October 9–15 1987 Vol 6 No 40 60p

POPULAR Computing WEEKLY

WORD UP!

WordPerfect Amiga reviewed see page 18

NEWS DESK

Amstrad portable

Atari CD-Rom price revealed

HARDWARE

Panasonic KXP-1083 printer

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POPULAR Computing WEEKLY

October 9–15

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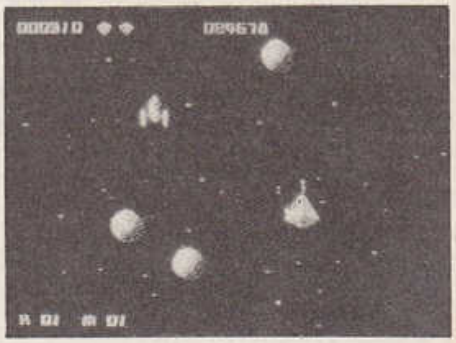

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£135m for Amstrad – portable on its way?

AMSTRAD last week announced pre-tax profits of nearly £136 million, showing an increase of over 80 per cent over 1986 figures of more than £75 million.

Amstrad chairman Alan Sugar made a lengthy statement to accompany the results, in which he warned that the phenomenal growth experienced by the company in recent years would not be sustained in the future.

"To go forward we must realistically accept that we cannot achieve the doubling effect we have experienced in the past," he said.

"The current financial year is going to be one of consolidation and seed planting in formulating our firm plan of growth for the future."

Sugar took the opportunity to round on his critics – in the computer industry and financial community alike – who had been less than impressed by Amstrad's moves into the PC market.

"We are not a company that lives or dies by the success of any one product," he said, perhaps admitting the company's hopes for the PCs had not been met.

"(The PC1512) attracted tremendous interest and, in my opinion, has revolutionised the so-called computer industry in the UK.

"The 'Amstrad effect' of low price high volume production and marketing has taken the wind out of an industry cocooned in a sedate and uncompetitive environment, encapsulated in a hyped-up aura of mystical high technological sophistication," Sugar stormed.

He added that Amstrad has plans for over 20 new products over the next 12 months, as well as moves into satellite TV and "two completely new, exciting product areas", as yet undisclosed.

● DESPITE denials, it seems likely that Amstrad will launch a new computer in America during November. This rumour comes almost immediately after Alan Sugar denied that he would be entering the AT or 80386 market this year.

The machine, rumoured to be named the LT-1, is likely to be an MS-DOS compatible portable. Others suggested that the machine would follow the PS/2 range and have 3.5" disks, and indeed would come bundled with an adapted version of *Wordstar* 1512 (*Wordstar* LT-1?).

Perhaps the most important feature of the portable, is the screen. To compete with the current crop of portables, Amstrad must use both supertwist technology, and some form of backlighting. In order to keep to the price range Amstrad has budgetted (supposedly £400) this is going to be very difficult, unless they use badged technology, something that seems very unlikely after Alan Sugar's comments on laser printers (see *Popular Computing Weekly*, 2 Oct).

The most likely date for the launch is next month's Comdex Show in the USA.

Sugar: upset 'so-called' computer industry

1987 PCW 'great success!' claim show organisers

THE 1987 PCW Show was, as anyone who tried to wander around on any of the public days will tell you, the busiest ever.

Although the official figures have yet to be announced, it seems almost certain that this year was far busier than last year. A figure nearer 80,000 was being rumoured last week, considerably higher than last year's 63,000.

The exhibitors too seemed happy, although most business companies felt the show had lost its lead in the business market and should perhaps split, with one show for business and another for games.

Mike Blackman, the organiser of the show, was extremely enthusiastic when asked about the show; "The show was a great success for all concerned. The figure at the moment is around 75,000, and that is far better than last year. Trade reaction has been very good, and the level of international trade in particular was very good."

Next year, however, there will be a little more competition for the PCW show as EMAP (East Midlands Allied Press) are promising to launch a games-only show.

PCW Show, Olympia 1987

Mail-order Z88s recalled – most not affected

Z88 owners worried that their machines will have to be recalled due to faulty operating ROMs should not be getting too upset.

Peter King, marketing manager of Cambridge Computer, has assured *Popular* that the problems are only with the first few hundred machines, and that to describe them as problems is an exaggeration.

Simply the changes involve one ROM change (the operating system) in order that the machine will be able to run the third party software that is currently being developed.

Z88 owners wishing to know whether or not their machines need to be returned for this modification should follow these simple instructions;

Press the 'INDEX' key, then press the 'HELP' key, and finally press the left 'ARROW' key. Your Z88 will then print a screen with the version number of your operating system. If the number is less than 2.0 (ie 1.0, 1.4, etc) then it needs changing, if it is 2.0 or above then all is well.

DKTronics sells out

PERIPHERALS manufacturer RAM Electronics has acquired the rights to manufacture and sell the DK'Tronics range of products.

RAM is probably best known for its range of Spectrum peripherals, including joystick and printer interfaces, and the Music Machine MIDI interface. RAM's Richard Sekula said:

"The DK'Tronics range of products complements our current range by adding a strong Amstrad content which was previously missing from RAM's product line-up."

The DK'Tronics name will continue to be used, and the various products will be marketed under that name.

"Why not?" said a spokesman for the company. "It's a good name."

A revised price list for the DK'Tronics range of products will be issued shortly, according to the company spokesman.

SOFTWARE HOTLINES

NOW that PCW has been and gone at last, *Hotlines* is going to spend the rest of the year tracking down all those games that were announced but not yet available at the show (the vast majority, in other words).

Where better to start, in that case, than with *Star Trek*, which we've all been waiting for since last year's show. It seems that the ST version is now finished and that **Firebird** is just waiting to get all the packaging finished before they can get it into the shops. Firebird says that versions for the main 8-bit machines will follow 'at warp factor 10', which probably means next year's show. However, we should be able to review the ST version within the next fortnight (that gives me time to prepare lots of 'beam me up' jokes.

In the next office along the people at **Rainbird** are working on something called Dick Special for the ST and Amiga. The plot is fairly ordinary, about the search for a lost dog called Spook (hence the subtitle, *The Search for Spook*). But it's the graphics that make it look interesting – large cartoon-style animated graphics of the sort that you normally only see in short demo programs. The game is being programmed by Sandy White and Angela Sutherland, who were behind the innovative graphics of *3D Ant Attack* a few years ago.

I've just been peering over someone's shoulder at an almost finished version of *Backlash* by **Novagen.** It's a shoot 'em up for the ST, similar in style to the old *Battle Zone* game but what's impressive about it is the speed and smoothness of the action – 'awesome' was the word one ST boffin used. I wouldn't go quite that far, but it is pretty good.

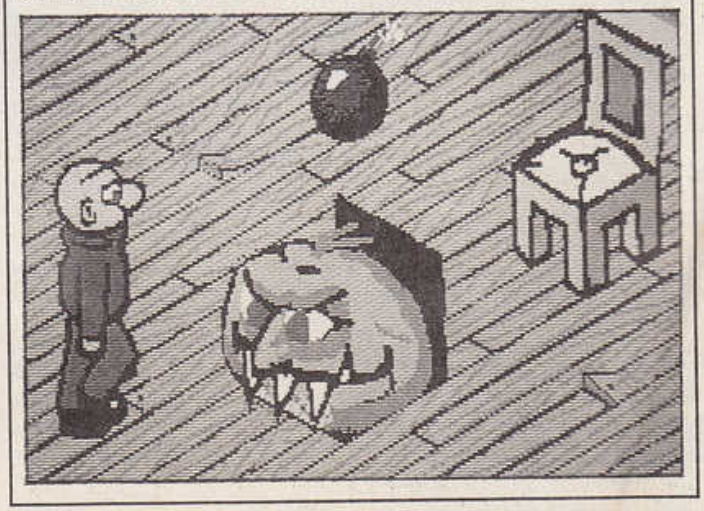
CRL looks like it's almost finished with the *3D Game Maker* at last. This is a utility which allows you to design 3D arcade games along the lines of *Knight Lore* and *Alien 8*. This has been in the pipeline for a while now, but got hit by delays.

Palace, on the other hand, is going for straight shoot 'em ups with *The Shoot 'Em Up Construction Kit*.

Other games designers that have been released generally haven't been all that successful, mainly because they've tried to cover too wide a range of possible games, but these two concentrate on specific types of games and they look like they're more likely to allow users to come up with something worthwhile.

There's yet another software house moving into the budget field this week. The not very sensibly named **Pirate Software** is launching £1.99 and £2.99 labels, and two titles look like they might be worth a closer look: *Holiday in Sumaria*, which looks like a sort of budget *Sweevo's World*, and *Smash Out* which is a version of *Break Out* – not terribly interesting, but it does include a screen editor so that you can design screens of your own.

CRL is also about to release the Spectrum version of *Ball Breaker*, which could be described as *Break Out* in 3D. So here we are in late 1987 and I'm still reviewing versions of *Break Out* for the Spectrum. That, as they say, is progress.



DIARY DATES

OCTOBER

15–17 October
Desktop Publishing Show
Business Design Centre, London
Details: Demonstrations of latest hardware and peripherals, plus seminars and user clinics
Organiser: Database Exhibitions, 061-456 8383

23–25 October
Amstrad Computer Show
G-Mex, Manchester
Details: Latest hardware and software right across the Amstrad range
Organiser: Database Exhibitions, 061-456 8383

NOVEMBER

13–15 November
Electron and BBC Micro User Show
New Horticultural Hall, London
Details: Latest hardware and software across the Acorn range
Organiser: Database Exhibitions, 061-456 8383

14 November
National Einstein Exhibition
National Motorcycle Museum, Birmingham
Details: Einstein software etc.
Price: 50p
Organiser: UKEUG (0473) 49507

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organiser before attending. We cannot accept responsibility for any alterations to show arrangements.

Action on ST shortage

ATARI last week confirmed that it has taken steps to resolve the ongoing ST shortage, which has left many potential customers in a state of desperation.

An Atari spokesman offered the usual "sales have exceeded all our forecasts" boast, while admitting that the company may have made insufficient forecasts for ST sales earlier in the year.

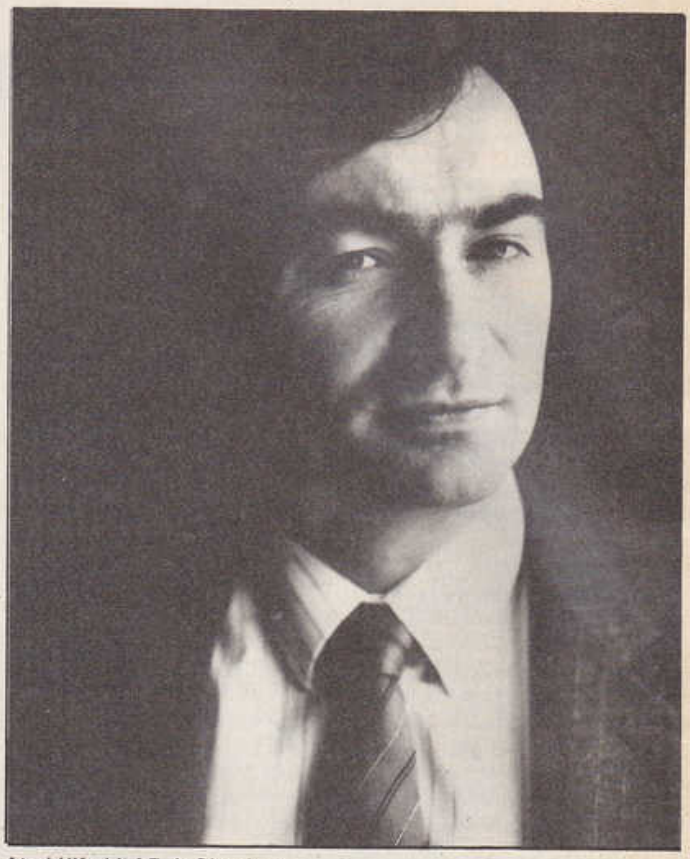
"It is slowly being resolved. We forecast increased sales for the ST, but sales have exceeded all our forecasts. All through August and September dealers were out of stock.

"We have made extraordinary moves to get a quantity of STs airlifted from Taiwan," he added, and said that he expected any problems to be fully solved by the end of the month.

In the meantime, Atari recommends anybody on the lookout for an ST to go to a large branch of WH Smith, or a specialist Atari dealer. Ring Atari on Slough (0753) 33344 for information on your nearest stockist.

Atari has confirmed further details on the CD-Rom machine announced at the PCW Show. It will reach the UK market "in very small quantities" in November, and will sell for £399 inclusive.

The Atari spokesman said last week that it will be aimed at the educational, engineering and business market – including users of large databases, such as national newspapers.



Atari UK chief Bob Gleadow

A500 cut?

THE END OF Commodore's voucher offer on the A500 Amiga last month has served only to fuel intense speculation on the future pricing of the model, and the trade press was suggesting a possible £499 (including VAT) price point from next week.

The £100 discount offered under the voucher scheme made a permanent cut more than likely.

Commodore was unwilling to comment either way last week but the putative £499 price point would fit in with the margins necessitated by the current huge advertising spend on the A500.

CHARTS

Popular to carry 16-bit Top Twenty

1	(5)	Terrorpods (ST)	Psygnosis
2	(2)	Defender of The Crown (Am)	Mirrorsoft
3	(1)	Barbarian (ST)	Psygnosis
4	(NE)	F15 Strike Eagle (ST)	Microprose
5	(4)	Road Runner (ST)	US Gold
6	(3)	Guild of Thieves (ST)	Rainbird
7	(9)	Terrorpods (Am)	Psygnosis
8	(8)	Indiana Jones (ST)	US Gold
9	(7)	Barbarian (Am)	Psygnosis
10	(10)	Flight Simulator 2 (ST)	Sub-Logic
11	(6)	Guild of Thieves (Am)	Rainbird
12	(16)	Arkanoid (ST)	Ocean
13	(14)	Flight Simulator 2 (Am)	Sub-Logic
14	(17)	Goldrunner (Am)	Microdeal
15	(16)	Faery Tale Adventure (Am)	Micro Illusions
16	(NE)	Tai-Pan (ST)	Ocean
17	(19)	Defender of The Crown (IBM)	Mirrorsoft
18	(20)	Space Battle (Am)	Anco
19	(13)	Sinbad (Am)	Mirrorsoft
20	(23)	TNT (ST)	Infogrames

All figures compiled by Microdealer/Computer Trade Weekly

From this week onwards Popular will be publishing both 8- and 16-bit software charts. The 16-bit market, whilst still smaller than 8-bit is now sufficiently developed to make worthwhile reading. It's (mildly) interesting to note that while companies like US Gold and Ocean are strong in both fields, the leading company on this chart at the moment is Psygnosis, which has probably never been heard of by the average Spectrum or Commodore owner.

