NEW

Home Computing WEEKLY

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INSIDE

Programs to type in for: VIC-20, BBC,

Show reports: London, Hanover

Pages of news

Software reviews for: Atari, Dragon 32 VIC-20, Spectrum, BBC

DRAGON GETS U.S. WARNING

Dragon Data, planning to launch its big-selling computer in America, has been warned by a Tandy boss: You'll be tangling with the big boys.

By the end of June 10,000 Dragon 32s should be with distributors in America, rising to possibly 200,000 a year.

Speaking at the Forth Worth, Texas, headquarters of Tandy Radio Shack, John Shirley, senior vice-president in charge of computer merchandising, said: "They will find it a very difficult and competitive market.

"I'm not saying it can't be done – I'm saying the cost is extremely high. You have to spend millions in TV advertising. Last year 500m dollars was spent in total on television by the major companies."

Tandy's Colour Computer costs 299 dollars for the 16K model, 399 dollars for 16K with extended BASIC and 549 dollars for 32K, also with extended BASIC. The Dragon is about £170 in the UK, without shipping costs this converts to about 249 dollars.

Asked where the export Dragons would be made, marketing director Richard Wadman said: "We would prefer to make it here and ship it to the States. Costings are being done down to the third decimal place."

But he said costs may dictate that the Dragons are made under licence in America with some parts made in Port Talbot to begin with.

Mr Shirley said Dragon would face the might of four big companies: Atari, Radio Shack, Texas Instruments and Commodore. There was also the Spectravision and a new 32K computer from Panasonic to contend with.

He said: "EACA, a Hong

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Help us to get out

There are some reddish faces at Algray Software — an easy adventure game turned out to be not quite so simple.

The program in question is Portals of Evil, a £7.95 cassette for the Colour Genie, written by 22-year-old Paul Barsby.

The player starts in a castle sewer and has to work up through the castle to destroy the wizard on the top floor, freeing a country enslaved by fear for 300 years.

But Algray's Graham Heywood said: "People have been ringing us up and writing to us because they can't get out of the sewer.

"We have found that it may be a little too hard for them. We though it was easy — but we've had three years' experience. it turns ou that what we think is an introductory game is not necessarily."

Now a sealed envelope will be enclosed with the game giving some hints. Here are a couple of tips for the 200 people who have already bought Portals of Evil:

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ARCADIA
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Three mind benders from

Imagine

..the name of the game

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SOFTEK

SOFTWARE

Dragon's Lair and Joust

MONSTERS IN HELL

JUST THREE OF THE AMAZING NEW MACHINE CODE GAMES FROM SOFTEK

FOR THE ZX SPECTRUM

MONSTERS IN HELL

If it wasn't actually a nightmare, then it certainly seemed like one... trapped in Hell with the all - consuming flames below me being chased by vampire monsters through a mad maze of ladders and platforms. But I had Holy Power on my side, and a hammer which could magically create holes - the only way to kill these crazy monsters seemed to be to make them fall to a lower level! But just then, the Mad Monk sent his Ghouls after me... Any ZX Spectrum.

Joust

Its taken America by storm - now its available for your ZX Spectrum! In this amazing new arcade game you ride an ostrich and Joust with the Dark Lords on their buzzards in a fantasy land where anything can happen - and it usually does. You control your mounts wing-flap and direction of flight in this fast and furious game of wits. Any ZX Spectrum - Available very soon!

MILLIPEDE

Milli the Millipede seemed indestructable; as soon as I shot a part of her, the rest of her just kept on coming! But I was faster, she wouldn't get to me... just then Sid the Spider appeared causing me to swerve and lose my aim. And what's this!?? Scorpi the Scorpion dive bombing me with her indestructable fleas which leave more of those blasted mushrooms to spoil my aim! Quite the most delectable version of the arcade favourite for any ZX Spectrum.

Dragon's Lair

I thought it would be easy... explore the Dragon's Lair, find the legendary Crystal of power and be gone before he knew of what was happening. More fool I, for he was there all right waiting for me, and that imp which followed me everywhere with no other seeming purpose than to steal my compass without which I was well and truely lost! The ultimate Maze-Adventure game for the 48K Spectrum.

COSMIC SWARM

OK, I accept that I'm to blame. I was warned against entering the Proxima Centauri Sector without an escort. And now I'm in the midst of a swarm of alien egg-like forms, collision seeming imminent I fire, they break open revealling strange alien types which fly wildly around. I fire again as if my life depended upon it - then two of the forms fuse into a single mutant which chases me! One of the most original shoot-em-up space games to appear. Any ZX Spectrum.

FIREBIRDS

They swoop, they dive, they turn figures of eight. The most amazing Hi-Res shoot-em-up arcade type game to come out in ages! Can you survive? Any ZX Spectrum.

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SOFTWARE SUPERMARKET

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read the book of spells and use the sword on the mesh. But watch out for the giant rat.

Algray has also brought out a really simple adventure game for beginners, Labyrinth of Fear, costing £7.95.

Mr Heywood said: "The hardest part is thinking up names. We were originally going to call it The Deep because you keep falling down through different levels. But we found the name was already being used."

Algray, which also imports Tandy software, is planning to launch programs for the Dragon soon.

Algray Software, 33 Bradbury Street, Barsby, South Yorks S7 6AQ

Join Genie club, says Lowe

As part of a campaign to boost the Colour Genie, importers Lowe Computers started the National Colour Genie Users' Group on Saturday, along with a club magazine called Chewing GUM. The initials stand for Genie Users' Magazine.

Lowe Computers, Chesterfield Road, Bentley Bridge, Matlock Derby DE4 5LE

Glare-free TV screens

Glarego, a new anti-glare kit at £7.95, is claimed to provide a lasting non-reflective surface for TV screens.

Marketed by Vision Products, the kit is two aerosol sprays — one to clean the screen and another to apply the anti-glare surface — A screen mask to stop the sprays spreading and a special lint-free cloth.

Vision Products, Unit 10, Wessex Road, Bourne End, Bucks SL8 5DW

World at your fingers

Several months of research went into writing World Info, a £5 program for the 48K Spectrum, says software house Wimsoft.

The result is a store of information on all the countries of the world, including facts on population, area, head of government and military alliances.

And two more files on the same tape give details on human rights, wars...and disturbances which may break out in the future, says Wimsoft.

Updated frequently, it is said to be useful for sixth-formers, teachers, journalists and others who need to have a background to the news.

As the facts change, the data files can be updated.

The program is a datafile which runs on Campbell Systems' £15 database program Masterfile.

Wimsoft has also brought out a program called Phones which it says will share out the costs of telephone calls among several users and keep track of a single user's calls. It costs £4.50 and runs on both models of the Spectrum. There is also a version for the 16K ZX81.

Wimsoft, 20 Brookside Road, Wimbourne Minster, Dorset BH21 2BL
Campbell Systems, 15 Rous Road, Buckhurst Hill, Essex IG9 6BL

Kit 'cures the wobbles'

Wobbly computer RAM packs can be cured, says Adapt Electronics, with a £7.50 kit called the RAMlock.

Adapt says the kit, costing £8 by post, is suitable for the ZX80 and ZX81 and all popular RAM packs and can be fitted with a soldering iron, but not cutting or drilling.

A Spectrum version would be available soon.

Adapt Electronics, 20 Starling Close, Buckhurst Hill, Essex IG9 5TN.

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Continued from front page

Kong company, never achieved much success with its Model 1 which was similar."

He also pointed out the differences between the Uk and US home computer markets. In America small home micros were sold in chain stores, discount houses and department stores and not in computer shops because "there's no money in it." The specialist computer shops sold machines like Apples and the IBM Personal Computer.

Both men said they knew nothing of rumours that Tandy was planning to go to law over the similarities between the Colour Computer and the Dragon 32. Both machines use Microsoft's extended colour BASIC and the same Motorola chips.

Mr Wadman said: "This is a rumour which has been floating around for a fair while. The company's view is that there is nothing on which to take action.

"We have unofficially spoken to Tandy and they don't know anything about it.

"Electronically they are similar because they have to be, but the design and layout of the board bears no resemblance to the Colour Computer. Apart from the common chip set there is nothing to take action on."

And Mr Shirley said: "I've no knowledge of that."

Mr Gary Pack, of Tandy Radio Shacks's legal department, said: "I think you can appreciate that any time you are considering anything with legal action we cannot comment. These are not things to be discussed in the public domain."

Dragon Data, Kenfig Industrial Estate, Margan, Port Talbot, West Glamorgan SA13 2PE

Tandy Corporation (UK), Tameway Tower, Bridge Street, Walsall, West Midlands

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HCW8

My pick of the crop in America

More new product announcements this week.

For the Commodore 64, Protecto Enterprises sells the following items (and more) direct from the facotry. It offers a word processing package, a database package, and an electronic spreadsheet package for $69 each.

Protecto offers a programmer's helper package for $59, a personal and business accounting package for $49, a programming reference guide for $18.95, and a BASIC tutor and typing tutor for $19.95 each. Additionally, the same firm markets an 80 column board.

It will sell the word processor, data base, and spreadsheet packages together with the 80 column board for $275. They offer a 10-day free trial on their products, will send a free catalogue upon request, offer over 300 programs for the 64, and claim to love their customers.

You can get in contact with them by writing or calling: Protecto Enterprises, P.O. Box 550, Barrington Illinois 60010, (312) 382-5244.

★★★★★

If you own a VIC-20 and need some improvement on your typing skills, try Typing Package, three programs on a cassette — one for warm-up, one for drill, and a third for testing. Reasonably priced, it comes from MFJ Electro Enterprises, Kanata, Ontario, K2K 1X3 Canada. Contact them for costs.

★★★★★

Two new games for the ZX-81 have just been announced. Vault of the Centaurs lines you up against the Centaur Warriors whom you must overcome to obtain fuel for your spaceship.

You then fly your ship through space, reach the gamed Vault, all the while avoiding intersteller obstacles, compute the entrance position, avoid the guard, obtain the treasure, and steal your way home avoiding all the same obstacles. It costs $19.95 on cassette for 16K machines.

Mega-Mind puts you against the computer. The object: six shapes are placed in four positions that must be decoded to form a pattern. You must decode the comptuer's pattern before it decodes your. Available from Orbyte Software, P.O. Box 2686, Waterbury CT 06720.

★★★★★

Tired of having your VIC-20 as a silent partner? Plug in a voice synthesizer based on Vortrax and go. This will allow you to program words and sentences, and enable you to adjust volume and timbre. Offering features normally found on devices costing more than $400, this one costs only $79.00. An optional voice editor ($9.95) is available to make programming easier. This company offers a 15 day trial on this produce. Protecto Enterprises, P.O. Box 550, Barrington, Illinois 60010, (312) 382-5244.

That's all for this week. See you here next Tuesday.

Bud Izen
Fairfield, California.

Invisible program

A Spectrum version of Invisible Man, designed to help children aged seven-13 to learn about co-ordinates and compass points, has been brought out by Chlksoft.

The £5.95 program, originally written for the BBC micro and the VIC-20, draws a cartoon man and hides it in a 10 by 15 grid. The child has to enter co-ordinates to find it.

Chalksoft says the next three programs for the Spectrum will be Inkosi, Metrics and Angle.

It has just also re-worked five VIC-20 tapes so that they can be used with any RAM pack fitted, from 3K to 16K, but not the Super Expander.

A sixth program for the VIC-20, called Decimals, is due out in June.

Chalksoft, Lowmoor Cottage, Tonedale, Wellington, Somerset TA21 0AL

Top Twenty programs for the Spectrum

1	Penetrator	Melbourne House (2)
2	Transylvanian Tower	Richard Shepherd (10)
3	Flight Simulation	Psion (12)
4	Hungry Horace	Psion/M. House (16)
5	Planetoids	Psion (9)
6	Galaxians	Artic (4)
7	Cruising	Sunshine (19)
8	Blind Alley	Sunshine (–)
9	Horace Goes Skiing	Psion/M. House (–)
10	Arcadia	Imagine (5)
11	Mined-Out	Quicksilva (–)
12	VU-3D	Psion (–)
13	Planet of Death	Artic (–)
14	Ground Attack	Silversoft (12)
15	Chess	Psion (11)
16	VU-Calc	Psion (–)
17	3D Tanx	dK'Tronics (–)
18	Space Raiders	Psion (17)
19	Spectral Invaders	Bug Byte (–)
20	Centipede	dK'Tronics (–)

Compiled by W. H. Smith. Figures in brackets are last week's positions

Crossword winner

The winner of the crosword competition in issue No.5 of Home Computing Weekly is Kenneth John Amos, of 112 Great Brays, Harlow, Essex. He will be receiving a £10 cheque. This is his entry

Crude... in both senses of the word

After last week's exclusive disclosure by Home Computing Weekly that "adult" video games were being imported by Silverfox Communications, a storm of outrage and concern has swept through the computer games world.

Unfortunately, at the eye of the storm, there doesn't appear to be very much of substance.

At the time of going to press, a promotional tape made by Silverfox reached us. What follows is an impression of the games based on this detailed recording.

***Knight on the Town**. The basic idea is to build a bridge across a river to "rescue" and be rewarded by a damsel. This is achieved by steering your knight, naked save for a helmet, backwards and forwards with the bridge sections. In doing so, you have to avoid bird droppings, snapping alligators and other crawling bugs. the speed, variety and occurrence of the obstacles increases with each successful bridge crossing. The graphics are hardly above cartoon level and movements tend to be crude in the unsophisticated rather than the obscene sense.*

*To avoid accusations of sexism, another version of the same game is available in which the male/female roles are reversed. This is **Lady in Waiting.***

***Burning Desire**. The player controls a helicopter, from which dangles a naked rescuer, who then has to save another naked woman from the top of the building.*

Other figures hurl missiles from the sidelines. A successful rescue brings up another display, showing a slightly more detailed view of the two figures. There appears to be no other reason for this screen other than titillation. If it works on you, then I would send for the optician.

*The role-reversed game is called **Jungle Fever.***

***Gigolo**. The game play of this cartridge still eludes me even after several viewings of the tape. It appears to consist of steering a woman into different occupied houses for the (by now) usual reason.*

*The male version is **Cathouse Blues** and both seem to be slower versions of Pac-man.*

***Bachelor Party**, and its doppelganger **Bachelorette Party**, are simpler forms of Breakout, where the object is to break through a wall of bricks. The wall in this case is made up of naked males or females according to the game.*

*Last, but not necessarily worst, are **Westward Ho** and **General Retreat**, modified versions of the infamous Custer's Last Stand which caused so much trouble in the States that shops had to remove it from their shelves. Rape is no ionger the name of the game as the lady in question (or general for that matter) is not tied to a stake.*

And so it went on... and on... and on. The graphics in all the cases were uniformly uninteresting, on the level of lavatory wall graffiti.

All in all, not an inspiring collection. Someone, somewhere thought at one time: "Hey, that's a good idea. I bet they'll sell."

For all the wrong reasons, they might. Silverfox's good marketing ploy of making two games available on each cartridge should be copied for other games. But the standard of graphics and the lavatorial sense of humour will pall very quickly.

Chris Sheldon Which Video? magazine

● This space is for you to sound off about the micro scene, to present your bouquets or hurl your brickbats. share your views by sending them to Paul Liptrot, Opinion, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE.

Catch up on what you missed at the fair

There's little razamatazz at shows held by computer clubs. But they do offer enthusiasm and value. Paul Liptrot went to the latest London fair

Shows held by London's computer clubs have managed to retain the flavour of enthusiasm. And the more they look like church hall jumble sales, the more hobbyists enjoy them.

It was the same at the fourth and latest annual show, now moved from its home at North London Poly to the more spacious Central Hall, Westminster.

At the same time, other halls in the building housed an exhibition on the treasures of imperial India and a meeting of women opposed to nuclear weapons.

Barry Goddard, organiser of the show for the Association of London Computer Clubs, said: "We were able to transfer the special club flavour from the poly and maintain the atmosphere."

Seven of the London clubs had stands and there was the ever-popular Computer Junk Shop — a sort of bring and buy for computer users.

Here is a selection of the new products at the show:

James Hutchby, 23, has written a new type of chess program for Oxford Computer Publishing. It is based around a character called The Turk, said to be a mysterious 18th century traveller who journeyed around Europe with a magical automaton which couldn't be beaten.

Mr Hutchby admitted: "I'm not a particularly good player — but machines don't play chess in the same way that humans do."

