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HORIZONS

February 1983

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EDITORIAL

COMPU NET, MICRO NET, AND the many bulletin board systems now available to Commodore micro owners, are at the forefront of modern communications technology. History shows, though, that society is slow to respond to vibrant developments. It wasn't long ago that the sight of a motor car would be invariably accompanied by that of a man walking in front with a red warning flag.

It took mass production and the development of the market for the motor car to become a success. In much the same way, an increase in the sheer numbers of network users will force relevant legislation and technical development to be carried through.

At the moment, for instance, the high telephone charges involved in networking discourage many potential users. If special rates could be negotiated then the market would be much wider. At the same time, there are technical problems with ring systems which do little to encourage users. Compu net's dial-loading rates are slow, and it appears that the memory space taken up by the modems itself may limit the use of serious applications software. This might imply that the small business user market, which should form a substantial part of Compu net's subscriptions list, would be limited.

At the same time there are legal questions to be settled: is a network system responsible for all material uploaded, or, as Compu net maintains, is it not more responsible than British Telecom is for what is said over its phone lines? Whether or not networks can be regarded as "electronic publishers", legally responsible for whatever material they carry, will have to be decided before long. It's just one of the ways in which society has not yet adjusted to the micro age, though one thing is sure, once the adjustment is made, the potential of networking is unlimited.

BEYOND

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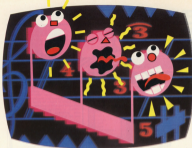
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ANIMATION 10½ • ANIMATION 10½ • ANIMATION 10½ • ANIMATION 10½

OVERALL 11 • OVERALL 11 • OVERALL 11 • OVERALL 11 • OVERALL 11 • OVERALL 11

COULD IT EVER HAPPEN?



notes all at the same time).

■ As the press of a button, you can summon up pre-programmed rhythms and bass accompaniments to play along to.

■ These three rhythm combinations can be speeded up or slowed down.

■ You can even glissando (so long as you don't hurt yourself.)

■ That is, make a note slide up in pitch.

■ You can filter sound: reduce the treble, the bass, or both. You can save, on cassette or disk, a voice or tune for future use.

■ And, for better sound reproduction, you can connect

MAKE MUSIC YOUR FORTE.

■ Alright, let's all gather round the computer for a good old sing-song.

■ You'll find the new Commodore 64 Music Maker strikes exactly the right note, whether you're an accomplished musician or whether you are an out-and-out beginner.

■ If you can hum and know your ABC, you can start to play famous popular tunes immediately.

■ No matter if you've never played a note before.

■ Simply type in the notes from the SFX Tutor Handbook.

■ MUSIC MAKER DISK OR CASSETTE C64/16.

then tap in the rhythm.

■ And, before you can even say "Richard Clayderman," the automatic playback fills the room with music.

■ Once you've become a "piano" virtuoso, you'll quickly appreciate the Music Maker's other amazing capabilities.

■ You can synthesize musical instruments, even create your own "synth" electronic sounds.

■ You can play notes polyphonically.

■ (This is the smart way of saying you can play three different

Music Maker to your hi-fi system.

■ Music Maker has been designed, like all our software, to get the very best out of Commodore hardware.

■ It's the first in a series of packages which will fully exploit the Commodore 64's outstanding musical capabilities.

■ Commodore software: it costs no more, even though there's more to it.



LETTERS

PAGE

Thanking you...

DEAR Commodore (sir),
Horizons, I am wondering in which computer to go. I am 80% sure that I'm getting a Commodore.

If you have any leaflets and software leaflets to hand out, I would be more than pleased to get some.

Please could you give me leaflets as the last time I had ended off I had to pay for the books, so if you could send me leaflets.

Thanking you,

Roy Ashcoombe
Tooting Bec
London

WE ARE not having the leaflets. Try asking Commodore for the leaflets. Thanking you.

Print At ideas

YOU MAY be interested in this short advertisement, which gives a PRINT AT function without the need for additional machine code routines.