THE BARBARIAN HAS ARRIVED!
THE TERRORPODS ARE COMING!

TWO GREAT NEW TITLES FROM PSYGNOSIS

PSYGNOSIS

BARBARIAN

Can you become Hegor the famous dragon-slaying, monster-mangling Barbarian?

Are you the warrior who can enter the fearful realms of the underground world of Durgan, a world terrorized by the evil Necron?

Can you handle the adventure, the frenzied attacks, the hidden traps, the gruesome death dealing monsters?...

Your quest; to destroy the lair of the accursed Necron. Your prize; the kingdom's crown.

Your task is awesome! You must live on your wits, conquer your innermost fears, use every skill and weapon available to you.

Hideous perils await. Can you survive?...

Are you Hegor the famous dragon-slaying, monster-mangling Barbarian?

512k colour versions available for Atari ST and Commodore Amiga – colour monitors only.

TERRORPODS

Its been a long watch...As the sun disappears over the horizon, the uninviting, grey bleakness of Colian becomes apparent. Following the intense heat of the day, the onset of night adds the bitterness of sub-zero temperatures to an already hostile environment, and the stark interior of the D.S.V. appears almost homelike.

Deep melancholy is suddenly smashed by the shrill scream of a siren. The status panel has gone crazy, an extrordinary array of lights flash uncontrollably. Good grief...what's happening?

Frantically, you turn to look at the command scanner, hunting through the mass of information before you, in a desperate attempt to decipher what has happened.

Your whole being freezes...It can't be! The Terrorpods...

512k colour versions available for Atari ST and Commodore Amiga – colour monitors only.

ARENA

The classic sports simulation.

BRATACCAS

Become Kyne the earth scientist accused of genetic fraud.

DEEP SPACE

The ultimate interstellar war game.

512k colour versions available for Atari ST and Commodore Amiga – colour monitors only.

▶ BARBARIAN	£24.95
▶ TERRORPODS	£24.95
▶ DEEP SPACE	£34.95
▶ BRATACCAS	£34.95
▶ ARENA	£29.95
▶ ARENA BRATACCAS	£34.95

Psygnosis
FREEPOST
Liverpool L3 3AB
United Kingdom
Tel. Nos.
051 647 8118 (Daytime)
051 227 4800 (After hours)

VISA

ACCESS

S E E I N G I S B E L I E V I N G

Showing out

Gordon North takes a slightly cynical look of last month's PCW show, and reports that it was not quite the main event that it was made out to be.

The PCW show is a curious event. For five days each September, several dozen of Europe's noisiest computer game manufacturers and many thousands of their boisterous young customers set up camp in Olympia's National Hall, less than twenty yards from the restrained, squeaky-clean environment of the business and serious computing area. The visitors to each of these areas – kept apart by little red ropes and the prayers of the show organisers – are as incompatible as it is possible to be but the potent mix does give the whole event a cosmopolitan, almost dangerous quality.

Visitors to the 1987 show, which closed on Sunday, were starved of the big launch that had added a certain spice to previous events. There was to to be no new major manufacturer entering the market, no new cult personality and no new software package for everyone to talk about in the bars and lounges. Even Amstrad, who used last year's show as the first public outing for its PC1512, could only follow up with the 9512 wordprocessor – an interesting machine but certainly no mould-breaker.

Admiring

Alan Sugar put in a personal appearance on the first trade-only day and glad-handed his way through a throng of admiring computer folk. The nice young representative from Amstrad didn't know whether 'Alan' would show up later in the week to meet members of the public but thought that 'as he's very busy he probably wouldn't'. I thought he probably wouldn't as well.

If the lack of big launches was disappointing, then the size and quality of the stands put up by the industry's big spenders certainly wasn't. I think US Gold and Ocean may have confused the PCW show with another of Olympia's famous events – the Ideal Home Exhibition. The stands they built would have housed several families and I would have put in an offer for one of them if the carpets were included in the price and the previous owners would agree to take out the 10 televisions they had put in every room.

Ocean's stand, in common with many others, housed a real arcade machine or two. The one I tried was a rally driving simulation complete with black leatherette seating that delivered a hydraulic spinal punch to simulate reality. It left me feeling quite uncomfortable but at least it's an improvement on last year's show when I couldn't find a place to sit down at all. I'm not sure I approve of the use of expensive arcade games to promote cheap home ones because it smacks of subtle misrepresentation but perhaps I'm just a fuddy-duddy.

Sir Clive Sinclair was there too, and his company's matt-black stand took me right back to the days of the ZX81. It's quite ironic that his little black portable Z88 was one of the few things at the show that I found myself returning to over and over again. His stand was small compared to those of his neighbours and there were times of day when the light didn't get to it but Sir Clive has still got pulling power. I visited that stand over and over again until I really began to believe that I could formulate a spreadsheet on the train without being sniggered at.

Growth

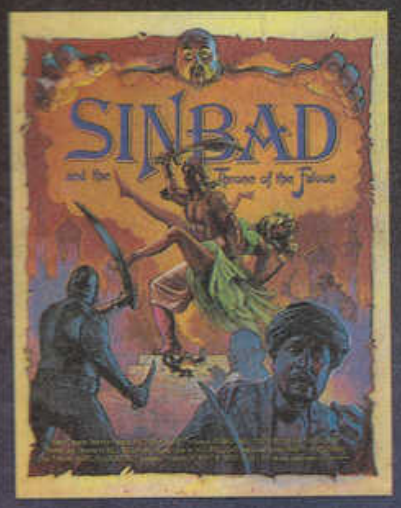
The big themes in the business section were, not too surprisingly, desktop publishing and networking but even exhibitors in these high growth areas gave largely lack-lustre performances. The promised desktop publishing village was not so much a village as a circle of wagons waiting for the Red Indians to arrive. Every DTP representative I talked to was remarkably vague about the potential of the systems they were selling. 'Just around the corner' seemed to find its way into every conversation. Still, perhaps next year will be better and I'm sure that a good reason for buying a £10,000 DTP system is just around the corner.

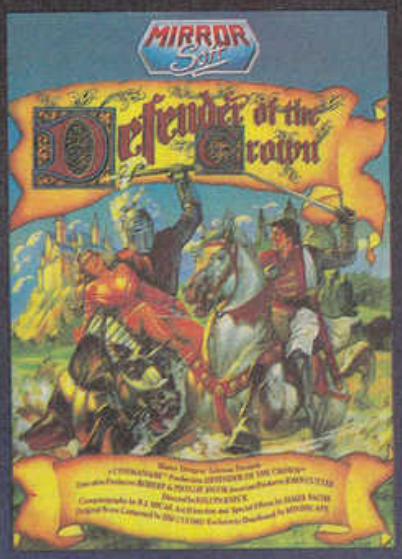
It was in the business section that I found the product that I would nominate as my favourite of the show. A tacky piece of point-of-sale material portrayed the bare chest of a hunky male model displaying the one thing that will make 1988 bearable . . . A black leather shoulder holster for a Psion organiser. It was only the thought of explaining the strange bulge under my jacket to the security man at the exit that stopped me from snapping one up on the spot. I finally left the PCW show with the feeling that I had just seen the whole of a very fast moving industry stop and draw breath. We will all attend the 1988 PCW show and I have a hunch that we will all enjoy it much more than this year. 1987 was not a vintage year.

Two views of the "non-vintage" 1987 PCW Show.

MIRROR Soft

CINEMAWARE





LETTERS

Key facts in advertising

I am writing in connection with the 'CRUEL WORLD' letter that you published in 25/9–1/10 edition of *Popular*.

I must say that I agree with the sentiments of the reader, and that Commodore's advertising is indeed in very bad taste, perhaps even worse than suggested.

In fact, I would think that Atari could sue because the 'toy' computer depicted with the clockwork key drawn onto the side of its monitor has a quite uncanny resemblance to the distinctive keyboard of the Atari ST.

This point aside I would like to add my comments to the continuing Atari ST vs Amiga debate. Having looked in detail at both, and decided to keep my options open, I feel competent to comment.

My advice is that, if money is no object, then buy the Amiga for playing games and some occasional word processing, but be sure to fit a RAM expansion because the A500's memory tends to run out easily.

However, if you have any aspirations to use the machine for professional purposes, or like me, you have to count your pennies, then buy the ST. Not only is there more software, but it is cheaper too.

P. Michael Kingston
Bristol

As always, your views are very personal, and we are quite sure that there will be a barrage of mail disputing what you say, but we would be interested to hear what someone at Atari thinks about your comments on Commodore's advertising campaign.

Polite rejoinder

I am writing with regard to Duncan Evans's comparison of ST Basics in Vol 6 No 38 of PCW. Apart from being an example of sloppy journalism, with two of the Basics being dismissed with statements like "I'm afraid we can write that off already" when a language isn't even available for evaluation, and "I don't particularly like the way it works", Mr Evans just doesn't seem to have spent enough time with HiSoft's Basic to understand how it works.

The original bundled ST Basic is indeed terrible and deserves criticism, and the forthcoming version will not be helped by retaining the dreadful editing environment, but the actual language update isn't yet available for use or review. We don't know how much, if anything, existing users will be charged for upgrades, but it will be bundled free with new STs and deserves to be evaluated at least as a Basic for the many first-time programmers that will use it.

From reading the article I feel that Mr Evans had far more experience of GFA and Fast Basic than of HiSoft's version. He didn't seem to have taken time to get the hang of the editor, which though it doesn't have all the features of Fast Basic's superb editor, is as capable as GFA's. More importantly it looks as though he hasn't grasped the most important feature apart from speed: HiSoft's Basic can handle more GEM features easily than the other Basics through special libraries which can be extended by the user to make it even more comprehensive with regard to GEM and other user-defined functions. This was neatly glossed over by the comment that "in practise it results in quite a messy situation". That can only mean that Mr Evans is "quite a messy" programmer, as the inclusion of two or three extra lines in the program doesn't upset most people.

He also described HiSoft's GET and PUT statements as being very clumsy to use, when to me they appear to be almost identical to those in Fast Basic and GFA Basic. His example of GFA's capability of splatting 8 by 8 squares of pixels on the screen at a rate of 230 per second would have withered somewhat had he got far enough into using HiSoft's Basic to achieve the figure of 869 per second in a set grid, or 429 randomly that I managed in five minutes programming!

The nature of his attitude to exploring a new product for review is summed up in his conclusion where he says he wouldn't recommend it because "I don't particularly like the way it works". Apart from being an extraordinarily insipid statement and an inadequate summary it might explain how he didn't grasp the abilities of this Basic.

For a useful comparison between products, the reviewer should have sufficient experience of all the products, and while he seemed to know the first three well, it appears that he had not bothered to get sufficiently far with HiSoft Basic to produce a valid evaluation. It is unfair to ST users, Atari and HiSoft that this article was printed. The damning comments on the bundled Basic may serve to put newcomers to personal computing off buying the ST, they and ATARI will suffer. (I *like* the ST! I think every home should have one!) The inadequate evaluation of HiSoft's Basic will cause them to lose sales and might have prevented me from buying it and getting the greater control of the ST that I wanted without having to start all over again with C.

Tim Osmond
London

Perhaps Mr Osmond is unaware that a comparative review is a mixture of fact and personal opinion. There was not one mention of an incorrect fact and all his letter said was, 'I've bought HiSoft Basic and I don't like what you said about it'. Unlike Mr Osmond I have used all four languages, and offered my personal opinion as to which was the best one to program with. Anyone reading all of the conclusion can see that I offer guarded recommendations for all of the products (including HiSoft's) except Atari Basic. As for my 'blithe' comment on the Atari Basic upgrade, I have to say that anyone who is serious about programming in Basic will be appalled by the editor and if they can afford it, buy an alternative. As in fact Mr Osmond has.

On the specific point of the GET and PUT commands: in BFA Basic you simply specify a string that the area of screen is read into. Fast Basic is almost as simple. In HiSoft Basic you have to dimension an array, according to a convoluted formula, to the correct size, or larger, before you can GET or PUT. Regarding being withered, GFA Basic capabilities are remarkable because it is an INTEPRETED language, rather than HiSoft Basic which is COMPILED. Any GFA Basic owner can pay the extra money for the GFA Compiler; the resulting code will perform a random PUT at xxx per second.

Next, after spending the last five years programming in various Basics, I would say that my style is not straightjacket structured programming, but it is usually far from "messy" and I do dislike the spaghetti programming approach. In my review, I actually gave HiSoft Basic top marks for structured programming, as it is just that bit better in this department.

I'm glad that Mr Osmond likes the product that he has bought. Good for him. We live in a democracy and this magazine is all about giving people the power to choose what is best for them.

By any other name . . .

Perhaps it would enlighten your correspondents (particularly Stephen Batey [Vol 6 No 37] and the Federation Against Software Theft) to hear that software "piracy" is NOT theft, and no-one should pretend it is. Pretty obviously, it isn't piracy, either. (If anything, it is a copyright matter, which is a civil issue, not a criminal one.) These labels are slapped onto controversial arguments to give them a psuedo-legal credibility.

I quite agree that unauthorised copying is a complicated issue. But let's not confuse it further by using incorrect and highly emotional terms.