Chess — The Turk is for the 48K Spectrum and costs £8.95. Managing director Bill Richardson said 15,000 copies had been sold already.

Four new programs for the Commodore 64 — three games and one educational — were launched by ASN. Brain Strain, Squares and Light Bike cost £5.95 each and Necked, at £6.95, is a version of Hangman in French, German, Italian and Spanish with more languages to follow.

Managing director Chris Lee said: "By the end of the month we'll have four more programs for the 64 and we hope to bring out four a month after that."

ASN is also planning utility ROMs for the 64 which will add more features.

Novasoft launched three utilities for the VIC-20 at £5.95. Juggernaut moves the contents of memory from one location to another and allows access to an additional 8K block of memory usually reserved for ROM cartridges. Buccaneer is designed to make back-up copies of software. Novasoft sell both with a warning that copying commercial software is illegal.

Mirage reconfigures the VIC-20 to either a 3.5K or 6.5K machine to avoid the need to keep swopping RAM packs.

Colin Chatfield, head of Micro-Aid, said: "I don't see the computer as a toy only — I see it as a tool to be used."

So his company has produced a £9.15 version of Hangman for the BBC Micro model B in four languages, French, German, Italian and Spanish, plus English antonyms and synonyms and a spare. Each was written by Mr Chatfield, using dictionaries, and has 150 words.

Beebpen is a new word processor on EPROM for the BBC Micro from Braintech. Among its features is a display of 18 lines of 80 characters, single character commands and compatibility with 1.0 and 1.2 operating systems. Beebpen costs £39.10 until June 1 and £44.85 afterwards.

Kempston brought out a new game for the Spectrum called Android One and costing £5.95 and showed its newly-launched Centronics-type interface for the Spectrum, at £45.

Steve Maltz, of Shards Software, said his firm was launching a new range of Family Programs for the Dragon. Each cassette tape would have several programs for £3.95 plus a voucher for 50p off the next buy. The first two are Quiz Pack and Action Pack and the range will include educational programs and utilities.

Fly your own World War One bi-plane, says Opus Supplies, which showed its new Dogfight game, at £6.95, for the BBC model B micro with joysticks. Opus also has a new board for the BBC Micro to add 16K of RAM and 64K of ROM. It costs 34.44, plus the price of the chips — 16K-worth cost about £31.

Add-on company Fuller Micro Systems showed Printerface, a £30 RS232 interface for the Spectrum, and a voice synthesiser called Orator, costing £39.95, also for the Spectrum.

A new name in software, Rainbow, brought out its new Mini Language Aid. You type in English or foreign words and the computer displays them at random for translation. Rainbow says it is useful for exam revision. The program costs £4 for the VIC-20, BBC, ZX81 and Spectrum.

Personal Software Services gave a first public showing to Tai, a two-screen 3D adventure costing £4.95 for the 16K ZX81.

Abbex was showing a new release with a familiar-sounding name — ETX, which costs £5.95 and runs on the Spectrum.

Citadel Products' managing director Vic Cedar says its new 32K RAM pack kit for the Spectrum, at £24, was designed by an ex-Sinclair engineer, takes 10 minutes to build and is better value than the competition.

Haven Hardware showed a Spectrum Soundbooster costing £3.95 as a kit or £5.95 ready built. Speakers have to be added.

Two games for the NewBrain, Space Trader and Miner, were announced at £8.50 by Computasolve, along with a drawing program for the BBC Micro, called Draftmate and costing £9.99.

Where to find them

Oxford Computer Publishing, Brimrod, 4A High Street, Chalfont St Peter, Bucks SL9 9QB
ASN Computer Services, 17 Adelphi Crescent, Hayes Park, Hayes, Middx UB4 8LY
Novasoft, 46 Pheasant Drive, Downley, High Wycombe, Bucks HP13 5JL
Micro-Aid, 25 Forse Street, Praze, Camborne, Cornwall TR14 0JX
Braintech, 81 Rydal Crescent, Perivale, Middx UB6 8DZ
Kempston Micro Electronics, 180A Bedford Road, Kempston, Bedford MK42 8BL
Shards Software, 10 Park Vale Court, Vine Way, Brentwood, Essex CM14 4UR
Opus Supplies, Birchtrees, 10 Beckenham Grove, Shortlands, Kent BR2 0JU
Fuller Micro Systems, The ZX Computer Centre, Dale Street, Liverpool 2
Rainbow Research, 288 High Street, Ponders End, Enfield, Middx
Personal Software Services, 452 Stoney Stanton Road, Coventry CV6 5DG
Abbex, 20 Ashley Court, Great Northway, Hendon NW4
Citadel Products, 50 High Street, Edgware, Middx HA8 7EP
Haven Hardware, 4 Asby Road, Asby, Workington, Cumbria CA14 4RR
Computasolve, 8 Central Parade, St Marks Hill, Surbiton, Surrey KT6 4PJ

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ESPIONAGE ISLAND (Adventure D)
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You find yourself stranded on an inhabited alien planet. Can you reach your ship and escape?

also available for SPECTRUM

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The future is looking small for micro users

Several new micros were given their first public airing at the Hanover Messe (Show) '83. Henry Budgett trekked around the vast exhibition to bring you this report

Judging by the new computers at the Hanover show, the future is going to be smaller, protable — and probably Japanese.

Among the companies with new micros in the four vast exhibition halls was Commodore and, leading the Japanese invasion, Panasonic, Sharp Casio and Fujitsu.

Few details were available, except that all are on their way to the UK soon.

Sharp's neat MZ-700 offers 64K of RAM, 6K of ROM and 2K video RAM for an expected UK price of around £300. And there is an optional on-board micro-cassette player and plug-in four-pen plotter.

Powered by the same Z80A processor as the Spectrum and other popular home micros, the MZ-700 has a typewriter-style QWERTY keyboard and five function keys and a screen display of 25 lines of 40 characters.

All this is packed into a stylish case measuring 13¾ in by 12in by 1½ in.

Sharp also showed two new monitors — a 12in model with green screen and a 14in colour model.

With rubber-like keys and single-key entry of commands, there can be no mistaking that **Panasonic's** Alpha is aimed at the Oric and Spectrum market. It has its own graphics set and 32K of RAM. Its smaller brother, the JR100, has fewer keys but was shown with an expansion board fitted underneath.

Micro 7 from Fujitsu — a full set of keys

Casio, best known for its sophisticated calculators, was showing two new machines.

The FP-200 comes with 16K of RAM, full keyboard, liquid crystal display with peripherals available including a four-pen plotter and numeric keypad.

Casio describes its FX-702P, it has QWERTY keyboard, plus numeric keypad, and built-in printer, liquid crystal display and micro-cassette player.

From **Fujitsu** came the Fujitsu Micro 7 with a full typewriter-style keyboard — along with 10 function keys and numeric keypad, cursor and editing keys.

The new portable DX-64 is based on the big-selling **Commodore 65** with added half-height 5¼ in disc drives and a 5in colour or black and white monitor and a detachable full keyboard, plus four function keys, built into the lid.

It is expected to retail at around £800 and to be made at the company's plant now being contructed at Corby, Northants.

The keyboard of the DX-64 will be slightly different from the Commodore 64 to take account of the narrower width.

And there will be two models to choose from — the 8050 with 1 megabyte of disc storage and the 8250 with 2 megabytes.

It is expected also that the American standard NTSC monitors will be changed to the PAL system for UK sale.

If everything goes well, the DX-64 should make its UK debut at the PET show in June and became available here in the autumn.

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Oric program pointer...

I feel it my duty to write and inform you of a few necessary alterations in your program for the Oric-1 in issue 3. Lines 1345, 1360 and 2005 should be changed to:

```
1345 F1 = 1:GOSUB 2005
1360 NEXT
2005 V = (XY(2,1) = 35) *16
   + (XY(1,1) = 35) *32
```

I found that the program didn't actually assign your new character to the location in memory occupied by the character you wished to replace with your new one. To correct this, add the following line:

```
1355 POKE T + I - 1, - V
```

Experienced programmers would have seen through this and added a similar line, but I think many newcomers would be bewildered!

Steve Casson, Norhampton

...And one for the ZX81

I'd like to let readers know that I've spotted a bug in my DOMAC program, published in Home Computing Weekly number 3, page 22.

Line 4075 should read LET A 16,16 = A 19,12.

Fortunately, as this line is in the New Year routine, it shouldn't have caused any problems yet!

George Baldwin, Weybridge, Surrey

Not just fun from games

I read with some interest the One Man's View column by Aldo G. Rabaiotti in issue 5 of Home Computing Weekly. It quickly became apparent that the letter re-emphasised some basic misunderstandings about the games/micro market.

We are moving into an age when every home and every job will make substantial use of computers. It is important that people should become computer experienced, and in this role the micro as a games machine is playing a vital part. The information which I get back from my members indicates that the games which are being played the most (not the most purchased games) are those which make specific use of the micro as a computer. The adventure type games and simulation games are a good illustration of this.

The strong and progressive games market is also producing a generation of programmers who are fully aware of 'human/computer' interaction are are writing programs for people to use, not experts. This is essential if we are to move into the high technology society where we make full use of the computer in our daily life. We need programs in industry, commerce and the domestic environment which can be used by anyone. Many of such programming techniques have arisen directly from games software, especially the error checking and data validation systems which are now so essential, since you cannot presume that the person using your program is trained.

Far from killing the micro market, games programming will produce the drive to push it into the 21st century. So long as we can maintain a leading games/hobby software development industry we can expand into a hi-tech society. Anything which endangers that and the training of young programmers endangers the future and prosperity of this country.

Nigel Backhurst, General Secretary, General Secretary, Computer Trade Association, 108 Margaret Street, Coalville, Leics LE6 2LX

Ship of Doom hits the rocks

We'd like to draw your readers' attention to a problem that has arisen with our Ship of Doom/Adventure C game, now being sold through Sinclair.

One of Sinclair's batches of tapes has been corrupted, and contains a bug which will cause the program to crash when certain commands are entered.

If you buy one of these tapes, it should be returned either to the shop you bought it from or to Sinclair Research at Stanhope Road, Camberley, Surrey — don't send it back to us!

Our apologies to anyone who's bought one of these tapes for the inconvenience caused.

Secondly, Artic customers should note that we now provide hint sheets for our adventure games. So if you're stuck, just send us a stamped addressed envelope, and we'll send one off to you.

Richard Turner, Artic Computing, 396 James Reckitt Avenue, Hull HU8 0JA

Joys of Extended Basic

Some interesting programming advice for TI-99/4A owners has been featured in your pages recently.

However I would strongly recommend that serious programmers should purchase the Extended Basic module. Extended Basic is a very powerful language and it is a pity that it is not built into the unexpanded machine as standard.

An example of its power is shown in the short routine below, which recreates the lengthy # program for displaying large versions of the letters A to Z published in your issue of April 5-11.

It is not necessary to define the characters of the large letters in data statements as line 120 does the same job. In fact, the whole routine could be fitted on to one program line!

The use of full name variables should make the routine self-explanatory.

```
100 REM Routine to display
        large letters on the
        screen
110 CALL CLEAR
120 CALL MAGNIFY(2)
130 COLOUR = 16
140 ROW = 100
150 COLUMN = 100
160 FOR LETTER = 65 TO 90
170 CALL SPRITE (#1,
    LETTER, COLOUR,
    ROW, COLUMN)
180 FOR DELAY = 1 TO 300
    :: NEXT DELAY
190 NEXT LETTER
```

In addition the letter can be set moving by adding two extra parameters to line 170.

Note the ease with which sprites may be created, compared with the pain of calling up the equivalent player-missile graphics on the Atari or the sprites of the CMD 64. Extended Basic has many other features that make it both user-friendly and very powerful.

Pat on the back for Atari

I have an Atari 400, and on reading Home Computing Weekly I've noticed that a lot of the letters are criticisms of other computers. Well, I haven't got a criticism — I am writing to tell you how helpful Atari have been.

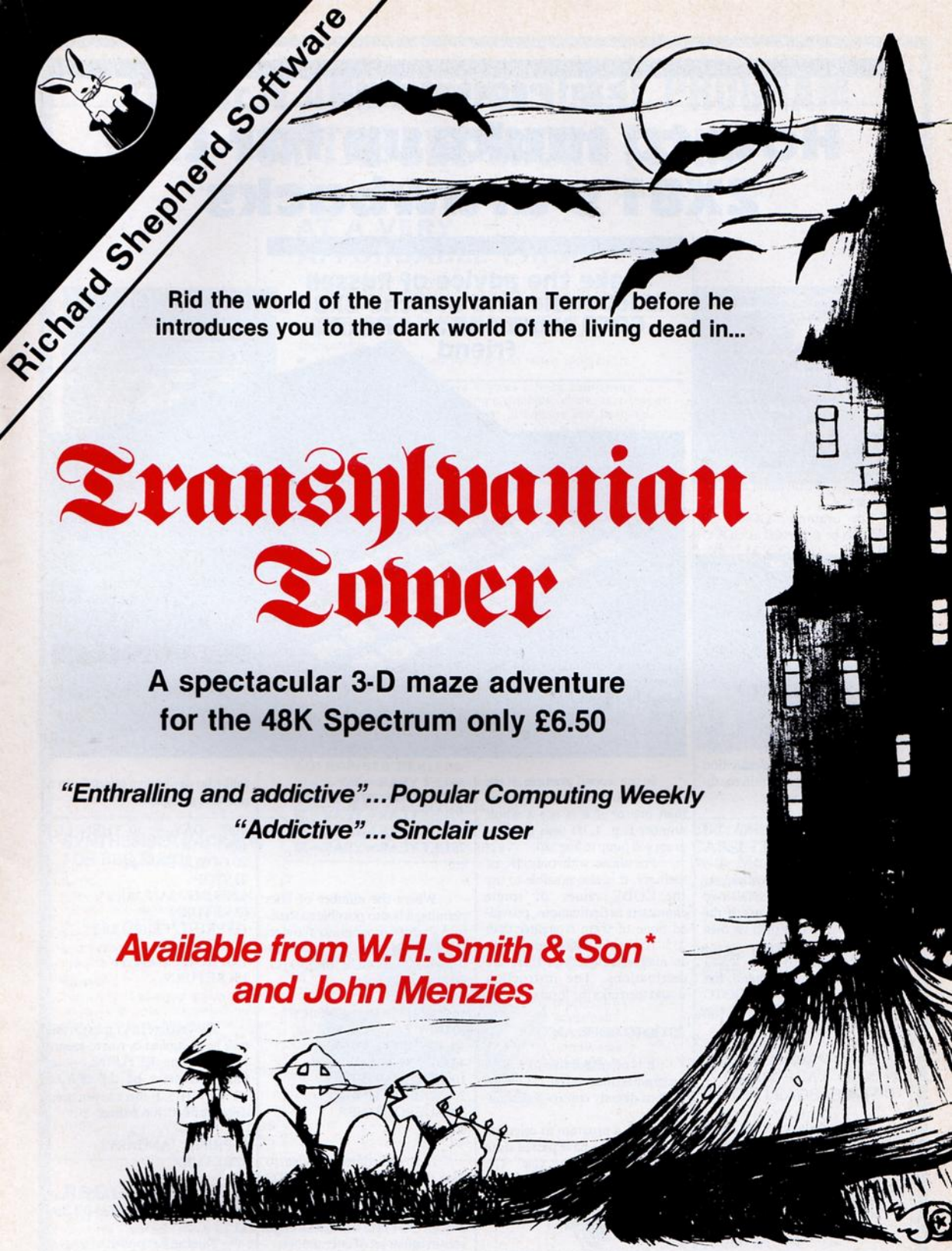
About a month after receiving my computer the cassette recorder failed to work, so we took it back to the shop where we got it from. After two weeks my father decided to phone Atari to see what was going on, and they said that they would send us another one.

Sure enough, it came the next day by overnight express; but it still wouldn't work, so we sent my compter off with the cassette recorder and a few days later it came back perfect.

So what I'd like to say is that not all computer companies are to be criticised, because Atari have been so fast and helpful. Everyone who is thinking of buying a computer should remember that it is best to buy them from proper computer shops, not small electrical shops.

C.R.J. Fox, Loughor, West Glamorgan

Send your letters to Letters, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. Don't forget to name your computer — the best letter could win £5 worth of software. Queries cannot be answered on this page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How to make up for the ZX81's drawbacks

Take the advice of Russell MacDonald and use the ZX81's GOTO command as a flexible friend

When Uncle Clive first produced the ZX81, many people said the way in which the GOTO facility was used was extravagant and unnecessary.