To print an input at a specific point, use this routine prior to the required command. Let X = the column required, 0 to 79. Let

Y = the row required, 0 to 24. Then GOSUB to the PLOT routine, which can be placed at any suitable point in the routine and is as follows:
POKE1211,X:POKE1214,Y:SYS16712:GOTO1650

The values of X and Y can be redefined as required during the program.

Foxy Lewis

Abingdon

Ox52d

Reset defeated

HERE'S how to stop Paul Bapin's reset which (December issue). Paste the following numbers into locations 1216d onwards:

1216d A
1216e B
12170 0
12171 0
12172 183
12173 184
12174 203
12175 54
12176 48

where A is the low byte of the address of a machine code program, 0d handles the fact that the reset switch has been pressed, and B is the high byte.

This stimulates an auto-start cartridge ROM at address A, B.

For instance, enter the code with A = 0, B = 182, then POKE 48152,86. Type a small program like I REM (RETURN) and press the reset switch. The screen should clear, but you can still LIST your program. Amosy Walsley

RAP England
Widener-Hampton

Booga-boo-hoo

SIX months ago I purchased the great game Booga-hoo the Flea from Quicksilver.

However, after reaching the top of the cave, I cannot find any way to jump through the entrance. Could anyone send me some of instructions and offer some advice?

Philip Morgan
South Ampton
Sho51d

THEY had the only letter we've had asking the same question. Anyone got an answer?

Flying tape

IN YOUR December issue you reviewed the (apparently) last only Nuthing's Flight Simulator 2 program, and I am very interested in buying a copy. However, you say that because of the complexity of the program it's only available on disk, and I don't own a disk drive. Yet in the same issue, the same supplier from whom you obtained the review copy on disk was advertising a version on cassette! (Page 10, 44 Supplies Co.)

I would be most grateful if you could explain the apparent contradiction, and if you could tell me if the cassette version differs in any way from the disk.

Seary A&S
Liverpool
Merseyside

YES, 64 Supplies does now offer a version of the Flight Simulator 2 on tape, which wasn't available at the time our disk review was written. The disk version was a continuous screen principle, with new sections of the simulation being loaded on the program continues.

We can only assume that the tape version is substantially the same, but has to be loaded in separate sections. We'll be trying to get hold of a tape version to check it out as soon as possible.

£10 prize letter

BECAUSE we know you're all busy people with plenty to do, we're offering you letters to spend your valuable time writing to Commodore Horizons. Each month we'll give a £10 prize for the most interesting letter on hardware, software, computing, or life in general. The ball's in your court... get writing!

This is the chance to air your views — send your tips, complaints and compliments to Letters Page, Commodore Horizons, 10-12 Little Newport Street, London WC2E 9PP

COMPUTER

L
E
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S



COME BLYA I'VE WRITTEN A FAST AND ORIGINAL CORRECTION

I CAN'T PURSUE



YOU CONTROL A LITTLE YELLOW TANG ARROUND A



WHAD DAVA ME AN ITS ALREADY BEEN INVENTED???

NEWS DESK

Collins goes soft

BRITAIN'S largest independent trade publisher, Collins, has set up a software imprint, Collins Soft. The first acquisition is the *Entrepreneur* range of programs from Triptych (review in this issue). The remaining *Entrepreneur* titles will be available from Collins Soft from January 1st, and further titles are in preparation.

Triptych titles cost £9.95 on tape and £24.95 on disk. Titles so far include *Entrepreneur*, *Numbers at Work*, *Decision Maker*, *Star Wars*, *Project Planner* and *Rescue*.

Each title is intended to help micro owners get their machine to a practical application. Each contains a tutorial booklet and program, and Collins Soft's publisher Graham Taylor promises to carry on in an attempt to "influence the direction and focus of software development... away from games and computer literacy... to software that actually does something." Contact Collins Soft at 5, Griffin Street, London W1N 1LA, 01-493 7078.

Cheat sheets

PHOENIX PUBLISHING'S Computer Cheat Cards are now available through bookshops at £1.99. The handy-sized folding reference leaflets cover subjects such as keywords, operating commands, graphic and sound commands, colour codes, BASIC statements, logical operators, error messages, and programming hints and tips.

