Home Computing WEEKLY

NEW

An Argus Specialist Publication

APRIL 19-25, 1983 No. 7

35p

INSIDE

Programs to type in for: ZX81, BBC, VIC-20, Oric-1

Pages of news

Software reviews for: BBC, Dragon, Spectrum

Articles on ZX81, Atari

Competition winners

COMPUTER SEX STORM

ANOTHER HCW EXCLUSIVE

Police are looking into a complaint by anti-porn campaigner Mary Whitehouse about "adult" computer games due to go on sale soon.

And the director of the National Society for the Prevention of Cruelty to Children is demanding action by Home Secretary Willie Whitelaw.

The games — with names like Burning Desire, Knight on the Town and Philly Flasher — are being imported from America by John Pickard, 34, managing director of Silverfox Communications in Clacton High Street.

Mrs Whitehouse, who lives just 20 miles from Clacton, informed the police immediately she heard of the plan.

Mr Pickard is importing six cartridges, costing £39.95, and each one contains two games to run on video machines like the Atari VCS and on the Atari 400 and 800 computers fitted with adaptor sockets.

Within six months he plans to have cassette and disc versions available for many popular home computers.

One of the games is a modification of Custer's Last Stand which caused a storm when it was launched in America. It shows a soldier raping an Indian girl.

But Mr Pickard said. "Our

Continued on page 3

New factory for new micro

Memotech, best known for its ZX81 add-ons, is launching its own home computer.

Launch date for the micro — the name has not yet been settled — will be in the second half of July.

The idea came up because Memotech was working on a business micro, called the SM1, with Orchid Computers, of Oxford, which own Memotech.

Technical director Geoff Boyd said. "We decided we could tackle the consumer end by making a low-cost model. All the hard work had been done already, so it didn't take us very long at all."

It meant, he said, that the basic model for home use would have a wealth of peripherals available at the time of the launch.

Mr Boyd, 33, said: "Potentially you could put a Winchester disc on it. We are really doing the whole thing the other way round. After all, we've got to progress — the ZX81 won't go on forever."

Continued on page 5

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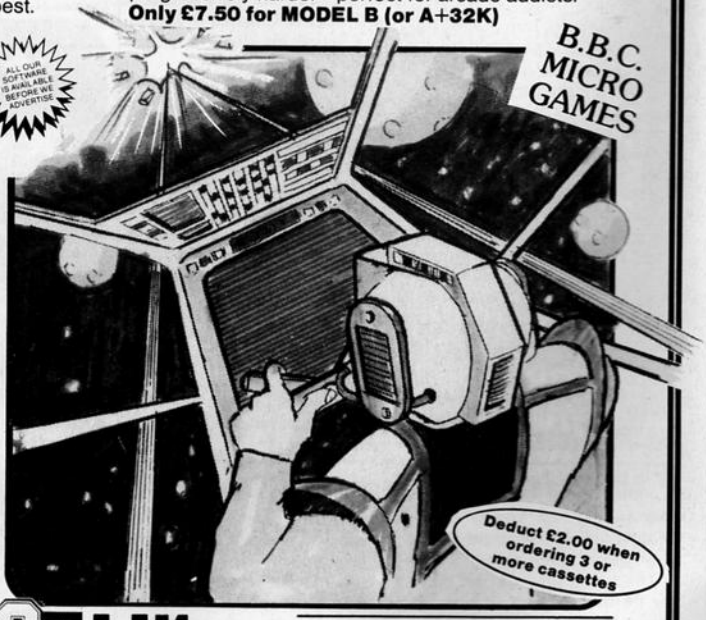

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Continued from front page

game, Westward Ho, has been modified. She does not get raped. . . she entices the soldier."

Among the range is Cathouse Blues, with prostitutes, muggers and graphic bedroom scenes; Philly Flasher and its female version; Burning Desire and Jungle Fever, in which a male or female victim "rewards" a rescuer after being saved from being burned alive; Bachelor Party and Bachelor-ette Party are versions of the arcade favourite Breakout where the wall and missiles are replaced with people.

Even Westward Ho has a version called General Retreat where the roles are reversed.

Mr Pickard said: "I came across them in the States and I thought: what a good idea. Now I've got an exclusive deal to market them here and in Europe. I knew I was going to run into problems, but I don't think they are insurmountable.

"Children are not in the market. We are dealing with an adult market. They are the sort of thing you would get out after a dinner party or after a night at the pub and have a good time.

"You would see a lot more on the adult video films.

Mr Pickard said he had taken legal advice before deciding to bring in the cartridges. He expects his first shipment to arrive before the end of the month and plans to show them at a trade exhibition next month.

He said: "Until they are on the market people like Mary Whitehouse can't sue us. They can't make a complaint unless they have purchased the goods.

"In no way do I find the games obscene.

"Yes, I can see them being sold in Smiths and Menzies. After all, they sell Knave and Fiesta and they are about the same level in content. But I would expect them to be out of the reach of children."

Mr Pickard said he was writing to Mrs Whitehouse to invite her to see the games — "or I will take them to her."

A spokesman for Mrs

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QUEST IS HERE!
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Whitehouse, at the National Viewers' and Listeners' Association, confirmed that she had asked Clacton police to investigate and to see if any Customs and Excise law was being infringed.

She said: "Our concern is with young children and the availability of pornography and this is another means of making this sort of thing available.

"We could not comment on these games because we have not seen them but if the police think they break the law they would forward the case to the Director of Public Prosecutions."

In a strongly-worded comment, the director of the NSPCC, Dr Alan Gilmour, said he was horrified to hear of the plan to market "pornographic" video games in this country.

He said: "No matter how careful parents are, there is the very real danger that children will gain access to these 'games' in the same way they are about to obtain the so-called video 'nasties' at present.

"The view of sex portrayed by such ghastly offerings can twist a child's mind for life.

"In addition to protecting against physical cruelty, the NSPCC has a responsibility for children's morals. I will be encouraging that responsibility by making my views know to the Home Secretary.

"I hope that he will take rapid action to ban, or at least tightly control, the availability of such products."

ORIC PRICE RISE

Tangerine raises price of delayed 16K Oric-1 by £30 to £129. Oric Products' price stays the same, but "discussions in progess" on final retail price.

Tangerine's discount for 48K Orics sent on loan to customers ordering 16K models set at 10 per cent. Oric's discount will be 25 per cent.

Deliveries of 16K machines likely to be ahead of schedule, says Oric Products.

Our winners and answers

Congratulations, 115 times over, to the winners of the competition in the first three issues of Home Computing Weekly.

And, if you are not among them: watch out for more big prize competitions in HCW.

The senders of the first 15 correct entries out of our two large boxes will each receive a 48K Spectrum, a ZX printer and three software cassettes. The total value of each prize: about £250.

And the senders of the next 100 correct entries will each get a £25 voucher for programs from Quicksilva's wide range.

If you are a winner your prize should be delivered to your home within 28 days.

Many entrants answers all the questions correctly, but a number stumbled over two. Question five in issue two foxed some people, probably because Peter Tootill had two articles in that issue. The answer was in large type above his item about bulletin boards.

Question four in issue three was wrongly answered by some because, it seemed, they did not read to the end of the article. The last paragraph began: "Y starts the New Year routine..."

Even if you were not a winner this time, we hope you enjoyed the competition.

Here are the answers in full, followed by the names and addresses of all the winners.

Issue 1

1 PMG stands for Player Missile Graphics, p30
2 HMS Saracen, p34
3 A(505) is the array holding the maze plan in the VIC-20 program, p5
4 *FX 11, 14 sets the auto repeat speed, p19
5 Mike Johnson runs the ZX Microfair, p8. Spellings with a t were also accepted
6 Ship of Doom was rated at four stars, p21
7 There were 10 questions in Junior Mathematician, p28
8 Buck's surname is Dogers, p41

Issue 2

1 Mastermind was given a four-star rating, p41
2 Alan Laird wrote Munchees, p18
3 Program 14 is called Clef, p27
4 The fruit machine program made a profit of about 1p per roll, p7
5 Peter Tootill runs the Mailbox-80 bulletin board, p22
6 Memory location 755, on the Atrai, is called CHACT, p36
7 Highest score by the writer of the Atomic waste program was 910, p30

Issue 3

1 Allen Webb was giving speedy advice, p12
2 Centipede was rated at four stars, p40
3 Subroutine 600 is called by line 420, p36
4 Y starts the New Year routine, p22
5 Dougie's surname is Bern, p26
6 Colditz, a program for the PET, runs in less than 8K, p18
7 Boss runs on the VIC-20, p28

Spectrum Winners

W. D. James, 1 Crowland Way, Formby, Liverpool L37 8BR; **Tim Prince**, Tiercel, 4 Winfred Road, Sedbergh, Cumbria LA10 5AZ; **Harold J. Finney**, 98 Quinton Park, Cheylesmore, Coventry CV3 5HY; **F. P. Raffle**, 62 Edward Road, West Bridgford, Nottingham NG 2 5GB; **Miranda Ellis**, 9 Hall Road, Norwich NR1 3HQ; **L. M. Bassett**, 4 The Avenue, Biggleswade, Beds SG18 0PS; **James Heath**, 289 Budshead Road, Whitleigh, Plymouth PL5 5JE;

Robert Jackson, 36 Sunnybank, Marlow, Bucks SL7 3BL; **Martin White**, 36 Woodside Avenue, Burley, Leeds LS4 2QT; **Ingeborg Lindholm**, Flat 3/1, 69 West End, Park Stret, Glasgow G3 6LJ; **G. Brown**, 11 Hendy Road, Mold, Clwyd, North Wales CH7 1QS; **Mark Kent**, Atkins, Tumby Woodside, Mareham-le-Fen, Boston, Lincs PE22 7SL; **Jeffrey Corbett**, 15 Bryn Henllan, Brynna, Llanharan, Pontyclun, Mid Glamorgan CF7 9SG; **D. J. Long**, 42 Orchard Brow, Hollins Green, Warrington, Cheshire WA3 6JL; **Trevor Castledine**, 53 St Martins Road, Finham, Coventry, West Midlands CV3 6FD.

Software Winners

Oliver Rackham, Grey Lodge, Whitesmocks, Durham DH1 4LH; **C. Griffiths**, 29 Brunel Court, Coseley, West Midlands WV14 8JJ; **Davide Taylor**, 7 Dunsmuir Grove, Gateshead, Tyne and Wear NE8 4QJ; **Chris Hughes** 141 Haydn Road, Sherwood, Nottingham NG5 2LN; **J. F. Cook**, Severn View, Vinegar Hill, Undy, Newport NP6 3EJ;

H. S. Winetroube, 13 Nelson Court, Wellington Street, Hull, Humberside HU1 1X0; **T. R. Chapman**, 32 Harman Road, Bush Hill Park, Enfield, Middlesex EN1 1LB; **P. J. Pankin**, 91 Pembury Road, Tottenham, London N17 8LY; **Colin Trench**, 6 Kinross Road, Ipswich, Suffolk IP4 3PL; **Chris Deacon**, 21 Farneworth Road, Mickleover, Derby DE3 5EQ;

D. Horgan, 50 Garston, Great Cheverell, Nr Devizes, Wilts SN10 5XU; **S. J. Potter**, 20 Palmar Road, Maidstone, Kent ME16 0DN; **F. Ziebicki**, 25 Harris Street, Halton View, Widnes, Cheshire WA8 OTP; **L. A. Freeman**, 36 Green Lane, Northgate, Crawley, West Sussex RH10 2JP; **Paul E. Webb**, 25 Grange Crescent, Riddlesden, Keighley, West Yorkshire BD20 5AH; **A. C. Roper**, 45 Galloway Clost, Barwell, Leics LE 9 8HL; **Michael L. Haslam**, Flat One, 53-59 Highfield Street, Highfields, Leicester LE2 1AD; **M. E. Tortell**, 155 Queen Anne Avenue, Bromley, Kent BR2 0SH;

E. Frangoulis, 54 Holland Road, London W14 8BB; **P. E. Carson**, 2 Southview, The Green, Godstone, Surrey RH9 8DZ; **Tom Cox**, 54 Cherry Way, Hatfield, Herts AL10, 8LE; **Paul Murphy**, 55 Fields Road, Lepton, Huddersfield, West Yorkshire HD8 0HQ; **Howard J. Malyon**, 198 Prospect Road, Farnborough, Hants GU14 8JZ; **F. K. M. Ho**, 19 Cromwell Close, East Finchley, London N2 0LL; **P. M. Bennie**, 122 Mildmay Road, Romford, Essex RM7 9BU;

Mrs Z. Cianchi, Lavendon Rectory, Lavendon, Nr Olney, Bucks MK46 4EX; **Paul Douglas, 11/21 Maxwell Oval, Pollokshilds, Glasgow G41 5ST; R. Ormerod**, 12 Dunsmore Drive, Salendine Nook, Huddersfield, West Yorkshire HD3 4GS; **Euan Pearson**, 17 Holmlea Drive, Kilmarnock, Ayrshire KA1 1UX; **T. E. Scott**, 4 Farmdale Road, Carshalton Beeches, Surrey SM5 3NG;

K. A. Beck, 37 Cartridge Crescent, Ryecroft, Walsall, West Midlands WS3 1QY; **Keith Callanan**, 27 Windsor Crescent, Russell Park, Ulverstone, Cumbria LA12 9NP; **C. Benstead, 52 Plymouth Avenue, Lower Bevendean, Brighton, Sussex BN2 4JB; Peter Bowman**, 53 Rutland Drive, Harrogate, North Yorkshire HG1 2NX;

D. Butchart, 459 Liverpool Road, Birkdale, Southport, Merseyside PR8 3BN; **Devang Shah**, 589 Parrswood Road, East Didsbury, Manchester M20 0QS; **R. S. Ellison**, 46 Mayfield Road, Whalley Range, Manchester M16 8EU; **Wing Wah Fan**, 65 Adswood Lane West, Cale Green, Stockport, Cheshire SK3 8HZ; **A. P. Berry**, Flat 5, 37 Brighton Grove, Rusholme, Manchester 14; **Simon Gilham**, Red Roofs, Capel, Dorking, Surrey RH5 5JF;

Mrs G. M. Redpath, 21 Chester Avenue, Whitehead, Co. Antrim, Northern Ireland BT38 9QQ; **Oswyn Mowbray**, Glanrafon Stores, Tyn Lon, Holy Head, Gwynedd, North Wales LL65 3AX; **R. J. Hart**, 19 Wordsworth Close, Princes Park, Chatham, Kent ME5 7NU; **Mark Wignall**, 87 Tiverton Road, Tottenham, London N15 6RP; **J. E. Etherington**, 14 Bushey Close, Linden Village, Buckingham MK18 1HZ;

Paul Hale, Canonley Old Hall, Main Street, Cononley, Keighley, North Yorkshire BD20 8LJ; **Agha Rahman**, 98 Shakespeare Road, Acton, London W3 6SN; **E. R. C. Holland**, 1 Prospect Cottages, Boughton Aluph, Ashford, Kent TN25 HJA; **Don Weerasinghe**, 21 Wormholt Road, Shepherds Bush, London W12 0LU; **Stuart Patton**, 10 Lord Street, New Silksworth, Sunderland, Tyne and Wear SR3 2DX; **Shelagh Duffy**, 40 Pemerton Road, Weeke, Winchester S022 6EV; **R. Woods**; 8 Kimberley, Letchworth, Herts SG6 4RA;

Steven Moore, 31 Alexandra Road, Sheringham, Norfolk NR 26 8HU; **Leonard McIlloney**, 59 Cedar Road, View Park, Ayr, Scotland KA7 3PG; **Jispal Andeh**, 106 Gadsby Street, Attleborough, Nuneaton Warickshire CV11 4NZ; **Magnus Wadsack**, The Three Lions Inn, Stuckton, Nr Fordingbrigde, Hants SP6 2HF; **F. Goodyear**, 39 Broxburn Road, Warminster, Wilts BA12 8EY; **Simon Jeffery**, Ledrah House, Ledrah Road, St Austell, Cornwall PL25 5HG;

Derek McLaughlin, 122 Strathern Road, West Ferry, Dundee DD5 1JW; **A. J. Wallace**, 41 Alexander Crescent, Oakham, Rutland, Leics LE15 6LA; **P. Davies**, Spring Hollow, Broad Oak Lane, Mobberley, Cheshire WA16 6JT; **Ian Archbold**, 3 Shirley Close, Stevenage, Herts; **Robert Andrew Firth**, 1 Old Guy Road, Queensbury, Bedford, West Yorkshire BD13 1JB; **C. Robertshaw**, 3 Chapel Street, Thornton, Bradford, West Yorkshire BD13 3JR; **Garry Knight**, 30A Stanton House, Thames Street, London SE10 9DJ; **Graham Hooper**, 31 Purcell Street, Longsight, Manchester M12 4NU; **J. P. Kelly**, 159 Powerscroft Road, Clapton, London E5;

K. Salmon, 369 Bramford Lane, Ipswich, Suffolk IP1 5BS; **K. J. Craske**, 154 Crescent, Failsworth, Manchester M35 0GR; **H. R. Hoque**, 53 Harlech Road, London N14 7BY; **A. J. Cook**, 50 Catlin Crescent, Shepperton, Middlesex TW17 8EU; **Bill Longley**, 388 Ipswich Road, Colchester, Essex C04 4EX; **Philip S. Adkins Potter**; Greystones, Brighton Road, Busbridge, Godalming, Surrey GU7 1PL; **Graham Malam**, 95 Kidbrooke Grove, Blackheath, London SE3 0LG; **Alec F. Hemingway**, 26 Wheelwright Avenue, Lower Wortley, Leeds, Yorks LS12 4UW;

M. D. Trow, 19 Weathercock Lane, Low Fell, Gateshead, Tyne and Wear NE9 5JD; Kevin Page, Montrose, Angus, Scotland DD10 9BH; **John Chopin**, 91 Queen Elizabeth Way, Kingfield, Woking, Surrey; **D. C. Dunton**, 75 Kingsman Road, Standford le

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Memotech's home micro is expected to appeal to users in the BBC and Commodore 64 bracket. Mr Boyd said: "It's not the cheap market."