For example, GOTO 30 could also be expressed as GOTO CODE "2", GOTO VAL "30", GOTO X, GOTO 5 ** 2 + 5 (5↑2+5), GOTO 2 *X+(Y/3), GOTO A(3,2) and an infinite number of other expressions. This is also true for GOSUB routines.

At first sight this seems slightly excessive. In fact, this is one of Sinclair's methods of supplying a flexible command to make up for limitations.

Most other micros provide the useful ON...GOTO... command which allows a destination to be chosen under a certain condition. Here is an example:

```
100 ON X GOTO 100,210,350,470,580
```

It means that if X equals one then go to 100, if X equals two then go to 210 and so on. If the value of X is greater than six then the instruction is ignored.

Unfortunately, the ZX81 does not have this command. But due to the flexibility of the GOTO command, ON...GOTO... can be simulated in just two lines:

```
10 LET A$ = "100210350470580"
20 GOTO VAL A$((X *3)-2 TO X *3)
```

If there is the possibility of X being greater than five, then the following line could be added:

```
15 IF X>5 OR X<1 THEN LET X=5
```

or:

```
15 IF X>5 OR X<1 OR X<>INT(X) THEN LET X=5
```

In the second example, if the value of X is greater than five, less than one or if it is not a whole number (e.g. 1.75) then the program will jump to line 580.

For those with only 1K of memory, it is also possible to use the CODE values of single characters as destinations, provided none of them is greater than 255. A$ would only need to have as many characters as there are destinations. The instruction would then take the form:

```
20 GOTO CODE A$(X)
```

It is often possible to write a program so that an INPUT can be used to directly control a destination.

Take a program to calculate how many days have passed since the beginning of the year. The result is achieved by subtracting the number of days in the remaining months from 365 (ignore leap years):

```
10 PRINT AT *,*;"NUMBER OF THIS MONTH?"
20 INPUT MONTH
30 LET YEAR = 365
40 GOTO 40 + 10 *MONTH
50 LET YEAR = YEAR - 28
60 LET YEAR = YEAR - 31
70 LET YEAR = YEAR - 30
etc
```

Where the number of lines permits, it is also possible to structure a whole program to allow an INPUT to determine the destination for a GOSUB or GOTO. Here is an example:

```
10 PRINT "INPUT CHOICE"
20 INPUT C
30 GOSUB C *100
40 GOTO 10
100 SUBROUTINE 1
200 SUBROUTINE 2
300 SUBROUTINE 3
etc
```

It is sometimes possible to base the calculation of a GOTO destination on figures arising during the course of a program, though this will often mean using a very irregular set of line numbers.

In the following example, the aim is to calculate the month in which a particular day of the year falls (the day having arisen from a previous program):

```
10 IF DAY = 10 THEN LET DAY = 11
20 GOSUB DAY *2
21 STOP
62 PRINT "JANUARY"
63 RETURN
118 PRINT "FEBRUARY"
119 RETURN
180 PRINT "MARCH"
181 RETURN
etc
```

The variable DAY must in this case be multiplied by two to ensure room for the RETURNs — so there can never be the case of YEAR = 31.5. If this had not been done we might have done:

```
31 PRINT "JANUARY"
32 RETURN
```

...with the result that nothing would be printed for day 32.

This can be applied whenever the action to be taken by the program varies predictably according to the value of a known variable. ■

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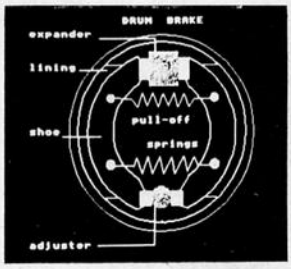
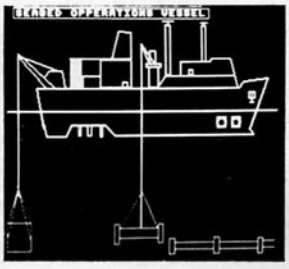
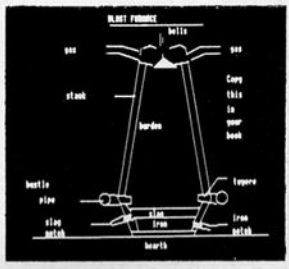
(the examples shown are all unretouched off-screen photographs of some of the program's capabilities).







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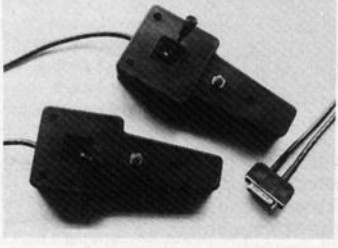

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Games Pack 4 Dragon £6.91

Gem Software, Unit D, The Maltings, Station Road, Sawbridgeworth, Herts.

This package takes a couple of minutes to load from cassette and actually contains two games: Sea Harrier and Sub Chase. The instructions for both games were adequate and both are played using the keyboard. Each had four levels of difficulty.

In Sea Harrier your objective is to land on an aircraft carrier without hitting too many clouds. The clouds can be dispersed using bombs but you run the risk of damaging your ship if you hit it.

I found that by flying at the top of the screen you can destroy the clouds at your leisure but it was still difficult to land successfully on the carrier.

In Sub Chase, your task is to sink the subs with your depth charges, avoiding the torpedoes being fired by the subs at your ship. Like Sea Harrier, this game used chunky graphics to form the shapes of the objects and neither game had any sound effects.

I thought the games lacked excitement and imagination, but they would keep the youngsters quiet for a few hours. **C.D.**

instructions	80%
playability	70%
graphics	65%
value for money	75%

★ ★

Mind Twisters Vic-20 £9.99

Romik Software, 24 Church St, Slough, SL1 1PT.

This is a compendium of four games, three well known, one a little more original: Mastermind (alias Decipher), Connect 4 (alias Four Thought), Blackjack and Teaser.

The review tape could have been substandard since loading was difficult and Mastermind was unloadable. However, the three games I did manage to run were well written with adequate graphics. Connect 4 played a particularly good game, even though it was a little slow.

Teaser was an odd one. You are presented with the numbers 1 to 9 and you take turns to take numbers. The winner is the first player to reach a total of 15 with three of his numbers. I found it easy to draw with the computer, but impossible to win.

Blackjack played British "pontoon" rules. I did feel that the graphics were a little weak, but you can't expect much in an unexpanded VIC.

Assuming that Mastermind was up to the same standard, this is a reasonable collection of old favourites. VIC owners who are fed up with Space invaders could do worse than consider this package which is good value for the price. **A.W.**

instructions	70%
playability	80%
graphics	70%
value for money	80%

★ ★ ★ ★

Games Pack 1 Dragon £6.91

Gem Software, Unit D, The Maltings, Sawbridgeworth, Herts.

Space Attack, Sheepdog, Torpedo and Snake are the four BASIC games in this compendium.

As far as I am concerned, Snake is the only game that's challenging enough to have much long-term appeal. It's an excellent version of the old game where you have to eat randomly-placed blocks. Control is by joystick or keys, and the display uses low-resolution graphics.

As for the rest... in Space Attack you are in the top left hand corner of the screen, and have to shoot at an enemy ship in the bottom right corner. To do this, you enter the direction and velocity of your shot.

Random planets half-heartedly block your way; and the enemy is meant to return your fire but doesn't. The path of your ship is not rubbed out, so if your next shot hits the path, a hit on the enemy is presumed. It just isn't worth playing.

From outer space to deepest countryside, you control a dog and have to round up three sheep in Sheepdog. Good graphics, but the game is rather slow, and the dog clearly needs obedience training; it doesn't respond well to the control keys.

And a thousand leagues under the sea in Torpedo, you are a submarine captain and have to launch a torpedo when a ship is in your sights. Good graphics give a realistic impression of looking through a periscope. **D.W.**

instructions	65%
playability	55%
graphics	70%
value for money	35%

★ ★

Games Pack II Dragon £6.91

Gem Software, Unit D, The Maltings, Sawbridgeworth, Herts.

Four items on this cassette, providing good value for money.

First comes Landing, a flight simulation programme that surprised me with its tricky handling. It requires two joysticks — one for throttle control and the other for rate of descent and banking. There are three stages to this 'game', the approach, landing and stopping, all requiring a high level of coordination.

The first part is done by reading instruments which then, if successful, give way to some graphic sequences. It takes two to pilot and very rewarding when you succeed.

The second item is a good version of Hangman with a selection of about 150 words. Always a fun way to learn spelling.

Speedboat is a straightforward dash between two twisting banks, picking up points for hitting orange markers. Controlled by keys with space bar for speed change.

The game of Battleship is an old favourite assisted here by some appropriate graphic subroutines. Going from the grid reference, if you score a hit, you see what you've got as your shell homes in to its target.

I didn't expect much from a games pack but the quality of two games, the flight landing simulation and battleships, was very impressive and well worth having.

All the necessary instructions come on screen and loading is straightforward. An enjoyable selection for all the family. **M.P.**

instructions	100%
playability	90%
graphics	80%
value for money	90%

★ ★ ★ ★

ET
48K Spectrum

Macronics, 26 Spiers Close, Knowle, Solihull, W. Midlands B93 9ES

How do they get away with it? Anyone else so much as uttering the initials E.T. gets jumped on from an extreme height by you-know-who...

Anyway, assuming Macronics remain suitably unjumped-upon, E.T. is a worthy little game, or collection of games. It is in five sections, the first of which is an instruction program, using rather an endearing little figure to "bubble-speak" each screenful. This is clever the first time you see it, cute the second time...and boring thereafter.

In the first stage of the game proper, you move the E.T. figure around a wooded maze collecting phone parts, while avoiding the inevitable mad scientist out to kill you. Once through that, stage two is similar, excpet that the maze is not visible — but the scientist is, as he advances to the kill once again.

Stage three involves running around ghosts and pumpkins (well it *is* Halloween) to get home — pursued by the mad scientist once again.

Stage four is totally irrelevant and boring. You move a spaceship from side to side at the top of the screen to avoid meteors coming up towards you. They move so slowly and apathetically that unless you fall asleep it is well-nigh impossible to get hit!

Stages 1-3 are playable and good entertainment, if somewhat repetitive. The only tactic needed is to draw the scientist into a dead end, so that you can carry on collecting whatever bits you have to collect in peace.

You have the option of playing each stage individually, or combining all four into one long game. Good value.

	R.M.
instructions	60%
playability	70%
graphics	70%
value for money	70%

★★★★

Games of Logic and Cunning
BBC £9.70

Golem, 77 Qualitas, Bracknell, Berkshire RG12 4OG

Five different games of logic and cunning designed for use by young computer users. They are Auction, Flip, Reverse, Telepathy, and Hexal5 and they vary widely in quality, interest and playability.

I doubt whether Flip and Telepathy would hold the interest of children for more than a short time; Auction, Reverse and Hexal5 are better.

In Auction, you try to buy antiques at auction by outbidding fellow bidders. There are two options, either to bid against the computer, or bid against another player. it is a challenge to try and beat the computer, but the game is not wildly exciting to play.

The aim of Reverse is to rearrange a row of letters in the least number of moves. This game has good graphics and is compulsive to play.

Hexal5 can only be played on Model B, and is a graphics version of a classic game. Hexadecimal digits (0-9, A-E) have to be rearranged in order on a square grid containing one blank square. Taxing, even for adults!

This collection is varied in both quality and type of game, but is a little over-priced. **P.C.**

instructions	80%
playability	70%
graphics	80%
value for money	65%

★★★

★ poor
★★ average
★★★ good
★★★★ very good
★★★★★ excellent

NO. 1 FOR THE DRAGON

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HCW8

Software from the States for your Atari

Marc Freebury casts a critical eye over a selection of Atari software from across the Atlantic

It is a fact that though the Atari is an excellent machine, Atari do not back it up themselves with much software, particularly in the games field. They have left this to an ever-increasing number of software houses.

Most of these are American, but a few British companies are slowly adding to the number. This means that most Atari software must be bought through mail order. For suppliers, contact Atari (UK) at Atari House, Railway Terrace, Slough SL2 5BZ. Tel: Slough 33344.

Galactic Chase 16K £16

Softcell Computers

A close copy of the arcade game Galaxians. The aliens swoop down in small groups, first bombing your ship, then attempting to ram it.

Bonus points are awarded for shooting down the command ships, and an extra base is received at 7,000 points. This copy even has the galaxians that 'loop the loop' at the bottom of the screen.

An option for two players is included, and an option to start at a higher level. The sound effects are sufficient for this type of zap-it-if-it-moves game, and the invaders themselves are very colourful.

Having seen the cartridge Galaxians now available, I would still choose this very cheap but very good copy.

instructions	75%
playability	80%
graphics	80%
value	75%

★ ★ ★

Preppie 16K £19.95

Adventure International

Next to Star Raiders, Preppie is without doubt the best game ever produced for the Atari. The game is based on Frogger, except that instead of a frog, there is a Preppie, or Prep School Student, to the non-American.

He is being forced to collect golf balls off the Nasty Nine course. Among the hazards to be dodged are lawnmowers, golf carts, logs, canoes and puddles.

As you progress up the ten screens, bulldozers, alligators and even a giant frog put in an appearance.

The action is smooth, with unbelievable background music, and the game uses 28 colours on screen at once. Reaching level ten is a real achievement. Altogether an excellent game.

instructions	90%
playability	95%
graphics	99%
value	95%

★ ★ ★ ★

Galactic Empire 32K £16.50

Adventure International

From the same stable as Preppie, this game does not reach the same heights. It is a tactician's game, with the objective of conquering the twenty planets in the galaxy.

You begin with ownership of one. By building fleets and taxing your people, you must build fleets strong enough to overcome the opposition, who vary in technological ability.

The game has very limited graphics, which do little to enhance a very slow-moving game. Particularly annoying is that each time you move your fleet, the shipboard computer prepares a report which takes up to a minute to complete.

If you have a week to spare, and the patience to go with it, this game is for you.

instructions	75%
playability	30%
graphics	20%
value	35%

★ ★

Ghost Hunter 16K £19.95

Arcade Plus

As the title suggests, this is a version of the now world-famous Pacman.

The Ghost Hunter of the title is supposedly meant to be ridding a mansion of said ghosts, but in my opinion it should be retitled Hunter Ghosts — since they do most of the chasing.

The game has 16 mazes, although you may only use one per game — definitely annoying. There are four brightly coloured ghosts, which seem to have the same tendencies as Pacman ghosts in using different tactics to catch you.

There are four power-pills, and when eaten the ghosts careen across the screen back to the central cave.

This version also has a two-player option, with another option allowing two players to play simultaneously — although why you would want to do that is beyond me.

Reasonable copy of the arcade game although it misses some features and adds a lot of superfluous ones.

instructions	75%
playability	60%
graphics	65%
value	65%

★ ★

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HCW 4

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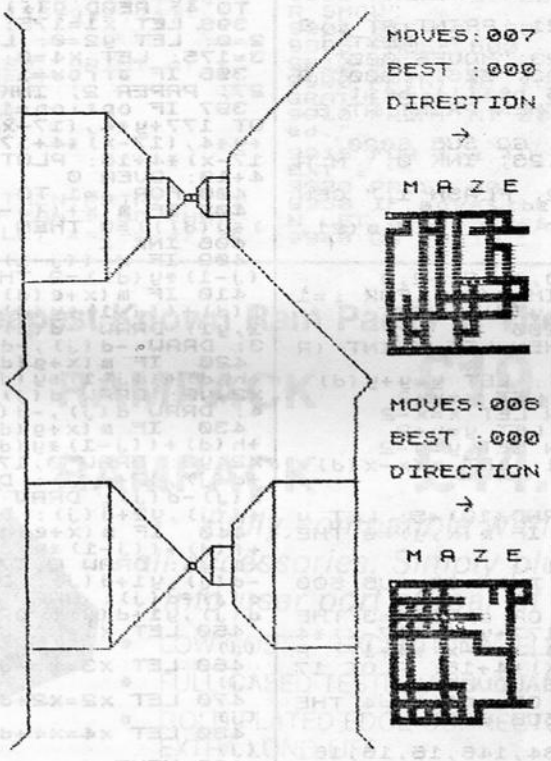
Get lost, easily, in the Amazing Maze

Suddenly you're landed in the middle of a maze . . . but there's a three-dimensional view to help you find your way out. Matthew Taylor wrote his game for the 16K Spectrum



It's very easy to get lost — especially on the harder options — in my Amazing Maze program, for the 16K Spectrum.