The Commodore 64 version also includes a full list of PET graphic characters, SID-chip registers and ASCII character codes.

For more details contact Phoenix, 14 Vernon Road, Basing, Hants, W12 1JL, phone 0923-32189.

Record-breaking US software



FOLLOWING the lead of Virgin and Island, another record company has opened a software subsidiary.

Arista's Aristasoft label debuts with a series of packages from top US home-brand and Electronic

Arts. The initial launch features six games which made the top ten in the US Billboard chart, all of which are for the Commodore 64.

Titles include *Choplifter*, in which you have to pilot a helicopter on a rescue mission

when 64 US delegates are kid-napped. *Lode Runner*, a multi-screen lockers-and-platforms game. *Hard Hat Mack*, a construction game; and *One-on-One*, a two-player basketball simulation.

David's Midnight Magic is a puzzle simulation for 1 to 4 players, and *Spelunker* is an underground exploration epic. *Raid on Raging Bay* is a graphically sophisticated war game, and *Hearts of Impossibility* is a 128-room dungeon adventure. All the above games cost £9.95 on tape and £12.95 on disk.

Additionally, *Operation Wildwind*, *Merlin on the Zindweest*, *Archon* and *M.U.L.E.*, and luxury packages including instruction manuals, selling for £11.99 on tape and £14.99 on disk.

For more details contact Aristasoft, Suite 105/16, Asphalt House, Palace Street, London SW1 01-434 8387.

Tony's travels

TONY CROWTHER, well-known author of *Loas*, *Blagger*, *Funny Figures* and *Mandy Milk*, is on the move again.

Tony and partner Roger Taylor of Wizard Development Co have moved to Quicksilver after a disagreement with Genesis Graphics. The first Quicksilver game will be *Black Thunder*, a version of Genesis's *Suicide Express* (read a review of *Alligator's Lament*). The material in the original version, which involves speeding along a futuristic railway system avoiding attack by fighters, bombers and drones, has now been replaced with a buggy, and the music on the game has been rewritten. The original software speeds effects are still included, but *Black Thunder* is also compatible with Cornish's *Speech 64* voice synthesizer.



From L: Tony Crowther, Roger Taylor, and Quicksilver staff

Black Thunder will cost £7.95 on tape and £12.99 on disk. The next program in the works is called *Gryphon*, and is due for launch after Christmas. Tony's deal with Quicksilver covers these two games only, since his disagree-

ment with Genesis centred on their desire to sign an exclusive contract. As a development company in its own right, Wizard will be able, in the words of Roger Taylor, to "Free our time and capital to concentrate on new ideas."

Panda bears up

DESPITE LAST year's disappointing shortage of Commodore data recorders having finished, there still seems to be a market for interfaces allowing conventional recorders to be used with the 64.

The Panda 20/64 interface costs £17.99, and is produced by PACT International. The interface also works with the Vis 20, and features a special phase switch which enables it to cope with different types of tape recorder and tape quality. It also features two LEDs, a red one to show when data is being saved and a green one for loading.

The Panda 20/64 has been covered with turbo-loading programs, and will be available through electrical, television, hi-fi, video and computer shops. Contact PACT International, PO Box 38, Fourborough, 0712-110600.

Computer brains

FIFTEEN-YEAR-OLD Peter Chase of Cambridge has bought the Sunday Times Young Computer Brain of the Times.

The competition, sponsored by the Sunday Times and Commodore, involved developing a new idea for a computer application which would benefit society. This year, the theme of computer communications was being emphasized, and Peter's winning idea was "Comov", a system for sailors and consulars.

Peter's prize included a certificate from the Sunday Times, and an SX-64, modem, MCS-681 colour printer and software packages, total value £2800, from Commodore. The prizes were awarded by the President of the British Computer Society, Dr Frank Page, at a lunch at the Waldorf Hotel in London.

Second prizes included an SX-64, peripherals and software, total value £1700, and for the third prize there were Commodore 64's, peripherals and software worth £600.

Scope widens for ISP



ISP MARKETING, producers of the game design language Scope, have been bought out by their American distributors CodeWriter.

