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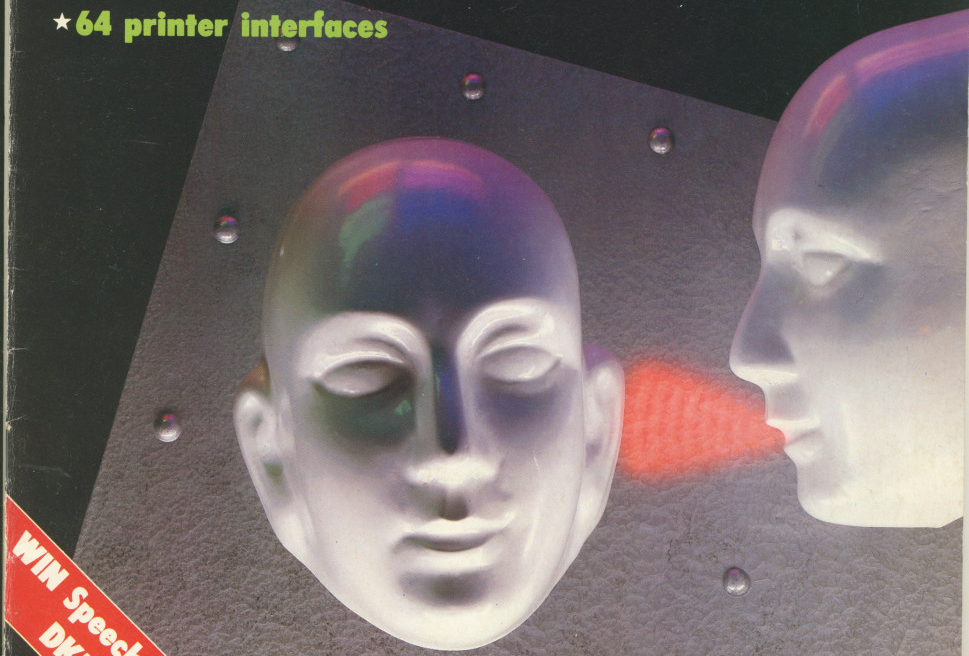

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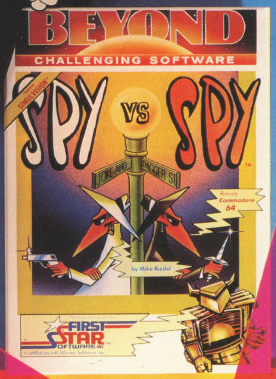

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US address
Commodore Horizons, c/o Business Press International, 205 East 42nd Street, New York, NY 10017.

Subscriptions
UK £10.00 for 12 issues, overseas surface (excluding US and Canada) £16.00 for 12 issues, US and Canada airlifted US$33.95 for 12 issues.

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Commodore Horizons welcomes readers' contributions — either articles or program listings. Articles should be typed double-spaced with a wide margin. Programs should, whenever possible, be printed out on plain white paper, accompanied by a cassette. We cannot guarantee to return every article or program submitted, so please keep a copy. If you want to have your program returned you must include an s.a.e.

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Commodore Horizons is published monthly by Sunshine Books, Scot Press Ltd. Typeset by In-Step Ltd, 33-41 Dallington Street, London EC1. Printed by Riverside Press Ltd, Thanet Way, Whitstable, Kent. Distributed by SM Distribution, 16-18 Trinity Gardens, London SW9 (telephone 01-274 8611, telex 261643). ISSN 0265-4164. Registered at the Post Office as a newspaper.

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CONTENTS

News 8
Plus/4 price cuts, Stanworth out and Channel 4 on the micro market

Mail Merge 10
Our new-look letters page with readers' comments and the £10 star letter

Soft Hits 11

All the goodies and the garbage in the galaxy's greatest games reviews

Speak and spell 16
Roger Jones plunges into conversation with his 64 on the subject of speech

Printerfaces 20
If you want to use a high-quality printer with your 64 you need an interface — Bill Donald assesses the market

Mastering sprites 24
Sarah Cotton responds to zillions of requests and explains M.O.B.s

Tower of Adventure 32
Barbara Conway straps on her buckler and sallies forth to battle Doomdark

VIP software 34
Very Important Package for modem users introduced by John Cochrane

Profile 36
The friendly ghouls at Palace Software talk about Cauldron

Shrink 38
Mike Hart's utility may save a visit to the psychiatrist by solving memory space worries

Spirit of the Stones 40
Commodore's unique puzzle package brought up to date

Software file 42
Playing music on the 64 and racing horses on the Vic 20

Answer Back 45
Jack Cohen's latest look at technical tips and hardware hints

DK/Currah contest 47

Your chance to win the Speech 64 voice synthesiser featured in our cover article

Imprint 54
More book reviews on the Commodore 64, Vic 20 and computing in general

Hobbit contest 58
Melbourne House's phenomenal Hobbit is now on disk — you can win a copy

EDITORIAL

COMMODORE'S surprise price cut for the Plus/4 has been met with mixed reactions by the computer press. While Commodore can rightly claim that at £149 the Plus/4 is more competitive with the Acorn Electron and the Sinclair Spectrum Plus, the company's original claim suggested that the Plus/4 was not aimed at the same market — it was to be the "productivity machine", its unique built-in software putting it far ahead of other home computers.

Accepting for the moment that the Plus/4 is now being asked to compete with the Electron and Spectrum Plus, where does this leave the C16? Already one major retail chain, Curry's, has cut the price of the C16 starter pack to £80. Christmas purchasers must be fuming.

Although software support for the two new machines is growing, it looks as if they will never make as big a dent in the market as Commodore hoped. The 64 must continue to be the flagship of the Commodore fleet until the C128 emerges (in whatever form) to supplant it.

The 64 is an institution, just as the Zx81 was. Despite its poor Basic, the sound, graphics and memory size of the machine are combined to form an upique package. The C16 and Plus/4 compromise on these features, and are are software incompatible with the 64. Commodore will have learned a lesson from the difficulties they have encountered with these machines, and the next generation of CBM micros will doubtless be designed with this in mind.

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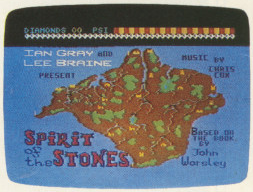
Only one man knows where they are, and he's not saying.

All that he has to say he's said already – but in the form of riddles, clues and puzzles.

Solve the puzzles in the Spirit of the Stones program and you'll find it much easier to solve the puzzles in the Spirit of the Stones book.



Solve the puzzles in the book and one (or more) of the diamonds can be yours.

Whoever discovers a diamond can also claim his or her share of the Royalty Fund, which could grow to a maximum of £1 million. It's a game that's as entertaining as it can be rewarding.

On cassette or disk, £14.99.

INTERNATIONAL FOOTBALL

Already it's recognised as the best football game ever seen outside of Wembley.

It's startlingly life-like, and gives you near perfect control of the players.

You can kick the ball, dribble it, pass it,

MEDALLION.
HAVEN'T GOT IT
AVEN'T GOT IT.

head it or even throw it in from the touch-line. And every time you belt the ball into the net, the crowd cheer wildly.

How often you score depends on how good you are, and also at what level you choose to play.

There are 9 levels you can play against the computer. Or you can play a friend.

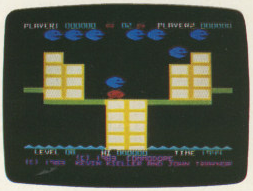
International Football is a real test of skill, dexterity and speed. It is certain to drive you football crazy.

On cartridge, £14.99.

JACK ATTACK

There's no other game like it. It has been voted by the U.S. magazine 'Electronic Games Hotline' as a 'must buy.'

Jack Attack is about squashing heads. It's an addictive game, a game of strategy and cunning. We can almost guarantee it will turn you into a head-case.



To stay alive, Jack must leap aside from collapsing bridges and crashing blocks, and at the same time he must make sure he doesn't fall into the water... and drown.

And that's the easy bit.

Because everywhere Jack goes he's dogged by jolly bouncing sadistic heads that are out to nut him.

He has to squash their heads before his is squashed.

And Jack can't afford to lose his head because we've only given him three, and when they've gone, he's gone...

Jack Attack is available for both the Commodore 16 and Plus/4. On cartridge £14.99.

commodore
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CBM Int'l profits down

COMMODORE International's latest financial reports make dispiriting reading. In the six months ending December 1984 earnings were down by $52m over the same period the previous year. Chairman Irving Gould blamed the high value of the dollar, and said that the fiscal period just ending was "transitional". New products planned for the US and worldwide markets would, Gould announced, contribute to Commodore's growth.

Nidd Valley saves Slomo

CAMBRIDGE Computing Research, distributor of the Slomo peripheral, has gone into receivership. Nidd Valley Micro Products, the company responsible for the design of the Slomo, has re-organised manufacture and distribution in Yorkshire.

Cambridge Computing distributed a range of joysticks and interfaces for popular computers. No news of the company's future has yet emerged.

Keith Tippey of Nidd Valley said "This was a severe setback to our company as Cambridge Computing were our major subcontractor and distributor. However, we are able to fulfill all orders without delay."

The Slomo costs £14.95 and is now available from Nidd Valley Micro Products at Stepping Stones House, Thistle Hill, Knaresborough, North Yorks, 0423-864488.

Activision in print

GAMES software specialists Activision have published a free magazine. The Activision Software Club News winter issue is 16 pages long and carries news and reviews of new Activision products for the Commodore and other computers.

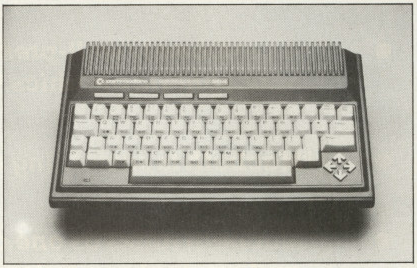
For your copy contact Activision at 15 Harley House, Marylebone Road, London NW1, 01-486 7588.

Plus/4 and C16 go down

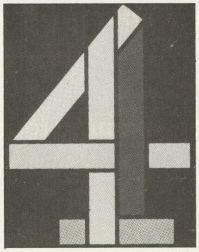
THE PRICE of the Plus/4 has been cut from £299 to £149 in a bid to boost sales. Commodore's marketing manager, David Gerrard, argued that the new price will allow the machine to compete with the Sinclair Spectrum and Acorn Electron, both of which have recently been cut in price.

Although Commodore announced they had no intention to cut the price of the C16, three major retail chains have taken the decision out of their hands. Dixon's and Curry's have cut the price of the C16 Starter Pack, which includes the micro, data recorder, manual and four software packages, to £79.99, and Smith's has cut the price to £129, from the original price of £139.

The price cuts are thought to be a reaction to poor sales after a reasonable performance over the Christmas period. Ironically, while complaints of software shortages have been heard from many C16 buyers, it is only now, when it seems that the retail chains may be trying to dispose of their stocks, that C16 software is coming out in considerable quantities.



Commodore confirmed that there are no plans to delete either the C16 or the Plus/4, but with the C128 on course for launch in the Summer speculation is that the machines will be sacrificed on the altar of software compatibility.



4-Tel future

CHANNEL 4 Television has announced two new productions for micro users. 4 Computer Buffs, a weekly series, will be on air by the time you read this. It's to be transmitted on Mondays at 5.30, and is produced by the Thames TV team responsible for the popular Database series.

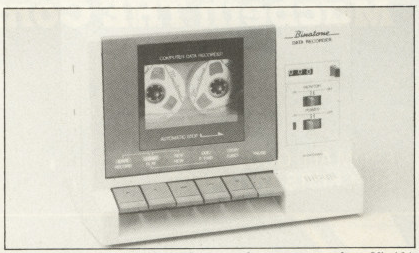
Each week the program will look at news and current affairs in the micro market, emphasising educational uses and telecommunications.

In addition the series will include light-coded on-air software transmissions which can be picked up using a simple-to-construct light pen. There will also be audio code transmissions on Tuesday mornings on Channel 4.

Meanwhile 4-Tel, the Channel 4 section of the teletext service Oracle, will begin a software downloading service. Initially the decoder required will be available only in versions for the Sinclair Spectrum, but a CBM 64 version is planned. The decoders are manufactured by OEL and will cost around £140.

For more details contact Channel 4 Press Office, 60 Charlotte Street, London, 01-631 4444.

Binatone breaks into peripherals market



BUDGET hi-fi specialist Binatone has announced a Vic/64 compatible data recorder, the 01/6560. At £34.95, the machine offers facilities unavailable on the Commodore C2N datasette; cue and review, pause and a loudspeaker.

The 01/6560 features in addition a front-loading format with soft eject, and automatic stop.

Contact Binatone on 01-903 5211.

Stanworth out

DRAMATIC moves at Commodore's UK headquarters in Corby in the last few weeks have resulted in a major shake-up in the company.

★ 100 assembly line workers were laid off in what was said to be "the result of seasonal variations in staffing requirements"

★ Aileen Bradley of the retail marketing department left the company along with "a number of other permanent staff"

★ US senior executive Marshall Smith flew into the UK

★ and UK general manager Howard Stanworth resigned his post without explanation

Financial director Arthur Scott is to stand in for Stanworth until a new appointment is made.

Although Commodore will not admit any connection between Smith's visit and the departure of Stanworth, speculation is that the price-cut from £299 to £149 for the Plus/4 has not gone down well with the American board. The Plus/4 stays at $275 to $325 in the US, fuelling speculation that the UK price cut was not authorised by America.

No official announcement of the management shake-up has yet been made. It is not known why Stanworth, who joined Commodore over a year ago from United Dairies, chose to leave the company, or what his departure implies for the future of Commodore UK.

Ex-GM Stanworth

LET down

THE FEBRUARY LET (Leisure Electronics Trader) show at Olympia held no great surprises for Commodore users.

However, there were several interesting developments in the field of peripherals. The Timex 3-inch disk drive and operating system should be available for the 64 in the Summer. It consists of a machine-specific interface with a standard disk unit, and up to four units can be chained under the control of the built-in Z80 processor. The disks can store 160K per side, and the controller includes two RS232C ports. The disk operating system extends Commodore Basic with eighteen new commands, and the system is completely transparent to existing software and hardware. Operating speed should be 4-5 times faster than the 1541 disk drive, though the final details of price and distributor have not been fixed. Contact Micro Interface, 84 Talbot Road, London, 01-340 0310.

MCT's 64K RAM board for the C16 extends the machine's useable memory to 60671 bytes. It can be fitted without modification to the PCB, and is said to be fully compatible with existing C16-Plus/4 software. Cost will be £49.95. Contact MCT Co., Group House, Fisher's Lane, Norwich, Norfolk, 0603-666966.

Dynamics Marketing's acoustic coupler is a 300 baud, full duplex originate and answer device, consisting of an interface unit and a coupler compatible with all types of telephone handset. Cost is £77.50 with software, while the useful Right Notch disk cutter costs £5.70 and can be used to turn single-sided disks into double-sided. For both contact Dynamics Marketing, Unit 2, Franklin Street, Oldham, 061-626 7222.

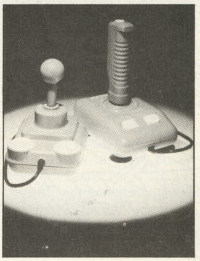
Anirog's Voice Master, by Covex USA, is a unique device consisting of an interface for the 64 and a head-phone-mounted microphone. It enables you to sample your own speech into the computer's memory, then either reproduce it or use it in speech recognition programs. The Voice Harp mode allows you to whistle or hum into the computer, which will then play its own SID chip in tune with the sound in a variety of different modes. Voicemaster can be used with your own Basic programs, though once recorded the unit is not necessary to reproduce the sounds, so speech and other effects can be incorporated into your own games. Cost will be under £50, as will that of the Super Sketch drawing tablet, another American import first seen at the Commodore Show last year. Contact Anirog at Unit 10 Victoria Industrial Park, Victoria Road, Dartford, Kent, 0322-92513.

Joysticks and a trackball coming

HARDWARE users are in for a treat with the release of micro controllers from three companies.

Vulcan Electronics' latest product is the *Gunshot,* a dual fire-button joystick costing £8.95. It's compatible with the CBM 64 and Vic 20, and with the C16 and Plus/4 using a Vulcan adaptor. There's also a rapid fire version of the Gunshot planned. Contact Vulcan on 01-203 6366.

Kempston Micro Electronics' offerings are the *Grand Prix* series; the *Formula 1,* a microswitch based self-centering dual-button model; and the *Formula 2,* a new design with a pistol grip and both base and handle fire buttons. Call Kempston on 0234-852997.

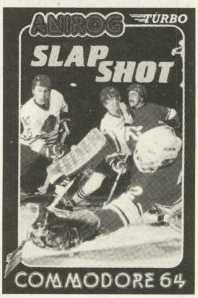


Finally, Marconi's *Tracker Ball* has more serious uses, as it's intended to be a computer-aided design accessory. The CBM 64 version will cost £59.50 and come complete with a design software package. Contact Central Trade Exchange, Ashton Lodge, Ashton Road, Dunstable, Beds, 0582-64334.

Anirog back in the game

ANIROG'S new titles for Commodore machines include games for the Vic 20, 64 and C16/Plus-4.

Slap Shot is a two player ice hockey simulation for the 64, incorporating software speech and Turbo loading. Cost is £8.95 on cassette and £10.95 on disk.



Minipedes costs £6.95, and contains versions for the C16-Plus/4, CBM 64 and Vic 20 + 16K. It's a version of the classic Centipede.

3-D Time Trek, Zodiac and *Star Commander* cost £6.95 for the C16-Plus/4. The games are, respectively, a version of Star Trek featuring long and short range sensors, Navigation Computer and Damage Sensors; a supernatural maze game with 400 corridors and legions of monsters; and a space shoot-'em-up.

Reviews in due course. Contact Anirog at Victoria Industrial Park, Victoria Road, Dartford, Kent, 0322-92513.

Mail Merge

Send your letters on software, hardware, computing or life in general to Mail Merge, Commodore Horizons, 12/13 Little Newport St., London WC2H 7PP. Star letter wins £10.