Adam Smith
London

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A172

GMX12.87

with Kenn Garroch

No-access address

G Thibaudeau, of London, writes:

Q I have a big problem. A few days ago I finished an address filing program for my own use and saved it onto my Opus Discovery disc drive.

At first I was glad not to have written it in assembly language because of the time it would have taken. Now I'm sorry not to have done so. You see, my problem is that the program is roughly 41K long and, after saving it, I switched off for the night.

Since then it has been impossible to load it back into the Spectrum. The only thing I get is an 'out of memory' report. I know the program is long but why did it save it and load without a problem the first time?

Do you know where I could obtain a copy of the Discovery's ROM dissassembly, if it exists?

Also, I was wondering if you could provide me with the address of an Opus Discovery club, maybe in the London area?

A I'm afraid this one is beyone me – hopefully some of our readers can help (pretty please?).

If you need help, write to Kenn Garroch, Peek & Poke, Popular Computing Weekly, Greencoat House, Francis Street, London SW1.

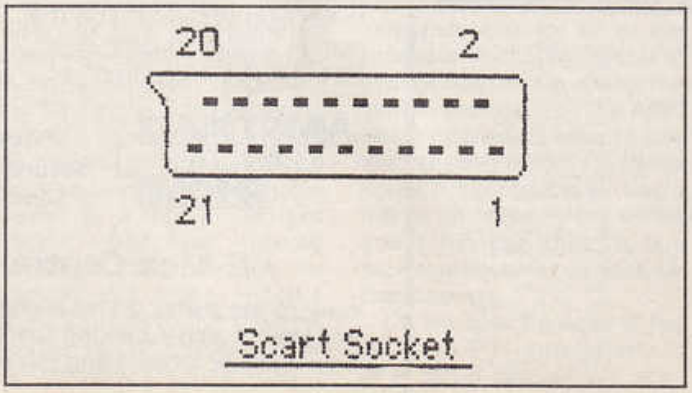
SCART sockets

Peter Erskine, of Colchester, Essex, writes:

Q Ref. *Popular Computing Weekly* 6–36 11/9/87 about SCART sockets. The pin out is as follows:

Pin	Signal
1	Audio output RH
2	Audio input RH
3	Audio output LH
4	Audio chassis return
5	Video chassis return (RGB Blue)
6	Audio input LH
7	RGB blue input
8	–
9	Video chassis return (RGB green)
10	Clock for video recorder remote control
11	RGB green input
12	Data line
13	Video chassis return (RGB red)
14	10 bit clock
15	RGB red input
16	RGB switching voltage
17	Video chassis return
18	RGB switching voltage return
19	Video output
20	Video input
21	Screening chassis return

where the pins are numbered like this:



So the system is highly versatile but a simple signal lead would not be reversible; when you make one up, label one plug TV and the other Computer etc.

In the case of a lead for a non-stereo TV, it is sufficient to feed audio input to say LH only.

Video input means video recorder type signal, presumably composite 10 bit clock seems to be the signal for teletext which gives the time at the top right of the TV picture (if you don't make this connection you don't get the clock although teletext is still there).

A Thanks Peter.

Commodore controller

Adrian Soord, of Yeovil, Somerset, writes:

Q I own a Commodore 64 and I wish to use it to control electrical appliances such as coffee makers, lights, and radios. I understand that there are a few hardware packages on the market such as Epyx's Red Boxes which do the job but are extremely expensive.

Would it be possible to use the computer as a home control unit and be able to program what time an appliance comes on at any plug (terminal) in the house, or to control a motor to open and close curtains, etc?

I have a basic knowledge of electronics and plenty of spare time.

A Doing it yourself may not be much cheaper than buying a ready made unit. However, it should be a lot more fun, and you should end up with a more flexible system.

What you need is a method of transmitting information along the mains wiring of your house. Anything with a receiver built into its plug can then pick up the signal and decide whether to turn on or off.

Fortunately there is a chip (LM1893 stocked by Maplin at approx £16 each) which will do a lot of the hard work for you. This chip connects to the mains via an isolation transformer and is able to receive or transmit serial data at speeds up to 4800 baud – certainly fast enough for most applications. At the computer end, the connection should be quite straightforward, simply attach to the user port on the 64.

However, problems begin when building units to receive and decode the signals. The ideal system would have a microprocessor at each node (terminal, device, whatever) since this could easily be made to read the serial signal and turn various outputs on and off. Microprocessors also have the advantage that they could be used to transmit data back to the main computer (in this case the C64).

The drawback is that such a system would be quite expensive and take quite a while to set up.

The next best choice would be to use a UART (Universal Asynchronous Receiver Transmitter) chip at each node. As far as I can remember, the 6402 would be suitable since it does not have any control registers and can thus be used as a stand alone device.

Most other UARTs are built for interfacing to µprocessors and thus have all sorts of control registers that can be accessed via the address and data buses, which is rather impractical when there is no µprocessor around.

By connecting the simple UART to the serial receive line of the mains tranceiver, every time data is transmitted, all of the receivers will get the same data/number. This will be an

eight bit value, and can be decoded using an 8 input and gate (or nor) with some of the inputs selectively inverted.

This would give 266 possible locations, although since things may need more than one command, this can be split into 128 or 64. In any case, there should be far more than you would need. The main problem with this type of system is that each node would cost around £30 to build.

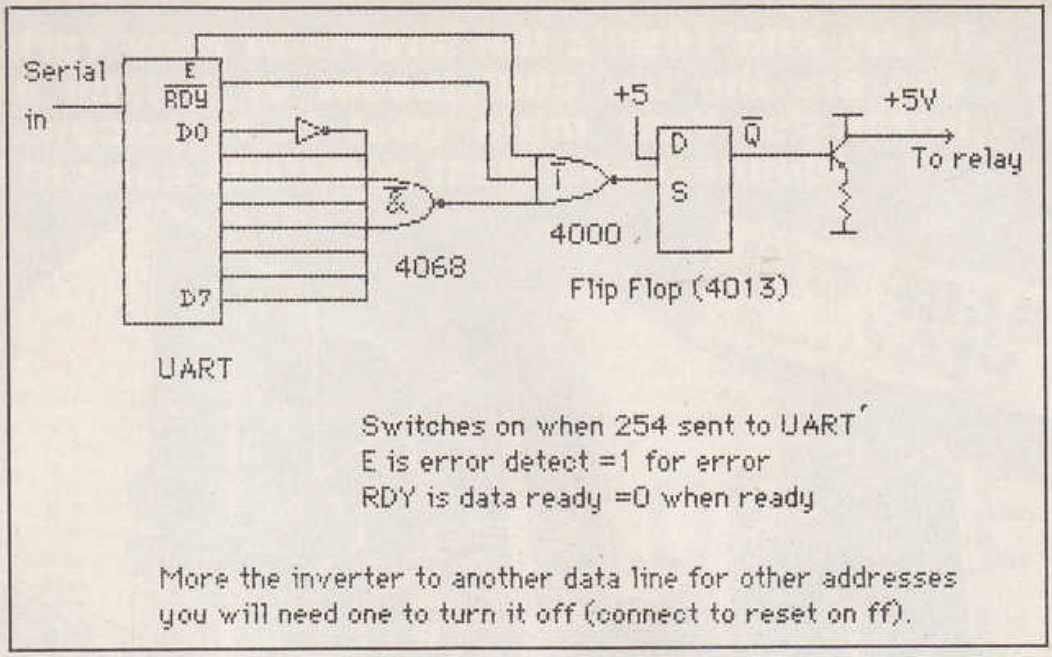
Another alternative is to scrap the idea of using the mains wiring, even though it is very attractive, and install your own cabling. This need only be two core bell wire as long as transmission speeds are kept relatively low.

The same UART system described above could be used, cutting the cost of a node by at least 50%. You will, unfortunately, have rather a large number of wires floating around the house.

One thing to make sure of when attaching things to the mains supply is 1, make sure the 250V is isolated from any electronic circuitry you may be using and 2, make sure that the relays used to turn the supply to the various devices are big enough.

I know these two points may sound trivial but having cooked a circuit board once, and burnt out a pair of contacts, it definitely pays to install such things as fuses and isolation transformers.

I've sketched out a rough diagram of the UART receiver idea so that, hopefully, it makes more sense. Without actually trying it, I can't be certain that it will work – I don't have the necessary data sheets either. I'll leave the fiddly details up to you.



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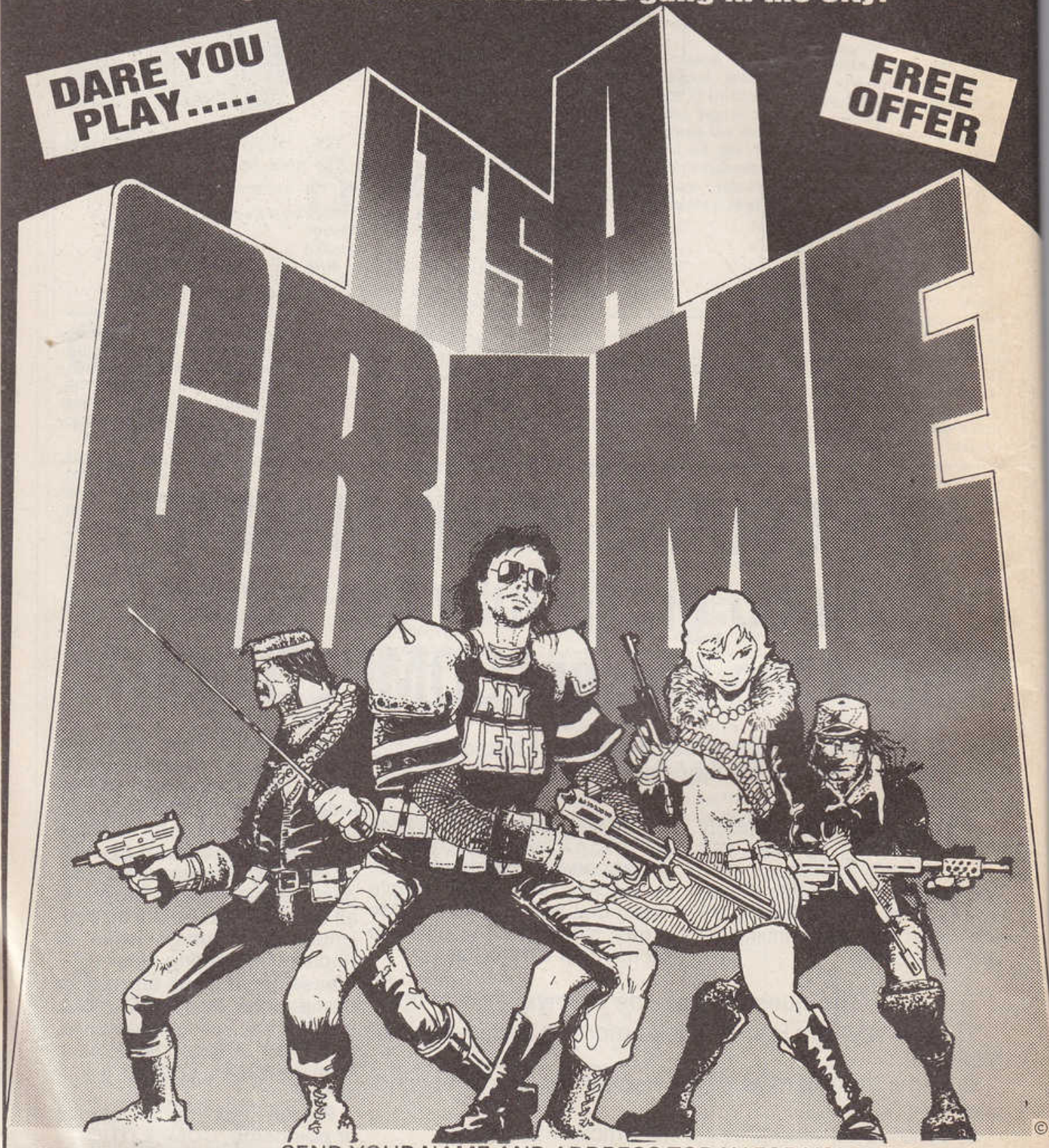

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SECRETS OF THE SILVER SCREEN

Ken Garroch gives advice on how different screens are set out.

The first thing when dealing with machine code graphics is to gain direct access to the screen. On most computers this is pretty straightforward since the screen memory and the microprocessor's memory are in the same address space, unlike MSX and other machines which have their screen memory controlled by a separate chip through which you have to go to place anything directly onto the screen.

Knowing exactly how the screen is set out is vital, and as usual with computers, nothing is standard, they are all different. Presuming that the computer has some kind of bitmapped screen, the general idea of a display is to take the contents of the screen RAM and convert it into a form that can be displayed as pixels. In its simplest form, a byte can be said to represent 8 pixels with the left most being the most significant bit (MSB). This does, however, only give a monochrome display and since most machines work in colour, there must be some way in which the screen RAM is coded to represent different colours. The usual method is to use more than one bit to represent a pixel eg, two bits would give 4 pixels per byte with each pixel being capable of 4 colours. The Commodore 64 works after this fashion but gets additional colours partly by having an extra area of RAM that defines colours for an area the size of a character, and splitting the byte into two nibbles, the two low bits in each nibble giving the colour for one pixel, the two high bits for another.

The main thing to note is that the more colours there are, the more memory is needed or the lower the resolution. The best example of this is the BBC micro where the highest resolution is 640 × 256 with two colours the lowest (using the same amount of RAM is 160 × 256 with IC colours ie, hi-res uses 1 bit per pixel, and lo-res uses 4 – either of which fits into 20K of RAM). An alternative is to the use method employed on the ST where each word (16 bits) represents 16 pixels in hi-res but in lo-res four words are taken in parallel to provide 4 bits per pixel (16 colours), the first pixel being the MSBs of each word the next being the second MSBs of each word and so on for all 16.