CodeWriter's specialty is program generating software, and the company claims to have been leader in the field for some years. Graham Lomas and Allen Penfold of ISP Marketing become Marketing and Technical Directors of CodeWriter UK, which will be producing largely disk-based software.

Initial releases include Eile Writer, Report Writer and Menu Writer, which enable home or business users to tailor applications packages to their own specifications.

Adventure Writer is a text-only adventure game creator based on The Quill from Gilsoft. Dangerous and Dragon Writer is another

adventure creating package, while Dialog, is an interactive tutorial program which allows yes/no or multiple choice questions to be set and answered.

E.L.P. (Easy Language Parser), is a visual problem solver, and the original CodeWriter program generating package is also available.

The CodeWriter factory in Berkshire will be producing software in several European languages, and the company will be interested to see the user-specific programs written using their packages and consider them for commercial marketing.

Prices will be "in line with UK usage", and there's a demo disk available from the company for £9.95. Contact CodeWriter, PO Box 31, Basingstoke, Hampshire, RG24 2BA4.

L9 disks

ALL SIX OF the popular Level Nine adventure games have now been made available in disk format.

The Commodore 64 games include Return To Eldor, the latest release, the space adventure Newball, Colonial Claw and the Middle Earth trilogy.

The disk versions will cost £11.95, and cassette version owners can exchange them for disks with a charge of £2.50 to

cover costs.

The new Level Nine catalogue lists all the programs, and comes in an A5 poster format. The catalogue illustrations will be changed every two months, and if you're interested in getting a copy you should send a medium sized a.s.c. to Level Nine, 229 Hughlands Road, High Wycombe, Bucks, HP12 3PL.

CBM \$25m payout

MORE DETAILS of Commodore International's purchase of Amiga have been announced. A recent quarterly statement reveals that around \$25m in cash and stock has been paid to acquire the company, which will gain Commodore 27 engineers and the rights to the much-loved Lorraine personal name.

Financial analysts have responded positively. Technical details on the Lorraine, revealed in a previous issue of Commodore Horizons, are promising, but it will have still competition from the Macintosh and IBMPC. Commodore share prices fell after the announcement of the purchase details, though stocks were said to be at a high level.

The lawsuit against Amiga by the chairman of Atari, Jack Tramiel, former head of Commodore, is still pending. Tramiel alleges that technology developed by Amiga for Atari is being transferred to Commodore under their arrangements. Commodore executives say that the lawsuit won't delay the debut of the Lorraine.

New man

COMMODORE UK has appointed a new Marketing Manager, David Gerrard. Formerly with electronics giantes Honey, Gerrard was involved with the company's business computer project. He was also employed as UK marketing manager for Texas Instruments calculators and watches.



His responsibilities will include marketing of home computers, software and peripherals, but will also extend into Commodore's attempt to crack the UK business market.



REWRITE THE HIGH SCORE TABLES

So, you've got a Commodore. You've got enemies. With the Gunshot, you'll have all the opposition covering 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.

Ask about Vulcan interfaces for the C 16 and Plus 4.

See the range of Vulcan joysticks and interfaces at your local stockist ... we'll see you on the high score tables.



VULCAN
ELECTRONICS LTD
Joystick Genius

SOFT★HITS

White wizard

The latest in the range of talking games from Tynes is Gandalf the Sorcerer, a Tolkien-esque wizard in magical machine, in command with the whole Tynes range. Gandalf features very skilled, colourful graphics programming, combined with the fashionable gimmick of

software speech. It's a very slick package, though the game



isn't that original.

You control the sorcerer Gandalf, moving him around

the battlements of his magic castle and flinging fireballs at the attacking Lowlanders. There are lovely little sound-effect explosions when you score a hit, and occasionally you have to avoid the magic laser to draw extra power from a magic star, and a poisonous spider tries to grab your leg.

Should the lowlander penetrate the castle and kidnapping your apprentice, you must

follow them outside and stop the fiends while collecting gold coins. Leave it too long and an attack comes along and steals the coins. An Ouch! What's that doing there...?

