and easy to use. The range of options available is better than that of most competitors, if not quite as good as the specialist releases. Like all databases, you must make sure it is capable of handling the tasks you need it for. However, Arnor seems to have thought hard about what features most people will find useful.

Protex Office probably has a more limited niche, in that Invgen will only interest companies with a reasonable amount of invoice work yet who are not big enough to require a specialist program. Even so it is a remarkably cheap buy and very competent.

Product: Protex Office

Price: £34.95

Product: Protex Filer

Price: £24.95

Supplier: Arnor Ltd., Protex House,  
 Wainman Rd., Peterborough PE2  
 OBU

Tel: 0733 239011

### POINTS FOR

- Very fluent to use
- Menu system simplifies many promerge tasks
- Editing data very much easier than with most databases

### AND AGAINST

- Parts of the database and invoice generator may be too limited for certain jobs
- Operations such as deleting records or removing some fields are awkward on long files, but this is probably only a problem on CP/M Protex
- Two drives are needed for regular use of Invgen

## CYBERNOID

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**and/or keys**

**C**YBERNOID is the long-awaited sequel to Exolon – one of the best games ever to hit the Amstrad. Like its predecessor, Cybernoid is the work of Raffaele Cecco, who has produced one of the glossiest shoot-'em-ups you'll ever play.

The bold colourful graphics are in an instantly recognisable style, but the plot differs significantly from Exolon, most noticeably in that you no longer control a humanoid figure.

Instead, you have at your command a small fleet of Cybernoid ships which can travel left and right, fall under gravity, and fly upwards.

The setting is an underground complex of Federation storage depots. You have been commissioned to put a stop to the raids by pirate ships resulting in the theft of valuable minerals, jewels and the latest experimental weaponry.

In the course of their raids the baddies have activated all planetary defence systems, with which you will have to contend as well as with the pirates themselves.

Your task is to retrieve the stolen cargo – achieved by shooting as many baddies as possible. Upon their destruction, they will drop whatever object was in their possession, which can then be collected by passing over it.

As much booty as possible must be returned to the nearest storage depot within a given time limit, shown as a graph at the top right of the status panel.

Bonus points together with an extra Cybernoid ship will be awarded if you succeed, but only if your cargo is over a certain value.

Some objects dropped by dead pirates are powerful weapons, and if picked up will arm your ship with a wicked array of destructive forces.

One such object is a golden ball, which whirls constantly around your craft smashing anything in its path. Another little gem is the extra gun which sticks to the back of the ship and protects your rear.

Each Cybernoid craft has some initial weaponry of its

own, selected with the number keys one to five. I battled through several screens using nothing more than the default cannon and bombs before even realising what else I had in stock – and what stunning goodies they are.

First, there are normal bombs. These are used in the same fashion as in Exolon – holding down the fire button initiates a burst of deadly missiles. Pretty powerful, but not much more effective than the cannon.

There are just 20 bombs allocated to each craft, which is



twice the number available in Exolon – but believe me, you need all the help you can get.

Next are a set of impact mines. Holding down Fire leaves a deadly trail floating in your wake. You also have six seeker missiles, which are sheer unadulterated destruction when unleashed upon an otherwise fatal source of danger.

The explosion from a seeker is similar to the volcanic fireball effect caused by exploding shells in Exolon, but even more spectacular.

A defence shield is also available, but you are only allocated three charges so use them with care. Finally, and best of all, are



the bounce bombs. These unleash a multitude of what look like little rubber balls, which bounce frantically around the screen, hitting most nearby pirates sooner or later. Any balls which can't find a target eventually fizzle out.

If you exhaust a certain type of weapon, the pirates also drop golden bags which, when collected, allow you to restock.

Cybernoid has to be seen to be believed. It's all there, even down to Dave Jones's catchy electro-pop tune which plays all through the game. The sheer speed of the action left me amazed.

Hovering in a pirate-packed chamber, randomly loosing off assorted weapons, creates a scene of such hairy proportions that even the most hardened video game addicts will want to

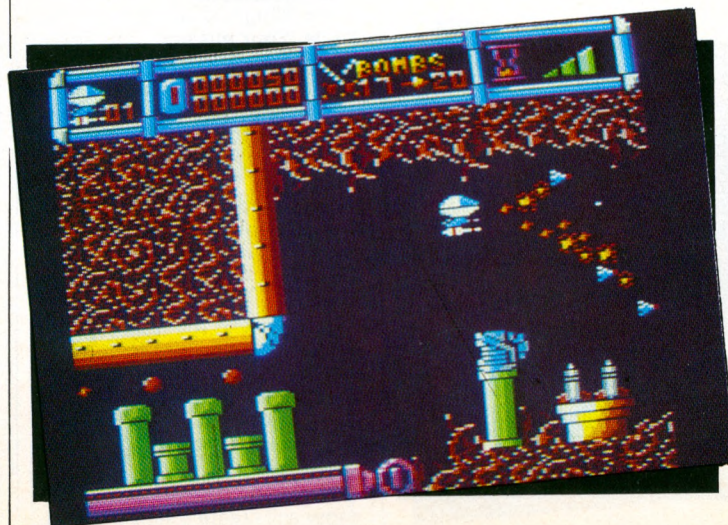
go crying to mummy. (*Calm down, Nixon!* – Ed.)

A minor moan: If you select the sound off option, you lose both the tune and the FX. I'd prefer to have stopped the music and left the rest to the volume control.

Also I did spot a couple of minor buglets in my preproduction copy, but these didn't detract from the game and I expect they'll be sorted by the time it hits the public.

If you want a game that will make Commodore 64, Spectrum, or Atari XL fans cry into their pints, you must get Cybernoid. Heaven knows where Raffaele Cecco goes from here, but whatever he does will be eagerly awaited.

Chris Nixon



### Presentation 91%

Definitely one of the classiest-looking games to date.

### Graphics 93%

The speed and colour has to be seen to be believed.

### Sound 92%

Great soundtrack.

### Playability 90%

Manoeuvrable ship and exciting weaponry.

### Addictiveness 95%

I couldn't drop the joystick until 3am.

### Value 92%

Cheap at the price.

### Overall 95%

Another smash hit from Hewson?

## SPY vs SPY TRILOGY

**Active**  
**£9.95 (tape)**  
**£14.95 (disc)**  
**Joystick or**  
**keys**

**M**OST compilations consist of an assortment of unrelated games, but this one is different. It is made up of **Spy vs Spy** together with its two follow-ups.

The first game is set in the embassy. Your mission is to find the only exit and board the plane to freedom. Before you do, however, you must collect your briefcase, passport, money, keys and the top secret plans. This may sound an easy task, but life is never that simple.

Other spies are lurking in the endless corridors hoping to find the plans before you do. Should they be out of range of any objects, pressing Fire will bring them face to face, wielding clubs with which to hit one another.

To make things even more difficult time is ticking away, and unless you are quick the plane will have left before you can make your escape.

To help you in your quest, your trapulator will display any items which you have managed to collect. The map shows you where you are, and any rooms coloured in show that your spy has been there at least once before. Objects needed for your mission are denoted by a dot.

At the same time as searching for your papers, you can lay booby traps to thwart the progress of your enemy.

Controlling your spy is not easy, especially with the keyboard where the cursor keys are

used. Many of the embassy buildings are two storeys high, and holes in the floor are hidden by carpets. In these situations pressing the joystick once will uncover such openings. A second press will lower a ladder for you to climb.

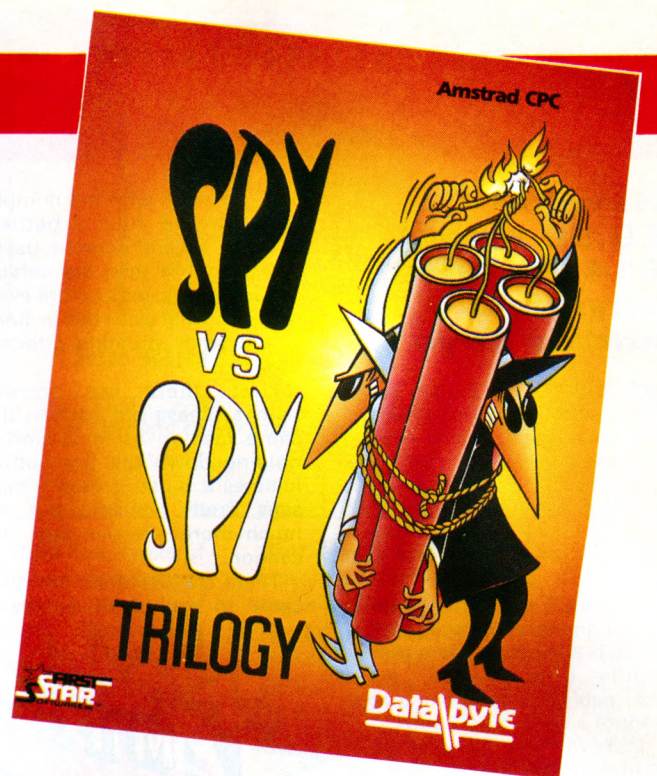
Spy vs Spy is beginning to show signs of age, with chunky graphics and simple sound effects. When it first appeared it caused quite a stir, having many unique features such as 3D graphics, hand-to-hand combat, simultaneous display of two players, and so on. But things have moved on at a rapid rate.

Fortunately, the author has paid a great deal of attention to these details in the subsequent games.

**Island Caper** sees our intrepid hero on a small island where the three parts of the XJ4 missile have been hidden. Your task is to find and recover them, assemble the missile, and transport it off the island using your secret submarine.

Like the previous game, the trapulator will show an inventory of your possessions. Graphically, this game is much better than its predecessor, while still using the same split screen format.

In addition to the problems



caused by the other spy, there are many other natural hazards to be faced. Getting out of quicksand can be very difficult, fighting sharks almost impossible, and erupting volcanoes fatal.

Control is very similar to the original with options for one or two players, difficulty levels, and music or sound effects. As in Spy vs. Spy, traps can be set to make life difficult for the enemy.

Snares and pits will slow your opponent's progress, and coconut bombs and napalm will temporarily reduce an unwary agent to ashes.

The map shows those quadrants where you have made recent visits, and a few white dots identify those areas where the missing missile parts can be found.

**Arctic Antics**, the final game in the trilogy, is set in the Arctic Circle. Your mission is to find a gyroscope, computer punch card, fuel canister, together with the all-important briefcase, and leave the island by rocket before the blizzards arrive.

In many ways, this game is little more than an extension of the previous ones, with the same set of options, controls, and that ever-present trapulator.

Fortunately the puzzles are sufficiently different to prevent boredom setting in. While searching for the equipment necessary for escape, you can again set a number of traps for your opponent.

Throwing water on to the snow will create a slippery spot,

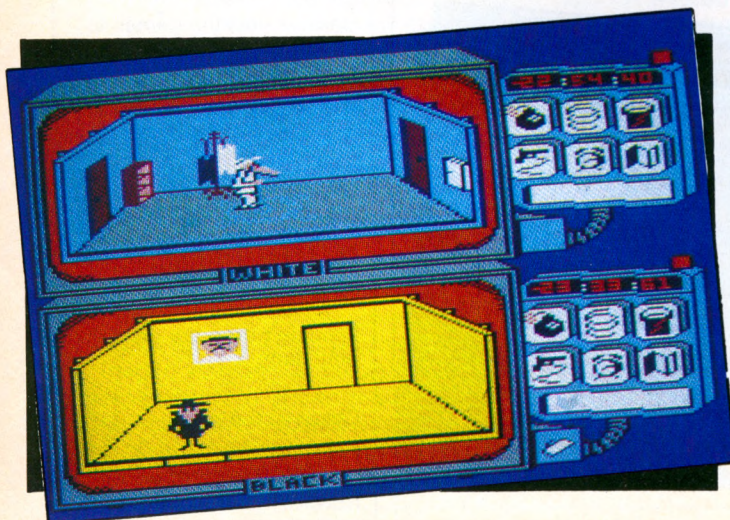
and sawing a hole in the ice can cause even more problems for your unwitting adversary.

Movement in the Arctic is always difficult, and you need to keep a constant eye on your body temperature. As soon as the cold begins to bite, you need to rush inside the nearest igloo and stand by the fire until your temperature rises to the required level.

Once you've located all the required objects, you can board the escape rocket and leave the Arctic forever.

As compilations go, this one offers little variety. However, Spy vs Spy is an excellent game with good graphics and plenty of puzzles to solve. The split screen display makes the two-player option the best way to play it.

Steve Lucas



**Presentation 82%**  
 Plenty of options.

**Graphics 85%**  
 Later games better than the first.

**Sound 70%**  
 Good effects, pity about the music.

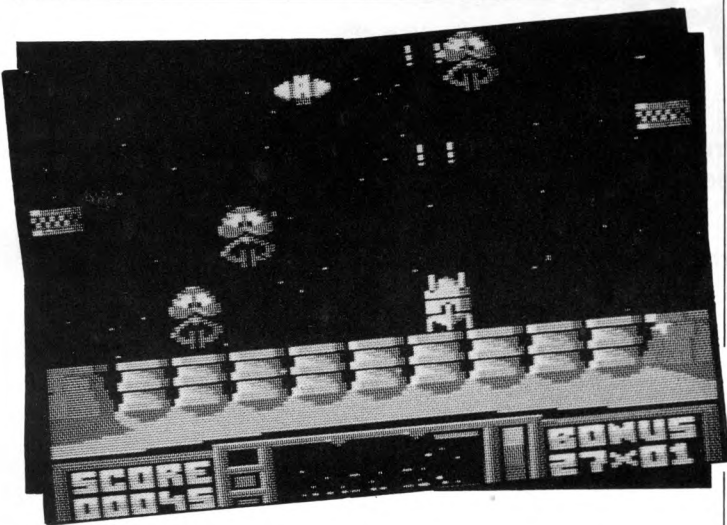
**Playability 90%**  
 Plenty to do.

**Addictiveness 87%**  
 Should keep you busy.

**Value 95%**  
 Three games for the price of one.

**Overall 92%**  
 Keep on spying!

## SPINDRONE



**Atlantis**  
**£1.99 (tape)**  
**Joystick or**  
**keys**

**Y**OU have been left to guard vital plutonium stocks on the recently colonised planet Fungii 7. The evil Kermatoids are intent on plundering the plutonium, and your only defence is the highly manoeuvrable battle droid known as Spindrone.

You can move the Spindrone up, down, left and right, but it suffers from inertia. It's intentional, I know, but it doesn't make for what I'd call a highly manoeuvrable craft, and it gives the game a sluggish feel.

The Kermatoids float down slowly and put out grappling claws to pick up the plutonium, leaving giant toadstools in its place.

The Spindrone blows up if it comes into contact with a Kermatoid. Once they land you can only watch as they lift off with the ore which, unfortunately, protects them from being zapped.

The Spindrone slides between three screens, and a radar display at the bottom shows where you and the Kermatoids are. The screens wrap, so as you slide off the left one you appear on the right one.

Just to make things more difficult, to move from screen to screen you must move under or over a rising and falling platform.

Lots of other alien types appear as you progress. They don't pinch your plutonium but they sure get in the way, and tend to work as bodyguards for

the grapplers. As the screen doesn't scroll, it's quite possible to move slap bang into an alien or a falling rock.

Rockets appear, too, running horizontally across the landscape so you can't play the game by simply scrambling back and forth along the bottom of the screen.

As you are protecting one screen the Kermatoids are stealing ore from the others. It's definitely a no-win situation and the object of the game is to keep them at bay for as long as you can. You get bonus points at the end of each attack phase.

Spindrone doesn't exactly have the breathtaking excitement you may look for in a shoot-'em-up, and it's just another variation on a theme. If you're a fan of the genre, take a look at it. Otherwise I'd give it a miss.

Ian Waugh

**Presentation 65%**

High score only. No user-definable keys.

**Graphics 80%**

Big, clear and chunky.

**Sound 25%**

Just a sickening pulsating drone and unexciting zaps.

**Playability 45%**

I'm not a fan of inertial movement.

**Addictiveness 45%**

Doesn't particularly have any.

**Value 50%**

A budget game at a budget price.

**Overall 50%**

Magnificent in its mediocrity.

## BAD CAT

**US Gold**  
**£9.95 (tape)**  
**£14.95 (disc)**  
**Joystick only**

**I**S this an alternative to the Alternative World Games? The action takes place in Los Angeles during preparations for the 1984 Olympics, only you're not preparing for the competition, you're trying to get from one side of the city to the other. And you're a cat.