Measuring 19in wide, 2¼in high and 8in deep, the aluminium casing — coated in black plastic — will house 32K of RAM, 16K of video RAM, a 16K BASIC ROM with a Z80A processor running at 4MHz.

The Microsoft-compatible BASIC will have extra graphics commands — there will be 26 reserved graphics characters — and a Logo subset. There will also be a screen handling language called Noddy and an assembler/disassembler also in the ROM.

The keyboard has QWERTY typewriter keys with, alongside, eight function keys and a numeric keypad, which accounts for the 19in width.

Centronics-type printer interface will be standard and there will be ports for hi-fi, monitor, two joysticks and others, and a slot for cartridges.

There will be six spare slots inside to take Memotech's boards, like extra money — at 32K, 64K and 128K per board — to a maximum of 512K, the industry standard CP/M opefating system used by most business micros and a disc controller board which will run up to four drives, including Memotech's own.

Software has often been slow to follow the launch of new computers; would the same happen with Memotech's micro?

Mr Boyd said: "We are taking care of that. I thing people will spend a lot of time — up to 75 per cent — playing games on our computer. That, of course, will decrease as people start programming but at the launch we will have 25 cassettes available. Most of them will be games, but there will be two educational programs."

Four programmers were working on software and the companys' Memo-calc and Memo-text cartridges would be available for the new computer.

The two men leading the design team are Mr Boyd, who specialises in hardware, and his friend Robert Branton. They set themselves up as a partnership and now both are directors.

Memotech was formed 18 months ago and employs 65 staff in Witney and a smaller technical department 20 miles away in Oxford.

Many of the Witney employees are working in portable buildings while the company's new factory — due to be completed in August — is finished. It is here that the new micro will be made.'

"Within a month of production we will be up to 10,000 a month," said Mr Boyd. "By the end of the year we will be well ahead of the market in terms of being able to provide peripherals — unlike some other companies."

No price has yet been decided. Mr Boyd explained: "This business is very strange. You don't know what's happening in the semi-conductor or memory scene. We've approached the whole thing very conservatively and this will be reflected in our pricing."

He expected the computer to be priced in the Commodore 64 and BBC micro range.

Mr Boyd added: "We don't want to be pushy and say we'll sell 200,000 in the first week. It's a good machine and it will be competitively priced."

Memotech, Station Lane, Witney, Oxon OX8 6BX

Spectrum 'success'

Sinclair Research believes it has now replaced nearly all the faulty power supplies sold earlier in the year with Spectrums. In most cases, said a spokesman, they were turned round within 48 hours of arriving at a specially-opened warehouse.

And production had been great enough to ensure sales of Spectrums were not hit through sending of replacement power supplies.

Recalled power supplies only: Sinclair Research, Unit F, Broad Lane, Cottenham, Cambs CB4 4SW

Ancient to modern

Parents and teachers, more accustomed to holding antiques and craft faires, are staging their first computer fair at Barnwell School, Stevenage, Herts, on Sunday.

Stephen Booth, 17 Park View, Stevenage

Computer Whiz Kids to star on TV

It Had to Happen Dept. Hooray for Hollywood — one of the major three American television networks, NBC, has just approved plans to produce a pilot for a TV series called Whiz Kids.

The show will star young computer geniuses combatting the forces of evil by doing wonderful and amazing things with computers. The producers are negotiating with IBM, Apple, and Xerox for up-to-date and realistic equipment. A microcomputer expert is serving as a consultant to the show.

The producer has two computers of his own, so the series will be less fantastic, and attempt to show possibilities a little ahead of what is currently happening, but still within the realm of feasibility. I'll keep you posted. The pilot should be done by late April and, if picked up as a series, will start in September.

★ ★ ★ ★ ★

And now for some new games. Creative Software, 230 East Caribbean, Sunnyvale CA 94086, is marketing a line of games for the VIC-20 and both Atari 400 and 800 machines. Their representative tells me that these items are available from Audiogenic, of PO Box 88, Reading, Berkshire.

Dropping a line to the folks in Sunnyvale a line will result in your receiving a nice catalog and further information. In addition to games with titles such as Astroblitz, Black Hole, Trashman, City Bomber and Minefield, and Apple Panic, Creative also offers more useful programs such as Car Costs, which helps you keep track of auto expenses and analyse its performance; Loan Analyzer, to help you decide what sort of loan you need, and what it will cost you; Home Inventory, which will help you catalog your posessions; and other home applications programs such as Decision Maker, Household Finance, and Home Office.

Additionally, they offer four educational programs: Hangman-Hangmath for maths drills; Math Hurdler-Monster Maze; Spills & Fills (teaches quantities); and Pipes (teaches basic economics).

Prices seem very reasonable. Most of the programs are available on cassette and tape with a few on cartridge only.

★ ★ ★ ★ ★

Lest ZX81 owners feel left out, this item is for you. Available from Softsync Inc, of 14 East 34th Street, New York, New York 10016, (212) 685-2080, is a fine line of games, programs, and utilities on cassette, not to mention affording you the opportunity of owning your own Uncle Clive T-shirt. What a thrill, and only $5.95 (cheap)!

Most of the programs in the catalogue, which they will furnish free if you enquire nicely, fall into the category of programmers' aids, educational, financial, personal, and games. Games are sub-divided into strategy, arcade, and adventure.

Of particular interest is the graphics kit (16K $14.95) which makes available 23 assembly language routines which you can use to draw multi-character shapes, and/or to add other graphics dimensions to your programs such as borders. The program loads into the top 2K of memory and automatically repositions RAMTOP so that your programs will not overwrite it.

The educational programs cater to the four-12 age group, and use a combination of clever graphics and text display to enterain as well as drill on the use of the alphabet, numbers, vowels, and spelling. Most of the programs cost $14.95 or less.

See you here next week...
Bud Izen
Fairfield, California

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Hope, Essex SS17 0JN; **Grahan Roy Hannington**, Cara-Mia, 229 Rayleigh Road, Thundersley, Essex; **Warwick Jones**, 18 Beverley Hyrst, Addiscombe Road, Croydon, Surrey CR0 6SL; **James Wright**, 22 Colthill Crescent, Mill Timber, Aberdeen AB1 0EF;

M. Long, 28 Law Street, West Bromwich, West Midlands, B71 1DZ; **D. E. Jobson**, 41 Avoncroft House, Winchester Drive, Chelmsley Wood, Birmingham B37 5QH; **A. Moulds**, 99 Clapton Common, London E5; **M. J. Hughes**, 25 Icknield House, Sutton Estate, Cale Street, Chelsea, London SW3 3SQ; **I. Tapping**, 15 Lichfield Road, Great Yarmouth, Norfolk NR31 0EQ; **Stephen Beck**, 11 Coverdale, Heelands, Milton Keynes, Bucks MK13 7LZ; **W. R. Collins**, 39 Brynheulog, Penygaer, Llanelli, Dyfed SA14 8AF; **Alistair Smith**, TF 3, 40 Marionville Road, Edinburgh, Scotland EH7 5UB; **Peter Brown**, 44 Woodland View, Stratton Strawless, Norwich, Norfolk NR10 5LT;

Stewart Cunningham, 16 Ben Hope Avenue, Hawkhead Estate, Paisley, Scotland PA2 7ND; **Steven Tinter**, 63 Thirston Way, Kenton Bar Estate, Newcastle Upon Tyne, Tyne and Wear NE3 3ER; **David Gerrish**, 35 Winfields, Pitsea, Basildon, Essex SS13 1HA; **Anne Barker**, 26 Montgomery Avenue, Southport, Lancashire PR9 7SD; **Colin Holland**, 148A Charlton Lane, London SE7; **T. R. Coleman**, 169 Bocking, Church Street, Braintree, Essex CM7 5LH; **Peter J. L. Gent**, 13 Cintra House, 11 Beulah Hill, London SE19 3LY; **Iain MacDonald**, 2 Berkeley Square, Hemel Hempstead, Herts.

Cut-price Spectrums?

Rumours have been spreading among computer retailers that Sinclair Research is about to slash the price of its top-selling Spectrums.

But a spokesman for the company said: "I can't really comment — there is no immediate plan for us to announce a price cut."

The talk has been fuelled by the planned launch of the Spectrum in America within the next four weeks, because Timex is pricing its version, called the TS2000, at $149 for the model with 16K of RAM.

The UK price for the same model is £125 — roughly £25 dearer.

Most UK Spectrums are made by Timex in Dundee where workers at one plant were staging a sit-in last week.

However, the plant making Spectrums was unaffected. If the sit-in lasts beyond the workers' holiday period it may eventually affect the gearing up of a production line which will manufacturer flat-screen TV tubes for Sinclair.

● A spokesman said there was still no date fixed for the launch of Sinclair's new Microdrive mass storage devices.

Sinclair Research, Stanhope Road, Camberley, Surrey

Bored? You shouldn't be

Computer users will get bored unless software companies start providing more than just games, says a market research expert.

Graham Tillotson, whose company has just made a survey of the market, said: "It's not only my view, it's the view of many other people we have spoken to.

"It's not going to die overnight. Games are becoming more sophisticated and are always going to be popular, but if that is all they are going to do we think the market will suffer.

"Eventually people will get bored.

"I believe software people will react and we will see some significant developments in the next couple of years.

"I see a number of areas — and they are purely speculation — which have potential, like education, which has hardly been tapped.

"Take one subject alone, like physics. You could build up a library of 40 to 50 tapes just to take that subject to O-level.

"I think home accounting has a very limited future, it's going to be small fodder. For most people, with the rate at which a tape recorder can load data, an accounts book would be far quicker.

Mr Tillotson, who has a 16K ZX81 at home and a Sirius at work, is managing director of Marketing Direction which has just carried out a survey jointly with Gallup.

It showed that the average home computer user spent 11 hours a week using the machine and that nearly 700,000 households had home computers.

Other surveys have put the figure higher and Mr Tillotson said the difference may be accounted for by some households owning more than one computer and by the differences in survey methods.

Marketing Direction, 6 High Street, Thames Ditton, Surrey

Top Twenty programs for the Spectrum

1	Schizoids	Imagine (–)
2	Penetrator	Melbourne House (5)
3	Escape	New Generation (–)
4	Galaxians	Artic (–)
5	Arcadia	Imagine (15)
6	Planet of Death	Artic (16)
7	Avenger	Abacus (–)
8	Nightflight	Hewson (13)
9	Planetoids	Psion (–)
10	Transylvanian Tower	Richard Shepherd (3)
11	Chess	Psion (–)
12	Ground Attack	Silversoft (–)
13	Orbiter	Silversoft (–)
14	Muncher	Silversoft (–)
15	Flight Simulation	Psion (12)
16	Hungry Horace	Psion /M. House (10)
17	Space Raiders	Psion (–)
18	Gulpman	Campbell (–)
19	Cruising	Sunshine Books (–)
20	The Hobbit	Melbourne House (1)

Compiled by W. H. Smith. Figures in brackets show last week's position.

You could be on our pages

We welcome programs articles and tips from our readers.

PROGRAMS should, if possible, be computer printed to a width of 48 characters (use a new ribbon) and/or sent on cassette. Check carefully that they are bug-free. Include details of what your program does, how it works, variables you have used and hints on conversion.

ARTICLES on using home computers should be no longer than 2,000 words. Don't worry about your writing ability — just try to keep to the style in HCW. Articles most likely to be published will help our readers make better use of their micros by giving useful ideas, possbibly with programming examples. We will convert any sketched illustrations into finished artwork.

TIPS are short articles, and brief programming routines which we can put together with others. Your hints can aid other computer users.

Competitive — rates are paid.

Keep a copy of your submissions and include an SAE if you want them returned. Label everything clearly and give a daytime and home phone number if you can.

Paul Liptrot, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE

QUEST

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A NEW DIMENSION IN SPECTRUM SOFTWARE

More and more micros

A new survey shows that there are now 1.1m computers in homes throughout the country with Texas Instruments and Atari gaining sales through price cuts.

The facts were gathered for the trade Weekly Computing and The Observer from dealers, distributors and manufacturers.

Its figures show that in the three months to the end of February, the 100 largest manufactueres of home computers alone sold more almost 350,000 machines.

Top 10

Most popular home computers — sales figures for three months to February 28

1 Sinclair	198,000
2 Commodore	32,600
3 Acorn(BBC)	32,00
4 Dragon	30,000
5 Texas Inst	13,000
6 Atari	11,000
7 Sharp	9,100
8 Grundy (Newbrain)	8,700
9 Tandy	7,300
10 Oric	7,000

Eyeing up your micro

A video recorder can now be linked to a BBC model B micro and images transferred between the two — but at a price.

Digithurst's MicroEye interface costs £339.50

The company says that pictures can be digitised with a resolution of 256 by 256, although only 128 by 128 pixels are used. This is so that users are able to upgrade with a second processor.

MicroEye is supplied with cable and software, with which to analyse images, dump them onto disc or printer.

Digithurst, Leaden Hill, Orwell, Royston, Herts SG8 5QH

TI to spend £¾m on TV

Texas Instruments is spending £¾m on a TV advertising campaign starting next month to build sales of its computers.

The first part of the campaign, beginning mid-May, will be for the TI-99/4A and later its new £75 model, the 16-bit TI-99/2, will be included.

Texas says that the 99/2, due here after October, will be the first 16-bit computer at such a low price. It has rubber-like keys, 4K of user RAM — expandable to 36.2K — black and white display and a port at the back for TI add-ons.

Texas Instruments, Manton Lane, Bedford MK41 7PA

Ceefax-style for Spectrum

Spectrums can be made to simulate the Ceefax and Oracle Teletext services, says Iain Stewart, who has produced a £4.95 program called ZXTEXT.

It uses the full 32 by 24 screen of either Spectrum model, plus colour, flashing and high-resolution graphics. He says it has a capacity of 900 pages, with enough memory.

Iain Stewart, 17 Torry Drive, Alva, Scotland FK12 5NQ

Granada lands 'em young

In a bid to de-mystify computers, Granada TV is preparing a summber series starring young micro users and including reports on programs and buyers' guides.

Robin Kent, producer, Granada TV, Manchester M60 9EA

MicroEye — links micro to video recorder

We have to stay friendly

Many programs seem to concentrate on the user's first few hours with menus, detailed help messages and a simple introductory guide. But what of the experienced user? The needs of the novice and the old hand often conflict, but few take this into account.

For several years we have been writing software to help decision making, emphasising friendly and convenient ways to interact — menus, extensive help facilities, tutorial guides. This, we thought, would enable people to concentrate on their problems, not on the software.

Gradually we realised we were getting just as many dissatisfied and reluctant users.

They faced two problems:

- *They understood the program was easy to use, but could not use it themselves*
- *It was difficult for them to judge how close they were from the correct operation of the system. They were frustrated because there was no easy transition from simple to more complex tasks.*

Menus are certainly convenient and straightforward for novices, but since they do not have to remember anything they have a rather passive role, not encouraged to think or explore. They are encouraged to place unreasonable faith in the software rather than themselves.

Inevitable, menus restrict the functions available, frustrating users whose needs to not quite match the designer's. With familiarity, menus can seem tedious. Errors increase because users rush through to get to what they want.

A menu's life, for a frequently used program, is about a week!

At this stage the facility to turn off menus, using commands instead, is essential so users go directly to the required operations and can also perform more complex tasks.