Overall, very slick, though not a great challenge.

Program: Gandalf, 64

Supplier: Tynes

Price: £9.95

Graphics: ★★★★★

Sound: ★★★★★

Gameplay: ★★★★★

Radio-active

One of these games where it's necessary to arrange a free weekend to be sure of completing it. Countdown to Meltdown features a very impressive perspective 3-D effect which will draw a gasp at first sight.

The scenario is a 2000-year nuclear plant threatened with disaster as the core begins to

overheat. You control a number of androids which must be led to the core and used to neutralise it.

Each chamber can be viewed from a number of different angles, and will contain equipment which can be either useful or dangerous. Some android can only carry a certain amount of equipment, so choose carefully — it would be frustrating to get right through to the core only to find that you hadn't picked up the necessary Grog Drill or

Suitcase along the way.

The animation is quite good, though the figures are small.



Particularly appealing is a record of damage called ARP which drains your money, though there are also robot

soldiers lurching around which have to be avoided.

A very nice challenge for the sort of game player who enjoys making maps, and who doesn't mind withdrawing from human contact for the kind of time it will take to complete this complex game.

Program: Countdown to Meltdown, 64

Supplier: Creative Sparks

Price: £7.95

Graphics: ★★★★★

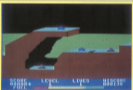
Sound: ★★★

Gameplay: ★★★★★

Future tense

Yet another from the Y-masters of the cheap game, and this one's a little cracker. Don't take anything of the game itself, which is based on a little-known vector-scan arcade game, Graviton.

Using the arcade controls and thrusters on your disk's spaceship, you must first manoeuvre out of an underground base, then, avoiding UFOs, land on one of four planets. The score then changes to the landscape of



the planet, where you must pick up fuel pods with your tractor beam, avoiding mines from gun emplacements and

the effects of gravity which threaten to pull you into the ground.

At the risk of sounding

trite it is for the many respectable companies who are doing marvellous things in the £6-£7 price range, £8.95 is exceptionally playable, much more fun than many £10,000-level magazines, and although the idea isn't strictly speaking an original one I don't remember anyone having ripped it off in a Commodore version before. Full marks to Masteronic for producing another little classic, which you should all dash out and buy at once.

Program: 1985, 64

Supplier: Masteronic

Price: £8.95

Graphics: ★★★★★

Sound: ★★★

Gameplay: ★★★★★

Inkworm attack

Quits is a pleasantly unusual offering from the underrated Supersoft. It's a pretty straight-forward test of speed and physical dexterity, in which the field of play is one some intergalactic wasteland,

but a sheet of writing paper.



You play Arthur Crews, a food economist persecuted by

nightmares in the midst of his exams. Your sheet of paper must be defended at all costs from the ravages of the Inkworms. This you can do by covering up their inky markings with TYPIT correcting fluid. Watch out, though, for the paper-eating monsters, and don't over-use. Giving way to the temptations of the tasty snacks appearing at the side of

the paper can lead to a visit from the dreaded Dennis.

Unusually clear graphics and nice quality sound effects as you stamp on the inkworms make Quits a definite game.

Program: Quits, 64

Supplier: Supersoft

Price: TBA

Graphics: ★★★★★

Sound: ★★★★★

Gameplay: ★★★★★

SOFT★HITS

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Commodore 64

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Commodore 64

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£255.00

Monitor's

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Monitor 1431AP	£249.75
Phillip's 9.5in green	£79.95
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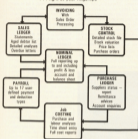
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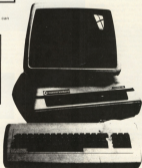
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SOFT★HITS

That's all folks!

Based on the same sort of concept as the old Road Runner cartoons, *CBH Hanger* is a good idea which doesn't quite come off. The backgrounds are drawn in a cartoon-like style, though the animation of the characters

isn't up to the same standard. The idea is to stop a bandit running through your valley.



using the standard methods of the cartoon world, dropping

rocks on his head, blasting him with a cannon, snatching him with an owl, and so on. You must figure out how to use the objects found in the first ten screens. Thereafter you must also take evasive action if you want to survive a screen, and on the final level every game in which you fail to stop the bandit costs you a life.