The instructions are a poor translation from the German but the introduction gives a flavour of what's to come: "...an exciting adventure in the sewage systems of the city and a duel in the local pub". Sounds like just another Saturday night out.

You control Bad Cat. He can walk, jump, and turn somersaults. There are four levels separated by an interlude. The first level is the city, and the obstacles are pools of water to jump over, trestles to swing through and crawl under, trampolines to jump on, and a large ball to roll across.

Then comes the interlude. Here you get a bird's eye view of the city. BC is on a motorbike and you must get him to the flashing red square while avoiding the cops. The detail is so tiny it'll take most of the allotted time to find the square.

Level 2 is the arena. BC is standing on two large bumpers floating in a swimming pool. Above him is a board across which circles, triangles and boxes scroll. You must make him jump from bumper to bumper, and punch out the

symbols while avoiding a dunking. I got rather bored with this after a while.

Level 3 is similar to the first, only the scenario is the sewer and the obstacles are different.

Finally BC is in the pub where he faces a bulldog. The object here is to throw bowls at each other.

If either is hit they must go to the bar and drink a pint of beer. Of course, the drinker you get the bowler you throw.

The nice thing about Bad Cat is that it moves relentlessly on. If you fail at any stage, you are not sent back to square one.

Each level loads from tape, and the events within the levels load separately. So if you're tape based, there's quite a lot of waiting.

Ian Waugh

**Presentation 80%**

The Germanglish instructions add to the charm.

**Graphics 85%**

Nice backgrounds, cat, and animation.

**Sound 10%**

A few FX, no music. Boo!

**Playability 85%**

Fairly easy, and with a little practice you'll soon be an expert.

**Addictiveness 65%**

Light hearted, but not one you'll come back to.

**Value 70%**

It's not budget, and the content isn't exactly heavyweight.

**Overall 70%**

Different!



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## LEE ENFIELD IN AN AMAZON ADVENTURE

**Infogrames**  
**£9.95 (tape)**  
**£14.95 (disc)**  
**Joystick/keys**  
**or keys**

**T**HIS is the third in the Time Troubleshooter series, and sees our hero – Lee Enfield – in a bit of a fix at the foot of the Andes cordillera. His sworn

enemy, the Yellow Shadow, has captured Lee's best friend Bill, and is holding him to ransom deep in the forbidden forest.

Armed with a knife, a few sticks of dynamite, and a thermal magneto detector, you set out into the jungle to find the treasure and rescue poor old Bill.

Not only will you encounter the fiendish henchmen on your travels, but you will also need to fend off many strange creatures

deep in this weird landscape.

Most enemies can be disposed of with a quick blow, but in case of emergency throwing a stick of lighted dynamite can be most effective. Unfortunately, the number of sticks is limited, so you need to be absolutely sure it's needed.

On the other hand, the thermal magneto detector is powered by solar energy, so you need to come out of the temple from time to time to recharge it.

Keyboard control is possible, but you are stuck with the cursor keys which are not the most convenient ones to use. A joystick is much better, although you still need to use the keyboard to chuck the dynamite.

When you do decide to fight it out, you need to press the fire button at the same time as using the joystick to thrust your knife in the right direction.

The screen is split into four main sections – the playing area, detector screen, status, and a picture of Lee Enfield. A red dot in the detector screen indicates the position of an enemy in relation to your current position. It's a shame that

so much space is taken up with the expression on Lee's face, leaving a comparatively small playing area. Despite this, movement from screen to screen is fast and smooth, and the sprites bright and colourful.

With good sound effects and excellent control, this game offers a challenge to keep you out of mischief for many hours.

**Steve Lucas**



### **Presentation 65%**

No extra features.

### **Graphics 72%**

Pity the action doesn't fill the screen.

### **Sound 82%**

Good FX and a reasonable tune.

### **Playability 85%**

Fast responsive action.

### **Addictiveness 72%**

You need plenty of patience to get there.

### **Value 75%**

Better than average.

### **Overall 78%**

A fast-action combat game.

## DEMON'S REVENGE

**Firebird**  
**£1.99 (tape)**  
**Keyboard only**

**T**HE originally-named Merlin Jnr. is a clumsy so and so. His master leaves him in charge for a few days, and then he goes and knocks over four innocent-looking jars letting out the four talismans of Troder the demon.

Now evil powers are up to no good in the castle, and only

with your help can Merlin Jnr. retrieve all of the talismans before his master returns. If he doesn't, well, he could even lose his job! I'm quite sure you wouldn't want that to happen now, would you?

The action takes place in a dungeon. There are certain objects lying around which, when placed over different types of furniture, will help reveal where the offending talismans are hidden. Once you

do retrieve them, you must take them to the temples at the top of the dungeon. Having arrived there, you have to find the correct temple for each talisman, and then return to the starting point in order to complete the game.

Many creatures are constantly attacking you, and the only way to destroy them is with fire or water spells found lying around. However, certain enemies can only be killed by one of the spells, the other has no effect.

The controls are a bit fiddly to use at first, as there are quite a lot, but after a while it gets easier. Once you have them mastered, the game is a delight.

Graphically, Demon's Revenge is pretty good. Colour has been cleverly used with a 3D effect, and the sprites move at a tremendous speed.

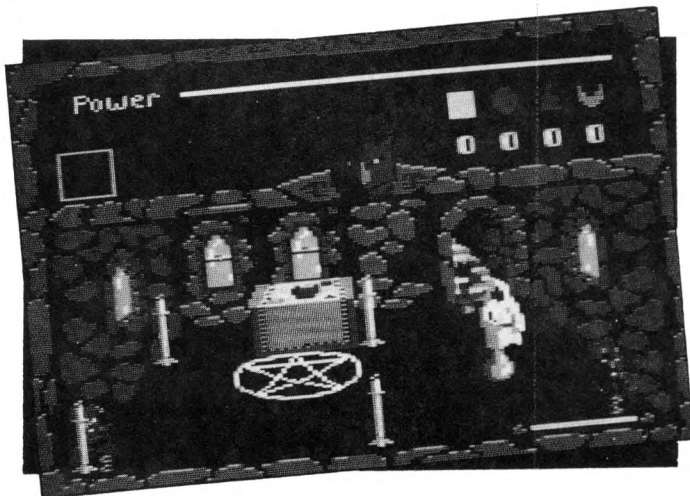
Occasionally the spells are difficult to direct because of the style of the graphics, but, as with the controls, it all gets easier with practise.

A short burst of music accompanies the title screen, but that's it as far as the tunes go. A

few jingles while playing the game wouldn't have hurt, as the effects are rather dull.

For a budget title Demon's Revenge is great. The idea may not be the most imaginative ever, but it's good clean fun! Highly recommended.

**Dennis Hemmings**



### **Presentation 75%**

Good instructions and an impressive array of options

### **Graphics 80%**

Nicely coloured and detailed.

### **Sound 40%**

A distinct lack of in-game music.

### **Playability 70%**

Explore and blast everything in sight

### **Addictiveness: 75%**

Just one more go, please!

### **Value 80%**

A low price for what you get.

### **Overall 80%**

There isn't a good reason why you shouldn't buy it!

## SHANGHAI KARATE

**Players**  
**£1.99 (tape)**  
**Joystick only**

**T**ELL us a story, honourable grandfather, the children ask. And so begins the old Japanese sailor's tale of how the evil Wang Chen, a disgraced former pupil of the Changchun Karate Academy, broke in with his warriors and killed all the masters and pupils – except Lo Yin who escaped with the sacred karate scrolls which he was studying at the time.

If the members of the academy were so good, how come they let a disgraced pupil kill them all, that's what I want to know, and what's a Japanese sailor doing telling a Chinese story?

The game follows Lo Yin on his journey to Shanghai, where he eventually gives the scrolls to his friend Derek who takes them to Slough. How's that for an atmosphere killer?

The action takes place in four locations on Lo Yin's journey. The first is by the Great Wall, the second is in the forest by the banks of the Yangtze, the third is in the Loyang caves – complete with giant spider – and the fourth is in the Dragon temple.

You can kill your opponents by karateing them to death or, in the Great Wall scenario for example, by pushing them off the wall. Two dragon scrolls at the top of the screen record the energy level of the two fighters and when you die you sort of teleport up into space.

The eight joystick directions correspond to six movements, and with the fire button pressed

produce seven kicks and punches. It's easy enough to move and punch in the desired direction but a little thought is needed in order to perform a specific block or kick.

If you want to duff over a friend, there's two-player mode – the second player uses the keyboard – which in many ways offers a fairer challenge although you can't progress through the game.

Shanghai Karate is an accomplished effort, but it does smack slightly of a budget production – which of course it is. Still it's definitely worth a look whether or not you're a karate fan.

Ian Waugh

### Presentation 80%

Practice mode, lots of speed and level options, plus hi-score table.

### Graphics 80%

Static backgrounds but pretty. Good characters.

### Sound 40%

No music but zap-'em-up sounds to accompany kicks.

### Playability 70%

The controls take a little getting used to.

### Addictiveness 55%

It held my attention, but I wouldn't rush a sweet and sour chicken with fried rice to play it.

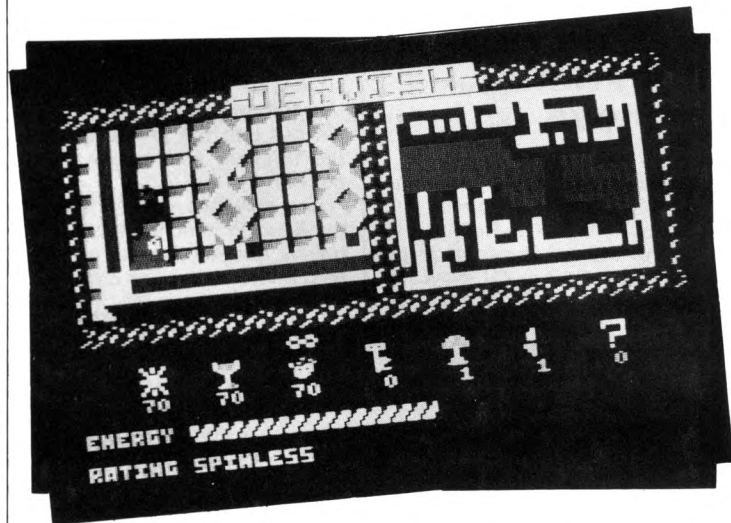
### Value 75%

Just another karate game, but at a nice price.

### Overall 68%

Not outstanding, but a good little game.

## DERVISH



**Power House**  
**£1.99 (tape)**  
**Joystick or keys**

**T**HE Dervish way of life is heavily based on magic, and, as one of the wizards of the community, you must travel through the eight levels of awareness in order to reach the upward path.

You are going to need all your skills and mystic powers to succeed – as well as the patience to master the controls.

When first loaded Dervish gave that déjà vu feeling. Its so much like Druid that its quite unnerving. You even have a totally useless chap following you constantly hindering your progress.

As you explore the bland landscape you have many different weapons and spells at your disposal to help prevent evil demons attacking you. These spells include bolts of light and water, Chi, and Fugue, the effects of which can only be discovered by casting them. There are also many objects to be found which are essential to completing your quest.

Various diamond-shaped houses will help you replenish your limited spells. A counter moves randomly below your weapons, and you have to select your chosen supply before time runs out.

The graphics are pretty awful – the scrolling is flickery, and on numerous occasions part of the screen moves seconds after another.

Bland colouring only results

in a bad headache and spots before the eyes, and the maps are a joke, although I didn't laugh.

The only half-decent pictures are the icons, but even they aren't that much better.

The music on the title screen is prehistoric and the in-game sound effects wouldn't be missed. The worst part of Dervish, though, is its playability. No game should be easy, but this one takes the idea a little too far and frustration soon sets in.

The instructions don't help at all, and they don't even explain the role of the chap who is following you around like a lost sheep.

However, more instructions would not have helped much, as this Power House game has about as much power as a deflated balloon.

Dennis Hemmings

### Presentation 20%

Poorly designed, useless instructions.

### Graphics 25%

Awful sprites and appalling scrolling.

### Sound 20%

Not what you would normally expect from an Amstrad game.

### Playability 30%

Pretty dire.

### Addictiveness 25%

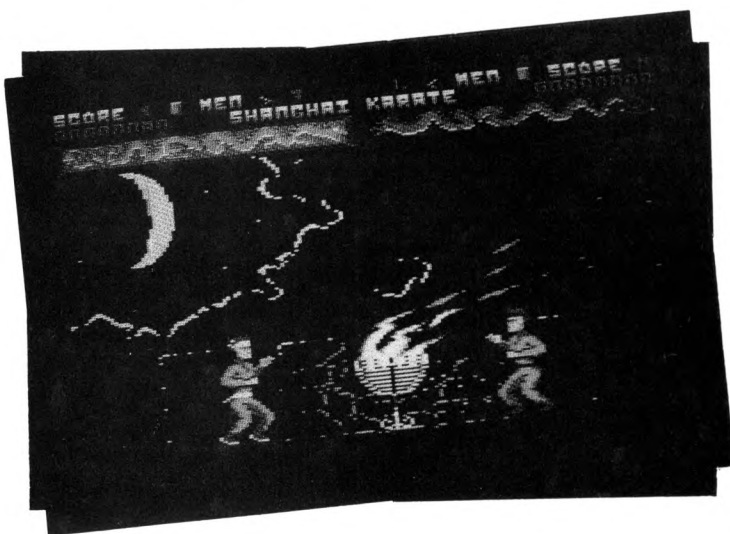
One play will be too many.

### Value 25%

Even at such a low price it's not worth it!

### Overall 20%

Power House poops out.



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## TOP 10 COLLECTION

### Elite £9.99 (tape) Joystick and keys

**C**AN you expect a package costing just under a tenner and containing 10 games to be anything more than a cheap gimmick? The answer to this question came as a pleasant surprise.

**Saboteur** follows the exploits of a highly skilled ninja who has been hired to infiltrate the rebel headquarters. Arriving by rubber dinghy, he must penetrate the underground complex and locate a computer disc. With this in his possession he can make his escape by helicopter.

The well-animated character has to kick, punch and stab his way past rebel guards, leap over dogs, and avoid ceiling-mounted laser guns.

This same format is used as the basis for **Saboteur 2** where

the ninja's sister is out to avenge the killing of her brother who was fatally wounded during the first mission.

Soaring silently above the complex, a sleek feminine form hangs precariously beneath a high tech hang glider. Calculating her trajectory, she releases her grip and plummets Earthwards.

Human opponents have now been replaced by robotic guards who are heavily armed and incredibly resilient. Excellent programming, and even more difficult than the original.

**Critical Mass** is not particularly impressive. It is a two-colour high-resolution game based on frantic attempts to wrest a power station from the grip of alien invaders. Several of the animation sequences are well done, but the action is sluggish and soon becomes boring.

Seated at the controls of the world's most powerful helicopter - **Airwolf** - you must locate

and rescue five kidnapped scientists. Unfortunately for you, they have been incarcerated in a labyrinth far beneath the Arizona desert.

Not only is **Airwolf** visually pretty, it is one of the most testing games I have played. The vertical and horizontal corridors are often no wider than **Airwolf** itself. Only the most skilful pilots will penetrate more than a few screens into the hideout.

**Sigma Seven** is in three parts. The first is an alien shoot-'em-up set in deep space. Stage two involves guiding a robot around a Pacman-type maze.

Somewhere within the maze is a pattern of permanent dots. Memorise this pattern, for in stage three you are required to recreate it on a control panel. **Sigma** is a good blend of traditional and original ideas.

**Deep Strike** is a World War One air combat simulator. You have been assigned to escort a bomber as it flies over enemy territory on its way to take out a

series of fuel dumps. Flying behind the other aircraft, you must pick off the fighters before they can do too much damage. Excellent 3D graphics and lots of action make this game a joy to play.

Staying with the flying theme, **Elite** has included **Combat Lynx**, the popular helicopter warfare program. Skimming at high speed over mountainous countryside, you flit from base to base, fighting off enemy attacks.

The ability to select from a choice of six different types of weapon makes you a formidable opponent. The graphics are pretty basic, but they don't detract too much from the action.