Putting the colours on the screen is usually done with a technique called masking. For example, with a mono display where each bit represents a pixel, to set the left most pixel in the byte (pixel 0 on the left hand side of the screen) simply OR with 128 e.g. in bytes this is:

01001000	on screen value of first byte of screen RAM
10000000	ORing with 128 gives
11001000	and the pixel is set. To clear it, AND with 127
01111111	like this, to get
01001000	which is what we started with

Finding out which bit to access can be done with a lookup table. Find the x offset in the byte, the remainder after dividing by 8 or, in machine code, just AND the x position with 7. This is then an offset in the lookup table which has the following values:

10000000	x=0
01000000	1
00100000	2
00010000	3
00001000	4
00000100	5
00000010	6
00000001	7

The eighth bit is the first of the next byte i.e. 8 AND 7=0 which brings us neatly to finding the correct byte from the x position. This is simply x divided by 8 which, in machine code, is simply 3 right shifts, each one being divided by 2.

If the screen is laid out simply (and they rarely are) then there will be a specific number of bytes per line e.g. for 320 pixels monochrome there will be 40 bytes across. The next line continues where the last ended i.e. the screen is continuous in memory. So, using the y value of the position multiplied by the number of bytes from the beginning of the screen memory.

Taking the above example and say the screen is 200 lines deep, the multiplication of y by 40 will yield 200 results. Since screen access has to be as fast as possible a lookup table is used to get the results. A minor problem is the fact that 199×40 is 7960 which is a value that will not fit into a byte (0–255 only unfortunately). The answer is to use a table of words i.e. two bytes per result and multiply the y value by 2 before looking up the result (easy since it has one left shift). The table looks like this:

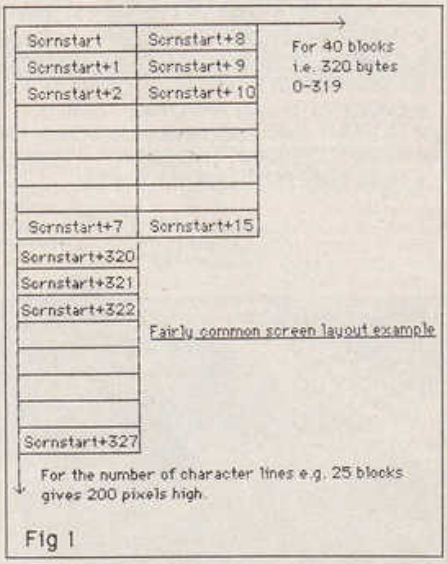

Fig 1

```
t40t    dc.w    0,40,80,120,160,
                200,240, etc for 200
                entries
and the outline machine code is
enter x and y in two regs (if possible) Rx
  and Ry
LSL     Ry      Shift y value one left
                for x2
load    t40t+Ry,R1  Get times 40 value
                into R1
load    Rx,R2   Duplicate Rx –
                need it later
1sr     Rx      x div 2
1sr     Rx      x div 4
1sr     Rx      x div 8
add     Rx,R1   Add Rx to R1 to give
                byte pos
AND     #7,R2   R2 and 7 get x for
                mask lookup
load    mask=R2,
        R3      Mask is in R3
add     scrbse,R1   Add start of screen
                RAM
OR      R3,(R1) OR mask into
                screen RAM
```

Note that this is an outline form only it should be quite easy to convert to machine code for any processor. The reason that the screen start address i.e. the memory address of the first byte on screen, is added in later is because it may change i.e. for buffered screen (drawing on one screen while displayiong another reduces flicker), scrolling etc. If the start address does not change then it can be included in the t40t lookup table i.e. added to the multiplication – this will increase the efficiency of the routine and any small amount helps.

The above example is how things would work in an ideal world. However, apart from a few machines, the screen layout is usually more complex especially for colour. Fortunately, the basic idea is the same, all that needs to be done is to figure out exactly how the screen is laid out, and find a formula that will fit it. For instance, many machines use screen lines set up as in fig 1. To access these, the y value will need to be divided by the number of rows and then the remainder used in conjunction with the x value to find the byte offset in question. For colour, the masking lookup has to be altered to cope with colours i.e. multiple bits. All this entails is finding a formula that fits, and using the shortest, simplest piece of machine code to perform the calculation.

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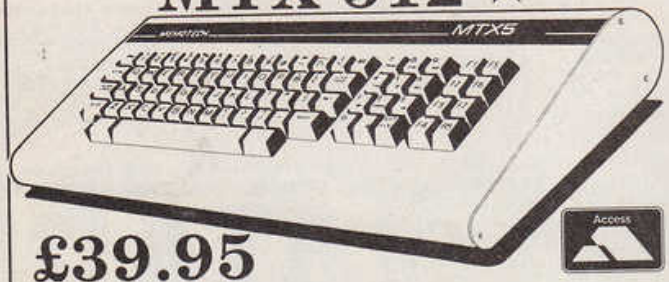

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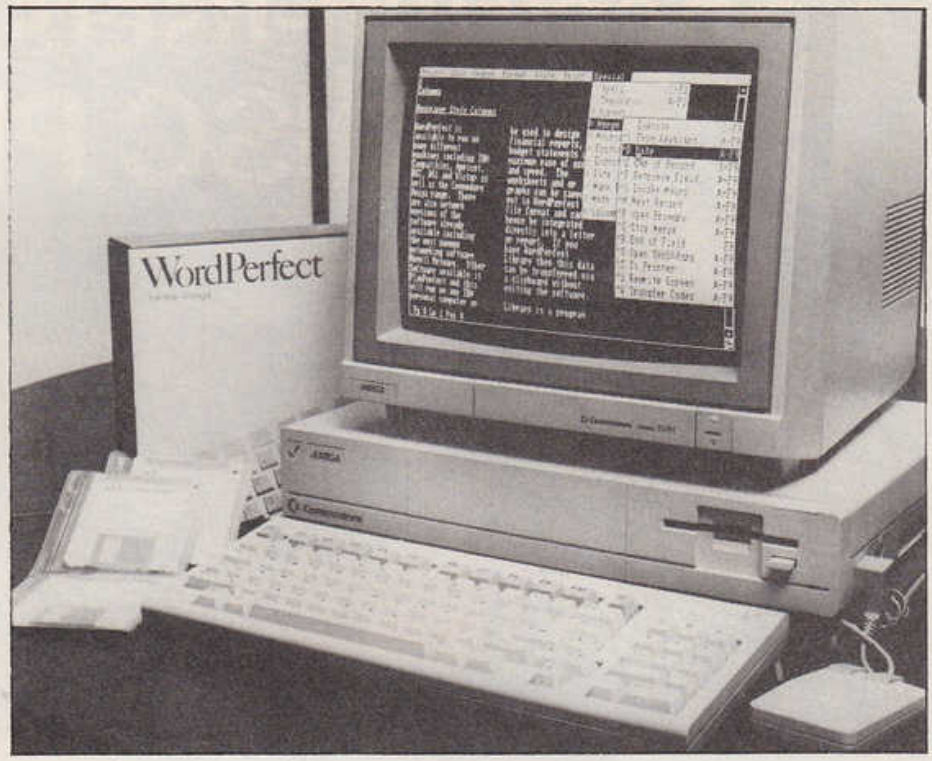
WordPerfect is the most popular wordprocessor for IBM PCs and their compatibles. It is now available for the Commodore Amiga series, and despite its high price, Ian Rook finds it makes his words almost perfect.



Well, mucho, very, good

Chickens and eggs. Hardware and software. Same problem. No one will spend thousands of pounds developing a program for a machine which no-one has bought, but no-one will buy a machine which has no software. This Catch-22 situation usually results in the sheep sticking to PC-compatibles and having to suffer slow processors and duff machines. Brave software houses sometimes change all this and good software ensures a rosy future for any machine. Why *WordPerfect* is the best selling wordprocessor on the IBM's and compatibles. With a recommended retail price of £425 on the PC version, that is no mean feat. Until recently it was number one in price alone but then Amstrad put its incredibly naff wordprocessor – *WordStar 1512* – into a bundle (they should have put it into a bin) so it can't really be counted.

So what has made *WordPerfect* so popular? Well for a start it is fast. Moving from the top of a document to the bottom only involves a short pause. *WordPerfect* has the best help options I've seen on any program. Just press the Amiga help key followed by the initial letter of the topic you want help with and the necessary keystrokes are details. Type "help" followed by those keystrokes and you will get a full page of text on the function. This co-operation from the software is in stark contrast to the initial display. Until you press the help key there are no on-screen prompts, rulers or menus, just a line at the bottom of the screen detailing the document name and cursor position. The keystrokes are far from mnemonic eg control F5 for mark text in preference to *WordStar's* control KB, but you get a keyboard overlay for the function keys. In fact you get two overlays. One for the A500 or A1000 and one for the A2000. You soon learn the major keystrokes.

Many expensive wordprocessors offer spelling checkers, but only a few include a Thesaurus. The ability to look up a synonym is a godsend for anyone who wants to add variety to texts. I particularly like it for writing vitriolic letters to restaurants where the service is lousy. You can add and delete words within the spelling checkers vocabulary, but the Thesaurus is fixed. One bugbear of the PC version is that the Thesaurus covers most of the page when in use. The Amiga version is window driven so you can move the text and allocate the space in a way you find more comfortable. This is not a gimmick, it makes software easier to use.

The window approach is extended to the full control of the software, you don't have to use a mouse with *WordPerfect*, but on an Amiga it seems the natural thing to do. For marking blocks it is much quicker than a load of cursoring around. There are full mail merge facilities, headers, footers and even mathematical calculation. The ability to define Macros saves a good deal of typing particularly when the work is repetitive. I would much rather press two keys than have to enter my address at the start of every letter. In this way *WordPerfect* is a bit like *LocoScript*, storing the standard phrases on disk.

Amiga disks are slow. Not even the mighty *WordPerfect Corp.* can do much about that. This means that some of the features which have spoilt me on my hard disk PC, have become a pain. Spell checking and timed backups in particular.

Amiga developers are given guidelines on how to write a user-interface based on =RJ= Mical's (sic) intuition. Software uses requestors and gadgets. *WordPerfect* has compromised between the official way of doing things and the IBM way. Wild cards on an IBM use an asterisk, on the Amiga they do not. Yet the Amiga file manager prompts with a df1:*.

Officially you need two drives to use *WordPerfect*. I found the second drive handy – essential if you want to use the speller or Thesaurus, however, for simple text editing you could get by with one. But no-one is going to shell out £225 plus VAT for a simple text editor. The Amiga comes with ED after all. The price is steep but then the software is very, very good. In the United States the software is offered to registered students at $99, so it might be worth looking up any distant relations.

I'm please to see this software on the Amiga, it adds credibility to the 2000's business machine mantle. It also removes the main reason for using an IBM.

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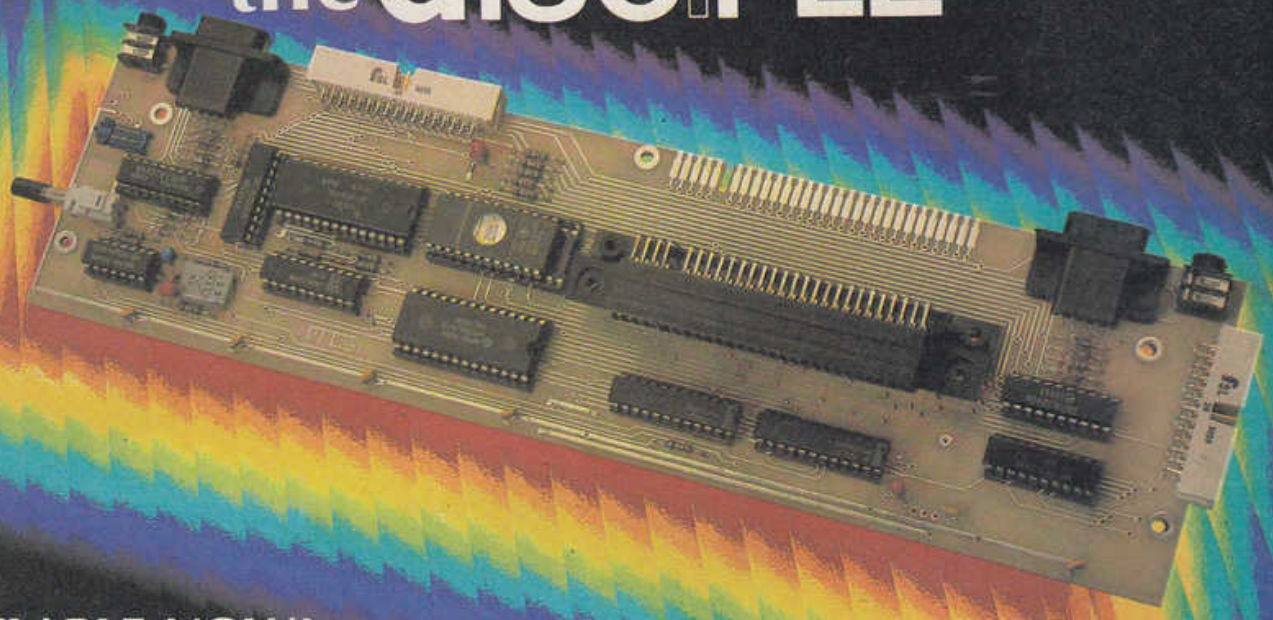

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The Underground Empire flies in

Infocom is better known in the UK to the disk-using elite than to the cassetted hordes, but the makers of *Zork* have been visiting London to plan their next few releases.
Cliff Joseph registers their surprise as they encounter the PCW Show, and checks out the future.

Saturday afternoon may not be the best time to get your first glimpse of the PCW Show, but that's when Joel Berez, and Mike Dornbrook of Infocom arrived for a flying visit to the London headquarters of Activision UK. The American equivalent of PCW, the Consumer Electronics Show, isn't open to the public so they weren't expecting the hordes of young games players that swarmed over anything with a joystick attached.

"It was quite amazing," Joel said, and Mike seemed to agree.

"A madhouse. I don't think you could have anything quite like that in the States."

The computer games industry in Britain seems to be much more volatile than it is in America, with a younger audience and more emphasis on what we would call arcade games. In fact Joel remarked that PCW reminded him more of an old video games show than a computer show. The fact that 'computer' and 'video' games mean exactly the same thing to many people in Britain gives an indication of how differently the industry has developed.