No go on 64 CP/M

I THOUGHT you may be interested to hear the result of an exchange of letters between myself and Commodore (UK) Ltd.

The most interesting fact is the removal of the CP/M cartridge from the market. I personally find this a rather sad event. For some time, CBM 64 Users in the U.S. have been able to purchase many products to run under CP/M, such as COBOL. Admittedly, it does require some intense searching of advertisements in magazines such as 'BYTE', or (more easily) through specialist magazines; yet the products were never advertised here, especially as there must be a considerable market for them.

For my own part, I must confess that I would very much have liked to implement some software using CP/M, or at least to experiment with a Z80 micro-processor, but the support from Commodore can at best be described as minimal. In addition, the rumours of unreliability of the CP/M cartridge (i.e. totally refusing to work with some issues of the '64) question the market value of the product.

I have actually *seen* the 'p-system' operating on a standard CBM 64. Perhaps it is the intention of Commodore to replace the unreliable CP/M hardware with a more reliable Software-based Operating System, and hence release products that way? Certainly, no mention was made of this in the official reply to me.

My letter pointed out that dealers seemed unable to get stocks of the CP/M cartridge, and that no CP/M software has been released by Commodore.

The reply from Commodore stated that due to software shortage and incompatibility problems the CBM 64 CP/M cartridge was to be withdrawn.

Adrian Warman
University of London

THE INTRODUCTION of the C128, with its CP/M operating mode, may also have influenced the withdrawal of the 64's CP/M cartridge. In order for the 128 to have a clear market advantage it would be sensible for Commodore to pull out of 64 CP/M.

Commodore club

I HOPE you will give my new computer club a mention in your letters page.

This club is privately run mainly as a hobby, and is only for Commodore owners (Vic 20, CBM 64, C16, Plus/4). If I can obtain sufficient response then there will be a quarterly newsletter which would contain the following items:
Letters column, Latest news, New software review, Machines and accessories at discount prices, Secondhand machines and accessories for sale, Competitions, Quizes, Puzzles, Software at discount prices, Hints and tips, Software projects, Special offers, Technical information, A to Z guide to computers, Help and advice, Free advertising, Software hire service, Register to swop your unwanted software, Sales register, special list of dealers who offer a good service, as recommended by members.

If anyone would like more details all they have to do is send an s.a.e. to me.

Paul Hoare
127 Avenue Road
Beckenham
Kent

Graphics gallery

AFTER reading *Creative Computer Graphics* by Annebel Jankel and Rocky Morton, I was inspired to write to you. How about running a 'Gallery of Computer Graphics', so that people can show off their graphical creations, perhaps with prizes (as in the letters page).

£10 winner

Robert Bowers
Park Gate
Southampton

GOOD idea! Send in your programs on cassette, colour photos, or transparencies, of graphics you've created on the Vic, 64, C16 or Plus/4, and we'll publish the best and think up a fab prize or two.

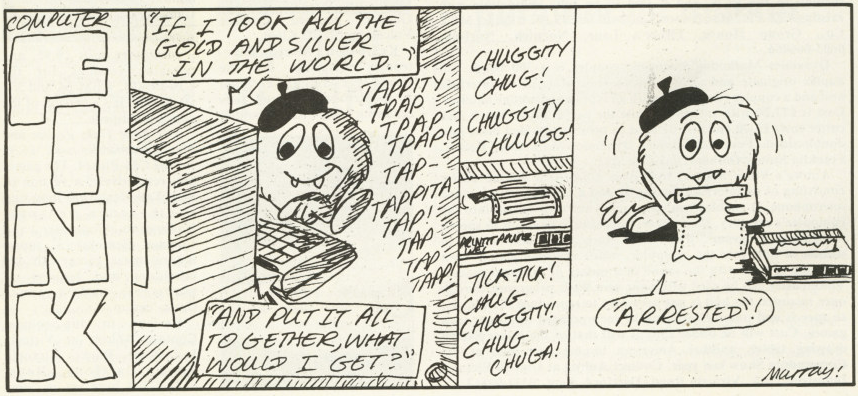
Compunet praised

I WOULD like to suggest that you put some of your listings on Compunet, as Jeff Minter did with **Syncro.** You could charge a nominal fee (Say 50p) or perhaps no charge. There are a couple of thousand of us out here with CBM modems and I'm sure we'd all be grateful if you would do this.

A few writers have complained that Compunet is expensive to use. Would you explain to them that most of us out here have to go to work during the day and that by the time we sit down at our computers, it's after 6 and it's free (except for the cheap rate phone call). There are quite a few excellent programs both free and cheap, and a few good ones at full price. Having downloaded quite a few programs, I consider that the downloading time isn't too bad — certainly it's faster than loading from tape.

Don't be too negative about Compunet!

M G Merrington
Normanton
Yorks

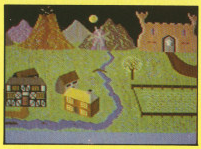


SOFT★HITS

Magical tricks

Quite a good idea here, but not as well exploited as it might have been.

You play the part of a witch magically transformed into animal shape. In the first screen you must lassoo a passing leprechaun just (like catching the bus) and follow it along a row of toadstools,



beating off attacks by unfriendly birds with a flick of the tail.

The next screen sees you zapping ravens in order to clear the path to a bridge, after which you must pass a precious diamond to an owl which will carry it through to the next stage. So it goes on, through a poisonous lake, a forest, and to the witch's house, where if you drop the magic pouch into the cauldron you can regain your true shape.

The ultimate aim is to stop a volcano from exploding and destroying your village. I can't pretend I stuck with it long enough to do that.

The graphics and animation are OK but no more, and overall Witch Switch, while nothing unusual, could fairly be described as a decent pot boiler.

Program: Witch Switch, 64
Supplier: English Software
Price: £6.95
Graphics: ★★★★★
Sonics: ★★★★
Gameplay: ★★★★

Down on the beach

The latest from Bridlington loonies Taskset, Seaside Special is another off-the-wall offering which combines snide political comment with high playability.

Radium Rodney must scour Rotaway Beach for radioactive seaweed, avoiding the unwelcome attentions of jellyfish, crabs, hungry clams, voracious seaweed pits and armed guards. Having collected ten lumps, he can preceed to Downing Street and

bombard the evil alien Polytikians whose nuclear processing plant is responsible for all the nastiness in the first place.

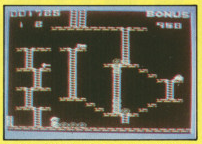
The caricatures of N*r**n T*bb*tt, Geo**rey H*we, L**n Br****n and so on are wickedly realistic, but don't make the mistake of thinking that there's nothing more than a political joke to the game. It's jolly good fun and is done with the usual Taskset wit and polish.

Nice music and picture postcard artwork complete what is a very good little package.

Program: Seaside Special, 64
Supplier: Taskset
Price: £6.90 cassette, £9.99 disk
Graphics: ★★★★★★
Sonics: ★★★★★★
Gameplay: ★★★★★★

Snakes & ladders

An unremarkable but perfectly competent ladders-and-platforms game. Micky the Bricky must search through four building sites for sets of



tools. He's hampered in his efforts by rolling oil drums, which threaten to dislodge him from the ladders and platforms and stop him from moving to the next stage via the top of the buildings.

Control is by keyboard or joystick, and for the price it's certainly worth a play. Vic owners can't afford to be that fussy anymore if they want new software, so it's nice to see that Firebird is going some way to support them. Make the most of it.

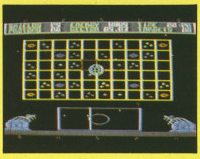
Program: Mickey the Bricky, Vic 20
Supplier: Firebird
Price: £2.99
Graphics: ★★★★
Sonics: ★★★★
Gameplay: ★★★★

To boldly go, yet again...

Aaargh! Yet another oldie — but fortunately a goodie. This is one is based on the Star Trek concept — using long and short range scanners and a variety of weapons, you must clear sector after sector of space in order to protect your homeworld from attack by the deadly (fill in whichever alien race applies).

In this case there are 60 sectors, and the baddies are the evil Gorganitor. Your long range scanner shows you all 60 sectors, with the homeworld of Jaraloba spinning serenely in the middle. By warping through hyperspace to each sector (watch out for those space mines!) you can engage the enemy in combat, and in the exciting fight sequences your Phasor Cannon and Proton Helix charges help you to destroy the enemy fighters and base stars. The tracking effect of your guns is very well done, and the baddies' ships are OK.

All the usual status reports



are given above your viewscreen, and you must use your radar displays to help you to dock with home bases for refuelling and repairs. At the end of each mission you're given a rating based on time taken, energy used, shots fired, shields left, and so on. So far I have won the respect of the evil Gorganitor at the expense of my own life — not much consolation.

Distinguished from the crowd by its attention to detail. Go for it.

Program: Sentinel, 64
Supplier: US Gold
Price: £8.95
Graphics: ★★★★★★
Sonics: ★★★★★
Gameplay: ★★★★★★

SOFT★HITS

SOFT★HITS

Scramble gamble

Yet another version of the famous Scramble, but this time distinguished by being a conversion of one of the best versions for the Spectrum.

Melbourne House's Scramble version sticks to most of the rules; your ship must fly through caverns and mazes avoiding enemy

missiles, dodging obstacles and zapping installations, in this case radar towers which unless put out of action feed information to the homing missiles.

It's not a particularly difficult game on Level One, but just to be different Penetrator includes a routine which allows you to use cursor controls to design your own screens, placing as many obstacles as you want until it becomes totally impossible to win!

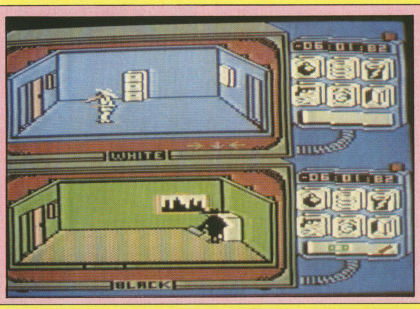
There's a marvellous fireworks show when you get through to the end, and awesome music which sounds like Rick Wakeman on speed. Well worth a look for devotees of shoot-'em-ups or connoisseurs of sprite graphics.

Program: Penetrator, 64
Supplier: Melbourne House
Price: £7.95
Graphics: ★★★★★★
Sonics: ★★★★★★
Gameplay: ★★★★★★

In black and white

Spy vs. Spy is Beyond's latest US import, this time from the highly regarded First Star. Based on the famous cartoon from Mad magazine, the game incorporates an unusual if not unique simultaneous two-player principle.

The White and Black spies scuttle through the many rooms of an embassy seeking secret papers, and attempting

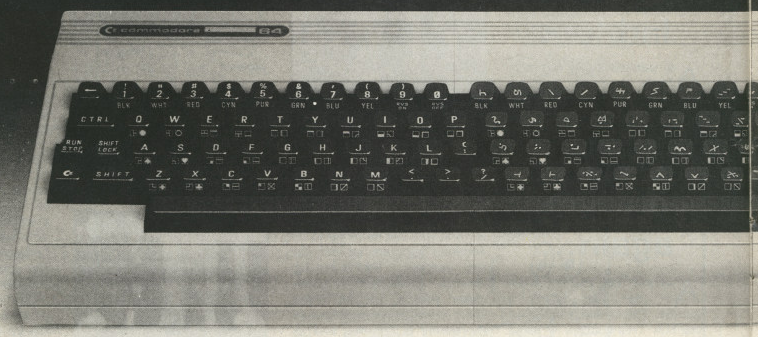


to trap each other with various fiendish devices, selected using the ingenious Trapulator. The music is catchy and the attention to detail admirable, the victor jumps up and down with glee and the loser snuffs it convincingly.

Very clever, though initially difficult to play. Stick at it.

Program: Spy vs. Spy, 64
Supplier: Beyond Software
Price: £9.95 cassette, £11.95 disk
Graphics: ★★★★★★★
Sonics: ★★★★★
Gameplay: ★★★★★★

The answer to your pro



That's one answer, here's a more practical one – BREDEN'S BASIC

Much as we all love the Commodore 64 for playing games or running our business software on, when it comes down to the nitty gritty of learning more about the computer and doing some programming, there is much room for improvement.

That is why we created **BREDENS BASIC** – it may not be the only extended basic around, but after reading the following information we are sure it is the only one you'll buy.

BREDENS BASIC – the Essential Extended Basic for the Commodore 64 incorporating High Resolution Colour Graphics, Structured Programming Techniques, Multi-Colour Graphics, User Defined Character Graphics, Music and Sound Synthesis and Toolkit Facilities plus many other useful features.

BREDENS BASIC has more commands, 135 in all, for the programmer to use than any other Extended Basic currently available, and drives the Sound and Graphic chips to their fullest extent short of writing in Machine Code.

Second scramble

Just for a change, a version of — Scramble! The difference here is that the screen is presented, not in the usual 2-D format of, say, Melbourne House's Penetrator, but in a perspective 3-D format. The result is that 3-D Skramble looks more like a version of Zaxxon, and it's a very pleasant change.

The graphics are very colourful and the explosions and other effects good. Particularly nice is the city scene which is gratifyingly difficult.

The resolution on the sprites isn't as good as it might be, and some of the graphics are flickery, but this isn't too much of a problem. The soundtrack is based on a stirring version of 633

Squadron, and all the usual elements are there — missiles, fuel dumps, indestructable fireballs, suicidal saucers and anti-aircraft missiles. This doesn't seem to be the month for originality, but ho-hum, you take what you get.

Program: 3-D Skramble, 64
Supplier: Livewire
Price: £7.95
Graphics: ★★★★★
Sonics: ★★★★★
Gameplay: ★★★★★

Crime pays

Villain is good fun considering the limitations of the Vic, with big chunky graphics, fast-moving action and decent sound effects. PC Plod, scourge of thieves everywhere, chases you as you pump your joystick frantically in a Daley Thompson-esque attempt to build up speed. You score points by leaping into the air and collecting various valuable artifacts as you run. The problem is that Plod will catch up with you if you linger too long, and you will go straight to jail without passing GO or anything else for that matter.

You can throw diamonds, though why you'd want to I can't imagine, and you can also do something with vacuum cleaners (how you get an endless supply of the things in your swag bag I can't imagine). Things are complicated by Surveillance Floaters, Alarms and bombs.

All in all there's a lot going on, and since this is more than can be said for most Vic games, good luck to Interceptor.

Owners of the unexpanded Vic complain justifiably about the lack of new software. Users of the 8K and 16K Vic are in an even worse position, since what companies are still dealing in Vic software want to make their market as wide as possible by catering largely for the unexpanded version only. While the Vic goes through its closing period in the micro market, it must be a great comfort for owners to know that companies such as Interceptor — of which there are disappointingly few — are still willing to take the gamble of bringing out software of more than merely adequate quality.

Program: Villain, Vic 20+8K
Supplier: Interceptor Micro's
Price: £5.95
Graphics: ★★★★★
Sonics: ★★★★★
Gameplay: ★★★★★

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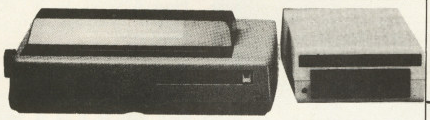

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COMMODORE 64

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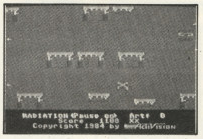
SOFT★HITS

Living in the past

Past finder is a potentially good game hampered by a lousy package. I know that you shouldn't judge a game by the box illustration, but people do — usually they are subsequently disappointed by the game itself. In the case of Pastfinder, the illustration of a gloved hand wielding a pick doesn't do justice to the game at all.

It's an abstract arcade adventure in which you control a Leeper, some form of biomechanoid quadruped, through a scrolling landscape full of mysterious objects and obstacles. Your goal is to pick up precious artifacts and deposit them at base stations, but you are hampered by increasing radiation levels and hostile aliens.

The Leeper moves in an indefinably peculiar rolling gait, and the baddies are well-designed and animated. There are protective devices and



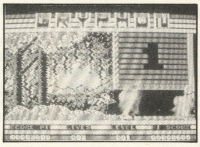
weapons which can be selected between stages, and a map screen in which you can choose which direction to explore next — deeper into the radioactive zone, where the pickings are richer, or into safer areas.

An interesting and unusual offering, which you should check out despite the undistinguished packaging.

Program: Pastfinder, 64
Supplier: Activision
Price: £9.99
Graphics: ★★★★★★
Sonics: ★★★★★
Gameplay: ★★★★★★

Get a Gryphon yourself

Well, the graphics are very colourful as usual, the gameplay is very fast and exciting, the concept is original, and the sound is the usual high standard. But, oh dearie dearie me, when is Tony Crowther going to do something other than a sideways-scrolling zapper?



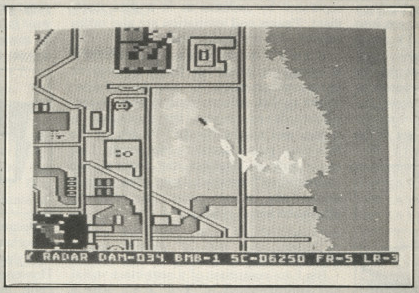
The Gryphon of the title is very cuddly for a mythical monster, and is required to fight off some fearsome sprites including Id Monsters and nasty glowing bowling balls, as he transports gold bars through the Dreamscape. The background is full of detail, and the zapping is first class (although Gryphon magic looks just like Proton Laser Plasma Energy to me).

I would recommend this game, because there's not much software about which reaches this level of imagination and technical skill. But I can't help feeling that Tony Crowther, he of Loco, Potty Pigeon and Black Thunder, should by now be moving, as has the Great God Minter, into new and more unusual areas.

Program: Gryphon, 64
Supplier: Quicksilva
Price: £7.95 cassette, £12.95 disk
Graphics: ★★★★★★
Sonics: ★★★★★
Gameplay: ★★★★★★

Helicopter holocaust

KERPOWWW! This is more like it. Unashamed megadestruction from Ariola as your Jetcopter sets off into the heart of the Bungeling Empire, in search of the automated factories which are churning out death machines by the score. The joystick-controlled 'copter handles beautifully, and the island landscapes scroll impeccably as you fight off jetplanes, bombers, AA fire and heat-seeking missiles.