The instructions that accompany **Turbo Esprit** do an excellent job of whetting your appetite. Here is an ideal opportunity to play **Miami Vice** for real, screaming through the city streets at up to 150mph, running drug smugglers off the road, or just gunning them

## PINK PANTHER

### Gremlin £9.99 (tape) £14.99 (disc) Joystick only

**I**N the latest release from Gremlin - courtesy of Magic Bytes - you take on the role of the Pink Panther, and as usual you are skint.

After much thought you decide to get a job as a butler in a mansion, the idea being to

relieve your rich employers of their belongings while they are asleep. Hopefully after five such escapades you can go on holiday in the South and recuperate from all the hard work. Don't forget your old enemy Inspector Clouseau. He's been after you for years and this time he is determined to make an arrest.

On loading there's a menu giving three choices: Go to the market, take a job, or retire to the sun - funds allowing.

The game consists of five



levels, each one a different house. To work your way up to the richest you need to improve your appearance. This you do by first going to the market and finding out the price of a top hat. Then you apply for a job.

After an interview with your prospective boss you take the job. Next a pleasantly bright and colourful screen depicting two floors of a house appears, and these well-drawn backgrounds scroll evenly as you walk through.

The sprites are an excellent rendition of the cartoon characters, and the animation is very smooth.

Unfortunately your employer sleep walks, and in order to

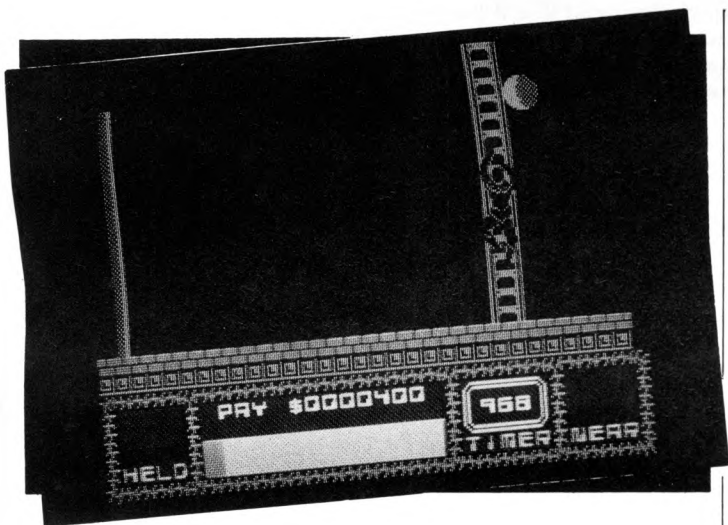
liberate his valuables you must guide him safely round the premises. If you allow the old boy to collide with walls or furniture, he will wake up and so uncover your plot.

Provided you can prevent this happening, and either outwit or avoid the bungling Inspector Clouseau, you can amass enough loot to buy the top hat.

Keeping your employer asleep involves standing in his way and pushing him, or ringing a bell to attract him in a safe direction.

After exploring the ground floor you guide your sleeping friend upstairs and do the business, which sounds easy but is fiendishly frustrating. Under the





down! Alas it was not to be. At full speed the car appears to be doing about 30mph, response to the controls is terrible, and I have never heard such puny sound effects.

Ladders and levels are very

much in evidence in the penultimate game, **Bombjack 2**. The objective is very simple: Collect every item of treasure while avoiding or killing the resident monster population.

You can only jump between

platforms that are horizontally or vertically aligned, and this constraint was put to good use when the screens were being designed.

Bombjack 2 is a strenuous test of both mental and physical agility.

Finally we have the best game in the compilation, **Thantos**, a mystical tale of fire-breathing dragons, witches, knights and princesses.

Flying for many a league, you dodge rockfalls, bomb soldiers, burn down castle gates, and finally rescue the beautiful princess – not bad for a chap with chronic halitosis!

Even though the game is a straightforward conversion from the Spectrum, the graphics are still some of the most impressive I've seen on the Amstrad.

A real sense of power has been programmed into the graceful wing beats of the mighty Thantos – a classic!

The Top Ten Collection is a well-balanced – and mostly

high quality – compilation of programs from the recent and distant past.

Nev Astly

### Presentation 85%

The instructions were bundled together in one large booklet.

### Graphics 80%

A mixed bag, but mostly very good.

### Sound 71%

Nothing outstanding.

### Playability 79%

You'll need sharp reflexes and wits.

### Addictiveness 80%

Enough to keep you playing for months.

### Value 95%

Most definitely!

### Overall 81%

A collection of very playable programs at a ridiculously low price.

playing area is a display showing how tired you are, what you are thinking about, the value of your illgotten assets, and your score.

You can use two modes – game and menu. When menu mode is selected the screen darkens and you are given several options. Be very careful here; your boss still wanders around and quite often I couldn't exit into play mode quickly enough to stop him waking up.

The chosen menu option is shown in a think bubble. You can lay planks or fire catapults to help you direct the boss, or make holes for Clouseau to fall down. Another option is to leave an inflatable panther for the boss to bounce off.

After a successful raid, you can buy the top hat, and price up a set of tails. Taking a job at the next house brings more of the same, and you end up back at the market where you can buy your tails and price a fake reference, and then a car.

With the first four properties successfully visited, and having enough kit to look respectable, you can present yourself at the last house. Take the job there, help yourself to the goodies,

and retire to the sun. Easy, eh?

The game looks deceptively simple, but beware, its one of those that creeps up and grabs you, and then won't let go. I think it's because it's just a pleasant harmless romp, a breath of fresh air in this violent age, rather than a frantic blast 'n' kill.

A couple of things have let the side down. Firstly, the music is abysmal. It isn't as you'd

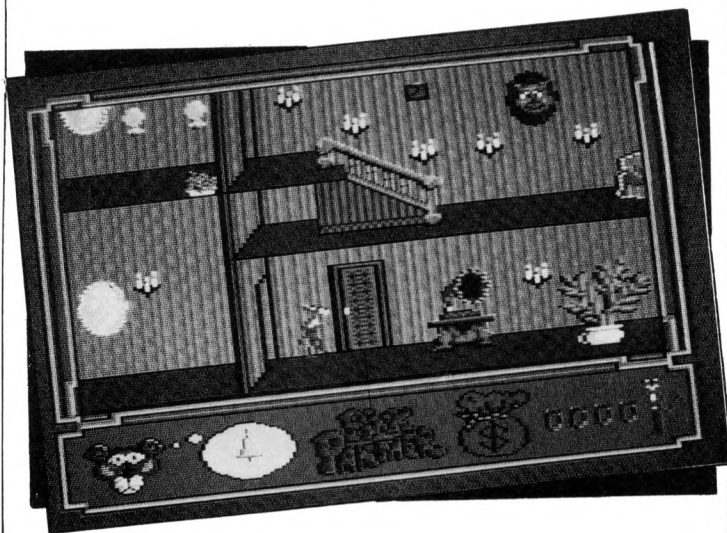
expect – the Pink Panther theme tune – but something totally nondescript and slightly off key.

The other, which is only a niggler, is the controls. The idea of having all the options on the joystick is great, but in this case they caused the problems I've already mentioned in connection with quickly getting from menu to play mode.

It seems an odd scenario for a game, after all burglary is

against the law, but all said I found Pink Panther great fun to play, and I would recommend it to anybody. Well done Magic Bytes and Gremlin.

Dave Manning



### Presentation 90%

A really nice game, a real pleasure to play.

### Graphics 95%

Excellent use of colour, well drawn, plus good scrolling.

### Sound 40%

What a shame about the music.

### Playability 80%

Very easy to get into and very rewarding when you crack a problem.

### Addictiveness 85%

If you want to lose the world for a few hours/days, dive into this.

### Value 80%

I would have liked a few more levels, but it's still well worth the outlay.

### Overall 90%

A great game – pleasing on the eye and nice gameplay.

# 10 LINERS

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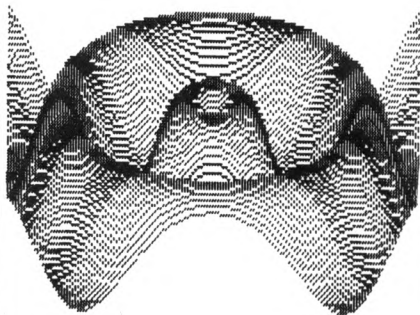
THE accent is on fast reflexes this month with two reaction testers. Graphics aren't forgotten, and you'll be amazed at Waves.

If YOU would like to contribute to this section, write to the above address. But remember to send a self addressed envelope if you want your tape or disc returned, and that all submissions must be your own work.

### WAVES by John Carpenter

**£10  
WINNER**

THIS interesting graphics routine is quite fast considering the amount of work it has to do. Note how hidden lines are removed even though the drawing proceeds from back to front, and try altering some of the variables to see different effects.



```
10 DEG:MODE 1:ORIGIN 150,100:BORDER 0
:INK 0,0:INK 1,26:INK 2,2:INK 3,15
20 DEFINT a-z:DEFREAL s:cx=150:yc=125
30 DIM s(360):FOR i=0 TO 360:s(i)=SIN
(i):NEXT
40 FOR x=0 TO 150 STEP 2
50 m=-1000:x2=(x-cx)^2
60 FOR y=0 TO 250 STEP 2
70 a=40*(8*SQR(x2+(y-yc)^2)/2)MOD 3
60)+y/2
80 IF a>m THEN PLOT x,a,((y/16) MOD 3
)+1:PLOT 300-x,a:m=a
90 NEXT y,x
```

### Reaction tester by Sue Howe

**£5  
WINNER**

HAVE you seen those reaction testing machines in transport cabs where you have to stop a coin from dropping to the bottom? Well here's a 10-line implementation.

To get an instant rating press the spacebar as soon as the penny starts to drop. Sue seems to think a bit of flattery gets past the editor. How right you are, Sue.

```
10 DEFINT a-z:a$="" 0"+CHR$(11)
20 MODE 0:WINDOW 2,2,3,25:PAPER 2:PEN
3:CLS
30 FOR i=1 TO 6:READ coment$:LOCATE#1
,6,i*4:PRINT#1,coment$:NEXT
40 DATA Editor,Lightning,Average,Wake
up!,Zzzzz,Brain dead
50 WHILE INKEY$<>"":WEND:FOR i=1 TO 4
000+RND*4000:NEXT
60 IF INKEY$=CHR$(32) THEN 50
70 FOR i=1 TO 23:IF INKEY(47)=0 THEN
80 ELSE PRINT a$;:NEXT
80 PRINT CHR$(7);:FOR i=1 TO 3000:NEX
T:WHILE INKEY$<>"":WEND
90 PRINT"Another go? Y/N"
100 a$=UPPER$(INKEY$):IF a$="Y" THEN
RUN ELSE IF a$<>"N" THEN 100 ELSE MOD
E 2
```

Editor

Lightning

Average

Wake up!

Zzzzz

Brain dead

### Fit to drive? by David Bird

**£5  
WINNER**

WE'RE not sure quite how scientific this one is, but it aims to put a percentage on your reactions. Rather than being a one-off snap test like Sue Howe's, you have to keep the effort up for several minutes.

Use the cursor keys to keep the marker on the moving dot. Try it sober and, assuming you're old enough, after a couple of drinks. You might be surprised how quickly you deteriorate.

```
10 MODE 1:SPEED KEY 3,3:DEFINT a-m,o-
s,u-z:CALL &BC02:PEN 1:PAPER 0:BORDER
0:INK 3,11:t=TIME:x=20:y=12:p=20:q=1
2:d=1:ON BREAK GOSUB 100
20 PEN 3:LOCATE 3,1:PRINT "TIME"181-d
;:sc=INT((d*310-n)/(d*3+1)):sc=ABS(sc
MOD (sc+1)):LOCATE 31,1:PRINT "SCORE
"sc;:LOCATE p+1,q+1:PRINT " ";:d=ABS(
(t-TIME)/300)+1:LOCATE x+1,y+1:PEN 2:
PRINT "*";
30 ik$=INKEY$:IF ik$="" THEN GOTO 40
ELSE IF ik$=CHR$(240) THEN q=q-1 ELSE
IF ik$=CHR$(241) THEN q=q+1 ELSE IF
ik$=CHR$(242) THEN p=p-1 ELSE IF ik$=
CHR$(243) THEN p=p+1
40 p=p MOD 40:q=q MOD 25:IF p<0 THEN
```

```
p=39 ELSE IF q<0 THEN q=24
50 n=n+ABS(p-x+q-y)*4:LOCATE p+1,q+1:
PEN 1:PRINT "+";:IF RND*100>d THEN GO
TO 20 ELSE LOCATE x+1,y+1:PRINT " ";
60 r=RND*13:IF r<4 THEN x=x+1 ELSE IF
r<7 THEN x=x-1 ELSE IF r<10 THEN y=y
+1 ELSE y=y-1
70 x=ABS(x MOD 40):y=ABS(y MOD 25):IF
x<0 THEN x=39 ELSE IF y<0 THEN y=24
80 IF d<180 THEN GOTO 20 ELSE CLS:PRI
NT "You scored";sc;CHR$(8);"%
90 PRINT:PRINT:PRINT "Press any key t
o continue";:FOR x=1 TO 2500:NEXT:WHI
LE INKEY$<>"":WEND:WHILE INKEY$="" :WE
ND:RUN
100 SPEED KEY 20,2:PEN 1:CLS
```

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Only one entry per person which must be on this form or a photocopy. Please return the form to us along with your entry no later than Friday July 8 to:  
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Name \_\_\_\_\_  
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If I am a runner up I would like my prize on (Please tick):  
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 Disc

# Choose yo

**IAN SHARPE**  
tests out  
the latest  
joysticks

**T**HERE is a bewildering array of joysticks on the market, and often you don't get a chance to test your choice before parting with your money. To help you decide we've been putting a collection of killing machines through their paces.

It would be impossible to test every joystick available, so we picked a representative sample. I don't know if we were particularly lucky with our selection, or whether standards have improved a lot recently, but none of the sticks could be described as really bad.

The first thing to emerge was that joysticks are a very personal thing. We all agreed that some were good, but there were others that one person liked but another didn't. So to get a broad opinion four testers took part, all comments are a consensus, and ratings have been averaged.

Table I gives our order of preference, regardless of price. The order is based on personal choice after extensive play testing. This is a highly subjective assessment, so in an attempt to be a bit more scientific we devised some programs to put a figure on aspects of performance. The first two measured how many times we could press the fire button or wiggle the stalk in 10 seconds. The third test recorded how precisely we could control a moving cursor to trace the path of a wavy line.

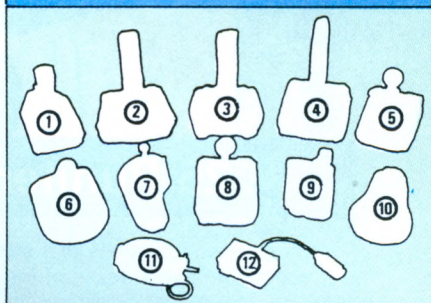
Surprisingly the test results didn't bear much relation to personal preference. We think this is due the fact that the sticks which performed better had greater potential than is required in most games. Also, when playing, a lot depends on comfort and feel, though how you quantify that we don't know.

Another possible reason is that when performing a test the tendency is to concentrate on the stick, whereas in a game you concentrate on the screen and your joystick control becomes less self conscious.

Some sticks come in two versions, with and without autofire. Others are only supplied one way or the other. Have a look at the Autofire panel and Table I for more information.

All the joysticks are operated by either leaf switch or microswitch. There is another type of switch found in joysticks, the sort that looks like a metal bubble. These were quite common at one time, but they are not very robust and none of the sticks had this type fitted.

The leaf variety is a piece of spring steel pushed against a contact, while micro switches are a proper self-contained switch unit. In general micro switches are more expensive,



last longer, and give better feel.

Long term durability is hard to test. Common sense says that a steel-shafted microswitch joystick should last longer than an all-plastic leaf switch one, but in our experience unless you give a stick rough treatment this only shows up after a very long period of use, by which time advances in design might make you want to upgrade anyway.

Of course your final choice would be modified by how much money you want to spend, whether you prefer a hand-held or tabletop model, and your liking for the ball-on-a-stick type or those with a moulded grip.



## Ram Delta

1

Angular styling and gear-lever type stalk distinguish Ram's offering. A rubber bush around the shaft provides just the right amount of resistance and springiness. Precision is very good, and the overall feel is very smooth.