At times the computer takes over the action and presents you with a vignette, some of

which are very funny. The problem is that playing *CBH Hanger* is like having an hilarious joke — for the tenth time. The novelty soon wears off, and without a little variation the graphics aren't enough to sustain the interest. Program *CBH Hanger*, 64 Supplier New Generation Price £7.95

Graphics: ★★★★★
Sound: ★★★★★
Concept: ★★★★★

8,192 blows

We always expect great things from Eastart here at *Horizons HQ*, and if *CAD/CAM Warrior* lacks something in originality it certainly makes up for it in scope.

Incorporating an amazing 382 screens of action, you'll encounter them all over the *CAD/CAM Warrior* is in the familiar "zap the badies and solve the problems before going on to the next screen" mould.

You control a dinky robotster which is plugged into a computer *CAD/CAM* (computer aided design and computer aided manufacture)

machine in order to find the missing cryo-water module on which are encoded the human element missing from the



machine's design programs.

The internal defence systems don't like this, of course, and they put up a fierce battle. The

attacking spines, in the shape of screws, orange beds, and indefinable metal objects, are nicely animated and respond

well to a good zapping. The screen all tend to look pretty much the same, though a sort of metallic amphitheatre

plotted by machined holes through which your droid drops to reach the underside.

On some screens it's enough to eliminate all the attacking elements, and you are then allowed to select a direction option to move on. It all becomes more complicated as you reach the heart of the machine, but you get the general idea.

Overall, paradise for multi-screen shoot-'em-up freaks, and purgatory for those of us who don't have entire days which can be set aside for mega-zapping.

Program *CAD/CAM Warrior*, 64 Supplier Taskbar Price £9.95 cassette, £12.95 disk

Graphics: ★★★★★
Sound: ★★★★★
Concept: ★★★★★

Manic monarch

Two popular trends have come together in one package from English Software. The first is the vague for sports on the monarchy, exemplified in *Bad Taste Software's* offering *Dix's Italy* (reviewed last month). The second is the ornate labyrinth-and-platform game, kicked

off by *Manic Monarch* and still leaping around though it's well past its prime.

However, if you're going to do a LARP you should at least do a good one, and *Henry's House* is super. Little Henry, a miniature prince, sets out to investigate the mysteries of his palace. Each room contains hazards which must be avoided, and goodies which must be collected in order to progress to the next level.

There are eight screens, each drawn with meticulous attention

to detail and a cartoon-like style. The animation of the little prince and the hazards,



such as clumping boots, whirling Happy Faces and snapping scorpions, is very good.

Sound effects are OK and there's a nice little sequence where Henry moves from one room to another.

Overall it's quite enjoyable, and has the sort of "just-one-more-game"-ish quality which makes platform games so popular. It certainly couldn't be accused of being original. Program *Henry's House*, 64 Supplier English Software Price £9.95

Graphics: ★★★★★
Sound: ★★★★★
Concept: ★★★★★

Octoplus

Proving that it is possible to do good things with the unexpended Vic, *Fairy Henry* is a bizarre effort from Software Projects featuring an octopus as a cooker. It doesn't look like an octopus, more like a spacefish, but that's not the point.

Thwifty! Thwifty!, an octopus, is trapped in a



the top of the cooker, convey them to the bottom and use

spoonworts *Fairy Henry*. I managed to devour quite a few cookers without losing interest before I was finally done to a turn. A jolly good little game, which has quite put me off the idea of cooking squid from the local Chinese takeaway.

Program *Fairy Henry*, Vic 20 Supplier Software Projects Price £5.95

Graphics: ★★★★★
Sound: ★★★★★
Concept: ★★★★★

SOFT★HITS

Zap mania

Some of you will remember Jeff Minter's Hell Gate, a shoot-'em-up of such staggering violence that it should have come with a government health warning. Just to prove that Llamasoft don't have the copyright on software for Master blasters, Software Super Savers have released the Revenge of the

Quadras, or to put it more accurately, its probably sequel.