Six factories must be bombed to prevent the completion of the battleship which will destroy your aircraft carrier. Since it's your only source of repair and armaments, you'd be well advised to protect it.

There's a map with the package which gives you a clue to the location of a secret weapons cache, but I haven't been able to find it yet, nor have I achieved the winner's victory parade. But I'm going to play this one until I DO!

Program: Raid on Bungeling Bay, 64
Supplier: Ariolasoft
Price: £9.95 cassette, £12.95 disk
Graphics: ★★★★★★★
Sonics: ★★★★★★
Gameplay: ★★★★★★★★

Wet fun

Football and cricket have been done, darts is dull and tennis is out of season, so I suppose that only leaves water-skiing. Hence Alligata's Waterski, a pleasant enough affair involving a stomach-churningly realistic representation of what it's like to be towed along behind a motorboat at high speeds. Oil-slicks and minefields bar your way as you attempt to line yourself up with the skijumps. Overspeeding causes your boat to explode, excessive caution and you're shark meat. You start by running a six-lap trial against the clock to qualify, then you get onto the suicide course.

There's something about the feel of this game which is very good; the background moves realistically, and you can almost feel the centrifugal force as you speed around the corners. There are also nice swooshing sound effects which add to the general atmosphere of sea-sickness.

Nice to see a game sans alien-zapping, ladders-and-platforms, sideways scrolling or 9,847 screens. See you later, Alligata.

Program: Waterski, 64
Supplier: Alligata
Price: £7.95
Graphics: ★★★★★★
Sonics: ★★★★★
Gameplay: ★★★★★

Software companies — send your new releases to SOFT HITS, Commodore Horizons, 12/13 Little Newport Street, London WC2

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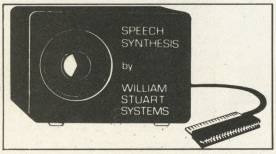
TALK

Your 64 can speak with the aid of software or hardware packages. Listen to ***Roger Jones*** *as he enters into a two-way conversation with his micro in which it's not what you say, it's the way that you say it*

SPEECH SYNTHESISERS have been around for some while now, and in general they all use the same basis for producing speech from your computer. In practice though the systems vary greatly.

Chatterbox

In the main speech processors are supplied in cartridge form, plugging directly into the user port and also having a DIN plug on a short lead which goes into the audio/video port next to the TV aerial socket. A short warning here; *never* insert or remove anything which has to be connected to the cartridge expansion/user port without first turning off the power, as this can damage the cartridge or the computer. Also make sure you get it the right way up.



First, to the real grandaddy of the bunch. The **Chatterbox** from William Stuart Systems was developed way back in 1980 for the now defunct U.K. 101 and Superboard D.I.Y. Computers, and has recently been updated for use on the CBM 64. It is somewhat unusual in having its own amplifier and speaker. It is packaged in a neat ABS box approximately 6'' x 4'' x 2'' and is attached to the computer via a flying lead and 24 pin edge connector which goes into the expansion port. On the top of the box are three sockets which allow for output to external amplifiers and speakers, and also input from the William Stuart Speech Recognition System, known as **Big Ears.**

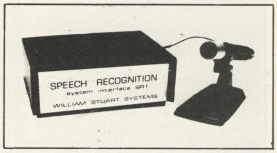
The Chatterbox does not hold a vocabulary of words, as do many of the more recently developed cartridge based systems, and the operating system has to be entered via the keyboard. This is, however, only a few lines of Basic, and does have the advantage of being able to be incorporated into the main body of a larger program. Words to be spoken can be entered using allophones, or more directly by entering a two digit number code for each allophone, the number codes or nmemonics being separated by commas as in a data statement. Pauses and intonation are also taken care of with a numeric code.

It is worth mentioning at this point that it is always necessary to finish a word or phrase with a pause, or else the last allophone spoken will continue to be sounded. All words or phrases are contained in strings and maybe handled by any of the 64's basic string handling commands. Due to its built-in amplifier and speaker, the ''Chatterbox'' produces very clear speech within the usual constraints of any allophone based system.

Learning

Big Ears comprises of a neat black metal box approximately 6'' x 2'' x 4'', with a brushed aluminium front panel. On the rear of this box is a 5 pin plug and a phono socket. Supplied with the unit is an Altai electret condenser microphone, stand and lead which plugs into the interface via the phono socket, and a length of multicore cable with a 5 pin din plug at each end which can be supplied wired so as to either plug directly into the 64, or be interfaced to the 64 via the Chatterbox speech unit.

The operating system for Big Ears is held in a program supplied on cassette tape. It is written as a number of Basic sub-routines so that it too can be incorporated into a larger program. For the purpose of testing however, the program will run as supplied and after loading and initialising the system you are asked if you want the unit to learn a new word or to test those you have already placed in the memory. To learn a new word, you assign it a word number and then type in the word. You are then asked to speak the word into the microphone. This must be done as clearly and as consistently as possible, four times, so that the program can build up an averaged voice print for each word input. Having entered two or more words, you can then proceed to test the system. When prompted, you speak the word into the microphone. The program then finds the best match between your input voice print and the averages held in memory, hopefully returning with the correct one!

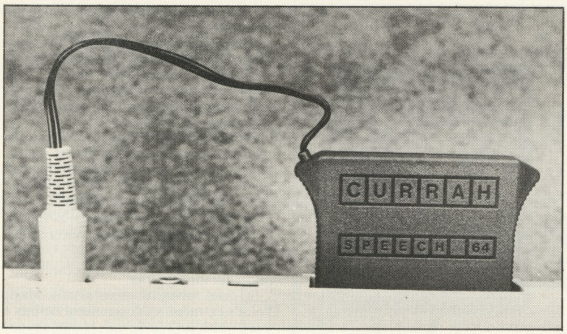


Because of its antiquity the Stuart system is perhaps the most basic of those I tested and this makes it a little user unfriendly. However it also means that you are free to chop and change the operating system around to a much larger extent than with more sophisticated units, and so far the more experienced programmer could hold more potential. I have, for example, managed to re-write the program so that both Chatterbox and Big Ears can be used simultaneously, thus enabling you to speak to the computer and have it speak back to you!

Cartridge

Of the cartridge type speech synthesizers, I looked at two types; The J.C.B. Microsystems **Speakeazy** and the DK/Currah **Speech 64.** Let's look at the Speakeazy first.

The cartridge is a neat black box about half the size of a cigarette packet, with a 23 page, A5 sized user manual. On power-up the normal Commodore legend is succeeded by a copyright message



indicating that the Speakeazy is on and working. Speakeazy is based on the General Instruments SP 0256 speech processor chip, which simulates speech electronically from a set of 64 allophones. Allophones are individual speech sounds, and any word in the English language may be built up from them. This is both the strength and weakness of such a system. In typing in words to be pronounced by the processor it is necessary to think not of how a word is spelt, but rather of how it sounds. The word must then be entered in a phonetic form which the processor can understand; in the case of the Speakeazy this entails entering each allophone, usually a two letter command, separated by commas and finished by a number between 1 and 5 to determine the length of the pause between words. To overcome this problem, J.C.B. has included a vocabulary of some 200 commonly used words which may be entered in plain English, but this produces yet another problem. In order to access the vocabulary it is necessary to use the 'SAY' command, whereas allophones need the 'SPEAK' command. To get over this J.C.B. has included another command word, 'ADD' which allows 'SAY' and 'SPEAK' to be used together as in this example from the manual:

ADD; SAY "HELLO, 4"; SPEAKA$; SAY "HOW, 4, R, 4, U, 4"; SPEAKA$

Allophones

Where A$ has already been defined in allophones, in this example, John, A— = JH, AA, NN1, 4. Thus the computer would say, "Hello John, how are you John." As you can see this is not uncomplicated, and of course if you wanted a name input into your program by the user, it is necessary that the user must know how to enter his or her name in allophones. However, of all the speech processors I have tested, the Speakeazy certainly supports the most structured programming, allowing the use of multiple statement lines and carrying extra basic keywords such as 'ADD' and 'WAIT' to control the main processor whilst the Speakeazy is doing its things! In the handling of numbers, Speakeazy wins hands down. It is the only processor which can interpret and speak a number as you or I would, for example all other processors would handle the following short program:

10 SC = 180
20 SPEAKSC

(or whatever the command is for that particular processor) by saying, "one eight zero", but Speakeazy says, "one hundred and eighty!" Clever huh! And obviously a better way of speaking your score at the end of a game. To my mind that is where Speakeazy comes out tops; with its sophisticated programming ability and numbers handling capacity, it is the cartridge I would choose to program the best speech into a game where all the end user is required to do is listen and understand what is being said.

Hawaii

The other cartridge I tested is a different kettle of fish altogether. DK Currah's Speech 64 is a real user's delight. The cartridge itself is just a little larger than J.C.B.'s and is sculpted to form finger grips for ease of insertion and removal. Currah entered the speech processor field with the Microspeech for the Spectrum and in many respects that product was very similar to J.C.B.'s Speakeazy. The Speech 64 is a vast improvement on the Spectrum version though, in that most words in English can be entered in their normally spelt form. Sometimes this does not sound quite right, but it is usually possible to correct this by spelling the word phonetically. My own name, Roger, whilst recognisable in its normal spelling, sounds somewhat better if spelt "ROTJER".

The DK Currah unit does this by breaking down the English spelling into recognisable component parts and converting them into the appropriate allophones. Of course it can be fooled by some of the vagaries of our language; the example quoted in the handbook is 'Hawaii'. In its original form it would sound like Haway-i. This can be improved by the phonetic spelling, "Hawhy'ewe' (the apostrophe puts emphasis on the 'ee' part), or you can instruct the processor to use the allophones directly by the use of brackets. The word using allophones must be enclosed in square brackets and each allophone separated by the use of round brackets, thus Hawaii becomes; [haw(ii)(ee)]. Normally spelt words, phonetically spelt words and words spelt with allophones can all be mixed into the same sentence and pronounced by the same 'say' command, as in the following examples:
SAY "HELLO, MY NAME IS ROTJER. I CUM FROM [HAWHY(II)(EE)]"

Intonation

Spaces between words are taken care of by the use of the appropriate punctuation and can be added together to put more realism into the speech. Intonation is taken care of also by the use of upper and lower case letters within the allophone format, for example, [hE(LL)(OO)] would put the emphasis on the 'E' sound. Speech 64 also supports two voices, the higher one being the default voice, the suffix ø being added to the 'SAY' command to access the lower voice. It is quite possible to make the computer carry out a conversation with itself in this way. (Isn't that the first sign of madness?) Another interesting feature of the Currah is its ability to voice the keys each time they are pressed. This is automatically switched on when the system is initialised with the command 'INIT' but can then be turned off and on at will with the commands 'KOFF' and 'KON'.

Very user friendly programs can be created as the following short example illustrates.

```
10 PRINT "[CLR]": SAY "HELLO WHAT IS YOUR NAME"
20 INPUTA$
30 SAYA$
40 SAY "IZ THAT HOW YEW SAY IT. PLEEZ ANSSER Y, OR N"
50 GETB$: IFB$ = "" THEN 50
60 IFB$ = "Y" THEN 110
70 IFB$ = "N" THEN 90
80 GOTO50
90 SAY "PLEEZ TRY [T(II)PING] IT IN AGAIN. YEWZ A DIFFERENT SPELLING"
100 INPUT C$: A— = C$: GOTO 30
110 SAY "HELLO"
120 SAYA$
130 SAY "HOW ARE YEW TODAY"
```

140 REM****REST OF PROGRAM****.

The variable A$ now contains the correct pronounciation of the user's name and may be used anywhere else in the program to increase user friendliness. Only in very rare cases is it necessary to use the allophones directly, and 99% of the time a little juggling of the letters will produce an acceptable result.

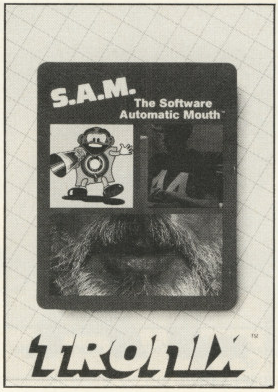
Numbers

Numbers are always pronounced singly, that is 180 is said as "one eight zero", and so the DK Currah unit is not as good as the J.C.B. for giving scores but aside from this slight drawback, I can find no fault with it.

The next speech synthesizer I had for review is something of an oddity, in that it is entirely software based, and merely uses the SID chip resident in the CBM 64 to produce relatively intelligible speech. The program's name, **Big Mouth,** is perhaps a little far fetched. Big Nose might be more appropriate, the speech having a curious nasal quality, somewhat reminiscent of poor old 'Balcob' from the television advert before squirting eight hours of relief up his conk!

Pitch and tempo of the voice can be varied at will by using various POKE numbers and the screen display may be turned on and off by yet another POKE. With the screen on though the speech is slowed down and no where near as clear as with the screen off. For what I could get out of the program it nevertheless seems a very interesting piece of software and at its price, a very cheap alternative to the cartridge based speech synthesizers.

A much more powerful software speech program is the **Software Automatic Mouth** (SAM), an American product which is disk-based. SAM allows full control of speed, pitch, intonation and vocabulary, and comes complete with a number of demonstrations including singing The Stars and Stripes, doing impressions of little old ladies and sinister aliens, and speaking at a range of different speeds and pitches. The program is compatible with all your own Basic and machine code routines, and probably achieves the highest quality possible with software generated speech, although whether or not it's of superior quality to hardware-generated speech is open to question.



Automata UK has also announced the **Backchat** system, which costs £25, but at the time of writing that isn't available for review.

Finally, one of the most powerful speech synthesisers available is the Adman Speech Maker. It combines the best of both worlds, allowing synthesis using allophones and also having a 234-word preset vocabulary.

The Speech Maker is a successor to the original Adman speech synthesiser, and is compatible with software designed for that unit such as Thor's 3-D Silicon Fish and Bug Byte's Twin Kingdom Valley. It's also compatible with software designed for Commodore's own Magic Voice, which looks as if it will now not be made available in large numbers, such as the BJ and the Bear educational series.

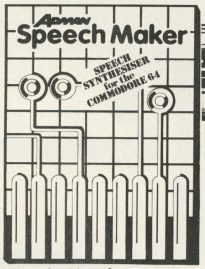
In cases where the use of the Magic Voice's extended VOC command defines a word which isn't in Speech Maker's preset vocabulary, it will voice a pause rather than crashing. User-defined words can be saved on tape and reloaded at any time, and there are four voice pitches available. Since the Speech Maker is interrupt driven it won't interfere with the normal running of programs, and Adman hopes to encourage software houses to put out a wide range of compatible software.

Gargling

In conclusion, if you're interestd to hear what allophone-based speech synthesis sounds like before you go out and buy a synthesiser, try this trick; place the tip of your tongue between your lips and waggle it up and down as if you were saying a double "L", and then try to speak. But don't let anyone catch you doing it, or they'll think all that alien zapping and keyboard punching has gone to your head! ■

Product	Type	Description	Supplier	Cost
Chatterbox	Hardware	Allophonic, internal amp and speaker	William Stuart Systems, Quarley Down House, Cholderton, Wilts, 098064-235	£39
Big Ears	Hardware	Voice recognition through microphone	As above	£49
Speakeazy	Cartridge	Allophonic	JCB Microsystems, 29 Southbourne Road, Bournemouth, 423973	c. £30
Speech 64	Cartridge	Allophonic with English interpreter	DK'Tronics, Unit 6, Shire Hill Ind. Est., Saffron Walden, Essex, 0799-26350. Welwyn Systems, Bedlington, Northumberland, 0670-822181	c. £30
Big Mouth	Software	Cassette, allophonic	Micro Centre, Bridge St, Evesham, Worcs, 0386-49641	£7.95 Disk £10.95
SAM	Software	Disk, interpreting	64 Supplies Co, PO Box 19, Whitstable, Kent, 0227-266289	c. £48
Backchat	Hardware/ software	Forthcoming	Automata UK, 27 Highland Road, Portsmouth, Hants, 0705-735242	£25

The Adman Speech Maker is a real conversation piece!



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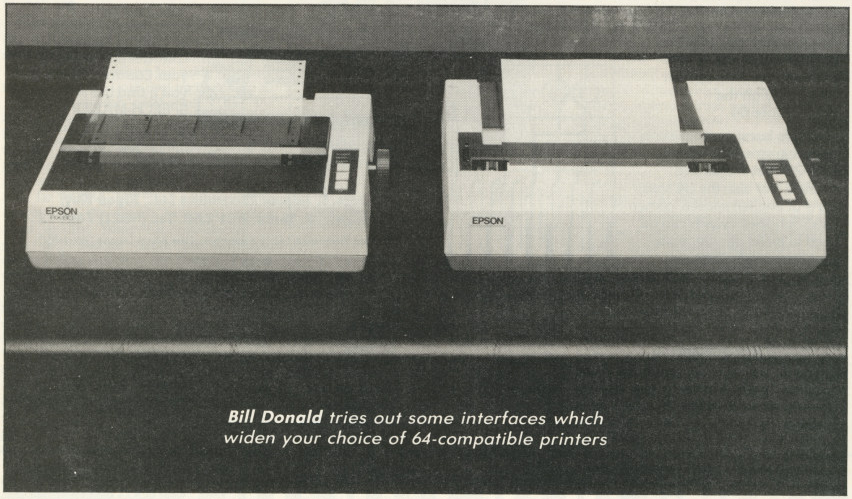
PRINTERFACES



***Bill Donald** tries out some interfaces which widen your choice of 64-compatible printers*

INTERFACING or coupling of other devices to micros is a wide ranging subject, and where the Commodore 64 is concerned demands some clever tricks on the part of the hardware engineer. Commodore has chosen the Serial bus as the main means of interfacing peripherals such as disk drives and printers. The drawback to the user of this method is the slow speed of data transfer, since the data is sent sequentially and only one device at any given time can essentially be active to transmit or receive on the bus line.