## Cheetah Special

2

Something of a contradiction, this one. Cheetah bills it as a breakthrough in joystick technology. As well as the normal direction and fire controls, the stalk can rotate slightly. Inside is an extra pair of switches which respond to the rotation. For this to work you need a two-joystick adapter to take the second plug.

You also need a game that is specially written to take advantage of the feature (we don't know of any) or at



# ur weapon



least has definable keys. Unless this idea catches on in a big way we can't see software houses writing games so that they aren't playable without this type of stick.

The contradiction is that for a joystick being billed as a break-through there isn't a microswitch in sight. In all other respects it feels like Cheetah's 125+, so you've got to decide whether the twist feature outweighs the otherwise average performance.

## Cheetah 125+

3

A basic leaf switch joystick with working autofire suitable for hand or tabletop. The action is not bad, but put alongside some of the microswitch models it seems a bit limp. If we hadn't tried it alongside other sticks, the 125+ would have made more of an impression. As far as scores went, we were no worse off with this one, and given that it's cheaper than all the

rest is probably the best value for money.

## Cheetah Mach 1+

4

It's hard to define quite why this one feels right. Fundamentally the design

## REVIEW

is the same as many other sticks, but unlike many what happens on the screen matches what you are doing with your hand. We were never left puzzling why the sprite went one way when we meant it to go another. An excellent weapon.

## Competition Pro Extra

5

We didn't have to take this one apart to look at the construction because it's got a sexy see-through case. It is very like the Euromax Professional except for a rubber bung round the stalk to give better response.

The one complaint with the review model (apart from the Amstrad incompatible autofire) was that if pushed hard against the stop, the stalk squeaks against the switch casings. Perhaps the switches aren't mounted with total rigidity, but having used this stick for several months it hasn't given any reliability problems.

## Cruiser

6

Apart from not being coloured black and red, Cruiser's claim to fame is an adjustable collar allowing three stiffness settings. Like the Competition Pro, we found it had a nice firm precise feel and managed some good scores with it. It needs to be fixed to a surface for best results and doesn't make any concessions to hand holding.

## Konix Speedking

7

This is purely a hand-held device which has been carefully designed to fit your mitt. The action is fairly short travel and very precise. You are forced by the shape to hold the base in your left hand, and move the stalk with your right. It's a pity a left-hand version isn't available.

The only other quibble is that for

**Turn to Page 34 ▶**

## Euromax Autofire Interface

12

The CPC does not respond to the autofire option on most joysticks. The exception to this is the Cheetah range. Euromax produces an autofire interface at £3.95 which will allow you to use autofire joysticks with safety, though the rate of fire will be reduced compared to the same stick on a different make of micro.

I say safety because Euromax

tells me that certain autofire joysticks feed 9 volts into the joystick port, and can damage your sound chip. Cheetah, however, says that its joysticks are safe, and has experienced no problems. Euromax says that its interface automatically reduces the voltage to a safe 5v.

In practice most testers didn't use autofire, and its importance is entirely a matter of choice.

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All rom software requires a rom expansion system. Its benefits include zero loading time and maximum memory available for text, data, programs etc. Remember: Utopia and the extra commands of Promerge Plus are not available on disc. Fits CPC 464/664, 6128.

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# New MAXAM rom

## MAXAM 1 $\frac{1}{2}$ – New Release!

At last, due to massive public demand, we have produced an enhanced Maxam ROM especially for Protex users. The editor has been taken out, and you can now assemble your source code simply by typing ASM while it is in Protex's memory. Debugging is now easier with comprehensive diagnostics and the ability to change register contents and resume from breakpoints. Other new features include load/save machine code from Protex/Maxam and extra assembler directives. All the other Maxam features are included.

**rom: £29.95**

## MAXAM

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## MAXAM II (6128, CP/M+)

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some people the base unit is a little on the large side, and the unaccustomed position of the fire button might make your hand ache slightly at first. However after a couple of days you'll find your grip strengthening, and the Speedking then becomes a very efficient tool indeed.

We were very surprised it didn't do better in the speed and precision tests because we got some impressive scores with it.

## Euromax Professional 8

At first this one seems unremarkable, but we all turned in some respectable scores with it. Perhaps it's the hallmark of a good design that you don't have to pay much attention to the stick when you first use it. Of all the models on test, this one felt the most robust, though we can't say if the impression would be borne out after a lot of use.

## Phasor One 9

On the face of it the pistol style is a good idea, and holding it in your hand before tackling a game it feels good. However, after 10 minutes in action we found that the fire button is not well placed for repeated use and we all got sore hands. Eventually your hand might strengthen sufficiently to compensate, but this still leaves another problem: We found that the narrowness of the grip made it easy for the stick to twist slightly in the hand and it was difficult to judge exactly which direction we were pulling the stalk. This often led to the on-screen movement being not what we expected.

## CONCLUSION

Terminator and Phasor One shouldn't be dismissed out of hand because they might suit some people, but do make sure you spend 10 minutes with them before stabbing your piggy bank in the back.

The Cheetah 125+ is well worth considering if money is tight. It has a very light action and can't quite match the feel of microswitch models, but it's cheap, has a working autofire, and is certainly competent.

Whether it's worth paying extra for the Special which has much the same feel is open to question. For the same price you could have one of the micro-switch models. Euromax Elite

TEST RESULTS							
	Shaft speed	Fire speed	Precision	Price	Autofire	Shaft type	Switch type
Konix Speedking	120	46	46	£11.99	N	Steel	M
Cheetah Mach 1+	135	45	51	£14.95	Y	Steel	M+L
Ram Delta	143	60	54	£9.99	Y*	Steel	M
Competition Pro Extra	120	63	55	£16.49	Y*	Steel	M
Cruiser	120	68	63	£9.99	N	Steel	M
Euromax Professional	132	66	65	£15.95	N	Steel	M
				£18.95	Y*		
Euromax Elite	140	67	61	£10.95	N	Steel	M
				£15.95	Y*		
Cheetah 125 Special	142	41	52	£12.99	Y	Plastic	L
Cheetah 125+	139	42	51	£8.95	Y	Plastic	L
Phasor 1	133	49	44	£12.95	N	Steel	M
Terminator	120	47	46	£14.95	N	Steel	M

\* needs Euromax interface for autofire to work

M = Microswitch L = Leafswitch

Table 1: Joysticks in order of preference

## Euromax Elite 10

The unusual shape fitted some hands well while others found it not to their taste. In play the Elite feels quite good and we've had one knocking about in the office for the past year. It is used regularly and has stood up to some heavy punishment.

## Terminator 11

Shaped like a hand grenade, the fire button is a metal strip bearing on a button set in the casing. The stalk is a relatively thin metal rod. After the initial hilarity over its appearance had died down, one person really liked it while the other three gave it the thumbs down. Overall it doesn't feel as good as more conventional sticks, and it is not easy to play well with. Taking into account the price, this is the only one of the bunch we'd definitely avoid.

and Professional, and Cruiser are good reliable pieces of kit, and you won't be disappointed with them. We thought the Competition Pro had a slight edge, but there isn't much in it and you might think differently. The Ram Delta was that bit better again.

For us, though, Cheetah Mach 1+ and Konix Speedking were top of the heap. The choice is down to your preferred type, and how important autofire is to you.

Such is the difference in personal opinion over joysticks, we think it is vital that you try your choice before parting with any money.

## CONTACTS

### Konix Speedking

Konix Computer Products, Units 12-14, Sirhowy Hill Industrial Estate, Tredegar, Gwent NP2 4QZ. Tel: 0495 350101

### Cheetah 125+, 125 Special, Mach 1+

Cheetah Marketing, Norbury House, Norbury Rd., Fairwater, Cardiff CF5 3AS. Tel: 0222 555525

### Ram Delta

Ram Electronics (Fleet), Units 8/15/16 Redfields Industrial Park, Redfield Lane, Church Crookham, Hampshire GU13 0RE. Tel: 0252 850085/31

### Competition Pro Extra

Dynamics Marketing, Coin House, Coin St., Royton, Oldham OL2 6JZ. Tel: 061-626 7222

### Cruiser

Leisuresoft (Powerplay), Unit 2, Roth-ersthorne Ave Trading Estate, Northampton NN4 9JN. Tel: 0262 602541

### Euromax Elite and Professional

Euromax Electronics, Pinfold Lane, Bridlington, North Humberside YO16 5XR. Tel: 0262 602541

### Phasor One

Britannia Software, Unit M28, Cardiff Workshops, Lewis Rd., Cardiff CF1 5EB. Tel: 0222 481135

### Terminator

Robtek, Unit 4, Isleworth Business Complex, St Johns Rd., Isleworth, Middlesex TW7 6NL. Tel: 01-847 4457



# GRADUATING WITH HONOURS

**DAVE DORN** gets a taste for CP/M Plus on chips

**A**S any CPC6128 owner will know, three operating systems are supplied with the machine. The one written by Locomotive software is built in, and comes into operation as soon as you switch on. The other two are CP/M 2.2 and CP/M Plus, which have to be loaded from disc.

CP/M 2.2 is provided mainly for compatibility reasons because it is supplied with the DD1 disc drive for the CPC464, and used to be bundled with the CPC664. CP/M Plus is a later version of CP/M, and is more useful. It takes full advantage of the CPC6128's extra memory and has extra facilities.

If you are a regular CP/M Plus user, loading it from disc is inconvenient in comparison to using an in-built operating system, more so if you often swap between Amsdos and CP/M.

Now Graduate Software has solved that problem. On the basis that you can legally back up your CP/M discs for your own use, it provides a service where it transfers the system to a pair of rom chips. Each rom set is personalised with your name and serial number, and Graduate insists that you send in your system disc before performing the service, which of course is returned to you.

As each of the eproms can hold 16k, and as *c10cpm3.ems* is roughly 24k long, the mathematicians among you will have noticed that there is 8k to spare. At least there would be, had Graduate not extended the system by providing what could best be described as CP/M RSXs and also building in some of the transient commands. But I'm ahead of myself – more of these later.

## The manual

The 24-page A5 CP/M Loader Reference Manual is required reading before you even unpack the roms from their protective wrapping. Thankfully, it is indexed at both ends, and is logically set out, taking you from installation to use in orderly steps. Most of the rom functions are

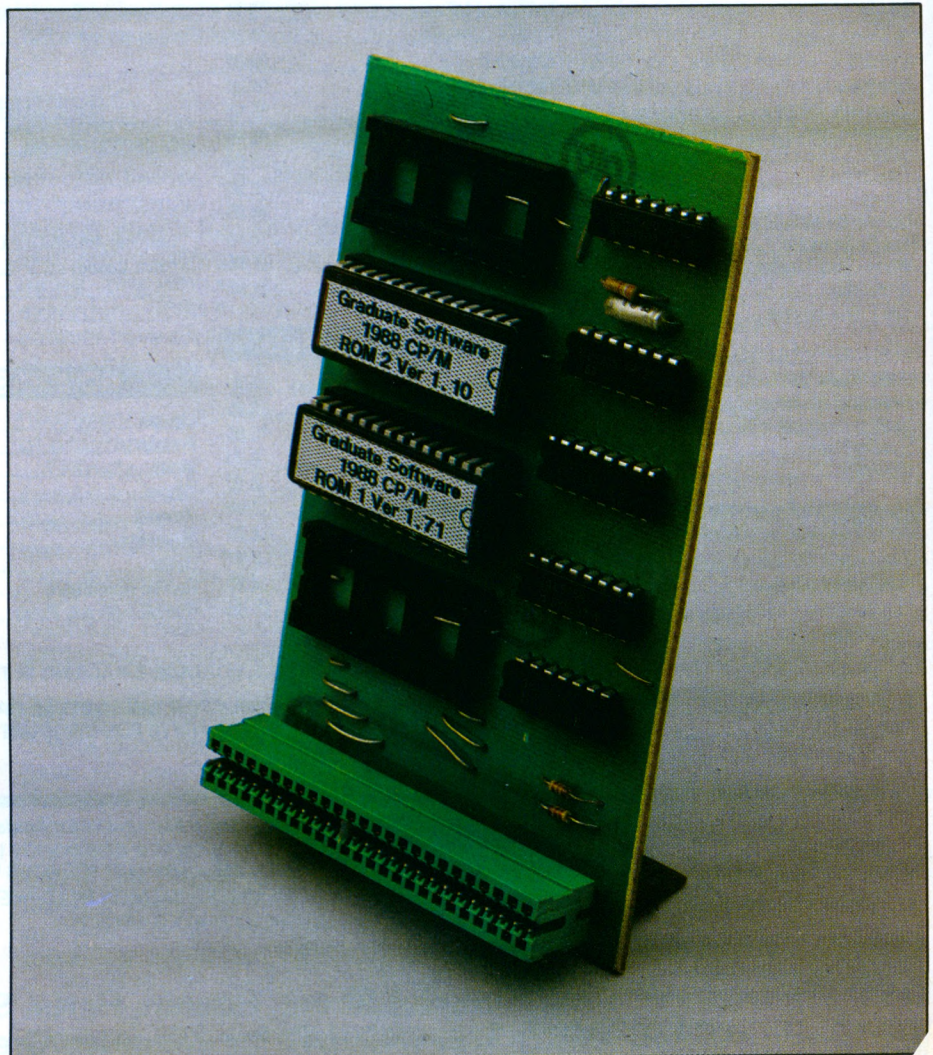
illustrated with sample files/command lines, and these examples are clear and easily understood.

The first job is to install the roms in your rom board. Graduate suggests that it is preferable to have the first rom resident in a slot below the disc rom. CPC464 users without the Britannia rom board and ARCS rom have little choice in this matter, while CPC6128 owners will have to decide for themselves whether to follow this advice. I tried the two roms in a

number of positions, both above and below rom 7, and had no problems initialising and using them.

One pointer though: All roms have an orientation nick at one end to enable you to insert them correctly in the slots. Graduate's labels cover these nicks, but are printed with semi-circles corresponding to them. You should be absolutely certain that you have correctly inserted the two roms

Turn to Page 39 ▶



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## ◀ From Page 37

before you power up, otherwise you run the risk of rendering your roms useless. And don't think that this is impossible to do. A very experienced user of my acquaintance managed to kill one of his roms in exactly this way, and had to seek a replacement from Graduate. (*Don't you dare tell them who!* – Ed.)

On power-up your screen will look a little different from usual. The roms announce themselves by printing your name and changing the background colour to red, followed by the rest of the rom sign-on messages with the usual blue background. CP/M is called by either of the bar commands IEMS or IO, and takes you to the CPM Plus prompt at lightning speed. You will notice that the prompt is now a double-shafted arrow (=>), indicating that the extra CP/M commands are available.

Should you have a *profile.sub* file on disc in the drive, this will be executed as normal, making auto booting applications very simple. A word of caution: Some programs will behave erratically unless the *profile.sub* that calls them is altered to restore CP/M to normal without the extended commands. This is done by including the command CCP (for Console Command Processor). I found it easier to include this in all my *profile.subs* as the last command before the call to the application.

Alternatively, the program you wish to run can be called from Amsdos by using either IEMS or IO followed by the program name. The program can be in either drive and is called by:

```
IEMS,<d>:!<<filename>!
```

where <d> is the drive letter and <filename> is the program call. Note that the plings are required.

Further extended and transient commands built-in include:

**IOP**, which allows conditional entry into CP/M, and displays a menu of .com files. All you need to do is key the number of the .com file to be run, and the roms take care of the rest. Pressing Escape allows you to change the disc, while pressing it twice returns you to Basic.

**CKEY, NKEY, SKEY**. These can replace the *setkeys.com* and associated *keys.\** files to allow you to define any key on the keyboard in control, normal, and shifted modes. This means that should you so desire, it is possible to do away with *setkeys.com* and save 2k of disc space.

**PALETTE** replaces the CP/M transient of the same name, using the

same parameters – another 1k of disc space saved. An associated command **INK** allows you to supply a pen number and colour required, much as in Basic.

**INVERSE** is self explanatory: It allows printing in inverse characters.

**LANGUAGE** replaces the transient program *language.com*, as does **RENAME** with its ordinary CP/M equivalent.

There are more in the same vein. One major improvement over the CP/M Plus as supplied with the CPC is in the way that these transient commands work. In every case, Graduate has arranged matters so that if a parameter is expected with a command, and it is not present, CP/M will prompt for the necessary input.