We have also added learning features. As users choose options they are also given the command to perform those choices directly. The menus can be restored on moving to a less well-known part.

Indicating the part of the input "in error" can be a good guide — at least the user knows that up to then he was correct. Suggesting possible alternatives helps and encourages exploration. Help messages with examples are useful and should be available on request. They need to be at different levels of detail and consider experienced users who will know some parts

If someone is told a program is "easy to use" or "idiot proof" it is difficult for him to explain how he made a mistake. It implies he was at fault, he did something silly. Calling software easy to use may encourage sales, but it leaves users on a hiding to nothing.'

So we encourage users to see software as a fairly complex tool which can be used with different levels of skill. Users need to develop a skill level appropriate to his needs. Such an approach can, however, only succeed if the program encourages exploration, moving gradually from one level to the next.

They must be thought of as long-term users rather than buyers. We should not assume they are idiots. We need to entice them into finding out more about what the program can do, through friendly interaction.

In this way, perhaps, we can not only win some friends but also keep them.

Marilyn Foote and Tim Smithin
School of Management, University of Bath.

● What makes you pleased or annoyed about the micro scene? Contributions to this column, which are paid for, should be sent to Paul Liptrot, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. Please include your occupation and your interst in computing.

Which games should you feed to your Dragon?

If you're in the market for Dragon games, look no further. Our reviewers have tested a selection of software for you — here's how they rate it

St George and the Dragons £6.95

Computer Rentals, 140 Whitechapel Road, London E1.

A graphic adventure game, written in BASIC and requiring one joystick.

Your quest is to strike the magic red stone which will release a bevy of damsels in distress from captivity. But not so fast — first you have to battle with a fire-snorting dragon and cross a bridge. Take care to avoid falling in the water or your heavy armour will drag you under.

Four levels of difficulty control how often the dragon does his flame-throwing bit, and you start each game with five lives. There is a high-score and personal score facility at the end of each game, together with a more unusual feature — your rating as a saint!

Loading instructions are printed on the cassette itself, which loaded first time every time, and playing instructions are on screen. Each time the program is loaded, though, you have to sit through instructions, complete with a little tune, and I for one would have liked the option of skipping them once I had got used to the game.

You also get musical accompaniment if you lose a life or accomplish your mission.

The levels of difficulty are well balanced, and I enjoyed playing the game. Good graphics.

J.M.

instructions	65%
playability	70%
graphics	90%
value for money	80%

★ ★ ★

Monster Mine £6.91

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

An original game in which you attempt to reach the top of the screen, avoiding the monsters which guard the path you must take. At the same time, you have to eat as many pound signs (worth £100 each) as you can within the time limit.

Very easy to play, with some nice touches: for example, the program asks for your name and then prints messages using it. For controls you use the arrow keys. The enter key can also be used just once in each game as a panic button: press it when you are just about to be eaten, and you will be whisked to the nearest doorway between the corridor you are in and the one below.

Since the highest resolution graphics are used, no colour is available, but I didn't find that this detracted from the game. Monster Mine is addictive and enjoyable, suitable for almost any age.

D.W.

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

★ ★ ★ ★ ★

Games Pack III £6.91

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

Two games on this tape, Reversi and Pontoon, although you wouldn't know it from the cassette insert.

The instructions supplied on screen are comprehensive but tend to be confusing. Excellent title screens, however.

Reversi (or Orthello) is in text mode and uses X and O to represent pieces. It is a board type game and involves capturing opponents' pieces by sandwiching them between two of yours. Play is between you and the computer.

Written in BASIC it is slow, even at the easiest of the five levels, and the use of a ? which appears to check out all possible moves, tends to make this game boring. It does play reasonably well, though.

Pontoon uses colour sound and graphics and is an excellent computer version of the card game. The computer acts as banker, and one or two people can play. Again written in BASIC, but fast enough to be enjoyable.

With this type of game you really need a full set of rules and instructions to be printed on the cassette insert for reference.

They are complex enough to tax even the best of memories!

Both games loaded first time and I did not discover any bugs — well error-trapped, too.

R.E.

instructions	46%
playability	60%
graphics	72%
value for money	65%

★ ★ ★

Space Mission £6.91

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

A variant of Asteroids, in which you fend off the asteroids while trying to shoot the enemy fleet.

Planet Invasion £7.95

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

This fast machine code version of Defender requires a joystick to control the elevation and forward/reverse speed of the space ship.

There are two versions of this game on the cassette: one in the highest resolution and therefore in black and buff and the other which allows for a display in more varied colour. There was little loss of quality in the coloured version, which I preferred as it made identification of the different forms of invader easier.

Your mission is to protect the Caloxin crystals from the Praetorian Invaders. Other hazards hit you from all directions as you fly around by the seat of your pants dodging, diving and dealing out death.

This was a very fast game that required split-second timing — very close to the arcade version. The sound effects, explosions and splintering fragments added greatly to the overall quality of presentaton.

My eight-year-old son retained the highest score, standing at 12,000 points, and my 7,000 looked pretty meagre by comparison. Very entertaining and highly motivating: if you like arcade games, buy it.

M.P.

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

★ ★ ★ ★

Donkey King £8

Microdeal, 41 Truro Road, St Austell, Cornwall

This proved to be an excellent arcade action game for the Dragon plus joysticks, written in machine code and well presented. Loading posed no problems, and as a hint of the good things to come, a colourful banner appeared on the screen while loading was in progress.

Your task is to shin up ramps and ladders in a gallant attempt to rescue a maiden in distress who — shades of King Kong — has been captured by a gorilla.

On the way you must ward off flames and other obstacles hurled by the marauding ape. There are four different screens with barrels, pins, jacks and conveyors which you have to struggle through before you finally reach and rescue the damsel.

One or two people can play. To help out learners you have the choice of playing at normal or slower speed. Another thoughtful touch is an option to play practice games which offer you twelve lives instead of the normal four.

I found myself agreeing wholeheartedly with the cassette inlay card, which described the game as "barrels of fun". I was immensely impressed with its excellent use of the Dragon's colour hi-res graphics and sound facilities.

C.D.

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

★ ★ ★ ★ ★

Dragon Golf £6.91

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

I don't play a lot of golf, only an occasional Crazy round at the seaside. I was looking forward to an instructive time, therefore, to help me along.

You start by giving your handicap, so I typed in 5. Mistake number one! That makes you a 'pro'. Next time I typed 50, to be told that the rules only permit up to 30. No allowance made for crazy golf players! I was beginning to think this was an adventure game where the riddles' answers were shrouded in some mystique.

On to the tee. A static graphic display shows you the top view from tee to hole with surrounding terrain. You are a yellow block which moves after each stroke.

Now for the next riddle. Choose between Wood (1-4), Iron (2-9) or Wedge (Percentage of full swing)! Beware, because some disparaging remarks are made if, like me, you fail to choose the right one. The ball is struck and the screen clears to update your position. This is genuinely puzzling because the block representing you does not always correspond to the text which describes your position relative to the hole. Follow the text.

When putting on the green I thought I could at least hold my own. Years of crazy golf must have done me some good! Feeding in the Percentage of Full Stroke to get to the hole I thought I could calculate the distance travelled. Wrong again!

Well, I've completed a few rounds of eighteen holes and I'm not much wiser. Playing the real thing I'd at least be fitter.

It could appeal to golfing enthusiasts, but not a game that had lasting appeal for me.

M.P.

instructions	60%
playability	50%
graphics	55%
value for money	60%

★ ★

Strategic Command is a game for two players, and a game of strategy (as the name implies) and skill, the object of which is to overrun the opponents capital.

Strategic Command £9.99

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

A game of skill and strategy written in BASIC for two players using joysticks.

The object is to overrun your opponent's capital.

There are two programs on the tape. The first enables you to test the sensitivity of your joysticks and the second is the game itself. Both programs must be loaded.

At the start of each game the map is drawn with the capital, army and navy bases for each force. players control either the red or yellow bases. Land and Sea units may be deployed and moved using the joysticks. When the opposing forces are near to each other battle will commence — the outcome depending on the strength of each force and the skill of the players. Each unit is displayed by one figure only regardless of the number of elements.

Other features include mine laying units which can lay two minefields. These do not affect your force but play havoc with your opponent and air reconnaissance. At which time you are able to discover the makeup of a rival unit.

The instruction sheet included contains detailed information on how to play and what to expect during the game. It takes a while to appreciate just what can be done.

My opponent and I thoroughly enjoyed this absorbing game. The graphics are of a high standard.

I loaded both programs first time on several occasions.

J.M.

instructions	85%
playability	95%
graphics	90%
value for money	90%

★ ★ ★ ★

spectrum games

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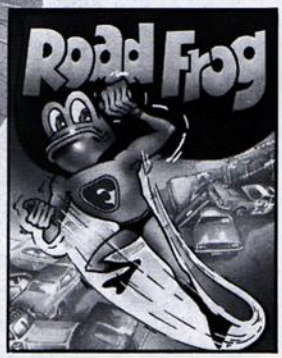

■ **ROAD FROG**
Guide Froggy across the road, then the river and finally home – *but beware the Evil Monster!*

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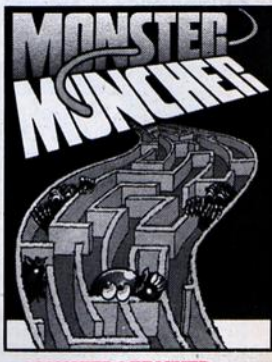

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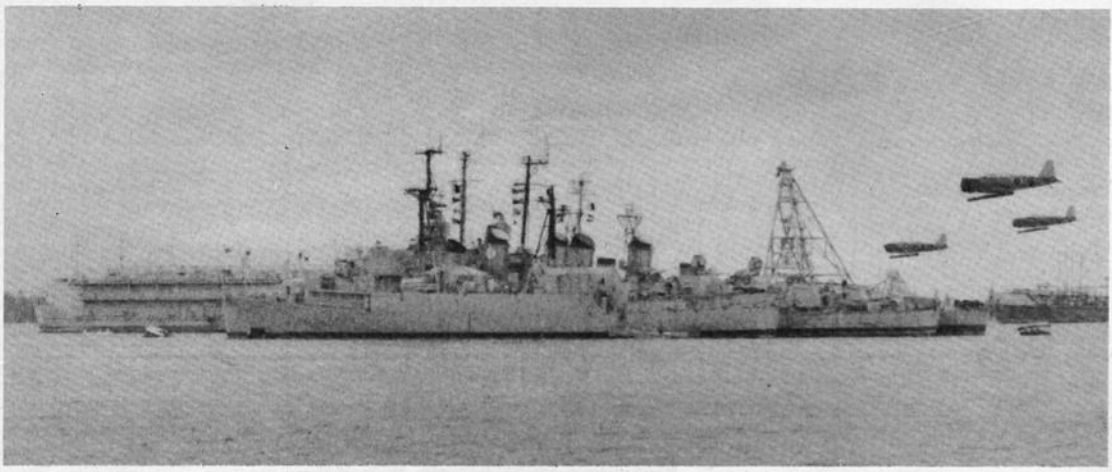
Into battle against the enemy fleet



Sink the enemy ships, armed only with your ZX81. Dave Carlos' program sends you into battle

You're under orders: find the enemy fleet and destroy it.

My Battle 16 game, which runs on a ZX81 with 16K, sets up a 10 by 10 grid on the screen and you have to find the enemy craft (see Figure 1).

They are: one battleship (five squares) which is coded B, one cruiser (four squares) code C, one destroyer (three squares) code D, four anxillaries (two squares) and eight submarines (one square) code S.

When all are sunk the number of moves taken is displayed and another game offered as shown in Figure 2.

In order to emphasise the mathematical use of co-ordinates numbers are used on both axes. The prompts for input flash on the screen and are taken in the normal order of X axis, Y axis.

No return key needs to be pressed as input is taken from INKEY $ statements.

As the game grid (G$) and the screen grid (S$) are separate, it is easy to restart the game — just type GOTO 480.

```
  10 SAVE "BATTLE1■"
  15 PRINT "WAIT A WHILE AND I W
ILL SET UP","THE GAME"
  16 PAUSE 300
  17 CLS
  20 REM BATTLE16
  30 REM D CARLOS
  40 REM 28 MARCH 82
  50 FAST
  60 GOTO 0280
  70 LET X=INT (RND*10+Z)
  80 LET Y=INT (RND*10+Z)
  90 IF X>10-(C+Z) OR Y<(C+Z) TH
EN GOTO 0070
 100 FOR A=0 TO C
 110 IF G$(Y,X+A)<>" " OR G$(Y-A
,X)<>" " THEN GOTO 0070
 120 NEXT A
 130 IF F=Z THEN GOTO 0270
 140 LET C=C-2
 150 IF RND>.5 THEN GOTO 0220
 160 LET G$(Y,X)="■"
 170 FOR A=Z TO C
 180 LET G$(Y,X+A)=CHR$ (170-C)
 190 NEXT A
 200 LET G$(Y,X+C+Z)="■"
 210 GOTO 0270
 220 LET G$(Y,X)="■"
 230 FOR A=Z TO C
 240 LET G$(Y-A,X)=CHR$ (170-C)
 250 NEXT A
 260 LET G$(Y-(C+Z),X)="■"
 270 RETURN
 280 DIM S$(10,10)
 290 DIM G$(10,10)
 300 LET Z=PI/PI
 310 LET I=NOT Z
 320 LET M=NOT Z
 330 LET F=NOT Z
 340 FOR H=5 TO 3 STEP -Z
 350 LET C=H
 360 GOSUB 0070
 370 NEXT H
 380 FOR H=Z TO 4
 390 LET C=2
 400 GOSUB 0070
 410 NEXT H
 420 LET F=Z
 430 FOR H=Z TO 8
 440 LET C=Z
 450 GOSUB 0070
 460 LET G$(Y,X)="■"
 470 NEXT H
 480 PRINT AT 7,24;"■■■■";AT 11,
23;"MISSES";AT 2,9;"■BATTLESHIPS
■";AT 11,Z;"■■■■■■■";AT 12,Z;"■■■
■■■■";AT 13,Z;"■■■■■■■"
 490 PRINT AT 5,10;"■■■■■■■■■■■
■"
 500 FOR H=10 TO 1 STEP -Z
 510 PRINT TAB 9;H-1;TAB 10;"■";
S$(H);"■"
 520 NEXT H
 530 PRINT TAB 9;"Y■■■■■■■■■■■■"
 540 PRINT TAB 10;"■■■■■■■■■■"
 550 SLOW
 560 PRINT AT 7,Z;"X=";AT 17,10;
"X"
 570 PRINT AT 7,Z;"■■";AT 17,10;
"■"
 580 IF INKEY$="" THEN GOTO 0560
 590 LET X=CODE (INKEY$)-27
 600 IF X<1 OR X>10 THEN GOTO 56
0
 610 PRINT AT 7,3;X-1;CHR$ 0;
```

```
 620 PRINT AT 9,1;"X";AT 16,9;"
X"
 630 PRINT AT 9,1;"Y=";AT 16,9;"
Y"
 640 IF INKEY$="" THEN GOTO 0620
 650 LET Y=CODE (INKEY$)-27
 660 IF Y<1 OR Y>10 THEN GOTO 62
0
 670 PRINT AT 9,3;Y-1;CHR$ 0;
 680 IF S$(Y,X)<>" " THEN GOTO 0
910
 690 IF G$(Y,X)<>" " THEN GOTO 0
800
 700 FOR H=1 TO 10
 710 PRINT AT 12,2;"HIT"
 720 PRINT AT 12,2;"MISS"
 730 NEXT H
 740 PRINT AT 12,2;"     "
 750 LET M=M+Z
 760 PRINT AT 12,25;M;CHR$ 0
 770 LET S$(Y,X)="X"
 780 PRINT AT 16-Y,X+10;"X"
 790 GOTO 0560
 800 LET S$(Y,X)=G$(Y,X)
 810 FOR H=1 TO 10
 820 PRINT AT 12,2;" HIT"
 830 PRINT AT 12,2;"HIT"
 840 NEXT H
 850 PRINT AT 12,2;"     "
 860 LET I=I+Z
 870 PRINT AT 8,25;I;CHR$ 0
 880 PRINT AT 16-Y,X+10;S$(Y,X)
 890 IF I=28 THEN GOTO 0960
 900 GOTO 0560
 910 PRINT AT 12,2;"TWIT"
 920 FOR H=1 TO 20
 930 NEXT H
 940 PRINT AT 12,2;"     "
 950 GOTO 0560
 960 PRINT AT 19,1;"WELL DONE YO
U GOT THEM ALL IN";" ONLY ";M+I;
" TRIES";TAB 1;"DO YOU WANT ANOT
HER GO"
 970 IF INKEY$="" THEN GOTO 0970
 980 IF INKEY$<>"Y" THEN STOP
 990 CLS
1000 GOTO 10
```

Figure 1. Start of game

Figure 2. End of game, with scores

ZX Microfair June 4th!