Non-standard

Commodore uses the IEEE parallel bus as the means of connecting peripherals on their larger machines. This allows the speed of data transfer to be stepped up considerably which may prompt you to question why this method is not used on the 64. Probably the answer from Commodores point of view is that of additional cost to the machine; also IEEE interconnecting cables are expensive, typically £30.00/metre.

The other method of data transfer available is the RS232 Serial system. Again this is available on the 64 but in a non standard form, meaning further complications for the user intent on linking those peripherals which use these systems.

Commodore over the years has presented us with a number of serial driven dot matrix printers, the present ones being the MPS801 and MPS802 as well as the new colour printer, the MCS801. No one who has seen the output of these machines can claim to be particularly impressed, and for the money you can do much better. The benefits of the alternative makes of printers can be in terms of higher print speeds, cleaner image resolution and enhanced flexibility of control over the printer.

Most of the printer manufacturers use a parallel bus for data transfer, the commonest bing the Centronics system. The printer interfaces available for the 64 can be of two types; those that convert any serial output directed to the printer into parallel data, or those which convert a parallel into a serial device. The three interfaces we are looking at in this review employ either of these methods and provide us with a direct comparison of the strengths and weaknesses inherent in each type. They are the GRAPPLER CD, the TURBOPRINT GT and the COMPRINT.

Grappler

The GRAPPLER is American in origin and is manufactured by Orange Micro Inc. of California. It comes as a circuit board that has a perspex cover which does give the user something to view rather than the usual enigmatic black cartridge affair. The unit plugs into the expansion port of the 64 and has a female socket to the same configuration allowing another card to "piggyback" the interface. A short flying lead plugs into the serial port of the 64 and the user then inserts the serial lead from the disk drive if in use. A very generous length of ribbon cable terminating in a centronics type connector then plugs into the printer. The device's power supply is taken from the 64 via the expansion port. Visible inside the clear cover are six DIL switches and these are accessed from an opening in the side of the interface.

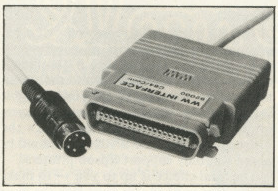
Turboprint

The TURBOPRINT is also American in origin, again from California, this time made by Telesys Inc. although the box does state the unit was assembled in Mexico! Here we are back to the mystery black box, with several types of leads issuing. A centronics ribbon cable for the printer, a serial cable for plugging into the disk drive if available or in the 64 and a flying lead which comes out of the rear of the serial DIN plug, and terminates into a bare piece of pcb which serves a power supply plug to be inserted into the cassette port. A "piggyback" extension allows use of the cassette unit. The device has four DIL switches which are accessible through a slot in the top, a power-on LED and a side mounted socket to which is attached another card which would serve as a printer buffer.

The COMPRINT is the only British unit in the trio and comes as an uncased board with the chips open to the elements and two serial DIN sockets mounted on the side. A length of serial port cable is also supplied and at this point your initial shock of how to use the device begins to evaporate. This unit sits inside the printer itself and plugs directly onto the printer pcb, thus solving the power supply and lengths of untidy cable problem. The printer, in my case an Epson RX80F/T, has a removeable flap on the side which exposes the two serial sockets. Daisychain the leads, and that's it. Of the three interfaces this is certainly the cleanest installation, although it should be pointed out that you must be familiar with handling pcbs and confident enough to carry this through without damage to either the printer or the interface. Failing this your dealer could do it for you, the job itself includes removing the case on my Epson took only ten minutes and I do not open these things up for a living!

Comprint

The GRAPPLER looks a well finished job and with its good quality connectors and leads does have an air of solidity. The TURBOPRINT by contrast looks cheap, and the miserable cable lengths particularly of the printer ribbon lead which must be all of twelve inches, culminating in a bare, roughly made cassette plug, is not acceptable. Even worse is the single core cable running back to this "plug" which is not bound at the serial plug end and did make me think that this was a preproduction model, and with one good yank the whole wiring would fall apart.



The hardware involved in each interface follows the same pattern; A MPU and I/O chip along with the operating system ROM. The TURBOPRINT and COMPRINT use the Motorola 6802 MPU while the GRAPPLER uses the 6502 as its MPU. All of the circuit boards showed good quality workmanship although the TURBOPRINT did not have any of the cables clamped to prevent damage by accidental pulling.

The operating literature supplied with each unit varied considerably. The GRAPPLER manual consisted of some thirty odd pages laid out in a narrow format which really only skimmed the surface of the device's abilities. Unfortunately the COMPRINT was even worse, another classic example of blinding the user with computerese such as "OPEN lfn,dn,(sa)". An index or page numbering, I hear you ask — no, not a chance. It really does make me wonder how these people cope with the more basic quests in life in the way of human communications.

Thankfully the TURBOPRINT manual shows the way forward; good typesetting, blow by blow accounts of what the screen should read, an index and glossary! My only real crib here is that what is given to us is very good but only the surface of the device's abilities is scratched.

The operating modes of these interfaces in the case of the GRAPPLER and TURBOPRINT are very similar, the COMPRINT being the odd man out. The first two have five modes in total, three of which are identical and I will look at those first.

The Emulation mode is self explanatory. The 64 is led to think it is addressing a Commodore printer such as the 1525, 1526 or MPS series. This gives the user the opportunity to print out the graphic characters which are specific to Commodore. I found this feature of value when printing out header pages for Compunet, who make great use of those characters.

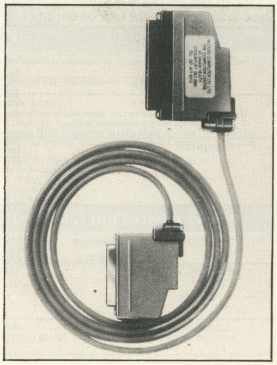
The Listing mode is very useful in that during the printing out of Basic programs which employ these graphic symbols as format control codes usually for the screen, the actual symbol is printed as shorthand for the keys used. For instance the heart symbol in quotations is designated as a command to clear the screen, in this mode it is shown beside the remainder of the program line as a bracketted CLR. Similarly the reversed image Q is shown as CRSDWN meaning cursor down, which is the key you originally selected during the typing in of the program. Unfortunately the GRAPPLER and TURBOPRINT do differ in terms of their respective shorthand although the difference is not too serious. Another missed opportunity for standardisation!

Transparent

The Transparent mode represents the opportunity of complete access to the printer's abilities by means of the control does specific to the printer. Anything in the way of these codes which are sent to printer either directly or under program control are not translated into Commodore printer codes. This is useful for bit-mapped graphics, using different type styles, graphic characters that may be available in the printer's own ROM and format control of the finished product on paper.

At this point the GRAPPLER and TURBOPRINT begin to diverge. The former has a mode called Text which is mainly used for word processing applications. In those mode Commodore control codes are passed through the interface unchanged, the alphanumeric ASCII codes are translated into standard printer codes. The remaining mode on the GRAPPLER brings into use the screen dumping previously mentioned modes. This facility does however use 8k of memory on the 64 and may not be compatible with all programs. The TURBOPRINT provides a basic loader program listing for this purpose although it is not clear as to whether or not it is for high resolution dumps. Also this does not overcome the fundamental problem with both interfaces in this routine since what is needed is a machine code program which is relocatable. The TURBOPRINT next provides what is termed Tag mode which is simply printing a hash character whenever an unprintable character is encountered.

The COMPRINT seems to take a radically different approach to the matter in the way of operating modes. Here great



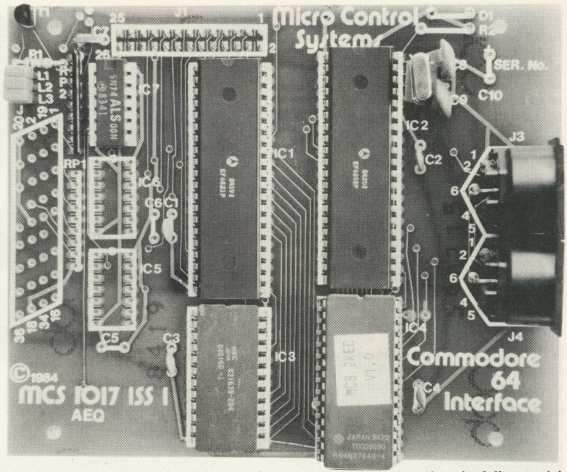
use is made of file secondary addresses, the total number allowed at any one time being 10. The whole thing is fine for simple documents but I can see one really getting bogged down in more visually demanding formats. I suppose the nearest equivalent on the ther two interfaces to the method of operation of the COMPRINT is the Emulation mode. The advert copy which revolves around making the 64 think that it is linked to a 1525 and not an Epson tends to confirm this view.

Flexibility

In use it became apparent that the GRAPPLER and TURBOPRINT are much easier to learn to live with. The main difference between the two was that the former gave a choice between DIL switch selection of mode or the opening of commnd channels, the TURBOPRINT did not have this flexibility. There was a notable difference in the operating speed of the printer between the three interfaces, the COMPRINT being the slowest presumably because of the serial method of linking to the printer. One way of overcoming this problem which is common in all operations of printers is to use a printer buffer. All of the interfaces supported a buffer but again at further cost. In the case of the TURBOPRINT this would plug into the side, the COMPRINT has space on the PCB for further additions which could mean dealer installation costs whilst the GRAPPLER gave no clues.

No problems were found in engaging other peripherals with the interfaces, with one exception. The CP/M Z80 card refused point blank the GRAPPLER because the interface does occupy some addresses in page zero. This was a great pity as it severely restricted the use of the CP/M system. It was a source of wonderment at the art of hardware engineering when the other two interfaces ran with no trouble; there it was, a 6502, 6800 and Z80 chips all in harmony! The Commodore Modem gave no problems and printing out of viewdata images proceeded unhindered with all three devices. Similarly the Stack SUPERHELP cartridge and KOALAPAD worked perfectly.

One of the other points noticeable with these interfaces was the lack of documentation dealing with EASYSCRIPT. I mention this for two reasons. The first being that this is the word processing package that I use, secondly the successful marketing campaign in 1984 by Commodore UK of giving EASYSCRIPT away with the purchase of a 1541 disk drive must have resulted in this program achieving market leadership. This being the case it seems to reflect badly on the interface manufacturers that they are happy to leap on the Commodore market bandwagon but not to support directly a Commodore produced product.



So let me summarise the interfaces individually. The GRAPPLER is well built and presented, the manual could be better. The range of facilities offered is very good particularly as the device can be configured for different makes of printer. Although the expansion port is used this does not get in the way of other cards. There is only one serious failure with the GRAPPLER, and that is its inability to run with the Z80 CP/M card. Other than this you have a powerful piece of hardware which I am quite sure has yet to show its full potential.

The TURBOPRINT, whilst not having the ultimate flexibility of the GRAPPLER, comes fairly close. A very good manual, a reasonable range of operating modes and the ability to interface with several printer makes adds up to a good product. The whole thing is let down by the shoddy standard of wiring, which quite frankly is not good enough for the money required and longevity in service.

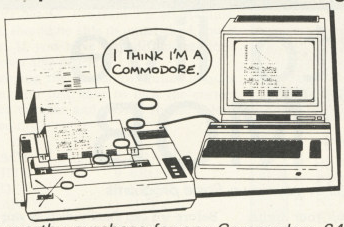
Choice

The COMPRINT represents a clean approach to the problem of wires everywhere, and I feel sure that if the manufacturer started again with the users instructions then he would improve his sales. As things stand some potential buyers might take justified fright at the instructions. The COMPRINT it should be noted will only support Epson printers.

The final choice is up to you — to make the most of your 64 you must pick the most appropriate interface for your printer system. ■

Product	Type	Supplier	Cost
Grappler	Centronics, plugs into expansion port	P&P Micro Distributors, Newhall Road, Rossendale, Lancs, 0706-212321	approx £100
Turboprint GT	Centronics, plugs into expansion port	Norbain Micros, Norbain House, 14-16 Boulton Rd, Reading, Berks, 0734-752201	approx £50
Comprint	Epson only, fits inside printer	Micro Control Systems, Langley Mill House, Langley Mill, Derbyshire, 0773-769011. Review model from CHROMASONIC, London, 01-263 9493	£61.99
Other devices not reviewed			
The Commodore Connexion	Parallel printer interface plus tape software	SMC Supplies	
92000/GWW	Interface cable for 64 or Vic, Centronics	Mikrocomputertechnik, Winchenbachstr. 3A POB 201605, D-5600 Wuppertal 2 West Germany, 202-505077	POA
Access interface cable	RS232 cable interface	The Computer Centre, 61 Shaw Heath, Stockport, Cheshire, 061-477 6013	£34.95

An Epson in Commodore clothing



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Learning to live with the MOB

Sarah Cotton explains how sprites can be used in your own Basic programs

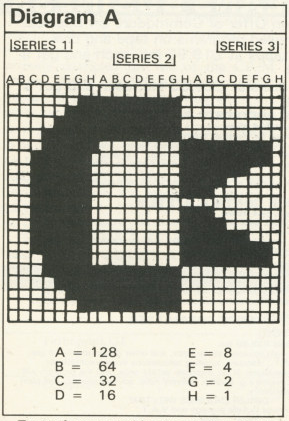
SPRITES or moveable object blocks, MOB's for short, are undoubtedly one of the most difficult features of the Commodore 64 for the average user to understand. In this article we'll be taking a look at how to create and manipulate them, so you will eventually be able to incorporate them in your own programs. Sprites are extremely useful in graphic displays because they can be moved about one pixel at a time. This gives a very smooth appearance.

To start off with we'll concentrate on one sprite, following up later with the use of multiple sprites.

Each sprite is made up of a block of 24 by 21 pixels, a pixel being the smallest dot that can be displayed on the screen.

They are created by POKE-ing numbers, usually held in DATA statements, into the computer's memory. To see how this can be done take the example in diagram A of a sprite which has been mapped out on a grid.

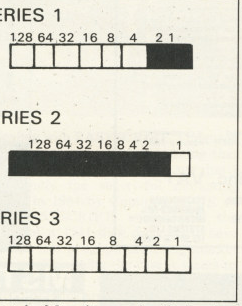
Diagram A



For each row, working from left to right, you will need to calculate 3 numbers — one for each series. Using the figures above every column, add the numbers designated to the filled blocks. For an example of this look at diagram B which shows you how to calculate the values for row 2.

When you have finished you should end up with 63 numbers, none of which exceed 255. Now you'll have to decide in which block of the computer's memory you are going to store this data for your sprite. Blocks 13-15 inclusive are your first choice, but blocks 32 to 63 can be made available by keying in the lines in program 1.

Diagram B



A total of 8 sprites can be displayed on the screen at one, so there has to be a system where we can refer to each by 'name'. To do this every sprite has two numbers: (see table 1).

SPRITE NO.	0	1	2	3	4	5	6	7
DENARY VALUE	1	2	4	8	16	32	64	128

So far we have been concentrating on creating the DATA statements and having a general look at sprites. Let's go on now to explain how to get the numbers in computer memory.

Let's choose block 13 to put our sprite in, that means memory location 832 (13*64) onwards. We will need a FOR. . .NEXT loop that will READ the DATA and POKE it into memory. The result of this is lines 10 to 40 of program 2.

At the moment the computer is holding the information in its memory but it isn't been used yet. Let's explain how to do this.

First of all we must decide what number to call out sprite — 2 for example. Then we tell the computer that we want sprite 2 to get its data from block 13. This is achieved using:

POKE 2042,13

The number 2042, the sprite pointer, refers to sprite 2 and the 13 to the appropriate memory block.

The sprite pointer number is calculated by adding the sprite number from 0 to 7 to the figure 2040.

Before we can finally display our sprite we must know about the sprite registers. The video chip which controls the sprites starts at location 53248. Following on from this are a series of registers which let us display and alter the sprites. These are shown in diagram (c).

The number 53248 is generally held in a variable such as V and the registers are referred to by adding on the appropriate number

If we draw out the table in diagram D we can work out which number to POKE into the on – off register.

You will see how I have put 0's for the sprites which are to be turned off, and a 1 in the one we want to display.

From this we can work out the value in the same way as we did when creating our sprite. Here it is equal to 4.

We are now in a position to write our program in full.

RUN program 2 and providing you haven't made any mistakes the sprite should appear on the screen. If you LIST the program the text will move over – under it. Even CLR will not eliminate it — this can be done using RUN–STOP and RESTORE or typing:

POKE V+21,0

For the time being don't worry about lines 80 and 90, we'll be explaining these later.

Multiple sprites of the same design are quite easy to incorporate. Adding:

55 POKE 2043,13

Will tell the computer to get the data for sprite 3 from block 13 as well. This in effect means that sprites 2 and 3 are of the same design.

The number poked in line 70 will have to be altered if both are to be turned on at once. Using the table in diagram (d) we get the value 12. You will also need to add the following line:

91 POKE V+6,100:POKE V+7,100

Again don't worry if you don't understand this line, it will become clear a little later on.

A single sprite can be turned on without affecting the others using:

POKE V+21, PEEK (V+21) OR (2 SP)

where SP is the sprite number from 0 to 7. To turn a single sprite off use:

POKE V+21, PEEK (V+21) AND (255—2 SP)

For multiple sprites of different designs the sets of data must be held in different memory blocks. Program 3 is an example.

You should be able to understand how it works. If you have any difficulties look back over this article.

Changing the colour of sprites is quite simple, you just have to pick the correct register number and POKE in the colour you require.

0 BLACK	8 ORANGE
1 WHITE	9 BROWN
2 RED	10 LIGHT RED
3 CYAN	11 GREY 1
4 PURPLE	12 GREY 2
5 GREEN	13 LIGHT GREEN
6 BLUE	14 LIGHT BLUE
7 YELLOW	15 GREY 3

If we bo back to our original program (program 1) we can change the colour of the commodore logo sprite to orange using 75 POKE V+41,8

You could even get you sprite to flush through all 16 colours.

Sprites can be expanded in a horizontal or vertical direction or both. This effect is achieved by replacing 1 pixel with 2, giving a 2X expansion. Using diagram (d) decide which sprites you want to expand and work out the value(s) to POKE in either register 29 (horizontal) or 24 (vertical).