Users of Arnor's utility rom Utopia will know how easy extended Amsdos commands become when used in this fashion, and the same applies here. It becomes possible to include **PALETTE** in a *profile.sub*, and be prompted for the colours you wish to use.

This is something that I particularly appreciate, as being colour blind certain colour combinations can be almost illegible to me while being perfect for most other people.

### In use

I had a few reservations about CP/M on rom before the Graduate CP/M dropped through my letter box, mostly about transient commands and auto booting applications. After using the roms with just about everything CP/M that I have, my reservations have disappeared. One gripe I always had with CP/M was the incessant file shuffling that seemed to be necessary to achieve painless running of programs.

Transferring the .ems file to a system format disc, and then copying files from a master disc on to the work disc, constructing a *profile.sub*, and then creating an Amsdos Basic program called *disc.bas* had become a necessary chore. As you can probably gather, *disc.bas* consists of one line:

```
10 ICPM
```

With Graduate CP/M Plus installed, I have no need to do anything other than back up the program and construct the relevant *profile.sub*. Using the in-built menu produced by IOP makes life simpler too, especially if, like me, you sometimes let your files get jumbled up and forget to label discs.

The ability to redefine keys simply and quickly is also an unexpected bonus, the CP/M version being a little long winded, and, to me, less than

mnemonic. Graduate has also included some Basic RSXs in a little corner of the roms, although they are likely to be of limited use. IVER or ICPMVER prints the version number of the roms to the screen, and I MYNAME outputs the registered user's name.

Neither of these two commands are likely to change the face of computing as we know it, but I PASSWORD and its associated I PW might do a little to increase the security of your Basic programs if you don't want anyone else to use them. Each rom set has a unique password built in, which can be incorporated into Basic programs.

If some unauthorised user is trying to gain access to a program so protected, he has but three attempts to get the password right before the program aborts. Using I PW at different points throughout the program causes an abort if the **password?** prompt has not been correctly answered earlier. I don't have a use for such refinements, being to programming what Mrs Thatcher is to Socialism, but they may be of use to you.

No, it is the extensions that Graduate has incorporated into CP/M Plus and the vast increase in loading speed that make it so very useful. There are still little backwaters of the roms that I have yet to explore fully, but even so, I am loth to return them to their rightful owner.

If you are a regular user of CP/M Plus, you will soon find Graduate's version indispensable. If you aren't, and you get the chance to see how much simpler these roms make using CP/M, I think you will soon be converted.

My one reservation would be the price for the CPC owner without a rom board, particularly CPC464 owners. Combined Precision Components at present ask £16 for the CP/M Plus system discs – a fair price – but to pay £30–£40 for a rom board, and then £24.95 for the roms may not appeal to everyone. Having said that, I still consider Graduate CPM Plus to be so useful to the serious CP/M user as to be worth paying that bit extra. Well done Graduate – top of the class!

Product: CP/M Plus on rom  
Price: £24.95  
Supplier: Graduate Software, 19 Everest Road, Fishponds, Bristol.

#### POINTS FOR

- Greatly increased convenience.
- Extra facilities.
- Frees disc space.

#### AND AGAINST

- Expensive if you haven't got a rom board.

# HOUSE CALL

# Better by

# Design Design

ROBIN NIXON visits an established software house with a new name

**G**RAHAM Stafford and David Llewellyn created Crystal Software six years ago, later renamed it Design Design, and now are making a further name change to Walking Circles.

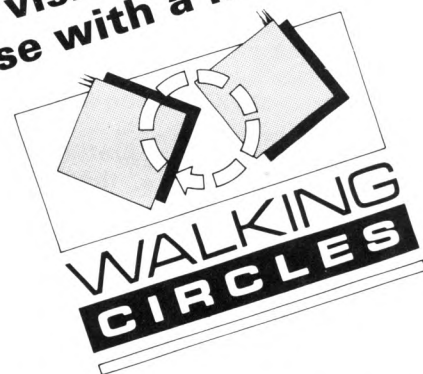
I recently visited Walking Circles to find out why the company has decided to change its name again and to see what Graham and David are working on at the moment. I must say that I ended up really walking in circles as I tried to find the office, which is an old mill shared with a wool company in the heart of Bury.

I must have gone round the building three times before I spotted a long piece of wire hanging down from a window with a piece of paper behind it which advised: *Design Design. Please*

*connect the wires together to ring the bell. Aha I thought, the first sign of a high-tech software house.*

Apparently the bell had been ripped off by someone who either spends his time collecting doorbells, or perhaps had his pinched in the first place. Whatever, once inside I found a clean smart office and a friendly group of people.

The directors explained some of the



company's background. It all started at university. Graham was studying electronic engineering and David computer science when they discovered that four of their friends had produced games for the ZX81. They were so impressed with them they decided to publish the programs under the name Crystal Software for a bit of fun. However, Crystal became so successful that the business began to take over from their university courses.

Crystal Software's first big break came in 1983 at a trade fair at Earl's Court, when Microdealer became the first of many distributors to take on its products. This gave Graham and David a chance to spend more time on the programming side, so as well as writing games for the Sinclair computers, Crystal wrote a powerful assembler for the Commodore 64 called Zeus which sold exceptionally well.

When the CPC464 came out most of Crystal's titles were converted for it, and since then the Amstrad has been one of the company's major formats. Games for the CPC to date include Dark Star, On The Run, 2112 AD, Nexor, Nosferatu, Kat Trap, and Living Daylights written for Domark.

The name Design Design was chosen mainly because they liked its



Graham Stafford and David Llewellyn



sound, but also to coincide with the release of Dark Star. It has since become synonymous with high quality software, so why change again?

### A new name?

Graham and David recently decided that they enjoy the software production side so much they would rather concentrate on that, and leave marketing the finished products to other people. The main way they have been doing this is to subcontract for companies such as Telecomsoft, Sinclair, Gargoyle, Pirhana and Domark.

They felt they needed to give the company a public profile more closely connected with their work as software developers. So in conjunction with their PR company, Inter-mediate, they started looking for a new name and logo.

I was shown a list of dozens of names which had been considered, all of which had been scrubbed out. According to Graham, all the good names had already been used so the only choice was to opt for something "a bit off the wall".

Their artist eventually came up with Walking Circles and told them he was convinced that was the name they were after. At first Graham and David thought he was going round the bend until he explained what a walking circle is – the shape the edge of a cube makes while it's rolling – hence the unusual logo.

### Budget software

Following our recent House Call to Codemasters and Softek I asked Graham about his opinions on budget software, bearing in mind that about 70 per cent of all games sold for the CPC at the moment is on budget labels.

David and Graham agreed that the main difference between budget and full-priced software is in the research and polish that goes into them. Due to the constraint of having a lower profit margin, budget games must be written in a shorter time – typically five or six weeks, and in some cases (as Graham can vouch) as little as two weeks.

He stresses, however, this is not the case with Walking Circles's conversion of Thrust to the PC, where it has been made virtually identical to the original BBC Micro version.

Walking Circle's products take a



The complete Walking Circles team

minimum of three or four months to complete. Much of this time involves play testing to ensure the product is right. But there is no rigidly defined production method. Generally they prefer to create an overview of a project and then bat ideas back and forth giving a creative knock-on effect.

Of course, they can't do this when

as having a larger 90x32 screen and a ram disc to work with.

The artwork is created on an in-house art program, which looked very powerful. I asked them why they didn't sell it. "Well," said Graham, "it's a bit rough at the edges". I've seen commercial software with far rougher edges.

### Top secret

Walking Circles is working on many products at the moment, one of them – being written for Elite – is quite spectacular. More about that when contracts have been finalised.

Competition is very hot between subcontracting companies as they vie for bigger and better jobs, and occasionally this can lead to considerable secrecy.

I can give a brief update on The Sewer which was started off as a competition in *Amtix!*, where the best game design received was to be turned into a marketable product. At *Computing with the Amstrad CPC* we have followed up on the program's development and I can reveal it is reaching completion with several new screens and sprites, and looks very impressive.

The delay was apparently caused by Walking Circles being pressed for time, but the team is now making good headway.

As soon as we have more information on The Sewer and the hush-hush games we'll be bringing you full details.

Unlike buyers of many other micros, most CPC owners considered their purchase carefully before buying

– Graham Stafford

they've been commissioned to produce a specific game such as an arcade conversion, but even so, if they do disagree with any ideas they often manage to compromise by offering a choice of options.

All the software is written on another micro. For instance, the programmers use heavily modified PCWs to write and assemble the source code. Then they port it across to CPCs for testing. This has the advantage of letting them see the game and the source code at the same time, as well

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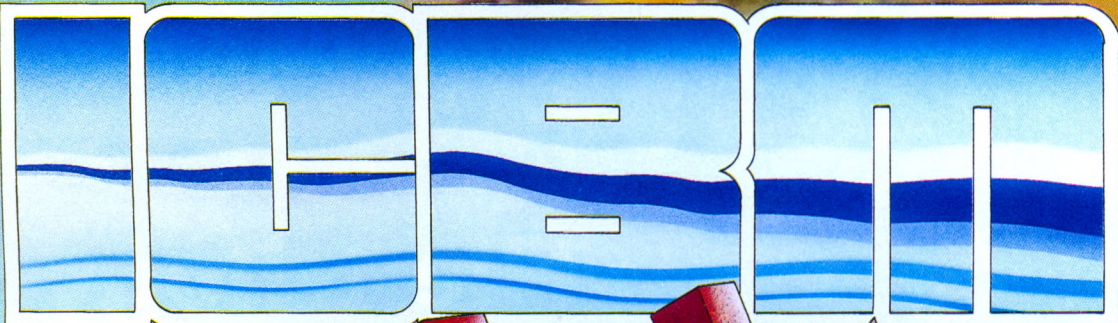


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# ICBM Defender

**THIS game brings a whole new meaning to Baked Alaska and Kentucky Fried. Due to a malfunction in a military computer belonging to an unfriendly country, hordes of intercontinental ballistic missiles (ICBMs) are now winging their way across the Atlantic to the United States and Canada. Your task is to blast them out of orbit before they unleash their warheads. To aid you in your task you**

**have a bi-directional tracking system which scans horizontally and then vertically. If you press the spacebar while the horizontal scan is taking place, its current location is stored and the vertical tracker starts scanning.**

**Pressing the spacebar a second time causes an explosive charge to detonate at the point where the two scanners intersect.**

**You have 18 cities to defend. The ICBMs come in waves of 18, and each wave is made up of progressively faster and deadlier weapons. Good shooting – the fate of America is in your hands!**

**You are the last line of defence as the ICBMs approach. Can you match up to ROBIN NIXON's challenge?**

```

10 REM          ICBM Defender
20 REM          by Robin Nixon
30 REM (c) Computing with the Amstrad
40 REM ----- CPC -----
50 MODE 1:BORDER 6:INK 0,9:INK 1,26:INK
2,24:INK 3,1:DEFINT a-s,u-z:DIM a(18,2),
c$(18),sc(10),sc$(10):FOR j=1 TO 10:sc$(
j)="CwtA - CPC":NEXT:GOTO 660
60 PAPER 0:CLS:name$="":p=0:lv=5:num=18:
city=18:EVERY num*3,3 GOSUB 510
70 DRAW 639,0:DRAW 639,399:DRAW 0,399:DR
AW 0,0
80 PLOT 637,399:DRAW 637,0:PLOT 2,399:DR
AW 2,0
90 MOVE 47,15:DRAW 624,15:DRAW 624,305:D
RAW 47,305:DRAW 47,15
100 WINDOW 4,39,7,24:PAPER 3:CLS:WINDOW
1,40,1,25
110 PEN 3:PAPER 1:LOCATE 13,2:PRINT " IC
BM DEFENDER "
120 GOSUB 530
130 PEN 1:PAPER 0:LOCATE 2,3:PRINT "SCOR
E"
140 LOCATE 30,3:PEN 2:PRINT "TIME"
150 WINDOW #1,1,40,1,25
160 t=TIME:EVERY 50,2 GOSUB 550
170 RESTORE:FOR j=1 TO 18:a(j,1)=36:a(j,
2)=j:READ c$(j):NEXT:sc=1
180 fire=0:GOSUB 220:PEN 1:PAPER 0:LOCAT
E x+3,5:PRINT " ":LOCATE 2,y+6:PRINT " "
190 IF num=0 AND city>0 THEN GOSUB 560
200 IF city<1 THEN GOTO 600
210 PEN 2:PAPER 3:fire=1:GOSUB 450:FOR j
=1 TO 18:GOSUB 320:NEXT:GOTO 180
220 PEN 1:PAPER 0:done=0:FOR j=1 TO 36:L
OCATE j+3,5:PRINT CHR$(241)
230 PEN 2:PAPER 3:GOSUB 320:PEN 1:PAPER
0
240 ik$=INKEY$:IF ik$=" " THEN done=1:x=
j:j=36:GOTO 260
250 LOCATE j+3,5:PRINT " ":IF num=0 OR ci
ty<1 THEN RETURN
260 NEXT:IF done=0 THEN GOTO 220
270 done=0:FOR j=1 TO 18:LOCATE 2,j+6:PR
INT CHR$(243)
280 PEN 2:PAPER 3:GOSUB 320:PEN 1:PAPER
0
290 ik$=INKEY$:IF ik$=" " THEN done=1:y=
j:j=18:GOTO 310
300 LOCATE 2,j+6:PRINT " ":IF num=0 OR ci
ty<1 THEN RETURN
310 NEXT:IF done=0 THEN GOTO 270 ELSE RE
TURN
320 p=p+1:IF p=19 THEN p=1
330 IF a(p,1)=0 THEN RETURN
340 z=RND*lv:IF z<3 THEN LOCATE a(p,1)+3
,a(p,2)+6:PRINT " "
350 IF a(p,1)=x AND a(p,2)=y AND fire=1
THEN FOR n=1 TO 30:SOUND 2,n*10,2,15,0,0
,4:NEXT:sc=sc+10*(6-lv):GOTO 490
360 IF a(p,1)=1 THEN GOSUB 460:RETURN
370 ON z+1 GOTO 380,400,420,440,440,440
380 IF a(p,2)>1 THEN a(p,2)=a(p,2)-1
390 GOTO 430
400 IF a(p,1)>1 THEN a(p,1)=a(p,1)-1
410 GOTO 430
420 IF a(p,2)<18 THEN a(p,2)=a(p,2)+1
430 LOCATE a(p,1)+3,a(p,2)+6:PRINT CHR$(
247);
440 RETURN
450 FOR n=1 TO 22:LOCATE x+3,y+6:PRINT C
HR$(216+n):NEXT:LOCATE x+3,y+6:PRINT " "
:RETURN
460 FOR n=0 TO 26:INK 0,n:SOUND 4,260-n*
10,2,7,0,0,7:NEXT:INK 0,0:LOCATE 10,4:PE
N 1:PAPER 0:PRINT c$(city);" destroyed!!
":FOR n=1 TO 1500:NEXT:INK 0,9
470 LOCATE 10,4:PRINT STRING$(LEN(c$(cit
y))," ");
480 city=city-1
490 PEN 2:PAPER 3:LOCATE a(p,1)+3,a(p,2)
+6:PRINT " ":a(p,1)=0:num=num-1:EVERY nu
m*3,3 GOSUB 510
500 PEN 1:PAPER 0:GOSUB 530:RETURN

