

POPULAR NEW COMPUTING

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WEEKLY

Virus no hoax – official



Afflicted – Amiga users are angry

THERE were red faces at Commodore last week when the company was forced to go back on its previous dismissal of the Amiga Virus program as a "hoax".

The good news is that a number of readers have offered a solution to the problem.

The bad news is that Commodore is refusing to act on the matter until it considers the situation is "out of hand".

Following the first item on the affair in last week's News Desk, a number of readers have suggested the following remedy for discs "infected" with the program.

Un-write protect the disc, put it in the external drive and type INSTALL DF1: (if the machine has only one drive, copy the INSTALL command into the RAM drive and type INSTALL DF0).

Our readers have pointed out that this must be done with each

affected disc, and that unfortunately some discs – particularly commercial games – are irreparable.

Meanwhile a spokesman for Commodore UK admitted that the program does exist, despite the fact that the company was previously adamant that the whole affair was a prank.

"It's not serious at the moment," he said. "As soon as someone thinks it's got out of hand, they'll take action. Commodore will do all it can to get rid of it – they've just got to obtain the anti-Virus disc."

The spokesman stressed that Virus cannot be passed from disc to disc, and that it cannot permanently affect a system.

A further twist in the tale could

come with Virus programs cropping up on other machines. A short piece in last Thursday's edition of *The Guardian* warned users of other machines to be cautious if borrowing discs.

In a new twist, Bill Hardwick, of Digipix, announced that he thought Virus was so serious that he had to take action. From now on, every pack of 10 3.5" discs will contain a copy of the Virus killer. For more details contact Digipix, 1 Brasher Close, Bishopstoke, Hants.

The Virus Killer has been produced by a group of American hackers, and will search each of your discs, informing you whether or not your disc has the virus, and removing it if it is found.

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Ocean grabs Robocop



Copyright: Rank Film Distributors

ROBOCOP, the sci-fi adventure film which took America by storm and grossed over \$50 million, has been snapped up by Ocean Software even before the film has been released in the UK.

The deal which is reported to have cost Ocean upwards of five figures looks set to become one of the best sellers of 1988 when it is eventually released during the summer.

Robocop – the film – goes on general release in the UK from February and according to a spokesman from Rank Film Distributors, "The film did extremely well in America and we expect it to do just as well in the UK. The response we've had so far has been very positive. Everyone seems to have enjoyed the film."

From Ocean, Gary Bracey, Software Manager said, "We haven't started yet on the programming. We won't start until at least early in the New Year. "The game isn't yet onto the story book stage, but we do have a few ideas on how to implement the film into a game."

Bracey was concerned that the design of the game should be of a very high standard:

"We will be devoting a lot of the time on the design so that we get the game right. This is something we have done with *Platoon* and the results will be worth the wait."

Robocop is an '18' certificate film and is the story of Murphy, a policeman of the near future in Detroit, USA.

One day whilst out on patrol, Murphy is killed by a gang while he investigates a robbery.

His body is then taken by Security Concepts Inc, who then, through the miracle of technology transform Murphy into Robocop.

The story then goes on and follows Robocop as he proceeds to clean up the city of the gangs that roam it.

Now the Summer will surely last forever!

The smell of the surf, the sun on your back, the sand between your toes... This isn't California Dreamin' - this is for real! Six of the best West Coast sports designed to set your pulse racing! Wow your friends with your incredible flying skateboard feats, or show your cool hacking at the sack. Skate down the boardwalk, flip the Frisbee® and wheeler the BMX. And then the ultimate test - that King of Californian sports - shooting the curl as you battle with those giant Pacific rollers to decide which surfer truly rules the waves!

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California Games™ features superb graphics, all the atmosphere of the West Coast, and one to eight

players can take part. All the quality you expect from an Epyx product is here and so much more. We could tell you more but instead let's hear what the critics have to say:

"California Games is quite simply the apex of computer sports gaming. Even in purely technical terms Epyx have somehow managed to surpass their own high standards - the pictures and sounds generated by this program are atmospheric beyond belief."

If you gather up all the superlatives from previous Epyx reviews

and add them together, you just might go halfway towards describing California Games®.

- Zzap 64

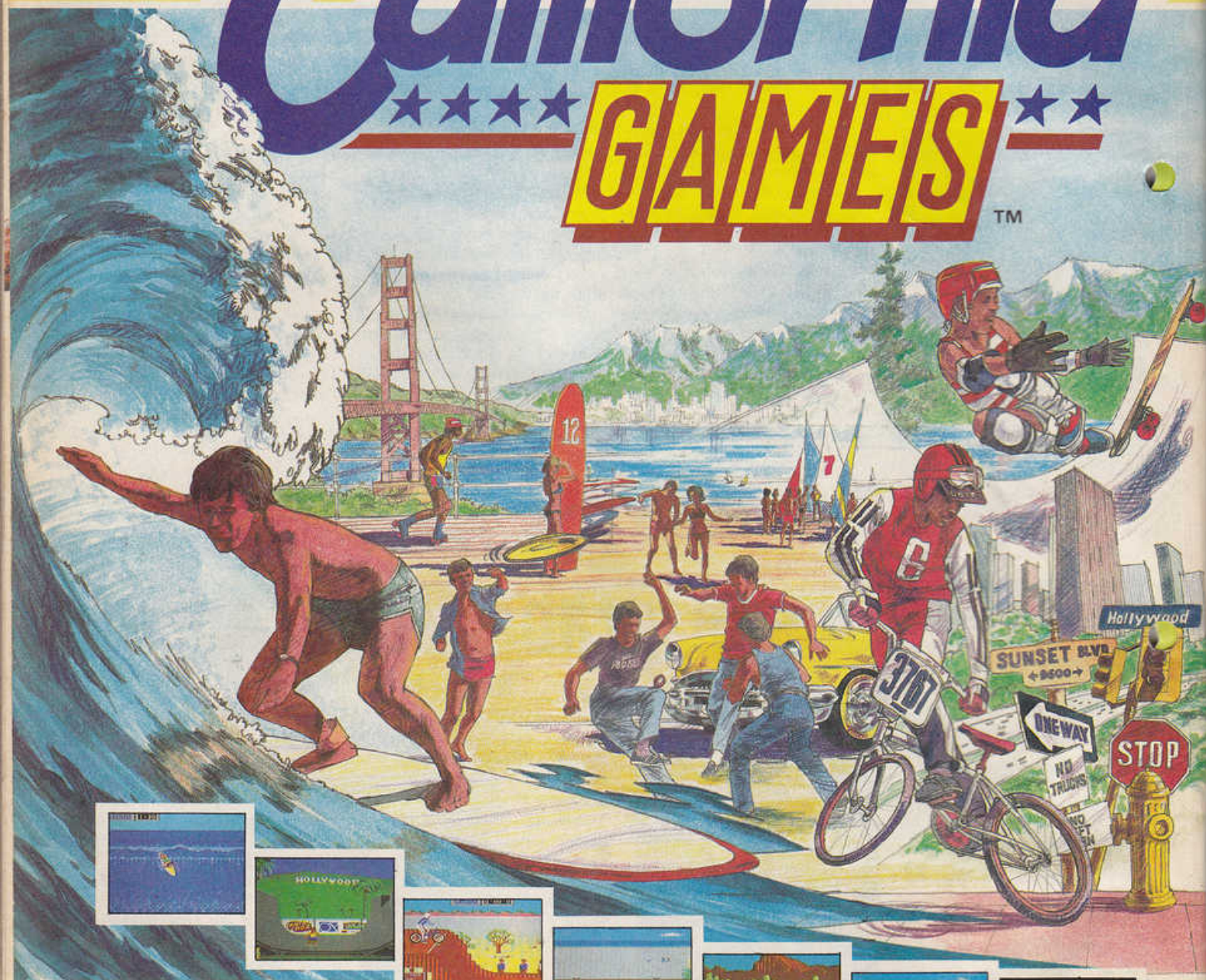
"California Games has to be the best release this year so far."

Some of the individual games are almost worth the asking price on their own."

- COMMODORE COMPUTING INTERNATIONAL

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CBM 64
EPYX®

Commodore's admission over Virus gives added weight to what was written in this column last week. To be sure, even now it sounds too much like a hoax. A program called Virus, which is contagious and introduces the danger of not being able to insert discs unless you don't know where they've been – it makes you want to check your calendar, not to mention your sources.

But *Popular Computing Weekly* – and its readers – have been vindicated on the issue. During the past week we have been inundated with calls and letters from various sources affected by the program, all over the country. Clearly this problem is real, and widespread. How long before it is deemed "serious"?

But if it gets onto other software – an article in *Computer Guardian* suggested IBM PCs and compatibles – the effects could be devastating and costly. Accounts and sensitive database information could be affected, and users would then be rightly indignant.

This issue places the software piracy debate in sharp relief. Often in the past, the wringing of hands by major, wealthy software companies has been dismissed by sections of the public who understandably have little sympathy for relatively minor dents in the multi-million pound profits they are perceived to be making.

But here is an instance of software piracy, hacking, call it what you will, causing problems directly for innocent users. It is therefore in their interests as much as anybody else that action is taken by bodies such as FAST to intervene in cases such as this in conjunction with hardware manufacturers.

Hurricanes, stock market crashes, fires, viruses – among all the bad news and tragic events of recent weeks the story of dyslexics using technology in their studies has made a welcome change. And it also makes a welcome change, it has to be said, to hear of computers being used in such a way to genuinely improve quality of life – if passing exams comes into that category.

But it is disappointing that the Department of Education and Science has no policy or guidelines for local education authorities. At a time when educational control is being centralised, it would be good news for dyslexics if they could be sure of getting help in using computers for their exams when they ask for it.

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Digitiser cheaper than a mouse?

By T Sacks

MICE may soon be under threat from a novel digitiser which could be cheaper, yet more accurate and reliable, than a standard mouse. The device, called the Cat-Pad, has been developed by an Isle of Man research company, Ewdec Technology, primarily as a rival to the mouse and an alternative to cursor keys.

The Cat-Pad senses the position of a hand-held probe anywhere on its surface. Around the main pad are 30 smaller pads, 18 of which replace commonly used keys including numbers. The functions of the other 12 can be defined by the user with the software supplied with the pad. The mouse buttons are simulated by a pair of micro-switches built into the probe, one of which is activated by lifting the probe from the pad.

The design of the Cat-Pad is ingeniously simple. It consists of a large semi-conducting plastic sheet across which a small voltage is placed via metallic strips along its edges. To locate the horizontal position of the metal-tipped probe, strips on the left and right hand sides of the pad are energised. When the probe is placed anywhere on the pad it detects a voltage proportional to its distance from the two strips. This voltage reading is translated by software to give the precise position of the probe between the strips.

Obviously this will not give the probe's vertical position, so several thousand times every second the

voltage is switched from the left and right strips to similar strips at the top and bottom of the pad. This allows the probe's vertical position to be gauged with equal accuracy.

One potential problem with this technique is that the presence of the inactive pair of strips distorts the electric field of the active pair. However, the software developed for the Cat-Pad compensates for this effect and allows a straight line drawn on the pad to produce a straight line on the screen.

Ewdec's managing director Stephen Wood claims that the Cat-Pad is perfectly linear to within 1mm of its edge.

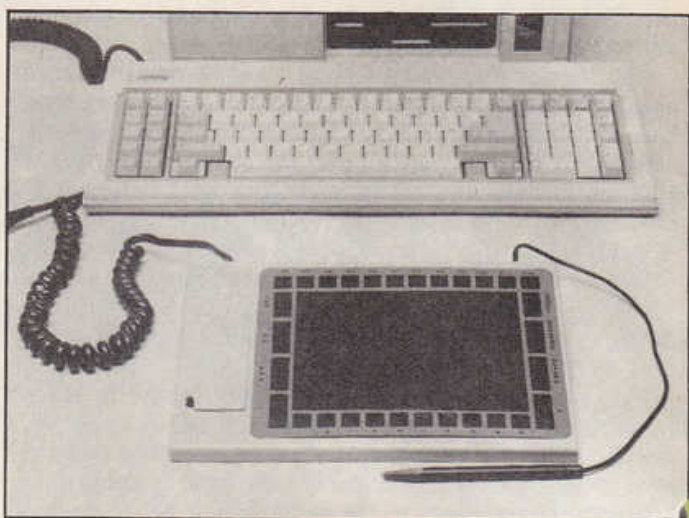
The present Cat-Pad has a resolution of 4,000 points by 4,000 points, whatever the size of the pad. This corresponds to a resolution of 480 by 350 points/inch for an A4 sized pad. The average mouse, by comparison, has a resolution of only 200-300 points/inch. Future versions of the Cat-Pad could have even higher resolutions.

Initially the Cat-Pad will be available for IBM PCs and ATs and close compatibles. "I'm 99 per cent sure it will work with all good PC's", says Wood.

It will not work with Amstrad PCs however, because it is designed to connect into the PC's keyboard lead via a T-junction and the Amstrad PCs use non-standard keyboard connections.

Versions for the Amstrad micros and other machines will probably follow.

The software supplied with the Cat-Pad will allow it to emulate



The Cat Pad

either a Microsoft mouse or cursor keys.

It could therefore be used with programs which do not support mice.

Ewdec is already having discussions with potential manufacturers on both sides of the Atlantic. "We're talking to most of the people in the business that count", says Stephen Wood.

He hopes to sign a licensing deal in early 1988 and expects the Cat-Pad to be available by the middle of the year.

Pricing will depend on the licensee but the device could be made for far less than a mouse and interface.

Wood expects major markets to be in desk-top publishing - an Apple Macintosh version is on the cards - and in education, where the Cat-Pad's robust construction

will be an asset.

Another market will be computer-aided design although the Cat-Pad is unlikely to replace high-quality digitisers because its resolution drops with pad size and its present probe will not work through paper.

Future developments could include higher resolution versions and pressure-sensitive probes. These could open new markets such as signature recognition. In the long term, the Cat-Pad technology could become cheap enough to be incorporated into computer keyboards.

Ewdec Technology, Witches Mill, Arbory Road, Castletown, Isle of Man
Tel: (0624) 824336

Code Masters adds Plus range



The Darling brothers: new ideas

CODE Masters has once again come up with a new idea to keep other games manufacturers on their toes.

This time, brothers David and Richard Darling have taken the record industry's concept of producing different versions of the same song, and applied it to computer games.

Two new titles, *Jet Bike Simulator* and *Super BMX Simulator* are launching the Code Masters Plus range whereby the consumer will receive extra value for money.

Costing £4.99, the package will include two cassettes, poster and stickers. The first cassette will

hold a standard version of the game on the A side, and an expert version on the B side.

In all the player will have to jet round 24 different courses and compete in three championships, which will be held in three different locations - lakes, coasts and docks. These latter two scenarios will be on the second cassette in which either version of the game can be played.

Another novel feature included in the game is the replay system, to give the player the chance to relive his race. In the standard version of the game, the object is to beat the

continued on page 6

Gremlin announces full Christmas schedule

GREMLIN Graphics Software Ltd, has just announced its new games for Christmas.

The eight games to be launched are *Tour De Force*, *Deflektor*, *Cosmic Causeway*, *Compendium*, *Blood Valley*, *Mask II*, *Alternative World Games* and *Gary Lineker's Superstar Soccer*.

Alternative World Games is unusual in that it is a sports spoof. Instead of athletics, swimming and gymnastics, the game presents the challenge of sack racing at Naples, pole climbing in Verona and running up walls in Venice.

The locations may be prestigious but the events certainly are not.



Blood Valley

The game may even end up piling plates or pillow fighting.

Up to eight players can take part in the game and there is a

choice to represent one of eighteen countries. During the *Games*, players are guided through the menu by a parrot who is also a personal supporter.

Alternative World Games is available on Spectrum 48/128K for £7.99, Amstrad CPC and Commodore 64/128K for £9.99 (cassette) and £14.99 (disc) and on the Atari ST for £19.99.

Blood Valley, on the other hand, may sound like an X-certified horror, but is simply a fantasy adventure.

Based on the books by Mark Smith and Jamie Thompson, the adventure places you in the fantasy world Orb, amidst The Archveult and a whole array of weird creatures and people.

To win the game, the player's plans and strategy must outdo that of the opponent's and the fantasy folk's.

Blood Valley is available on Spectrum 48/128K for £7.99, Am-

strad CPC and Commodore 64/128K for £9.99 (cassette) and £14.99 (disc) and on the Atari ST for £19.99.

For those who have already encountered Matt Tracker and Co, *Mask II* will revive old memories of the road.

With the aid of the *Mask* computer a team of three courageous agents must be chosen to accompany players on their mission to conquer Venom.

The game will be in two parts: the selection of the team at Boulder Hill and the main game sequence. The latter part involves controlling only one team member at a time. Constantly under attack by Venom assault machines, a choice must be made when to change or transform the vehicles.

Mask II is available on Spectrum 48/128K £7.99, Amstrad CPC and Commodore 64/128K £9.99 (cassette) and £14.99 (disc), and MSX £9.99.

100 gamers needed for users' panel

ELECTRONIC Arts is in search of one hundred gamers to participate in a users' panel.

Mark Lewis, director of European publishing, stated, "We want to keep in close contact with our users. It is imperative that we know how our software is received and perceived and what general games behaviour-patterns are. In this way, we will continue to produce the high quality software our market demands."