The 7th ZX Microfair will be on June 4th at Alexandra Palace Exhibition Pavilion London.

It's twice as big as the last show.
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Programs to teach you a thing or two

You micro can take the sting out of learning a whole range of subjects. Our reviewers cast a critical eye over a selection of educational programs, some for children and some for adults.

Educational — 1B BBC B £8.55

Golem, 77 Qualitas, Bracknell, Berks RG12 4OG.

Seven different games, designed to help children aged five to nine with maths, memory, spelling and telling the time.

Math1 deals with addition and subtraction, Math2 with multiplication and division — in both, the players must race to answer the questions and reach the finishing flag before a time limit runs out. A good idea, but both games fail to show the right answer if the player answers incorrectly — a serious omission in an educational program.

Cubecount asks the players to count the number of cubes displayed, and Shapes asks them to name various shapes. Both have good graphics and are fun to play.

Memory tests ability to recall colours and shapes displayed in a limited time period, and Spell and Clock, as you might expect, help with spelling and telling the time.

An excellent mixture of games, offering various levels of difficulty and speed of response. Entertaining enough to keep young children's attention and, on the whole, well-designed enough to help them learn while enjoying themselves. Good value for money.

P.C.

instructions	85%
ease of use	80%
graphics	85%
value for money	90%

★★★★

Educational — 2B BBC B £8.55

Golem, 77 Qualitas, Bracknell, Berks RG12 4OG.

Aimed at slightly older children aged seven to twelve, Educational — 2B simply contains harder versions of most of the games in Educational — 1B.

Math1, Math2, Memory, Cubecount and Spell reappear in upgraded form, but Shapes and Clock are replaced by Area, a game in which the player has to work out the area of a rectangle or square. Area is well designed, but a little too slow in supplying the answers to problems.

The package contains one less game than Educational — 1B, so not quite such good value.

P.C.

instructions	85%
ease of use	80%
graphics	85%
value for money	85%

★★★★

Eduquiz 1 Dragon £8.65

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

Presented in the style of the TV programme Winner Takes All, this program contains three quizzes, Geography, Inventors and Inventions, and Kings and Queens.

You are presented with the question and a choice of answers, each of which is given an odds value. Type in the number of your guess and how much you wish to bet, the correct answer is given and the money is adjusted appropriately.

I do not usually like quiz programs, but because of the presentation and the clever way in which questions are asked by juggling the phrases, I found this game quite addictive. You learn by your mistakes. There are a lot of combinations of facts and it would take a long time before all the possibilities were exhausted.

Text only, but with an excellent title page and good instructions presented on screen. Eduquiz 1 is easy to use, fun and educational. Written in BASIC, it loaded first time and seems adequately idiot-proofed.

If this program had included a "high score hall of fame" feature it would have been perfect. — and how did they get it to print black text on **orange?**

instructions	85%
playability	80%
graphics	68%
value for money	80%

★★★★

Simple Arithmetic 48K Spectrum £4.95

Camel Micros, 33a Commercial Road, Weymouth, Dorset.

Two programs aimed at helping children improve their arithmetic.

Numbers is a mathematical Space Invaders game which gives practice in whole, decimal and fractional number rules.

You answer the sum by shooting an invader from the column which contains the correct answer before they land — a wrong answer loses a life. An interesting way of motivating children to do drill exercises.

Kipper is a Battleships-type game in which you enter co-ordinates in an attempt to locate the kipper. Not so graphically interesting and of less obvious educational value as Numbers; it soon became boring even though the difficulty level increased.

Both programs loaded easily and began with prompt for name, levels etc. These are a bit vague and you get no help from the insert instructions. For instance, Numbers asks for an input for speed from 1 to 25 — no information as to which is which (25 is the slowest).

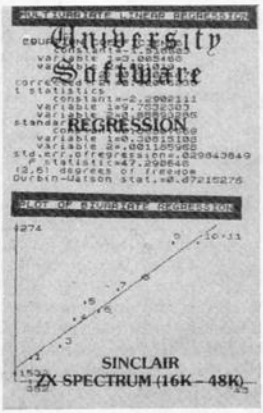
But on both games colour and graphics are put to good use, with sound used on Numbers.

A useful maths aid, but could do with better instructions, and it takes a few trial runs to become familiar with the operating procedure.

R.E.

instructions	60%
playability	70%
graphics	65%
value for money	80%

★ ★ ★ ★



Integration Matrix Operations £5.95 Linear Programming, Regression, £6.95 Spectrum

University Software, 45c Sloane Street, London SW1X 9LU.

These five programs are designed as aids for A-level and university maths students, researchers and scientists — for whom their titles will be self-explanatory.

They are not intended as teaching programs, and some knowledge of the mathematical computations they deal with will be needed in order to use them.

As well as knowing their subject, users will also need to know something about computing — a working knowledge of the computer keyboard is assumed.

Written in Basic, the programs are mainly direct conversions from a range originally written for the ZX81. Some colour is used, but from cassette insert to screen display this is essentially functional, academic software.

Having said that, the screen displays are clear, simple and easily read.

My maths teacher friend Jim was impressed with the programs, and thought they would be useful problem-solving tools for his O- and A-level classes — now all he has to do is persuade his school to buy a Spectrum.

Packaged with books to teach the subjects they cover, these programs could potentially be used for teaching.

But they would need better screen prompts — the prompts are clear enough, but not very user-friendly. Though the programs do not crash if incorrect input is entered, neither do they give any help in telling users where they are going wrong.

R.E.

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

★ ★ ★

Chemal 48K Spectrum £8.50

Camel Micros, 33a Commercial Road, Weymouth, Dorset.

I have only a very basic idea of chemistry but I was able to follow and use this program with no difficulty. It presents and teaches the techniques of inorganic chemical analysis in a very entertaining and informative way. A teacher friend of mine said, and I quote, "Hallelujah! a superb TEACHING program at last!"

A comprehensive instruction booklet is supplied with the cassette, which loaded easily and displayed clear, precise prompts and options. Excellent use of colour and graphics to demonstrate various processes, sound is not used, but then again it is not really needed.

I could not find any bugs, and the program seems to be well error-trapped.

Fully recommended to O- or A-level students and schools. If I was allowed loose in a laboratory the program warned me of my almost certain demise, and this added an extra dimension of interest.

I would have liked to have seen some explanation of invalid entries and advice on the correct entry expected: but this is a minor quibble on an otherwise excellent program.

R.E.

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

★ ★ ★ ★

Elem Add/ Elem Sub Multiply/ Divide BBC £7.50

Cottage Software, Heather Cottage, Selly Hill, Whitby, N Yorks.

Of the four programs in this elementary Maths package from Cottage Software, three resolutely refused to load. Even my local BBC agent couldn't do it. His conclusion was the same as mine — poor recording quality.

The one that did load was Elem Sub. Designed for an average six-year-old, it gives practice in subtraction with numbers up to nine.

No preliminaries — the program gets straight down to business. A random number of brightly coloured objects appear on the screen to the accompaniment of a series of sounds, and the child has to count them. Some are then crossed out and the child has to count these.

The subtraction is then carried out twice, once horizontally displayed and once vertically. The correct answer is finally rewarded with a big, red noisy tick. After all the questions have been answered a bug appears on the screen displaying the number of errors made.

Although quite pleasing the program has a number of drawbacks. It will accept any number of wrong answers without offering a correct one, no on-screen instructions are given and there's no 'error-trapping' on the Escape key.

K.O'S.

instructions	25%
ease of use	60%
graphics	60%
value for money	20%

How long can you survive a suicidal Spectrum?

The only way to avoid a head-on crash is to change lanes... and fast. A game for the Spectrum, presented by Mike Lord

You and the Spectrum Speed King are each driving around a four-lane race-course.

But it isn't a race — the cars are going in opposite directions, and your opponent is trying to crash head-on into you.

How many laps can you last before the inevitable end? Does it remind you of the North Circular at closing time?

When you start, the program will ask you for a "skill"; which is a number between 1 and 9. The higher the number entered, the more suicidal your adversary.

Once you are moving, the only control you have is the ability to change lanes at the openings in the dividers. Press I to move to an inner lane and letter O to get to an outer one.

In this listing, a large full stop means one space.

How it works

100 call sub-routine to draw track, set up user defined characters, and starting values

200-430 main program loop; moves both cars on a bit

200-230 work out next position of your car

240 looks at keys I and O when at appropriate points on the track and set movement flag yf accordingly

250 Move half way from one track to next if yf zero

260 quit if you have hit the enemy

300-330 work out the next position of the Spectrum's car

340 set movement flag cf if the Spectrum decides to change lanes

350 move the Spectrum's car half way from one track to the next if cf zero

400-410 delete old image of both cars and update co-ordinates

420 update lap count as appropriate

430 back to 200 if the Spectrum's car hasn't hit you yet

500-540 end routine; update hi score if you have improved on it, then invite the victim to another ride

9000- main race set-up subroutine

9200- sub-routine calling point to set the starting positions for another race.

Variables

yx,yy x and y co-ordinates for your car

yt your track number; track 1 is on the outside, and the five tracks are numbered 1,3,5, and 7

cx,cy,ct co-ordinates and track number for the computer's car

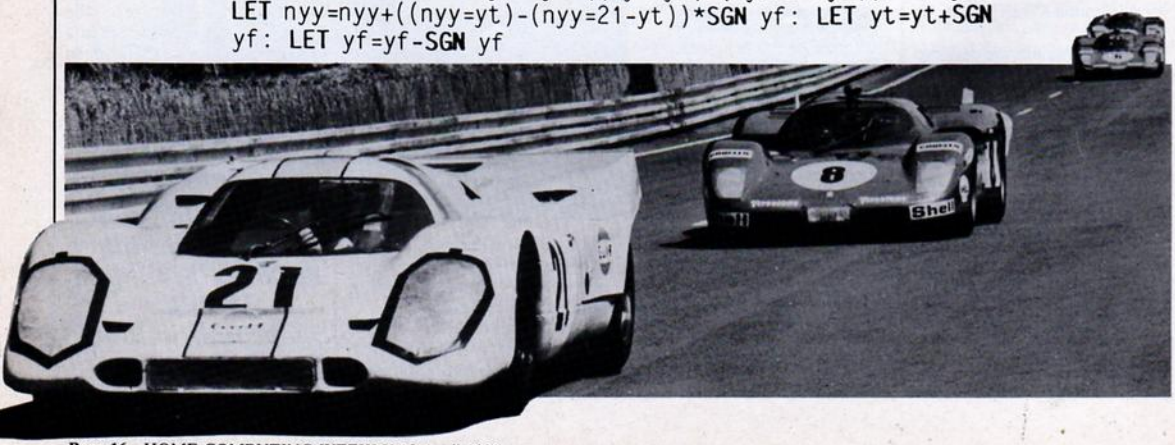
nyx,nyy next yx and yy values

ncx,ncy next cx and cy values

yf,cf flags, set to +2 or −2 when car is about to change lane

● **From Exploring Spectrum BASIC, by Mike Lord, published at £4.95 by Timedata, 16 Hemmell High Road, Laindon, Basildon, Essex SS15 6ED.**

```
100 GO SUB 9000: REM set up for first race
200 IF yy=21-yt THEN LET nyx=yx+1: IF yx=30-yt THEN LET nyy=yy
    -1: LET y$=CHR$ 145
210 IF yy=yt THEN LET nyx=nyx-1: IF yx=yt+1 THEN LET nyy=yy+1:
    LET y$=CHR$ 145
220 IF yx=yt THEN LET nyy=yy+1: IF yy=20-yt THEN LET nyx=yx+1:
    LET y$=CHR$ 144
230 IF yx=31-yt THEN LET nyy=yy-1: IF yy=yt+1 THEN LET nyx=yx
    -1: LET y$=CHR$ 144
240 IF nyx=15+(yy>12) OR nyy=11 THEN LET yf=2*((yt<7 AND
    INKEY$ ="i")-(yt>1 AND INKEY$ ="o"))
250 IF yf<>0 THEN LET nyx=nyx+((nyx=yt)-(nyx=31-yt))*SGN yf:
    LET nyy=nyy+((nyy=yt)-(nyy=21-yt))*SGN yf: LET yt=yt+SGN
    yf: LET yf=yf-SGN yf
```



```
26Ø IF nyy=cy AND nyx=cx THEN GO TO 4ØØ
3ØØ IF cy=21-ct THEN LET ncx=cx-1: IF cx=ct+1 THEN LET ncy=ncy
    -1: LET c$=CHR$ 145
31Ø IF cy=ct THEN LET ncx=cx+1: IF cx=3Ø-ct THEN LET ncy=cy+1:
    LET c$=CHR$ 145
32Ø IF cx=ct THEN LET ncy=cy-1: IF cy=ct+1 THEN LET ncx=cx+1:
    LET c$=CHR$ 144
33Ø IF cx=31-ct THEN LET ncy=cy+1: IF cy=2Ø-ct THEN LET ncx=cx
    -1: LET c$=CHR$ 144
34Ø IF (ncx=15+(ncy>8)) OR ncy=11 THEN IF RND <s/1Ø THEN LET
    cf=2*SGN (yt-ct)
35Ø IF cf<>Ø THEN LET ncx=ncx+((ncx=ct)-(ncx=31-ct))*SGN cf:
    LET ncy=ncy+((ncy=ct)-(ncy=21-ct))*SGN cf: LET ct=ct+SGN
    cf: LET cf=cf-SGN cf
4ØØ PRINT AT yy,yx;"•";AT cy,cx;"•";AT nyy,nyx; INK 1;y$;AT
    ncy,ncx; INK 2;c$
41Ø LET yx=nyx: LET yy=nyy: LET cx=ncx: LET cy=ncy
42Ø IF yx=16 AND yy<8 THEN LET lap=lap+1: PRINT AT 9,12;lap;
    " LAP";("s" AND lap>1)
43Ø IF yx<>cx OR yy<>cy THEN GO TO 2ØØ
5ØØ FOR a=1 TO 6: FOR b=144 TO 145: BEEP .Ø3,-4Ø: PRINT INK a;
    AT yy,yx;CHR$ b: NEXT b: NEXT a
51Ø PRINT AT yy,yx;CHR$ 146
52Ø IF lap>hi THEN LET hi=lap: PRINT AT 11,12;"HI SCORE";AT 12
    ,15;hi
53Ø INPUT "Press ENTER for another run"; LINE i$
54Ø PRINT AT yy,yx;"•": GO SUB 9200: GO TO 2ØØ

9ØØØ REM draw track
9Ø1Ø INK Ø: PAPER 7: FLASH Ø: BRIGHT Ø: OVER Ø: INVERSE Ø:
     BORDER 7: CLS
9Ø2Ø FOR a=32 TO 16Ø STEP 32: PLOT a/2,a/2-13
9Ø3Ø DRAW 256-a,Ø: DRAW 12,12,PI/2
9Ø4Ø DRAW Ø,176-a: DRAW -12,12,PI/2
9Ø5Ø DRAW a-256,Ø: DRAW -12,-12,PI/2
9Ø6Ø DRAW Ø,a-176: DRAW 12,-12,PI/2
9Ø7Ø NEXT a
9Ø8Ø FOR a=2 TO 6: PRINT AT a,15;"••";AT a+13,15;"••": NEXT a
9Ø9Ø FOR a=1Ø TO 12: PRINT AT a,2;"•••••";AT a,25;"•••••":
     NEXT a
91ØØ REM cars
911Ø DATA 231,66,255,255,255,255,66,231
912Ø DATA 189,255,189,6Ø,6Ø,189,255,189
913Ø DATA 36,9Ø,189,126,126,189,9Ø,36
914Ø RESTORE 91ØØ
915Ø FOR a=Ø TO 23: READ b: POKE USR "a"+a,b: NEXT a
916Ø LET hi=Ø
92ØØ REM starting values
921Ø LET yx=15: LET yy=1: LET yt=1: LET nyx=yx: LET nyy=yy:
     LET y$=CHR$ 144: LET yf=Ø
922Ø LET cx=16: LET cy=7: LET ct=7: LET ncx=cx: LET ncy=cy:
     LET c$=CHR$ 144: LET cf=Ø
923Ø LET lap=Ø: PRINT AT 9,12;"••••••••"
924Ø INPUT "Skill (1-9) ? ";s
9999 RETURN
```

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Incredible arcade type game featuring mushrooms, flies, snails, spiders, and the centipedes of course. Excellent graphics and sound. 6 skill levels, hi-score, rankings, bonuses, and increasing difficulty as the spiders become more active and the mushrooms increase.