The program generates a random maze and throws you into a random position right in the middle. A three-dimensional picture is then drawn of what you can see, lost there in the middle of the maze. You can move forward, turn left or right, ask for help or quit. Your task is to find the exit (which is always in the top left hand corner) and escape...

First the program prints a list of options and asks you to choose one. You are then asked if you want to know in which direction you are facing (shown by an arrow underneath the word DIRECTION in the main maze display).

This seemingly futile indicator can be very useful.

After the maze has been generated, which takes about 30 seconds, the three dimensional view is drawn, and the message, "F,L,R,Q or M?" is printed at the bottom of the screen. You must type in your command and then press ENTER. The commands are:

F	moves you one step forward
L	turns you to the left
R	turns you to the right
Q	quit. Hard luck, your score won't count for the high score!
H	help: prints the map, which clears itself after 10 seconds and 10 moves are added to your score.

The number of moves you have taken so far is displayed in the top right hand corner of the screen and the best number of moves below it. These are the number of actual steps you take, so this is a game of strategy not a real time game.

When you have escaped or quit — shameful person — the list of options is printed again. Now you can have another go with the same or a different option or input "q" to quit.

The program fits into 16K, but only just, which explains the absence of REM statements and the long multi-statement lines. There should be no problems encountered when typing in the program as long as you do not add anything if you are using a 16K Spectrum: just type in the program and SAVE it with SAVE"MAZE"LINE5. Just in case, here is an explanation of some of the lines:

20	There are 10 spaces inside the quotes
6000	There are 9 spaces inside the quotes
6030	There are 22 spaces inside the quotes

If you have a 48K Spectrum you might like to add some features which I would have liked to add, but didn't have the memory, like monsters, treasure, an oaken door and an axe to break it down, different levels, stairs...

How it works

5	sets high score to zero
10-70	options
100-116	set up screen
120-196	set up variables for maze generation
200-230	realises options
240-280	generate "arrow"
285-390	set up variable for play
395	re-initialises variables for graphics each turn
396	prints direction arrow if required
397	traces route if required
400-500	draw graphic display
505-506	update moves
510-560	INPUT, process and act on commands, error checking
570	clears graphic display
5000-5100	print map of maze, see hints on conversion
6000-6010	clear map area
6020-6050	clear graphic display
7000-7020	check forward move is valid and check for escape
9000-9110	opening display, INPUT options
9800-9940	finishing messages, update high score

Main variables

option	option
moves	number of moves taken so far
best	high score
arrow	1 if direction arrow is required
X,Y	position in the maze, both during random generation and play
m(21,21)	maze
d	direction: 1 up, 2 right, 3 down, 4 left
x(4),y(4)	table of displacements using above
d(7)	table of distances used in drawing graphic view
3e(4),f(4)	table of displacements to find square in m(21,21) to right
g(4),h(4)	as above but for left
xl-4,yl-4	positions of four corners when drawing graphic display
c	character number (CODE = c + 128) of ▶

graphic to be printed when printing map, see figure 1 and Hints on conversion

Hints on conversion

PLOT OVER 1; means "invert point", but is used as "unplot" in my program.

The graphic resolution on a Spectrum is 256 × 176. The square area for the three dimensional display uses 0-175 in both X and Y directions.

DRAW X,Y means draw from current position to a position X,Y away i.e. X,Y are relative displacements rather than absolute co-ordinates.

INPUT always uses the bottom line. You will have to be careful where you put your INPUTS on the screen.

INPUT"..."; LINE a$ is no different to INPUT"...";a$ on other computers. The LINE just prevents the Spectrum printing annoying quotes around your INPUT.

a$(1) means the first character in a$ i.e. LEFT$(a$,1)

PRINT' means print down a line as in ATOM Basic.

Lines 5010 to 5060 print the maze in double resolution — four maze locations to a character square. Therefore, the character to be printed has to be calculated. This is quite easy on a Spectrum because Uncle Clive has conveniently ordered the graphic characters in the Spectrum character set.

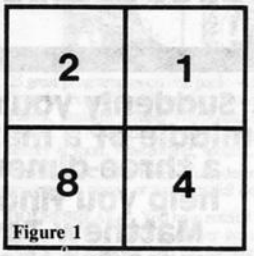


Figure 1

Consider each character square divided into four smaller squares, each smaller square numbered as in figure 1. To find the code of the character required, all that is needed is to add up the numbers in the small squares which are to be printed and add 128 (code for a space).

(For example, to find the code of ▛ : CODE = (1+2+8)+128 = 139 (check this on figure 1).

If these characters are not so conveniently ordered on your computer then you will probably need to set up a string array of these 16 characters.

```
  5 LET best=0
 10 RANDOMIZE : RESTORE : PAPER
 7: INK 1: BORDER 2: CLS
 15 GO SUB 9000
 20 FOR i=0 TO 21: PRINT AT i,2
2; PAPER 2;"          ": NEXT i
 30 PRINT AT 1,23;"MOVES:000"
 40 PRINT AT 3,23;"BEST :000";A
T 3,(32-LEN (STR$ best));best
 45 IF arrow=1 THEN PRINT AT 5,
23;"DIRECTION"
 50 GO SUB 6000: GO SUB 6020
 60 PRINT AT 10,23; INK 0;" M A
Z E "
 70 PRINT AT 1,2; FLASH 1;" GEN
ERATING MAZE "
 100 LET x=2: LET y=2: DIM m(21,
21)
 110 LET d=1
 115 DATA 0,2,2,0,0,-2,-2,0
 116 DIM x(4): DIM y(4): FOR i=1
TO 4: READ x(i),y(i): NEXT i
 120 FOR j=1 TO 200
 125 IF RND(.5 THEN LET d=INT (R
ND*4)+1
 130 LET x=x+x(d): LET y=y+y(d)
 140 IF x<2 THEN LET x=x+2
 150 IF x>19 THEN LET x=x-2
 160 IF y<2 THEN LET y=y+2
 170 IF y>19 THEN LET y=y-2
 180 LET m(x,y)=1: LET m(x-x(d)/
2,y-y(d)/2)=1
 190 NEXT j
 195 LET x=INT (RND*10)+5: LET y
=INT (RND*10)+5: IF m(x,y)=0 THE
N GO TO 195
 196 LET m(2,2)=1
 200 IF option<5 THEN GO SUB 500
0
 210 IF option=1 OR option=3 THE
N OVER 1: PLOT 177+y*4,(17-x)*4
+17: PLOT 178+y*4,(17-x)*4+17: P
LOT 177+y*4,(17-x)*4+18: PLOT 17
8+y*4,(17-x)*4+18: OVER 0
 220 IF option=3 OR option=4 THE
N PAUSE 500: GO SUB 6000
 230 GO SUB 6020
 240 DATA 16,56,84,146,16,16,16,
16
 250 DATA 8,4,2,255,2,4,8,0
 260 DATA 8,8,8,8,73,42,28,8
 270 DATA 0,16,32,64,255,64,32,1
6
 280 FOR i=0 TO 31: READ a: POKE
 USR "a"+i,a: NEXT i
 285 DATA -1,0,0,1,1,0,0,-1
 286 FOR i=1 TO 4: READ x(i),y(i
): NEXT i
 310 LET moves=0: LET d=INT (RND
*4)+1
 330 GO SUB 6020
 340 DATA 8,40,20,10,5,3,2
 350 DIM d(7): FOR i=1 TO 7: REA
D d(i): NEXT i
 360 DATA 0,1,1,0,0,-1,-1,0
 370 DATA 0,-1,-1,0,0,1,1,0
 380 DIM e(4): DIM f(4): FOR i=1
TO 4: READ e(i),f(i): NEXT i
 390 DIM g(4): DIM h(4): FOR i=1
TO 4: READ g(i),h(i): NEXT i
 395 LET x1=175: LET y1=0: LET x
2=0: LET y2=0: LET x3=175: LET y
3=175: LET x4=0: LET y4=175
 396 IF arrow=1 THEN PRINT AT 7,
27; PAPER 2; INK 7;CHR$ (143+d)
 397 IF option=1 THEN OVER 1: PL
OT 177+y*4,(17-x)*4+17: PLOT 178
+y*4,(17-x)*4+17: PLOT 177+y*4,(
17-x)*4+18: PLOT 178+y*4,(17-x)*
4+18: OVER 0
 400 FOR j=1 TO 7
 405 IF m(x+((j-1)*x(d)),y+((j-1
)*y(d)))=0 THEN GO TO 500
 406 INK 1
 409 IF x+((j-1)*x(d))=2 AND y+(
(j-1)*y(d))=2 THEN INK 7
 410 IF m(x+e(d)+((j-1)*x(d)),y+
f(d)+((j-1)*y(d)))=0 THEN PLOT x
1,y1: DRAW -d(j),d(j): PLOT x3,y
3: DRAW -d(j),-d(j)
 420 IF m(x+g(d)+((j-1)*x(d)),y
+h(d)+((j-1)*y(d)))=0 THEN PLOT
x2,y2: DRAW d(j),d(j): PLOT x4,y
4: DRAW d(j),-d(j)
 430 IF m(x+g(d)+((j-1)*x(d)),y
+h(d)+((j-1)*y(d)))=1 THEN PLOT
x2,y2: DRAW 0,175-y2-y2: PLOT x2
+d(j),y2+d(j): DRAW 0,175-y2-y2-
d(j)-d(j): DRAW -d(j),0: PLOT x2
+d(j),y2+d(j): DRAW -d(j),0
 440 IF m(x+e(d)+((j-1)*x(d)),y
+f(d)+((j-1)*y(d)))=1 THEN PLOT
x1,y1: DRAW 0,175-y1-y1: PLOT x1
-d(j),y1+d(j): DRAW 0,175-y1-y1-
d(j)-d(j): DRAW d(j),0: PLOT x1-
d(j),y1+d(j): DRAW d(j),0
 450 LET x1=x1-d(j): LET y1=y1+d
(j)
 460 LET x3=x3-d(j): LET y3=y3-d
(j)
 470 LET x2=x2+d(j): LET y2=y2+d
(j)
 480 LET x4=x4+d(j): LET y4=y4-d
(j)
 490 NEXT j
 500 PLOT x2,y2: DRAW 175-x2-x2,
0: DRAW 0,175-x2-x2,0: DRAW -(17
5-x2-x2),0: DRAW 0,-(175-x2-x2)
 502 INK 1
 505 LET moves=moves+1
 506 PRINT AT 1,(32-LEN (STR$ mo
ves));moves
 510 INPUT "▙,▟,▜,▛ or ■ ? "; LI
NE a$
 515 IF a$="" THEN GO TO 510
 520 IF a$(1)="f" OR a$(1)="F" T
HEN LET x=x+x(d): LET y=y+y(d):
GO SUB 7000: GO SUB 6020: GO TO
395
 530 IF a$(1)="l" OR a$(1)="L" T
HEN LET d=d-1
 540 IF a$(1)="r" OR a$(1)="R" T
HEN LET d=d+1
```

16K SPECTRUM PROGRAM

```
  545 IF a$(1)="q" OR a$(1)="Q" T
HEN GO TO 9800
  546 IF a$(1)="h" AND option>2 T
HEN GO SUB 5000: PAUSE 500: GO S
UB 6000: LET moves=moves+10
  550 IF d=0 THEN LET d=4
  560 IF d=5 THEN LET d=1
  570 GO SUB 6020
  590 GO TO 395
5000 FOR a=2 TO 18 STEP 2: FOR b
=2 TO 18 STEP 2
5010 LET c=0
5020 IF m(a,b+1)=1 THEN LET c=1
5030 IF m(a,b)=1 THEN LET c=c+2
5040 IF m(a+1,b+1)=1 THEN LET c=
c+4
5050 IF m(a+1,b)=1 THEN LET c=c+
8
5060 PRINT AT 11+a/2,22+b/2;CHR$
 (c+128)
5070 NEXT b: NEXT a
5080 OVER 1: PLOT 185,78: PLOT 1
85,77: PLOT 186,78: PLOT 186,77:
 OVER 0
5090 IF option=1 THEN OVER 1: PL
OT 177+y*4,(17-x)*4+17: PLOT 178
+y*4,(17-x)*4+17: PLOT 177+y*4,(
17-x)*4+18: PLOT 178+y*4,(17-x)*
4+18: OVER 0
5100 RETURN
6000 FOR i=12 TO 20: PRINT AT i,
23;"  ": NEXT i
6010 RETURN
6020 FOR i=0 TO 21
6030 PRINT AT i,0;"
      "
6040 NEXT i
6050 RETURN
7000 IF m(x,y)=0 THEN PRINT AT 2
0,0; FLASH 1;"YOU CAN'T GO THAT
WAY!": BEEP 1,0: LET x=x-x(d): L
ET y=y-y(d)
7010 IF x=2 AND y=2 THEN GO TO 9
900
7020 RETURN


9030 PRINT ' INK 2;" OPTIONS:"
9040 PRINT '"1...Display maze an
d trace route      throughout game
."
9050 PRINT '"2...Display maze on
ly throughout      game."
9060 PRINT '"3...Display maze an
d location         at beginning of
 game."
9070 PRINT '"4...Display maze on
ly at              beginning of ga
me."
9080 PRINT '"5...No help at all.
"
9100 INPUT "OPTION ? ";option
9105 IF option<0 OR option>5 THE
N GO TO 9100
9110 INPUT "ARROW (y/n) ?";a$: L
ET arrow=(a$="y" OR a$="Y"): RET
URN
9800 PRINT AT 20,5; FLASH 1;"POO
R SHOW"
9801 BEEP 1,-20
9805 PAUSE 500
9810 GO TO 10
9900 PRINT AT 18,2; FLASH 1;"CON
GRATULATIONS"
9910 PRINT AT 20,2;"You've escap
ed."
9915 FOR i=1 TO 4: BEEP .1,30: N
EXT i
9920 PAUSE 500
9930 IF moves<best OR best=0 THE
N LET best=moves
9940 GO TO 10
```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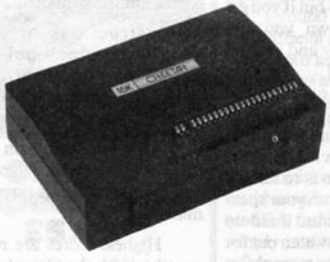

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HCW8

It's time to put on your thinking cap

If you're the reflective rather than the active type, then games of strategy are for you. But which to choose? Our reviewers judge the latest offerings

The Chess Player 48K Spectrum £6.95

Quicksilva, 92, Northam Road, Southampton, SO2 0PB.

One of many Spectrum chess programs on the market, Quicksilva's version adds a new twist to the game with an impressive piece of synthisised speech and a personality, in the form of the Chess Player. This evil being has decided that the Earth's fate is to be decided by a game of chess between him and a human challenger.

The game opens with the Chess Player announcing himself very clearly through the Spectrum's beeper. You are then asked whether you are using a black and white or colour television, so that the most suitable colours for each can be set.

There are six levels of play, each with varying reply times. The Chess Player plays quite a respectable game on the lowest level, although perhaps not as strong as some other chess games on the market.

Throughout the game the Chess Player displays his personality with such tactful remarks as "That was a pathetic move" or "Do you know what you're doing?", and occasionally admits that "This is harder than I thought", "This is a good game" or "That was a good move". Sometimes, though, his comments do not tie up with your actions.

Quicksilva has built itself a good reputation for high-quality software and The Chess Player does not let them down. The synthisised speech is impressive and the graphics pleasant, making this a very nice game indeed. **I.O.**

instructions	80%
playability	85%
graphics	80%
value for money	80%

★ ★ ★ ★

Dictator 48K Spectrum £4.95

dk'tronics, 23 Sussex Road, Gorleston, Great Yarmouth.

One for the would-be world rulers. Run a fictitious country entirely as you wish, but watch out for assassination attempts, army coups and revolting peasants (in both senses!).

A text-only format allows a mass of information to be thrown on to the screen and provides you with plenty of decisions to make — and to get wrong.

Your popularity rating with each sector of the population is displayed and if it falls too low in one year, the farms will yield you just so much food — but if you get to feel bogged down you can always raise an army and go beat up your neighbours!