According to Joel and Mike there is a much greater divide in Europe between the games and 'serious' sides of the industry.

"It's so different here, there are more entertainment labels. In America there's much less division between business and recreation – it's more of a smooth transition."

It all comes down to economics in the end. Americans tend to have a higher disposable income than we do – more money in other words, which means that they are much more likely to have powerful disc-based systems at home that also get used for business purposes.

"The top machines are PCs, the Apple 2, C64 and then the Mac – 40% of our sales are on PCs. Apple are doing really well at the moment, and the new 2GS is outselling STs and Amigas."

The average home user is also a bit older and the games they play tend to be more sophisticated than simple shoot 'em ups.

"The top titles take a lot of time and money to develop these days. People expect a lot, and whole teams of people work on the titles – artists, musicians, designers. It's not one man working in a room the way it often is here."

All this causes problems for a company like Infocom in a country where the most commonly used machine, the Spectrum, doesn't even have a disc drive and not a single Infocom game is available for it (though there is now the possiblility of conversion onto the Plus 3, according to Activision).

"Our problem with this market is that we started off on disc, and we can't compress the programs any further. The original mainframe version of Zork took up a full megabyte, and it took a lot of work just to get it down onto disc. But the Amiga and ST are starting to sell here, and that's a good sign for us."

As a result, Infocom games don't sell in their tens of thousands over here, but, as in America, they do have a long life and sell steadily over long periods rather than going in and out of the shops in a few weeks the way most arcade games do.

"*Zork* is eight years old now and it's still selling quite well. It's sold about half a million all together."

Zork is the game that first established Infocom's reputation in the adventure field. Ten years ago, Joel and a group of friends were working at the Massachusetts Institute of Technology, and in the evenings they would get together to play Adventure on their mainframe.

"We decided we could do better, and we came up with a larger game, with better puzzles – *Zork*.

"After a while we decided to leave MIT and make a bit of money, and the best thing to do it with was *Zork*. The strange thing when we started to sell it was when we found how unusual it was. People hadn't seen anything like it, something that was interactive."

All of Infocom's games are written on a mainframe using ZIL – the *Zork* Implementation Language, and then translated onto various micros using a system called ZIP.

Like Gilsoft's *Quill* (though on a much grander scale) the ZIL/ZIP system allows non-programmers to write adventures, so that Infocom can use writers who are strong on ideas without having to worry about their technical abilities. This led to collaborations with people like Douglas Adams, whose *Hitch Hiker's Guide To The Galaxy* was one of their biggest successes.

However, despite the success of the Zork Games and the adventures which followed, Infocom ran into trouble about a year ago. A venture into the business software market, with a database called *Cornerstone*, caused financial difficulties and the company became a subsidiary of Activision.

Joel and Mike's visit to Activision UK is to plan the release of their latest titles, *Plundered Hearts* and *Nord and Bert Couldn't Make Head Or Tail Of It*. These are both departures from the actual fantasy/sf formats of previous games. *Plundered Hearts* is a romantic adventure written by novelist Amy Briggs and aimed mainly at women, though they hope that men will enjoy it too.

"Twenty five per cent of our audience is female, which is unusual. For most companies it's 90–95% male, but they say that some of the best adventure players are housewives."

Nord and Bert is a collection of 'interactive short stories', each of which involves some sort of wordplay in order to solve the puzzles they present.

Both of these games are already available in America, but before returning, Joel and Mike dropped a hint about their next planned release, *Beyond Zork*.

This is a return to the world where the first *Zork* games were set, and it will incorporate some features of role-playing games as well as the usual text adventure. But they weren't saying any more than that, so Infocom fans will have to wait until nearer Christmas before returning to the Underground Empire.

Not quite human

Locked up for a week in the company of the new Panasonic KX-P1083 multi-mode printer, Chris Jenkins finds that it can knock out a font with the best of them, and if the machine is not exactly conversational, the manual does speak English.

Choosing a printer to work with is rather like interviewing job applicants; it's not just a matter of finding someone with the right qualifications, you have to be able to get on with them. The Panasonic KX-P1083 multi-mode printer is like a highly-qualified job applicant with a few annoying habits; it does the job, but would you want to share an office with it?

It's fast, it's small, and it's compatible with a wide range of computers; it's just a pity that the 1083 isn't a teeny bit more human-engineered.

The 1083 is a successor to the popular 1081, but inherits many bad points as well as the good ones. In appearance, the printer is pleasingly compact, with dimensions of 427 × 350 × 137 mm, and the weight of 9.9 Kg makes it luggable, if not portable.

The 1083 is a standard centronics (RS-232 optional) dot matrix device, which will emulate the Epson FX-80 or the IBM Proprinter. This makes it suitable for the entire range of home and business computers.

As you'd expect, the 1083 has a built-in tractor feed. This is push-type, and so does not waste a sheet each time you load the printer. It handles up to three simultaneous sheets of perforated paper from 4–10″ in width. There's also a selectable friction feed, for paper from 4–9″ width and 5–14.3″ depth. An optional cut sheet feeder is also available.

One very annoying feature is the semi-automatic paper loading, which, in common with other printers, tends to snatch the paper out of your fingers and crumple it up for you. Similarly galling is the feature which switches the printer off-line when you open the cover. This may avoid battered fingertips for the uncautious, but is frustrating if you just want to lift the cover to check the printing. Much more useful is the feature which switches the printer off-line when the paper runs out, preventing you from having half a document printed and the rest splattered in interesting patterns all over the platen.

Also annoying is the housing of the DIP switches, under the print head rather than recessed into a front panel. Fortunately, many of the printer's functions can be selected from the front panel alone.

<<< REV.1 >>>

DIP-SW	SETTING	MODE
1-1	ON	PRINTER MODE (STD. / IBM)
1-2	OFF	PAPER OUT DETECTOR (DISABLE / ENABLE)
1-3	OFF	(LF / NO LF) BY CR
1-4	OFF	SKIP PERFORATION (ON / OFF)
1-5	OFF	INTERNATIONAL CHARACTER SET
1-6	OFF	(USA / FRA / ENG / ENG / DEN / SWE / ITA / SPA)
1-7	ON	
1-8	OFF	(7 / 8) BIT DATA RECEIVE
2-1	ON	BUFFER CONTROL
2-2	OFF	(MODE1 / MODE2 / MODE3 / MODE4)
2-3	OFF	CUT SHEET FEEDER (ON / OFF)
2-4	OFF	ZERO FONT (Ø / 0)

The KX-P1083: dark sides and bright sides

The standard matrix is 9 × 9 pins, and the normal ASCII 96-character set is supported. However, using the DIP switches and front panel controls you can select a combination of eleven international character sets and five printing modes. There are two basic print sizes: Pica, at 10 characters per inch, and Elite at twelve. There's also a compressed mode, at 17 cpi, and semi-compressed at 15cpi. You can also select proportional spacing, and of course bold, italic, expanded, superscript, subscript, and underlining, all of them under software control.

Default mode printing speed is a very respectable 240 characters per second. This is achieved with the help of bidirectional printing (left-right-left) and logic seeking, by which the printer automatically skips the blank spaces at the end of lines and between paragraphs. The quality at this speed, though, is suitable only for listings and draft documents. However, from this mode (and no other) you can switch to other modes through software commands. In Courier near-letter quality mode, print speed is 48 cps, the dot matrix is 18 × 18 and noise levels increase dramatically, since the improved quality is achieved by a double pass of the print head. Trying to think while the 1083's print head is flinging itself around in NLQ mode is an uphill struggle. Also available is Bold PS, a proportionally spaced NLQ mode, which again uses a double-strike method and is not bidirectional.

The 1083 has a 6K buffer, with an additional 32K as an option for the truly impatient. Part of this buffer space can be assigned using the DIP switches to storing a set of user-designed characters. The form length can be adjusted using a rotating switch on the front panel. There are ten lengths available, from 3" to 12". This makes it easy to switch from, say, listings to label printing to letters without getting the screwdriver out to fiddle with the DIP switches.

There are twelve DIP switches, which are used to set the default modes of the printer. Switch one selects normal or Proprinter mode, in which you can use IBM graphics characters. DIP two switches on or off the paper out detector; obviously you'll want this switched off if you're using single sheets otherwise you'll have to put up with an annoying alarm beep at the end of each sheet.

Switch three selects whether the printer supplies its own line feed at each carriage return. Leave this in the wrong position and see your whole document printed on one line. Four switches the one-inch perforation skip on or off, while Five, Six and Seven select the international character sets. Other switches are used to configure the buffer, to select the optional cut sheet feeder, and to select whether zeros are plain or slashed.

Power up while holding down the Form Feed button, and the printer will produce a list of all the current DIP switch settings; clever idea. You can also activate a self test which prints out the entire character set, or a hex dump in which all data is printed in hex code rather than ASCII. Another useful feature is a warning buzzer which sounds if the printer is switched offline while there is still data in the buffer.

The 1083's perfect-bound manual is very comprehensive, and written in English, rather than incomprehensible Japlish which makes many manuals such heavy going. It covers basic operation, software control, font types, user-designed fonts, bit-image graphics and troubleshooting and includes many helpful tables and illustrations.

Overall, then, the 1083 is capable of producing good results despite its many annoying foibles. If compactness combined with the flexibility of the printouts are your highest priorities, you should be willing to learn to love the 1083.

Product *Panasonic KX-P1083 printer* **Micro** any Centronics-compatible **Price** £305 **Supplier** Panasonic, 300 Bath Road, Slough, Berks, SL1 6JB, 0753-73181.

than using it for limited spot effects.
The manufacturers aren't correct in claiming that this is a first; of course, the Hybrid Arts ADAP Soundrack, which connects to the ST to provide compact-disk quality sound sampling, has been around for some time. There is the slight drawback that it costs 2000, as opposed to the IS Sound Digitiser's 100.
The first thing to realise about the new IS package is that the software does not allow you to make samples. To do this you will need the original software package supplied with the IS analogue-to-digital-to-analogue conversion hardware cartridge.

Having created and filed your samples with the original software package (see the August ST Update for details), you can then link your MIDI synth to the ST, load the MIDI Sample Player software and get down to some serious music.

Like all samplers, the IS system works by changing the speed at which the sample is played back to create the effect of pitch changes. The MIDI communications standard for electronic musical instruments allows this to be done over a nine-octave range, with

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Quite a lot to he... at the PCW Show

```
43FFCD282DAFCD",1050
EAFCD282D3A42",903
92DCD6E34CD",1117
3FFCD282D",889
CD3BFF21",1094
FDCD28",1238
000ED",907
D28",819
C3",1042
",454
```

MIDI packages, light and sound sequencing, compo... editing, percussion, hardware and somethi... dump discs in, all fall lig... upon the ear of Mark Jenki... who spent many hours at th... recent PCW Show.

This year's PCW Show was a reasonably good one for musicians, with lots of interest being shown in the heavily music-oriented stands and quite a bit of response to games and other packages with some music content. As ever, Rob Hubbard astounded and delighted C64 users with his music for various new games, while Atari's big announcement on the first day was their launch of a CD ROM player which also (apparently) plays audio CD's as well, so once you've loaded up your software, you can work along to the latest dreadful Pink Floyd CD.

With over 300 exhibitors at the show it's hard to cover everything in a small space, but we'll be following up with detailed reviews of some of the music releases in coming weeks. Meanwhile, a tour around some of the musical highlights.

Cheetah

The *SpecDrum* and *AmDrum* drum sampling packages, plus an interface which will allow drum sounds to be played from Cheetah's new kit of budget pads. As we all know by now, Cheetah now have a wide range of MIDI control keyboards at absurdly low prices, and remain the best company to give an introduction to music followed rapidly by an opportunity to enter the more professional world of MIDI via their C64 and Spectrum interfaces, budget drum machine and synth module.

Datel

Lots of micro accessories including sound samplers and the £19.95. MIDI interface for the C64. No software specifically aimed at it, but it should run *C-Lab, SIEL, Jellinghaus, Steinberg* and other packages . . .

Eidersoft

Eidersoft was showing the latest version of its Atari ST sampler, *Pro Sound Designer*, with drum machine facilities and lighting synchronisation. The package is now fully responsive to incoming MIDI data and the demos were put on in conjunction with a Juno 106 and a Yamaha DX21 synth, which controlled voices, snatches of music and other samples taken on the ST.

Frontier Software

With vast amounts of musical data to be handled in professional applications (particularly if you're storing large numbers of sound samples), a hard disk drive is becoming a necessity rather than a luxury. Frontier showed its SupraDrive model in 20, 30 and 60mb versions (from £600 to £1700), and there's a 198mb model to come.

Inter Orient

A new sequencer package for the PC and compatibles, using a standard Roland/Passport type interface. No firm details or prices yet as Inter-Orient had only got its copy a day before the show, but it looks pretty powerful and should rival the Octave Plateau and other PC MIDI composition packages.

Kuma

Kuma's *KMinstrel* is a useful beginner's music package which works on the ST (with MIDI output and now on the PC (with the addition of a suitable MIDI interface). It can be both educational and entertaining, and although it's far from being a professional composition package, it can be used to print out simple scores.

Of possible use to the songwriter, Kuma was also showing *KRhymes*, based on Longman's *Top Pocket Dictionary of Rhymes*, and *KRoget*, based on Roget's *Thesaurus*.

Llamasoft

Jeff Minter's *Colourspace* is a light synthesizer running on most popular micros and intended to provide a visual background to your own choice of music. However, the next generation of the program, probably to be called *Lightmage* and to be launched next year, will also have an active musical role to play.

Running on the ST, *Lightmage* features two cursors rather than one, and these are controlled either by programmable waveform generators or by hand. Many new colour mixing and sequencing functions are available, and patterns can be mapped onto three-dimensional surfaces. There are more preset patterns available and in later versions of the software, the MIDI output will be brought into use to control music directly from the micro as images are formed.