Add the following line to expand the sprite in both directions in program 1 :
76 POKE V+29,4 : POKE V+23,4

Sprites can be expanded individually without affecting the other: for Horizontal expansion, use
POKE V+29, PEEK (V+29) OR (2 SP)

Horizontal unexpansion,
POKE V+29, PEEK (V+29) AND (255—2 SP)

Vertical expansion,
POKE V+23, PEEK (V+23) OR (2 SP)

Vertical unexpansion,
POKE V+23, PEEK (V+23) AND (255—2 SP)

The screen is 320 pixels wide and 200 high although some of the lower values will appear off the screen. See diagram E.

To position a sprite use the appropriate X and Y component registers for that sprite (refer to diagram c). Thus to display sprite 2 at (100,100) turn it on and then use:
POKE V+4,100 : POKE V+5,100

Unfortunately one problem occurs. The biggest number that can be poked into the registers is 255 but the screen goes up to 320 pixels wide. This is overcome using register 16 which controls the most significant bit (MSB) of the sprite's X direction. In effect this allows us to move the sprite across the entire screen.

It works like this:

1. Move the sprite to location X=255
2. POKE the value in register 16 for the sprites you want to move further across by using diagram (d).
3. Move the sprite as in 1 starting from X=0 again.
4. Turn off register 16.

We can move our Commodore logo sprite across the screen using program 4.

Once you start adding sprites to your own programs and moving them around

Program 1

```
POKE 8192,0
POKE 44,32
POKE 43,1
```

Program 2

```
0 REM COMMODORE LOGO SPRITE PROGRAM
1 REM BY SARAH COTTON
5 PRINT "{CLR}":REM CLR
6 REM POKE DATA VALUES INTO 13TH BLOCK
7 REM OF MEMORY
10 FOR T=0 TO 62
20 READ X
30 POKE 832+T,X
40 NEXT
50 POKE 2042,13:REM SPRITE POINTER
60 V= 53248: REM START LOCATION OF VIDEO
 CHIP
70 POKE V+21,4: REM DISPLAY SPRITE 2
80 POKE V+4,200
90 POKE V+5,100
95 REM SPRITE DATA
100 DATA 0,0,0,3,254,0,7,254,0,15,254,0
110 DATA 31,254,0,31,1,254,62,1,254
120 DATA 62,1,248,62,1,224,62,1,192
130 DATA 62,0,0
140 DATA 62,1,192,62,1,224,62,1,248
150 DATA 62,1,254,30,1,254,31,254,0
160 DATA 15,254,0,7,254,0,3,254,0,0,0,0
```

Program 3

```
1 REM MULTIPLE SPRITES OF DIFFERENT
2 REM DESIGNS BY SARAH COTTON
8 V=53248:REM START OF VIDEO CHIP
9 REM POKE DATA INTO BLOCK 13
10 FOR T=0 TO 62
20 READ X
30 POKE 832+T,X
40 NEXT
45 REM POKE DATA INTO BLOCK 14
50 FOR T=0 TO 62
60 READ X
70 POKE 896+T,X
80 NEXT
90 POKE2042,13:POKE2043,14:REM SPRITE
POINTERS
100 POKE V+21,12
105 REM TURN SPRITES ON
110 POKE V+4,100:POKE V+5,100
120 POKE V+6,200:POKE V+7,100
130 REM DON'T WORRY ABOUT LINES
140 REM 110 AND 120
150 :
160 :
300 REM PUT THE DATA FOR TWO SPRITES
310 REM OF YOUR OWN DESIGN HERE.
320 REM THAT SHOULD BE 126 NUMBERS
```

◀ then you will need to know when they collide with each other or any background characters. To do this we use registers 30 and 31.

The first of these is used to detect collisions between sprites. By PEEK-ing into this location and looking at the denary values of the sprites you can tell which have collided.

For example if,
PEEK (53278)
yields the number 12 then we know that sprites 3 and 2 have collided since their denary values add up to this figure.

If the value held in register 31 is not equal to zero then we know a sprite has collided with some background character.

When two or more sprites cross each other then the sprite with the lowest number appears in front, that is it has the highest priority.

Sprite to background priority is controlled by register 27. Draw out a table such as diagram (d) and put a 0 for the sprites you want to move over the background and a 1 for those you want to appear below.

The value obtained should then be POKE-ed into the register. Programs shows you how sprite to background priority can give a 3-dimensional effect.

By changing the words displayed on the screen in line 15 you could make this an interesting introduction page for your own programs.

So far our sprites have only been of one colour but it is possible to give them a total of 4. First of all we must tell the computer which sprites we want to put into multi-colour mode using:
POKE V+28, X

where X is the number obtained from diagram (d). When in this mode the pixels are arranged in pairs which reduces the resolution to 12 by 21.

The appearance of the 'bit pairs' determines from which register they obtain their colour. For details refer to diagram (f).

Let's conclude this article with a program which illustrates a simple 2 colour sprite, program 6.

Having mastered the techniques discussed in this article, you will be able to make use of one of the 64's most attractive feature. ■

Diagram C

MSB x	16
on/off	21
Expand y	23
Background Priority	27
Expand x	29
Sprite-sprite collision	30
Sprite-bkgrd collision	31

Sprite Number	7	6	5	4	3	2	1	0
x component	14	12	10	8	6	4	2	0
y component	15	13	11	9	7	5	3	1
Sprite colour	46	45	44	43	42	41	40	39

Diagram D

SPRITE NO.	7	6	5	4	3	2	1	0
DENARY VALUES	128	64	32	16	8	4	2	1
	0	0	0	0	0	1	0	0

Diagram E

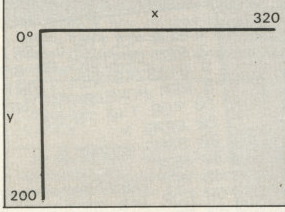
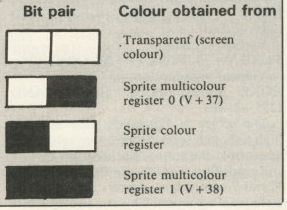


Diagram F



Program 4

```
0 REM COMMODORE LOGO SPRITE MOVING
1 REM ACROSS THE SCREEN
2 REM BY SARAH COTTON
5 PRINT"{CLR}":REM CLR
6 REM POKE VALUES INTO 13TH MEMORY
7 REM BLOCK
10 FOR T=0 TO 62
20 READ X
30 POKE 832+T,X
40 NEXT
50 POKE 2042,13:REM SPRITE POINTER
60 V= 53248
70 POKE V+21,4:REM DISPLAY SPRITE 2
75 POKE V+41,C:REM SPRITE COLOUR
80 POKE V+5,100:REM Y VALUE
90 FOR X1=0 TO 255
100 POKE V+4,X1
110 NEXT X1
120 POKE V+16,4 :REM MSB 0N
130 FOR X2=0 TO 63
140 POKE V+4,X2
150 NEXT X2
160 POKE V+16,0
170 C=C+1:IF C>16 THEN C=0:REM CHANGE
 COLOUR
180 GOTO 75
190 REM SPRITE DATA
200 DATA 0,0,0,3,254,0,7,254,0,15,254,0
210 DATA 31,254,0,31,1,254,62,1,254
220 DATA 62,1,248,62,1,224,62,1,192
230 DATA 62,0,0
240 DATA 62,1,192,62,1,224,62,1,248
250 DATA 62,1,254,30,1,254,31,254,0
260 DATA 15,254,0,7,254,0,3,254,0,0,0,0
```

Program 5

```
0 REM SPRITE PRIORITY BY SARAH COTTON
5 POKE 53280,0:POKE 53281,0
6 REM CHANGE SCREEN AND BORDER COLOURS
10 PRINT"s":REM CLR
15 PRINT"EQQQQQQQ                SPRITE PRIOR
ITY":REM "E"=WHITE; "Q"=CRSR DOWN
20 FOR T=0 TO 62
30 READ X
40 POKE 832+T,X
50 NEXT T
60 POKE 2042,13: V=53248:REM SPRITE
65 REM POINTER AND START OF VIDEO CHIP
70 POKE V+21,4:REM SPRITE 2 ON
80 POKE V+41,8 :REM SPRITE COLOUR
90 POKE V+5,105:REM Y VALUE
95 POKE V+27,0:REM SPRITE HAS
96 REM HIGHEST PRIORITY
100 FOR X=70 TO 250
110 POKE V+4,X:REM X VALUE
120 NEXT X
130 POKE V+27,4:REM SPRITE HAS LOWEST
135 REM PRIORITY
140 FOR X=250 TO 70 STEP -1
150 POKE V+4,X:REM X VALUE
160 NEXT X
170 GOTO 95
299 REM SPRITE DATA
300 DATA 0,0,0,0,254,0,3,255,128
310 DATA 31,255,240,31,255,240
320 DATA 63,255,248,60,124,120
330 DATA 124,124,124,255,255,254
340 DATA 255,255,254,127,231,252
350 DATA 61,255,184,60,255,56
360 DATA 30,255,112,30,0,112
370 DATA 31,255,240,31,255,240
380 DATA 15,1,224,31,1,240
390 DATA 60,0,120,56,0,56
```

Program 6

```
0 REM MULTI COLOURED SPRITE
1 REM BY SARAH COTTON
4 PRINT"s":REM CLR
5 V=53248
10 FOR T=0 TO 62: POKE 832+T,254:NEXT
20 POKE 2042,13:REM SPRITE POINTER
25 POKE V+21,4:REM SPRITE 2 ON
26 POKE V+4,100:POKEV+5,100 :REM X AND Y
 CO-ORDINATES
30 POKE V+28,4:REM MULTI COLOUR SELECT
40 POKE V+41,2:
50 POKE V+38,5
60 POKE V+23,4:POKEV+29,4:REM EXPAND IN
BOTH DIRECTIONS
```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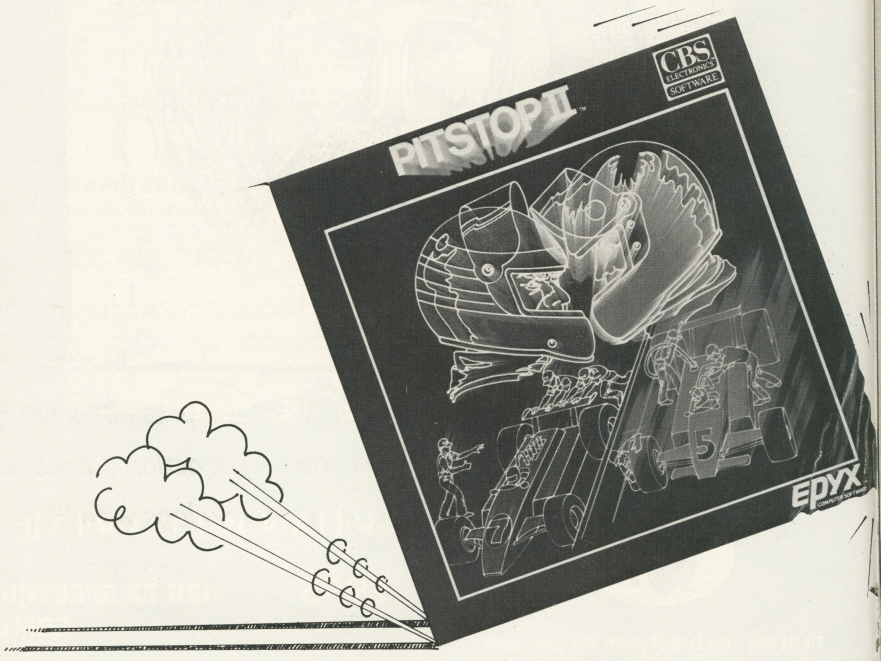
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TOWER OF ADVENTURE

In the Land of Midnight

*Warrior woman **Barbara Conway** takes on Doomdark single-handed*

IT IS NIGHT and I'm utterly frustrated and not feeling particularly bold. In fact I'm more than slightly tired, and isn't it getting just a teensy bit chilly around here....?

I am, as any addict of the classic Spectrum game will by now have guessed, well into the remarkable land of Midnight, courtesy of the new CBM 64 adaptation of **Lords of Midnight** from software house **Beyond.** And it doesn't take very long to discover that LOM is far less a game than an absorbing way of life. Even if the player doesn't initially get all that far with the main purpose of the game, the sheer fascination of exploring the territory can become an end in itself.

Beyond

With LOM, Beyond seems to have set out to justify its name by extending virtually all the boundaries of conventional adventure games. Where some have excellent graphic illustrations of locations, LOM can conjure up some 32,000 views on your screen, all of them fast and clear, to let you look at the surroundings in eight compass directions wherever you are. Scoring such simple ideas as having one hero. LOM starts you off with four, letting you find a supporting cast of 28 more, en route. All featured charactrs have minds of their own, and by no means all of them are heroic. Finding out who's likely to chicken out of a fight or bungle it and lose half the supporting troops is all a matter of learning through experience.

Central to the action is Luxor, the Moon-prince, on whom the fate of the Fair and Free (as opposed to the Foul) depends as their leader. No less important is Luxor junior, alias Morkin, a precocious princeling with one major virtue. So brave (or thick?) is young Morkin that Doom-dark's most dreaded weapon of power, the Ice Crown, can't touch the kid with its all-pervading Ice-Fear. Thus, at the start of the the program, it's Luxor's job to rally the Free to battle against Doomdark while Morkin sneaks off to find the Tower of Doom and purloin and/or destroy the Ice Crown. If Morkin destroys the Crown then the Free have won the Solstice war. But if he just finds it and hides it then Dad has a chance to do his stuff in more military style.

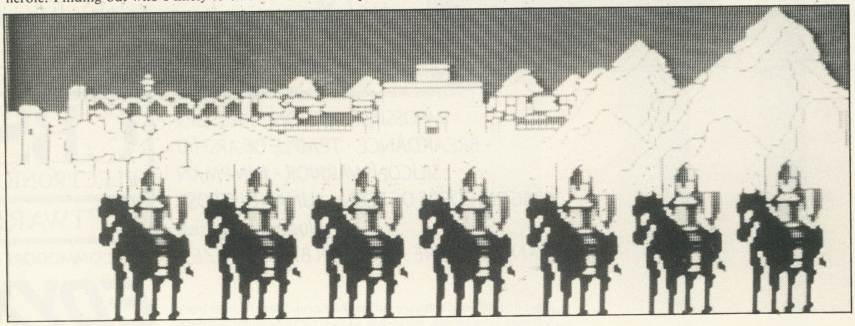
Again unlike almost every other adventure, you don't need to worry about the vocabulary in LOM. Various keys are set up to show you the different perspec-tives, let you "move" in your preferred direction, give you any special options for the screen shown (hide, fight, seek, recruit etc.) remind you of that persona's current status and condition and let you toggle between main characters.

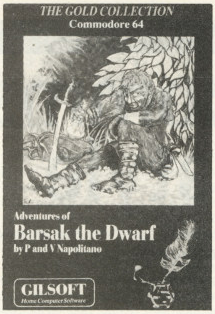
I've been more successful directing Morkin's quest than managing the war for Luxor and his two major allies Corleth the Fey and Rothron the Wise. Avid war-gamers may find Luxor's side of the operation more fun.

Alas, not enough space here to go into much detail on either, but with Morkin remember that the kid can't get the crown by himself and, even though he's not supposed to be able to recruit armies, it's quite possible to find some strongarm help to keep the way clear for him. The Lord of Shadows, only a day's trek from the start-ing point of the Tower of the Moon, is useful in this respect although the Ice Fear has a way of getting to him and he's not much cop as a general. Best ally for Morkin is Farflame the Dragonlord, but if you can't get to him before the forces of Doomdark (who move around at night when the Free must rest and may attack and take undefended keeps and other friendly areas) try for Fawkrin, once a creature of Doomdark but now a friend of the Free. Lorgrim the Wise is the only other possibility, but I haven't found him yet.

Midnight

For either adventure, you'll find the map of Midnight on the back of the exellent accompanying booklet gives you only the most general idea of the terrain. An important point to remember is that you have only a limited capacity to move each day (only Doomdark can move at night)





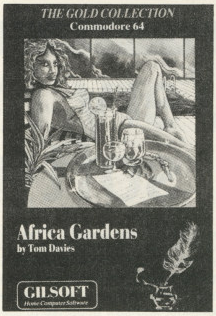
and clambering over mountains can exhaust you any accompanying allies and warriors. There are some useful aids, such as the utterly invigorating water of life and the Cup of Dreams which restarts your day at dawn, and there are three swords available which come in very handy against assorted wolves, icetrolls, dragons and skulkrins.

You should get LOM, which will also help you limber up ready for the day when the even more complex **Doomdark's Revenge** also makes the transition from Spectrum to CBM64. No adventurer should miss these experiences!

Back in rather more familiar territory, Interceptor has released **Empire of Karn** as the sequel to **Heroes of Karn.** The package is a complex and well-illustrated yarn with plenty of very devious twists in the quest to rid the empire of the evil Zhef. As the venturesome Stranger accompanied (although you might not guess it unless you "list" your possessions very early on) by faithful aide Darin, you'll find that the puzzles don't lie so much in mapping the area (which tends to be maze-free) as using your ingenuity. It's a lot of fun to play apart from the solution which, frankly, I found alarmingly unheroic.

Aliard's Tome from Romik is a text-only quest through a sinister underworld for the missing book of the title which proved to be thoroughly entertaining, displaying a bizarre cast of characters, chanting monks, morose giant, wailing witches and all, and a pretty sense of humour. Packages like this remind you that it's quite possible to have an enjoyable adventure game without either graphics or grandiose prizes.

A few closing words about **The Gold Collection,** seven games marketed by **Gilsoft** and written with the aid of that company's marvellous **Quill** utility. I'll be looking at various Quilled adventures over the next few months but one which stands out immediately in this text-only series is **Spyplane,** written by an experienced pilot and simulating a mission to photograph submarines and other military targets. It isn't exactly a flight simulation game, more a combination of that plus strategy and quick reactions. I keep crashing into the mountains (and once, ignominiously, into the sea) as I try to carry out my mission but,



although I'm not much good at it, it's enough of a challenge to keep my trying. Part of the trouble may be that I keep on getting distracted by the thought that, if I could somehow get the plane over Midnight, I could put the recce equipment to excellent use. Or would that be too utterly bold of me? ■

If you are having problems with a Commodore adventure program, write to Barbara Conway c/o Commodore Horizons, 12/13 Little Newport Street, London WC2H 7PP, and she will look at the most common problems in Tower of Adventure.