Great fun in its own way and will probably teach you a thing or two about youself that you didn't really want to know! About the only sure way to win is to kill off any opposition and run your spending close to the limits. Build up the secret police, but watch out for the army if it gets **too** strong!

The instructions need to be better explained, and longer. Supplying an unlabelled cassette may be cheaper, but it is a recipe for disgruntled customers, should tapes get mixed up at home. **R.H.**

instructions	50%
playability	65%
graphics	n/a
value for money	60%

★ ★ ★

Mined Out 48K Spectrum £5.95

Quicksilva, 92 Northam Road, Southampton SO2 0PB.

Mined Out is a thinking game. Your aim is to cross various minefields safely, gaining extra points along the way by rescuing the odd damsel in distress.

Should you remain intact through eight progressively more difficult minefields, the final test is to rescue Bill the Worm from a fate worse than death!

Although there is no time limit, you do get bonus points for a faster completion of each course.

You are told if one, two or three mines are adjacent to your present position, and it is up to you to interpret this information and stay alive. At higher levels a mobile bomb, slow but determined is set on your track!

This is a very easy game to understand but surprisingly difficult to get beyond level five. It is excellent fun to play and it really does bring home the point that in a minefield you **must not** lose concentration for a moment.

Instructions are easily understood and provided with the cassette is a keyboard overlay, clearly indicating which keys control direction.

After each level (win or lose) there is the option of an action replay of your moves through the minefield.

Highest scores are recorded together with the player's initials. Graphics are simple, colourful and perfectly adequate for this highly recommended game.

P.F.

instructions	85%
playability	90%
graphics	75%
value for money	90%

★ ★ ★ ★

Fortress of Evil 16K Colour Genie £7.95

Algray, Algray House, 33 Bradbury Street, Barnsley, S Yorks S70 6AQ.

One of several adventure games now available from Algray, Fortress of Evil follows a format that is becoming standard for this kind of game. You wander through square rooms, shown in 3D with the odd object lying about on the floor, and carry out actions using time-honoured phrases like "GET SWORD" and "STAB DEMON".

It's worth experimenting with commands, because the program will accept quite a wide vocabulary. Movement is controlled by the cursory keys for the four pole directions, and function keys for actions like climbing up or down stairs.

It is fairly difficult to do well at Fortress of Evil, mainly because you can suddenly be bumped off at critical stages in the game, Though this might at first appear to make the game more challenging, since there is no way of being reincarnated you have to reload the whole game all over again to find out where you went wrong. Very irritating.

To make the game more annoying still, Algray obviously decided that sparse, incomprehensible instructions should be the order of the day.

As adventure games go, Fortress of Evil is really rather tedious and, at £7.95, rather over-priced to boot. The graphics are nothing special, and don't make the most of the Colour Genie's facilities. **I.O.**

instructions	30%
playability	75%
graphics	65%
value for money	65%

★★

Rescue 48K Spectrum £5.95

CRL, 140 Whitechapel Road, London E1.

About the worst way to design a game is to make it complex for no good reason, other than it **looks** good at first.

Rescue is a classic example of this. The player is expected to remember so much information that it rapidly becomes impossible to actually **do** anything. Drop the gun **here**, get the radio **there**, find the boat **now**, move into **that** square — and all at once!

It is not that this is a difficult game to beat. Complexity and difficulty are not necessarily linked. If you can stay calm long enough Rescue is simple to win.

The main enemy is the mass of detail which you are expected to handle on the way. Rescue's design is too full of "chrome" — bits and pieces added for appearance — to be classed as anything close to good. **R.H.**

instructions	50%
playability	10%
graphics	60%
value for money	40%

★

Othello Spectrum £5.95

CDS Micro Systems, 10 Westfield Close, Tickhill, Doncaster, S Yorks DN11 9LA.

There are many versions of the boardgame Othello or Reversi around and this is a fairly standard one. The aim is to capture as many squares as possible by placing pieces and turning over your opponent's.

You have three options: playing against the computer, playing another person or watching the computer play itself, and you can choose either the black or white pieces.

There's not much fun in watching the computer play (except to learn tactics), with about 20 seconds delay between moves, and there's not much point in buying the game if you are mainly going to play against another person, so the value of this game lies in the ability of the computer opponent.

I found the algorithm used very difficult to beat. I suspect that it has been adapted from another machine, as at one point it tells you to press Return — but of course the Spectrum hasn't got a return key.

The instructions are clear but could have been laid out in a more readable fashion. Play is easy: you simply enter a two-digit grid reference and the computer will place your piece there if it is a legal move. If you think you cannot move, entering 00 causes the computer to check and to suggest a move if one is available. **N.W.**

instruction	84%
playability	95%
graphics	85%
value for money	80%

★★★★

Ultimate Adventure Dragon £8

Microdeal, 41 Turko Road, St Austell, Cornwall.

This adventure takes a couple of minutes to load from cassette and is written entirely in BASIC. The instructions, spanning several screens, should be adequate for all new adventures. They also described how to save an uncompleted game on cassette for resumption later on.

The aim of the game is to venture out from a market place, equipped with 250 dollars and 250 'strength' points, and search for seven hidden treasures. Finding a treasure adds to your capital; you must accumulate 1,000 dollars and return to the market in one piece to complete the adventure successfully. There are items which you can use to aid you in your task but you have to buy them in the market.

Once you venture outside the market place your travels may take you from the desert to the Arctic, and you can get teleported to any location if you fall foul of one of the numerous portholes.

Pythons, rhinos, sharks and other dangerous animals emperil your journey. Fending them off will cost you some strength points, but you can regain your strength if you find the infirmary.

Although the game does make some use of sound and hi-res graphics when looking for treasure, I felt that it lacked excitement and could have done with a touch of humour. Adventure game addicts may find enough to keep them occupied, but for me this was not the ultimate adventure. **C.D.**

instructions	80%
playability	80%
graphics	70%
value for money	75%

★★★

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Can you and your Metro make it through the night?

Take a trip without leaving your computer. Nightdrive, a game for the BBC micro by Philip Tudor, puts you in the driving seat

BL's Metro — can you handle it at speed... and in the dark?

Imagine you are driving through the Yorkshire Moors in your Metro on a crisp Sunday morning.

That's your driver's eye view in my program for the BBC micro, model B.

You must make your journey within 60 seconds, controlling your speed and direction.

The road stretches out on either side of the bonnet and there are two dials facing you — the one on the left showing elapsed time and the dial on the right giving your speed.

At the top of the screen is a white strip bearing the Nightdrive logo, score and high score.

The controls, explained fully in the instructions, are:

A — turn left
D — turn right
semi-colon — accelerate
colon — maintain speed
left square bracket — decelerate

The square bracket is shown as a right arrow in the instructions because mode 7, which is needed for the large characters, doesn't have a left square bracket symbol.

A maintain speed button is required because the accelerate and decelerate buttons continue to have effect until they are countermanded.

The game seems very difficult to play at first, so here is a piece of advice: Don't go fast because this increases the road's tendency to curve to a point where the road's drift is greater than your control.

The highest score I have reached — with the crash detector turned off — is 68. With the detector left on, I have only managed to reach a feeble 26.

How it works

10-60	REMarks
20	tests for escape key press
80-120	title, optional instructions, set up screen, start sound, DIMension arrays
130-290	main loop, calls up PROCedures
310-460	draw car, road, logo, score, high score, define characters
480-540	erase old road and draw new
560-650	set up starting road position, define envelopes, initialize variables
670-680	test for crash
700-720	"You Crashed!" Go to score, high score, play again? PROCedure
740-840	sound siren for about five seconds. Give score, high score, play again?
860-920	draw dials
940-970	road right
990-1010	road left
1030	accelerate
1050	decelerate
1070-1130	erase old and put on new clock hand
1150-1190	erase old and draw new speed needle
1210-1230	"You ran out of time!" Go to score, high score PROCedure
1250-1270	title
1290-1390	instructions
1410-1420	flash colours when crashed
1440-1450	put XL(n) etc... into SXL(n) etc...

Variables

K constant block movement of road
JP speed
S score
P play. If 1, quit; if 2, play again
B beat. If 1, beaten high score; otherwise not
R(1-6) and **XL(1-6)** X co-ordinates of right and left sides of road
DL(1-6) and **YR(1-6)** Y co-ordinates of left and right sides of road
C crash. If 1, crash; otherwise you were OK
SXR(1-6) and **SYR(1-6)** previous X and Y right co-ordinates
SXL(1-6) and **SYL(1-6)** previous X and Y left co-ordinates
CX and **CY centre of dials**
INC interval at which dial was marked
m movement of road (curving)
p amount m is divided by to form curve
**A$** contains CHR$s to flash big red letters

Conversion hints

In BBC BASIC, a PROCedure is equivalent to a GOSUB except that a PROCedure is called by name rather than line number.

The ENVELOPEs define noises — ENVELOPE 1 is the crash, 2 the motor and 3 the siren. If the SOUND command has a zero after it, the note will be played through a noise channel. The motor noise auto-repeats in the BBC micro. Other computers will need the motor noise included in every loop.

GCOL and COLOR are colour commands. RAD(x) converts x to radians. On machines without this function a bit of maths will be needed.

The VDUs and CHR$s call up different commands, such as colour, defining characters and turning blocks of colour on and off. VDU defines a character and VDU 19 changes a colour.

ON ERROR detects when the escape key has been pressed. On the PETs, this could be done by POKE 144,88 and in the main loop testing the PEEK 166 until it equalled 4, ie RUN/STOP has been pressed.

```
  10 REM**************
  20 REM**NIGHTDRIVE**
  30 REM**BY P.TUDOR**
  40 REM**20 FEB '83**
  50 REM**-BBC-MICRO**
  60 REM**************
  70 ON ERROR GOTO1470
  80 MODE7:CLEAR:DIMXL(6),YL(6),XR(6),YR(6),SXL
(6),SYL(6)
  90 DIMSXR(6),SYR(6):PROCTITLE
 100 PRINT''CHR$135"Do you want instructions? (
Y/N)"
 110 A$=GET$:IFA$="Y"THEN PROCINSTRUCTIONS
 120 MODE1:PROCINITIALISE:PROCSCREENSET:SOUND0,
2,1,10
 130 PROCDELAY:S=S+INT(SP/10)
 140 IFINKEY$(0)="A"THEN PROCCOPY:FOR I=1TO6:XR
(I)=XR(I)+80+(SP/4):XL(I)=XL(I)+80+(SP/4):NEXT:P
ROCUPDATE
 150 IFINKEY$(0)="D"THEN PROCCOPY:FOR I=1TO6:XR
(I)=XR(I)-80-(SP/4):XL(I)=XL(I)-80-(SP/4):NEXT:P
ROCUPDATE
 160 PROCTEST:IF C=1THEN PROCFLASH:MODE7:PROCCR
ASH
 170 IFPL=1 THEN RUN ELSE IF PL=2THEN END
 180 IFINKEY$(0)="]"THEN F=1
 190 IFINKEY$(0)=";"THEN F=2
 200 IFINKEY$(0)=":"THEN F=3
 210 IF F=1 THEN PROCDECELERATE
 220 IF F=2 THEN PROCACCELERATE
 230 IF SP<10 THEN 270
 240 IFRND(2)=1THENPROCLEFT(64,16)ELSE PROCRIGH
T(64,16)
 250 PROCTEST:IF C=1THEN PROCFLASH:MODE7:PROCCR
ASH
 260 IFPL=1 THEN RUN ELSE IF PL=2THEN END
 270 *FX15,0
 280 IFTIME>7000THENMODE7:PROCNOTIME:PROCEND
 290 PROCSPEEDO:PROCTIME:GOTO130
 300 REM**SET UP THE SCREEN**
 310 DEFPROCSCREENSET
 320 VDU23,240,25,59,27,29,15,15,7,3,23,241,152
,220,216,184
 330 VDU240,240,224,192.19,0,0,0,0,0,19,1,0,0,0
,0,19,2,0,0
 340 VDU0,0,19,3,0,0,0,0:GCOL0,1:MOVE200,0:MOVE
300,200
 350 PLOT85,300,0:MOVE300,200:PLOT85,400,200:GC
OL0,2
 360 MOVE300,0:MOVE420,260:PLOT85,980,0:MOVE420
,260
 370 PLOT85,860,260:GCOL0,3:MOVE420,260:PLOT85,
440,300
 380 MOVE840,300:PLOT85,860,260:GCOL0,0:MOVE420
,260:DRAW860,260
 390 GCOL0,1:MOVE893,200:MOVE980,200:PLOT85,980
,0:MOVE980,200
 400 PLOT85,1080,0:COLOUR131:FORI=0TO1:PRINTTAB
(0,I);
 410    PRINTSTRING$(40," "):NEXT:COLOUR0:PRINTT
AB(0,1);"SCORE:          ";
 420 COLOUR1:PRINT"NIGHTDRIVE";:COLOUR0:PRINT"
     HIGH:";H%
 430 VDU5:MOVE619,312:VDU240,241:VDU4:COLOUR130
:COLOUR0
 440 TIME=1000:PRINTTAB(21,24);"SPEED";TAB(14,2
4);"TIME"
 450 VDU20:PROCDIAL(520,120,30):PROCDIAL(760,12
0,18)
 460 PROCUPDATE:PROCTIME:PROCSPEEDO:ENDPROC
 470 REM**UPDATE**
 480 DEFPROCUPDATE
 490 GCOL0,0:MOVESXL(1),SYL(1):FOR I=1TO6
 500    DRAWSXL(I),SYL(I):NEXT:MOVESXR(1),SYR(1)
:FOR I=1TO6
 510    DRAWSXR(I),SYR(I):NEXT:GCOL0,3:MOVEXL(1)
,YL(1)
 520 FOR I=1TO6:DRAWXL(I),YL(I):NEXT:MOVEXR(1),
YR(1)
 530 FOR I=1TO6:DRAWXR(I),YR(I):NEXT:COLOUR0:CO
LOUR131
 540 PRINTTAB(6,1);S:ENDPROC
 550 REM**INITIALISE**
 560 DEFPROCINITIALISE
 570 ENVELOPE1,1,0,0,0,0,0,0,-1,-1,-1,-1,126,25
5
 580 ENVELOPE2,3,2,-4,4,50,50,50,127,0,0,0,126,
0
 590 ENVELOPE3,1,4,-4,4,10,20,10,127,0,0,-5,126
,126
 600 DATA20,40,100,200,200,400,300,600,400,800,
480,958,1280
 610 DATA40,1200,200,1100,400,1000,600,900,800,
820,958
 620 RESTORE:FORI=1TO6:READXL(I),YL(I):SXL(I)=X
L(I)
 630    SYL(I)=YL(I):NEXT:FORI=1TO6:READXR(I),YR
(I)
 640    SXR(I)=XR(I):SYR(I)=YR(I):NEXT:A$=CHR$14
1+CHR$136+CHR$129
 650 S=0:SP=0:PL=0:SP1=0:F=3:ENDPROC
 660 REM**CRASH DETECTOR**
 670 DEFPROCTEST:C=0:IFXL(2)>300 OR XR(2)<992 O
R SXL(2)>300 OR SXR(2)<992 THEN C=1

 680 ENDPROC
 690 REM**YOU CRASHED**
 700 DEFPROCCRASH:C=0
 710 PRINT:FOR I=1TO2:PRINTA$;"           You CRA
SHED!!":NEXT
 720 PROCEND:ENDPROC
 730 REM**END SEQUENCE**
 740 DEFPROCEND
 750 IFS>H%THENH%=S:B=1:ELSEB=0
 760 PRINT:PRINT:PRINTCHR$(134);"You scored:";C
HR$(131);S
 770 PRINT:PRINT:PRINTCHR$(130);:IFB=1THENPRINT
"You beat the HIGH!" ELSE PRINT"You didn't beat
the HIGH!"
 780 B=0:PRINT:PRINT:PRINTCHR$(133);"The HIGH i
s:";CHR$(129);H%
 790 *FX15,0
 800 SOUND1,3,101,60:SOUND2,3,117,60:SOUND3,3,1
29,60
 810 PRINT:PRINT:PRINT" Press";CHR$136;CHR$134;
"SPACE";CHR$137;CHR$135;"for another";CHR$133;"N
IGHTDRIVE."'''CHR$135"( 'N' to";CHR$131;"QUIT";C
HR$135")"
 820 A$=GET$:IFA$=" "THEN PL=1 ELSE IFA$="N"THE
N PL=2 ELSE 820
 830 SOUND&11,0,0,0:SOUND&12,0,0,0:SOUND&13,0,0
,0
 840 ENDPROC
 850 REM**DIALS**
 860 DEFPROCDIAL(CX,CY,INC)
 870 GCOL0,0:D=-1:MOVECX,CY:REPEAT:D=D+INC:XADD
=115*SIN(RAD(D))
 880    YADD=115*COS(RAD(D)):MOVECX,CY:DRAWCX+XA
DD,CY+YADD
 890    UNTILD>360:GCOL0,1:D=-1:MOVECX,CY+100:RE
PEAT:D=D+15
 900    XADD=100*SIN(RAD(D)):YADD=100*COS(RAD(D)
):MOVECX,CY
 910    PLOT85,CX+XADD,CY+YADD:UNTILD>360:ENDPRO
C
 920 REM**DELAY**
 930 DEFPROCDELAY:FORW=1TO4000-(10*SP):NEXT:END
PROC
 940 REM**MOVE ROAD RIGHT**
 950 DEFPROCRIGHT(M,P):K=RND(64)+0.2*SP
 960 PROCCOPY:FORI=1TO6:XL(I)=XL(I)+(M/P)+K:XR(
I)=XR(I)+(M/P)+K
 970    P=P/2:NEXT:PROCUPDATE:ENDPROC
 980 REM**MOVE ROAD LEFT**
 990 DEFPROCLEFT(M,P):K=RND(64)+0.2*SP
1000 PROCCOPY:FORI=1TO6:XL(I)=XL(I)-(M/P)-K:XR(
I)=XR(I)-(M/P)-K
1010    P=P/2:NEXT:PROCUPDATE:ENDPROC
1020 REM**ACCELERATE**
1030 DEFPROCACCELERATE:IFSP<351THENSP=SP+50:END
PROC
```