Merit Computers

Vital for the muso in a hurry, the *Plonker Box* sticks to the side of your monitor or micro and holds four or more of your most frequently-used 3″, 3·5″, 5·25″ or 8″ disks.

Silica Shop

Silica Shop seems the best deal around for Atari ST's, which continue to represent the best value if you're choosing a micro for musical purposes. Their range includes the 520ST-M with half megabyte drive at only £229.99.

Softpaquet International

A new range of music programs derived from the Mopro sequencer launched about a year ago. Jan Den Hertog of Softpaquet admits that the original sequencer has been superceded by other products, and the new range doesn't include a sequencer as such. There are editors for the Yamaha TX81Z, Yamaha FB01, Roland D50 and Akai X7000/S700 though, plus a drum composer package called OME, an "Interpreter" called MIDAS which allows MIDI data to be transmitted in various ways, and a generic sample.

Softpaquet is currently organising UK distribution and we'll publish full reviews as soon as possible.

Syndromic

A wide variety of music software from Hybrid Arts, Soundbits, Drumware and others, including visual editors for synths and samplers, 16-bit stereo sampling with the ADAP system, 60-track sequencing with SMPTE Read/Write facilities, and the MIDI-Maze multi-combat synthesizer which links up to 16 ST's for a fast-action multi-player game of "Kill the Happy Face".

Also on the Atari stand, a hybrid xxx demo or xxxx xxx xxxxxx Electric Network for Information Exchange, accessing a handy music database. Syndromic itself was emphasising the reasonable price of EZ Track, a basic MIDI sequencer package for the ST at less than £50.

Rainbird

Lotsa games, but also the *Advanced Music System*, which continues to be the best introduction to non-MIDI based music composition and editing.

2 Bit Systems

The *ST Replay* sound sampling system, now with a MIDI control option, plus the *Digidrum* drum sequencer, and on the 8-bit Ataris, the *Replay, Percussion Master, Micro-Voice, MIDIMaster* and *DigiDrum II* packages.

Phoenix

Ian Wooff

The last instalment of this program showed how it was possible to add new commands to Basic by extending the Spectrum's interpreter.

Adding commands is useful, but how many programs have you written that only use commands, and do not use functions? So this week's program shows how it is possible to extend our extended interpreter to include the ability to add functions to Basic.

With all these new commands and functions you may find that they can produce errors of their own. Producing Sinclair error reports is easy but you may find that they do not say what the nature of the error is. So this week's program also shows how user error messages can be added to our extended interpreter.

Listing one enters the final part of our extended interpreter into memory and saves all to code as one piece. You will need to have saved the code from part one from last week otherwise this part will be of no use.

Those of you who have been experimenting with the box command from last week may have found that it, or any other command added using this method, can be placed on the end of a PRINT statement. To try this, enter the following.

```
PRINT "PRINT statement";
*BOX 10,10,10,10
```

When it is run you should find 'PRINT statement' and a small box on the screen at the same time.

To see how to add functions we need to consider what the ROM does when it finds a Sinclair function. Functions are evaluated by the scanning subroutine which is held in ROM at 24FBH. Any unknown function will eventually lead to the error "Nonsense in BASIC" being produced. This is the same error as that produced by an unknown command and so the extended interpreter will test the Command Table to see if it is a new command. Before this though, the chain of events mentioned last week will have been put into action.

The important ones here are the clearing of the machine and calculator stacks. These are needed before we can finish evaluating the function. The machine stack holds the return address of the routine which called scannings, and the calculator stack may hold important values needed in the evaluation of the function.

Since rebuilding the machine and calculator stacks is impossible another solution needs to be found.

Ideally we need to assign the result of our function to a Basic variable so that it can be used by a Basic program.

The solution is to call the ROM routine which deals with the LET command. The routine is at 11007, (2AFFH), and uses information held in the system variable to create a new variable or assign a current variable a new value, the value being the top value on the calculator stack.

So all we need to do is set the system variables correctly, place the result on the calculator stack and call 11007. You will be glad to know that the ROM will have already set all the required system variables to the correct value, before control is given to the extended interpreter.

So all that needs doing is to stack the result and call the LET routine at 11007. An 8-bit number in the A register is stacked by the routine at 11560, (2D28H), a 16-bit number in BC is stacked by the routine at 11563, (2D2BH).

The only difference between commands and functions is that at the end of a function the result is stacked and the LET command called before a jump to the extended interpreter routine RET. The entries into the Command and Address Tables are indentical to those for a command. There is no reason why a function may not have parameters, these being placed on the calculator in the usual way.

If you wish to produce a Sinclair error report you can use the RST ⊙ command, but take care, if you have used the machine stack, or moved it to a new address, the extended interpreter address will have been lost and so the extended interpreter will have been turned off. This problem can be avoided by placing the error code in ERR NR, (IY+0), and then jump to the extended interpreter routine SYNTAX.

This method of adding function is used to add a RND function which does not use SEED. This function uses the 7-bit register R to produce the value. The routine produces values from 0 to 1 inclusive. As the text above explains, the result is given to the last variable used, as it is the last variable which will have the system variables set for it. So

```
LET A= +RND
```

will give the last variable which is 'A' the result of the function. The same will be done by the following:

```
LET A=0: PLOT 10,10: DRAW 100,100: *RND
```

as 'A' is still the last variable. The following will not though

```
LET A=0: PLOT 10,10: DRAW S,100: *RND
```

as the last variable used was 'S' not 'A' and so the result will be given to the last variable 'S'.

The extended interpreter is able to handle any number of user error messages, the only restriction being that of memory. The new error messages take the form:

```
8,1 <Error message up to 21
characters> 3:1020
```

All new error messages begin with 'S', followed by the error number. The error message itself can be up to 21 characters in length, any more characters causing the error message to wrap-round onto the next line. This is followed by the line and statement number which caused the error. If memory is short, then the error messages could be missed out and only the error number and line and statement number which caused the error being printed.

When an error occurs, control is given to an error routine which stores the error code and does any unfinished jobs such as removing entries of the machine or calculator stacks. Control is then given to the routine which produces the error messages. This is similar to the error routine in ROM, but produces the new form of error message shown above.

The error message data is held in the Error Data Table. This table must begin with a byte with bit 7 set, and the end of each message must have bit 7 set. This can be achieved by placing 255 at the start of the table and adding 128, (80H), to the last letter of each error message.

The error messages are demonstrated on the box command from last week. This command now produces three error messages.

S,1 "Y position off screen" – Y co-ordinate greater than 175

S,2 "Box too long" – X co-ordinate + box' length greater than 255

S,3 "Box too high" – Y co-ordinate + box height greater than 175

These errors are produced when the conditions are met. To see the error messages try the following:

```
S,1 - *BOX 10,180,10,10
S,2 - *BOX 200,10,10,60
S,3 - *BOX 10,150,30,10
```

```
1 DEF FN h(a$)=FN b(a$(1))*16+FN b(a$
(2))
 2 DEF FN b(a$)=CODE a$-48-7*(a$>"9")
10 CLEAR 64755
20 FOR a=65045 TO 65367 STEP 8
30 READ r$,r
40 PRINT a;":-";r$;"=";r
50 LET c=0
60 FOR g=0 TO 7: LET z=FN h(r$): LET r
$=r$(3 TO )
70 POKE a+g,z
80 LET c=c+z: NEXT g
90 IF c<>r THEN  PRINT "ERROR IN LINE
";1000+((a-65045)*1.25): STOP
 100 NEXT a
 110 SAVE "EX. BASIC"CODE 65045,322
1000 DATA "D4FE44FF03424F5B",1025
1010 DATA "0003524E44088000",367
1020 DATA "CDF7FDAF18093E01",976
1030 DATA "1B05CDF7FD3E0232",848
1040 DATA "24FE76FDCB01AEFD",1292
1050 DATA "CB304EC4CD0E2100",777
1060 DATA "00FD7437FD742622",865
1070 DATA "0B5C2322165CCDB0",667
1080 DATA "16FDCB37AECD6E0D",1035
1090 DATA "FDCB02EE3E53D73E",1118
1100 DATA "2CD73A24FE3C4F06",752
```

```
1110 DATA "00CD1B1A3E20D7CD",772
1120 DATA "9BFEED4B455CCD1B",1114
1130 DATA "1A3E3AD7FD4E0D06",711
1140 DATA "00CD1B1ACD9710FD",883
1150 DATA "360AFFFDCB019E21",967
1160 DATA "FEFCE5C3AC1211A5",1302
1170 DATA "FE3A24FECD140CC9",1040
1180 DATA "FF5920706F736974",935
1190 DATA "696F6E206F666620",705
1200 DATA "7363726565EE426F",945
1210 DATA "7B20746F6F206C6F",741
1220 DATA "6EE7426F7820746F",897
1230 DATA "6F2068656967E8CD",993
1240 DATA "F7FD3243FFCDF7FD",1577
1250 DATA "3242FFCDF7FD327E",1252
1260 DATA "5CFEAFD225FE473A",1151
1270 DATA "42FF80FEB0D22FFE",1390
1280 DATA "CDF7FD327D5C473A",1101
1290 DATA "43FF80DA2BFEAFCD",1345
1300 DATA "282D3A42FFCD3BFF",983
1310 DATA "3A43FFCD282DAFCD",1050
1320 DATA "3BFFAFCD282D3A42",903
1330 DATA "FFCD282DCD6E34CD",1117
1340 DATA "B7243A43FFCD282D",889
1350 DATA "CD6E34AFCD3BFF21",1094
1360 DATA "5827D9C3C9FDCD28",1238
1370 DATA "2DCDB724C90000ED",907
1380 DATA "5FCD282D3E7FCD28",819
1390 DATA "2DEF0538CDFF2AC3",1042
1400 DATA "C9FD000000000000",454
```

```
FE17=              10        ORG  65047
FE17 44FF          20        DEFW RND ;              Continuation of Address Tabel
FE19 03424F58
     00                  COMTABLE:
                            DB   3,"BOX",0 ;        Command Table. Includes function
FE1E 03524E44
     0880                   DB   3,"RND",8,#80 ;    Table terminated by 80H
FE24 00                 ERRCODE:
                            DEFB 0
FE25 CDF7FD        30   ERROR1:
                            CALL GETA ;             Error 1
FE28 AF                     XOR  A
FE29 1809                   JR   ERR.NO
FE2B 3E01               ERROR2:
                            LD   A,1 ;              Error 2
FE2D 1805                   JR   ERR.NO
FE2F CDF7FD             ERROR3:
                            CALL GETA
FE32 3E02                   LD   A,2 ;              Error 3
FE34 3224FE             ERR.NO:
                            LD   (ERRCODE),A
FE37 76            40       HALT
FE38 FDCB01AE               RES  5,(IY+1) ;         Signal 'ready for a new key'
FE3C FDCB304E               BIT  1,(IY+48) ;        Empty printer buffer if
FE40 C4CD0E                 CALL NZ,#ECD ;          has been used
FE43 210000                 LD   HL,0 ;             Reset the system variables
FE46 FD7437                 LD   (IY+55),H ;        FLAGX
FE49 FD7426                 LD   (IY+38),H ;        X PTR hi
FE4C 220B5C                 LD   (23563),HL ;       DEFADD
FE4F 23                     INC  HL
FE50 22165C        50       LD   (23574),HL ;       Stream 00 points to
FE53 CDB016                 CALL #16B0 ;            channel 'K'
FE56 FDCB37AE               RES  5,(IY+55) ;        Signal 'editing mode'
FE5A CD6E0D                 CALL #D6E ;             Clear the lower screen
FE5D FDCB02EE               SET  5,(IY+2) ;         Signal lower screen will require
FE61 3E53                   LD   A,"S" ;            Print 'S'                clearing
FE63 D7                     RST  #10
FE64 3E2C                   LD   A,"," ;            Print a comma
FE66 D7                     RST  #10
FE67 3A24FE                 LD   A,(ERRCODE)
FE6A 3C            60       INC  A
FE6B 4F                     LD   C,A
FE6C 0600                   LD   B,0
FE6E CD1B1A                 CALL #1A1B ;            Print error code
FE71 3E20                   LD   A,32 ;             Print a space
FE73 D7                     RST  #10
FE74 CD9BFE                 CALL MESS1 ;            Print error message
FE77 ED4B455C               LD   BC,(23621)
```

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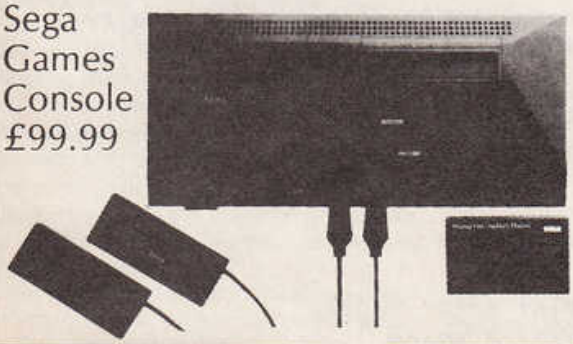