The hundred gamers will receive new Electronic Arts products and be asked to send in their own personal critique of them. In addition, they will be asked to complete

a diary with details of time spent with leisure software, buying patterns and game category preference.

Electronic Arts is inviting those interested in taking part, to send in an application card during November and December. Successful applicants will be notified in January and during the following two months, user meetings will be held throughout the country.

Panel application cards are available from retailers or direct from Electronic Arts, Langley Business Centre, 11-49 Station Road, Langley, Nr Slough, Berks SL3 8YN.

Whoops, sorry!

THE review of the Discovery 1200P modem in *Popular Computing Weekly's* November 6-11 edition, was a worthwhile feature but contained a couple of flaws.

In our enthusiasm for the product, we made mistakes concern-

ing price and telephone number. The modem is actually priced at £99, considerably cheaper than the price we quoted.

In addition, the correct voice telephone number to contact is 021-704 1399.

The quest of role-players



New release by Origin Systems

ULTIMA IV: Quest of the Avatar, a continuation of the role-playing saga, has recently been released by Origin Systems on IBM PC Compatible format.

Set in the mystical land of Britannia, the fantasy series has been successful on various formats, including Atari XL, C64 and Apple II.

Origin's Product Manager, Ray Evitts claimed, "These games are very sophisticated, requiring a highly developed sense of strategy and we know that there is an untapped market of IBM PC compatible users waiting for this type of product."

Ultima IV: Quest of the Avatar is priced at £24.95.

Code Masters adds Plus range

continued from page 4

time set by the computer. In the expert version, however, you must not finish last (there are four jet bikes) or you are out.

The Oliver Twins, who wrote *Jet Bike Simulator*, revealed the idea came from watching jet bike chaos in the film *Police Academy 3*.

They pointed out that the Plus range was 'breaking new ground' since the public had not been offered so much in one package

before. The follow-up to *Grand Prix Simulator*, *Jet Bike Simulator* is also seen from an aerial view.

The Oliver Twins suggested this gives the players more fun and more competition and so will enhance the game's life and addictive qualities.

Super BMX Simulator, on the other hand, is a completely overhauled version of *BMX* which Code

Masters launched when it first started.

Richard Darling, who wrote the game, explained the game was fundamentally different in certain aspects.

"Instead of seven courses, there are now fifteen, the graphics have been greatly improved and there is also a jump facility," he said.

The most significant thing about *Super BMX Simulator*, however, is that four players can race against each other at the same time. Richard was confident this would take computer games into the realm of a social function, including, rather than excluding people.

As with *Jet Bike Simulator*, there are three different scenarios - forest, standard BMX track and sand, although the third one hasn't been finalised yet.

Richard researched his subject by reading books and trying out his own BMX stunts. This is revealed in the subtle touches he has given the game, such as choosing tyres and gear ratio.

Currently at No 1 in the charts, Code Masters Gallup is hoping that the Plus range games will be as popular with the punters. If all goes well, other games will be added to the range, including perhaps a souped-up version of *Grand Prix Simulator*.

New book for PCW users published

DESKTOP Publishing with the Amstrad PCW, is a new book by Michael Milan.

Published by the National Computing Centre (NCC), it encourages PCW owners to diversify, advises them how to arrange text and illustrations on the page and how to produce output such as overhead projector transparencies, club magazines and presentations.

Purist desktop publishing refers to hardware and software packages which embody everything you

need to produce text and illustrations using a computer. Whilst Milan covers the DTP packages available for the Amstrad PCW, he also writes about ways of generating visual aids, including illustrations and enhancing material intended for duplication.

Throughout his book, Milan makes various suggestions on how to embellish your output no matter what methods are available.

Desktop Publishing with the Amstrad PCW is priced at £9.50.

UK farmers milk the micro

BRITISH farmers are to go on-line with MicroLink.

To encourage better use of computers, Andrew Cooley, the project co-ordinator for on-farm systems with the Milk Marketing Board, set up The British Computer User's Group.

Whilst he believes that farmers are already experimenting with computers beyond ordinary management use, he feels that farming suffers from inherent isolation.

"The primary aim of BFCUG is to overcome this isolation so farm computer users can share their ideas and experiences and get the maximum value from these immensely powerful management tools," he says.

To begin with, MicroLink will provide a farming section on its bulletin board, but this will eventually be extended so that BFCUG is a closed user group on the system.

The new project has been approved by leading software suppliers Farmplan and Sum-It, and also by Dr John Craven, head of the Milk Marketing Board's farm management services.

Farmers wishing to join MicroLink and BFCUG will receive a special rate.

A reduced subscription will be offered to existing MicroLink users if they become members of BFCUG before the end of this year.

Argus Press in name change

ARGUS Press Software will, from January next year, be known as Grand Slam Entertainment Ltd.

Stephen Hall, managing director of Argus Press Software, recently bought all of the issued share capital of the company from Argus Press Group. He decided to change the name to reflect the company's diversification in the entertainment industry.

The deal involves all the assets and liabilities of Argus Press Software Ltd. The trading names of Lothlorien, Mind Games and Grand Slam will continue, as will previous brand names, Quicksilver and Bug Byte.



Stephen Hall of Grand Slam Entertainment

Dante on the BBC

INFERNO is a new graphic adventure for the BBC Micro.

Released by Vanadis Software, the two reversible discs include pictures, puzzles, pages of compressed text and mazes.

Set in an atmosphere reminiscent of Dante's mythology, the game brings you into contact with weird and wonderful people, including the mysterious robed monk and the curious imp.

As you make your way through the numerous locations, you will have to cross pits of fire, get past magical pools and confront the ultimate evil if you are to attain eternal power. Choose your companions carefully...

Inferno will cost £14.95 (5.25" disc) and £19.95 (3.5" disc).

It is available from Vanadis Software, 37 Jeune Street, Oxford OX4 1BN.

MASTERTRONIC

TOP 30

Position	Title	Machine Type						
		Spectrum	C64	Amstrad	CI6	Atari	MSX	BBC/ Electron
1.	Kikstart II		✓					
2.	Milk Race	✓	✓	✓		✓	✓	
3.	Rapid Fire	✓	✓					
4.	Motos	✓	✓	✓				
5.	Angleball	✓		✓				
6.	Flash Gordon	✓	✓	✓			✓	
7.	Feud	✓	✓	✓		✓	✓	
8.	Destructo	✓	✓	✓				
9.	Bosconian	✓		✓				
10.	Rigel's Revenge	✓		✓				
11.	Shard of Inovar	✓	✓	✓				
12.	Xevious	✓		✓				
13.	Ocean Conqueror	✓						
14.	On Cue		✓		✓	✓		
15.	Streaker	✓		✓			✓	
16.	Beach Head II	✓	✓	✓				
17.	Invasion	✓	✓	✓		✓	✓	
18.	Curse of Sherwood	✓	✓	✓				
19.	Rescue	✓						
20.	Tunnel Vision		✓					
21.	Eddie Kid	✓	✓				✓	✓
22.	180	✓	✓	✓		✓	✓	
23.	Ball Crazy	✓	✓	✓				
24.	Formula One Simulator	✓	✓	✓	✓		✓	
25.	Anarchy		✓					
26.	Draughts Genius	✓						
27.	Void Runner	✓	✓				✓	
28.	Storm	✓	✓	✓	✓	✓	✓	
29.	Omega One	✓						
30.	Stormbringer	✓		✓			✓	



NEW



NEW



NEW



NEW



NEW

NEW AM NOW OTHER HOME COM

Amiga 500 is here.

With a mind-blowing array of features and capabilities.

And a £499.99* price ticket (inc. VAT), hundreds of pounds less than anyone could have predicted.

"...a miracle of compression..." writes *Popular Computing Weekly** "...it all adds up to a formidable system which is clearly better than anything else at the price."

This elegant little machine takes family computing into new dimensions of creativity, excitement and productivity.

It outruns and outguns office PCs as a business multi-tasker, performing a deskful of different jobs simultaneously, at over 7 million steps per second in realtime.

So other home computers may not be the only machines it consigns to the toy cupboard.

AMAZING SCIENCE FACT.

Amiga is used by Disney, Universal and other Hollywood studios for its dazzling 3D graphics manipulation and animation powers.

A sophisticated high-speed graphics processor called a blitter chip transforms images in realtime.

You can paint the screen with more than 4,000 colours. Create and modify designs and effects as you like, with pin-sharp resolution.

You command an almost limitless workshopful of stunning professional graphics capabilities.

With an optional Genlock interface, you can capture images off videotape. Manipulate and mix



them with graphics. Then re-transfer them to videotape!

This means you can produce spectacular special effects like those created by Amiga computers for Channel 4's *Chart Show* and the American TV science fiction series *Amazing Stories*.

YOU AIN'T HEARD NOTHING YET

Concealed within the sleek Amiga shape, there is also a pro-quality sound synthesiser and four-track stereo sound system.

Driven by another powerful and unique custom chip, it can synthesise musical instruments and

* Includes DeluxePaint from Electronic Arts worth £79 + VAT! (Excludes monitor or TV modulator.)

AMIGA 500. COMPUTERS ARE JUST TOYS.

Your Amiga can also synthesise the human voice.

It can speak back anything you care to write on the keyboard.

So this is one computer that can not only word process with faultless professionalism, and incorporate superlative graphics into the text, it can also read the text back to you aloud.

GAMESMANSHIP AND WORKMANSHIP!

The new Amiga 500, in fact, dumbfounds its competitors in every way.

Graphics, stereo sound, multi windowing, multi screens, 512K to 1Mb RAM (expandable by an incredible 8 further megabytes externally**), 3½" internal disk drive with 880K of mass memory, 4 unique dedicated chips plus the 16/32-bit power and 7.14MHz speed of its central processor, communications and vast expansion potential all add up to a computer of immense professional capability.

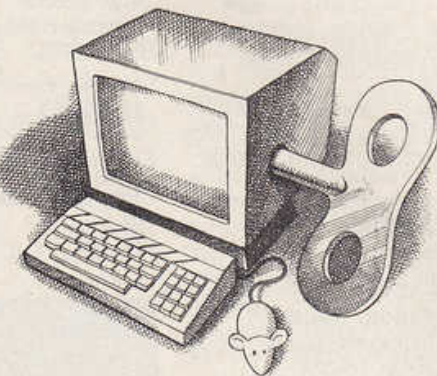
Yet the same technology allows the Amiga 500 to play games so mind bending that only full-scale arcade machines have been able to play them until now.

AND AMIGA MEANS 'FRIEND'!

However many of the Amiga's extraordinary talents you find yourself using, they will all be beautifully simple and natural.

You will be totally at home in the friendly and effortless Amiga

environment, where everything happens by windows, icons, mouse and pulldown menus.



And the Amiga 500 simplifies life in another way too.

There is now no comparable home computer. At any price.

**INCREDIBLY
ONLY £499.99*
INCLUDING VAT**

Try the astonishing new Amiga 500 at your nearest Commodore Amiga dealer.

And discover why *Personal Computer World*†, having tested the graphics performance of Amiga's latest and most powerful rival, concluded "...Amiga still reigns supreme..."



Commodore

sound effects.

An optional digitiser allows you to take onboard real sounds. Mix and modify the two. Translate your compositions from keyboard to sheet music. Play them back through the monitor's speaker or your hi-fi.

*Popular Computing Weekly, 22-28 May 1987. †Personal Computer World, February 1987. **Subject to availability.

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DIARY DATES

NOVEMBER

November 28

Adventure 87

Europa Gallery of Sutton Civic Centre, Sutton, Surrey. 9.30-4.30

Details: National Computer Adventurer's Convention, Seminars and Workshops
Adults £2.50, £2.00 in advance from Mr D Wilkins, 21 Village Row, Mulgrave Road, Sutton SM2 6JZ

Organiser: Vernon Quaintance, 50 Beatrice Avenue, Norbury, London SW16 4QN, evenings 01-764 6556

DECEMBER

December 5

6809 Colour Show

Grand Hall, Connaught Rooms, Gt Queen Street, London

Details: Show for Dragon and Tandy owners

Tickets £2 adults, £1 children

Organiser: John Penn, (04203) 5970

December 9-10

IBM's Strategic and Tactical Directions: 9370, PS/2, SAA Seminar

Sheraton Park Tower, 101 Knightsbridge

Details: PS/2 and the communications capability needed

for SAA, examines the 9370 product, contrasting with mini-computers

Organiser: EMAP Conferences, 12 Bedford Row, London WC1R 4DU, 01-404 4844. Contact Tessa Dwan or Sarah Gladstone

December 12

Christmas ZX Microfair

New Horticultural Hall, London SW1

Details: Latest innovations for Sinclair users

Advanced tickets: £1.50 adults, £1 children

Tickets on the door: £2 adults, £1.50 children

Organiser: Mike Johnson, 01-801 9172

JANUARY

January 28-30 1988

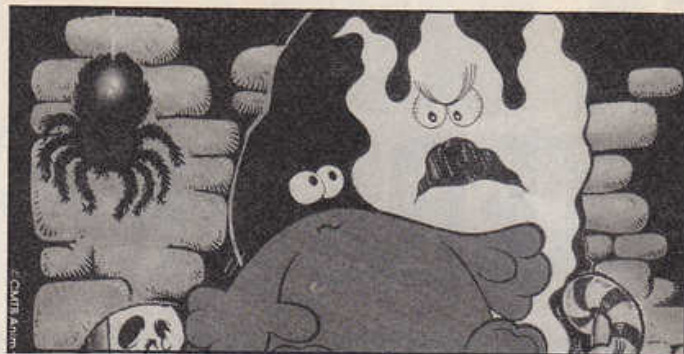
The Amstrad Computer Show

The Great Hall, Alexandra Park, London

Details: Displays and demonstrations of all the latest hardware, software and peripherals for Acorn computers
Adults £3, Under 16's £2 - £1 off for advance tickets

Organiser: Database Exhibitions, 061-456 8383

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.



SOFTWARE HOTLINES

How time flies when you are having fun. Here we are in the second week without the effervescent Duncan Evans, and the office is beginning to get very quiet without him, though I hasten to add, not too quiet!

Interesting phone calls this week started with Pat Bitton from **Mirrorsoft** who informs me that their programmers have managed to cream *Defender of the Crown* onto cassette for all Commodore 64 owners. Admittedly it is still a multiloop, but this is still a staggering achievement.

As you will read elsewhere in news, our Exec Ed spent Saturday in Birmingham with Gary Lineker and the team from **Gremlin**. A good time seemed to be had by all, and for someone who must spend most of his life being pestered by the public, Gary was apparently refreshingly helpful and intelligent - the game looks pretty excellent too!

The screenshot I have chosen for this week is from **Gremlin's Alternative World Games**. With such events as Boot throwing, piling plates and pillow fighting, this game takes itself considerably less seriously than some other sport games I could mention. It's a real pity the screenshot is in black

and white, but there we go.

Game of the week, in fact year, must be *Star Wars* on the Atari ST. It may be four years old (wow, was it that long ago), but it is still one of the most playable arcade games of all time (and a worth Game of the Week), and the conversion is excellent. Well done **Domark**, this even makes up for Friday 13th.

Another new release from **Gremlin** (pew, this is getting rather **Gremlin** orientated) is *Cosmic Causeway*. Based around the *Bounder/Trailblazer* genre of games, it is due to arrive on my desk any minute and I should, therefore, be able to review it for next week's issue (I must say, that going on what I've seen, it looks truly fabby).

All you Berk fans out there (no, not Duncan Evans fans!) will be ecstatic to hear that **Piranha** have released another game in the *Trap Door* series, this time called *Through the Trap Door* (see above). The game, together with the series, can be seen on a children's program called No 73 on December 5th, so get up early, have a look and see what you think. I haven't loaded it yet, so I'll reserve judgement.

And now, the end is near, and so I face the final Hotline... Enough of Frank, as the tears roll down my cheeks, I bid you farewell. Next week Duncan will return, unless you write in hundreds of letters demanding he is replaced...

Daniel 'Blue Eyes' McGrath

CHARTS

Top Twenty

1	(4)	Game Set Match	Ocean
2	(1)	Grand Prix Simulator	Code Masters
3	(2)	Joe Blade	Players
4	(3)	Soccer Boss	Alternative
5	(9)	World Class Leaderboard	Access-US Gold
6	(5)	Renegade	Imagine
7	(7)	California Games	Epyx
8	(24)	Solid Gold	US Gold
9	(6)	Pro Ski Simulator	Code Masters
10	(13)	Back to the Future	Firebird
11	(10)	BMX Simulator	Code Masters
12	(11)	Dizzy	Code Masters
13	(16)	Live Ammo	Ocean
14	(NE)	Star Wars	Domark
15	(9)	Indiana Jones	US Gold
16	(NE)	Football Frenzy	Alternative
17	(17)	ATV Simulator	Code Masters
18	(12)	Fruit Machine Simulator	Code Masters
19	(NE)	Thundercats	Elite
20	(NE)	10 Pack	Gremlin Graphics

All figures compiled by Gallup/Computer Trade Weekly



Testing time for dyslexics

Two weeks ago, we reported on the dyslexic schoolboy, Richard Challis, who was waiting to hear if he could use a word processor for his 'O' level exams.