BBC PROGRAM

```
 1040 REM**DECELERATE**
 1050 DEFPROCDECELERATE:IFSP>49THENSP=SP-50:ENDP
ROC
 1060 REM**CLOCK**
 1070 DEFPROCTIME
 1080 GCOL0,1:MOVE520,120:XADD=100*SIN(RAD(D))
 1090 YADD=100*COS(RAD(D)):DRAW520+XADD,120+YADD

 1100 GCOL0,0:FIX$=RIGHT$(STR$(TIME),4)
 1110 D=(6*VAL(LEFT$(FIX$,2)))-60:MOVE520,120
 1120 XADD=100*SIN(RAD(D)):YADD=100*COS(RAD(D))
 1130 DRAW520+XADD,120+YADD:ENDPROC
 1140 REM**SPEEDO**
 1150 DEFPROCSPEEDO
 1160 GCOL0,1:MOVE760,120:XADD1=100*SIN(RAD(SP1)
)
 1170 YADD1=100*COS(RAD(SP1)):DRAW760+XADD1,120+
YADD1
 1180 GCOL0,0:SP1=SP*0.9:MOVE760,120:XADD1=100*S
IN(RAD(SP1))
 1190 YADD1=100*COS(RAD(SP1)):DRAW760+XADD1,120+
YADD1:ENDPROC
 1200 REM**NO TIME**
 1210 DEFPROCNOTIME:SOUND0,0,0,0
 1220 VDU20:*FX9,6
 1230 CLS:PRINT:PRINT:FORI=1TO2:PRINTA$;"       Y
ou ran out of TIME!":NEXT:ENDPROC
 1240 REM**TITLE**
 1250 DEFPROCTITLE
 1260 CLS:FORI=1TO2:VDU129,141:PRINT"
 Nightdrive":NEXT
 1270 ENDPROC
 1280 REM**INSTRUCTIONS**
 1290 DEFPROCINSTRUCTIONS
 1300 PRINT''CHR$134"You are driving down a coun
try lane."''CHR$131"   'So what?',you say....":A
$=INKEY$(200):PRINT'CHR$134"   ...you can't see
where you're going!"
 1310 PRINTCHR$133;"In fact, that's not entirely
 true...."''CHR$133;"...you";CHR$129;"CAN";CHR$1
33;"see the faint edge."''CHR$131;" To make thin
gs easy,the road is curved"'CHR$131"and if you g
o over the edge...";CHR$136;CHR$129;"SPLAT!"
 1320 PRINT''CHR$130"      Press";CHR$136;CHR$13
2"SPACE";CHR$130;CHR$137;"to continue."
 1330 A$=GET$:IFA$<>" "THEN1330
 1340 CLS:PRINT''CHR$134;"The controls are as fo
llows:"''CHR$131;TAB(6);"'A'......";CHR$135;"Tur
n left.":PRINTCHR$131;TAB(6);"'D'......";CHR$13
5;"Turn right.":PRINTCHR$131;TAB(6);"';'......"
;CHR$135;"Accelerate."
 1350 PRINT'CHR$131;TAB(6);"':'......";CHR$135;"
Maintain speed.":PRINT'CHR$131;TAB(6);"'J'......
";CHR$135;"Decelerate."
 1360 PRINT''''':FORI=1TO2:PRINTCHR$131;CHR$136;C
HR$141;"          Good luck!":NEXT
 1370 PRINT''CHR$130"      Press";CHR$136;CHR$13
2"SPACE";CHR$130;CHR$137;"to start."
 1380 A$=GET$:IFA$<>" "THEN1380
 1390 ENDPROC
 1400 REM**CRASH FLASH**
 1410 DEFPROCFLASH:SOUND&10,1,4,5:FOR I=1 TO 60:
VDU19,1,RND(15);0;
 1420   VDU19,2,RND(15);0;19,3,RND(15);0;:NEXT:E
NDPROC
 1430 REM**COPY LOCATIONS**
 1440 DEFPROCCOPY:FORI=1TO6:SXR(I)=XR(I):SXL(I)=
XL(I):NEXT:ENDPROC
 1450 PROCUPDATE:IFTIME>7000THENMODE7:PROCNOTIME
:PROCEND
 1460 REM**ESCAPE**
 1470 MODE7:PRINTTAB(1,4);"Do you want another N
IGHTDRIVE (Y/N) ?"
 1480 A$=GET$:IF A$="Y"THEN RUN ELSE END
```


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My Pontoon game occupies about 6K and runs in a VIC-20 with 3K RAM expansion.

At the start the screen shows two sets of cards face down, yours on the top half of the screen and the computer's below.

You start with £100 and you are asked how much you want to gamble. When you have entered the amount your cards are turned face up and you select whether to twist or stick by pressing T or S.

If you twist another card appears and the total value is displayed in the middle of the screen. If your total is more than 21 you "bust" and the computer wins the bet.

If you stick the computer turns its cards and tries to score more than you. It wins if it scores the same or more. You win if it "busts".

For the computer to win outright it must win all your money and for you to win you must walk away with £1,000 or more.

The amount you need to win can be changed at line 664 and the starting amount can be changed at line 27.

How it works

10-99	initialise variables, create user-defined graphics
100-180	set up screen for play
200-267	place your bet
300-399	your play — turns cards and inputs T or S
400-490	control computer's play
500-540	print text for computer's win
600-680	print text for your win
700-795	sub-routine to turn cards
1100-1190	computer's outright win
1200-1290	your outright win
2000-2090	print titles

Variables

Y	your card starting position
C	computer's starting position
S	Money you have got
X	counter and random numbers
A	data
R	sound
I and J	counters
A$	inputs
B	your bet
C(1-10)	computer's cards
Y(1-10)	your cards
YT	sum of your cards
CT	sum of computer's cards
P	position of card
N	number of card to be printed
NM	a flag

Hints on conversion

Conversion should be fairly easy if you have a Commodore 64 or PET. But for other computers it would be quite difficult because the program uses the VIC's built-in graphics characters.

Control characters

The control characters used in this program are as follows —

Line 140: clear screen. **160** cursor down x 3. **210** reversed text. **215** black, reversed text. **220** reversed text, set red. **230** reversed text. **235** reversed text, green. **310** home cursor, cursor down x 11, reversed text, black, cyan, black, cyan. **315 reversed text, red. 407** reversed text, purple. **450** reversed text, black, home cursor, cursor down x 11. **452** set reversed text, set green. **514** set reversed text, set black. **515** red, reversed text. **614** black, reversed text. **615** reversed text, cyan. **660** set reversed text, green. **1130** clear screen, purple. **1135** yellow. **1140** cursor down x 2, green. **1150** cursor down x 2, cyan. **1215** clear screen, purple. **1220** yellow. **1225** cursor down x 2, green. **1230** cursor down. **1255** black, cursor down x 2. **2005** home cursor, cursor down x 10, reversed text, set black. **2010** reversed text, red. **2020** purple, reversed text. **2085** home cursor, cursor down x 10.

The POKEs in the program are: 36879 screen colour, 36878 sound volume, 36877 white noise, 36876, 36875 and 36874 are the sound channels, 36869,240 is for normal text and 36869,255 for user-defined text.

The memory-mapped screen locations are from 7680 to 8185, colour locations are from 38400 to 38884, the user characters are stored from 7168 onwards and the characters replaced are @ABCDEFGHI JKLMNOPQ. Their data is in lines 74-91.

```
2 REM              ******************
3 REM              * ALAN BLACKHAM'S *
4 REM              *   VIC PONTOON    *
5 REM              *     (11/03/83)   *
6 REM              ******************
7 REM
10 POKE 36878,15
12 POKE 36879,8
27 Y=7680:C=7966:S=100
30 REM ** USER CHARS **
40 X=7168
50 READ A:IFA=-1 THEN 100
60 POKE X,A
70 X=X+1:GOTO 50
```

VIC-20 PROGRAM

```
72 REM ** DATA FOR CHARS **
74 DATA 255,0,0,85,170,0,0,0
75 DATA 63,64,128,149,138,128,128,128
76 DATA 252,2,1,81,169,1,1,1
77 DATA 128,128,128,149,138,128,128,128
78 DATA 1,1,1,81,169,1,1,1
79 DATA 128,128,128,149,138,128,64,63
80 DATA 1,1,1,81,169,1,2,252
81 DATA 128,148,190,190,156,136,128,128
82 DATA 128,136,156,190,190,136,136,128
83 DATA 128,136,156,190,156,136,128,128
84 DATA 136,156,170,255,170,136,136,128
85 DATA 63,64,128,128,128,128,128,128
86 DATA 252,2,1,1,1,1,1,1
87 DATA 128,128,128,128,128,128,64,63
88 DATA 1,1,1,1,1,1,2,252
89 DATA 0,0,0,85,170,0,0,0
90 DATA 0,0,0,85,170,0,0,255
91 DATA 0,0,0,0,0,0,0,0
99 DATA -1
100 REM
102 REM **** SCREEN ****
105 REM
107 POKE 52,20:POKE 52,20
120 POKE 36879,25
130 POKE 36869,255
135 R=128
140 PRINT"■A@A@@@BQQQQQQQQQQQQ"
145 FOR I=1 TO 8
147 R=R+5:POKE 36875,R
150 PRINT"COCOOODQQQQQQQQQQQQQ":NEXT I
155 PRINT"EPEPPPFQQQQQQQQQQQQQ"
160 PRINT"■■■A@A@@@BQQQQQQQQQQQQQ"
165 FOR I=1TO 8
166 R=R+7:POKE 36875,R
167 PRINT"COCOOODQQQQQQQQQQQQQ":NEXT
170 PRINT"EPEPPPFQQQQQQQQQQQQQ";
175 POKE 36875,0
180 IF NG=0 THEN NG=1:GOSUB 2000
200 REM
202 REM ** BET **
205 REM
210 GOSUB2050:PRINT"■■YOU HAVE £";S
215 PRINT"■■ YOUR BET ( 1 -";S;")"
220 POKE198,0:INPUT"■";A$:B=VAL(A$)
225 IF B<=S AND B=INT(B) AND B>0 THEN 235
230 GOSUB 2050:PRINT"■INVALID QUANTITY":GOTO 220
235 GOSUB2050:PRINT"■■YOUR BET = £";B;
240 REM ** RND CARDS **
242 C(1)=INT(RND(1)*10)+1:IF C(1)=1 THEN CT=CT+10
243 C(2)=INT(RND(1)*10)+1:IF C(2)=1 THEN CT=CT+10
250 C(3)=0:Y(3)=0
252 Y(1)=INT(RND(1)*10)+1:IF Y(1)=1 THEN YT=YT+10
253 Y(2)=INT(RND(1)*10)+1:IF Y(2)=1 THEN YT=YT+10
255 YT=YT+Y(1)+Y(2)
257 CT=CT+C(1)+C(2)
260 REM ** TURN CARDS **
265 P=Y:N=Y(1):GOSUB 700
267 Y=Y+2:P=Y:N=Y(2):GOSUB 700
300 REM
302 REM **** PLAYER ****
305 REM
307 IF YT>21 THEN 500
310 PRINT"■■■■■■■■■■■■■■■TWIST OR ■STICK ?"
315 PRINT"■■     SCORE =";YT
320 POKE 198,0
325 GETA$:IFA$=""THEN325
330 IF A$<>"T"AND A$<>"S"THEN 325
340 IF A$="T" THEN 350
342 FOR I=254 TO 128 STEP -3
345 POKE 36876,I:NEXT
347 POKE 36876,0:GOTO 400
350 X=INT(RND(1)*10)+1
351 J=0
352 J=J+1:IF Y(J)<>0THEN 352
353 Y(J)=X:Y(J+1)=0
354 IF X=1 THEN YT=YT+10
355 YT=YT+X:Y=Y+2
360 P=Y:N=X:GOSUB 700
370 IF YT>21 THEN 500
399 GOTO300
400 REM
402 REM **** VICS GO ****
405 REM
407 GOSUB2050:PRINT"■■  YOU STUCK ON";YT
420 P=C:N=C(1):GOSUB 700
430 C=C+2:P=C:N=C(2):GOSUB 700
440 IF CT>21 THEN 600
445 IF CT>=YT THEN MN=1:GOTO 500
450 PRINT"■■■■■■■■■■■■■■■  I WILL TWIST !"
452 PRINT"■■  MY SCORE IS"CT
460 POKE36876,253
465 FORR=1TO900:NEXT
467 POKE 36876,0
470 X=INT(RND(1)*10)+1
471 J=0
472 J=J+1:IF C(J)<>0THEN 472
473 C(J)=X:C(J+1)=0
475 IF C(J)=1 THEN CT=CT+10
477 CT=CT+X
480 C=C+2:P=C:N=X:GOSUB 700
490 GOTO 440
500 REM
502 REM **** YOU LOST ****
503 REM
505 IF MN=1 THEN MN=0:GOTO 514
506 FOR J=1 TO 10
507 IF Y(J)=1 THEN Y(J)=2:GOTO 510
508 NEXT J:GOTO 514
510 YT=YT-10:GOTO300
514 GOSUB2050:PRINT"■■   BAD LUCK!"
515 PRINT"■■ YOU HAVE LOST £";B
517 S=S-B
520 FOR L=1 TO 15
525 FOR M=250 TO 240 STEP -1
530 POKE 36876,M:NEXTM,L
535 POKE 36876,0
540 GOTO650
600 REM
602 REM **** VICS LOST ****
603 REM
605 REM
606 FOR J=1 TO 10
607 IF C(J)=1 THEN C(J)=5:GOTO 609
608 NEXT J:GOTO 614
609 CT=CT-10:GOTO 440
614 GOSUB2050:PRINT"■■  WELL DONE!"
615 PRINT"■■    YOU WIN £";B
617 S=S+B
620 FOR L=1TO6
625 FOR M=200TO220+L*2
630 POKE 36876,M
632 NEXTM,L
635 POKE 36876,0
650 REM **** PRESS KEY ****
660 PRINT"■■    PRESS ANY KEY"
662 IF S<=0 THEN 1100
664 IF S>=1000 THEN 1200
665 YT=0:CT=0:MN=0
670 POKE 198,0
675 GETA$:IFA$=""THEN675
677 Y=7680:C=7966:PRINT"■"
680 GOTO 100
700 REM
702 REM **** SHOW CARDS ****
705 REM
710 POKE P,11:POKE P+4,12
720 FOR I=P+1 TO P+3
725 POKE I,227:NEXT
730 FOR I=P+22 TO P+176 STEP 22
735 POKE I,229:POKE I+4,231
740 FOR J=I+1 TO I+3
745 POKE J,17:NEXT J,I
750 POKE I,13
```