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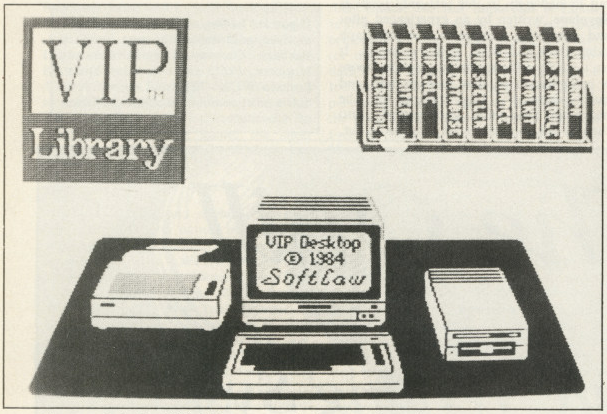
Very important comms software USA style

***John Cochrane** looks at one of the most sophisticated communications packages on the market, and finds its American charm loses something in translation*

VIP TERMINAL is an American package, developed in Minneapolis by the Software Corporation, and now imported to the UK by Impex Software. It is of interest because it shows just how good the Commodore 64 microcomputer is when driven by well thought out software, and just how comprehensive American communications software is.

However, there are drawbacks to use of VIP Terminal in the UK. Using many of the European commercial networks, such as Compunet, looks difficult because special driving software is required. Also the 1200/75 communications baud rate usually used by such systems, although popular here, is not one of the accepted American rates and VIP does not cater for 1200/75. It may be possible to get over the problems, but you require a lot of technical knowledge and a lot of assistance from the network manager to get anything worthwhile. Still, if you fancy paying for the trans-Atlantic phone bill you can always use the built-in software for E-Com, run by the US Post Office. Another point to note is that the software has been written for use with American modems and, although several different modem-types are allowed for, you will be unlikely to be able to make use of the auto-dial part of the program.

What does VIP have to offer? I'll tell you, but make sure that you take a deep breath before reading the next sentence.



You can choose to display from 40 to 106 columns on-screen, you can use baud rates from 50 up to 2400, you can pre-program up to 20 keys with often-used inputs, you can echo communications to a printer as you type, you can transmit and receive sequential or Basic or machine code files, you can store a 16-entry telephone directory and (possibly if you have a suitable modem) auto-dial and auto-logon, you can leave the software to auto-answer incoming calls, and you can change the communications protocol to suit.

You can have word wrap to tidy up the screen display, you can use a full-screen editor, there is a disk manager which will give you a full directory and let you save or load or rename or delete disk files, you can send disk files to an RS-232 printer or to a Commodore printer, you can change all the screen colours, you can set an on-screen clock, you can set an alarm, you can send the full 128 ASCII character set including control characters, or you can use the Commodore character set or the 64 graphic character set, you can have auto-detection and replacement of characters, you can change the communications setup without having to break contact, there is a help facility, and so on. You get the idea? In short, I have been using VIP Terminal for 5 months now and I'm still finding out about the package.

But let's take it from the beginning. The program comes on disk with a 100+ page manual which explains computer communications from first principles as well as describing how to use the program, although from an American point of view. The manual reads much as a book, so you really should read it all to get the most out of it. There is no index so it can take a long time to find specific information unless you have read the thing thoroughly.

Once loaded (3 minutes from disk) the program has 8 main sections comprising help, communications and display setup, terminal mode (the one you use for the actual communicating), clock setting, select printer options, input pre-set strings and assign these to single keys, disk manager, and the telephone directory. Most of the time a series of icons (little pictures) representing the major options is displayed along the bottom of the screen to remind you what's available. If you have a joystick then you can move a hand with pointing finger to the appropriate icon to select the option required, this is great fun and is quite practical to boot.

PSI's communications software mentioned in our February issue is available from Chris Townsend Computing, 64/66 John Williams St, Huddersfield W. Yorks, 0484-516266.

HELP will load a text file from disk and show the file a page at a time on screen. Entries are available for each of the 7 other main sections and provide some alternative information to the manual. It's a pity that these files are one of the few items that cannot be dumped onto a printer, as it can be a trifle annoying having to search through a load of text for a forgotten bit of information in the middle of the night after failing to talk to bulletin board number 25 for the umpteenth time.

OPTS (options) is the next section, and this allows you to select the screen format and communications parameters. Available are options for the number of columns (40, 64, 80, or 106) and the colours used for text, background, highlighting, border, etc.

Whilst in the Options section you can also select such things as a margin warning, an audible key-click, and switch the word-wrap on or off. A second page of options lets you set the various parameters to be used for communications. These include all the normal things, such as baud rate, parity, stop-bits, and duplex, although only 7 and 8 bit-characters are allowed (5 and 6

bit communications are very rare these days). You can also set special characters for such things as software handshaking and to replace unwanted or unprintable characters with something else.

Terminal

Next comes the all-imporant terminal mode, called TALK. This is where you put the whole thing into practice and get on with the talking. The screen is blank except for a line telling you that you are in terminal mode, a clock read-out which you can turn off, and the function icons which can also be turned off. Special commands are available by pressing the Commodore key and another key. For example, you can switch the printer on the off, or you can reset the communications settings, or you can change the number of display columns, all without halting your current communication. Few communications programs give you this much control.

Option 4, TIME, sets the software clock, which can be set to the second. The date can also be set but the only real use that I can think of for this is when using electronic mail over extended periods.

The PRINT option gives you the opportunity to configure output to a printer. The default setup is for a Commodore 1525 printer, default device 4, and secondary device 7. This lot can all be changed and you can also output true ASCII rather than Commodore character codes if you need to. As an alternative to using the Commodore serial interface for driving the printer you can use VIP to drive an RS-232 printer through the user port. You can transfer files directly from disk to printer in this way. Normally the user port will be used by the modem (the Compunet modem is unusual in only using the cartridge port; in fact you will be in trouble if you try to use VIP with any modem which is not either American or intended to pass data through the user port) which means that you cannot use an RS-232 printer at the same time as a modem.

KEYS is what is getting to be known as a glossary function. You can set up strings of characters to be reproduced by simple key presses. The number keys are used in combination with the control key or the Commodore key to give 20 strings. These can be used to hold such things as passwords or often-used messages.

Manager

FILE is option number 7. This is a combination disk-manager and file-editor. Using the disk-manager you can get a disk directory, load a file, rename a file, delete a file, change the disk device number, and load and save what is known as the environment. The environment contains the telephone directory, the glossary, and your selections for screen and terminal options.

Finally comes option 8, TEL, which is a telephone directory. You can record up to 16 often-used phone numbers and the special terminal parameters, such as baud rate, required for communication. An auto-dial facility for the US modems is included which also automatically sets up the correct terminal parameters. This can save you a lot of aggravation if you regularly communicate with several systems. There is also an automatic redial to keep ringing a chosen number until you get through. British Telecom will not like it if you set the software to redial too many times in one hour.

Variety

To sum up, VIP Terminal is a sophisticated communications package which unfortunately loses a little of its sparkle in crossing the Atlantic. If you want to access the commercial 1200/75 systems, such as Viewdata, Prestel, and Compunet, then get a UK package. Softlaw is interested in producing a European version of VIP Terminal, which should include a 1200/75 option, but I do not know when or if this will actually come to pass. If you want a little variety in your life, want to transfer messages, programs, and data between your friends, or want to use international systems then VIP is setting a standard that few European packages can challenge. ■

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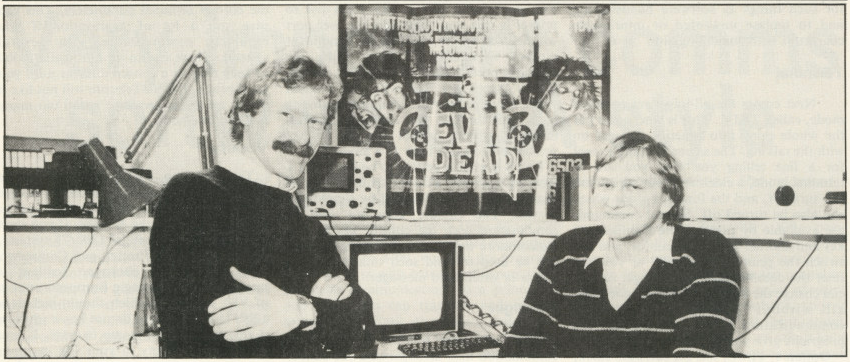


Haunted Palace

Chris Jenkins spirits off Pete Stone and Richard Leinfellner (above), Keith Miller, Steve Brown and Stanley Schembri — the five magicians behind Palace Software

"Palace is one of the slowest software houses around — we've been going for a year, and we're only just releasing our second game!" It doesn't sound like a record to be proud of, but Pete Stone maintains that it's better to work this way than to flood the market with hastily-developed software.

Since the launch of **The Evil Dead** last year, Palace's follow-up has been eagerly awaited. Unlike TED, the new arcade adventure **Cauldron** is an original concept, not based on a film, and *Commodore Horizons* is the first magazine to see the program in its complete form.

But how did Palace Software start up, and how does the company intend to follow up the initial impact of The Evil Dead?

"Richard Branson and Nick Powell founded Virgin Records in 1969, and in 1981 Nick decided to take the experience he'd gained from Virgin and try a few different ideas. He was interested in the film and video area, so he founded Palace Video. The video part of the company now covers making and distributing films, such as the Christmas hit **Company of Wolves**, music videos for bands such as Ultravox and the Rolling Stones, and slightly off-beat, "arty" productions such as **The Hit** and **Paris, Texas.** Palace Software evolved from The Video Palace, which I was running in 1981.

"I'd always been interested in the idea of home computers, though I had little technical knowledge. The Video Palace started retailing hardware and software at the time when the ZX81 had just become available to retailers, and big sellers included the Atari 400/800 machines. It was more an experimenter's than a games player's market.

"The big leap was taken when the CBM 64 came out — it was eagerly awaited, and we had reservations for it before it was even available. There was very little software to begin with, so the first decent titles to come out, from companies like Rabbit and Llamasoft, sold very well. We've always had a soft spot for Minter-like shoot-'em-ups for that reason — in any case, our main programmer Richard Leinfellner isn't into ponderous games that need a lot of working out. Palace games aren't the type where you can stand still for a long time doing nothing.

Nasty but nice

"Richard had a friend who worked in the Video Palace, and since he was a games fanatic who had built his own computer we gave him a job developing software. We saw a lot of companies doing games badly, and knew we could do better, but the right idea didn't come along until The Evil Dead."

The film was the most successful video rental in 1983, though it garnered an unjustified reputation as a "video nasty". Pete claims that when work on the game started, the film hadn't achieved its notoriety, so there was no intention of cashing in on its reputation.

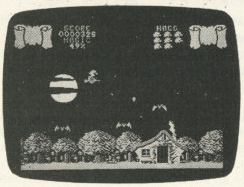
"There were a lot of false starts, with Richard and Colin Tanner working out the concept on a BBC. The original version contained more of the film elements, but we decided eventally to restrict the action to the inside of the cabin."

The Evil Dead game sticks quite closely to the script of the film. A group of teen-agers holidaying in a forest cabin disturbs a group of evil Sumerian demons. One by one the teenagers are taken over, until only one is left, using what weapons he can to stave off the zombies' attacks until he can destroy the magic book which is the source of their power. Though unremarkable graphically, The Evil Dead is fun to play and features some unusual touches, including spooky Gothic music by Keith Miller.

"It was one of the first games to include full screen scrolling, rather than just having a portion of the screen scrolling. We were very pleased with the reviews of it, and understandably we're still thought of largely in connection with that game. Even on a recent trip to Germany people were saying "Ah yes, the Evil Dead company"!

We did think of making a whole series of games based on films, but looking through the Palace catalogue nothing obvious appeared. Since then several companies have produced games based on films, and with a few exceptions it seems to compromise the game so much that it doesn't seem worth it. I'm not saying we'll never make another film-based game, but at the moment we're going for original ideas."

While working on the follow-up to The Evil Dead, Palace brought out two Vic-20 games, **Squish** and **Bricks**. "We'd bought the rights some time previously, and although we thought the games were very fast-moving and colourful we wanted to wait until after Evil Dead to launch them — we didn't want our first releases to be for the Vic. Although they sold moderately well, it's too late now to do anything else for the Vic. We're also not too interested in the C16; it's difficult enough reproducing 64 games in versions for the Spectrum, but with an even smaller memory like the C16's we realy couldn't do the kind of things we want to."



Palace Software's other venture is in distributing the Ram Jam Corporation's adventure games. "Ram Jam is a group of programmers based around Trevor Toms and George Stone, who were adventure freaks frustrated with the kind of games which were on the market. They weren't too interested in Dungeons and Dragons-type fantasy scenarios, so they decided to write something more like the American Infocom games. When the game which became Valkyrie 17 was almost complete they approached Palace with a view to marketing it. We didn't consider ourselves adventure people — it's no fun to me being stuck inside a cave — but this was something different, a mystery thriller with elements of suspense and humour."

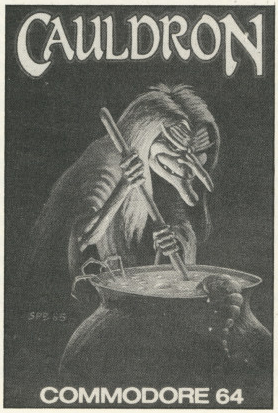
The Valkyrie 17 adventure (reviewed in last month's issue) starts with a series of messages left on your answerphone (contained in an audio track on the B-side of the tape) and a number of documents relating to the secret Nazi society Valkyrie 17. "The game had very good reviews in its Spectrum version, and the Ram Jam people later cross-compiled it into a CBM 64 version. I think there are many computer owners who are disappointed by the sorts of games on the market, and we find a huge cross-section of users love Valkyrie 17 even if they don't normally like adventure-type programs. Palace Software's name isn't actually on the packaging, but people have gone to the trouble to track us down and phone or write just to thank us for putting the game out. There's also a lot of interest in the next Ram Jam program, **Three Days in Carpathia**, but since none of Ram Jam's people work at it full time it's always difficult to say when it will emerge. Even I don't know much about it yet, in any case."

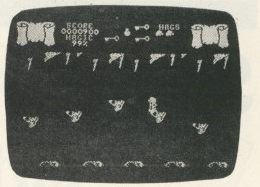
I asked Pete whether Palace might not do better to take on more programmers and try to work on more products simultaneously. "My view of some of our competitors is that they put things out just to keep the money coming in, at the expense of quality. We've been building up a good team at our own speed, and the right people are hard to find; the age of the lone programmer is really over. Not many people can cope with graphics, concept, sound and programming, so a team effort is the best way. I hope in future we can accelerate slightly, but you won't be seeing a game a month from us!"

Richard Leinfellner is now the main programmer, with Stanley Schembri also hacking. Graphics are designed by Steve Brown, an illustrator who Pete Stone found through his work on science fiction and fantasy themes for books and magazines. "Steve's really done a lot for the look of the new game Cauldron — he designed the cover artwork, worked out the backgrounds and put hundreds of hours of work into designing over 30 frames of animation for the main character, the witch." Steve works with a gruesomely realistic latex replica of the Facehugger from the film Alien sitting on his desk. It appears (in part at least) on the cover illustration for Cauldron, though much of Steve's work is much more mundane — for instance, coding the lettering for the title screen of Cauldron. "One thing you've got to watch out for", he explained, "is that pixels aren't the same shape as squares on graph paper. That's why I always do the final designs by eye — if you look at the title screen for **Ghostbusters** you can tell that it's been designed on graph paper because the circle is squashed!"

Synclavier

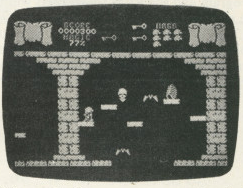
Musician Keith Miller, more used to working with £30,000 computer synthesizers such as the Synclavier, on advertising jingles like the Martini campaign, uses an Autographics Microsound 64 keyboard to compose music for 64 games. "I use a special routine which converts the notes I play straight into code. It's an interesting exercise working within the limitations of the SID chip, and I like to base the music in some way on the graphics of the game. For





The Evil Dead I used a mock Gothic style, and on Cauldron I tried out a sort of silent movie car chase style, but that didn't go down very well. The final style will probably be something like a John Carpenter soundtrack, **Assault on Precinct 13** maybe. I don't think the music will run all through the game though — it's more effective to use it just at significant points."

Richard and Stanley's coding work was almost finished when I visited Palace's offices above the Scala cinema. All that remained was to polish the sprites, add a few sound effects and remove the cheat options which allow you to play through the development version without bumping into an endless steam of nasties.



We won't give away too much of the plot, since, as is becoming usual with arcade adventures, part of the fun is in working out what you're supposed to be doing. In essence though, you play a witch who must speed around the world on a broomstick, searching for the elements to make up a magic potion. To do this you must find the special keys which allow you into underground caverns, and once inside endless horrors face you as you leap from ledge to ledge.

The graphics are marvellously detailed, and the months of work put into Cauldron show through in the quality of the animation and the ingenious concepts used. "We think that the general quality of the graphics and concept will make all the difference" comments Pete. "Playing the whole game through might take hours, but you can't afford to stand still for a second. All the ideas we're working on at the moment work that way, incorporating high-quality graphics with an adventure element."

After Cauldron, none of the ideas kicking around are well enough developed to be worth talking about. But a brief discussion of films suitable for adaptation came up with some interesting ideas — Walt Disney? Snow White and the Seven Dwarfs? "That wouldn't be a bad idea", commented Steve "eight sprites!" ■

Save your memory with Shrink

***M C Hart's** 64 program squeezes a quart into a pint pot*

THIS UTILITY for the Commodore 64 is adapted from the routine published in David Lawrence & Mark England's **Commodore 64 machine code master** (Sunshine Books, 1983) to whom due acknowledgement is made!