Since then, the examination board has ruled that Richard can use a computer, a welcome relief for the boy who was otherwise almost certain to fail his exams.

But whilst Richard is now happy, what exactly does this decision mean for the thousands of other dyslexic children?

A spokesperson for the Department of Education and Science, pointed out that the ruling was a matter for individual examining bodies, not a national one, so that dyslexic children would not automatically be issued with computers in exams.

Whilst this is true, it does seem that there is already some sort of common policy agreed by a joint council of examining boards.

Terry Davies, from the Associated Examining Board (AEB), commented, "We want to be consistent, we want to be fair."

That is all very well, but what is actually being done to help dyslexics? One thing is the recent formation of an advisory body representing the various handicapped groups. Scheduled to meet in December, they will raise the question of word processors and dyslexic candidates.

Although Davies could not predict what the outcome of this meeting would be, he did say that the joint council are already allowing any candidate to produce course work using a word processor.

Morris, spokesperson for the London Examining Board, reiterated most of what Terry Davies had said. He told us, "The whole matter is still under consideration, and there has been no final decision as yet."

He said there was a substantial number of dyslexic children applying for the present concessions.

Following our report two weeks ago on the dyslexic schoolboy awaiting an official response as to whether he could use a word processor for his exams, Nikki Carvey investigates the issues surrounding this problem.



Sandra Mullaney of the British Dyslexia Association

This would seem to indicate that dyslexic children are in great need of assistance during exams, and therefore should be permitted access to the most modern technologies available.

Richard Challis' appeal was certainly treated as a test case for dyslexics, but he was not the first to have used a word processor in exams. We heard from a young man, Richard Paul Clucas, who used a word processor in his 'A' levels last year.

Clucas explained that using a word processor was just a natural progression for dyslexic children who are at present allowed to use a typewriter or receive extra time.

According to Clucas, applying for permission to use a word processor was easy enough. "You just

need something to confirm you are dyslexic; say a certificate from a child psychologist, which you give to the examining board. You can then ask for the concessions to which you are entitled, or make your own suggestions. I myself asked if I could use a word processor."

Clucas provided his own computer, since to use an unfamiliar piece of equipment would have hindered rather than helped him. To assess the effect it would have on other children, he used it in his mock exams and everything went according to plan. However, he was not permitted to use a spelling checker, and extra time was allocated for printing out, as this would have disturbed the other candidates.

Despite his success, Clucas said that dyslexic children are often unaware of their rights regarding exam concessions. He pointed out that there is considerable variance in dyslexia: "If you have a high IQ, and mine is 152, dyslexia is more of a handicap, as teachers often do not realise just how much it is affecting you, they just think you are lazy."

Sandra Mullaney, spokesperson for the Dyslexia Association, is only too aware of the problems dyslexic children face in school. She believes the problem needs to be tackled by the teachers when the child is young, but often the complexity of the situation is overlooked.

She added that the matter has been exacerbated in the past by educationalists who have disagreed over whether a child is dyslexic or not.

Consequently, it is only in recent years that dyslexic children have begun to receive concessions from examining bodies.

Both Mullaney and Clucas would like to see word processors in the exam room, not exclusively for dyslexic pupils but for all candidates. Clucas remarked: "It would make marking so much easier for teachers. It must be difficult for them to read so many different types of handwriting."

In Britain, there is currently 320,000 children with severe dyslexia and a further 800 who suffer from it to some degree. During examination periods, they not only have to cope with the handicap dyslexia imposed on them, but also with the additional stress of knowing they are at a significant disadvantage.

Richard Paul Clucas summed up how many dyslexic children must feel, saying: "If I had not been allowed to use a word processor, I would have left school. There wouldn't have been any point in staying. I was psychologically ill because of it all." □

Ask and you will receive

I was interested to read the news item in the issue dated November 13-19 entitled "PC help for dyslexics", as I too am dyslexic.

I have now left school after taking my A-level exams in June 1986 and am presently doing technical consultancy work for Argonaut Software.

In my written exams in that year I was given permission to use my Nimbus PC2 with Microsoft Word.

I had no problem in getting the various exam boards to agree to this unusual measure as long as I did not use a spelling checker.

I am therefore in a position to answer the questions posed by the authorities in your article.

As dyslexic pupils are already entitled to 10 minutes' extra time for each hour of an exam paper or the use of a typewriter, it is an obvious natural progression to allow the use of a wordprocessor.

As I was entitled to this extra time it was given in order to print out the work.

I used this set up in my mock exams, so I was able to study the effect on the other pupils in the exam room.

We found that the use of a wordprocessor in the same room as everybody else during an exam had no adverse effects on the other pupils.

Obviously if we had used the printer in the set time I would have to have been individually supervised in a separate room, which is not very practical.

I cannot understand why Richard had any problems getting permission to use a wordprocessor in his exams as I had no problem in doing so.

I am pleased to hear that he has now been given permission to do this, but I do not see what all the fuss has been about, as I had already set the precedent for him and the 320,000 others.

My advice to anybody who is unfortunate enough to suffer from dyslexia is that they will never give you anything if you do not ask, but if you ask you will get what you are entitled to, especially with support from your teachers.

Never give up hope in yourself, as I feel that I have proved that you can still be good at things even with such a severe handicap.

Richard Paul Lucas
Dartford, Kent

Thank you for your letter. This week our News Analysis is on the problem of dyslexia and studies. See page 11.

Classy company

Just a quickie plea, last year you published a massively useful index.

I keep all my back issues and when I need to refer to a review the index is without competition in usefulness.

You provide info. The information only becomes really useful when it is accessible. Your index fulfilled this admirably.

You are in classy company; only the *Which?* magazine produces an index as concise and clear.

So whenever at the end of the year you produce it - PRODUCE IT!!! One issue which will make all the others worth having.

Phil Morley
Peterborough, Cambs



He would, wouldn't he?

From chatting on Compunet's Party Line, it seems that many otherwise dedicated computer users are unaware that the BBC's Ceefax service has a computing news section. Now this seems a shame, especially as I contribute to it!

The computing pages start at 701 (BBC 2). My bit is "Call Compunet", a digest of some of the current activities to be found on Compunet, which include news, views, reviews, special interest groups, advertising, hints, clubs and software (art, music, games, utilities).

"Call Compunet" can be a little, er, irregular, but it averages an appearance every four weeks, and starts up for a week at a time.

With the imminent availability of Compunet to Amiga and Atari ST users, there will be a lot more

activity to report, including trial access via Kermit or X-modem.

I'd recommend Ceefax page 701. Well, I would, wouldn't I?

James Taylor
Sutton Coldfield, W Midlands

Puzzling news

"Let us know what you think of the new-look *Popular Computing Weekly*" you say. Well now.

Comparison with previous publications shows

- 1) A restyled but less attractive cover;
- 2) Main items rearranged but no change in overall presentation or proportions except for somewhat more emphasis on games;
- 3) Nothing in it is NEW.

Then you ask what we would like to see covered.

A lot of us out here regard the zapping of aliens as a rather trivial pursuit and we want to make use of our machines in other directions.

So as well as catering for the younger generation, GIVE US SOMETHING TO DO, such as:

- 1) Restore the puzzle as promised. This is essential.
- 2) Extend the Programming section. Understandably this is not easy in view of the multiplicity of machines and systems now available.

One other suggestion you might like to consider. The computer scene is rapidly becoming overwhelmed by its own jargon. Many newcomers and, indeed, others who have been interested but not intensively involved for many years, are confused and bewildered by it.

How about publishing a Glossary of terms and abbreviations with comprehensive explanations of each? Remember we are not all computer geniuses, Mr Garroch.

Hoping for even more innovation from the new management.

George Godman
Tewkesbury, Glos.

Now hear this. THE PUZZLE WILL BE BACK NEXT WEEK! In its original form, as devised by the wonderful Mr Gordon Lee and, you guessed it, by overwhelming demand!

As for your other points, the idea of a glossary is very interesting and, given the time, is something that might well appear. Extending the Programming section is unlikely for the time being, at least.

Thank you for your letter, and we welcome further suggestions from yourself and anyone else. Richard J Turner, for example.

Oo-er, sounds like an advert

We are writing to say that we hope *Popular Computing Weekly* will resume an aspect of its publication which we are sure has been of great interest to users of less popular machines. In the past you have run special features on machines, including those that are either out of production, or have never sold as well as they should.

I feel you could feature machines such as the Memotech series, the Computers Lynx, Jupiter Ace, Atari 8 bits, Acorn Electron, and the entire MSX series. More upmarket, the Apricot, and Sirius computers are certainly less well covered by the press than their sales should merit. I would appeal to owners of those machines to make their presence as a magazine buying force known, writing letters, articles and supporting the appropriate amateur/professional user groups, as well as the programs and articles sections of *Popular*.

At the expense of sounding like an advert, we come to the machine that concerns us most - the Sinclair QL. (As a support group for the Sinclair QL, and compatibles, we attempt to encourage support for it in every way possible. We publish a monthly magazine for members of our club, organise promotions where we can, and offer special deals.)

One of our new planned developments is the organisation of a QL and general computer bulletin board. We would like to hear from users of the QL who would be interested in accessing it. There would be a small registration fee for users who wished to access special features, although it would not be very much. Perhaps £2.50 a year if we get a reasonable response. In return, we would be able to organise a number of special features such as public domain software, programming courses, cheap advertising and a helpline, as well as the usual up-to-date computer news and comment, and the messaging facilities.

If users would be interested, or have ideas for the board, then would they please contact us at our normal address. We may be able to organise special communications package deals for QL owners without modems. The more possible registrations we know about, the easier it will be to work out a fee, and the features we can offer. (We are sending details to members, but would still like to hear from them.)

Richard J Turner
Shildon

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Star treatment

Were you one of those people who sat entranced in a cinema ten years ago as that gigantic spaceship thundered overhead and brought about a new age in cinematic entertainment? Were you also one of those people who rushed into the arcades when Atari produced a vector graphics game based on that same film.

If you experienced *Star Wars* in either of the above mentioned incarnations then have Domark got a treat for you. *Star Wars* has now been converted to the ST, a machine eminently suited to wire frame graphics, as *Star-glider* showed, and as a bonus sampled speech from the movie has been thrown in.

The game is basically in three parts. To start with you must fight off enemy Tie fighters, and, more importantly, their twirling star shaped missiles. You have a force shield which can take eight hits, the ninth one killing you, so it's essential not to suffer too many hits in the early stage.

The enemy fighters duck and weave around, you can follow them in a limited way, but this is no *Elite*-style space battle. Using either the joystick or mouse, fending the Empire off can be frenetic when there's three of them and they're all firing at once.

Should you survive a set time the Tie fighters, if there's any left, break off and flee for the Death Star.

Part two commences with a sample of Luke Skywalker gasping, "Look at the size of that thing" or "Red five I'm going in." He could just be talking to Princess Leia but I presume he's



floor which fires continuously at you, and trying to shoot the tops

kisses from Princess Leia, your only reward is Han Solo's congratulatory, "Well done kid, that was a shot in a million." Thanks matey.

And then you go round and do the whole thing again, only this time it's harder.

There are actually three skills levels to select from at the start which control, amongst other things, whether there are any catwalks in the trench the first time you fly down it.

On later levels you've got to cope with Darth Vader shooting you in the backside as well.

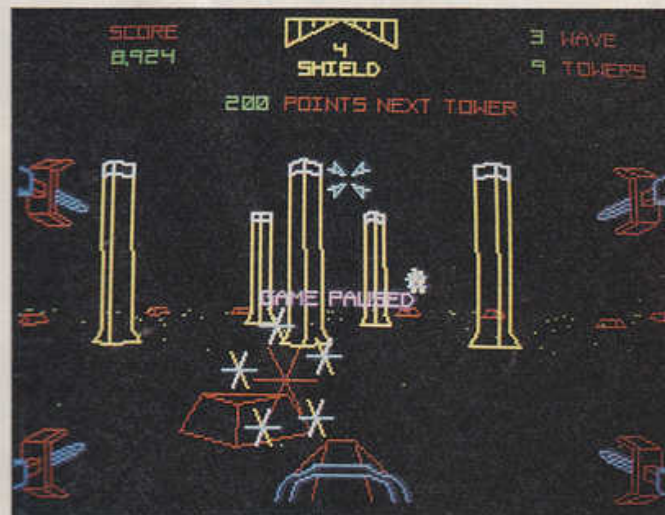
Programmed in Germany and licensed by Domark, this ST version is very, very close to being a replica of the original arcade game.

The only disappointing aspect is the sound. The explosions and theme tune are weak, and only partly redeemed by the sampled speech.

Star Wars may not break any ground technically, but it is a faithful reproduction of one of the very best arcade games of all time.

Although it could be accused of slight repetitiveness, overall it, stands alone as probably the most complete arcade to home machine conversion ever and for ten minutes of sheer heart stopping exhilaration and excitement, there is little that can stand in competition.

Mark Ulyatt



referring to the Death Star which expands to fill the screen.

You now find yourself hurtling across the Death Star's surface destroying red squares on the

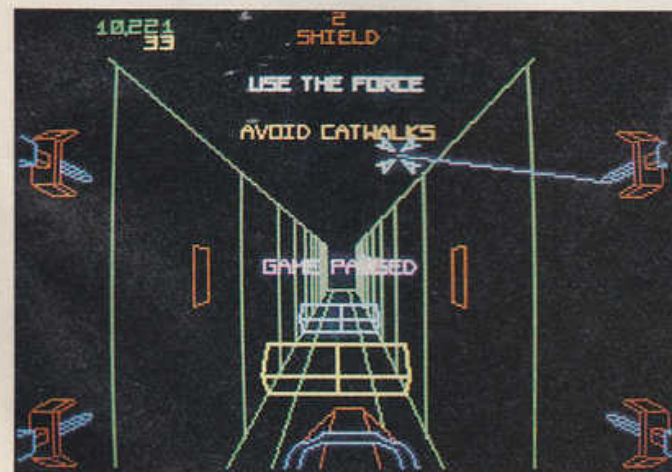
off yellow towers which loom up alarmingly.

If you can destroy nine towers there's a big 50,000 point bonus to be had. Not being able to bulls-eye womp rats at the best of times I couldn't manage it.

After some more of this part three unfolds with your ship arcing down into the trench, and one of the most famous sequences in the film.

On the initial level you only have to worry about defence emplacements shooting you, there's catwalks later on which are hell to try and dodge using a mouse.

With Obi-Wan Kenobi telling you to trust in the force the exhaust port target soon flashes towards you. A well placed shot makes you into the hero of the alliance, but instead of hugs and



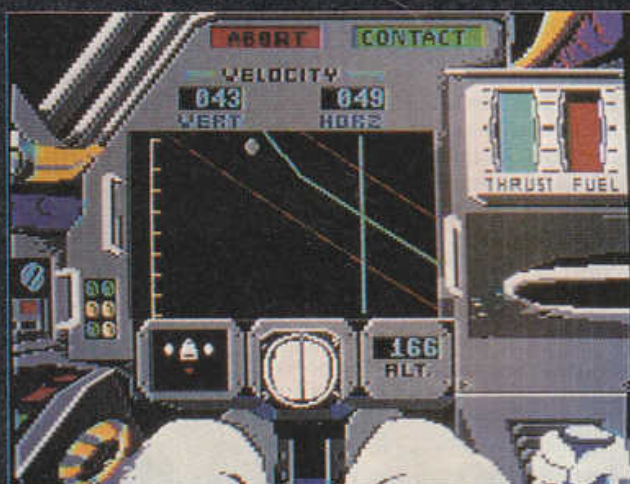
Program *Star Wars Micro*
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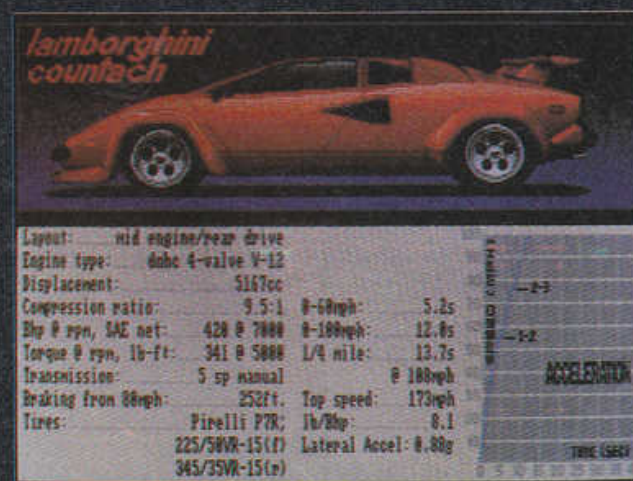
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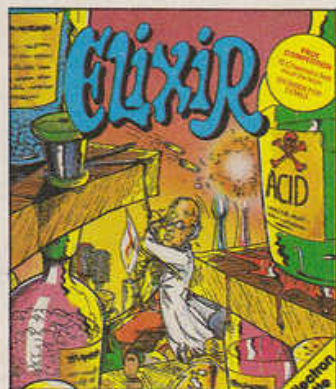
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Acorn Electron

Program *Elixir* Type Adventure Price £9.95 (cassette), £11.95 and £14.95 (disc) Supplier Superior Software, Regent House, Skinner Lane, Leeds LS7 1AX.