```

Turn to Page 43 ▶

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### ◀ From Page 43

```

510 SOUND 1,num*100,3,15:RETURN
520 DATA Washington,New York,Los Angeles
,Houston,Denver,Boston,Chicago,Miami,Atl
anta,San Francisco,Memphis,Dallas,Disney
world,Detroit,Las Vegas,Montreal,Vancouv
er,Ottawa
530 PEN 2:PAPER 0:LOCATE 2,2:PRINT "CITI
ES";city
540 PEN 3:LOCATE 30,2:PRINT "ICBMs";num:
PEN 2:PAPER 3:RETURN
550 WINDOW SWAP 1,0:PEN 1:PAPER 0:LOCATE
8,3:PRINT sc:LOCATE 35,3:PRINT INT((TIM
E-t)/300):WINDOW SWAP 1,0:sc=sc+1:RETURN
560 sc=sc+city*10*(6-Lv):FOR j=1 TO 18:a
(j,1)=36:a(j,2)=j:num=18:NEXT:GOSUB 530
570 Lv=Lv-1:IF Lv<2 THEN Lv=2
580 EVERY num*3,3 GOSUB 510
590 RETURN
600 dm=REMAIN(1):dm=REMAIN(2):dm=REMAIN
(3):PEN 1:PAPER 3:LOCATE 17,15:PRINT "GAM
E OVER":FOR n=1 TO 5000:NEXT
610 PAPER 0:CLS:PLOT 0,0,1:DRAW 638,0:DR
AW 638,398:DRAW 0,398:DRAW 0,0
    
```

```

620 PEN 3:PAPER 2:LOCATE 8,3:PRINT " ICB
M Defender High Scores "
630 IF sc<sc(10) THEN GOTO 660
640 n=0:FOR j=1 TO 10:IF sc(j)<sc THEN G
OSUB 710:j=10
650 NEXT
660 CLS:PLOT 0,0,1:DRAW 638,0:DRAW 638,3
98:DRAW 0,398:DRAW 0,0:PEN 3:PAPER 2:LOC
ATE 8,3:PRINT " ICBM Defender High Score
s "
670 PAPER 0:FOR j=1 TO 10:LOCATE 7,7+j:P
EN 1:PRINT USING "##";j;PEN 2:PRINT sc
$(j):LOCATE 31,7+j:PEN 3:PRINT sc(j):NEX
T
680 PEN 1:PAPER 3:LOCATE 8,23:PRINT " Pr
ess any key to continue "
690 WHILE INKEY$<>"":WEND
700 WHILE INKEY$="":WEND:GOTO 60
710 PEN 1:PAPER 0:LOCATE 6,6:PRINT "You
have achieved a high score"
720 LOCATE 6,8:PRINT "Please enter your
name:"
730 LOCATE 6,10:INPUT:name$
740 FOR k=10 TO j+1 STEP -1:sc(k)=sc(k-
1):sc$(k)=sc$(k-1):NEXT:sc(j)=sc:sc$(j)=n
ame$:RETURN
    
```

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	= 16512	260	= 33024	510	= 29952
20	= 47296	270	= 59680	520	= 43328
30	= 06560	280	= 09792	530	= 38496
40	= 60544	290	= 23744	540	= 15008
50	= 11872	300	= 36480	550	= 14016
60	= 63008	310	= 33504	560	= 37824
70	= 22528	320	= 54880	570	= 37664
80	= 09184	330	= 49792	580	= 47872
90	= 37920	340	= 03008	590	= 27008
100	= 11040	350	= 34880	600	= 36448
110	= 01184	360	= 46688	610	= 47552
120	= 15392	370	= 65472	620	= 64544
130	= 18016	380	= 08992	630	= 59264
140	= 57952	390	= 28000	640	= 16768
150	= 45504	400	= 60416	650	= 42400
160	= 11456	410	= 28000	660	= 56960
170	= 13344	420	= 35456	670	= 23232
180	= 27936	430	= 14848	680	= 59872
190	= 11104	440	= 27008	690	= 58848
200	= 20480	450	= 43840	700	= 25696
210	= 34272	460	= 55424	710	= 45984
220	= 10528	470	= 59488	720	= 54272
230	= 09792	480	= 15552	730	= 11168
240	= 28000	490	= 07424	740	= 00928
250	= 23072	500	= 05888		

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# Player on the warpath

I HAVE owned my CPC for just over a year. When I first bought it I was most interested in it as a word processor. However, I soon discovered that the Amstrad was the ideal wargames partner, and while saving up for a printer I have investigated the wargames field.

I have managed to build up a varied selection of wargames/simulations. The first one was the budget title *Rebelstar*, an excellent skirmish that presents the player, in the solo mode, with a series of progressively harder options.

There is, as is often pointed out in the pages of computing press, a dearth of material for the serious wargamer. What really annoys me, and I am sure all the other wargamers out there, is the garbage that is sold under the wargame title.

I am thinking of one game in particular, *Convoy Raider*. The review I read classified this arcade romp as a wargame. Either the reviewer was no wargamer or he/she had read a misleading publicity handout.

What is annoying is that on the strength of the review I forked out the best part of £10 for what I can only describe as pure dross. *Desert Fox* is another game that I have seen listed with strategy games. What a mistake!

Recently I read a review of Activision's *Guadalcanal*. The reviewer found it a great disappointment, but despite that I was lucky enough to receive the game as a Christmas gift.

It is, in my humble opinion, one of the best wargames I have played so far. In many respects it's better than *Vulcan*, which is itself brilliant. I do think that there could be some improvements, but any I could offer would merely make a classy offering even better.

What is needed, if it does not already exist, is some kind of organisation

prepared to offer its opinions on those items of software that purport to be of interest to wargamers. Only through such an organisation can terrible mistakes be avoided and many pounds saved. — **David Evans, South Wirral.**

## Changing characters

IN reply to the letter from Alan Lewis in your April issue concerning the use of the second character set in the DMP3160. I have a CPC6128 and DMP3000 which I use with Pocket Protect. I too wanted to change character sets within text files, mainly in order to mix text and graphics.

After a great deal of messing about with the printer control codes I succeeded in changing from Epson FX (the default set) to IBM set 1

and back, and at the same time setting and unsetting the eighth bit by using an embedded control letter.

I found that if I tried it with IBM set 2 I could not unset the eighth bit, and so could not change from graphics back to text.

The control codes are held in the printer set up file EPSON.PTR as follows:

a 27 62/61 (set eighth bit to 1/0).

f 27 109 1/0 (select character table 1/0).

y 27 85 1/0 (select/cancel unidirectional printing, which is better for graphics).

If I want to change from text to graphics, I use Control x-f and Control x-y at the start and end of any graphics section, and then Control x-a immediately before and after any character or characters to be converted to graphics. It works very well. I am not sure why the second IBM set doesn't

perform in the same way. — **Major Mike Beazley R.E. BFPO.**

● Thanks also to Mr. Catton of Gosport who has solved the same problem with his Citizen 120D by using 27 35 instead of 27 61 to switch off eighth bit mode.

## Disc space dilemma

I HAVE written to your magazine before without getting a reply, but this time I really do need your considered advice. I have recently upgraded from a tape driven CPC464 to the CPC6128, and I can't understand the data storage system.

On cassette you can see how much tape (storage space) you have left, and you can see where to start

Turn to Page 48 ►

## A bug in the CPC464

I AM having a problem with a database program I am writing for my CPC464 and disc drive. The problem occurs when I input a name for a file to be loaded from disc into the computer's memory.

If, for example, the name of the file to be loaded is stock, the program stops with the message sstoc not found. As you can see the filename has been changed by repeating the first letter and deleting the last. I have tried different filenames but this rule always holds true. The file is always saved successfully.

I have written the program in different ways to try and pinpoint the problem and also printed the file-

name on the screen after entry to check if I had a faulty keyboard, but this proved not to be the case.

Working on the principle that the disc was corrupted, I have used different discs and also tried the program without the dk'Tronics 64k expansion which I have plugged in. Any suggestions? — **D. Simpson, South Wirral.**

● The reason is a bug in the CPC464, which was fixed on later models. And don't worry, the discs are not being corrupted. When you open a file for input or output HIMEM is automatically lowered to make room for the buffer.

As Basic's strings live just below HIMEM, these have to

be copied down when HIMEM is lowered. The bug is in the routine that does this, and the cure is to fix the location of the buffer before the Basic program gets under way. If you do this the strings never have to be moved. Just add the following lines to the start of the program:

```
10 SYMBOL AFTER 256
15 OPENOUT"dummy"
20 MEMORY HIMEM-1
25 CLOSEOUT
30 SYMBOL AFTER 240
```

You can leave out the SYMBOL AFTER commands if your program doesn't redefine characters less than Ascii value 240.

## ◀ From Page 47

saving more data so as not to overwrite anything already on the cassette.

What I would like explained is, after having saved an initial program on disc how can I make sure that subsequently saved programs will go on after the first and not overwrite the one already there? How do I know how much space I have left for saving more programs?

Perhaps this is an easy problem to understand, but I would like your help to ensure that I do not record over valuable programs. – I.K. Gee, Redhill.

● As we receive literally hundreds of letters every week it is just not possible to provide an individual advice service.

It would take a small army of knowledgeable staff to do it – as it is there are just enough here to write the magazine. We can't guarantee to reply in every case, although we do try to answer as many letters as possible.

When you save a program to disc the CPC automatically puts it in an unused area and it will not overwrite existing programs. If there isn't enough room, it will tell you, so you should always keep a spare disc handy in case you run out of space and don't want to create room by erasing files.

If you want to know in advance if there is enough room, simply type CAT and it tells you how much space is free.

The only other limitation is that you can have a maximum of 64 files on one side of the disc. If you want to find out how big the program in memory is, type:

```
CLEAR  
PRINT HIMEM-FRE(“”)-370
```

## Copies don't work

MANY thanks for the excellent magazine, particu-

## How not to blow your fuse

IN the April issue of Computing with the Amstrad CPC you printed a letter concerning uprating the fuse in colour monitors. For technical reasons the fusing of transformer-fed equipment is a difficult problem to solve. Perhaps a few points would throw some light on the topic:

● The initial current at switch-on depends on the instant in the electrical cycle at which the switch closes.

● The initial surge current depends on the value of the supply voltage at the supply point (how much it is above the nominal 240 volts).

● The degree of magnetic saturation of the transformer core reached during the cycle. This is usually a design function.

● The potential supply fault level at the premises concerned. This will depend on the size of the supply cables to and within the premises, also the proximity of the substation.

● The ability of the fuse to absorb the surge at switch-on without melting. The usual way of overcoming this is by the use of fuses with an increased thermal capacity (slow blow) usually up to 10 times the rated current for 20 milliseconds.

A fuse also provides protection during use by melting due to sustained heating at a lower rate than that experienced at switch-on. Better protection is provided by a thermal breaker but increases cost.

If the fuse blows on switch-on, and if on the occasions it does blow there is often a loud magnetostrictive thump from the transformer, it is quite possible that the fuse has blown due to the heavy switch-on surge and a fuse with a higher rating is indicated.

Also, if an extension cable of a lower current rating such as 2 amps is used to supply the computer, it may increase the impedance of

the supply enough to reduce the initial surge so that the fuse does not blow.

To conclude, it is possible that certain combinations of supply conditions will cause the fuse to blow regularly but the computer is not necessarily faulty.

The calculation of the fuse size would not be easy, and it is more likely that rule of thumb and the experience of the designer will be used for the final choice.

It would be possible to use a thyristor to control the switch-on so that the supply is connected at the maximum voltage in the supply cycle to avoid the current surge. The alternative is to keep changing the fuse, use a bigger one, or use a few yards of cable to supply the computer to act as a current surge limiter.

Fuses are cheap effective protection devices, but do have limits on their effectiveness and reliability. – L. Knight, Neath.

larly Ian Sharpe's latest series of articles on Bankmanager which I am finding most enlightening. I have, however, come across a problem with the Bankmanager program and hope that you can help.

On buying my CPC6128 about a year ago I made copies of my master discs as advised. Now I find that Bankmanager will not load from copied discs, though it will still load from my original master.

I have tried making copies on a number of discs (just to make sure that the disc I was using was not faulty) all to no avail. I am therefore forced to use my master each time I want to run Bankmanager. Help! – T.G. Williams, Stoke-On-Trent.

● This is very strange, as there should be no problems running Bankmanager from copies of the system discs. A possible cause is that you are copying files

rather than the complete disc, or perhaps erasing files you don't think you need.

Bankmanager is in two parts – bankman.bas and bankman.bin. Make sure they are both on the copied disc.

## Printer port dump bug

WITH reference to the review of the KDS 8 bit printer port by Ian Sharpe in your February issue, when I run the program I find that in line 180 the K is rejected, and the program reports Data exhausted in 80.

I have typed the program three times and checked each listing with a printout. Can you help? My computer is a CPC464. – Arthur H. Neal, Leicester.

● The problem is a due to a bug in CPC464 Basic. It was sorted out on the CPC6128

which was the machine used to develop and test the screen dump. The weird effects are due to the  $\bar{z}$  (bar) in the REM statement in line 180. Simply remove the offending character and all will be well.

## Taping

I HAVE an Amstrad CPC6128 and have been trying for a long time to fathom out how to copy on to tape games that I have typed from your magazine. I have the right cassette recorder and lead, as I can play cassette-based games.

Have you any suggestions? – Sue Halliday, Stroud.

● Load the listing from disc. After typing I TAPE, and SAVE "filename" you will get a message saying Press REC and PLAY then any key.

You should then set the



tape recorder to Record, and press one of the letter keys on the CPC's keyboard.

The tape recorder should now start up and record the program. If it doesn't record at all, it is likely that you either have the wrong lead or it is plugged into the wrong socket, or it isn't compatible with your recorder.

There is also a possibility that either the recorder or the CPC is faulty.

If you can hear the recorded program when you play the tape back, but it won't load, it is probably too quiet and again will probably be a compatibility problem.

If there is more than one input socket, for instance MIC and LINE IN, try them both. Trying with another cassette recorder may help to pinpoint the source of the trouble.

## £10 Prize letter

### More on Pixelator

HAVING typed in Robin Nixon's Pixelator from the March issue I was pleasantly surprised – what a great program, just what I need for designing sprites, I thought.

The editor was a dream to use (he still is – Ed) making sprite designing almost enjoyable. A few hours and a screen full of work later I saved the screen to disc.

However, when I tried to load the file into Basic for

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The address is: Postbag, Computing with the Amstrad, Europa House, Adlington Park, Adlington, Macclesfield SK10 4NP.

further editing, all I got was a File type error. I suspect this is due to the method being used to write data to tape/disc being incompatible with the format Basic is looking for.

This problem, however, is easily overcome. All that is required is to do the following:

- Set HIMEM to &3FFF (MEMORY &3FFF).
- Load and call the Pixelator code.
- Once your screen is finished press Escape to return to Basic.
- Type in, run, and call the routine (CALL &A000) created by the program below.

```
10 FOR a=0 TO 10:READ b:
POKE &A000+a,b:NEXT
20 DATA &01,&00,&40,&60,
&69,&11,&00,&C0,&ED,&B0,&C9
```

The previously designed screen should now be visible. Step one protects the backup screen held at &4000 in memory, and basically all the routine does is to copy this into the screen memory at &C000. It performs an

LDIR instruction with BC=16384 bytes, source HL=&4000, destination DE=&C000, if anyone is interested.

Incidentally, the code is relocatable and can be POKEd into any free address. I hope this helps other readers who have experienced any similar problems.

I know this is becoming a bit of a cliché but your magazine is brilliant – keep up the good work. – Gary Thomson, Glasgow.

● Thanks very much for the tip. By the way, you had the third item of data as &04.

No, it isn't a cliché, just music to the editorial ear.

### A different brush

WE have read the review on Easidraw in the March issue and we wish to clarify the paragraph which states:

Metrotec also does an Easiart program for artists, so there can't be much

doubt as to Easidraw's function.

We would like to point out that Easiart is not written by Metrotec, but our company Microdraw Ltd. Metrotec, as well as other companies, buy the product from us on a trade basis. – Mrs J. Garrod, Microdraw Ltd, Maidstone.

### The sound of silence

I'VE had my CPC464 and a copy of Computing with the Amstrad CPC for about a week. I was sorry to hear about the death of James Wilson, the talented Code Masters artist, as most of my games are from this company.

I have a problem: The headphone socket at the back of the computer does not work. Do I need special headphones, or is the socket broken?

I am 11 years old and would like a pen pal who has a CPC464 and who can help me know more about the computer, and exchange hints and tips. – M. Randomski, 51 Westbound Road, Upton, Torquay Devon. TQ1 4JT

● No, the headphone socket is not broken. In fact it isn't a headphone socket at all, because it doesn't put out enough power to drive a pair of headphones. It is intended that you feed the output from the socket into an amplifier such as a hi-fi unit or tape recorder.

If you haven't got one, our sister company Database Electronics markets a headphone adapter called Sound Master which comes complete with headphones for £14.99 including postage.

If you want to spend more money than that, Siren Software, which advertises regularly in this magazine, does a similar device known as the Sound Blaster which also outputs to a pair of speakers supplied with the adapter.

It costs £31.99 including postage.

### Supershift and CP/M

I HAVE typed in and run the Supershift utility in the April 1988 issue, but I can't seem to get it working. I've just tried running the program then booting up Prottext and also creating an EXEC file, but when I am in command mode I always get Unknown Command when I type SON or ISON.