As its name implies, the program "shrinks" a program file resident in memory by removing all spaces not in strings, the entire REM statement if placed as a comment at the end of a line, and everything after the REM statement if it stands by itself on a line. In this way, you can still GOTO a REM statement in your program and the REM token itself will not be removed.

The savings in space can be quite considerable — depending upon the number of spaces in the original program as well as the amount of REMming, the savings can be as much as 20%. A true 'compactor' program which also packs statements onto a line so that they are near to the theoretical maximum of 255 bytes will save even more space but such compactors have the problem of making the program difficult if not impossible to edit after use.

Two improvements have been made to the original version published by Lawrence and England. In the original version one accessed the routine by a SYS number and then waited (praying!) for anything up to about 10 minutes or so hoping that the routine was working and the machine had not crashed. The first adaptation that has been made is to print the line numbers on the screen as they are processed — in this way one not only gets psychological reassurance that the program is 'doing its stuff' but it is also possible to gauge how far through the process it is by watching the line numbers.

The second improvement has been to insert a patch into the code so that spaces within DATA statements are not also removed. Occasionally one wishes such spaces to be significant (e.g. a list of words for an adventure game) and the adaptation ensures that such spaces are not removed from the data.

To use the routine load this program and then RUN it. Load the program you wish to shrink and then type SYS 50000 — you should see the line numbers of the program you are compacting print in order on the screen. ■

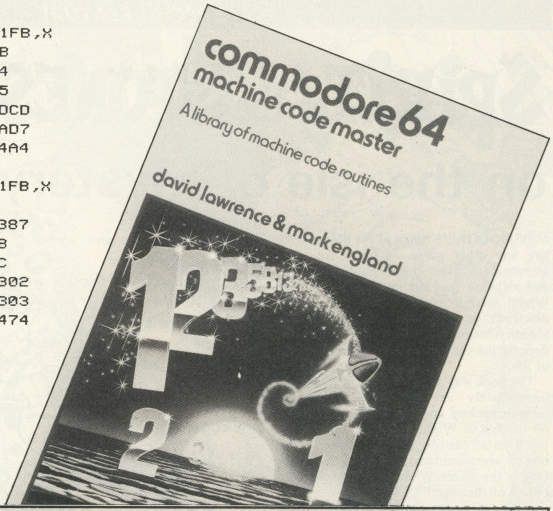
DISASSEMBLY

```
B*
   PC   SR AC XR YR SP
.;0008 30 4F 4F 00 F6
.
C350 A9 FF      LDA #$FF
C352 85 14      STA $14
C354 85 15      STA $15
C356 AD 02 03   LDA $0302
C359 AE 03 03   LDX $0303
C35C 85 FB      STA $FB
C35E 86 FC      STX $FC
C360 A9 6A      LDA #$6A
C362 A2 C3      LDX #$C3
C364 8D 02 03   STA $0302
C367 8E 03 03   STX $0303
C36A E6 14      INC $14
C36C D0 02      BNE $C370
C36E E6 15      INC $15
C370 20 13 A6   JSR $A613
C373 A0 01      LDY #$01
C375 B1 5F      LDA ($5F),Y
C377 F0 5D      BEQ $C3D6
C379 C8         INY
C37A B1 5F      LDA ($5F),Y
C37C 85 14      STA $14
C37E C8         INY
C37F B1 5F      LDA ($5F),Y
C381 85 15      STA $15
C383 A2 04      LDX #$04
C385 86 0F      STX $0F
C387 C8         INY
C388 B1 5F      LDA ($5F),Y
C38A F0 2E      BEQ $C3BA
C38C C9 22      CMP #$22
C38E D0 08      BNE $C398
C390 A5 0F      LDA $0F
C392 49 FF      EOR #$FF
C394 85 0F      STA $0F
C396 A9 22      LDA #$22
C398 C9 83      CMP #$83
C39A D0 08      BNE $C3A4
C39C A5 0F      LDA $0F
C39E 49 FF      EOR #$FF
C3A0 85 0F      STA $0F
C3A2 A9 83      LDA #$83
C3A4 24 0F      BIT $0F
C3A6 30 27      BMI $C3CF
C3A8 C9 20      CMP #$20
C3AA F0 DB      BEQ $C387
C3AC C9 8F      CMP #$8F
C3AE D0 1F      BNE $C3CF
C3B0 E0 04      CPX #$04
C3B2 D0 05      BNE $C3B9
C3B4 E8         INX
C3B5 9D FB 01   STA $01FB,X
C3B8 E8         INX
C3B9 CA         DEX
C3BA A9 00      LDA #$00
C3BC E8         INX
```

Continued

Disassembly continued

```
C3BD 9D FB 01     STA $01FB,X
C3C0 86 0B        STX $0B
C3C2 A6 14        LDX $14
C3C4 A5 15        LDA $15
C3C6 20 CD BD     JSR $BDCD
C3C9 20 D7 AA     JSR $AAD7
C3CC 4C A4 A4     JMP $A4A4
C3CF E8           INX
C3D0 9D FB 01     STA $01FB,X
C3D3 18           CLC
C3D4 90 B1        BCC $C387
C3D6 A5 FB        LDA $FB
C3D8 A6 FC        LDX $FC
C3DA 8D 02 03     STA $0302
C3DD 8E 03 03     STX $0303
C3E0 4C 74 A4     JMP $A474
```



SHRINK/SYS50000

```
10 REM *****    SHRINK/SYS50000   *****
20 :
30 REM  ** D. LAWRENCE & M. ENGLAND **
40 :
50 REM    ** IMPROVED BY MIKE HART  **
60 :
70 FORJ=50000 TO 50146:READ X:POKEJ,X
80 T=T+X:NEXT:IF T<>17590 THEN PRINT "DATA ERROR!"
90 END
100 DATA 169,255,133,20,133,21,173,2
101 DATA 3,174,3,3,133,251,134,252
102 DATA 169,106,162,195,141,2,3,142
103 DATA 3,3,230,20,208,2,230,21
104 DATA 32,19,166,160,1,177,95,240
105 DATA 93,200,177,95,133,20,200,177
106 DATA 95,133,21,162,4,134,15,200
107 DATA 177,95,240,46,201,34,208,8
108 DATA 165,15,73,255,133,15,169,34
109 DATA 201,131,208,8,165,15,73,255
110 DATA 133,15,169,131,36,15,48,39
111 DATA 201,32,240,219,201,143,208,31
112 DATA 224,4,208,5,232,157,251,1
113 DATA 232,202,169,0,232,157,251,1
114 DATA 134,11,166,20,165,21,32,205
115 DATA 189,32,215,170,76,164,164,232
116 DATA 157,251,1,24,144,177,165,251
117 DATA 166,252,141,2,3,142,3,3
118 DATA 76,116,164
READY.
```

Spirit of the Stones

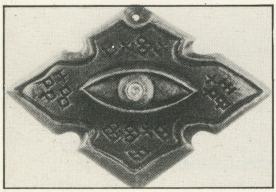
on the isle of mystery

A special report on the epic quest for real treasures on the Isle of Wight, Commodore's Spirit of the Stones, a unique book and software package

COMMODORE'S **Spirit of the Stones** isn't like any other game — it's more of a phenomenon. The idea behind the book-and-software package came from Isle of Wight author John Worsley's book, described as a "supernatural book of hidden treasures", and for some people deciphering the mystery has become a way of life.

The book was published late in 1983, and immediately sparked interest among treasure seekers and puzzle-lovers. Hidden on the Isle of Wight, where John Worsley has lived all his life, are 41 talismen, each one of which contains a genuine diamond. One is the Great Wight Eye, the ultimate object of the search.

Four talismen were found before Commodore's computer game package for the 64 was launched last year. Since then thousands have bought the package, and are eagerly searching the game and the book for clues to the location of the talismen.



The game is a fast-moving 21-screen arcade adventure, which gives extra clues to the location of the talismen. But you must solve the riddle of the runes in the book before the clues make any sense.

The book contains the mythical story of the scattering of the stones, and is packed with illustrations and clues in the secret runic alphabet. But you don't need to travel to the Isle to dig for the stones — once deciphered the clues provide enough information for postal claims to be made.

Author John Worsley explained "The publishers, Sheerjewel, will pass on to me any postal claims which are close enough for me to check. In my travels around the Isle, though, I have many times come across people searching for the talismen. Some even searched in the right spot, but failed to find the treasure. When a talisman is found, I leave a plaque to mark its place, so that future seekers will know they are on the right track."

Seekers who wish to visit the isle can take advantage of the Diamond Time holidays arranged by the Isle of Wight Tourist Board.

Royalties

In addition to the intrinsic value of the talismen and the Great Wight Eye, successful hunters can also win a share of the Royalty Fund. Fifty pence is placed into the fund for every package sold, up to a total of £1m. Each talisman contains a secret message which doubles as a token by which the finder can claim a share of the Royalty Fund. The person who finds the Great Wight Eye itself will need to decipher its final riddle and contact the publishers, who will then announce the end of the search.

Already fans of the quest have formed a cult of rune code addicts; runic graffiti has begun to appear on the island and John Worsley promises "a unique software product" in the near future, which will fuel this interest.

Spirit of the Stones is an unforgettable experience, one of the most notable software products around. Get into it and you'll find yourself in a world of fantasy, which offers very real treasures as prizes for unravelling its puzzles.

Spirit of the Stones is available from Commodore software dealers at £14.99.

REWRITE THE HIGH SCORE TABLES

So, you've got a Commodore. You've also got enemies. With the Gunshot, you'll have all the opposition cowering in corners. 8-directional action and an all-in-one moulded stem allows accurate annihilation and strength to survive those all-night sessions. Dual fire buttons for fading fingers (and a rapid fire version when they're really coming thick and fast). And, if you break it (and we know you'll try) our 12-month guarantee will prove invaluable. Only £8.95. The Gunshot plugs directly into the CBM 64 and Vic 20.

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COMMODORE SOFTWARE FILE

Compumusic

COMPUMUSIC enables you to compose, store and reply tunes on the 64's SID chip. Line 1 sets the variables, and lines 10 to 55 print the screen title. Lines 60 to 119 print the main menu and check which key is pressed. Lines 120 to 165 print the "composition" screen and input the pitch and duration of the note.

Lines 169 to 185 store the high and low frequency into the variables, and lines 200 to 270 actually play the tune. Lines 500 to 550 print an error message if you try to enter a non-existent note, while 1000 to 1003 store note data. The tune is not erased from memory if you return to the main menu, but only if you select the Erase option.

```
1 L=0:Z=0:M=0:DIMN(1000):DIMD(1000):DIMHF(1000):DIMLF(1000)
10 PRINT"□"
20 POKE53280,0:POKE53281,0
30 PRINT"■■■■■"TAB(14)"■COMPUMUSIC"
40 PRINT"■■■"TAB(11)"□ANDREW  RIDGWICK"
50 PRINT"■■■■"TAB(6)"■PRESS ANY KEY TO CONTINUE"
55 GETR$:IFR$=""THEN55
60 PRINT"□"
70 PRINT"■■■■■■■■■■■■■■■■■■** ■MAIN MENU ■**"
80 PRINT"■■■"TAB(9)"■F1 ■- □COMPOSE A TUNE"
90 PRINT"■■"TAB(9)"■F3 ■- □ERASE TUNE"
100 PRINT"■■"TAB(9)"■F5 ■- □PLAY BACK TUNE"
110 PRINT"■■"TAB(9)"■F7 ■- □QUIT PROGRAM"
111 PRINT"■■■■PRESS■ RETURN■ INSTEAD OF ENTERING A NOTE"
112 PRINT"■"TAB(5)"TO RETURN TO THE MAIN MENU"
115 GETF$:IFF$=CHR$(133)THEN120
116 IFF$=CHR$(134)THENRUN
117 IFF$=CHR$(135)THEN200
118 IFF$=CHR$(136)THENPRINT"□□":POKE53280,14:POKE53281,6:NEW
119 GOTO115
120 PRINT"□":L=L+1:M=M+1
130 PRINT"■"TAB(5)"■ # #   # # #   # #   # # #   #"
135 PRINTTAB(5)"■C D E F G A B C D E F G A B C"
140 PRINT"■"TAB(5)"■12345 6789111 11111 1122222 22"
145 PRINTTAB(5)"          012 34567 8901234 56"
150 PRINT"■■"TAB(3)"□SEMI-QUAVER  ■62"
155 PRINT"■"TAB(3)"□QUAVER        ■125"
156 PRINT"■"TAB(3)"□CROTCHET      ■250"
157 PRINT"■"TAB(3)"□MINIM         ■500"
158 PRINT"■"TAB(3)"□SEMI-BREVE    ■1000"
160 INPUT"■■■■WHICH NUMBER FOR A NOTE";N(M)
161 IFN(M)=0THEN60
165 INPUT"■WHICH NUMBER FOR A DURATION";D(M)
169 RESTORE
170 READP:READO:READI
175 IFP=-1THEN500
176 IFP<>N(M)THEN170
180 IFP=N(M)THENHF(M)=O:LF(M)=I
185 GOTO120
200 PRINT"□"
210 POKE53280,7:POKE53281,7
220 M=0:Z=0
225 IFZ=LTHENPOKE53280,0:POKE53281,0:GOTO120
230 Z=Z+1:M=M+1
240 POKE54296,15:POKE54278,12:POKE54277,15:POKE54276,33
250 POKE54273,HF(M):POKE54272,LF(M)
255 FORC=1TOD(M):NEXT
```

```
260 POKE54278,0:POKE54277,0:POKE54276,0
270 GOTO225
500 PRINT"□"
520 PRINT"■■■
```

```
150 IFV=1THENW$="■■■■■RED RUM"
151 IFV=2THENW$="■■■■■ROYAL BLUE"
152 IFV=3THENW$="■■■■■BOY SANDFORD"
153 IFV=0THENW$="■■■■■■PHOTO FINISH NO CLAIM"
154 FORG=1TO1000:NEXT
160 POKE36879,8:PRINT"■":PRINT"■":POKE36869,240
161 E$="■■■■WINNER WAS "
162 FORH=1TO14:PRINT"■"LEFT$(E$,H):FORN=1TO50 :NEXTN:NEXT
163 FORH=1TO25:PRINT"■"LEFT$(W$,H):FORN=1TO50 :NEXTN:NEXT
170 GOTO250
200 PRINT"  ■M KITWOOD ■1984■■■"
201 PRINT"YOU HAVE £"CO
202 IFCO=<1THENPRINT"■■■■■■■■■■■■YOU ARE BROKE":END
210 PRINT"■■■■■■BET ON HORSE 1,2,3?"
211 J1=INT(2+8■RND(0))
212 J2=INT(2+8■RND(0))
213 J3=INT(2+8■RND(0))
214 PRINT"■1) RED RUM       "J1"-1"
215 PRINT"■2) ROYAL BLUE    "J2"-1"
216 PRINT"■3) BOY SANDFORD "J3"-1"
217 ML=INT(3+3■RND(0)):PRINT"■THE "ML"FURLONG RACE"
220 GETU:IFU=0ORU>3THEN220
221 IFU=1THENU1=J1
222 IFU=2THENU1=J2
223 IFU=3THENU1=J3
224 PRINT"■■■■■■HOW MUCH"
225 INPUTCA:IFCA>COTHEN224
226 PRINT"■■■■■■HERE WE GO":FORG=1TO1200:NEXT:CO=CO-CA:PT=0:L=0
227 GOTO5
250 IFV=UTHENPRINT"■■■■■■■■■■■■YOU WON":CO=CO+U1■CA:GOTO200
255 GOTO200
```

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Round and round . . .

CAN THE Commodore 64 be programmed to draw circles?
Stephen Wilson
Dalston
Carlisle

YES, IT IS possible, both in Basic and in machine code. Unfortunately it's a sophisticated process involving at best digital differential analysis, and at its simplest plotting points on polar co-ordinates. You would probably find it easiest to buy an extended Basic package which includes commands for drawing circles.

Vic 20 defined

CAN YOU tell me how to program multicolour single UDG's on the unexpanded Vic 20?
Michael Grant
Nuneaton
Warks

YOU WILL find a 3×3 multicolour character editor program listed on page 419 of Raeto West's book *Programming the Vic*. I recommend this book unreservedly to all Vic owners, who will find the answers to practically any question on the Vic in its pages. See last month's issue for more details.

ASCII answer

CAN YOU tell me how to disable and re-enable the CLR/HOME, CRSR, INSERT and DELETE keys on the 64?
D E Adams
St Clears
Dyfed

THE KEYS can be disabled either in Basic or using machine code. The Basic, use the GET command to sift unwanted keypresses by rejecting the ASCII values obtained. Alternatively, you can write your own CHRGET routine in machine code, and divert the existing routine to your own.

If you write only in machine code, then a similar routine can be used to sift unwanted letters. This subject was dealt with more fully in our July '84 issue.

This space reserved

I NEED HELP with a problem concerning user-defined characters on the 64. Using the program on page 110 of the Programmers' Reference Guide, I find that too much memory is reserved for the 64 characters (18K) and this does not leave me with enough space for my own program. If I use the program on page 114 I have enough space, but my program gets overwritten, and I haven't yet worked out how to protect a reserved area.
T Armstrong
BEFPO 17

HERE IS A program which leaves 30K for your Basic program and protects your character set from being overwritten.

```
100 POKE 53281,6:PRINT
CHR$(142)
110 POKE 52,128:POKE
56,128
120 POKE
56334,PEEK(56334) AND 254
130 POKE 1, PEEK(1) AND
251
140 FOR I=0 TO
2047:POKE
32768+I,PEEK(53248+I):N-
EXT
150 POKE 1,PEEK(1) OR 4
160 POKE
56334,PEEK(56334) OR 1
170 POKE
56578,PEEK(56578) OR 3
180 POKE
56576,(PEEK(56576) AND
252) OR 1
190 POKE 648,136
200 POKE 53272,32
```

To protect an area of memory from being overwritten by Basic you can lower the top of memory available by POKEing the special pointers in the zero page to the new values. On power up the locations 52 and 56 contain 160. This is $A0 which puts the top of memory at $A000, so if you want to use the area from $9000 (36864) to $9FFF (40959) for a machine code program, you will POKE 52 and 56 with 144 ($90) making the new top of memory at $9OOO. 52 is FRETOP, the pointer to the bottom of string storage, and 56 is MEMSIZ, the pointer to the highest address used by Basic.