Amstrad

Program *Kung-Fu Master* Type Fight Price £2.99 Supplier Mastertronic, 8-10 Paul Street, London EC2.

Program *Sabre Wulf* Type Arcade Price £1.99 Supplier Mastertronic, 8-10 Paul Street, London EC2.

Program *KnightLore* Type Adventure Price £1.99 Supplier Mastertronic, 8-10 Paul Street, London EC2.



There are few Spectrum games producers left from when the machine was launched those many years ago. One of those still going is Cases Computer Simulations (CCS) with its line of strategy and wargames. *Blitzkrieg*, the latest effort from them, lets you take command of the German armies which invaded France and those other fiddly bits in May 1940.

It makes something of a change to play the Germans, and a refreshing one at that. Your command consists of the 4th, 6th, 12th and 16th German armies plus Panzergruppe Kleist.

The command system is slightly unusual in that you have three cursors to control the advance into French territory. The X cursor, when set, will mark the centre of the line of advance for that particular army. The R and L cursors are used to set either flank of the front line. The army commander automatically assigns individual units to the front line, with any spare being held in reserve.

Once the plan of operation has been established initial orders to your commander must be issued. These can be attack, defend or use discretion. Obviously if an

attack is starting to incur heavy losses the commander won't want his boys to go on being massacred, so insisting on attack is necessary to force the assault through no matter what the cost.

Blitzkrieg relies on that old favourite, movement points to determine who can move how far in a turn. Foot sloggers get six while mechanised and armoured receive eight. The type of terrain costs 1-4 movement points and also affects combat significantly. Forces attacking across a major river, for example, lose 40% of their strength.

The map is a scrolling affair with large and simple, but effective, graphics. Other features of the game include command radius, hidden movement, morale and reorganisation. There are four victory conditions, all to do with army strengths, breakthroughs and lack of progress.

Ken Wright's one player simulation of the German's opening assaults in World War 2 may not appeal to some, but for the dedicated computer wargamer *Blitzkrieg* represents an interesting and worthwhile addition to the genre.

Mark Ulyatt

Program *Blitzkrieg* Micro Spectrum Price £9.95 Supplier CCS, 14 Langton Way, London SE3 7TL.

Deja Vu - a nightmare comes true. *Deja Vu* is an adventure game, of sorts. As the game starts, you find yourself on the floor of a toilet in the back of a seedy bar (it takes all sorts).

You stagger to your feet, images tumbling through your mind like dolphins through hoops at a marina. There's a body, and you're suspected of doing the dirty deed. With the cops and the mob after you, some nifty footwork is required to avoid joining it. Oh, there's another problem, you've lost your memory, so you don't know who you are.

Deja Vu doesn't require you to type in any complex commands, instead you point to a command in one of the windows and then click on the element in picture that you wish to apply the command to. Double clicking on an item itself normally produces an intelligent response - doors open and open drawers are examined.

If it sounds quite good so far, let me elaborate. On the Mac, *Deja Vu* was a slick and impressive product. On the ST it's

rather uninspiring. The graphics are in colour, but unfortunately that is over-shadowed by their poor quality.

The trouble with having all these windows is that it takes one click to activate them and when you doing a lot of window shopping it feels fairly clumsy.

I hope the two subsequent

adventures in the series, *Uninvited* and *Shadowgate*, are better than this product.

Mark Ulyatt

Program *Deja Vu* Micro Atari ST Price £24.95 Supplier Mirrorsoft, Athene House, 66-73 Shoe Lane, London EC4P 4AB.



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English Software has produced a disappointment, it's called *QBall*. As with its other new release, *Leviathan*, *QBall* is dangled with a mutilated joystick plug. Unlike *Leviathan*, the dongle goes in joystick port 2.

The game then, consists of potting six red balls and a yellow ball.

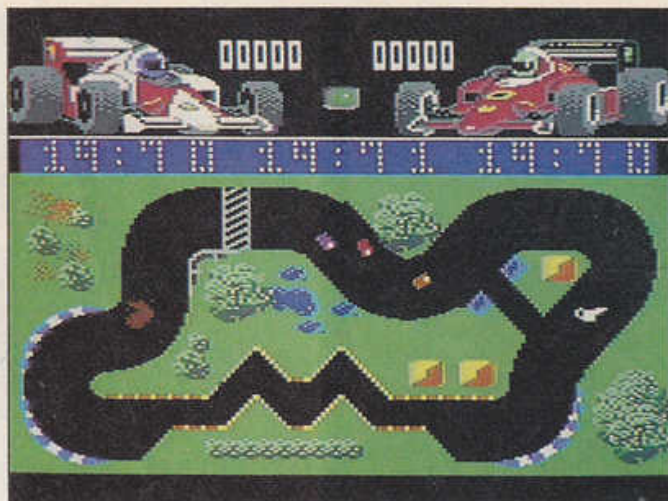
Once a red has been sunk, you can go for a yellow, which is replaced on the screen, and then another red. And so on until the last red has gone and the yellow is potted for the final time.

Okay, so far it sounds like a cross between snooker and pool, but what turns *QBall* into a mind numbing experience is the fact that the game takes place in a three dimensional environment, you are playing inside a cube, with the pockets in the corners.

The cursor keys can be used to revolve the cube left-right and up-down so you can see better what is going on.

The mouse controls a flashing target spot, which isn't easy to line up where you want because it insists on jumping from one spot to another.

The other controls are on the



keyboard and set the power and friction elements. There is also a planer mode which is a 2D representation of the 3D special playing area.

This helps in, if you persevere, obtaining topspin and backspin on the shots.

To keep you on your toes there's a sixty second timer on every shot. Take too long and you're penalised.

As a two player game *QBall*

becomes an experience in frustration that you can share with a friend, but for the solitary gamer it has to be said that this is not that exciting.

Mark Ulyatt

Program *QBall* Micro Amiga
Price £19.95 Supplier English Software, 1 North Parade, Manchester M3 2NH.



Codemasters has once again produced an exciting simulator to follow *B.M.X.*, *Pro. Snooker* etc. In *Grand Prix Simulator* you drive a formula one car around fourteen brilliantly planned racing tracks.

You can challenge a friend or match your skills against the computer using joystick or keyboard. The level of difficulty increases with each new track, but the goal remains the same - win the race!

This is quite difficult if you are playing against the computer and it might take you a long time (if ever) to reach the last screen.

If you play with a friend, however, only the loser doesn't qualify so you can afford to come in second and still get to try out the next screen.

The controls are simple, especially since you can redefine the keys, but actually controlling the car is a different matter. At top speed it's easy to completely lose control and driving slowly hasn't won a grand prix yet!

Once you've reached a compromise between speed and safety to negotiate the difficult twists and turns of the track, you will inevitably hit one of the almost unavoidable oil patches where fast

spins will catapult your car an extra few metres up the track. Going under bridges is the most frustrating hazard, because you can't see yourself on screen, and nine times out of ten you end up crashing, which is pretty annoying until you work out the correct way to approach the bridge.

If this sounds a bit daunting don't be dismayed, there is also the occasional bonus which appears from nowhere as you race round the track.

The graphics are neat and well drawn and the loading screen is interesting.

Although the introductory tune is pretty mediocre, the speech synthesis at the beginning and end of each race is brilliant.

Overall I think the game was well thought out with good sound effects.

The gameplay is fantastic and will keep you at the keyboard for hours.

For two pounds you'll have a good bargain.

Scott Arnold

Program *Grand Prix Simulator* Micro Commodore 64/128
Price £1.99 Supplier Code Masters, Beaumont Business Centre, Banbury, Oxon.

Software guide continued

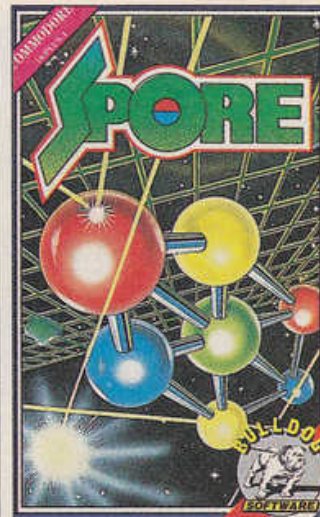
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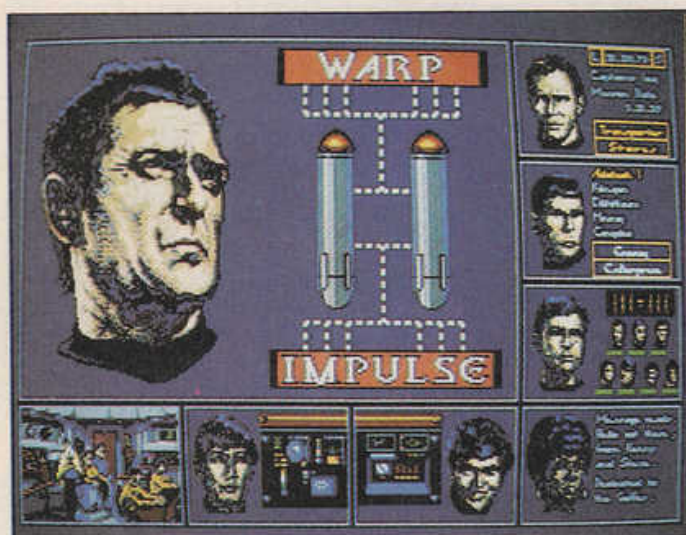
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Commodore C16

Program *Spore Type Arcade*
Price \$1.99 Supplier Mastertronic, 8-10 Paul Street, London EC2.





Space, the final frontier... At long, long last, the game that was going to be last year's big seller has finally been released. Yes, you can now buy the game that cost a number of people their jobs, cost Firebird a huge sum on money, and made Steve Cain's reputation because of the graphics.

This game, this licensing deal, this experience, this *Star Trek*, is now officially in the shops.

I say officially because there are more naughty copies of *Star Trek* floating around than there are unsold BP shares. So what's changed since we previewed the game this time last year. Well, for one thing all the bugs have been taken out and the loading tune has been redone. Er, that's about it.

For those not in know, the plot goes thus: twenty starships entering a zone centred on the star Dakiak have thrown a wobbly and turned renegade, declaring allegiance to the Klingons. The Enterprise has been dispatched to sort out the mess as usual. As Starship Command are worried

about the mutiny spreading they have enclosed the afflicted area within a Klein Sphere, with you on the inside, of course, which prevents matter from passing through it. You have five years' game time to do the business otherwise the Sphere will be made permanent and you'll be trapped within for ever!

What is actually going on covers a couple of pages of the instruction booklet, so to summarise: the Klingons are to blame (aren't they always?) because they've discovered that a particular dilithium isotope acts as a telepathic amplifier. When connected to the right equipment it enables them to brainwash anyone within range, including Starship captains and crew.

You've got to put a stop to it somehow, and this is where the plethora of collectable objects in the game come into play. There are, in fact, a number of different ways to win the game, including capturing the Klingon Admiral, delivering an antidote to rebel Federation Commanders, destroying Dekian II where the

dilithium delta 6 isotope is mined, destroying the Klingon psimitter, constructing your own psimitter, blackmailing the Klingon Admiral over a cowardly past, interrupting Klingon communications and, finally, releasing something known as the peace virus.

Achieving any of these goals involves flying around, collecting the correct object that will help you, fighting off Klingons, trying not to upset the Romulans who are initially neutral, avoiding dangerous planet types and beaming down to life supporting planets.

There is a main display showing the bridge of the Enterprise and all the characters from the TV series. Clicking on a character brings up their own screen and the attendant functions. Alternatively you can click on a snapshot of a function if it appears around the edge of the main display.

When fighting off Klingons and rebels you simply have to affix a sight to the rotating wireframe image of the opposing ship and then press the fire icon continuously.

Hardly challenging, exciting, or anything for that matter. The enemy ship doesn't even explode, it just spins away.

The other disappointment is when you beam down to a planet. Not only don't you get to see everyone in the transporter room slowly fading away (but you get the sound effect), but when you reach the surface on a life supporting planet you find yourself in a corridor.

The wireframe representation of an obstacle, ahead must be countered in the appropriate way before you can progress. On to the next obstacle, that is.

At the end of the corridor, if you get that far, should be an item or person of interest or



Spock is useful for identifying who controls a star system, how much damage the Enterprise has taken, and status of attacking ships. The other characters all perform the expected functions, with Kirk being used to lead the crew to the transporter room.

Steve Cain's static graphics were incredible a year ago, and they still are. The sampled speech which surfaces every so often is well used, of an acceptable quality and certainly complements the situations it's used in. This was the first time 'sampled anything' had been used in an ST game, but since last year sampled sound has become virtually obligatory for big production releases so the impact has been lessened to some degree.

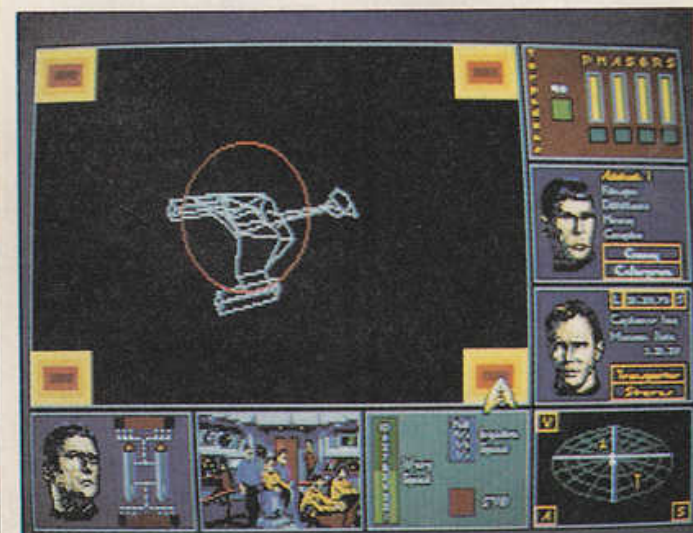
Where *Star Trek* does fall down is in the action sequences.

importance. It's up to you to find out where everything is, though thankfully Firebird has listed the function of all the objects in the instruction booklet.

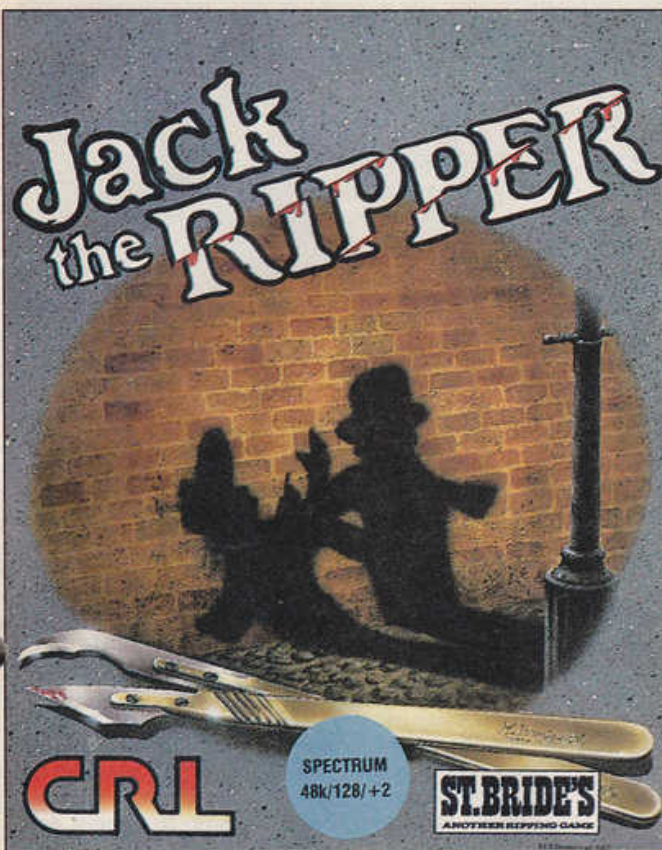
A year ago *Star Trek* would have been a monstrous success, selling just on the fabulous graphics and speech.

It might still do as well, but with such a wealth of strategic options it is something of a let down to discover that the gameplay is so very mediocre.

Mark Ulyatt



Program *Star Trek Micro*
Atari ST Price £19.95 Supplier
Firebird, 64-76 New Oxford
Street, London WC1A 1PS.



units of what can only be described as an average game.

CRL has also resorted to that age-old selling ploy of trying to sell a game based on the graphics of another machine. The Spectrum graphics are nowhere near as good as the detail on the Commodore 64 version, so I find it rather odd that CRL should try and sell this way.

The game itself was written using Gilsoft's Professional Adventure Writing System by those rather weird Ladies Of St Brides.

There was indeed some potential in having a *Jack The Ripper* game, unfortunately CRL spoilt the potential by the 'hype' surrounding the release, so in the end it was not likely to appeal to many gamers. Whatever CRL may say about this game being an adult one, I can't honestly see any 'adults' bothering to play the adventure.

I was looking forward to playing *Jack The Ripper*, as I thought it would be something special. All it is, is a below average adventure appealing to younger players. It's about time CRL brushed up their act and started producing some decent mystery adventures.

Program Jack The Ripper Micro
Sinclair Spectrum Price
£8.95 Supplier CRL Group plc,
King's Yard, Carpenters Road,
London E15.

According to CRL, "The events in this game have been dramatised and in places it has been necessary to take some liberties with the facts."