I have version 2.16 of

Prottext, and I am wondering if the utility works with this? – Roy Harding, Huddersfield.

● Your version of Prottext is the one that runs under CP/M Plus. Supershift was written to work with versions that run under the CPC's built-in operating system.

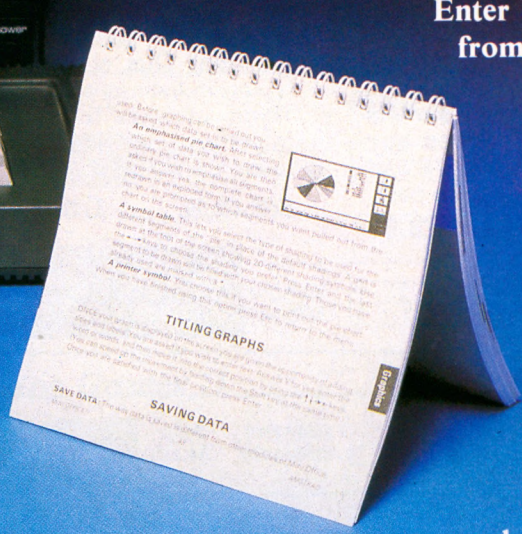
When you boot up the

other operating system that comes with your Amstrad – CP/M Plus – everything previously in memory is wiped out, including Supershift.

So we're afraid the answer is no, Supershift doesn't work with your version of Prottext. Our apologies for not making it clear in the article.



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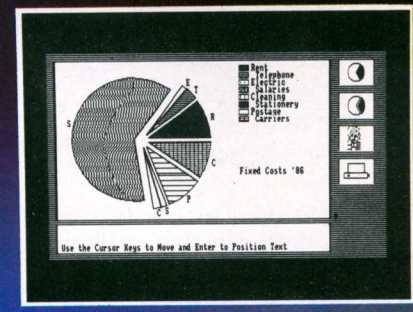


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*****
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5: Pullman Reservations
6: Steam Excursions
7: Electric Express - Newsletter
8: Timetable and fares from May 12th

M Hb for HELP
1-9 Redisplay @cort
Select 1
```

## that can't be matched!

*Here's what some independent reviewers say about Mini Office II: Menus throughout the program were abundant and well structured, allowing complex choices to be made with hardly a glance at the pocket-sized spiral-bound manual, and offering a wealth of user-defined functions... For the money it really is unbeatable. Dedicated word processors, spreadsheets and comms packages may offer some extra facilities, but some are so full of whistles and bells you may find yourself forever in the manual or even not using half of their power. What you get with Mini Office II is a valiant attempt to provide an all-embracing small business package at a down to earth price; it fulfills all its promises, and there's nothing cut-rate about the facilities it provides. – Tubelink/Viewfax 258*

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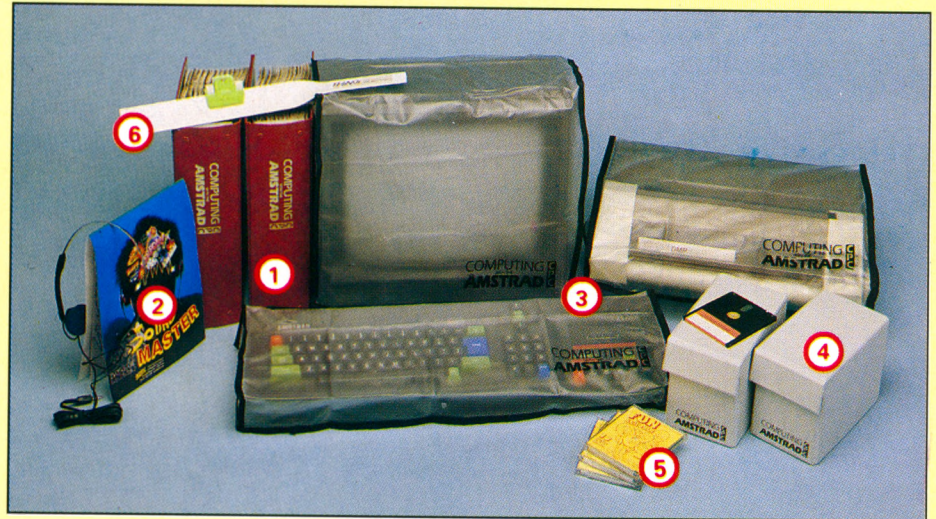
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*The puzzles are delightfully well constructed and obtusely logical... Guild of Thieves must surely steal the title of best graphics adventure. I'm very impressed.*

**– Gandalf, Computing with the Amstrad CPC, January 1988**

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**L**AST month's utilities toolbox went down so well that I decided to do another. Rather than providing one utility, I'm giving you three which wouldn't merit features individually, but are useful enough to deserve an airing.

## Basic line mover

When writing a Basic program you should aim to structure it so that the main functions each have their own well-defined section of program, clearly labelled with a REM comment.

However, a lot of people cobble programs together without much planning and the result is a morass of GOTOs, few REMs, and is impossible to follow – even for the programmer. Such programs are known in the trade as spaghetti Basic, and the culprits are unlikely to produce anything worthwhile.

If you catch yourself in the act of creating spaghetti Basic, never fear, these days it can be treated. Program 1 enables you to move Basic lines to another part of the program. With it you can restructure your work without laboriously moving lines manually.

Run it before starting a programming session, and whenever you want to move a chunk of program, use this command:

```
ILMOVE,first,last,before
```

The parameters *first* and *last* denote the first and last line numbers of the block of lines to be moved. These will be taken out and inserted before the line number specified by *before*. Here's an example:

```
10 REM part of a program
20 PRINT"Hello"
30 a=a+1
40 PRINT"there"
50 PRINT"world"
60 PRINT a
```

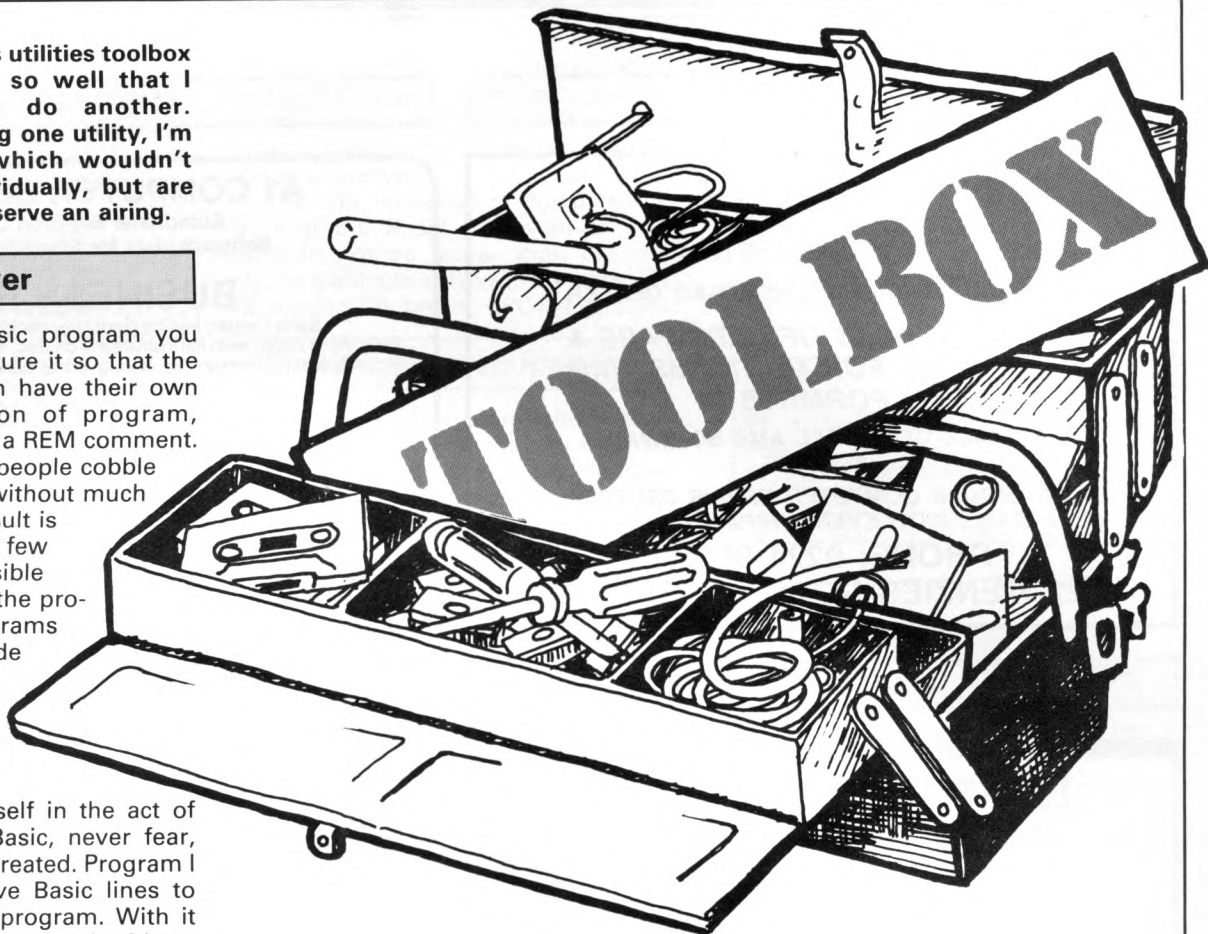
```
ILMOVE,40,50,30
```

LIST

```
10 REM part of a program
20 PRINT"Hello"
40 PRINT"there"
50 PRINT"world"
30 a=a+1
50 PRINT a
```

RENUM

As you can see, lines 40 to 50 have



## IAN SHARPE presents another selection of useful routines

been slotted in before line 30, giving the program a more logical layout. In this example we could have achieved the same effect by moving a single line like this:

```
ILMOVE,30,30,60
```

But what do we do when we want to move some lines right to the end of the program? In other words, to the place where there is no line which can be specified as *before*. The obvious way is like this:

```
10 REM line 10
20 REM line 20
30 REM line 30
```

```
ILMOVE,20,30,10
```

Instead of taking line 10 to the end, we're moving the rest of the program to before line 10, relocating two lines instead of one.

There is, however, a disadvantage to this method which is well to be aware of before sending me irate let-

ters. One way of writing a utility like this is to copy the lines to be moved into a buffer, slide the section of Basic between the source and destination along to fill the gap, and finally copy the moved lines from the buffer to the hole created by move. This way is quick, but assumes enough memory is available to use as a buffer, which might not always be the case.

The method I chose was to move the lines a byte at a time, sliding the intervening section along one byte every time a byte is copied. In this way no buffer is used, as the byte taken out in each step is stored in a register. The trouble is that if you are copying a lot of lines it is a slow way of doing things.

It's one of those situations where there is a choice between a fast program which uses a lot of memory, or a slow one which needs a minimal amount of space.

Imagine you had a Basic program with line numbers 10 to 3000 in incre-

**Turn to Page 57** ▶

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## ◀ From Page 55

ments of 10. It's a 10k program, and you want to move lines 10-50 right to the end. Your first thought might be to do this:

```
1 MOVE,60,3000,10
```

For every character in lines 60-3000, a byte is taken out, 10k of program is moved up a byte, and the taken character inserted in its new position. This is repeated over 10,000 times. Even in machine code this is a lot of work to do, and takes long enough to make you think the micro has crashed. A better idea is to put a dummy line at the end:

```
3010 :
```

and do the move like this:

```
1 MOVE,10,60,3010
```

which is a lot quicker.

## Tasword Basic editor

The Tasword word processor is tremendously popular, and has many thousands of satisfied users. It isn't the slickest word processor around, but many find it simple to use and quite adequate for their needs.

If you save a Basic program as an Ascii file like this:

```
SAVE"name",a
```

it can be loaded into a word processor where the superior facilities make the entry and editing of Basic much easier. The problem with Tasword is that it amputates any Basic line more than 120 characters long. Program II is a utility to solve the problem.

The program is in two parts. The first option on the menu (Split) takes an Ascii file, and any line longer than 79 characters is split into separate lines. The processed file is saved as *temp* on tape or disc, and may be loaded into Tasword – or any other word processor with the same problem – for editing. The file should be resaved as *temp* afterwards.

The second option (Join) takes a *temp* file and rejoins split lines, resaving a file whose name you will be asked for. This can now be loaded and run as a normal Basic program.

In order to achieve the feat of splitting lines and knowing which ones to join at a later date, the program needs to leave markers at appropriate places. When you load *temp* you will see an underline character at the start of lines *not* to be rejoined.

I chose the underline character because it rarely, if ever, crops up in

Basic listings. Even if it does, you'd be unlucky to find it at the start of a line when it has been split up, and you can always modify the splitter to use some other character.

The only limitation of this program is that the Basic you want to edit should not be larger than the file space available in Tasword. I think this is around 12k for the CPC464 version.

## Multiface screen loader

We often use Romantic Robot's Multiface 2 for capturing screens in commercial software and CP/M programs. These can then be reloaded, and either dumped or photographed. Screens saved in this way have the disadvantage that when loaded from Basic as soon as you touch a key the CPC resets, and all is lost. This prevents you doing anything but look at the screens.

If you want to load a Multiface screen and still keep control of your micro, Program III is what you need. It installs a short machine code routine that will load a Multiface screen and return to Basic. You can then do what you like with the screen, such as dumping it to the printer, or resaving it in the normal format so that you can load it without my routine.

When Program III has been run, there is a new RSX:

```
1 MLOAD,@a$,@inks%(0),@md%
```

The variable *a\$* holds the name of the

saved screen on tape or disc. When the screen has been loaded and the routine returns to Basic, the array *inks%* will have the ink values, and *md%* will hold the screen mode. You need to dimension *inks%* beforehand, and *md%* must already exist as well.

Here's an example of how you would load a screen saved as *scn.bin* after Program III has been run:

```
10 MEMORY &3FFF:DIM inks%(15):md%=0
:a$="scn.bin"
20 1 MLOAD,@a$,@inks%(0),@md%:MEMORY
&8FFF
30 CALL &BB18:FOR i=0 TO 15:PRINT "
Ink "i" is inks%(i):NEXT:PRINT mode
is md%
```

You could now resave it like this:

```
SAVE"scn.bin",b,&c000,&4000
```

Which will produce a file on disc which may be reloaded without Program III having been run.

The machine code poked into place by Program III takes the ink values and screen mode out of the loader that is saved along with Multiface screens.

It is just possible that other versions of the Multiface have a different loader, and this will cause the wrong mode and colours to be selected. If this happens, the first thing to do is save the screen as I've described. Then you'll have to take an educated guess at the correct mode and colours before reloading.

### Program I: Basic line mover

```
10 REM Program I - Basic Line Mover
20 REM By Ian C. Sharpe
30 REM (c) Computing with the Amstrad
40 REM ----- CPC -----
50 MEMORY &8FFF:Ln=140:IF PEEK(&9000)
=&C9 THEN END
60 FOR adr=&9000 TO &9139 STEP 13
70 READ byte$:chk=0
80 FOR i=0 TO 12
90 v=VAL("&"+MID$(byte$,i*2+1,2))
100 POKE adr+i,v:chk=chk+v
110 NEXT
120 IF chk<>VAL("&"+RIGHT$(byte$,3))
THEN PRINT"ERROR in LINE":Ln:STOP
130 Ln=Ln+10:NEXT:CALL &9000
140 DATA 3EC9320090010E90214191C3D14EF
150 DATA BC1390C319904C4D4F56C500FE5CC
160 DATA 03C21A9147FD213991DD5E00DD5B7
170 DATA 5601FDE5CDF390FDE1CA1A91FD8D9
180 DATA 7500FD7401DD23DD23FD23FD23627
190 DATA 10E0ED5B3B91AFED522A3B91ED6D5
200 DATA 5B3D913808EB223B91ED533D91550
210 DATA E55E2356E1192B223B91ED5B39550
220 DATA 911BED533991AF4FED52CA1A91668F
230 DATA CB012A3991ED5B3D91AFED52CB68F
240 DATA 013E03B9CA1A912A3B91ED5B3D4EB
250 DATA 91AFED52234D442A3991ED5B3D5AC
260 DATA 91AFED523821223F912A3D91ED5AF
270 DATA 5B39917EE5D5C55D5423ED4B3F66D
280 DATA 91EDB0C1D1E1120B78B120EAC97BA
```