VIC-20 PROGRAM

```
755 FOR J=I+1 TO I+4
757 POKE J,228:NEXT
760 POKE I+4,14
800 REM ** PRINT CHARS ON CARD **
805 POKE 36874,220
806 FORR=1TO50:NEXT:POKE 36874,0
810 X=INT(RND(1)*4)+1
812 POKE P+22,6+X
815 IF X=1 THEN CH=211:CO=2
816 IF X=2 THEN CH=193:CO=0
817 IF X=3 THEN CH=218:CO=2
818 IF X=4 THEN CH=216:CO=0
819 FOR I=P+30720 TO P+30720+198 STEP 22
820 FOR J=I TO I+4
821 POKE J,CO:NEXT J,I
824 IF N<10 THEN 840
825 X=INT(RND(1)*3)+1
830 IF X=1 THEN N=10
832 IF X=2 THEN N=17
834 IF X=3 THEN N=11
836 POKE P,N+128:N=10:GOTO 850
840 POKE P,48+N+128
850 ON N GOTO 860,865,870,880,890,900,910,920,930,940
860 POKE P,129
862 POKE P+112,CH:GOTO 990
865 POKE P+46,CH
867 POKE P+178,CH:GOTO 990
870 POKE P+46,CH
872 POKE P+178,CH
874 POKE P+112,CH:GOTO 990
880 POKE P+45,CH:POKEP+47,CH
885 POKE P+177,CH:POKE P+179,CH:GOTO 990
890 POKE P+45,CH:POKEP+47,CH
892 POKE P+177,CH:POKE P+179,CH
895 POKE P+112,CH:GOTO990
900 POKE P+45,CH
902 POKE P+177,CH
904 POKE P+111,CH
905 POKE P+47,CH
906 POKE P+179,CH
907 POKE P+113,CH:GOTO 990
910 POKE P+45,CH:POKE P+47,CH
912 POKE P+177,CH:POKE P+179,CH
914 POKE P+111,CH:POKE P+113,CH
915 POKE P+68,CH:GOTO 990
920 POKE P+45,CH:POKE P+47,CH
922 POKE P+177,CH:POKE P+179,CH
924 POKE P+111,CH:POKE P+113,CH
925 POKE P+68,CH:POKE P+134,CH:GOTO990
930 POKE P+45,CH:POKE P+47,CH
932 POKE P+89,CH:POKE P+91,CH
934 POKE P+133,CH:POKE P+135,CH
936 POKE P+177,CH:POKE P+179,CH
938 POKE P+112,CH:GOTO 990
940 POKE P+45,CH:POKE P+47,CH
942 POKE P+89,CH:POKE P+91,CH
944 POKE P+133,CH:POKE P+135,CH
946 POKE P+177,CH:POKE P+179,CH
948 POKE P+68,CH:POKE P+156,CH
990 POKE 36874,128
992 FORR=1TO100:NEXT:POKE36874,0
995 RETURN
1100 REM
1102 REM **** YOU LOST ****
1110 REM
1120 POKE 36869,240
1130 PRINT"     VICPONTOON"
1135 PRINT"
1140 PRINT"  YOU HAVE RUN OUT OF        MONEY"
1150 PRINT"     HARD LUCK!"
1155 FOR I=1 TO 7
1156 RESTORE
1160 FOR J=1 TO 80
1165 READA:POKE 36876,A:NEXTJ,I

1170 POKE 36876,0
1190 GOTO 1250

1200 REM
1202 REM **** COMPUTER LOST ****
1205 REM
1210 POKE 36869,240
1215 PRINT"     VICPONTOON"
1220 PRINT"
1225 PRINT"  I HAVE RUN OUT OF        MONEY"
1230 PRINT"  COME BACK NEXT WEEK!"
1240 FOR I=1 TO 7
1242 FOR J=150 TO 220
1243 POKE 36875,J:NEXTJ,I
1245 POKE 36875,0
1250 REM ** ANOTHER GO **
1255 PRINT"  ANOTHER GAME (Y OR N)"
1260 POKE 198,0
1270 GETA$:IFA$=""THEN1270
1280 IF A$="Y"THEN RUN
1290 POKE 36879,27:PRINT"":END
2000 REM
2002 REM **** TITLES ****
2003 REM
2005 PRINT"          VIC-20 PONTOON"
2010 PRINT"  BY A.BLACKHAM(C)"
2020 PRINT"  PRESS ANY KEY TO PLAY"
2030 GETA$:IFA$=""THEN2030
2050 REM
2052 REM **** CLR SCREEN ****
2055 REM
2060 FOR I=7900TO7965
2080 POKE I,160:NEXT I
2085 PRINT"          ";
2090 RETURN
```


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The latest action games: firecrackers or damp squibs? This is what our reviewers think

Moons of Jupiter Vic-20 plus 3K £9.99

Romik, 24 Church St., Slough, SL1 1PT.

From time to time a real gem of a program emerges from the mass of software on sale, and this is one. In spite of its name, Moons of Jupiter is an excellent version of the old favourite Asteroids.

To the uninitiated, the idea of the game is to pilot a small space ship in the middle of a swarm of asteroids. Using the ship's cannon, you must destroy the asteroids and survive.

As you shoot the asteroids, they break up into smaller, faster moving, rocks. When you have cleared the screen of all debris, you get a new screen full to shoot at.

The ship's controls enable you to rotate the ship to the left and right and to move forwards. Your score simply depends on how many asteroids you destroy.

In Moons of Jupiter, the asteroids are beautifully drawn "moons" which move smoothly across a screen which is larger than that on the normal Vic. All animation is superb, without the faintest trace of jerkiness.

The ship moves very realistically with just a touch of inertia to make life difficult, and can be controlled from the keyboard or by a joystick, an option which more software authors should use.

The game offers three levels of difficulty and is very challenging. Occasionally nasty little objects called Gologs appear on the screen. You can destroy them, but I won't tell you how.

Overall, a superb game which any "Asteroids addict should obtain without delay. **A.W.**

instructions	80%
playability	90%
graphics	100%
value for money	95%

★ ★ ★ ★ ★

Rox 64 Commodore 64 £4.95

Llamasoft, 49 Mount Pleasant, Tadley, Hants RG26 6BN.

Retro Thrusters Activated! Planetfall successful. A bleak landscape upon which your multicoloured lunar module slowly descends is the scenario for Rox 64, a cross between Asteroids and Lunar Lander.

Underneath the lunar surface your craft's status is displayed, along with an unusual Damage Percentage display which increases as coloured boulders drift down and crash mightily into the surface.

Once your percentage has reached a certain level, your craft is destroyed by an impressive earthquake.

Your only defence is to fire rockets diagonally or straight up to intercept the boulders, and you gain points for each hit plus an accuracy bonus. A Smart Bomb is available for desperate situations. Should you destroy all the rox, a large mother ship bleeps down and rescues your craft for a large points bonus.

The instructions at the beginning of the game weren't too clear, but I found them easy to pick up as I went along. Loading presented no problems whatsoever.

The boulders and missiles are slow to move, but there is an addictive quality to the game, and the colour displays between waves are excellent. All in all, good value for money.

D.A.

instructions	60%
playability	65%
graphics	65%
value for money	70%

★ ★ ★

Horace goes skiing Spectrum £5.95

Psion (with Melbourne House), 131 Trafalgar Road, Greenwich, London SE10

This is a sequel to Hungry Horace, from the same stable of writers, but not, I hope, the end of Horace. In this adventure, he has the princely sum of $40 and wants to go skiing, but first of all, he has to cross over a very busy motorway.

The traffic on the motorway is a first-class example of the use of animated graphics, but this does not stop it knocking poor old Horace down. Every time he is knocked down he has to pay an ambulance fee of $10, which makes the National Health Service seem a good proposition.

However, if Horace spends all his money on ambulance fees, he can earn some more by bravely dashing backwards and forwards across the motorway collecting points (hopefully). 1000 points will earn him the price of a pair of skis, or an ambulance ride.

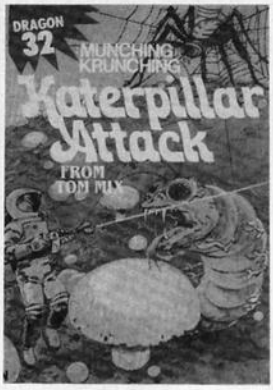
If you can successfully get him to the ski slopes, there is more money to be earned by skiing down to the finishing line... but watch those trees!

I would have liked to have seen instructions on the screen as well as on the inlay, but I found that by using keys 1, 2, 3, and 4 I was able to keep a tight control — well, tightish — over the game.

Fun to play. You need a fair bit of patience to cross the road, but it is worth the effort. **B.B.**

instructions	60%
playability	90%
graphics	100%
value	80%

★ ★ ★ ★



Katerpillar Attack Dragon plus joystick £7.95

Microdeal, 41 Truro Road, St Austell, Cornwall PL25 5JE

A fast machine code version of Centipede, entertaining, colourful and making a refreshing change from Space Invaders and the like.

The on-screen Katerpillar is a docile-looking creature that breaks up into segments when zapped, and proved to be a great hit with my younger children (from eight downwards).

I couldn't help wondering who the game is actually aimed at, though; because of the lurid cassette box design, showing a hideous space monster being attacked by a space man, I would not have picked Katerpillar off the shelf as a children's game.

No spaceman, but you have a laser base at the bottom of the screen and fire to your heart's content. The screen soon becomes littered with mushrooms and spiders — all of which cold be potentially dangerous...

You lose a life when a spider touches you, making a raspberry sound that would have had Miss Muffet in stitches — my kids were rolling about.

Highest score is kept, but I wish you could input your name. They cheat in my house, and everyone claims top score.

Katerpillar provides excellent optional instructions, looks good on screen, plays well and allows the Dragon to appear in its rightful place as second to none. **M.P.**

instructions	90%
playability	100%
graphics	100%
value	90%

★ ★ ★ ★ ★

Power Blaster Vic-20 £9.99

Romik Software, 24 Church Street, Slough, Berks SL1 1PT.

Two classic arcade games, Space Invaders and Pacman, combined into one.

Your spaceship sits in a Pacman-like matrix surrounded by dots(mines) and pursued by Martians.

Instead of devouring the mines you have a highly effective laser which allows you to destroy whole rows of them for initially impressive scores.

I say initially impressive because as you progress through the levels (1-9), the machine code speed of the program makes the higher stages extremely difficult, with frantic Martians chasing you for all they are worth.

I have shown Power Blaster to several people, whose reactions have confirmed my opinion that this is one of the best non-cartridge games I have yet seen for the unexpanded Vic.

Highly addictive, although very simple in concept and easy to play. Either keyboard or joystick can be used.

If I had to make a criticism of this game then it would have to be that, at £9.99, it is quite expensive. No more so, though, than many other Vic-20 games, which tend to cost more than programs for rival machines. **M.B.**

instructions	90%
playability	90%
graphics	80%
value for money	85%

★ ★ ★ ★

Kong Colour Genie 16K £8.95

Algray, Algray House, 33 Bradbury Street, Barnsley, S Yorks S70 6AQ.

Based on the arcade game Donkey Kong, already very popular in the USA but not quite as well known here, Kong is a faithful reproduction of the original.

The idea of the game is to manoeuvre your little man through different situations to try and rescue a young lady held captive by the infamous King Kong at the top of the screen. The action takes place on four different screens, each one supposedly harder than the last.

There are five controls to move the man left and right, up and down and to jump over or on to obstacles. The movement can be controlled either by the keyboard, or with joysticks (if you happen to be rich enough to own a set), and is easy to master.

The first screen consists of a series of girders joined together by ladders which must be climbed. To hinder you, Kong throws barrels which roll down the girders and ladders. These must be jumped over or crushed, using a hammer which you must retrieve from a hook above one of the girders. But this hammer is unreliable and can disappear from your hand at any time; usually at just the wrong moment.

As soon as you reach the damsel in distress at the top of the screen the display immediately changes to the next setting: a series of conveyor belts carrying hot pies. You must travel along the belts, and jump off, without hitting a pie or ending up in the oven in the middle of the screen.

The next screen is probably the most difficult and consists of a lift system which is constantly moving and a series of levels which must be jumped. The lift must be in exactly the right position before you can safely jump on to or off it, and it takes a while to find exactly the right point. After the lift, you must jump from level to level across open shafts while avoiding springs which Kong throws down them.

The next level is a mere formality. It consists of eight plugs which must be removed from the girders, causing them to collapse and so kill Kong, rescuing the young lady into the bargain.

The game then repeats, unfortunately with no apparent increase of difficulty.

Minimal instructions are provided, the author clearly assuming you know how to play already, but it is fun to experiment with the game and find out what you can and can't do. The program is entirely machine code, making for beautifully animated and smooth graphics plus good use of colour and sound.

An excellent game, making full use of the Genie's facilities and well worth buying. **I.O.**

instructions	50%
playability	90%
graphics	90%
value	85%

★ ★ ★ ★

Sea Invasion Vic-20 £9.99

Romik Software, 24 Church Street, Slough, Berks SL1 1PT.

Based on the Space Invaders theme, but instead of aliens an assortment of octopi, crabs and starfish. These give 30, 20 and 10 points respectively if you destroy them — but they are out to destroy you too.

With the aid of a speargun and temporary shelter behind sea plants, you must attempt to rid the ocean of these creatures before they overrun you. But if you do succeed in clearing one horde, another takes its place moving at a faster pace until your three lives are used up.

There are five skill levels and a choice of joystick or keyboard control, both equally effective.

High scoring is possible for the skilled player, with the added attraction of a mystery bonus when you spear the stray shark speeding across the top of the screen. On the whole, an entertaining game. **K.W.**

instructions	70%
playability	60%
graphics	75%
value for money	40%

★ ★ ★

SOFTWARE REVIEWS

Skramble Colour Genie 16K £8.95

Algray, Algray House, 33 Bradbury Street, Barnsley, S. Yorkshire S70 6AQ

No prizes for guessing which famous arcade game this is a version of. Like many of Algray's games, Skramble follows the original's format as closely as possible within machine limitations.

For any of you who don't already know, the object of Scramble-type games is to guide your little spaceship through tunnels and caves while avoiding and bombing the usual alien welcoming committee.

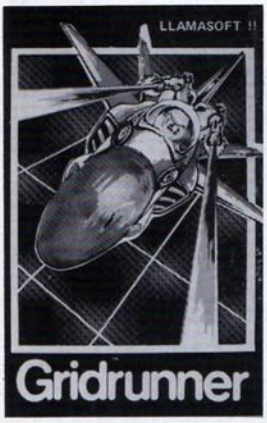
To earn points and survive, alien warships, rockets and meteors must be zapped, along with enemy ground bases. There is a fuel limit and the only way to complete each section is to bomb fuel dumps which mysteriously refuel your craft.

The ultimate aim of the game is to reach and land on a 'homing slot' at the end of the tunnel. Needless to say, to get that far is very difficult indeed and I haven't got anywhere near it — yet. Apparently, should you be clever enough to make it, there is a chance of winning £100 from Algray.

The game is entirely in machine code, making it fast and reasonably smooth. The controls take a while to master and the game a lot longer, but all this adds to the interest. Good graphics, sound and colour, making this an excellent game. **I.O.**

instructions	50%
playability	90%
graphics	90%
value	85%

★ ★ ★ ★



Gridrunner Commodore 64 plus joystick £8.50

Llamasoft Software, 49 Mount Pleasant, Tadley, Hants RG26 6BN.

Gridrunner's action takes place on a yellow grid, representing Earth's latest solar power generator, now overrun by aliens. Your mission is to clear the grid with the aid of a super-blaster.

A klaxon-like warning sounds as the screen alerts you: "Battle Stations. Enter grid sector 01." There are in fact 31 sectors you can choose to enter. Your small green blaster appears on the grid and moves freely with the aid of a joystick around the lower portion of the playfield.

Gridsearch squads which resemble wriggly worms come down very quickly and break into smaller worms when hit. They leave behind pods, which change shape and eventually explode, sending bombs hurtling down.

The XY Zapper also plants pods, and sends a lethal beam vertically up to catch you unawares. All these creatures can be killed by blasting away with your high speed cannon.

Gridrunner is rather like an abstract version of Centipede, with 'spacey' sound effects. Detailed instructions make comprehension and playing fairly easy, but the game moves so fast that it takes a little getting used to.