One could question how much CRL has dramatised the whole story of *Jack The Ripper*. The

much talked about graphics are indeed quite nasty, maybe too nasty for a computer game. But, there is indeed method behind CRL's madness, as last week's cover story in *Popular* said, CRL seems to be after a bit of publicity in order to shift a few extra

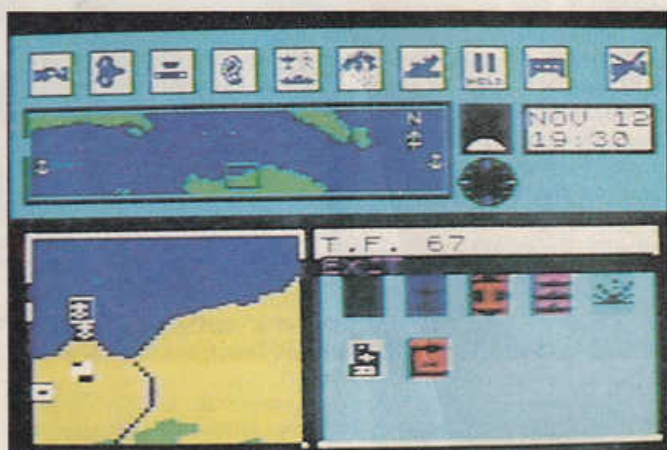
Here with go with another World War 2 strategy game. *Guadalcanal* is a battle between American and Japanese forces in the latter months of 1942 for the island.

The game itself is icon-driven. There is one icon which is quite apt for this game 'Scrap Game', and on more than one occasion I used it, together with switching off the Commodore 64. There isn't really much to recommend about *Guadalcanal*, it's quite plain, not very inspiring and a real let down.

Activision brings out two sorts of games; the really good ones which are fun to play, and the plain mediocre.

Guadalcanal falls into the latter unfortunately.

If you're looking for a game that requires you to spend hours trying to understand the instructions then *Guadalcanal* might be worthwhile looking at, as I think that maybe after a few hours it



might get a little interesting.

I don't find the prospect of toggling a joystick for a few hours around a bunch of icons very interesting.

If Activision wishes to bring out more strategy games, it might be better if they concentrated less on icons and more on

detail and gameplay.

Leslie Bunder

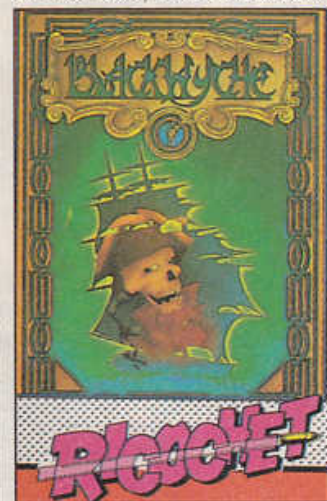
Program Guadalcanal Micro
Commodore 64/128 Price \$9.99
(cassette), \$14.99 (disc) Supplier
Activision, Pond Street, London
NW1.

Software guide continued

Commodore C64

Program Blackwyche Type
Adventure Price £1.99 Supplier Mastertronic, 8-10 Paul Street, London EC2.

Program Star Wars Type
Arcade Price £12.95 Supplier Domark, 22
Hartfield Road, London SW19 3TA.



Spectrum

Program Rentakill Rita Type
Arcade Price £1.99 Supplier Mastertronic, 8-10 Paul Street, London EC2.

Program Kung-Fu Master Type
Fight Price £2.99 Supplier Mastertronic, 8-10 Paul Street, London EC2.

Program Cybex Type Adventure
Price £2.99 Supplier Software
Publishing Associates, 197-199
City Road, London EC1V 1JN.

Program Murphy Type Arcade
Price £2.99 Supplier Software
Publishing Associates, 197-199
City Road, London EC1V 1JN.

Program Erik: Phantom of the Opera Type Arcade Price £2.99
Supplier Crysis Software, 197-199
City Road, London EC1V 1JN.



Shoot-em insane



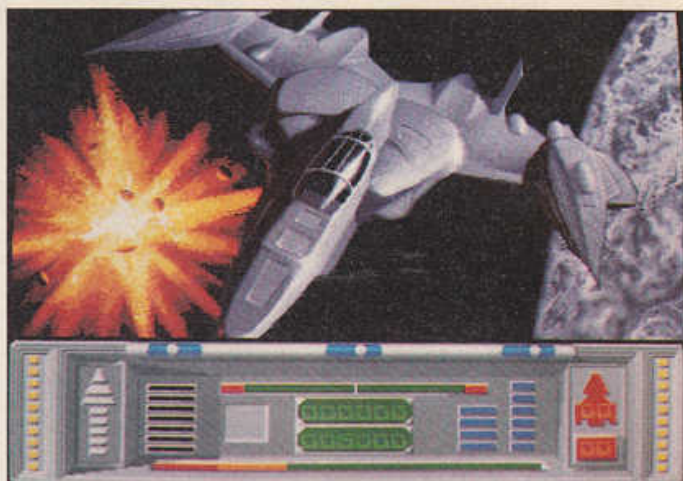
Slowly but surely, Cornwall-based Microdeal is becoming a force to be reckoned with in the Amiga games market. No longer is it thought of as the only company that continues to supply products for dead machines such as the Dragon and QL.

Now Microdeal is expert in 68000 games, with a string of hits on both the ST and the Amiga, and plenty more products in the pipeline. With *Karate Kid II* being a personal favourite of mine (particularly the music for the Amiga), I was looking forward to the latest game, which

turned out to be a shoot-'em up called *Insanity Fight*.

One of the oddest things about the Amiga is that of the recent crop of games, most seem to have been programmed by the people from the oddest parts of Europe. Germany, Spain, and in this case, Switzerland. The programming house in this case is called Linel, and I get the feeling that this will not be the last game to come from this talented house.

Once the game is loaded, a series of *Superman*-esque titles appear on the screen with an excellent horizontally scrolling



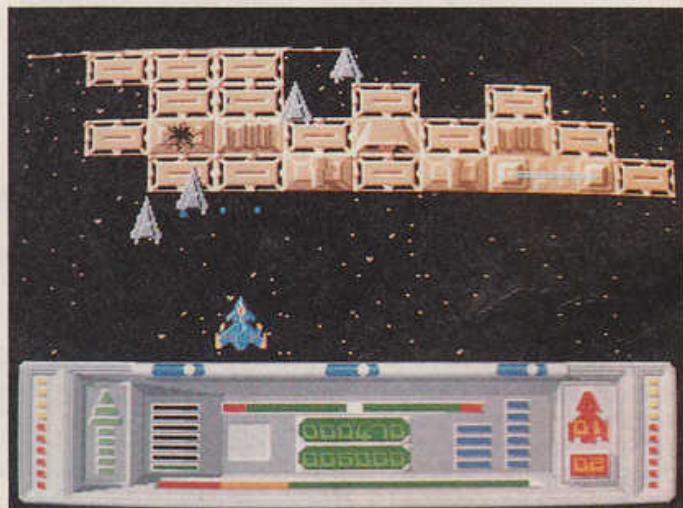
starfield displayed in the background. This is just the beginning of a display of excellent graphics and programming techniques that shows just how much potential the Amiga has really got. The chunky graphics and jerky scrolling of some earlier Amiga releases is certainly not the case with *Insanity Fight*.

The game begins with some sampled music (unfortunately the band they decided to sample are pretty dire, but we'll forgive them this minor fault). Then follows a screen showing a depiction

of the game's premise. *Insanity Fight* and some other Amiga games is that this game uses the whole of the screen, not just a windowed section in the middle. This may be harder work for the programmers, but it makes the game a great deal more fun.

Insanity Fight is a good, fun shoot-'em up. It does not pretend to be anything else, and is all the better because of that.

Occasionally the screen does flicker, but as the flicker is only on sprites this is forgivable. It is not cheap at \$24.95, but then



tion of a starfighter all dressed up for combat; and then the game begins.

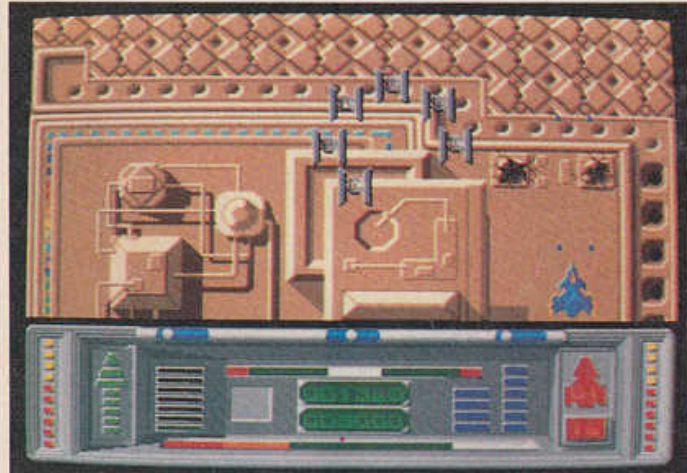
In essence the game is a shoot-'em up. It uses ideas similar to those that made *Uridium* so successful, and transposes them to a vertical scenario with very detailed and impressive graphics and sound effects. You control a ship that can move left and right, as well as speeding up and slowing down. You must blast everything in sight and get as far through the game as you can.

One of the most notable differ-

ences between *Insanity Fight* and some other Amiga games is that this game uses the whole of the screen, not just a windowed section in the middle. This may be harder work for the programmers, but it makes the game a great deal more fun.

Daniel McGrath

Program *Insanity Fight* Micro Amiga Price £24.95 Supplier Microdeal, Box 68, St Austell, Cornwall PL25 4YB. Photos copyright Microdeal Ltd.





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Lug and deliver

While we all wait expectantly for the Amstrad portable launch at the PCW show in January, Geoff Wheelright tells us what to expect.

While Amstrad has shown prototypes of the PPC640 and announced pricing, at press time the company has still not given final details on the software it intends to bundle with it (other than the previously announced MS-DOS 3.3 and 'Mirror' communications software).

Value for money

Despite this prematurity, it must be said that the PPC640 looks extremely good value for money. For a mere £599 you'll be able to get a luggable PC-compatible with dual 3.5 inch discs, a built-in Hayes-compatible modem that runs up to speeds of 2400 baud, offers 640K of Ram, a full AT-style keyboard and its own built-in super-twist LCD display screen.

There is no-one anywhere in the PC industry producing a portable with anything like that kind of specification at that price. Luggables from Compaq, Toshiba, Sharp and others will cost you two to three times what Amstrad is charging.

And not all portables - even in the £1500 to £2000 price range - include the built-in CGA video output offered by Amstrad - along with the standard parallel and serial ports. They do, however, generally include at least one expansion slot of some kind - a fact that Amstrad has catered for with its planned optional add-on expansion box. The company claims that this will give the PPC640 a power supply and four PC-compatible slots.

Thus the PPC460 looks like a well-specified and well-priced luggable. You will note, however, that the word 'laptop' does not come into the discussions as the PPC640 is particularly poorly-suited for being the kind of computer you might use on the train, plane or bus.

Too large

It is too large, heavy and battery-intensive to be a great deal of use for taking notes or writing reports when away from a mains source - although the company does claim it will run for up to eight hours off the 10 alkaline battery 'C' cells needed to power it without mains.

But as you can power it off every alternative mains source from a car's cigarette lighter to an Amstrad PC1640

monitor, the PPC's limited battery operation facilities should not be a problem.

If you do have to try and use this somewhat hefty little beast on a train, you can at least be consoled that it uses the kind of standard batteries that can be purchased at most train stations, rather than the awkward, sealed rechargeable units which can leave you stranded without power on a long trip away from your power supply.

As far as storage goes, the PPC640 may present a few problems if you use the kind of budget software normally associated with the PC1512 and PC1640. Without exception, this has been available on the larger 5.25 inch floppy disc format used by those machines and may not yet be available on 3.5 inch disc.



The Amstrad PPC

Disc size

While expensive applications such as Lotus 1-2-3 and Ansa's Paradox have been available on 3.5 inch disc for some time in order to capitalise on the market offered by the Toshiba portable computers and IBM's Personal System/2 machines, there has not been such a move to the 3.5 format amongst budget software companies.

This is not a massive problem if you own another PC and have the communications software and cabling to allow you to transfer files from the 5.25 inch format to the new 3.5 inch variety. But the software must not be copy-protected (as this does not move over a serial link very easily) and must not require checking of file sizes as they can be sometimes slightly altered by a transfer over a communications line.

In short, the safest option is to check that the software you want to run on the PPC is available on the 3.5 inch disk format before you buy.

The screen

In addition to the 3.5 inch drives, the other major difference between a desktop machine and the PPC is the screen. Although the PPC's LCD screen is pretty good and offers quite fair resolution (and fast screen updating, if the machine I saw running Flight Simulator at the PPC launch was any indication), it is still no match for a standard CRT.

If you've never worked with an LCD screen, I suggest that you try the PPC in a variety of conditions before buying. The crucial thing to understand about an LCD display is that it operates in exactly the opposite way to a CRT. While you can read the screen of a CRT due to the light the CRT itself generates (and indeed the CRT is often easier to read as the room gets darker), an LCD requires reflected light to work best - and the more reflected light the better.

The keyboard

The jewel in the PPC design is the keyboard, a full-size, full-stroke AT-compatible job which 'flips down' in front of the main unit. Although it is not detachable, its size and completeness has to make it the best keyboard that Amstrad has produced for any of its machines.

You get all the regular function keys along with cursor keys, numeric keypad and the new IBM keyboard layout (one which I must admit still confuses me).

In fact, Amstrad seems to have started its design work with the keyboard and then reverse-engineered the product.

Conclusions

Overall, the company seems to have provided a well-specified and well-priced answer to that challenge. Although it is a shame that we do not yet know the full extent of the software bundle and have not yet seen full production machines, we can take it on Amstrad's past track record that it should be able to deliver the promised goods on time.

And when they arrive, they will almost certainly represent the best value for a PC-compatible luggable portable that you can possibly get. □

On the move

Barry Smith compares and contrasts the performance of the Z88 and the Toshiba T1000 portable computers.

While the attention of the computer press has begone to computers with hard discs and 32-bit processors, a quiet revolution has been taking place which may finally establish the battery-powered laptop computer as an affordable and popular product.

The laptop revolution was heralded by the announcement of the Cambridge Computer Z88. Following the announcement, Sir Clive Sinclair's new firm took several months to complete the design, meet the mail-order backlog and begin volume shipments.

Rival manufacturers were not idle while Cambridge Computer struggled to finish and ship the Z88. During the summer, several MS-DOS based laptops appeared at breakthrough prices. Market leader Toshiba introduced the T1000, its first portable to be priced under the psychological £1000 barrier. Other established suppliers of laptops introduced new machines at competitive prices, including Interquadram, whose Dataview Spark starts at \$747.

With Amstrad's recent announcement of a range of MS-DOS laptops starting at an astonishing £399, it's clear that the laptop price revolution is starting to snowball.

The further the price of DOS laptops falls, the harder it becomes to decide whether to buy a Z88 or wait for an IBM-compatible. To weigh up the problem (no pun intended) I carried a T1000 and a borrowed Z88 around for several days. I used both machines at home, on the train and in the office, and I tried to gain an overall impression of the strengths and weaknesses of each.

Common features

It is worth pointing out that the two machines have several basic features in common. Both are remarkably lightweight and compact. The Z88 breaks new ground here: it weighs in at just 2lbs and it's no larger than an A4 notepad. At 6lbs, the Toshiba is far and away the lightest available IBM-compatible laptop - Amstrad's portable will weigh around twice as much.

Both machines use a new kind of liquid crystal display (LCD) screen known as

'supertwist', and the Amstrad portable will follow suit. Supertwist is like the older LCD technology in that it allows the construction of a cheap, lightweight flat screen, but it provides a considerably higher contrast between lit and unlit pixels, and the result is much more legible.

Finally, both the Z88 and the T1000 make use of low power drain CMOS Ram, and both have their operating system in Rom. The Toshiba, of course, is based on the standard MS-DOS operating system. It is highly unusual for MS-DOS to be supplied in Rom, but the T1000 comes with just one 3.5" disc drive. This would be restricting on any normal DOS machine - but by putting DOS in Rom Toshiba has created a highly functional one-drive computer.

The T1000

The T1000's use of 3.5" disc drives follows Toshiba's existing practice. Although most PCs - including Amstrad's desktop model - still use the older 5.25" floppies, the 3.5" microfloppy is destined to become increasingly common. Since the adoption of 3.5" drives by IBM for its new PS/2 range, software houses have started making PC packages available in this format, and add-on 3.5" drives for PCs are becoming available.

I was able to read and write my Toshiba discs on a PS/2 machine and also using a 3.5" drive attached to a Compaq machine. More surprisingly, I found that I could read and write the discs on my Apricot PC providing I booted a late release of the operating system and BIOS software. Earlier versions corrupted discs - so Apricot users should check this out carefully.

PC users can either buy Toshiba's external 5.25" unit for the T1000, or alternatively a 3.5" unit for their desktop PC. If you need to exchange data with a PC, and do not wish to buy an extra drive, you may want to invest in a null modem cable and a public domain comms program.