Poking the port

I HAVE BEEN trying to obtain information on the 64's User Port. I've bought many books including the Programmers' Guide, but they have been of little help. Could you give me the relative addresses and POKE numbers, tell me how to turn on and off a five volt output from one of the pins, and give me any other information which might be needed to control a mains relay.
Chris Watson
Burnley
Lancs

THE USER PORT is at 56577 (port B) and its controlling register (DDRB), that is, the data direction register B, is at 56579. Each of the eight lines in Port B has a bit in the DDRB which controls whether that line will be input or an output (0 for input, 1 for output).

Thus, to set PB0 for output, POKE 56579,1. For instance eight bits would be 00000001. If other lines have been set as output then to retain these you would POKE 56579,PEEK(56579)OR1. This will then only change bit 0 to 1. POKE 56579,PEEK(56579)AND254 would change bit 0 to 0.

To change the next line, you would POKE56579,PEEK(56579)O-R2, so that the eight bits read 00000010. The next will be OR4, and so on. Conversely, use AND253 to reverse OR2, and use AND251 to reverse OR4.

On the 5V output, you can use a PNP transistor with its emitter connected to the +5V supply pin; a controlled current supplied into its base may be derived from PB0 via a suitable resistor. The controllable 5V supply will be obtainable from the transistor collector. Please do not attempt this if you are inexperienced in electronics.

POKE 56579,PEEK(56579)OR1 to configure output on line PR0. Turn on with POKE 56577,PEEK(56577)AND254, off with POKE56577,PEEK(56577)O-R1. PR0 is pin C on page 359 of the Programmers' Reference Guide.

The above setup is capable of supplying a small 5V relay for your mains switch. Extreme care is required not to mix high and low voltage lines.

Load and fire

I HAVE always suffered from intermittent tape loading problems with my CBM64, and recently discovered that the problems always arise with certain types of blank tapes. I have 4 TDK D46 of which only one works; 12 Boots C15 of which only 7 work; and 5 Maplin C10 of which all 5 work. Is this a normal state of affairs, or is there something I can do to make the faulty tapes work?
David Thurston
Reading
Berks

TDK TAPES are fine for audio applications, but I wouldn't recommend them for computers. The other tapes you mention are all perfectly suitable, so most probably the cause is misalignment of the tape heads. Have these checked, and clean and demagnetise them. Interceptor Micro's is about to market a head alignment test tape which you might find useful — contact them on 07356-71145.

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- ☐ **NOVEMBER** — The Plus/4 and C16. Commodore conversations from Currah. Steam heat from Tony Crowther's Loko listing.
- ☐ **DECEMBER** — Steve Lee interviewed. Digitising, Music.

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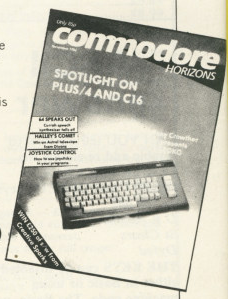

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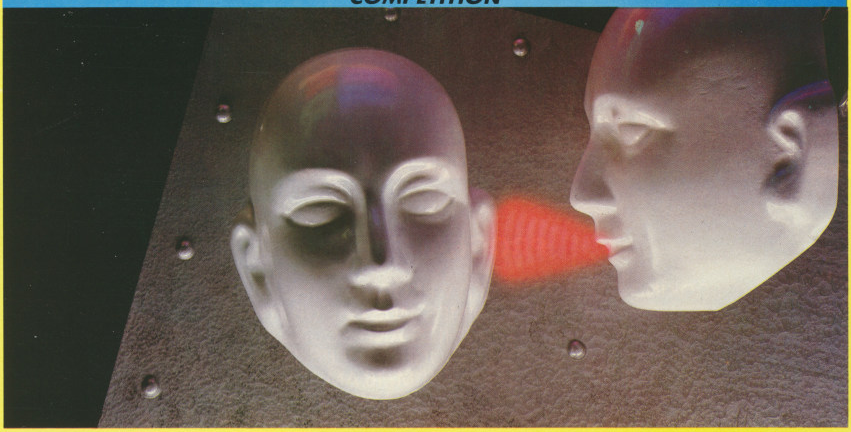


TALKING HEADS

To be won — 10 Speech 64 synthesisers from DK'Tronics

THIS IS YOUR chance to win a DK'Tronics/Currah **Speech 64** voice synthesiser. The Speech 64, which is reviewed more fully in our special feature this issue, is a cartridge-based unit which lets your 64 speak any word you care to type in. Its powerful English interpreter can understand most words, and in cases where it can't cope with unusual pronounciations you can enter phrases phonetically.

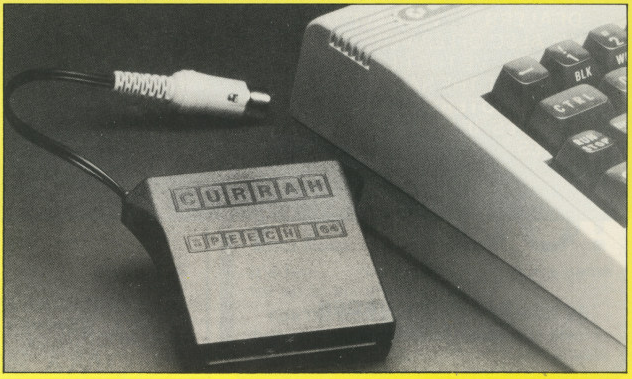
There are four speech pitches available, and the Speech 64 can be used with your own Basic and machine code programs or with software such as Tony Crowther's **Gryphon** from Quicksilva.

Normal cost is around £30, but ten lucky winners will receive a free Speech 64 from DK'Tronics, the company which has now bought the rights to manufacture and distribute Currah products.

To win, just look at the photo of the two robots (above and on the cover) and tell us what you think they are saying to each other. The ten entrants who come up with the most apt, original and amusing captions will win a DK/Currah Speech 64.

Put your entry on a POSTCARD with your name and address, and send it to *Speech 64 Contest, Commodore Horizons, 12/13 Little Newport Street, London WC2H 7PP,* to arrive by the last working day of April. Winners will be announced in the June issue. All normal competition rules apply.

The winners of the **Psychedilia** competition in the February issue are; (CBM 64) M Wilson, Sheffield; J A Goddard, Stretton; P Meier, Teignmouth; K Roche, Poole; R Bolger, Bridgend; (C16) T Burton, London; C Prowse, Penzance; A Rudderforth, Hull; S Fraser, Kilmarnock; M Calladine, Stapleford; (Vic 20) J Nicholson, Torquay; M J Davies, Llandeilo; G Royle, Hayes; R Stambrow, London; R Hawkins, Walsall. Each will receive a copy of the light synthesizer program Psychedelia from Llamasoft. ■



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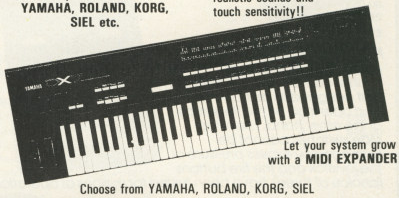

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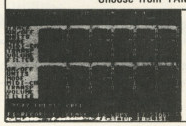

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Scholarly effort

Book: *Better Programming for your Commodore 64*
Authors: *Henry Mullish and Dov Kruger*
Publisher: *Fontana*
Price: *£3.95*
Reviewer: *Phil Bonner*

Henry Mullish and Dov Kruger are American college lecturers, who have produced a rather scholarly textbook.

Each Basic command is introduced in a thorough, logical manner and then explained carefully. Numerous short programs are included to illustrate the subject matter and each chapter ends with a comprehensive revision exercise. Certainly any newcomer to Basic who was able to persist and work through it chapter by chapter would learn a good deal about simple programming.

At the back of the book are a glossary and three appendices, listing the character graphic symbols, the screen display codes and the ASCII codes. There is no index, which is a serious omission as it makes the book difficult to use for quick reference, and no mention is made of sprites.

This is indeed a scholarly work, but unattractive and written in a style which would not inspire enthusiasm. I do not recommend it.

Middle ground

Book: *Intermediate Commodore 64*
Author: *Guy Grotke*
Publisher: *Prentice Hall*
Price: *£14.50*
Reviewer: *Eric Sharp*

Many American computer books make the mistake of including supposedly funny cartoons, presumably in order to appeal to the kiddies. Once you've seen the same jokes several times over, the appeal wears off, and the cartoons in The Intermediate Commodore 64 certainly don't have anything much to offer, and serve only as a minor irritant.

Moaning apart, the book itself is a fair attempt to bridge the gap from Basic to machine code. As a follow-up to the earlier volume Elementary Commodore 64, it first introduces more advanced programming concepts such as top-down and structured programming. Each section is illustrated with typeset listings, which I don't like to see in computer books, but let's be charitable and assume that they're all accurate.

Algorithms and file handling are dealt with before we get on to some actual machine code, in the form of a discussion of hand assembly, monitors, assemblers, vectors and interrupts. Then it's on to the usual sections on bit-mapped, hi-res and sprite graphics, and two appendices on opcodes.

Huh? That's it! Just when it seemed to be getting underway, the book comes to a sudden halt. Then I figured out what had happened — they were leaving it wide open for sequel.

I don't think it's a good idea to go for a book which almost requires you to read the preceding and following volumes, but if this book does take your fancy then there's no harm done. It's no better no worse than a number of books on the same subject, but at £14.50 I'd look at the opposition first.

The Vic lives

Book: *Delving Deeper into Your Vic 20*
Author: *Philip Campbell*
Publisher: *Interface*
Price: *£5.95*
Reviewer: *Adrian Morris*

A useful little volume which covers all the major aspects of programming the Vic without going into complexities.

There are five sections, each illustrated by around twelve programs. Part one deals with graphics, part two with sound, part three with the game control port, and parts four and five with simple hardware projects and useful programming utilities.

The stated aim of the book is to unlock the full potential of the Vic. The author argues, rightly, that the Vic isn't dead while there are users who want to get more from it, and there is plenty there to find. Although the tone of the book is a little over colloquial, I doubt whether the majority of readers will object to it. It does after all serve to liven up the rather dry subject matter.

It's difficult to find something original to say in this kind of book, so it's important to hold the reader's interest right away.

The first major program is a piano keyboard routine, which demonstrates the use of the PET character set and the noise generators. This is a good start, since the reader is allowed to use the computer for some creative purpose straight away, rather than just have to sit watching it do something clever.

Creating new character sets, always a good subject, comes next, and then on to high-res graphics. One of the best programs in this section is Electrical Goldfish, which gives a graphical representation of the inside of a goldfish bowl — a cheap and easy to feed pet.

It's very praiseworthy that the book contains useful details on building and using games controllers, a subject which other books cover poorly. There are even details of how to use two joysticks with the Vic.

Some useful appendices and a few details on using ROM routines like the keyboard buffer are included, and in total this book is an excellent all-round introduction which should spark off many interesting ideas.

Handling printers

Book: *Commodore Disk and Printer Handbook*
Author: *David Bridges and Helen Naylor*
Publisher: *Phoenix*
Price: *£7.95*
Reviewer: *Derek Witt*

Suitable for use with all Commodore machines, this handbook deals with the 1541 disk drive and any suitable printer, specifically Epson types.

The disk operating system, relative, sequential and direct access files, and changing device numbers are covered in this section. There's very little new material here, but it's useful to have it all in one place, especially since the instructions which come with the 1541 are notoriously inaccurate.

For obvious reasons, it's difficult for the authors to recommend specific makes of printers. For that reason the printer section may be a little unsatisfactory if what you're looking for is a buyers' guide. If you're genuinely ignorant about printers, and don't know the meaning of terms like "bi-directional", "true descenders" or "multifont" then it may be of more use.

Using the Commodore 1526 as the main example, the printer handling section of the book is more than adequate. It deals with the use of secondary addressing to format printing on a line, control line spacing, design characters, and so on, and then goes on to cover the popular Epson RX-80 printer, which of course has many facilities unavailable on Commodore machines (though you'd need an interface to operate it).

A very handy book for the beginner, and the experienced user of disk drives and printers too.

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Instead of ten aliens, C
for his Commod

What happened ne

Saturday morning.

Waltzed into my local computer shop.

Packed as usual with masses of kids enjoying the arcade games.

Surely I could put my Commodore 64 to better use. Helpful assistant suggests a Commodore Communications Modem.

Tells me it comes with a year's free subscription to Compunet, a new network service, saving me a cool thirty quid.

A bargain not to be missed, so I bought a Modem.

If I knew then, what I know now, I'd have thanked that assistant more.

Saturday (one week later).

Fantastic.

My Compunet membership came through this morning.

Hurriedly plugged the Modem into my 64's cartridge port, and hooked up to the telephone line.

Can't wait.

At last I can communicate with other Commodore 64 Modem owners and giant mainframes.

What's more, I can also access databases throughout Europe and the U.S.A.*

This is what home computing's all about.

Sunday morning.

Raining.

Tapped in my Compunet I.D. and personal password.

Wow, what a directory!

Decide to pit my wits against other Modem users by entering Multi User Dungeon, an interactive on-line game.

Should stretch the old grey matter a bit.

Then a quick look in 'The Jungle.' This is an open area where other Modem owners display messages.

See a Commodore user in Fife wants to sell 'U-boat' for £3.00.

Leave message offering him 'Mighty Gork' on a straight swap.

Monday evening.

Move on to the Compunet Software Park.

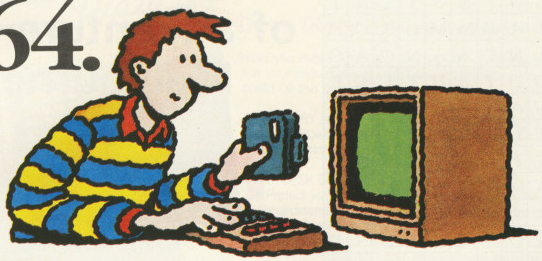
What a choice. Loads of high quality bargain programs.

Particularly interested in educational software, so I call up 'The Study.'

Download free physics package to help with my exams.

Clive bought a Modem

dore 64.



ext changed his life.

Tuesday evening.

Dad's turn.
I don't get a look in as he's busy teleshopping.

Actually it's amazing what bargains turn up. He even finds a new house.

Mum said she doesn't want to move and anyway his dinner's getting cold.

Wednesday evening.

Discover I can join BLAISE,* the computer service for the British Library.

Their catalogue of books dates way back to 1950.

Should give me an interesting edge over my school chums.

Thursday evening.

Sis has a go.
She keys into Prestel.*
Imagine, over 300,000 pages of information and news.

What does she choose? The lonely hearts section.

She's disappointed. Couldn't find Simon le Bon's private number.

Friday evening.

Yippee! Receive a reply from the guy in Fife.

He fancies taking on Gork.

What's more he's written a program he'd like my opinion on.

He transfers it direct, using the free user to user software.

I've made my first computer pal.

What a week. Best one I've had since getting my Commodore 64.

Sure am glad I got the Modem instead of all those aliens.

The Commodore 64 Communications Modem comes as a complete package with a year's free subscription to Compunet, for just £99.99 inc. VAT.

Find out how a Modem can change your life. See it now at Spectrum, Curry's, Comet and selected Commodore dealers.

commodore

For further information phone or write to:
Commodore Communications Modem, 1 Hunters Road, Weldon, Corby, Northamptonshire NN17 1QX, Tel: 0536 205252.

*Require additional subscriber charges. Prestel is a reg.d.trademark of British Telecom.

A	S	T	M	G	S	N	U	M	N	U	J	A	S	C	I
B	I	L	B	O	B	A	G	G	I	N	S	I	T	A	T
P	R	I	C	L	O	T	I	A	B	M	M	C	R	O	H
M	P	A	T	L	I	B	L	N	E	A	A	N	O	A	O
L	O	G	U	U	E	X	D	D	I	B	U	T	L	E	R
G	I	T	A	M	L	I	N	A	T	E	G	R	L	F	I
A	C	E	F	A	L	M	T	L	R	R	Z	U	S	W	N
D	U	N	G	E	O	N	K	F	R	I	T	P	F	O	O
M	A	C	K	O	T	R	A	M	P	N	L	A	N	T	G
U	Z	E	L	V	E	N	K	I	N	G	P	O	L	N	O
C	Z	L	E	T	W	T	R	O	A	Q	U	A	D	S	P
A	R	R	L	O	W	W	N	A	N	G	O	B	L	I	N
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C	D	N	A	R	F	G	F	A	R	P	I	O	U	Y	T
Y	W	D	O	O	L	P	P	A	D	S	G	R	H	I	T
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Put your name and address on the postcard and send it to Hobbit Competition, Commodore Horizons, 12/13 Little Newport Street, London WC2H 7PP, to arrive by the last working day of April. Normal competition rules apply, and winners will be announced in the June issue.

The winners of the SLOMO contest in the February issue are; N Bateman, Hull; P J Seedhouse, Chepstow; M Martin, Carterton; C Roberts, Denbigh; and G Pullen, Southwick. Each will receive a Commodore 64 SLOMO screen speed controller from Nidd Valley Micro Products.

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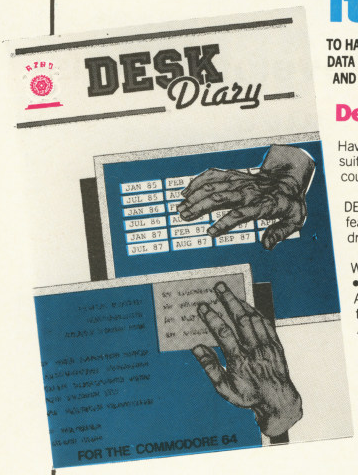

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