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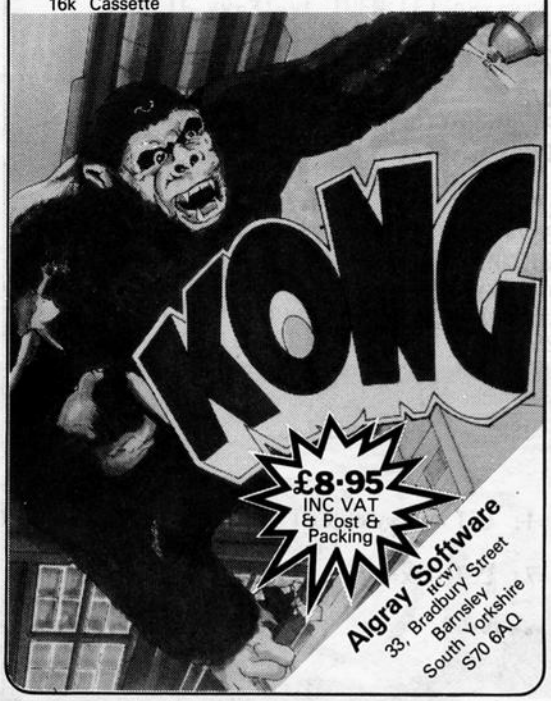

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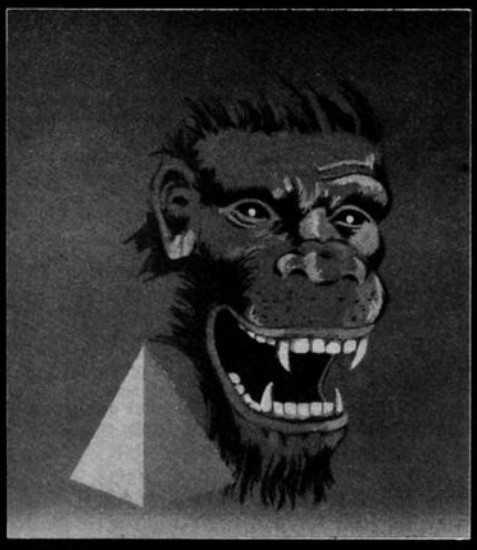

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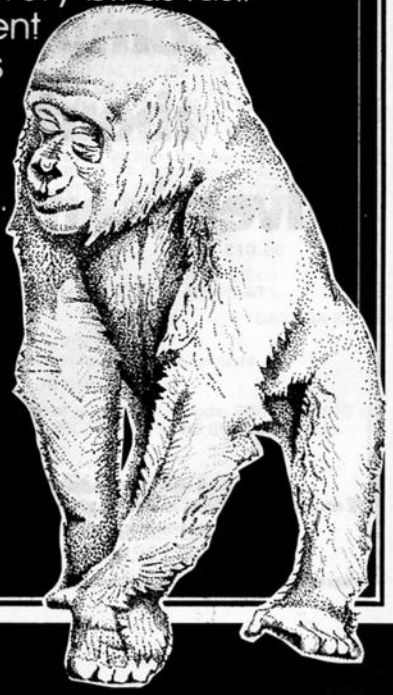

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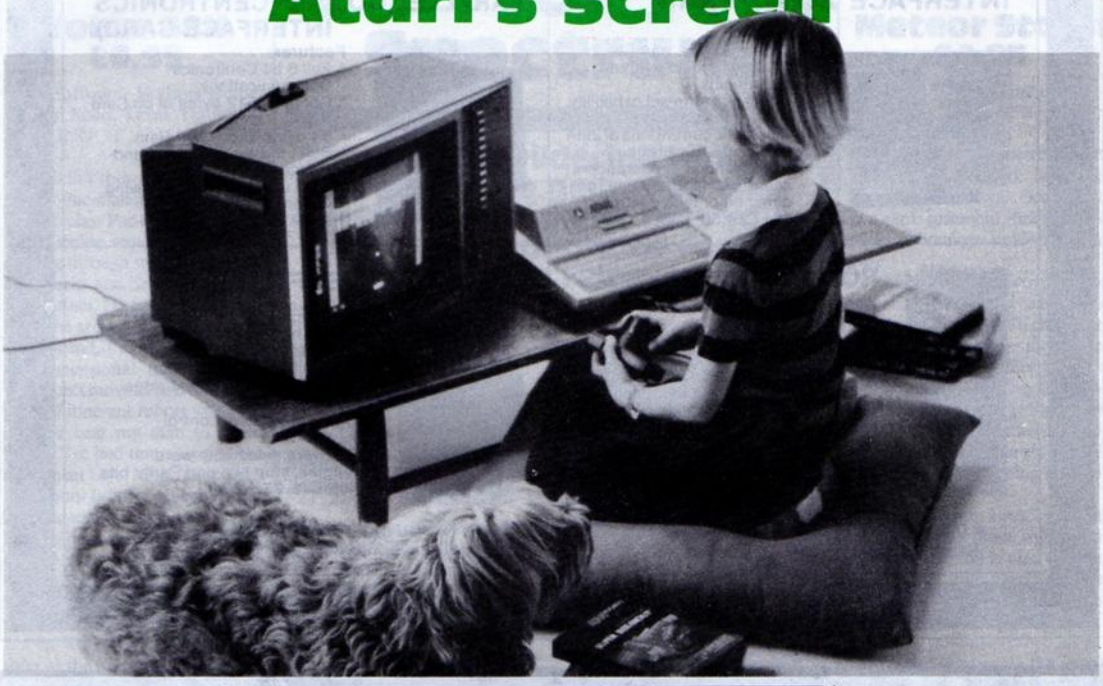

After delving inside his Atari, Marc Freebury emerges with a report on how to use its display list to create good looking games

Whenever you use a GRAPHICS command on the Atari, you are also creating a display list. This may not be obvious, but it happens nonetheless.

The "usable" screen — the piece you can see — consists of 192 horizontal lines. Each graphics mode uses a set number of these lines to create each of its own lines:

Basic mode	Number of lines used
0 (2)	8
1 (6)	8
2 (7)	16
3 (8)	8
4 (9)	4
5 (10)	4
6 (11)	2
7 (13)	2
8 (15)	1

This shows that BASIC mode zero takes eight scan lines per line — 24 lines multiplied by eight scan lines gives 192, maximum usage.

The display list always precedes the screen memory, and can be found by:

```
10 DL = PEEK(560) +
PEEK(561)*256
```

The first three locations of the display list contain 112. These just bring the screen to its normal central position.

The next location is the mode being used for the top line, plus 64. The problem is that the computer does not call the modes the same numbers as in BASIC — use the figures in brackets instead.

The next two locations point to the memory to be used in the screen display, high byte second, low byte first.

Then comes a series of locations describing what modes will be used to use all 192 scan lines. You can use less, but using more has spectacularly disastrous results.

These modes are also given in computer mode numbers.

Finally, there are three locations which tell the computer to go back to the start and display it all over again. The first is always 65, the second and third are the low and the high bytes of the address of the start of the display list.

Now you know how to build a display list, try this:

```
10 GRAPHICS 0:SETCOLOR
2,0,0
20 DL = PEEK(560) +

30 POKE DL + 3,71:

40 POSITION 2,0:? "HELLO"
```

This modifies the display list so that the top line of the screen is in mode 2, while the rest remains in mode 0.

It appears that the second line is also in mode 2, but in fact it is a continuation of the top line. The modes 1 and 2 only use 20 characters per line, and two are required to fill the 40 character line we removed.

This technique allows for smart opening titles, or putting "score" in large characters.

Mixing large numbers of modes will require forethought, since the graphics modes will also have the same problems as the text modes with regard to line length.

If you do attempt this, place your new display list in a safe place, such as 1536. Then POKE 559 with 0, POKE 560 with the low byte of the display list address (in this case 0) and POKE 561 with the high byte (in this case 6). Lastly, POKE 559 with 34 again.

Do not forget that the address of the screen memory must also be poked into the fifth and sixth locations of the display list, before the POKE 559,0.

Used at its simplest level, the display list can provide interesting effects. At higher levels of complexity it could lead to some very interesting games.

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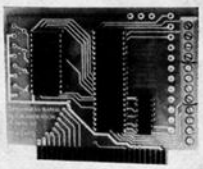

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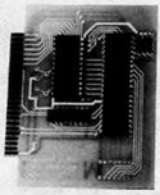

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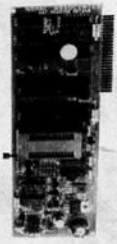

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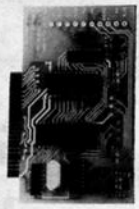

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Where the arcade action is — for your Spectrum

There's a bewildering range of arcade-type games on the market. Our panel tells you what they thought of some of the new releases

Tobor 48K £6.95

Elfin Software, Hudson House, Battery Road, Great Yarmouth, NR30 3NN

Why didn't they say it was a version of Pac-man in the first place? I can't play Pac-man! After the 3-D opening sequence of robots moving through what looked like city blocks and clever little bowling routines, I thought this was going to be great fun!

Instead, I'm presented with a two-dimensional maze, a man who won't move as he is told and a gang of itinerant robots who proceed to beat my man to death before I've had time to get to the movement keys! Most frustrating.

Tobor is not at all bad, if you like Pac-man style pursuit games. It does have a different slant or two, but the graphics are way behind, for example, Psion's Hungry Horace — the best Spectrum Pac-man I've seen to date.

In Tobor you get killed as soon as the robots line up on you — none of this close quarter stuff. You can only fire in the direction you're moving and you will die often. I cannot advise on tactics — I never stayed alive after collecting my jewels in the city to devise any.

Good fun then — but not what the presentation promises.

R.H.

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

★ ★

Space Zombies Spectrum £5.95

Mikro-Gen, 24 Agar Crescent, Bracknell, Berks

They've got to be joking! Space Zombies? A line of little coloured blobs that weave across the screen to be shot up absolutely at leisure. An opening, easy, round maybe?

Not a bit of it! The next round is every bit as enthralling and challenging as the first. After a few minutes of this you will be looking forward to cleaning your teeth at night for a bit of excitement.

About the only use I can conceive for Space Zombies is as an introduction to space games for young (i.e. under-eight) would be space conquerors. The colours are quite nice and you do get killed, sometimes.

Otherwise, I'm afraid it's all too easy and unimaginative.

Strictly for those who consider stepping on small furry animals a balanced and exciting pastime.

R.H.

instructions	50%
playability	20%
graphics	20%
value for money	20%

★

Cosmic Raiders £5.95

Mikro-Gen, 24 Agar Crescent, Bracknell, Berks.

Defender by any other name... is just as difficult! Cosmic Raiders runs slowly and not particularly smoothly. The spaceship looks like it's running on half cylinders. Firing the craft's laser freezes the entire screen for a brief period. Despite all this, the game is good fun to play and will bring you back to the keyboard for another try.

As with all derivatives of the arcade massacre, the aim is to preserve stupid humans from the hovering alien kidnappers. They are not making it easy for you, however, as they have all climbed to the top of high buildings and are waving about frantically. Even the most short-sighted alien couldn't miss this lot.

Still, save them you must against landers, mutants, mother ships and the rest. If things get too frustrating, shooting humans is easier than shooting aliens, and often more satisfying!

Bad for public relations, though.

R.H.

instructions	60%
playability	70%
graphics	50%
value for money	70%

★ ★ ★

Meteor Storm £4.95

Quicksilva, 92 Northam Road, Southampton SO2 0PB

Cyan outlines of meteors skim across a plain black screen in classic Asteroid style. Occasionally a pink spaceship, firing yellow bullets, bounces randomly into view.

Meteor Storm proved to be playable, enthralling and sufficiently fast to provide a challenge. The meteors increase in number and speed as the score mounts, and an audible warning greets the new reinforcement every 10,000 points. But this indistinct croak of "meteor alert" is hardly enough to justify the advertising boast of speech.

The program includes a sophisticated attract mode with a high score tale. Sound is used to good effect, and the meteors travel smoothly and quickly. The explosion displays could be better, though.

You can orientate the attack craft in eight ways using the top row number keys, and a keyboard overlay is provided. But control of the ship takes time to master, and the keys could have been better selected.

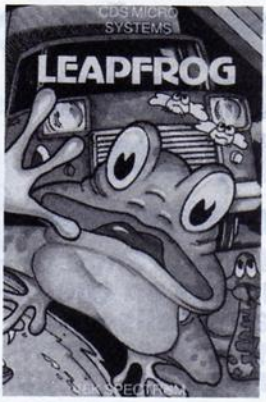
C.L.

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

★ ★ ★

Leapfrog £5.95

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



A standard version of the arcade game Frogger, where a frog has to be guided through four lanes of traffic, across a river by leaping across logs and turtles and finally into one of five homes. If the home is already occupied by a crocodile you are eaten, but if there is a dragonfly there you score a 50 point bonus.

Other hazards are the risk of the long-suffering turtles sinking beneath the waves, hence drowning you, and a hungry snake lurking on the riverbank (though I never encountered this).

You move your frog using the cursor keys and the S key to start. Attractive graphics and sound, though the tune at the beginning and end of each game gets a bit tedious after a while, especially as it delays the next game.

A good solid implementation of the game, but with no innovations. It is quite compulsive but has one important fault — the keyboard seems to be read unpredictably. Sometimes I was certain I pressed the correct key but had no response; at other times the briefest touch sent the ambling amphibian too far forward and into disaster.

N.W.

instructions	80%
playability	70%
graphics	92%
value for money	85%

★★★★

Ground Attack £5.95

Silversoft, 20 Orange Street, London WC2H 7ED

Be warned: this program is addictive. With each run that ends in disaster, and most of them do, you feel that the reasons for failure are obvious and avoidable. With a slight change of tactics you should be able to do much better. So you try again — and again — and again.

Known to arcade devotees as Scramble, among other aliases, Ground Attack provides you with three ships armed with bombs and lasers. Your task is to destroy enemy fuel bases while dodging ground-to-air missiles and airborne attackers.

The scenery, which moves from right to left, begins in the open air, but then goes into underground caverns which get narrower and narrower. There are nine alternative running speeds, ranging from fairly comfortable to impossible, and six control keys.

The instructions are brief but adequate. You have to work out the scoring basis for yourself, and the optimum tactics dawn on you as you gain experience. Destruction of one of your ships is shown in a spectacular and effective way, with appropriate sound.

No bugs or glitches were detected, and the program loaded without difficulty.

Excuse me. I must practice that ground-skimming laser attack. If I can get that right...

D.T.

instructions	90%
playability	90%
graphics	70%
value for money	85%

★★★★

Planetoids £4.95

Psion, Stanhope Road, Camberley, Surrey GU15 3PS

Meteors, Asteroids, Planetoids... software companies are fast running out of synonyms for drifting space debris. In this version, twinkling stars form a backdrop to yellow planetoids, which pass by smoothly and quickly while you try to destroy them with softly clicking bullets. Sometimes a mystery ship appears.

Z and X control your rotation, SPACE is for firing, and ENTER is for thrusting. You access hyperspace by pressing H, necessitating a sudden swipe at the centre of the keyboard in an emergency.

Your ship moves responsively in all directions, and the graphics are generally good and colourful, despite a disappointing explosion effect. The sound could be improved, though — and why is there no high score facility?

As for bugs — try hyperspacing while thrusting, or accelerating over the mystery ship's bullets (it's safe!). And a position of total safety can be found at the screen's edge.

There's a tedious and incomprehensible game called Missile on the other side of the tape.

Planetoids is an average adaptation of the arcade game, but Psion has not fully debugged it or presented it at its best.

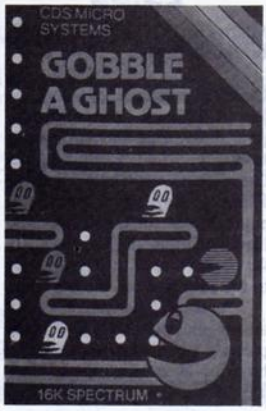
C.L.

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

★★★

Gobble a Ghost £5.95

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



No prizes for guessing what this program should really be called. Four ghostlike object pursue you around a maze and gobble you up if they catch you. You have the opportunity of eating up to four power pills, each of which give you a temporary chance of revenge.

The controls used are 1 and Q for Up and Down, 9 and 0 for Left and Right. A sensible approach, because using cursor keys is difficult using two hands, but one I still found confusing as I tend to forget which axis is controlled by which pair of keys.

The graphics are fine and the sound unusually clear for the Spectrum, but neither is particularly remarkable. Being a machine code program there is no jerkiness in the movement and so the game is perfectly playable from a keyboard, though not terribly exciting. A more than competent version of an overworked game.

N.W.