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```
FE7B CD1B1A             CALL #1A1B ;          Print line number in which error occured
FE7E 3E3A               LD   A,#3A ;          Print a colon
FE80 D7          70     RST  #10
FE81 FD4E0D             LD   C,(IY+13)
FE84 0600               LD   B,0
FE86 CD1B1A             CALL #1A1B ;          Print statement number in which error
                                              occured
FE89 CD9710             CALL #1097 ;          Clear the editing area
FE8C FD360AFF           LD   (IY+10),255 ;    Set NSPPC to indicate 'no jump'
FE90 FDCB019E           RES  3,(IY+1) ;       Select 'K' cursor mode
FE94 21FEFC             LD   HL,START
FE97 E5                 PUSH HL ;             Place START on bottom of stack
FE98 C3AC12             JP   #12AC ;          Jump back to ROM
FE9B 11A5FE     80 MESS1:LD  DE,ERRORDATA ;   Address of error messages
FE9E 3A24FE             LD   A,(ERRCODE) ;    Error code to A
FEA1 CD140C             CALL #C14 ;           Use ROM routine to print error message
FEA4 C9                 RET
FEA5 FF592070
     6F736974
     696F6E20
     6F666620
     73637265
     65EE426F
     7820746F
     6F206C6F
     6EE7426F
     7820746F
     6F206865
     6967E8         ERRORDATA:
                    DEFM 255,"Y position off scree","n"+#80,"Box too lon","g"+#80,
                    "Box too
 heig","h"+#80
                    ;                         See text for layout of Error Data Table
FED4 CDF7FD     90 BOX  :CALL GETA
FED7 3243FF             LD   (BLEN),A ;       Length of box
FEDA CDF7FD             CALL GETA
FEDD 3242FF             LD   (BHEI),A ;       Height of box
FEE0 CDF7FD             CALL GETA
FEE3 327E5C             LD   (23678),A ;      Y position of box
FEE6 FEAF               CP   175 ;            Is Y position off top of screen ?
FEE8 D225FE             JP   NC,ERROR1 ;      Error 1 if it is
FEEB 47                 LD   B,A
FEEC 3A42FF             LD   A,(BHEI)
FEEF 80                 ADD  B
FEF0 FEB0               CP   176 ;            Is box too heigh ?
FEF2 D22FFE             JP   NC,ERROR3 ;      Error 3 if it is
FEF5 CDF7FD    100      CALL GETA ;           X position of box
FEF8 327D5C             LD   (23677),A
FEFB 47                 LD   B,A
FEFC 3A43FF             LD   A,(BLEN)
FEFF 80                 ADD  B ;              Is box too long ?
FF00 DA2BFE             JP   C,ERROR2 ;       Error 2 if it is
FF03 AF        110      XOR  A
FF04 CD282D             CALL #2D28 ;          Stack 0
FF07 3A42FF             LD   A,(BHEI)
FF0A CD3BFF             CALL LINE ;           A=Height Draw first line
FF0D 3A43FF             LD   A,(BLEN)
FF10 CD282D    120      CALL #2D28 ;          Stack Length
FF13 AF                 XOR  A
FF14 CD3BFF             CALL LINE ;           A=0 Draw second line
FF17 AF                 XOR  A
```