```
290 DATA 2A3B91ED5B399113ED533991AF5D4
300 DATA ED5223F91ED5B3B912A39911A553
310 DATA C5E5D5ED4B3F916B622BEDB8D17F5
320 DATA E1C1770B78B120EAC9FD2170016AF
330 DATA FD6E00FD66017CB5C8E5FD6E0271A
340 DATA FD6603AFED52E12005FDE5E13C759
350 DATA C9D55D54FD19D118DD212B917E686
360 DATA CB7FF5E67FCD5ABB23F128F3C987E
370 DATA 446F6E27742062652073696C6C477
380 DATA F9000000000000000000000000F9
```

### Program II: Wrapper

```
5 REM Program II
10 REM Basic Line Wrapper
20 REM by Ian C. Sharpe
30 REM (c) Computing with the Amstrad
40 REM ----- CPC -----
50 Lim=HIMEM-256:MEMORY 6999
60 OPENOUT"ldum":MEMORY HIMEM-1:CLOSE
OUT
70 WHILE 1:MODE 2
80 PRINT"S to Split"
90 PRINT"J to Join"
100 WHILE INKEY$<>"":WEND
110 c$="":WHILE c$="" :c$=UPPER$(INKEY
$):WEND
```

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## ◀ From Page 57

```

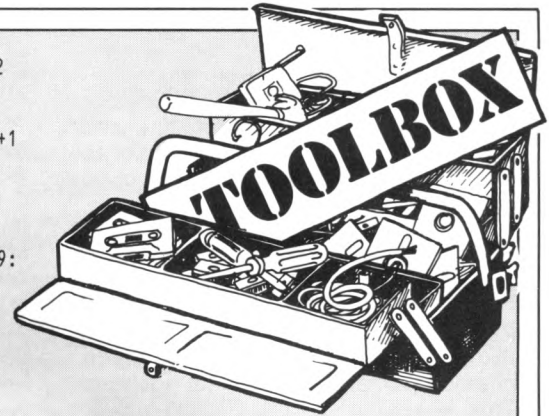
120 c=INSTR("SJ",c$)
130 ON c GOSUB 150,320
140 WEND
150 REM ----- Split -----
160 INPUT"Filename? ",file$
170 OPENIN file$:PRINT"Reading"
180 pt=7000
190 WHILE NOT EOF
200 LINE INPUT#9,a$
210 FOR i=1 TO LEN(a$)
220 POKE pt,ASC(MID$(a$,i,1)):pt=pt+1
230 NEXT:POKE pt,255:pt=pt+1
240 IF pt>lim THEN PRINT"Sorry, not e
nough memory":END
250 WEND:CLOSEIN
260 OPENOUT"temp":PRINT"Writing"
270 PRINT#9,"-";z=1:FOR pt=7000 TO p
t-1
280 a=PEEK(pt):IF a=255 THEN PRINT:PR
INT#9:PRINT#9,"-";z=1:GOTO 300
290 PRINT#9,CHR$(a);:PRINT CHR$(a);:z
=z+1:IF z=80 THEN z=1:PRINT#9
300 NEXT:PRINT#9:CLOSEOUT
310 RETURN
320 REM ----- Join -----
330 INPUT"Filename? ",file$
340 OPENIN"temp":PRINT"Reading"
350 pt=7000
360 WHILE NOT EOF
370 LINE INPUT#9,a$
380 PRINT a$

```

```

390 IF LEFT$(a$,1)="/" THEN POKE pt,2
55:pt=pt+1:a$=RIGHT$(a$,LEN(a$)-1)
400 FOR i=1 TO LEN(a$)
410 POKE pt,ASC(MID$(a$,i,1)):pt=pt+1
420 NEXT
430 WEND:CLOSEIN
440 OPENOUT file$:PRINT"Writing"
450 FOR pt=7000 TO pt-1
460 a=PEEK(pt):IF a=255 THEN PRINT#9:
GOTO 480
470 PRINT#9,CHR$(a);
480 NEXT:PRINT#9
490 CLOSEOUT
500 RETURN

```



### Program III: Screen loader

```

5 REM Program III
10 REM Multiface 2 Screen Loader
20 REM By Ian C. Sharpe
30 REM (c) Computing with the Amstrad
40 REM ----- CPC -----
50 MEMORY 88FFF:ln=140:IF PEEK(&9000)
=&C9 THEN END
60 FOR adr=&9000 TO &90B3 STEP 13
70 READ byte$:chk=0
80 FOR i=0 TO 12
90 v=VAL("&"+MID$(byte$,i*2+1,2))
100 POKE adr+i,v:chk=chk+v
110 NEXT
120 IF chk<>VAL("&"+RIGHT$(byte$,3)) T
HEN PRINT"ERROR in LINE";ln:STOP

```

```

130 ln=ln+10:NEXT:CALL &9000
140 DATA 3EC9320090018690219290C3D15B7
150 DATA BCFE03C0DD5DD6E04DD66054671C
160 DATA 235E23566B621100C0CD77BC214B9
170 DATA 0040CD83BCD7ABC3AD880E6036CA
180 DATA DDE1DDE5DD6E00D66017723366DF
190 DATA 00CD0EBCFD21B780010010DD5E538
200 DATA 02DD5603C5FD7E0021989006204E7
210 DATA BE28032310FA3E209012414F7841E
220 DATA 41D5E5CD32BCE1D113AF1213FD74C
230 DATA 23C10C10D82100401100C0010030B
240 DATA 40EDB0C98B90C30E904D464C4F650
250 DATA 41C40000000000001404151C14E
260 DATA 181D0C050D1606171E001F0E070D8
270 DATA 0F1202131A051B0A03B0038180D8

```

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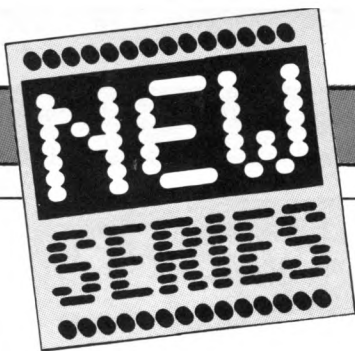
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# LET'S SORT IT ALL OUT . . .

**SIMON MONK and SUE BRADSHAW**  
begin a two-part article on  
sorting data in Basic

**A** COMPUTER program, be it a word processor, database, or game, is about processing data. Often a vital part of the processing is sorting the data into order, and this was one of the first tasks to which computers were put in their early days.

Sorting by computer is well understood, and many methods – or algorithms – have been developed. The majority are refinements of older techniques, but five fundamental types have emerged which have been around for some time now.

It is unlikely that any more will be developed in the near future, unless they appear riding on the back of technological advances like parallel processing as found in the transputer.

We will be showing you how these sorting techniques can be used on your CPC, and how to decide on one for particular circumstances. Even if you have no immediate use for sorting, you should find this an interesting avenue for exploration if you're just getting to grips with Basic

The choice of sorting method depends on three things:

- How much information is to be sorted. Some algorithms work very quickly for a small amount of data, but rapidly get bogged down if more than a few hundred items need to be sorted.

These algorithms are often referred to as *n squared* types because the time they take to sort is related to the square of the number of items. For instance, if 100 items take 1 second to be sorted, 500 items do not take 5 seconds, but 25 seconds.

On the other hand, some algorithms take a relatively long time to sort a few numbers, but do not take a great deal longer to sort many.

- Data already partly in order will make some algorithms perform much faster, but will have little effect on others.

- The amount of work needed to program the algorithm must be considered. There is no point in writing a super-fast 300 line sorting routine to deal with a list of 10 numbers.

Accompanying this article are examples in Basic of the main sorting algorithms. We have tried to make them as general purpose as possible so they can be used in your own programs without too much modification.

If the sort needs to be written in another language, first go through the algorithms by hand and make sure you understand what they are doing.

In this connection we find a pack of cards very useful or, if you like, cut up squares of paper and write a number on each. You can then move them around to follow what is going on.

The examples all assume integers are being sorted into ascending order. To sort strings, change the array to an array of strings, and any variables used to hold an element of the array into string variables. Altering the routines to sort in descending order is not difficult if you can follow how the algorithm works.

To use the programs, first load the test program – Program I – and then merge the sorting routine of your choice. CPC464 owners with disc drives should save the modules as Ascii (use the ,a save option) to avoid a bug in the disc operating system rearing its head.

The test program should be self-explanatory once you run it. It generates a list of random numbers, puts them in the array *a*, and sorts them into order using the chosen method.

One point worth mentioning is that you'll be asked for a random number seed. If you specify the same one with different algorithms, you will get the same list of random numbers. This means you can do valid time comparisons, because the amount of sorting required will be the same in each case.

With different seeds you'll get different lists of random numbers which may be more (or less) out of order, and therefore not be a fair contest.

## Selection sort

This is a very widely-used method. It is quick for a small number of items, easy to program, and easy to understand. This algorithm sorts the data from the left and keeps a marker to show where the sorted part of the data

stops and the unsorted part starts.

1: The unsorted marker is put at the first item of data.

2: The smallest number in the unsorted section is found and exchanged with the first number in the unsorted section.

3: The unsorted marker is moved one step to the right so that it now points to what was the smallest number in the unsorted section.

4: Repeat steps two to four until the unsorted marker points to the last number.

Here's an example:

```
10 3 8 5 9 6
*
```

10 is the first unsorted number, so swap it with the smallest unsorted number which is 3. Then move the marker right one:

```
3 10 8 5 9 6
*
```

Now 5 is the smallest unsorted number so swap it with the first unsorted which is 10. Move the marker right one:

```
3 5 8 10 9 6
*
```

Next swap 6 with 8:

```
3 5 6 10 9 8
*
```

Now 8 with 10:

```
3 5 6 8 9 10
*
```

Now the smallest number in the unsorted section is 9, which is also the first number in the unsorted section. So we swap 9 with 9 which is a bit silly but perfectly possible. We therefore end up with:

```
3 5 6 8 9 10
*
```

Program II is an implementation of the selection sort algorithm. Just

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<i>unsorted:</i>	Marks the edge of the unsorted region
<i>smallest:</i>	Position of smallest unsorted item
<i>i:</i>	Loop counter

Table I: Variables used in selection sort subroutine

## ◀ From Page 59

merge it with the test program and you'll be able to see it in action. To help you see how it relates to the description, Table I lists the variables used and their functions.

## Insertion Sort

This algorithm has the advantage of working more quickly if the data is already partly in order. It is more difficult to program than selection sort, but is quicker even if the data is random.

Like selection sort, the insertion method keeps a marker to show where the unsorted part of the data starts, and works from left to right.

- 1: The smallest number in the data set is swapped with the first number. This is done only once.
- 2: The marker is moved to the second item of data.
- 3: The first unsorted number is inserted into its correct position in the sorted section. This enlarges the sorted section by one, so the marker is moved one place to the right.
- 4: Step three is repeated until the data is sorted.

An example:

10 3 8 5 9 6

10 is swapped with the smallest number (3), and the unsorted marker is placed at the second number:

3 10 8 5 9 6  
\*

10 is inserted in its correct position in the sorted section, which does not involve its moving. However the marker must be moved:

3 10 8 5 9 6  
\*

Now it is the turn of 8 to be inserted. It goes between 3 and 10 so after the marker has been moved we get:

3 8 10 5 9 6  
\*

Next 5 is inserted between 3 and 8:

3 5 8 10 9 6  
\*

Now 9 is inserted between 8 and 10:

3 5 8 9 10 6  
\*

### Program I

```

10 REM Program I
20 REM * TEST FOR SORTING ALGORITHMS *
30 REM by Simon Monk & Sue Bradshaw
40 REM (c) Computing with the Amstrad
50 REM Variables sent to sorting
60 REM subroutine:
70 REM n - Number of items to sort
80 REM a(n) - Array to be sorted
90 PEN 1:PAPER 0:MODE 1
100 INK 0,13:INK 1,0:INK 2,13,3:INK 3,
110
110 DEFINT a:DIM a(10000)
120 WINDOW 1,40,5,24:PAPER 0:PEN 1
130 WINDOW#1,1,40,2,3:PAPER#1,3:PEN#1,
140 WINDOW#2,17,23,25,25:PAPER#2,0:PEN
#2,2
150 CLS:CLS#1
160 INPUT#1,"Items to be sorted (2 to
10000)";n
170 INPUT#1,"Seed for random data set"
;seed
180 RANDOMIZE seed
190 FOR i=1 TO n
200 a(i)=INT(RND*100)
210 NEXT i
220 GOSUB 370:REM display numbers
230 PRINT#2,"Sorting";
240 tstart=TIME
250 GOSUB 1000:REM sorting routine
260 tfinish=TIME
270 PRINT#2,SPACES(7);
280 PRINT
290 PRINT"Time taken (seconds) = ";
300 PRINT USING"#####.##";(tfinish-t
start)/300
310 PRINT
320 GOSUB 370:REM display numbers
330 PRINT
340 PRINT"PRESS ANY KEY TO CONTINUE":P

```

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	= 07808	170	= 34688	330	= 47712
20	= 59936	180	= 04800	340	= 26016
30	= 29728	190	= 12608	350	= 27648
40	= 06560	200	= 16416	360	= 02240
50	= 07136	210	= 01568	370	= 15712
60	= 59648	220	= 00416	380	= 29888
70	= 53920	230	= 11392	390	= 59904
80	= 54976	240	= 38208	400	= 00896
90	= 31488	250	= 50944	410	= 60192
100	= 42240	260	= 22784	420	= 12608
110	= 29120	270	= 34816	430	= 42848
120	= 08608	280	= 47712	440	= 01568
130	= 63104	290	= 03328	450	= 41024
140	= 21376	300	= 01792	460	= 27008
150	= 32320	310	= 47712		
160	= 32352	320	= 00416		

Finally 6 is inserted between 5 and 8:

3 5 6 8 9 10  
\*

Program III is the subroutine to merge with Program I for a demonstration, and Table II lists the variables used.

● So that's two ways of sorting data. Next time we'll have a look at other powerful techniques, and see how the various algorithms compare for speed.

```

RINT
350 a$=INKEY$:IF a$=""THEN 350
360 GOTO 150
370 REM Display the numbers
380 REM if less than 100
390 IF n>100 THEN RETURN
400 PRINT"DO YOU WANT TO SEE THE NUMBE
RS (Y OR N)":PRINT
410 a$=INKEY$:IF a$=""THEN 410 ELSE IF
a$="N" OR a$="n" THEN RETURN
420 FOR i=1 TO n
430 PRINT USING"##";a(i);:PRINT" ";
440 NEXT i
450 PRINT:PRINT
460 RETURN

```

### Program II

```

1000 REM Program II
1010 REM SELECTION SORT
1020 REM
1030 FOR unsorted=1 TO n
1040 REM Find smallest unsorted numbe
r
1050 smallest=unsorted
1060 FOR i=unsorted TO n
1070 IF a(i)<a(smallest) THEN small
est=i
1080 NEXT i
1090 REM Swap first unsorted number w
ith smallest
1100 temp=a(unsorted)
1110 a(unsorted)=a(smallest)
1120 a(smallest)=temp
1130 NEXT unsorted
1140 RETURN

```

### Program III

```

1000 REM Program III
1010 REM INSERTION SORT
1020 REM
1030 REM Find smallest number and swap
it with first
1040 minimum=1E+38
1050 FOR i=1 TO n
1060 IF a(i)<minimum THEN minimum=a(
i):smallest=i
1070 NEXT i
1080 temp=a(1)
1090 a(1)=minimum
1100 a(smallest)=temp
1110 REM ** now do the sorting **
1120 FOR unsorted=3 TO n
1130 elem=a(unsorted):aux=unsorted
1140 WHILE a(aux-1)>elem
1150 a(aux)=a(aux-1):aux=aux-1
1160 WEND
1170 a(aux)=elem
1180 NEXT unsorted
1190 RETURN

```

<i>unsorted:</i>	Marks the edge of the unsorted region.
<i>minimum:</i>	Minimum value in the array.
<i>smallest:</i>	Pointer to the minimum element.
<i>i:</i>	Loop variable.
<i>elem:</i>	Contains an element of the array.
<i>aux:</i>	Auxiliary pointer to the array.
<i>temp:</i>	Temporary variable.

Table II: Variables used in insertion sort subroutine

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