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

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Why Romik says that honesty is the best policy

There's too much deception in the software market, according to Mike Barton, of Romik. Candice Goodwin finds out what made this company decide to put its cards on the table

After seven months in business, Romik has already outgrown its small office at 24 Church Street, Slough. There is just about enough room for the two partners, Mike Barton and Gerry Rose, and their two assistants — but since a large box of cassette cases was taking up the rest of the floor space, it was pretty hard to get through the door.

The inlays had just arrived for Power Blaster, one of Romik's new programs for the VIC-20, and Lorraine Brind, the company's "girl Friday", was busy putting inlays into cassette boxes and packing the boxes into cardboard cases.

Anyone who has played a Romik game would instantly recognise the Power Blaster inlay as one of Romik's. Rather than a glossy artist's impression of what the game is about, it simply carries a copy of the screen display at some point in the game, painstakingly copied by Mike Barton himself.

It's all part of what Mike calls "the honest approach." He said: "I don't believe in false promises. What you see on the front shows part of the actual program."

The only indulgence the company allows itself is in the descriptive blurb: "The year is 2201... you are the commander of a Venusian defence force patrol..."

Mike Barton got the idea of setting up Romik while he was working as sales manager for Rabbit Software. He said: "I've always been into electronics. I built myself a stereo record player before there were any stereo records in this country — I had to import them from the States. And I served an apprenticeship in electromechanics."

The first stage was to sit down and think up a plan of campaign — which, Mike claims took him just two hours.

Honest packaging and honest advertising was one part of the plan. Reliability and value for money was another. And Mike aimed to offer a good service to dealers, getting orders out the same day they came in.

The chance to put the plan into action came when Mike bumped into Gerry Rose in Harrow one day. The two had known each other since the days when Gerry was regional manager on Mike's first sales job. Gerry said: "He asked me if I knew anyone who was prepared to put £5,000 into a business, and I said I might be interested."

Gerry, who has an accounting background, went through the figures: "I said it would cost more like £30,000." They decided to put £10,000 in each and borrow £20,000 from the bank to give them some working capital, and on September 9 1982 Romik — Ro from Rose and mik from Mike — was launched.

Six days later, a cheque for £16,000 arrived from a major US software company. Gerry said: "I never had to put my money in in the end. We took Mike's money out three months later, and we never had to ask the bank for credit."

Mike and Gerry are a strange combination, one confident and extrovert, the other quiet and cautious. But Gerry reckons "we find we complement each other.

"Mike's the ideas man, the market assessment man — he deals with the programmers. I do everthing else — orders, despatch, packaging, accounts.

"We're both salesmen, but we don't have to sell. The original idea was that Mike would be out on the road all day, selling, while I would be stuck in the office answering the phone. I even went out and bought a TV aerial — I thought I'd be watching a lot of television to pass the time.

"But in the end, Mike didn't have time to go out on the road — and I didn't have time to watch a single television programme."

Apart from that, "the plan I drew up I haven't deviated from by one iota", says Mike. The software range, which started with eight programs for the VIC and now includes 14 titles, currently sells for a fixed price of £9.99 per cassette.

All the programs are written in machine code, and are duplicated on both sides of the tape. On each side the recordings are at slightly different levels, to allow for differences between individual recorders. But Mike

Honest Mike Barton — no false promises

"Girl Friday' Lorraine Brind

Gerry Rose, "the company pessimist"

reckons that, because of the care taken while the tapes are being copied, their customers report very few problems with loading.

"We've had 40 to 50 sent back since the company started trading. Of those, most have been perfect — people just haven't followed the loading instructions."

Romik insists on no more than a 0.01 per cent failure rate from the tape duplicating company it uses: "with the state of the country at the moment, if you demand something, you'll get it". The key to good quality reproduction, Mike says, is to produce a good master tape in the first place; the master for their programs is made at the tape manufacturers', under strictly controlled conditions.

Romik's "honest approach" has apparently paid off. "The response from retailers is that our stuff sells itself".

At the moment, Romik employs four full-time programmers and 20 part-timers, all working from home. Most of the part-timers are still at school or college. "the older the guy, the harder it is for him to grasp action games. Older programmers don't see the difference between one action game and another". Gerry added: "Like all modern music sounds the same to me."

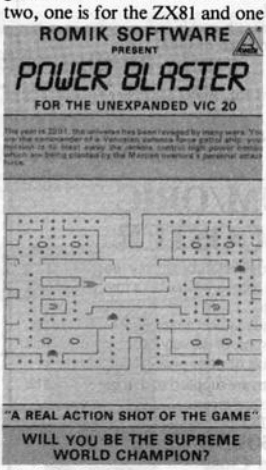
The company is currently negotiating with one programmer who is just twelve years old. But Mike is quick to point out: "We do insist that programming mustn't interfere with their studies in any way.

"Our programmers have no time stipulation. We don't say, you've got to turn out 10 programs a year. It's more important to turn out perfect games. One of our programmers is still working on his first game."

To keep good programmers, Mike reckons Romik pays very good money indeed. "They get 20 per cent of the gross take; they earn more per program than we do. But the programmers are the most important part of the company."

When Romik moves into new premises soon, the plan is to take on more staff generally, and more programmers in particular. "We want four or five people working full-time in-house, sorting out problems and building up a library of software routines."

It will take a lot of programmers to meet Romik's avowed goal of having 25 quality programs for every popular home computer. So far all but two of its games are for the VIC. Of those two, one is for the ZX81 and one for the Dragon.



The inlay for Power Blaster: what you see is what you get

BBC, Spectrum, Atari and Commodore 64 programs are in the pipeline, though, and Romik is, Mike says, one of two companies chosen by Lynx to write software for its new micro: "We got a fantastic deal from Lynx. They appreciate the fact that software sells computers".

Romik's software is sold entirely through retailers — Mike considered mail order to be a dying market from the first. They are in Lasky's and Currys, as well as a network of independent retailers, and sell a lot of cassettes in America and Australia too.

What of the future of the software market? Gerry: "I don't think anybody knows. But I admit I'm the company pessimist — it must be my accounting background".

Mike: "I don't care if we don't take a penny, because I feel our games bring a lot of enjoyment to a lot of people. But I intend our company to be number one in software across the board in six months time. And I intend us to be the leading software company in the world in 18 months".

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No machine is complete without this, the original cosmic shootout. In machine code with three invader types (plus mother ship), bonus bases, hi-res, double size screen, etc.

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A space dog-fight simulator which, like Asteroids, is written in machine code and uses hi res. Guide your fighter through tight loops and turns to centre the elusive alien craft in your sights. With 10 skill levels.

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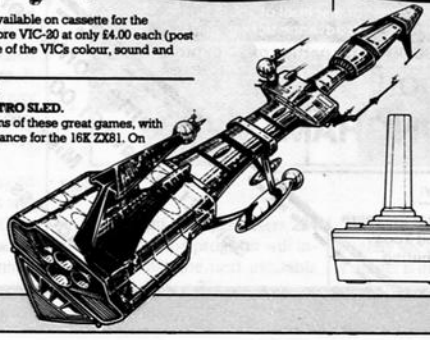

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Tune in to lots more BBC characters

Create more characters the easy way on your BBC micro. Geoff Turner explains how and presents a character generator to type in

As well as displaying the standard ASCII character set, the BBC micro allows user definition of a further 32 characters.

These characters are defined using the VDU 23 command, as described on page 384 of the user manual.

Each individual character is plotted on an eight by eight grid. Figure 1 shows how one of the characters is produced, in this case, the letter A.

Using the VDU 23 command, any combination of pixels can be plotted to create a user defined character. Figure 2 demonstrates how a typical space monster could be produced. The command to achieve this would be: VDU 23,224,195,66,255, 153,255,231,255,102

The figure can be considered as eight rows of eight pixels. The numbers along the top, are the numerical values of each pixel in the row, whilst the number at the end of each row is the total value of the plotted pixels in the row.

The nine numbers following the VDU 23 command represent the character number, i.e. 224, and the numerical values of the eight rows of the character. First row 195, second row 66 etc. etc.

With a little practice, the VDU 23 command is very easy to use, when defining individual characters.

It can, however, become a little tedious if you want to define a full set of characters for use in a particular program. My character generator program was designed to enable a set of characters to be produced with ease.

Characters are plotted on a large eight by eight grid using a moving cursor.

Pixels can be plotted or erased as required, and the program takes care of all the calculations. Numerical values of the character are continuously updated and displayed alongside the grid.

A normal size version of the character is also displayed so you can see how it will appear when used in a program.

A set of defined characters may be saved on tape, and recalled later for use in another program. It is therefore possible to define any number of character sets for particular applications, and store them on tape.

The program is very easy to use. All necessary instructions and prompts are included in the listing. Please note that whilst character numbers 224 to 255 are normally available for user definition, the program itself uses characters 224 and 225, and the program will inform you that the next available character is in fact 226.

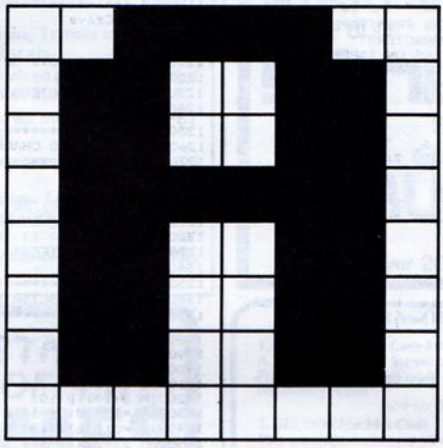

Figure 1

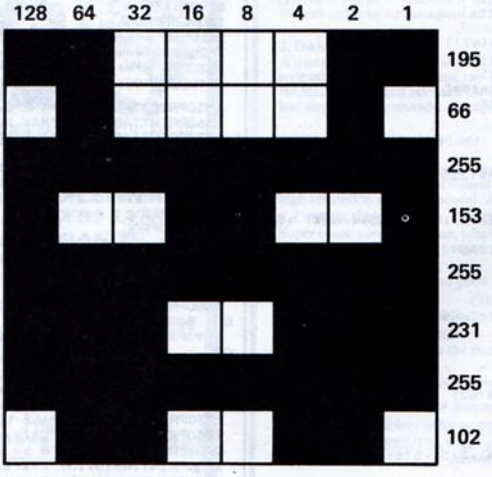

Figure 2

The program uses approximately 4K of memory. It runs on a model B in Mode 1, but model A users may use two-colour mode 4. It will be necessary to delete all references to colour 2 and colour 3 in the listing.

The variables are: CH% character number currently being defined, LC% last character defined, CHOICE% the value entered by the user when prompted by the menu, X% Y% X and Y coordinates of the 8 by 8 grid, C% counter variable in for next loops, G, G$ used to GET inputs from keyboard, B(array) numerical values of each column of the grid, S(array) numerical value of each of the 8 rows.

How it works

The program makes good use of BBC Basic PROCedures.

10-220	form the main loop and direct the program to the various procedures as selected by the user from the menu.
230-390	menu of five options.
400-970	define character
980-1150	display all defined characters
1160-1240	save character set on tape
1250-1340	load character set from tape
1350-1500	initialise variables
1510-1630	exit program
1640-1820	instructions

Hints on conversion

Because this method of character definition is specific to the BBC micro, it is not easily converted to other machines.

The basic outline of the program could be used, but considerable changes would need to be made within the procedure for defining characters. However, I have included some guidelines for those people who are unfamiliar with BBC basic.

PROCEDURES may be substituted with GOSUBS
GET and GET$ may be replaced with INPUT or INKEY functions
COLOUR changes text colour
*FX 15,1 FLUSHES keyboard buffer prior to input
VDU 19 changes actual colours used in any mode
VDU 23 command used to store user defined characters
VDU 7 makes a short BEEP

The majority of the program uses fairly standard Basic. ▶

```
10REM **********************
20REM CHARACTER  GENERATOR
30REM by GEOFF TURNER 1983
40REM **********************
50REM **********************
60MODE 7
70PROCinstructions
80MODE 1
90PROCinitialise
100PROCmenu
110ON CHOICE GOTO 120,140,160,180,200
120PROCload
130GOTO 100
140PROCdefine
150GOTO 100
160PROCsave
170GOTO 100
180PROCdisplay
190GOTO 100
200MODE 7
210PROCend
220END
230REM ******************************
240REM ********* MENU *************
250REM ******************************
260DEFPROCmenu
270CLS
280PRINTTAB(16,3);"MENU"
290PRINTTAB(16,4);"====="
300PRINTTAB(5,7);"1.  LOAD CHARACTERS FROM TAPE"
310PRINTTAB(5,9);"2.  DEFINE NEW CHARACTERS"
320PRINTTAB(5,11);"3.  SAVE CHARACTERS ON TAPE"
330PRINTTAB(5,13);"4.  DISPLAY DEFINED CHARACTERS"
340PRINTTAB(5,15);"5.  EXIT PROGRAM"
350PRINT''

360*FX 15,1
370INPUT "      SELECT OPTION  1-5  :   "CHOICE
380IF CHOICE < 1 OR CHOICE >5 THEN VDU 7:GOTO 370
390ENDPROC
400REM ******************************
410REM **** DEFINE CHARACTERS ****
420REM ******************************
430DEFPROCdefine
440CLS

450S(1)=0:S(2)=0:S(3)=0:S(4)=0
460S(5)=0:S(6)=0:S(7)=0:S(8)=0
470PRINTTAB(0,3)"Characters available       226 to 255"
480PRINTTAB(0,5)"Last character defined     ";LC%
490PRINT
500*FX15,1
510INPUT"Enter next chr number      "CH$
520IF VAL(CH$) < 226 OR VAL(CH$) > 255 VDU 7:PRINTTAB(2
7,7);"    ":GOTO 470

530CH%=VAL(CH$)
540FOR Y%=11 TO 18
550FOR X%=12 TO 19
560COLOUR 2
570PRINTTAB(X%,Y%);CHR$(224);
580COLOUR 3:PRINTTAB(22,Y%);"O"
590NEXT : NEXT
600X%=12:Y%=11
610COLQUR 3:PRINTTAB(X%,Y%);CHR$(62);
620PRINTTAB(1,24)"C.  Plot cell"
630PRINTTAB(24,24)"L.  Plot line"
640PRINTTAB(1,26)">.  Advance cursor"
650PRINTTAB(24,26)"<.  Backspace"
660*FX 15,1
670G$=GET$
680COLOUR 3
690IF G$="C" PRINTTAB(X%,Y%);CHR$(225):S(Y%-10)=S(Y%-10
)+B(X%-11):GOTO 820
700IF G$="L" THEN 710 ELSE 720
710FOR X%=12 TO 19 : PRINTTAB(X%,Y%);CHR$(225): NEXT :S
(Y%-10)=255:GOTO 820
720IF G$="." THEN COLOUR 2:PRINTTAB(X%,Y%);CHR$(224):GO
TO 820
730IF G$<>"," THEN 660
740COLOUR 2
750IF X%=12 THEN PRINTTAB(X%,Y%);CHR$(224):Y%=Y%-1
760IF Y%=10 THEN Y%=11
770FOR X%=19 TO 12 STEP -1
780PRINTTAB(X%,Y%);CHR$(224)
790NEXT
800COLOUR 3:PRINTTAB(12,Y%);CHR$(62)
810S(Y%-10)=0
820COLOUR3:PRINTTAB(22,Y%);"   "
830PRINTTAB(22,Y%);S(Y%-10)
840VDU 23,CH%,S(1),S(2),S(3),S(4),S(5),S(6),S(7),S(8)
850PRINTTAB(30,15);CHR$(CH%)
860X%=X%+1:IF X%>19 THEN X%=12:Y%=Y%+1
870IF Y%>18 THEN GOTO 900
880PRINTTAB(X%,Y%);CHR$(62)
890GOTO 660
900COLOUR 3:
910VDU 7
920*FX 15,1
930PRINTTAB(1,30);"DO YOU WISH TO STORE THIS CH'R Y/N "
::INPUT Y$
940IF Y$="N" VDU 23,CH%,0,0,0,0,0,0,0,0:GOTO 970
950IF Y$<>"Y" PRINTTAB(37,30)"  "::GOTO 910
960LC%=CH%
970ENDPROC
980REM ******************************
990REM **** DISPLAY DEFINED CHRS ***
1000REM ******************************
1010DEFPROCdisplay
1020CLS
1030PRINT:PRINT
1040PRINTTAB(0,3)"*******  DEFINED  CHARACTERS  ********
**"
1050PRINT
1060C%=226
1070REPEAT
1080PRINTC%;" ";CHR$(C%);"    ";C%+1;" ";CHR$(C%+1);"
";C%+2;" ";CHR$(C%+2)
1090PRINT
1100C%=C%+3
1110UNTIL C%>255
1120PRINTTAB(3,30)"PRESS SPACE BAR TO RETURN TO MENU"
1130G=GET
1140IF G<>32 THEN 1120
1150ENDPROC
1160REM ******************************
1170REM *** SAVE CHARACTERS ********
1180REM ******************************
1190DEFPROCsave
1200CLS

1210PRINTTAB(0,10);"SET DATA CASSETTE IN POSITION"
1220PRINT
1230*SAVE "CHARACTERS" 0C00+0100
1240ENDPROC

1250REM ******************************
1260REM **** LOAD CHARACTERS ********
1270REM ******************************
1280DEFPROCload
1290CLS
1300PRINTTAB(0,10)"SET DATA TAPE IN POSITION"
1310PRINT:PRINT"THEN PRESS RETURN KEY"
1320G=GET:IF G <> 13 THEN 1320
1330*LOAD"CHARACTERS"
1340ENDPROC
1350REM ******************************
1360REM ** INITIALISE VARIABLES **
1370REM ******************************

1380DEFPROCinitialise
1390CH%=0
1400LC%=0
1410VDU 19,2,2,0,0,0
1420DIM S(10),B(10)
1430B(1)=128:B(2)=64:B(3)=32:B(4)=16
1440B(5)=8:B(6)=4:B(7)=2:B(8)=1
1450VDU 23,224,255,129,129,129,129,129,129,255
1460VDU 23,225,255,255,255,255,255,255,255,255
1470FOR C%=226 TO 255
1480VDU23,C%,0,0,0,0,0,0,0,0
1490NEXT
1500ENDPROC
1510REM ******************************
1520REM ***** EXIT ROUTINE *******
1530REM ******************************
1540DEFPROCend

1550PRINTTAB(1,3);"THE CHARACTER GENERATOR PROGRAM "
1560PRINTTAB(1,5);"MAY NOW BE ERASED."
1570PRINTTAB(1,9);"THE DEFINED CHARACTERS"
1580PRINTTAB(1,11);"WILL REMAIN IN MEMORY "
1590PRINTTAB(1,13);"AND MAY BE RECALLED"
1600PRINTTAB(1,15);"USING VDU <CHR NUMBER>"
1610PRINTTAB(0,19);CHR$(136)"PRESS BREAK KEY"
1620G=GET
1630ENDPROC
1640REM ******************************
1650REM ***** INSTRUCTIONS *******
1660REM ******************************
1670DEFPROCinstructions
1680PRINTTAB(5,2);CHR$(130);CHR$(141);"CHARACTER GENERAT
OR"
1690PRINTTAB(5,3);CHR$(130);CHR$(141);"CHARACTER GENERAT
OR"

1700PRINTTAB(8,5);CHR$(131);"by Geoff Turner."
1710PRINTTAB(0,8)"This program assists the user in"
1720PRINTTAB(0,9)"defining a set of characters using"
1730PRINTTAB(0,10)"the VDU 23 command."
1740PRINTTAB(0,13)"Characters are plotted on a large"
1750PRINTTAB(0,14)"8 by 8 grid, and the normal size"
1760PRINTTAB(0,15)"character is displayed alongside."
1770PRINTTAB(0,18)"Provision is made for saving a set"
1780PRINTTAB(0,19)"of characters on cassette, and loadin
g"
1790PRINTTAB(0,20)"them back for use in other programs."
1800PRINTTAB(5,24);CHR$(136);CHR$(134);"PRESS SPACE BAR
"
1810G=GET:IF G<>32 THEN 1810
1820ENDPROC
```