As an option, Toshiba will fit a CMOS Ram disc that retains its contents even with the main power switched off. This extra 618Kbyte Ram drive greatly increases the usefulness of the T1000: you can boot the machine from Rom, store your

software on the DMOS Ram disc, and use the 720K floppy drive entirely for data storage.

Disc swapping

Amstrad's one drive portable is likely to be lame by comparison. With the operating system, application software and data all held on a single drive, disc swapping will be the order of the day, whereas in theory you could run the T1000 for three or four hours without using any discs at all. I adopted the practice of copying work down on to a floppy at the end of each session to guard against data loss due to the battery running out. After about four hours, the T1000 usually needed recharging but it was possible to plug in the mains adaptor and continue work while the batteries were replenished.

Both at home and in the office, the Toshiba worked well. Particularly if you are used to sophisticated DOS packages, it is useful to be able to run the same software on your portable and share data with desktop machines. On the move, though, the Toshiba was less of a success. During a train journey of, say, forty minutes or more, providing the train was not too crowded, it was possible to get useful work done. On shorter journeys or on the bus, it was clearly not worthwhile trying to use the machine: half the journey would be wasted waiting for the machine to complete its memory test and boot up. Most of the rest of the journey would be spent saving what little work you had done to disc and shutting the computer down.

The Z88

The Z88 by contrast is a truly portable computer, and this is its main advantage over DOS laptops. The machine will fit comfortably under your arm: it's no more trouble to carry around than a newspaper or a small book. Because it is so light and compact, it can be used literally anywhere. I managed to work on buses, even in bus queues or while waiting for trains.

The Z88 is easy to use while you are standing up: balance it on one hand and type with the other. A nice touch here is that the diamond key, which initiates most

of the word processor and spreadsheet commands, does not have to be held down while the command letters are typed like the control key on a conventional PC. It's enough to hit the diamond key and then type the command letters afterwards, making the machine ideal for one handed operation.

In keeping with Sir Clive's well-known aversion to magnetic disc drive technology, the Z88 is aggressively solid-state. Sinclair's offering is designed around three types of silicon storage: Rom, CMOS Ram, and EPROM. Internally, 128K of read-only memory (Rom) stores the machine's specially developed operating system and its built-in suite of application software.

Storage

Lower power drain CMOS random access memory (Ram) provides storage for programs and data while the machine is being used and retains its contents between sessions. In addition, Ram is the main read-write medium used by the filing system. The 32K provided with the basic machine is only barely adequate for both these purposes, and prospective buyers should budget for the 128K Ram expansion. One megabyte cartridges are promised some time in 1988, but only light users will be able to wait.

Because the Z88 makes use of battery-backed Ram you can afford to switch it off at a moment's notice. Each application that is running - and all your work - will be preserved as you left it. When you switch the machine on again, there is no long wait while the machine boots up: you start immediately, and exactly, where you left off.

The Z88's resemblance to an A4 pad is not confined to its size - the machine can be carried and used in almost exactly the same way as a notepad, while at the same time bringing all the advantages of a computer. In the same way that you can flip between different pages of a notebook, the Z88's context-switching operating system allows you to flip between many different tasks. Several copies of the main application - the word processor-cum-spreadsheet PipeDream - can be in use simultaneously. This does not amount to true multi-tasking: only one task is active at a time. But quick switching between the tasks that are in hand is all most users need - and in order to mimic the integral context-switching environment of the Z88, DOS users have to make do with troublesome pop-up utilities.

Once you had filled the Z88's Ram, some form of long term storage of data would be essential to allow you to clear out the machine's memory without simply throwing work away. This could mean buying the PC Link kit and using the disc drives of an

existing PC to store your files. More kits of this sort are available, or promised, to allow owners of machines such as the Amstrad PCW, the Apple Macintosh or the BBC micro to download Z88 files to disc.

Storage

The need for longer-term file storage, and for a software distribution medium, is partly met by erasable programmable read-only memory (EPROM) cartridges that plug in to the same front-edge slots used by the RAM expansion cards. At the moment the maximum capacity is 416Kbytes - much less than a 3.5" floppy. EPROMs are less convenient than discs: to erase them, you need to have access to an EPROM eraser. Larger capacity units are under development that will hold as much as 3Mbytes, but apparently it will be necessary to return these to Cambridge Computer for erasing.



The Toshiba T1000 portable PC

If the Z88 is your only machine, the only alternative to EPROMs would be to buy a disc drive for the machine. We are told that disc drives are catered for by the Z88's filing system, and that one will ultimately be available. Still, Sinclair himself says that the Z88 should never need a disc drive, and there is no sign of one in the shops yet.

The Z88's keyboard is a one-piece membrane type and after using the Toshiba's conventional keyboard I anticipated problems with it. In fact, within a few hours, I was typing as accurately as usual and almost, but not quite, as fast. I did not like the keyboard, but it was usable and no doubt it contributes to the Z88's compactness.

Display

Since the Z88's display is embedded in the main unit, and not hinged like the Toshiba's, you can only alter the viewing angle by altering the angle of your lap or by propping up the whole thing. Although the screen will show a full 80 columns of text, it does have its disadvantages. The display uses a rather cramped font with very short

descenders, and it still only shows eight lines - or six lines of actual text - compared with the Toshiba's twenty-five line display. Running WordPerfect Executive on the Toshiba, I had 24 lines of text - four times as much as on the Z88. The page-map on the right-hand side of the screen helps to some extent, but serious editing work was difficult: the Z88 was at its best when I was making notes or typing rough drafts.

If you do decide to buy a DOS machine, of course, you have to allow for the cost of applications software, but DOS software prices are falling these days and that may not be too big an item. The Z88 restricts you (at the moment) to the built-in applications: PipeDream, BBC Basic, communications and file transfer software. Since the applications are supplied with the machine, you do not need to budget for software. But do not be fooled by the basic price of the Z88. You will need extras. Budget for a Ram expansion, and either EPROMs or a link kit to another computer for long-term storage. Other extras you might need include a mains adaptor in case you get caught without replacement batteries, and an EPROM eraser.

Comments

Add the cost of all these items together and, interestingly, you get a figure not far removed from the price of the bottom model in Alan Sugar's new range. If you need a machine that will be usable in almost any situation, the Z88 is the best choice, and it is not worth waiting for a DOS machine. What you should not do is to go for the Z88 on the grounds of price alone. □

Z88 prices:

Z88	£249.99 + VAT
PC Link kit	£24.95
Mains adaptor	£9.95
32K Ram	£19.95
128K Ram	£49.95
32K EPROM	£19.95
128K EPROM	£49.95

T1000 prices:

T1000	£995 + VAT
CMOS memory	£375

Amstrad portable:

from £399 + VAT

Tel:

Cambridge Computer	0223 312216
Toshiba	0932 785666
Amstrad	0277 228888

Network knights

Compunet is about to welcome both the Atari ST and the Commodore Amiga online. The first public demonstration of these two 16-bit micros online to Compunet was at the PCW show where they set a date in early December for the software release.

The ST will have a 40 column display using the mouse to control pull down windows etc; currently under consideration is an 80 column version for use with the ST's mono Hi-Res monitor.

The Amiga software is in many ways more interesting because it has used the multi-tasking available to great effect. This is an 80 column display separated into two windows, one will display the directory, the other will show the text frames. There is also to be a third optional window for the text frame editor which was not included in the original demonstration.

It will be possible to edit text frames while you are downloading software from the system and most downloaded software should be able to be run while you are still online.

There are currently two small areas on Compunet for the two new arrivals (GOTO ST & AMIGA) and these are bound to grow as more users come online, naturally both micros will also be able to read the wealth of text that is already on the network and use the special features such as Party Line.

Future plans

The next micro that is currently having access software written for it is the PC and its compatibles. Its arrival will not be for some time yet, so it is always possible that Compunet may decide on a different micro before then if the micro market changes.

Plans to bring the BBC micro online earlier this year were dropped when it became clear that the future of home micros was in the 16-bit machine.

Accessing

To access the network with either the ST or Amiga you will need a Hayes compatible modem and Compunet are currently trying to negotiate a special deal with a manufacturer for the supply of these.

The CBM 64 continues to use the plug-in style modem, a new batch of these should

Atari ST and Commodore Amiga users will soon have access to the Compunet system. Graham Edkins outlines this progress and also sums up some new programs and utilities available on the system.

now be available after a period of unavailability following Commodore's decision to stop manufacturing them.

The new batch are the traditional style Cnet modem but I am told that they will be manufactured to a much higher standard. Anyone with an old Cnet modem who is having trouble with it can return it for a



Compunet screen shot

part-exchange and a replacement will be supplied at a special price.

New subscribers' deal

The deal that is being offered to new subscribers with a CBM 64 is a modem and three months' free 'Gold' subscription for £39.95. This will also include three months' free off-peak local access to most areas via the Istel network.

Istel have now opened a node in Dublin which gives Eire users a far cheaper route to the network than they have had before making it far less expensive for them to access Compunet than to access Prestel.

Features

On the network itself there are (as always) many new programs, text frames and areas to look at. Once again it looks like the programmers on Compunet have come up with a new idea which will filter through to commercial games software, this one has come from the Meanteam.

The demo is the first to have a vertically scrolling bit mapped graphic and the inventor (JCB) is planning a diagonal scroll shortly, he calls the technique Variable Screen Positioning (VSP) and he goes to great lengths to explain it in a scrolling message in the demo. This demo has been unloaded in the Meanteam's Directory (GOTO 215422) but is bound to find a place in the Demo Hall of Fame before it dies.

I was chatting recently to Steve (SDC) on Party Line and he said that his demo has never had a mention despite the fact that he had a budget game published, his demo can be found in DEM11 which also holds his very informative area called DIY Machine Code.

Utilities

The software Utilities area on Cnet (GOTO UTILS) has grown recently and is well worth visiting again. Many of the new programs are from Eddy Carroll who is well known for his excellent uploads by CBM 64 users on both Cnet and Micronet. Eddy will be uploading a TTY access program that he has written, this should appear around Christmas time. Judging by the standard of his work to date it will be something to keep an eye out for.

A series of uploads not to be missed are the Fogg letters (GOTO 312759), these are probably the funniest frames that I have ever read on Compunet.

Fogg also appears in a new online monthly magazine area called Online (GOTO HOTBED). This is edited by Keve who has managed to persuade a number of netters to contribute a few frames each on their own subject. Keve can also be found writing reviews about the latest computer magazines in MAGS and has uploaded a free 80 column Kermit access program for the 64 and external modem (GOTO KEVE). □

The life of ROM

Simon Goodwin writes a program to see inside your ROM on the Amstrad CPC.

If you are lucky enough to own a sideways ROM board you may often have wondered what goes on inside those ROM chips. This program, enables you to do that, among other things. You will need a disc drive to use these facilities. To get the program up and running type in the BASIC listing.

When the program is RUN it will check your data statements. If you have made a mistake, an error message will be displayed. If you have typed in the data correctly, the five new BASIC commands that the program gives you will be installed.

You may want to save the machine code as a binary file. To do this type :SAVE "romcode",b,41800,700. To load this binary file type:

```
MEMORY 41799:LOAD "romcode",
41800:CALL 41800
```

Most of these commands require you to specify the number of the ROM you are referring to. ROM numbers are in the range (0 to 252). For example the BASIC ROM is number 0, whilst the DISC ROM is number 7.

Commands

The five new commands are:

:HELP

Gives a run-down of the new commands and their syntax.

:ROMLIST,ROM number, address of 16k Buffer

This gives all ascii dump of any ROM (0 to 252). You must specify the location of a 16K buffer to act as a temporary store for the data. Pressing any key pauses the listing during printing.

:ROMSAVE,rom number,[filename]

ROMs and especially EPROMs do not last forever and you may want to create a backup copy of the data on ROM for the sake of safety. This command allows you to create a backup copy of any ROM (in the range 0-252) on disc under the filename that you specify. Do not worry about the screen corruption during the save.

:COMMAND,[name of rsx command], @variable1%,@variable2%

This command searches all ROMs for the RSX command you specify. If the search was successful then the memory address of the command is returned in @variable1%, and the ROM number in which it was found is returned in @variable2%. If no such command was found then both vari-

ables return zero. Note that rsx commands in background ROMs that have to be loaded into ram to execute, will not be recognised.

:ROMCALL,ROM number, memory address

This allows you to execute programs or rsx commands in sideways ROMs. You can use this after obtaining the number and memory address of a command using :COMMAND. Again do not try to execute programs that have to be moved from ROM to RAM to execute. Do not call programs in RAM using this command.

:ROMLIST,:ROMSAVE and :COMMAND can be loaded into CUSTOM RSX MANAGER.

Use the following memory addresses and lengths to store them:

```
:ROMLIST ... 41810,80
:ROMSAVE ... 41881,90
:COMMAND ... 41990,80
```

If readers do not want to type the program in, write to me care of *Popular Computing Weekly*, and I will supply it on disc together with documentation, for only £4.50. □

```
10 REM -----
20 REM ROM UTILITIES
30 REM By Simon.T.Goodwin 1987
40 REM -----
50 REM
60 MEMORY 41799
70 linenumber=210:address=41800
80 FOR n=1 TO 88
90 count=0
100 FOR i=0 TO 7
110 READ a$:POKE address,VAL("%"+a$)
120 address=address+1
130 count=count+VAL("%"+a$)
140 NEXT i
150 READ check$:check=VAL("%"+check$)
160 IF count<>check THEN PRINT "Error
in line";linenumber:END
170 linenumber=linenumber+10
180 NEXT n
190 CALL 41800:PRINT "Initialised"
200 END
210 DATA 01,B7,A4,21,83,A4,CD,D1,412
220 DATA BC,C9,DD,7E,02,DD,5E,00,41D
230 DATA DD,56,01,4F,CD,0F,B9,C5,3DD
240 DATA 21,00,C0,01,00,40,ED,B0,2BF
250 DATA C1,CD,18,B9,DD,6E,00,DD,487
260 DATA 66,01,01,00,40,7E,FE,20,244
270 DATA 30,07,3E,2E,CD,5A,BB,18,29D
280 DATA 03,CD,5A,BB,E5,C5,CD,1B,477
290 DATA BB,38,09,C1,E1,78,B1,23,3EA
300 DATA 0B,20,E2,C9,CD,18,BB,18,3BE
310 DATA F2,11,00,C0,DD,7E,02,4F,36F
320 DATA CD,0F,B9,C5,21,00,C0,01,33C
330 DATA 00,40,ED,B0,C1,CD,18,B9,43C
340 DATA DD,6E,00,DD,66,01,7E,F5,402
350 DATA 23,5E,23,56,EB,F1,47,11,32E
360 DATA FB,07,CD,BC,BC,30,11,21,376
```

```
370 DATA 00,C0,11,EC,3F,3E,02,CD,309
380 DATA 9B,BC,30,04,CD,8F,BC,C9,469
390 DATA 3E,45,CD,5A,BB,3E,52,CD,3C2
400 DATA 5A,BB,CD,5A,BB,3E,4F,CD,451
410 DATA 5A,BB,3E,52,CD,5A,BB,C9,450
420 DATA DD,7E,00,DD,6E,02,DD,66,3EB
430 DATA 03,22,02,A4,32,04,44,DF,284
440 DATA 02,A4,00,00,00,C9,DD,6E,2BA
450 DATA 04,DD,66,05,7E,23,5E,23,26E
460 DATA 56,EB,E5,F5,3D,47,23,10,3D2
470 DATA FD,7E,C6,80,77,F1,E1,CD,5D7
480 DATA D4,BC,28,1C,E5,C5,DD,6E,4C9
490 DATA 00,DD,66,01,C1,79,77,23,318
500 DATA 3E,00,77,C1,DD,6E,02,DD,3A0
510 DATA 66,03,79,77,23,78,77,C9,334
520 DATA 3E,00,DD,6E,00,DD,66,01,2CD
530 DATA 77,23,77,DD,6E,02,DD,66,3A1
540 DATA 03,77,23,77,C9,CD,78,A4,3C6
550 DATA 21,BB,A4,06,09,C5,CD,6C,38A
560 DATA A4,23,CD,78,A4,C1,10,F5,476
570 DATA CD,78,A4,C9,7E,FE,23,28,479
580 DATA 06,CD,5A,BB,23,18,F5,C9,3E1
590 DATA 3E,0A,CD,5A,BB,3E,0D,CD,342
600 DATA 5A,BB,C9,00,00,00,00,98,276
610 DATA A4,C3,52,A3,C3,99,A3,C3,51E
620 DATA F0,A3,C3,06,A4,C3,55,A4,4BC
630 DATA 52,4F,4D,4C,49,53,D4,52,2FC
640 DATA 4F,4D,53,41,56,C5,52,4F,2EC
650 DATA 4D,43,41,4C,CC,43,4F,4D,2C8
660 DATA 4D,41,4E,C4,4B,45,4C,D0,349
670 DATA 52,4F,4D,20,55,54,49,4C,24C
680 DATA 49,54,49,45,53,20,46,6F,253
690 DATA 72,20,41,6D,73,74,72,61,2FA
700 DATA 64,20,43,50,43,20,6D,69,250
710 DATA 63,72,6F,73,2E,23,23,42,26D
720 DATA 79,20,53,69,6D,6F,6E,20,2BF
730 DATA 54,20,47,6F,6F,64,77,69,2DD
```

```
740 DATA 6E,20,31,39,38,37,20,66,1ED
750 DATA 6F,72,20,50,43,57,2E,23,23C
760 DATA 23,7C,52,4F,4D,4C,49,53,275
770 DATA 54,2C,72,6F,6D,20,6E,75,2D1
780 DATA 6D,62,65,72,2C,61,64,64,2FB
790 DATA 72,65,73,73,20,6F,66,20,2D2
800 DATA 31,36,6B,20,62,75,66,66,295
810 DATA 65,72,2E,23,7C,52,4F,4D,292
820 DATA 53,41,56,45,2C,72,6F,6D,2A9
830 DATA 20,6E,75,6D,62,65,72,2C,2D5
840 DATA 5B,66,69,6C,65,6E,61,6D,337
850 DATA 65,5D,2E,23,7C,52,4F,4D,27D
860 DATA 43,41,4C,4C,2C,72,6F,6D,296
870 DATA 20,6E,75,6D,62,65,72,2C,2D5
880 DATA 61,64,64,72,65,73,73,2E,314
890 DATA 23,7C,43,4F,4D,4D,41,4E,25A
900 DATA 44,2C,5B,63,6F,6D,6D,61,2D8
910 DATA 6E,64,5D,2C,40,61,64,64,2C4
920 DATA 72,65,73,73,25,2C,40,72,2C0
930 DATA 6F,6D,20,6E,75,6D,62,65,313
940 DATA 72,25,2E,23,7C,48,48,4C,23D
950 DATA 50,2C,69,73,20,77,68,61,28B
960 DATA 74,20,79,6F,75,20,61,72,2E4
970 DATA 65,20,72,65,61,64,69,6E,2FB
980 DATA 67,2E,23,42,59,20,53,54,21A
990 DATA 47,20,47,6F,6F,64,77,69,2D0
1000 DATA 6E,20,31,39,38,37,28,63,1F2
1010 DATA 29,20,50,6F,70,75,6C,61,2BA
1020 DATA 72,20,43,6F,6D,70,75,74,30A
1030 DATA 69,6E,67,20,57,65,65,6B,2EA
1040 DATA 6C,79,00,00,00,00,00,00,E5
1050 DATA 00,00,00,00,00,00,00,00,0
1060 DATA 00,00,00,00,00,00,00,00,0
1070 DATA 00,00,00,00,00,00,00,00,0
1080 DATA 00,00,00,00,00,00,00,00,0
```


It's a set-up

Mark Jenkins with music for the Amstrad CPC...