```
FF18 CD282D             CALL #2D28 ;        Stack 0
FF1B 3A42FF             LD   A,(BHEI)
FF1E CD282D             CALL #2D28 ;        Stack Height
FF21 CD6E34             CALL #346E ;        Negate top value on stack
FF24 CDB724             CALL #24B7 ;        Draw third line
FF27 3A43FF    130      LD   A,(BLEN)
FF2A CD282D             CALL #2D28 ;        Stack Length
FF2D CD6E34             CALL #346E ;        Negate top value on stack
FF30 AF                 XOR  A
FF31 CD3BFF             CALL LINE ;         A=0 Draw last line
FF34 215827             LD   HL,#2758 ;     Reset HL' is destroyed by line drawing
FF37 D9                 EXX
FF38 C3C9FD             JP   RET ;          End command
FF3B CD282D    140 LINE :CALL #2D28 ;       Stack value in A
FF3E CDB724             CALL #24B7 ;        Draw line
FF41 C9                 RET
FF42 00        150 BHEI :DEFB 0
FF43 00             BLEN :DEFB 0
FF44 ED5F      160 RND  :LD   A,R
FF46 CD282D             CALL #2D28 ;        Stack R register
FF49 3E7F               LD   A,127 ;        Register is 7 bits long
FF4B CD282D             CALL #2D28 ;        so stack 127
FF4E EF                 RST  #28 ;          Use calculator
FF4F 0538               DEFB 5,#38 ;        Division. End calculation
FF51 CDFF2A             CALL #2AFF ;        Call LET
FF54 C3C9FD             JP   RET ;          End function
```


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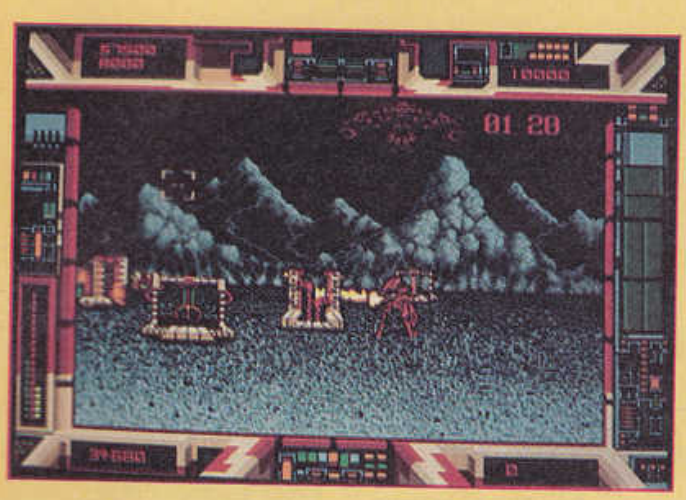


Licensed to ill

The Terrorpods are coming! Unlike the dreadful BBC series of a similar name, these metallic aliens are invading a mining asteroid called Colian, with the intention of setting up shop and building more Terrorpods. Colian supports ten separate mining colonies, each with its own mines, dumps, stores and resource centres interlinked by regular shuttle services.

Everything was going fine until the Empire and its Terrorpods arrived to take over the place and start manufacturing components for assembly off-world. As the only representative of the Federation stupid enough to take on the task of obtaining the components you find yourself down on Colian's surface, trading with the installations in an attempt to build up your mineral resource level. Until the Empire noticed what you were doing.

Suddenly, there are Terrorpods and Spoilers everywhere, destroying and draining installations left, right and centre. You're next on the list so it's a race against time to collect all the components, while fending off Empire attacks, before they nail you to the floor.

As usual with Psygnosis games, the packaging is first class, even if the Roger Dean poster has been folded up (ggrrr!). The graphics, as well, seen in an out of the window, 3-D perspective, are up to the excellent standard that Psygnosis are renowned for. What is surprising is that the animation is, for the most part, very good.

The display consists of a bordered window through which the asteroid's surface can be seen, along with all the installations. In the border are displays and counters representing fuel and Detonite levels, damage sustained, number of missiles primed, points scored, position co-ordinates, and an intelligence panel which the instructions refuse to elaborate upon.

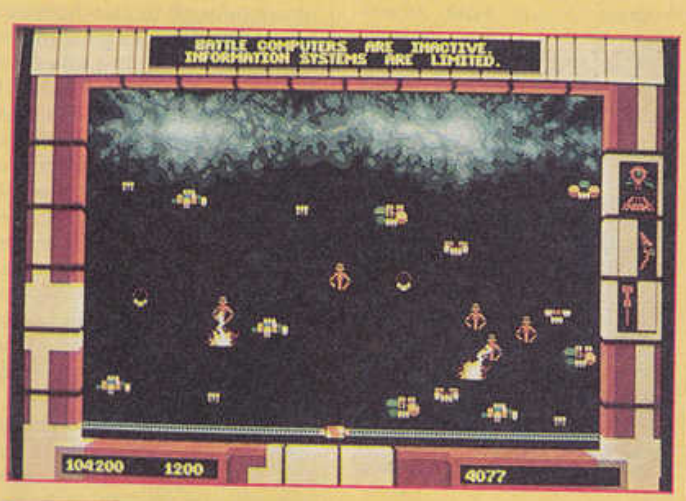
As long as you have fuel you can move around, left and right, and into or out of the scenery. The scrolling of the crushed rock surface is nicely done and, on the Amiga version but not the ST, the mountains in the background scroll along.

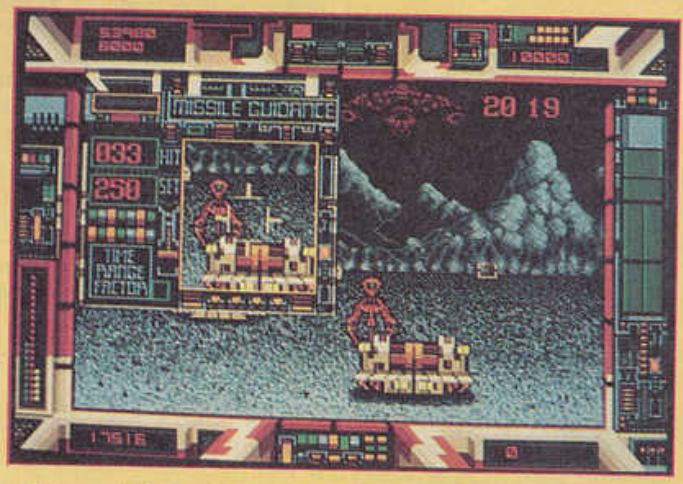
Your Defence Strategy Vehicle (DSV), has defence systems in the form of phasers (which make a harsh zapping noise followed by a noisy explosion when something is hit), shields to block enemy missiles, and missiles which must be primed, aimed and then directed to their targets.

The two other functions available are an energising beam which reconstructs installations that have been destroyed by the Terrorpods, and a remote drone. The drone must be sent out to dock with the various installations when you want to trade. The installations don't like having you around though, since the Empire is on your tail. Your appearance can spell destruction, so trading is strictly timed.

This aspect of the game must be mastered though, otherwise you aren't going to get anywhere. The delights of simply blasting away at Terrorpods and Spoilers soon pales when there is no point to it.

Running out of fuel and Detonite are the most serious problems initially. Having an empty tank means that the Empire mothership can pound you with missiles until your shields run out. Running out of Detonite prevents you from firing the phasers or priming a warhead for a missile, so this is not something you want to have happen.





The real trick to Terrorpods involves using the mapping systems to see where the Empire activity is, finding out trading prices at the various installations, warping from sector to sector to keep up with events, and monitoring and defending those installations that are building the components that you need. Life can get rather hectic when you're waiting at an installation for the next shuttle that will mean completion of a component, and the full force of the Empire starts to bear down on you. Run for it, or expend vast quantities of energy beating them off? The choice is yours.

It can take quite a while to really get the hang of Terrorpods, and the fast thinking, complex strategy and zapping may not be to everyone's taste, but it is certainly an original, slickly produced, and challenging game.

Product *Terrorpods* **Price** £24.95 **Machines** Amiga, Atari ST **Supplier** Psygnosis Ltd, 1st Floor, Port of Liverpool Building, Pier Head, Liverpool L3 1BY.

NEW RELEASES

Your complete guide to all the software released this week

AMSTRAD CPCs

Program *Ninja Hamster* **Type** Arcade **Price** £8.95 (£14.95) **Supplier** Supplier CRL, CRL House, 9 King's Yard, Carpenter's Rd, London E15 2HD.

Program *Sorcerer* **Type** Strategy **Price** £12.95 (£17.95 on disc) **Supplier** PSS, 452 Stoney Stanton Rd, Coventry.

Program *Uridium* **Type** Arcade **Price** £2.99 **Supplier** Hewson, Hewsom House, 56b Milton Trading Estate, Milton, Abingdon, Oxon OX14 4RX.

Hewson's excellent space shoot 'em up, finally released for Amstrad machines. Surprisingly, Hewson has released it as a budget game, making it very good value.

ATARI XL/XE

Program *BMX Simulator* **Type** Arcade **Price** £1.99 **Supplier** Codemasters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon.

Program *Ted Bear's Rainy Day Games* **Type** Educational **Price** £1.95 (disc only) **Supplier** ABC Holdings, 53 Cambridge St, Aylesbury, Bucks HP20 1RP.

C64

Program *Creations* **Type** Arcade **Price** £1.99 **Suppliers** Codemasters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon.

An interesting budget release – three games written with the *Games Creator* utility, plus the *Games Creator* itself, all on one tape for just £1.99.

As with most games written with utilities, the three here are competent but not particularly great. However, three of them, plus the possibility of writing your own make this exceptional value.

Program *Ted Bear's Rainy Day Games* **Type** Educational **Price** £21.95 9 (disc only) **Supplier** ABC Holdings, 53 Cambridge St, Aylesbury, Bucks HP20 1RP.

An educational package aimed at four-year old and upwards, using the cardgames *Concentration, Old Maid* and *Go Fish* to aid in developing concentration and strategy.

Program *Mr. Angry* **Type** Arcade **Price** £1.99 **Supplier** Codemasters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon.

A variation on the *Elevator Action* theme, set in a hotel where you have to find a missing body behind one of the hotel bedroom doors. The basic idea is a bit limited, but it's not bad for a budget game.

If excitement has a name, it certainly isn't *Indiana Jones and the Temple of Doom.* Like many games-of-the-coin-op-of-the-licence-of-the-film, the version which finally filters through to your home computer does little to capture the spirit of the original movie, though the music does stir the blood a little. The title screen is also great, and Harrison Ford fans may think it worth buying just for that!

The ST version is in three parts, and is basically two platforms-and-ladders scenarios and a chase game. The backgrounds, which of course don't capture all the detail of the coin-op original, are fairly bland, depicting a maze of caverns through which the small figure of Indy moves in a quest to free enslaved children. There are three difficulty levels, selected according to which entrance to the caves you choose, and this determines the number of guards, bats, serpents and evil sorcerers who will try to bump you off. There are also chasms which you can swing over, cliff edges to topple off and firebolts to cope with, all using your trusty whip.

Climbing ladders all the time, you finally complete the first section, and get on to the underground railway chase, which would be more exciting if it weren't for the fact that the diagonal scrolling becomes noticeably jerky at this point. The third level is back to the caverns for a diamond search, which is really just a sophisticated version of Pitfall. Indiana Jones and the Temple of Doom might have done well if it came out at the same time as the film, but doesn't measure up to the more impressive ST games currently being produced by more original software houses.

Chris Jenkins

Program *Indiana Jones and the Temple of Doom* **Type** Arcade **Machine** Atari ST **Price** £19.95 **Supplier** US Gold, Units 2/3, Holford Way, Holford, Birmingham B6 7AY.

Program *Thunderbolt* **Type** Arcade **Price** £1.99 **Supplier** Codemasters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon.

This isn't quite the 'best ever shoot 'em up' that the cassette inlay brags about, but it is fast and furious (though some of the graphics are a bit gaudily coloured).

Program *Ninja Hamster* **Type** Arcade **Price** £9.95 (£14.95) **Supplier** Supplier CRL, CRL House, 9 King's Yard, Carpenter's Rd, London E15 2HD.

Program *Pegasus Bridge* **Type** Strategy **Price** £12.95 (£17.95 on disc) **Supplier** PSS, 452 Stoney Stanton Rd, Coventry.

Program *Halls of The Things* **Type** Arcade **Price** £2.99 **Supplier** Firebird, 64–75 New Oxford St, London WC1A 1PS.

Program Codehunter **Type** Arcade **Price** £2.99 **Supplier** Firebird, 64–76 New Oxford St, London WC1A 1PS.

Program *Okinawa* **Type** Strategy **Price** £4.95 (£9.95 on disc) **Supplier** PSS, 452 Stoney Stanton Rd, Coventry.

Program *Tobruk* **Type** Strategy **Price** £9.95 (£14.95 on disc) **Supplier** PSS, 452 Stoney Stanton Rd, Coventry.

Program *Hysteria* **Type** Arcade **Price** £8.95 (£12.95 on disc) **Supplier** Software Projects, Bearbrand Complex, Allerton Rd, Woolton, Liverpool, Merseyside.

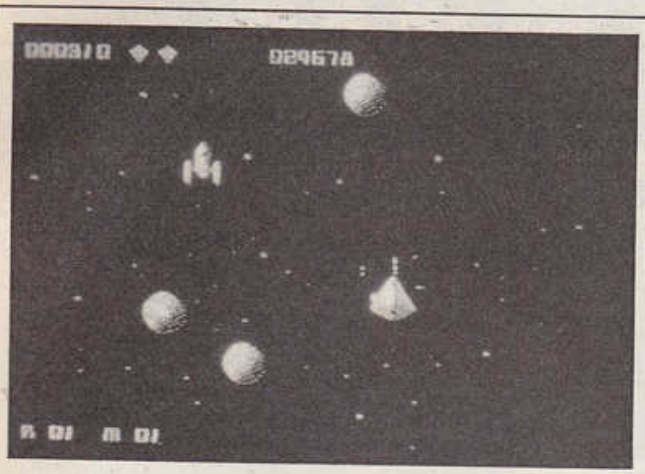
Program *Armourdillo* **Type** Arcade **Price** £1.99 **Supplier** Codemasters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon.

Another budget shoot 'em up. This time it's a ground based tank rather than a spaceship, but the principle's roughly the same. It's not the fastest game around, but the graphics are above average for a budget game.

MSX

Program *BMX Simulator* **Type** Arcade **Price** £1.99 **Supplier** Codemasters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon.

NEW RELEASES



Some people like subtlety. Some like an intellectual challenge. Some like games which offer a positive attitude to life. Others just like to DESTROY! Kill! Blast!! Har-Har!

***Mega-Apocalypse* should appeal to these demented joystick-bashers. The software equivalent of a Spinal Tap LP played at full volume on stereo headphones, this is without doubt the loudest, most brain-numbing, eyeball-searing game yet seen on the Commodore 64, and has no positive, life-enhancing aspects whatsoever, apart from being great fun.**

***Mega-Apocalypse* is basically an improved version of Martech's earlier hit *Crazy Comets*, itself a version of the coin-op *Mad Planets*. Your only task is to blast progressively larger and faster planetoids out of the sky. Before each round you have the chance to pick up some subsidiary weapons to help you do this in an even noisier, more vicious way. These include extra shields, 360 degree rotation, extra speed and some kind of spinning weapon, the function of which isn't made clear.**

The dual-player mode is great fun, and the dual enemy mode is even better, giving you another ship to blast at as well as the planetoids. The non-stop Rob Hubbard music, excellent sampled speech and violently swirling sprites are guaranteed to give you a headache within two minutes, so there's a soporific 'starfield' pause mode to give you a rest.

A stunning programming achievement, absolutely devoid of plot and maybe only of short-term interest, but a "must see" for headbangers and shoot 'em up fans.

Chris Jenkins

Program *Mega-Apocalypse* **Micro** CBM64 **Price** £8.95 (£12.95 on disc) **Supplier** Martech, Martech House, Bay Terrace, Pevensey Bay, East Sussex BN24 6EE.

Spectrum

Program *Hysteria* **Type** Arcade **Price** £7.95 **Supplier** Software Projects, Bearbrand Complex, Allerton Rd, Woolton, Liverpool, Merseyside.

Software Projects has changed its set up recently. They're no longer producing games themselves, and are simply publishing other people's work. The first new game, by Special FX, reminds me a bit of the old Sinbad films, with elements of Greek mythology. You have been sent back in time to fight a power-crazed entity of some sort, but before you can locate it you have to fight your way past animated skeletons, harpies, and the like.

Program *Dark Star* **Type** Arcade **Price** £2.99 **Supplier** Firebird, 64-76 New Oxford St, London WC1A 1PS.

Program *Halls of The Things* **Type** Arcade **Price** £2.99 **Supplier** Firebird, 64-76 New Oxford St, London WC1A 1PS.

Halls was one of the first fantasy/D&D style games produced for the Spectrum (a sort of early *Gauntlet*), and wa considered pretty wonderful in its day. Trouble is, that day was about three years ago, and while this isn't bad value as a budget game it does look its age.

Program *Trivial Fruit* **Type** Quiz **Price** £2.99 **Supplier** Pirate Software, 197-199 City Rd, London EC1V 1JN.

A budget variant on the *Trivial Pursuit* theme. Not bad of its kind, but I've never understood why you should want to do this sort of thing on a computer anyway.

Program *Call Me Psycho* **Type** Quiz **Price** £1.99 **Supplier** Pirate Software, 197-199 City Rd, London EC1V 1JN.

Program *Holiday In Sumaria* **Type** Quiz **Price** £2.99 **Supplier** Pirate Software, 197-199 City Rd, London EC1V 1JN.

Program *Smash Out* **Type** Quiz **Price** £1.99 **Supplier** Pirate Software, 197-199 City Rd, London EC1V 1JN.

Program *Sorcerer* **Type** Strategy **Price** £12.95 (£17.95 on disc) **Supplier** PSS, 452 Stoney Stanton Rd, Coventry.

Program *Red LED* **Type** Arcade **Price** £7.95 **Supplier** Ariolasoft, 68 Long Acre, London WC2E 9JH.

Program *Spaceblip/Bananablip* **Type** Arcade **Price** £2.50 **Supplier** Lelu/Lu's, 27a Draycott Avenue, Layton, Blackpool, Lancs FY3 7NP.

CHARTS

Top Twenty

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2	(2)	Joe Blade	**Players**
3	(3)	Arcade Classics	**Firebird**
4	(12)	Soccer Boss	**Alternative**
5	(10)	International Karate	**Endurance**
6	(18)	Back To The Future	**Firebird**
7	(5)	BMX Simulator	**Codemasters**
8	(-)	Tai-Pan	**Ocean**
9	(11)	Uchi-Mata	**Alternative**
10	(8)	Dizzy	**Codemasters**
11	(4)	ATV Simulator	**Codemasters**
12	(29)	Indiana Jones	**US Gold**
13	(7)	Run For Gold	**Alternative**
14	(9)	Paperboy	**Elite**
15	(16)	Super Robin Hood	**Codemasters**
16	(13)	World Class Leaderboard	**US Gold**
17	(15)	Destructo	**Bulldog**
18	(19)	Barbarian	**Palace**
19	(21)	Football Manager	**Addictive**
20	(17)	Kik Start 2	**Mastertronic**

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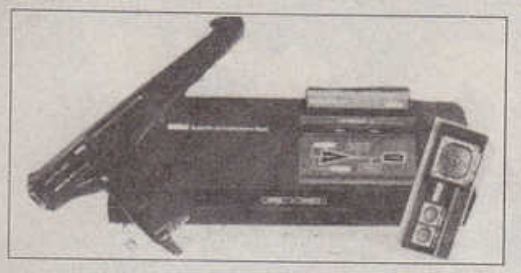

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"Hello . . ." (click)

"Hello, is that Ocean's PR department?"

"What's it to you?"

"Oh hello, I bought 'Head over Heels' the other day, and I was given the wrong instructions. Can you tell me what the pause key is please?"

"No."

"Pardon?"

"I said no!"

"Can't you get one out?"

"No I can't."

"Well can you send me the right instructions please?"

"Yes, send us yours and we have a twenty four hour turnaround." (CLICK)

Typically of the big boys it arrived two weeks later.

"Hello, is that US Gold?"

"Yes."

"Oh hallo, I bought 'Gauntlet' . . ."

"I'm sorry, we're closed, ring us when we're open."

"When's tha . . ." (CLICK).

That was 5:32 on a Friday afternoon.

This is a typical attitude displayed by the "modern" software conglomerates. They have a money grabbing fetish akin to the Inland Revenue service, and are as helpful as the DHSS. This would be bearable if the mistakes outlined above were not so common, but from the efficiency of these companies, you'd think they were being run by a bunch of lemmings who got their starting capital by sueing their brain surgeons for negligence.

The prize for minimum helpfulness must go to the temporary secretaries, who have a collective IQ a flatworm would be ashamed of. "Never heard of it" is not uncommon, and this is when the technical term you have used is 'Spectrum' or 'tape player'. When you finally get an 'expert' on the phone, he is preoccupied by the Manpower reject . . . whoever heard of turning down the volume on the inlay?

As for the programmers, when asking about their latest "All Machine Code" blockbuster, wouldn't you be a little surprised to hear "Try changing the variable in line 6527"?

The big software companies have the integrity of 'Pravda', advertising a game which will "blow your mind with its superlative gameplay" that needs two fingers to play and the reflexes of a brain-damaged slug. That is, if you have the patience of Princess Diana's gynaecologist to wait three months for the overnight delivery. My congratulations to Ocean for supplying an inlay subscription service for suckers who now just buy the artwork and leave the capitalists to sell the cassette off to the local discotheque as Sigueigue Sputnik's latest single.

Trying to get an unloadable game swapped is like getting a photo of Melissa Ravenflame. You'd get a piccy of the Ed, several months later. The magazines are no better, the rating of a game roughly corresponds to the number of courses at the press launch multiplied by the expenses allowance excess, doubled for each full page colour advert (quadrupled for cover positions). The only reason SU (Simply Unbearable) didn't give 'Game Over' a perfect ten is because the editorial assistant's chauffeur's daughter didn't get a free season ticket to Stringfellow's like the rest of the Editor's harem.

The software industry, now run by a small bunch of elite ex convicts who, if they saw a Spectrum, would probably stub out their Gauloises on it, is about as uncorrupt as Ronald Reagan's arms division. They release programs which are as much fun as six weeks in a Vietnamese death camp, but not half as interesting. Once they have your money, it's 'wham bam, thank you man' and 'afterservice not in my data'.

To sum up this total apathy on the part of the big boys, I offer you this biscuit-snatching finale from Elite: "Hello, I purchased 'Space Harrier' this afternoon, and having discussed it with a friend who's also got it, we think it's a forgery. Can you put me through to someone who can help?"

"Try again on Monday." (CLICK)

T. J. Wright

This week, due to overwhelming demand, we have decided that it is about time to launch a new puzzle.

And it has also been decided that the best people to think of a new format for the puzzle would be you, the readers.

So, in essence, this week's puzzle is to think of a puzzle; which will start the week after next.

As with all other puzzles, the person who invents the most interesting format for the new puzzle (phew this is getting confusing, Ed!) will receive a prize, which for this special case will be £20.

Because this is such an important decision, we have decided to run this 'design a puzzle' competition for two weeks, so the closing date is October 16.

Send all your ideas to Puzzle Ideas, Popular Computing Weekly, Greencoat House, Francis Street, London SW1P 1DG.

We expect to see wierder and more ingenious ideas than ever!

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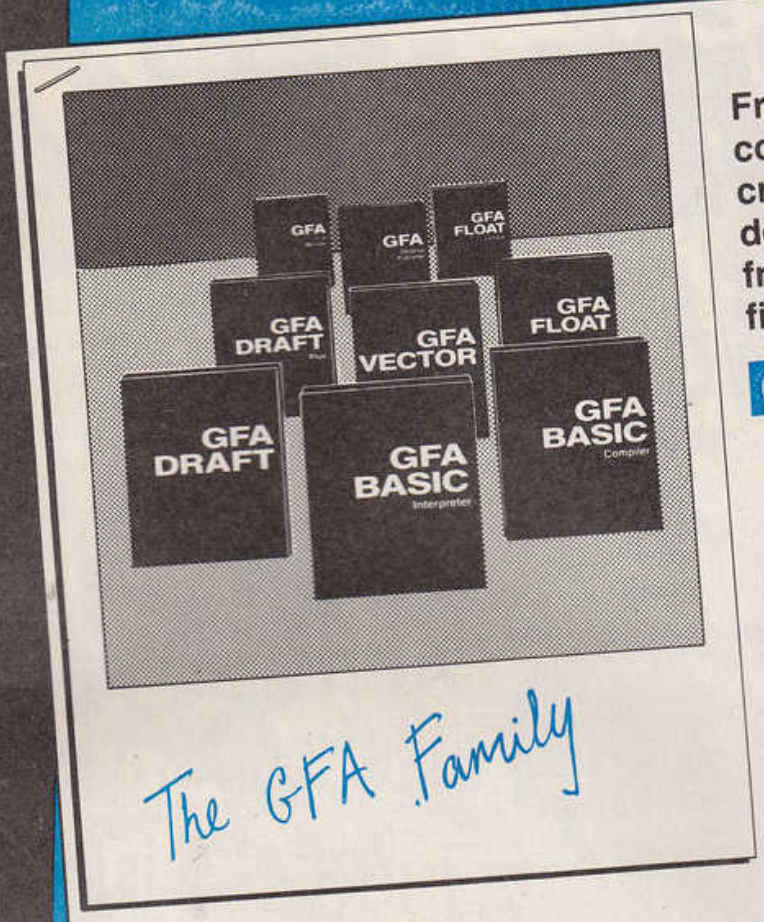

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