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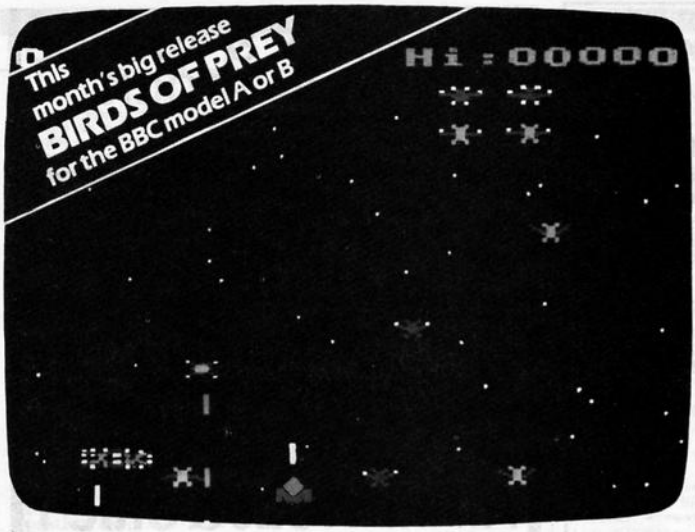

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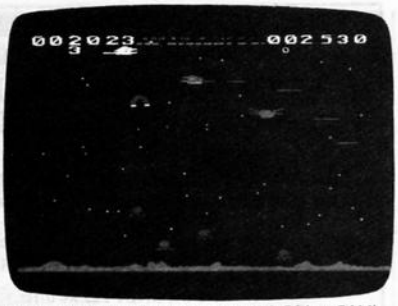

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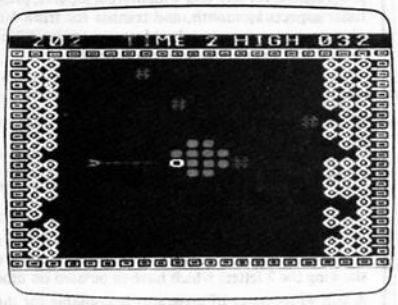

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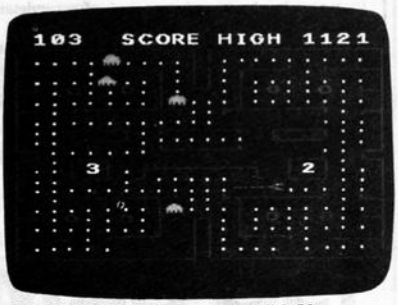

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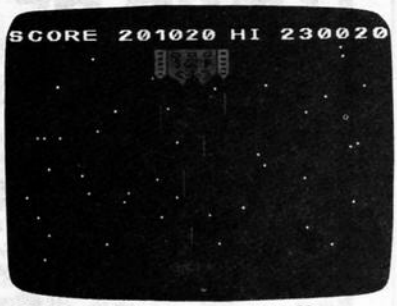

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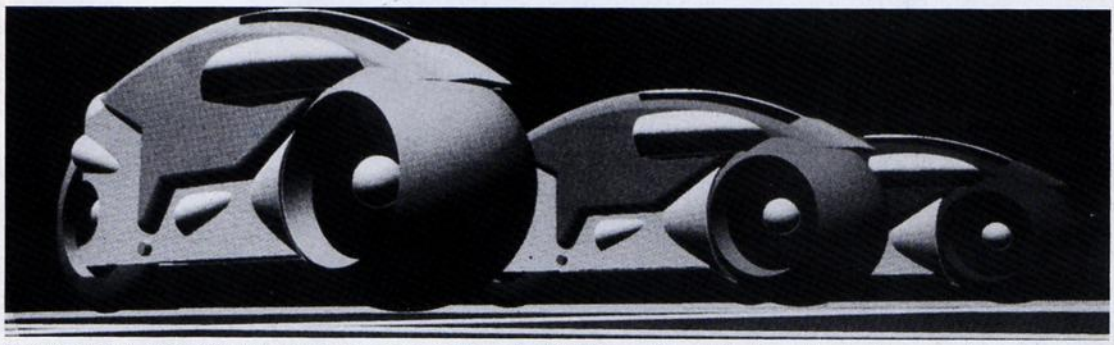
HCW7

On your bike . . . and race for your lives



Electronic light cycles offer the chance of escape in Tron, the Walt Disney film which takes place inside a computer program

If you have seen Walt Disney's Tron, you'll have no problem playing my Light Bike game for the Oric-1.

The idea is to move your motorbike around the screen without crashing into a wall or into the trail that your bike leaves behind.

In this game you play against your computer — and it's out for the glory of victory.

There is an added feature: line 170 takes out random pixels, creating another exit...if you're lucky

When the program is run it will display brief instructions, the screen will clear and the game will begin.

You are given 10 lives with which you must defeat your Oric. The computer also has 10 lives and is determined to win.

Climb on your Light Bike, open the throttle wide and try to beat your computer. Peter Shaw wrote his game for the Oric-1

Your bike is controlled by the cursor keys on either side of the space bar.

How it works

50 sets PAPER and INK colours for lower part of screen, then puts computer into HIRES mode
70 checks for key press
80-120 calculate new position for your bike
130 and 150 check to see if the position is already occupied
160 sets position of your bike
170 erases one pixel from play area
180-250 update computer's position
270 continues loop

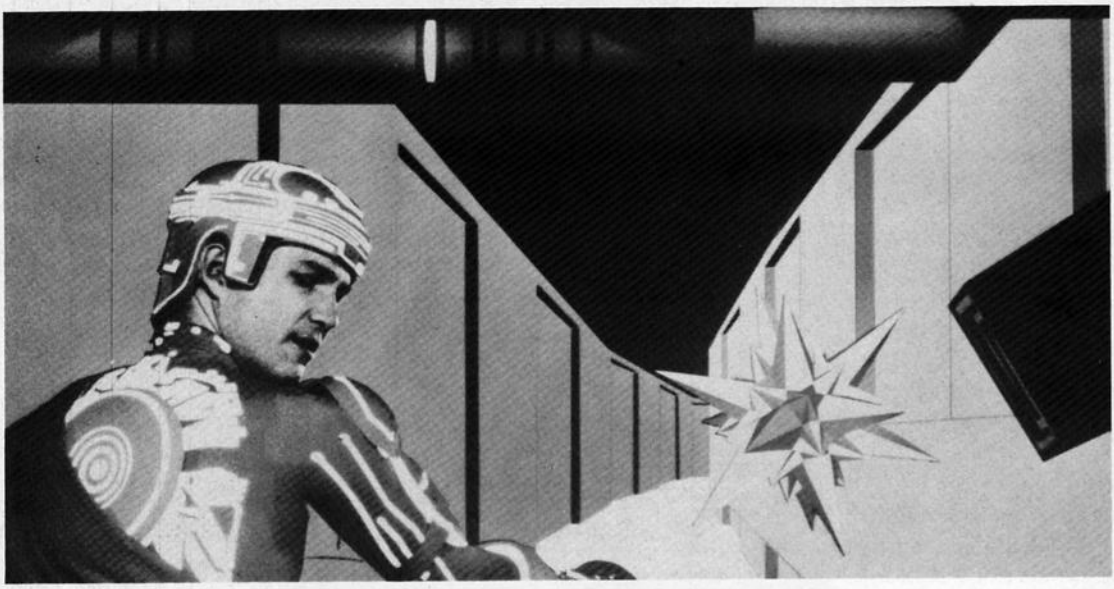
Subroutines:

1000-1080 you win a point
2000-2080 computer wins a point
3000-3050 you win game
4000-4050 computer wins game
7000-7030 draw playing area
8000-8070 set variables
9000-9150 instructions

Variables

CV and **CH** are X and Y co-ordinates of the computer's bike and
HV and **HH** are the co-ordinates for your bike
HS is human's score
CS is the computer's score
M determines the direction of your bike and
N decides the direction of the Oric's bike
C$ is the string holding the computer's points and
H$ holds the number of your points
A is a general control variable

```
10 REM ***** LIGHT BIKE *****
20 REM ** PETER SHAW 1983 ***
30 TEXT
40 GOSUB 9000'INSTRUCTIONS
50 PAPER0:INK2:HIRES
60 GOSUB 8000'SCREEN
70 K$=KEY$:IF K$="" THEN 90
80 M=ASC(K$):J=0
90 IF M=8 THEN HV=HV-1
100 IF M=9 THEN HV=HV+1
110 IF M=10 THEN HH=HH+1
120 IF M=11 THEN HH=HH-1
130 B=POINT(HV,HH)
140 PLAY 0,1,1,10
150 IF B=-1 THEN GOSUB 2000
160 J=1:CURSET HV,HH,1
170 U=0:CURSET INT(RND(1)*236)+1,INT(RND
(1)*98)+51,0
180 IF U=5 THEN GOSUB 1000
190 C1=CV:C2=CH
200 IF N=8 THEN CV=CV-1
210 IF N=9 THEN CV=CV+1
220 IF N=10 THEN CH=CH-1
230 IF N=11 THEN CH=CH+1
240 C=POINT(CV,CH)
250 IF C=-1 THEN N=U+8:CV=C1:CH=C2:U=U+1
:GOTO 180
255 PLAY 0,1,1,10
260 CURSET CV,CH,1
270 GOTO 70
1000 EXPLODE
1010 HS=HS+1
```



Jeff Bridges, hero of Walt Disney's Tron, with sidekick The Bit, a particle of energy

```
1020 H$=H$+"#"
1030 CLS:HIRES
1040 PRINT "Human ";H$,"Computer ";C$
1050 GOSUB 7000
1060 CV=60:CH=100:HV=160:HH=100
1070 IF HS=10 THEN GOTO 3000
1080 RETURN
2000 EXPLODE
2010 CS=CS+1
2020 C$=C$+"#"
2030 CLS:HIRES
2040 PRINT "Human ";H$,"Computer ";C$
2050 GOSUB 7000
2060 CV=60:CH=100:HV=160:HH=100
2070 IF CS=10 THEN GOTO 4000
2080 RETURN
3000 TEXT:CLS
3010 EXPLODE:EXPLODE:ZAP:EXPLODE
3015 FOR R=1 TO 10:FOR A=1 TO 7
3020 PLOT 13,10,CHR$(A)+"HUMAN! YOU WIN"
3025 WAIT 4
3030 NEXT A:NEXT R
3040 GET A$
3050 RUN
4000 TEXT:CLS
4010 EXPLODE:EXPLODE:ZAP:EXPLODE
4015 FOR R=1 TO 10:FOR A=1 TO 7
4020 PLOT 13,10,CHR$(A)+"HUMAN! I WIN"
4025 WAIT 4
4030 NEXT A:NEXT R
4040 GET A$
4050 RUN
7000 CURSET 0,50,1:DRAW 238,0,1
7010 DRAW 0,100,1:DRAW -238,0,1
7020 DRAW 0,-100,1
7030 RETURN
8000 C$="":H$=""
8010 CV=60:CH=100:HV=160:HH=100
8020 J=1:HS=0:CS=0
8030 CLS
8040 GOSUB 7000
8050 PRINT "Human ";H$,"Computer ";C$
8060 M=8:N=9
8070 RETURN
9000 TEXT:CLS
9010 A=1
9020 PRINT:PRINT:PRINT:PRINT:PRINT
9030 PRINT"Can you outride me, the great
est bike"
9040 PRINT"rider ?  Well I challenge you
 !!!"
9050 PRINT
9060 PRINT " Use the cursor controls to
move your"
9070 PRINT"bike, (on the right hand side
)."
9080 PRINT:PRINT
9090 REPEAT
9100 PLOT 15,2,CHR$(A)+"LIGHT BIKE"
9110 PLOT 10,20,CHR$(A)+"PRESS ANY KEY T
O PLAY"
9120 WAIT 3
9130 A=A+1:IF A=8 THEN A=1
9140 UNTIL KEY$<>""
9150 RETURN
```

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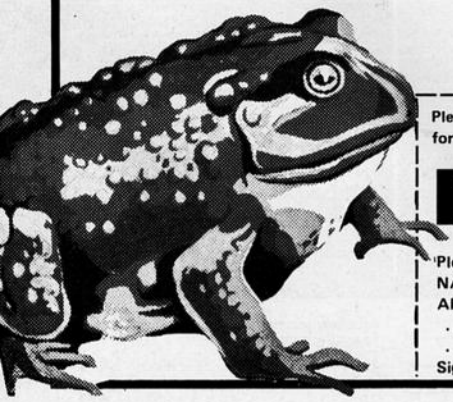
The program follows the style of that arcade favourite, Frogger and you must negotiate your green coloured friend across first a road populated with fast moving cars and lorries and then over the river by means of turtles and logs. Frogs may be able to swim but if your turtle decides to sink you'll be swept away by the current. Once across with three out of your four frogs you'll be able to score bonus points by catching the flies that appear over the river but, take care that you don't run out of time!

All in all it's a great, fast moving game that any number of people can play and, just to add to the spirit of the thing the program stores the top ten players' names so you can measure your performance. How much are we charging for this minor masterpiece? Just £5.99 all inclusive!



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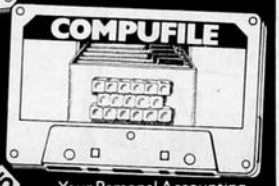

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Make a date with your VIC-20

The easy way to calculate dates. Just type in Kevin Irving's program for the unexpanded VIC-20

My program will calculate a calendar for any year required — and it should easily convert to another computer with about 3K of RAM.