John Kennedy has written in from Northern Ireland to ask advice on a possible first music set-up. "I'm a complete novice when it comes to things musical, but I'm determined to teach myself how to play", he begins. "I know a bit about computers though, so MIDI seems to be the way to go. I have an Amstrad CPC6128, and would like to know whether I should get a MIDI interface and a cheap Casio keyboard, or a synth module and a separate synth keyboard. Being a student my budget is limited to £200-£300".

In fact there is very little choice when looking for MIDI software to work with the Amstrad CPC range. We will look at what is available in a moment.

On the keyboard side, it does not make much difference whether you buy a complete synth or a keyboard and a synth module; having them separately would make it easier for you to upgrade your set-up one section at a time, but at the moment it would cost considerably more to buy both a mother keyboard and a synth module than just a synth.

Astonishingly enough, the best value in small MIDI synths is still the Casio CZ-101, which has been on the go for four or five years now.

It costs about £350 new, or less than £200 second-hand (look in *Melody Maker* or *Music Technology*) and has a miniature four-octave keyboard. It is completely programmable (once you've mastered its Phase Distortion synthesis method and data entry system) and is eight-note polyphonic.

When controlled from a computer or MIDI sequencer, the CZ-101 can also play in Mono Mode (also known as MIDI Mode 4), which means it can play four different monophonic sounds simultaneously under the control of four different MIDI channels.

The instructions for getting into this mode are not in the handbook; basically, all you have to do is hit Solo and set different MIDI channels for the voices 1-4.

A lot of sequencer packages have demo programs written specifically for the factor preset sounds of the CZ-101, which include respectable brass, strings, synth, mallet and even drum sounds. If you do not fancy the small keys of the CZ-101, the CZ-1000 with full-size keys is functionally

identical and won't cost too much more.

Alternatively, the CZ-2308 has similar abilities plus built-in speakers, a useful semi-programmable sampled drum machine, and 100 preset sounds, of which three can be reprogrammed using a computer (as we'll see below). Cost is about £350.

If you want to go for the "separates" approach; Cheetah's MK5 control keyboard will cost £99 from Boots, and there's a selection of modules you could go for; the Yamaha FB-01 (£200 second-hand, eight-note multitimbral FM synth programmable only via a computer), the Yamaha TX812 (similar but self-programmable and in a 19" rackmount format), the Roland EM-101

DHCP, for instance, have the following to offer:

MIDI Interface £50

MIDI In, Out and Thru plus a follow-on connector so you can continue using your computer with other peripherals.

Multitrack Sequencer £29.95 (disc) £22.50 (tape)

A fully editable multitrack polyphonic MIDI recorder with eight tracks, various loop modes, track merge, assignable channels, memory remaining indicator and notepad section.

Casio Editor £25 (disc) £15 (tape)

Edits sounds on the CZ-101, CZ-1000, CZ2308 and CZ-1 and allows you to build up a library of sounds on disc.

Voice Libraries £15 (tape/disc)

32 new sounds for the Casio.

Korg DW6000 Editor £29.95 (disc) £22.50 (tape)

Similar facilities for Korg's powerful analog-digital polyphonic synth.

User Port £25

3x8-bit ports, programmable for input or output, TTL levels.

Incidentally, DHCP also have MIDI products for the Amstrad PCW and can supply any necessary MIDI cables and other connectors to order.

Dougie's Music also have an interface (£50) and an MT-32 programmer (£59) for the Amstrad - mail order details on 0606 782522.

Unfortunately there isn't a vast variety of software available for the Amstrad because it's not a very international machine.

DHCP ELECTRONICS MULTI-TRACK MIDI SEQUENCER									
TRACK	MODE	CHAN	START	LOOP	TO	TRIG			
1	PLAY	11	000	000	000	38	X		
2	LOOP	05	012	120	186	22	X		
3	OFF	01	000	000	000	100	X		
4	REC	07	000	000	000	60	X		
5	PLAY	08	040	000	000	72	X		
6	OFF	00	000	000	000	100	X		
7	OFF	03	012	015	025	30	X		
8	PLAY	06	012	000	000	41	X		
NETWORK NAME TEMPO SIGNATURE BARCOUNT									
INT			120	4/4	024				

Screenshot of multi-track sequencer

(£150 second-hand, preset poly-mono analog synth module), the new Roland MT-32 (devastatingly powerful eight-note multitimbral LA synthesis unit with 30 sampled drum sounds, at least £399 though), or the Chase Bit 01 (about £400 second-hand, two powerful three-note polyphonic analog synths in a large rackmount package).

Cheetah's own synth module is still in the last stages of production, but it should prove good value for money and we'll publish a review as soon as it's available.

As far as the software side of things goes, you can currently obtain Amstrad packages from EMR via music shops or from DHCP by mail order.

Both companies supply a suitable MIDI interface and a multi-track sequencer package; you'll have to consult them for the latest prices but it should be possible to get something for £150 or less.

DHCP Electronics, 32 Boyton Close, Haverhill, Suffolk CB9 0DZ, 0440 61207.



The logical truth is

J. Smithson, of Gateshead, Tyne & Wear, writes:

Q A few weeks back I noticed that you mentioned logic circuits in your column, AND OR and the like. What I would like to know is more about how they work and which chips do what. That is, should I use CMOS, TTL, or what?

A As I have mentioned before, there are three basic types of logic gate, AND, OR and NOT. Using these, more complex functions such as NAND, NOR and Exclusive OR (EOR) can be built. The normal definitions of gates are usually defined as a two input system but it is possible to combine the gates to produce multiple input types eg, eight input AND, four input NAND, etc.

The truth tables for these work in exactly the same way as the two input types and show all the possible inputs and their respective outputs. So, for a three input gate, there are eight possible inputs (2^3 or $2 \times 2 \times 2$) and therefore eight possible outputs.

There are a number of different manufacturing methods, the most common of which are CMOS (Complementary Metal Oxide Semiconductor) and TTL (Transistor Transistor Logic).

In the old days, there was quite a distinction between the two with CMOS being low power but relatively low speed and TTL being high speed and high power. These days, things have improved somewhat and TTL has improved in the power consumption stakes, and CMOS is faster.

The main advantage of CMOS over TTL was the 'fan out', the number of other chips that can be driven from one chip output.

For the original 74 series TTL,

this was around 10 whereas 4000 series CMOS was around 50. The later versions of the 74 series TTL ie, 74LS and 74HC will drive an unlimited number of other gates providing they are HC or CMOS, a great improvement since it means that a design can be constructed from gates alone, no other circuitry is necessary.

As far as power consumption is concerned, the 74HC series uses less than CMOS and so is probably the best type of logic to use.

Logic chips come in families, basically as mentioned above, 74xxx and 40xxx where the xxx is the number of the particular device.

There are a variety of functions available in all families, and, in general, they are pin compatible so it is possible to replace a 7410 (Triple 3 input NAND) directly with a 74HC10. The main differences are between CMOS and TTL and most of these are not pin compatible (unfortunately).

Explaining how they work is a little complicated but I will try. First take TTL and the simple inverter. If the input A is set to zero (0 Volts) then no current flows into the base and the transistor is off and no current flows through it from collector to emitter (in the direction of the arrow). The output is therefore attached to the +V line giving a high output. If the input is attached to +V then the transistor switches on and current can flow through it pulling the output down to 0V - hence the inverter action.

The resistor is simply used to control the amount of current flowing through the transistor when it is on, if it weren't there, the transistor would burn out due to the amount of current it was conducting.

Fig 2 shows a TTL NAND gate which works as follows, if A and B are both set to +V the current flows into the base of T2 turning it on. This pulls the base of T3 down, turning T3 off. It also pulls the base of T4 up turning it on. This gives 0V at the output.

If either of A or B go low ie, 0V then T2 is off causing T3 to be on and T4 to be off giving a high or +V output. T3 and T4 have a special action in that when the output is off, current can flow back into it through T4. This means that gates connected to it will switch much faster since on current has somewhere to go.

One of TTL's features is that it pushes and pulls current around the logic circuit as well as dealing with the voltages. This makes it

faster than CMOS which operates purely on a voltage system.

There are two types of CMOS transistor (Actually they are Field Effect Transistors or FETs), one with the arrow pointing out (N type) and one with it pointing in (P type). When a voltage is applied to the input of a P type then the transistor turns off.

The opposite happens with the N type. The inverter makes use of this and when the input is 0V, the top transistor is on and the bottom one is off. This makes the output high. The opposite happens when +V is applied to the input ie, the top transistor is off and the bottom one on giving a low output.

The CMOS NAND gate works because when the two inputs are high, 1 and 2 are off (P type) and 3 and 4 are on (N type). If either or both of the inputs are low then 1 or 2 or both will be on and 3 or 4 or both will be off giving a high output.

The main point about CMOS is that it takes very small amounts of current to turn the transistors on or off (in the micro Amp region) thus the circuits have a very low power consumption and have a large fan out.

With both the systems, it is easier to fabricate NAND and NOR gates than the basic AND OR types. This is not really a problem since inverters are easily attached to the outputs.

Stable prices

J. Peel, of Colwyn Bay, Clwyd, writes:

Q I'm thinking of buying a computer in the near future and have decided on the Atari ST. What I would like to know is whether, after Christmas, the price is likely to go down at all?

A Unfortunately, I am not privy to the marketing secrets of Atari UK and so I don't know whether it will fall in price or not.

The thing to bear in mind is that if you wait until after Christmas in the vague hope that the price will drop, from now until then you will have no computer to play with.

My opinion is that it is usually better to have the computer rather than wait for the price to fall - unless of course the price is going to drop dramatically which it probably won't. So my advice is to buy now and start the fun as soon as possible.

Compatible interfacing

J. Brooks, of Belfast, N Ireland, writes:

Q I have an Amstrad CPC664 which, as you know is a disc based machine. A friend of mine has a 464 and has offered me some software he has written. Is it possible to load 464 software onto the 664 from tape, and if so, what connections would I need to make and what is the best kind of tape recorder to use?

A There should be no trouble connecting a tape recorder since, as far as I know, the tape system is exactly the same as the 464. The connections are shown below. Any old tape recorder will do, sometimes I think the tackier the better since high quality hi-fi tape decks seldom work well with computers.

Just get hold of the cheapest one that still works and wire up as below. You can get the components at most decent hi-fi stores.

Binary conversions

M. Simms, of Oldham, Lancs, writes:

Q I have had my Atari ST for about six months now and have just about got to grips with machine code. However, I need a routine to convert binary numbers into decimal figures that can be printed. Is there an easy way of doing this and if so, could you explain it?

A All you need to do is take the binary number and divide by multiples of ten. If it is a 16 bit number then start with 10000 since $2^{16} = 65536$. The result of this division is the most significant digit. The remainder is divided by 1000 to give the next digit and so on.

Fortunately, the 68000 has a DIVU instruction - divide unsigned divides a 16 bit value into a 32 bit register producing the quotient in the lower 16 bits and the remainder in the upper 16 bits of the register.

The routine shown in Fig 1 produces five figures, converts them to ASCII by adding 48 and then prints them. Note that the argument in d4 can be 2s complement negative. I've also put in something to print plus and minus and remove the leading spaces. □

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Chips with everything

In the third of our series on interfacing, Kenn Garroch looks at accessing and connecting ports on the Commodore 64, Atari ST and BBC.

This week I will look at how to access some simple input/output (i/o) on the major home micros - Commodore 64, Atari ST, BBC. The Spectrum and Amstrad use the Z80 system and were covered in last week's instalment.

Complex ports

They have to have an i/o port stuck onto the system edge connector to give them some kind of user port.

The first three, however, have i/o ports of varying complexity built in.

The Commodore 64

The C64 uses a 6526 CIA chip that has the user port attached to port B of CIA 2 located at \$DD00 (56576 this is the address of register zero of the chip, see Fig 1). Using DDRB (\$DD03), each of the 8 lines on the user port can be set to either input or output, and reading or writing is from location \$DD01.

The BBC

The BBC has a similar set up except that the chip used is the 6522 VVIA (Fig 2). Again, the lines of port B come out on the user port and register zero of the chip is at memory location \$FE60 (\$ is hexadecimal or & on the BBC). The data direction operates in the same way as the 6526 as does reading and writing to the port.

The Atari ST

The Atari ST is rather different since it uses the YM-2149 sound chip which includes two ports (Fig 3).

In this case, only two control registers are in the memory map and to access them, the register number must be written to register select, then the data read from read data and written to write data.

The lines of port B come out at the

Centronics printer port and although they can be read and written, the whole port must be used in the same direction ie, all lines in, or all lines out.

The mixer, register 7, has one bit that specifies the direction of each port, bit 7 (the most significant bit - 128) when set to zero makes the port input, and set to one (OR 128) sets output.

CIA 6526 internal registers

0	Output/Input port A
1	Output/Input port B
2	DDRA
3	DDRB
4	Timer A low
5	Timer A high
6	Timer B low
7	Timer B high
8	Time of day 1/10 sec
9	Time of day secs
10	Time of day min
11	Time of day hours
12	Shift register
13	Interrupt flags & enable
14	Control reg A
15	Control reg B

Fig 1 - the C64's CIA chip

To do this from a program, reg 7 is selected by writing a 7 to the register select (\$FFFF8800) and then reading the current setting from read data (\$FFFF8800) and either ANDing it with 127 to set input, or ORing it with 128 to set output. This value is then written back to \$FFFF8802 to actually set the direction of port B. Port B is then selected by writing 15 to

\$FFFF8800 and then reading from \$FFFF8800 for input or writing to \$FFFF8802 for output.

This is a little slower than accessing the port directly, and is not as sophisticated as a VIA/CIA chip. However, the speed of the 68000 in the ST makes up for a lot.

A little experimentation with the machines shows what can be done. For more information, see the bibliography at the end.

"A little experimentation with the machines shows what can be done."

VIA 6522 internal registers

0	Output/Input reg B
1	Output/Input reg A
2	Data direction B
3	Data direction A
4	Timer 1 low latches/counter
5	Timer 1 high counter
6	Timer 1 low latched
7	Timer 1 high latches
8	Timer 2 low latches/counter
9	Timer 2 high counter
10	Shift register
11	Auxiliary control
12	Peripheral control
13	Interrupt flags
14	Interrupt enables
15	Output/Input A - no handshake

Fig 2 - the BBC's VIA chip

PROGRAMMING

In operation

So far, I have described how to access the ports and how they work. The next step is to actually attach something and see things in operation.

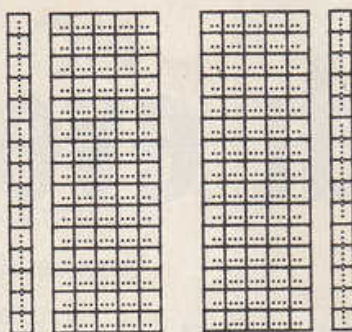
Attaching chips

The best and simplest way of attaching chips and other gadgets to the user ports of home micros is to use 'breadboards'. These are plastic strips that have rows of holes connected together (Fig 4).