Not all that original but for dedicated arcade players a fast and enjoyable game with good sound and graphics. **D.A.**

instructions	70%
playability	60%
graphics	60%
value for money	65%

★ ★ ★

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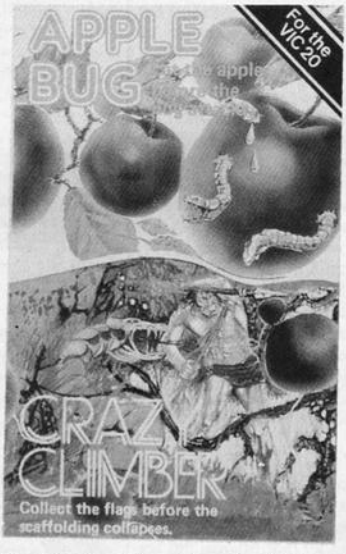

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The small company that means business

Professional applications on small computers? It can be done, says Mike Salem of Hilderbay. Candice Goodwin finds out how

From astronomy to writing programs for the ZX81 and Spectrum may seem like a quantum leap. But as far as Mike Salem of Hilderbay is concerned, it's just a natural progression.

"I only once looked through a telescope in the whole of my career in astronomy", he said. "My work mainly involved constructing mathematical models. So in fact I've been using computers for ages".

Before setting up Hilderbay, Mike Salem was an astrophysicist at a certain well-known university — which shall remain nameless because, Salem feels, his ex-colleagues would look askance at his foray into the commercial world.

The computers he used there certainly weren't the kind of machine you'd find in the home, either — they'd have filled the average living room many times over. But far from making him dismissive of home computers, his academic career has led Mr Salem to appreciate how powerful they really are.

"In the early days we were using machines vastly larger but less powerful than the ZX81 — and very useful they were too", he recalls. "The ZX81 would have costs hundreds of thousands of pounds some time ago. It's only the way we look at things that's turned it into a useless toy."

The best proof of his point is the software range that Hilderbay now sells, which enables quite complex, professional tasks to be carried out on very small computers.'

Mike Salem originally set up Hilderbay in late 1979 as a one-man consultancy firm, specialising in ship stability. Because "it made sense to become a limited company", he bought a ready-made company — including the name. "I'd probably choose a different one now", he says.

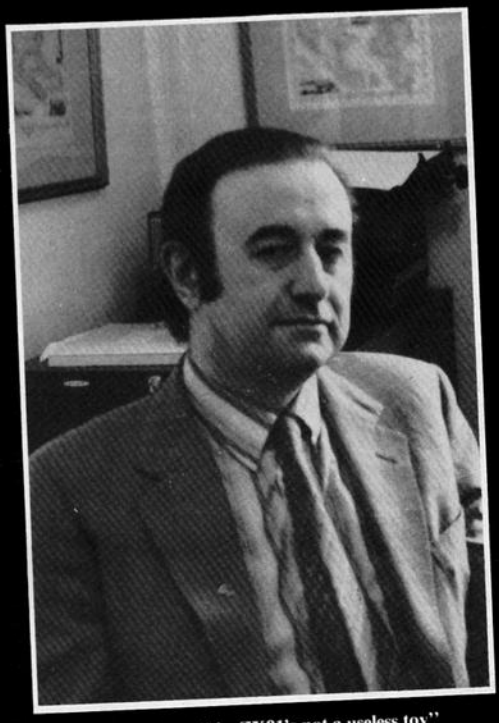
As a self-employed consultant, it was the tedium of working out pay-as-you earn calculations from the PAYE tables that gave him the incentive to write his first marketable program on a small computer. And it really was small. The machine was a Casio programmable calculator, and the program took up 256 steps.

When the ZX81 came out, Salem converted the program into a payroll package for the new computer, and decided to try and sell it commercially. He said: "The program meant that a payroll that would take two hours manually could be done in 15 minutes on the computer".

"I realised that it had an enormous technical and market potential, and assumed that people would rush to buy it".

At first, they didn't. But Salem continued to have faith in his product and, after he took over the marketing of it himself in October 1981, it started "going like wildfire".

Now, he reckons, there are a substantial number of companies doing their payroll on ZX81 and Spectrum computers: "certainly well beyond the hundreds, I would say". And his payroll



Mike Salem: "the ZX81's not a useless toy"

Bookkeeper Sheila Finn — covering the folk scene by computer

program has been on the market continuously ever since.

Who buys business packages for the ZX81 and Spectrum? Mike Salem estimates that around 75 percent are small business — "but that's purely a guess" — and his small business clients include funeral directors, garages, nursing homes, accountants, motorcycle dealers, bakeries, laundries and hairdressers.

But not all of them are small. "A fair number of people in really big businesses have bought our products — including a major chemical corporation and a large supplier to the oil industry. I suppose people buy them because they can take them home and work on them in the evenings".

Like many of the software companies that sprang up around the ZX81, Hilderbay was hit by the arrival of the Spectrum.

"No-one was buying ZX81 stuff because the Spectrum was coming, and no-one was buying the Spectrum because there were no Spectrums."

Since then, Mr Salem has extended his range to cover the more up-market Apple as well as the Spectrum. But he remains a firm fan of the ZX81. "It's just a problem of input — loading takes longer on the ZX81 than on the Apple, but the running's not too different. The BASIC is very good; the string handling on the ZX81 is better than on almost any machine".

As for catering for other machines: "We will diversify...when we can. The facility for a lot of RAM is interesting in the Oric and Newbrain — we write software that will take advantage of more memory if you've got it. The only reason we're not looking at more machines today is that we haven't got the resources".

The original payroll package has now been joined by a range of others, mainly aimed at the "serious", though not necessarily just the business user.

Some of them are purely business: stock control, and statutory sick pay, for example. Others would be equally useful in the home, such as budgeting and critical path analysis, a way of working out the most efficient way of carrying out a project, whether it is doing a piece of research, cooking a meal or building a house.

Hilderbay also sells hardware for the three machines, including an interface that will link the Spectrum to most makes of printer, and the printers themselves.

Included on request with every printer and interface is Hilderbay's Spectrum word-processing program. "We wrote it because we needed it, and there was nothing on the market at the time", Mr Salem explained. "It's very good, but it runs rather slowly". But it's clearly not too slow to be useful, for Sheila Finn, who does Hilderbay's bookkeeping and accounting, uses the program to produce the diary section of Folk London magazine.

No-one who deals extensively with the ZX81 can afford to ignore loading problems, and Hilderbay also sells a selection of hardware and software aids aimed at making loading a little easier.

Among these are meters to find the optimum signal level for loading, a tape head adjustment program, and a booklet which tells you, among other things, why you should never use a stereo tape deck to record your programs.

Though "professional software" is Hilderbay's public image, it isn't all work and no play. Its catalogue also includes a handful of games, including Evolution, which in the words of the game itself allows you to "retrace the course of evolution, and see if you are really here".

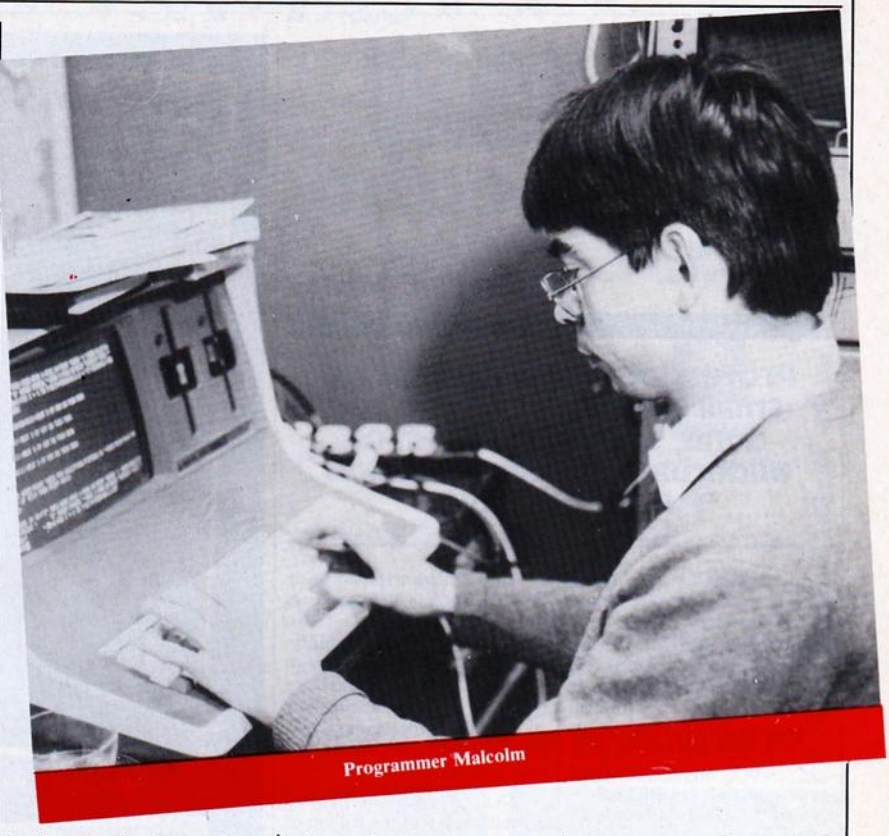
The first few programs were written by Mr Salem himself: "That was when it was I instead of we." He acquired his first freelance programmer towards the end of 1981, and now employs around seven programmers, all working on a freelance basis, and three people to help run the office at 8-10 Parkway, in Camden Town, North London.

He finds, though, that however quickly he takes people on, the work expands faster. "Things are still not properly organised. Things are expanding far faster than we can cope with. If you say you're expanding at 15 percent a month, the average financial person won't believe you. Keeping control is the basic problem.

"Expanding quickly sounds good, but it also means you can go broke. But having survived last summer when the Spectrum came out, we'll survive anything."

Among his plans, to be carried out when time permits, are a new range of accounting software, and a demonstrator tape which, for £3.95, will show prospective clients how the payroll, statutory sick pay and stock control programs work. He is also thinking of selling his software through retailers. "The trouble is, there's so much mail order to cope with that we don't have time to talk to the shops, and hence reduce our mail order. But we've been talking to three large organizations."

The future, he says, is "extremely difficult to predict in this market. Everybody uniformly decided I was going the wrong way, but I don't think so. Software companies need to have the spirit of the Victorian entrepreneurs — because if you don't come up with a new idea every month, you're broke".



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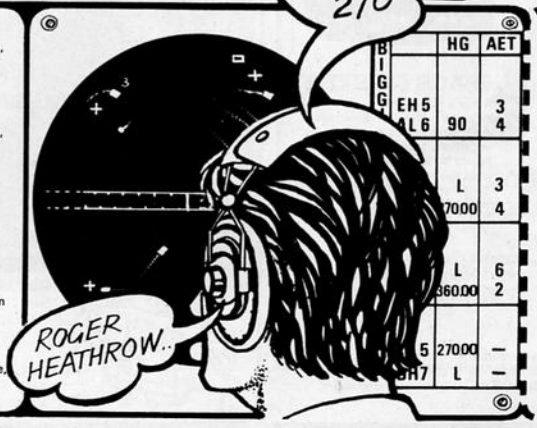

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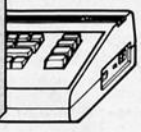

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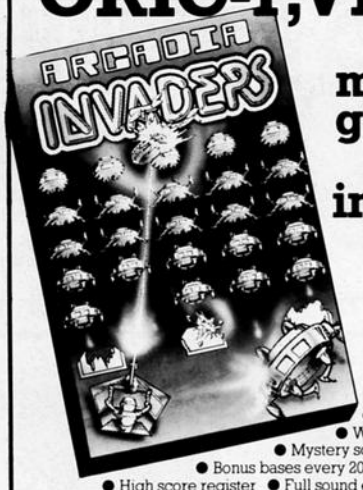

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Select any colour simply by pressing the initial letter of the colour — G for green, R for red and so on.

Type F and the colour will flash.

Some very intricate patterns can be produced by placing four fingers over the cursor keys and randomly pressing them.

To clear the screen and start again, press the tab key.

Users with joysticks may like to convert the program using the ADVAL function in lines 130-160.

How it works

30	*TV 255. This line is only necessary if top of the display is off the screen
70	VDU5 links text and graphic cursors
80	VDU29 moves graphics origin to the centre of the screen
130-160	examine cursor keys
170-230	examine colour select keys
240	examine flash select key
250	examine tab key
280-380	PROCedure to plot the pattern in four quadrants
390-610	PROCedure to display instructions

```
10 REM COMPUTER ART
20 REM By Geoff Turner
30 *TV255
40 MODE 7
50 PROCINTRO
60 MODE 2
70 VDU 5
80 VDU 29,639;511;
90 X=0:Y=0
100 COL=7
110 PROCPLOT
120 REPEAT
130 IF INKEY(-58) Y=Y+4:PROCPLOT
140 IF INKEY(-42) Y=Y-4:PROCPLOT
150 IF INKEY(-26) X=X-4:PROCPLOT
160 IF INKEY(-122)X=X+4:PROCPLOT
170 IF INKEY(-52) COL=1
180 IF INKEY(-84) COL=2
190 IF INKEY(-69) COL=3
200 IF INKEY(-101)COL=4
210 IF INKEY(-102)COL=5
220 IF INKEY(-83) COL=6
230 IF INKEY(-34) COL=7
240 IF INKEY(-68) AND COL<8 COL=COL+8
250 UNTIL INKEY(-97)
260 CLS
270 GOTO 90
280 DEFPROCPLOT
290 GCOL 0,COL
300 IF X>500 X=500
310 IF X<0 X=0
320 IF Y>500 Y=500
330 IF Y<0 Y=0
340 PLOT 69,X,Y
350 PLOT 69,-X,Y
360 PLOT 69,X,-Y
370 PLOT 69,-X,-Y
380 ENDPROC
390 DEFPROCINTRO
400 CLS
410 PRINT SPC(10);CHR$(141);CHR$(129);"COMPUTER  ART"
420 PRINT SPC(10);CHR$(141);CHR$(129);"COMPUTER  ART"
430 PRINT SPC(11);"By Geoff Turner"
440 PRINT
450 PRINT SPC(4);"SELECT A COLOUR BY PRESSING THE "
460 PRINT SPC(4);"INITIAL LETTER OF THE COLOUR."
470 PRINT
480 PRINT CHR$(130);"G for GREEN, ";CHR$(131);"Y for YELLOW ";
    CHR$(135);"etc.etc."
490 PRINT
500 PRINT CHR$(136);"PRESS  'F' AND THE COLOUR WILL FLASH."
510 PRINT
520 PRINT CHR$(134);"Use the cursor keys to draw a pattern"
530 PRINT CHR$(134);"in the top right quadrant of the screen."
540 PRINT CHR$(134);"The pattern will be reflected in the"
550 PRINT CHR$(134);"other three quadrants."
560 PRINT
570 PRINT CHR$(134);"Press TAB to clear the screen."
580 PRINT'''
590 PRINT SPC(10);"PRESS SPACE BAR."
600 IF NOT INKEY(-99) THEN 600
610 ENDPROC
```

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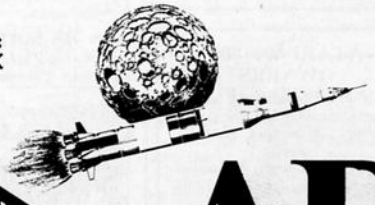

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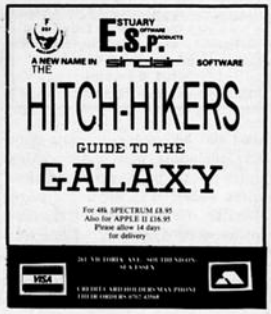

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I make my offer at this time, to enable me to secure more time to write my second book, it will take me at least 12-18 months, but when it is published it will prove to be a sensation, believe me.

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Why 'line the pockets' of your employer any longer, start 'lining your own' before you leave it too late. I am not making this offer to MAKE YOU RICH, in order to make myself rich, it is not necessary, you already know why. Working part time, my last financial year shows income well in excess of £70,000 with profits at over £11,000—yes JUST PART TIME, this can be multiplied many times if necessary. For those who wish it, in American Dollars again, this amounts to about $132,300 and profits about $20,790.

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The pessimists say—"It is not possible to succeed on your own any more"—what utter rubbish and absolute nonsense—these people belong to the category that are ASLEEP—believe me, it is easier now than ever it was, but only those who WANT TO MAKE MONEY do so, I KNOW.

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