It works out the day by counting from January 1, 1968, which was a Monday. The difference between this and the input date is then divided by seven to get the remainder as a number, zero to six, which indicated the unknown day of the week.

The program has a foolproof input routine for taking the year and months, making the program easy to use.

How it works

The listing is fairly straightforward, but here's an explanation of some of the commands:

CHR$(8) disables keyboard upper/lower case switching
CHR$(142) sets upper case and graphics mode
POKE36879 sets screen colours
POKE781 rows down
POKE 782 columns across
SYS65520

Hints on conversion

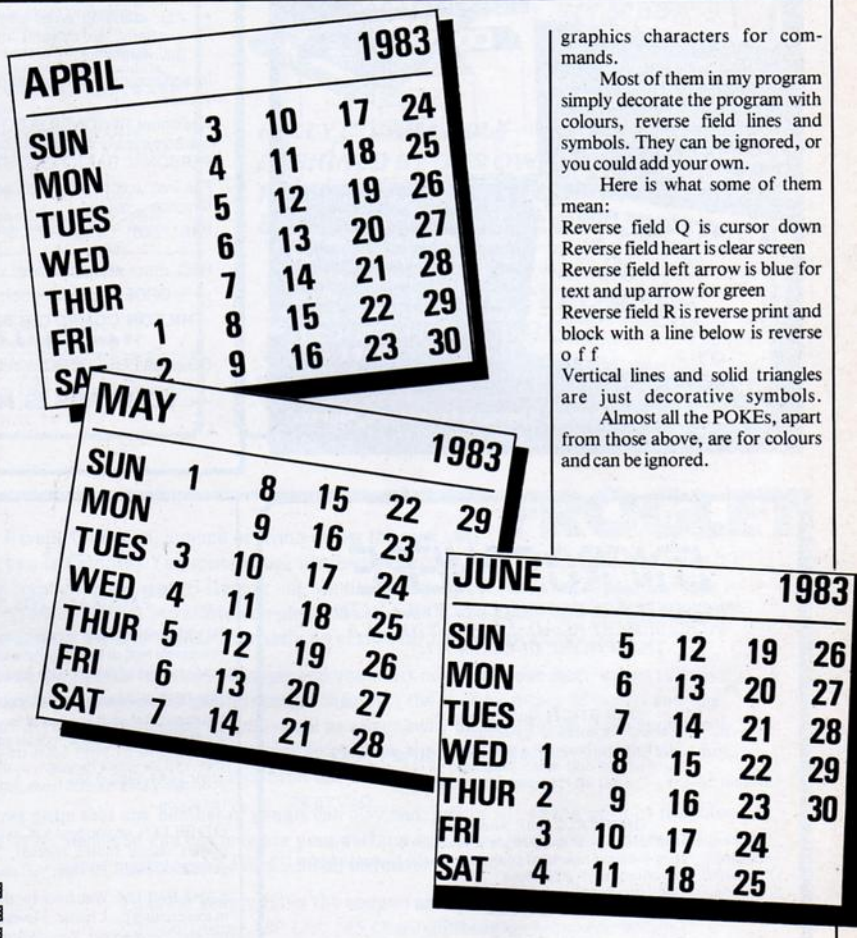
Commodore's BASIC languages have confused many people who own other micros because of the extensive use of graphics characters for commands.

Most of them in my program simply decorate the program with colours, reverse field lines and symbols. They can be ignored, or you could add your own.

Here is what some of them mean:

Reverse field Q is cursor down
Reverse field heart is clear screen
Reverse field left arrow is blue for text and up arrow for green
Reverse field R is reverse print and block with a line below is reverse o f f
Vertical lines and solid triangles are just decorative symbols.

Almost all the POKEs, apart from those above, are for colours and can be ignored.




```
1 REM[I][I][I][I][I][I][I][I][I][I][I][I][I][I][I][I][I][I]
2 REM[I]  CALENDAR  [I]
3 REM[I][I][I][I][I][I][I][I][I][I][I][I][I][I][I][I][I][I]
4 REM[I]  AUTHOR  [I]
5 REM[I] KEVIN IRVING [I]
6 REM
7 REM[I][I][I][I][I][I][I][I][I][I][I][I][I][I][I][I][I][I]
8 REM
9 REM SET UP PROGRAMME
10 CLR:RESTORE:DIMML(12),DA(12),MO$(12):FORI=0TO11:READJ:ML(I)=J:NEXT
20 FORI=0TO11:READDA(I):NEXT:FORI=0TO11:READMO$(I):NEXT
30 TS=7680:PRINTCHR$(8)CHR$(142)
40 GOTO2000
999 REM CALCULATE DAY
1000 YS=Y-1968
1010 LY=INT(YS/4)
1020 DS=YS*365+LY+ML(M)+D
1030 DD=INT((DS/7-INT(DS/7))*7+.001)
```

```
 1040 IFYS/4=INT(YS/4)ANDM<2THENDD=DD-1:IFDD<0THENDD=6
 1050 RETURN
 1099 REM SET UP SCREEN
 1100 PRINT"";:POKE36879,29
 1110 PRINT"      CALENDAR FOR":PRINTSPC((17-LEN(MO$(M)))/2)MO$(M)" "Y$
";
.  ..
";:NEXT
 1140 PRINT"──┼──┼──┼──┼──┼──┼──┼──";
 1150 RETURN
 1199 REM DISPLAY MONTH
 1200 V=5:FORD=1TODA(M):GOSUB1000
 1209 D$=STR$(D):D$=RIGHT$(D$,LEN(D$)-1):IFLEN(D$)=1THEND$="0"+D$
 1210 FORI=0TO1:POKETS+V*22+(DD/7-INT(DD/7))*21+I+1,ASC(MID$(D$,I+1,1)):NEXT
 1220 IFDD=6THENV=V+2
 1230 NEXT
 1250 PRINT"┌──────────────────────┐PRESS;-                  || C=CONTINUE  M=MENU |
";
 1260 PRINT"└──────────────────────┘";:POKE198,0
 1270 GETA$:IFA$="M"THENRUN
 1280 IFA$<>"C"THEN1270
 1290 RETURN
 1299 REM INPUT MONTHS
 1300 B$=""
 1310 GETA$:IFLEN(A$)=0THEN1310
 1311 IFASC(A$)<65ORASC(A$)>90THEN1310
 1320 POKE781,15:POKE782,PO:PO=PO+1:SYS65520:PRINTA$:B$=B$+A$
 1330 IFPO<FPTHEN1310
 1340 FORI=0TO11:IFB$=LEFT$(MO$(I),3)THEND=I:I=12:RETURN
 1350 NEXT:PO=PO-3:FORI=31TO26STEP-1:POKE36879,I:NEXT:POKE782,PO:SYS65520:PRINT"
  ":GOTO1300
 1999 REM              MENU
 2000 POKE36879,26
 2010 PRINT"        CALENDAR":PRINT"        └──────────┘"
 2015 PRINT"AUTHOR : KEVIN IRVING.";
 2020 PRINT"FILL IN EVERY SQUARE"
 2030 PRINTTAB(9)"YEAR":PRINTTAB(8)"┌────┐":PRINTTAB(8)"|    |":PRINTTAB(8)"└
────┘"
 2040 Y$="":PO=9
 2050 GETA$:IFLEN(A$)=0THEN2050
 2051 IFASC(A$)<48ORASC(A$)>57THEN2050
 2060 POKE781,9:POKE782,PO:SYS65520:Y$=Y$+A$:PRINTA$
 2070 IFPO<12THENPO=PO+1:GOTO2050
 2075 Y=VAL(Y$)
 2080 PRINT"  FIRST":PRINT" MONTH":PRINT" ┌────┐":PRINT" |    |":PRINT" └────┘"
 2090 PO=2:FP=5:GOSUB1300:D1=D
 2100 POKE781,12:POKE782,16:SYS65520:PRINT"FINAL":PRINTTAB(16)"MONTH":PRINTTAB(
16)"┌────┐"
 2110 PRINTTAB(16)"|    |":PRINTTAB(16)"└────┘"
 2120 PO=17:FP=20:GOSUB1300:D2=D
 2130 IFD1<=D2THEN2200
 2140 PRINT"THE MONTHS ARE WRONG !":FORI=0TO2000:NEXTI
 2150 POKE781,12:POKE782,0:SYS65520:FORI=0TO4:PRINT"                    ":NEXT
 2160 PRINT"                    ":POKE781,10:POKE782,0:SYS65520
 2170 GOTO2080
 2200 POKE781,12:POKE782,0:SYS65520
 2210 PRINTTAB(8)"DO YOU":PRINTTAB(9)"WISH":PRINTTAB(10)"TO":PRINTTAB(8)"CH
ANGE"
 2220 PRINTTAB(7)"ANYTHING":PRINTTAB(8)"<Y/N>?"
 2230 GETA$:IFA$="Y"THENRUN
 2240 IFA$<>"N"THEN2230
 2250 FORM=D1TOD2:GOSUB1100:GOSUB1200:NEXT:RUN
 62999 REM VARIOUS DATA
 63000 DATA0,31,59,90,120,151,181,212,243,273,304,334,31,28,31,30,31,30,31,31,30
,31,30,31
 63001 DATAJANUARY,FEBRUARY,MARCH,APRIL,MAY,JUNE,JULY,AUGUST,SEPTEMBER,OCTOBER,N
OVEMBER
 63002 DATADECEMBER
```

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How to keep your cool

Heat can make ZX81s very temperamental. Geoffrey Genever has found a cure.

If your ZX81 gets so hot that it will not load 16K programs, or heat builds up so much that you have to turn it off, then try my remedy.

The power supply provides much more voltage than is required by the machine and consequently the voltage controller has to dissipate a considerable amount of energy, which it does in the form of heat.

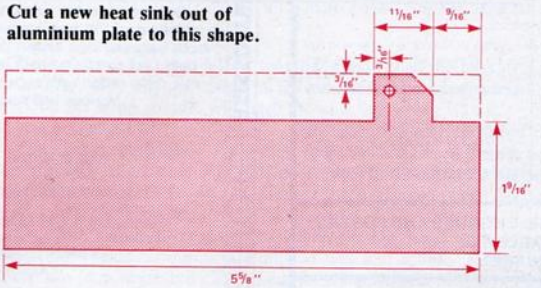
This heat is dispersed by a heat sink, which is a small aluminium plate bolted to the printed circuit board.

I found that this can easily be removed, as it is not soldered in place, and a much larger heat sink put in its place.

This then spreads the heat dissipation over the whole of the keyboard area, and that avoids the hot spot which causes all the trouble.

I found that after replacing the heat sink, and drilling four quarter-inch ventilation holes in the back of the case, I could leave the machine on for nine hours with no harmful effects, whereas before, an hour's running could lead to complete failure.

Cut a new heat sink out of aluminium plate to this shape.



Although replacing the heat sink should not damage the machine, you should not open the case if still under guarantee, lest you void the guarantee.

This is what I did:

1 Remove rubber pads and screws — noting where they came from — and remove base.

2 Open carefully, avoiding straining the keyboard cabling.

3 Undo the two small bolts holding the printed circuit to the base.

4 Carefully undo the larger bolt holding the heat sink and notice how the sink fits.

5 Copy the diagram in aluminium plate the same gauge as the present heat sink, but ensure that the fixing tag matches exactly that of the old heat sink. There is a very slight bend at the tag to prevent the heat sink from touching the case.

6 Insert the new sink in place of the old and bolt firmly into place. Check carefully, ensure case is clean.

7 Drill four holes in case at the back to increase ventilation.

8 Replace base taking care again with the keyboard cabling.

Finally, if having read this you feel your courage is not up to the job, take heart from the fact that I felt exactly the same before I started it.

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In addition to the disc pack a second processor is supplied. This is a Z-80A with its own 64K RAM card, communicating with the 6502A in the BBC computer through the 'Tube'. Typically the speed of execution of programs under the twin-processor system is increased by up to 50% compared with a conventional single-processor computer. A third processor, the 16 bit 68000, will shortly be available.

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Adventure game gave me the bird

I am one of the cranks who loves adventure games, so I read all the reviews with interest. Your review of Firien Wood caught my attention, and I duly ordered a copy, but I regret that I cannot share your reviewer's enthusiasm for this particular adventure.

I progressed through the caves and into the wood, despatching various nasties along the way, got through the castle, found the Golden Bird of Paradise, freed it with one quick wave of the magic stick and received its blessings all within two hours.

I did find it rather annoying to be killed — and called a sucker, to boot — simply for moving on to the wrong location. I do like a chance to defend myself'?

And since you only score points for killing monsters, if you are really clever you can complete this game having scored only about 70 points.

I appreciate that your reviewers probably have limited time, like myself, and wonder whether your intrepid adventurer had much difficulty with this particular adventure. I can now get from start to golden bird in about 10 minutes — not very good value to my mind.

Of course I appreciate that it's horses for courses, and one man's adventure is another's Sunday afternoon walk.

David Swain, Oxford

Our reviewer says that, as a veteran adventure gamer, he sticks by what he said, and would be grateful if David Swain would please tell him how to get out of the Maze of the Avenue of Trees.

My TI beats the VIC hands down

I am a proud and satisfied TI-99/4A owner. Proud because I own the best home computer under £200. It makes me wonder why people go out and buy a VIC-20 instead.

Both machines are about the same price, but the VIC only comes with 3K of user RAM. To get it up to 16K will cost you an extra £70.

The Texas cartridges are better quality than the VIC cartridges, too. The TI-99/4A is overall a much better computer.

Satisfied, because I'm glad to see that Home Computing Weekly has not neglected this machine. You are the first to include programming tips for the TI-99/4A — you could be even more ahead by doing a review of TI-k99/4A games.

Could you also give my thanks to Mr Gray and Mr Power for excellent programs?

N.P. Batram, Wendlebury, Oxon

We will be including some software reviews for the TI-99/4A in future issues.

Oric software troubles, too

I have had the usual problems that others have encountered after ordering an Oric-1. However it now seems to have gone a stage further.

In response to an advert in issue 2 of your magazine, I ordered Oric Flight, after first telephoning Tansoft and being assured of immediate despatch.

I received a confirmation of order dated March 17, and after two more phone calls to Tansoft received a cassette. It would not load!

The instructions bore no resemblance to the loading instructions for an Oric, so I returned the cassette, phoning to say I had done so. We will forward you another cassette at once, sir, was the reply.

Two more phone calls have been made, with promises of immediate despatch. Today I was told that a gentleman was looking at my cassette and would write and tell me what was wrong with it.

However my local Brainwave shop tells me that Oric software from Tansoft is not yet available. Have I been conned again by Tangerine?

Still, the last laugh must be mine. I was sent a 48K Oric on loan for the price of a 16K, and I shall use all their delaying tactics, false promises etc before I send them another penny.

P.A. Foster, Leiston, Suffolk.

Paul Kaufman, of Tansoft, says: "The original mix-up arose because we're still producing programs for the Microtan as well as the Oric, and Mr Foster probably got the wrong tape because he didn't specify which machine he wanted it for. Oric software certainly is available from Tansoft — we have hundreds of cassettes sitting here. But given a new machine, it does take time to get production running smoothly. We deeply apologise to Mr Foster for the delays he has experienced, and will get the tape off to him right away. I will also be writing to Mr Foster personally.

A case of mistaken address

We were very pleased to see the review of our programs Star War and Buck Dodgers on page 41 of the first issue of Home Computing Weekly.

However our address was printed as 46 Oxford Street, London W1, whereas we are in fact at 146 Oxford Street.

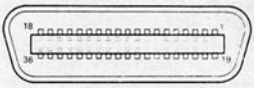
We would be most grateful if you would mention this to your readers.

The Software House, 146 Oxford Street, London W1.

Connect up a printer

Your review of the Tandy CGP-115 printer states that no input connection diagrams are included in the manual. The following are the connection details:

Parallel interface
Plug: 36-pin Centronix
Pin configuration



PIN CONFIGURATION

Signals

Signal pin	Return pin	
1	19	STROBE
2	20	DATA 1
3	21	DATA 2
4	22	DATA 3
5	23	DATA 4
6	24	DATA 5
7	25	DATA 6
8	26	DATA 7
9	27	DATA 8
10	28	ACK
11	29	BUSY
12	—	PE
13	—	BUSY
14	—	OV
15	—	NC
16	—	OV
17	—	CHASSIS GROUND
18	—	5V
30	—	OV
31	—	NC
32	—	FAULT
33-36	—	NC

Pin no	
1	not used
2	BUSY
3	GND (OV)
4	DATA

I have successfully interfaced this printer to my Microtan 65 using the parallel interface, and have had no problems with it even after hours of listing out my entire library of programs. A good inexpensive printer/plotter, indispensible for machine code programmers.

George Hood, Port Seton, East Lothian.

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