Chips and wires can be slotted in quite quickly, obviating the need for any soldering. The only hard bit is to make a connection from the computer to the board itself.

YM-2149 registers	
0	Read data / register select
2	Write data

Fig 3 - the ST sound chip
regs starting at \$FFFF8800



..... Holes connected together

Fig 4 - a typical bread
board layout

The best way is usually to get the appropriate edge connector for your computer and then attach a ribbon cable to it. This ribbon cable is then attached to the board with either a socket or by plugging in the appropriate wires.

A look through the various electronics catalogues (RS or Maplin etc.) will show a number of connectors that can be adapted to this use. Once you have it connected, components can be quickly wired up and the fun can start.

Next week, I will look at the various gadgets that can be attached to your computer, how they work, and how to use them. □

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same address as *Popular*

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The final section will be in next week's issue. ☐

[illegible]


```

4420 IFX=20 THEN POKE830,7:POKE831,5:POKE831,5
4430 IFX=30 THEN POKE830,1:POKE831,7:POKE832,5
4440 IFX=40 THEN POKE830,7:POKE831,7:POKE832,7
4450 IFX=50 THEN POKE831,7:POKE832,1:POKE831,1:SYS 49808
4460 IFX=60 THEN POKE832,7:POKE832,7:POKE832,7:X=0
4970 X=X+1
4982 IF(PEEK(V+16)AND1)=1 AND PEEK(V)>80 THEN GOTO 5000
4983 GOSUB 25
4990 GOTO 4410
5000 PRINT "TeleType":SC=SC+100:POKE 852,1
5001 PRINT "   ?$%"      "?%""
5004 PRINT "       ?++/"    "+/"
5006 PRINT "         ?++ /     "+"_/"
5008 PRINT "#####+/~$$$$$$$$$$$$$$$+/~"
5010 PRINT "&+++++++/_+++++++/$$$$$$$%"
5012 PRINT "&+++++++/_+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\\_"
5014 PRINT "&+++++++/_+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\\+_\"
5016 PRINT "&+++++++/_+++++++/_)))))*)\""
5018 PRINT "( )))++) _- ) )) ) ) ) ) ) ) ) ) ) ++)"
5020 PRINT "        -+++"      "-_/"
5022 PRINT "          +/"      "+/"
5024 PRINT "            -*"      "*-"
5100 POKE V+16,252
5105 FOR N=51194 TO 51198:POKE N,145:NEXT
5110 POKE V,20:POKE V+2,30
5120 POKE 830,7:POKE 831,7:POKE 832,7
5130 POKE V+5,150:POKE V+4,100
5140 POKE V+7,150:POKE V+6,100
5160 POKE V+9,150:POKE V+8,100
5170 X=0
5180 IF X=15 THEN POKE 831,8:POKE 832,6:SYS 49808
5181 GOSUB 25
5182 IF PEEK(355)=1 THEN 62000
5190 IF X=25 THEN POKE 831,6:POKE 832,8::X=0
5205 IF (PEEK(V+16)AND1)=1 AND PEEK(V)>80 THEN 5300
5210 X=X+1
5211 GOSUB 25
5220 GOTO 5180
5300 PRINT "TeleType"
5301 PRINT "###%##%#%#%#%#%#%#%#%#%#%#%#%#%#"
5302 PRINT "()*(*)(*)(*)(*)(*)(*)(*)(*)(*)(*)"
5303 FOR N=1 TO 4
5304 PRINT "_|_|_##%-_|_|_##%-_|_|_##%-_|_|_##%-_|_|"
5305 PRINT " ^O^O() * ^O^O() * ^O^O() * ^O^O() * ^O:"NEXT
5310 PRINT "###%##%#%#%#%#%#%#%#%#%#%#%#%#%#"
5312 PRINT "()*(*)(*)(*)(*)(*)(*)(*)(*)(*)(*)"
5314 :POKE 852,1
5320 POKE V,20:POKE V+2,30
5330 POKE V+16,252
5340 POKE V+5,100:POKE V+4,125
5350 POKE V+7,130:POKE V+6,125
5360 POKE V+9,160:POKE V+8,125
5370 POKE 830,7
5380 POKE 831,7
5390 POKE 832,7
5400 X=10
5401 IF PEEK(355)=1 THEN 62000
5410 IF X=20 THEN POKE 830,0:POKE 831,0:POKE 832,0
5440 IFX=45 THEN POKE830,4:POKE832,2:POKE839,8:POKE841,8
5445 IFX=50 THEN POKE830,8:POKE832,6:POKE839,8:POKE841,8:SYS 49808
5450 IFX=60 THEN POKE831,3:POKE830,7:POKE832,7:POKE839,6:POKE840,6:POKE841,6:X=10
6500 X=X+1
6515 IF (PEEK(V+16)AND1)=1 AND PEEK(V)>80 THEN GOTO 6600
6516 GOSUB 25
6520 GOTO 5410
6600 PRINT "TeleType":SC=SC+100
6602 PRINT "   ?$|$|"
6604 PRINT "       ?+/+++/+"
6606 PRINT "         ?+/+-+/+"
6608 PRINT "           ?+/+- -+/+ | \\"
6610 PRINT "             ?+/+- -+/+ ||"

```


PROGRAMMING: C64

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6612 PRINT "?+?+ —++$$$$| "
6614 PRINT "&+& —+/???/+|"
6616 PRINT "&+& -) ) ) ) ) ) + | "
6618 PRINT "( — — — ++$$$$$$$$$$$$% "
6620 PRINT " — — -) ) ) ) ) ) ) ) ) ) )"
6630 POKE V+16,0:POKE V,20:POKE V+2,30
6635 POKE V+21,253:POKE V+5,50:POKE V+4,100:POKE 51199,144
6640 POKE V+7,250:POKE V+6,100
6650 POKE 830,1:POKE 831,5:POKE 832,4:POKE 833,2:POKE 834,6
6658 FORN=839TO843:POKEN,2:NEXT
6665 IF (PEEK(V+16)AND1)=1AND PEEK(V)>80 THEN GOTO 6700
6666 GOSUB 25
6667 IF PEEK(955)=1 THEN 62000
6670 GOTO 6665
6700 PRINT "~~~~~":SC=SC+200
6701 FOR N=1 TO 5
6702 PRINT "~~~~~":NEXT
6704 POKE V,20:POKE V+16,0
6705 GOSUB 25
6706 IF PEEK(955)=1 THEN 62000
6715 IF (PEEK(V+16)AND1)=1ANDPEEK(V)>80 THEN 6800
6720 GOTO 6705
6800 PRINT "[ ]":POKE 53282,13:POKE 53283,5:POKE V,20:POKE V+16,0
6805 FOR N=1 TO 4:SC=SC+150
6806 PRINT " ~~~~~~":NEXT
6810 FOR N=1 TO 12
6812 PRINT " ~~~~":NEXT
6814 FOR N=1 TO 4
6816 PRINT "~~~~~":NEXT
6818 GOSUB 25
6825 IF (PEEK(V+16)AND1)=1AND PEEK(V)>80 THEN 6900
6826 IF PEEK(955)=1 THEN 62000
6830 GOTO 6818
6900 PRINT "[ ]"
6920 FOR N=1 TO 3
6922 PRINT "~~~~~":NEXT
6924 POKE V,20:POKE V+16,254
6926 GOSUB 25
6930 IF (PEEK(V+16)AND1)=1ANDPEEK(V)>80 THEN 7000
6931 IF PEEK(955)=1 THEN 62000
6935 GOTO 6926
7000 PRINT "[ ]"
7202 FOR N=1 TO 17
7204 PRINT "~~~~~":NEXT
7206 FOR N=1 TO 3
7208 PRINT "~~~~~":NEXT
7210 POKE V,20:POKE V+16,0
7212 GOSUB 25
7216 IF (PEEK(V+16)AND1)=1 ANDPEEK(V)>80 THEN 7300
7217 IF PEEK(955)=1 THEN 62000
7220 GOTO 7212
7300 PRINT "[ ]":POKE 53282,8:POKE 53283,9
7302 FOR N=1 TO 3
7304 PRINT " ~~~~~~":NEXT
7306 FOR N=1 TO 15
7308 PRINT " ~~~~":NEXT
7310 FOR N=1 TO 2
7312 PRINT "~~~~~":NEXT
7314 POKE V,20:POKE V+16,254
7315 IF PEEK(955)=1 THEN 62000
7316 GOSUB 25
7320 IF (PEEK(V+16)AND1)=1ANDPEEK(V)>80THENGOSUB300000:GOTO7400
7330 GOTO 7316
7400 PRINT "[ ]":POKE V+21,0
7402 PRINT "OH MY GOD YOU MADE IT"
7404 PRINT "HOW IS THIS POSSIBLE"
7406 PRINT "YOU MUST HAVE CHEATED"
7408 PRINT "BASH THE FIRE BUTTON"
7410 PRINT "WITH THIS GAME WOZ PROGRAMMED OVER A"
7420 PRINT "10 YEAR PERIOD AND IN THE PROCESS OF "
```



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7430 PRINT "PROGRAMMING IT I NEARLY CRACKED UP"
7440 PRINT "AND ACTUALLY GOT ROUND TO ENROLING FOR"
7450 PRINT "COLLEGE . . . THANKS FOR PLAYING"
7460 PRINT "JUST A FEW HELLOS TO THE TWO BOBS GAZ"
7461 "WAL BRI BILLHEMYSONCAROL OUR COLLEGE MOB"
7470 IF PEEK(56320)<111 THEN 7470
7480 GOTO 10
10000 V=53248:POKE 950,0
10001 FOR N=828 TO 844:POKE N,0:NEXT:POKE V+27,0:POKE V+16,0
10002 POKE V+23,0:POKE V+29,0
10003 SYS 49152
10010 FOR N=51192 TO 51198:POKE N,132+N-51192:NEXT
10020 FOR N=0 TO 7:POKE V+39+N,7:NEXT
10030 POKE V+37,8:POKE V+38,1
10040 PRINT "J":POKE 53281,0:POKE 53280,0
10045 POKE V+28,255
10050 POKE V+1,60:POKE V,130
10060 POKE V+3,60:POKE V+2,160
10070 POKE V+5,60:POKE V+4,185
10080 POKE V+7,60:POKE V+6,215
10090 POKE V+9,85:POKE V+8,150
10100 POKE V+11,85:POKE V+10,174
10110 POKE V+13,85:POKE V+12,198
10115 POKE V+21,127
10120 PRINT "LOB A JOYSTICK IN PORT2 AND PRESS FIRE"
10140 PRINT "HYPER AMAZING PEOPLE"
10150 FOR N=1 TO 5
10160 PRINT "Z(N),";Z(N);";";A$(N)
10165 PRINT
10170 NEXT
10180 PRINT "DESIGNED AND PROGRAMMED BY STE PATTULLO"
10190 S=54272:FOR N=5 TO 5+24:POKE N,0:NEXT:POKE S+24,15
10200 POKE S+5,100:POKE S+6,200
10210 POKE S+12,5:POKE S+13,100
10220 POKE S+2,50:POKE S+3,200
10230 POKE S+4,65:POKE S+11,129
10240 READ A,B
10250 IF A=-1 THEN RESTORE:GOTO 10230
10260 POKE S+1,A:POKE S,B
10280 FOR N=1 TO 150:NEXT
10291 POKE S+11,128
10292 GET G$:IF G$=" " THEN 20000
10300 IF PEEK(56320)<111 THEN GOTO 10230
10305 RETURN
10500 DATA 19,63,21,154,19,63,22,227,19,63,25,177,19,63,28,214
10510 DATA 19,63,21,154,19,63,22,227,19,63,25,177,19,63,28,214
10520 DATA 21,154,19,63,21,154,17,37,21,154,16,47,21,154,19,63
10530 DATA 21,154,19,63,21,154,17,37,21,154,16,47,21,154,19,63
10540 DATA 21,214,22,227,22,227,21,154,21,154,19,63
10550 DATA 21,154,21,154,19,63,21,154,22,227,25,177,28,214,21,154,21,154,-1,-1
20000 POKE S+24,0:POKE V+21,0:PRINT "J":X=0
20001 POKE V+23,255:POKE V+29,255:Z=10
20005 FOR N=51192 TO 51199:POKE N,130:NEXT
20010 PRINT "CREDITS AND STUFF"
20020 PRINT "PROGRAMMING STEVEN PATTULLO"
20030 PRINT "FUNNY NOISE ME AS WELL"
20040 PRINT "ENEMY SPRITES KENT MURRAY"
20050 PRINT "BACKDROPS ME AGAIN YAWN"
20070 PRINT "////////////////////////////////////"
20080 PRINT "MEGA MEGA THANKS AND HELLOS MUST GO TO"
20090 PRINT "KEVO AND EMMA HAPPY DARREN COL KENT"
20095 PRINT "JAGAR SIMON MIK CBM BREEZE BLOCKS LTD"
20100 PRINT "ANDY BRAYBROOK PCW BUFFS SNOOKER TEAM"
20110 PRINT "AND ALL YOU NICE PEOPLE OUT THERE"
20115 PRINT "THANKS TO KENT FOR NOT DOING THE MUSIC"
20117 PRINT "PRESS SPACE FOR A HEADACHE"
22001 POKE 828,6:POKE 829,2:POKE 830,3:POKE 831,4:POKE 832,5:POKE 833,1
22002 POKE 834,7:POKE 835,8
22100 FOR N=0 TO 15:POKE V+N,150:NEXT
22105 FOR N=837 TO 844:POKE N,10:NEXT

```


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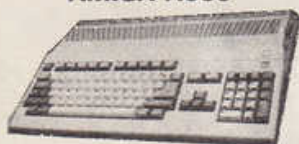
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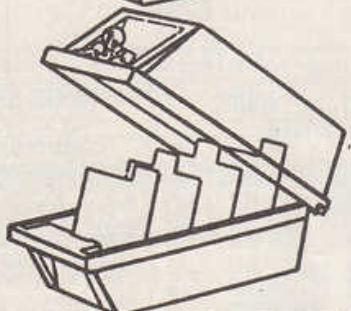
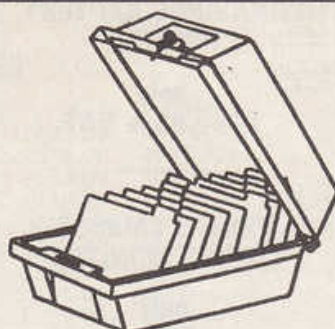
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The good, the bad and the indifferent

We have all seen their advertisements, many in the pages of this magazine, pleading for games to be sent, with promises of names in lights and fortunes to be made. As a part time freelance games writer I am sure that I cannot be alone in having suffered at the hands of so many software houses. Treatment is mostly indifferent but ranges from good to outrageous.

Since many software publishers seem so desperate for material, a budding young writer could be forgiven for thinking that, having carefully and lovingly dispatched his cassette containing many hours of work, some sort of reply or acknowledgement might be in order. How naive! Having suffered at the hands of numerous houses for a number of years, I can only sympathize with him.

If an author submits a manuscript for a book to a publisher it would be quite improper for him to send the same manuscript to several other publishers at the same time. He could, however, be reasonably sure of a reply and his manuscript returned if unsuccessful. I do not, however, think that the same unwritten rule can be applied to software publishers. To wait for a reply or rejection before sending the material to the next software house could mean many months or even a year elapsing. By this time the demand could well have changed, such are the fluctuations in the market. Admittedly some

houses are good, many are indifferent and some downright bad.

I now only send games after making an initial contact by telephone to some responsible person at the publisher. Despite this, however, out of the last six publishers to which games have been submitted, three have failed to reply or even acknowledge receipt of cassettes. Two sent the usual stereotype rejection and one was downright rude. None had seen fit to return the cassettes. Is it expecting too much for unwanted games that have been solicited to be returned?

I sometimes wonder if some publishers really know what they want and whether they are properly able to judge the market. Readers might be interested in some recent comments received from major software houses:

The good *'Thank you for your games sent for evaluation. We feel that it is now worthwhile approaching the High Street distributors and export agents. We would like your permission to duplicate 25 copies of each game etc ...'*

The bad *'Absolute drivel.'*
'You want to turn it off as soon as you see it.'
'I did better in my computer studies project at school.'

Yes! These latter comments were actual-

ly sent as part of a reply from a major software house that has recently advertised in these pages! Now I would be the first to agree that I am not the world's best games writer, I would not even be offended if my work was to be described as mediocre. I have, however, had work published and these comments are hardly worthy of professional people. Such companies do service to the computer industry nor to themselves and do not deserve to succeed.

As a teacher with a ready market of willing reviewers I sometimes wonder at the response of many publishers. We all know that the market has become much more sophisticated in recent years but does this mean that there is now no room for the traditional 'shoot-'em up' type of game. Judging by scenes to be found at any amusement arcade, I think that there certainly is room.

Software publishers are obviously in business to make money and they take a risk in producing a game for an uncertain market. They should remember, however, that the writers do most of the work. Many houses have few or no in-house writers, relying on a vast army of freelance writers. Could it be that the great demand in recent months is because this army is now very much depleted owing to poor rewards and indifferent treatment meted out by many publishers in the past... Don't knock the writers. □

Raymond G. Jones

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