From the second you hit the fire button this one is all action. Across the top of the screen more spiderlike ships, protruded from your lasers by banks of asteroids. Unless you manoeuvre your ship skillfully enough to blast the invaders, they'll drop to the ground and kidnap humansoids. You have a few moments to save the humansoids once they're on their way up, but the spider-ships have a nasty tendency to

blow you to pieces with a sticky sideways shot.



The scrolling message — which is difficult to watch while you blast the enemies — states that this isn't a Llama-

soft game, contains no rabbits, and is fantastic. I can only answer wholeheartedly. If nothing in life amuses you more than a few pleasurable moments blasting hell out of the pixels, this is the one for you.

Program: Revenge of the Quadras, Vic+ 88
Supplier: Software Super Savers
Price: £1.99
Graphics: ★★★★★
Sound: ★★★★★
Gameplay: ★★★★★

Flying start

This isn't the most complete, realistic or demanding flight simulator for the 64 but however in these categories must go to Llamasoft's Flight Simulator 2. Fighter Pilot may, though, qualify as the most exciting flight simulator; instead of just swooping around the sky looking for a landing site, you get the chance to kill something.

The graphics aren't as neat as the Spectrum original, but the sound is of course much better. You have a window view from



an F-15 fighter, and you can select a number of mission options.

In the full version of the game, you must take off, use your map mode and radar to locate enemy planes, plot a course to intercept them, shoot them down, return to base and land safely.

The controls are well-chosen, though it helps to have a joystick, and the landing sequence is so realistic it's terrifying. I plummeted into the tarmac about twenty times before I got the hang of it — glide in at low level, watch your striped indicator to avoid stalling, and remember

to put your wheels down.

Excellent interaction which incorporates a good deal of tactical and, supposedly, accurate factual info on the F-15, help to make Fighter Pilot a real killer. I can't wait to get my hands on the cheaper simulation Tomcatark.

Program: Fighter Pilot, 64
Supplier: Digital Integration
Price: £9.95 cassette, £14.95 disc
Graphics: ★★★★★
Sound: ★★★★★
Gameplay: ★★★★★

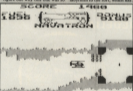
Apocalypse now

Yet another hot favourite from the States, First Apocalypse's best feature is the randomness of the challenge it presents, making each game different.

You pilot a jetvector around an underground labyrinth, avoiding mines and tanks, dropping bombs and firing missiles, expending laser traps and searching for your 15 lost comrades.

The scrolling screen is a familiar feature now, so it doesn't have as much impact as it would have when the game was first released. As a

result it's a bit difficult to figure out why this one was so



successful in the US. There's a bit of variety involved when you have to land to refuel, or

when you get right through the labyrinth to the fort, which has

to be destroyed, but overall the game is a little weak. The sprite graphics aren't

half as good as, say, Pelican Patrol 2, the sound effects are disappointing, and there's no real attempt made to create an illusion of 3-D.

In its favour, there's a nice Defender-style navigational radar screen, and a high level of destruction and destruction. It will certainly please many gamers players, but First Apocalypse doesn't manage to excite much interest compared to many of the other US Gold offerings.

Program: First Apocalypse, 64
Supplier: US Gold
Price: £3.95 cassette, £14.95 disc
Graphics: ★★★★★
Sound: ★★★★★
Gameplay: ★★★★★

Jungle bangles

This is a five-screen tape-and-dancer in which Jungle Jim sets out to reverse Jaws from the cannibals. Screen one sees Jim, pursued by a hungry lion, leaping and ducking to avoid spears which

will otherwise impale un-eminently. Screen two, like Pitfall, has him leaping from vine to vine (and the lion, on the lookout for breakfast, snaps him up if he misses the connecting line). Screen three is all swimming and crocodiles, screen four a save-up a mountain sliding boulder, and lastly there's the cannibals themselves to



control with Jim plunges into the pot of boiling stew if you don't overcome all the

hazards in time.

Unobjectionable, but this one isn't going to rattle your labyrinth too much. Nice service of Rivers of Babylon on the soundtrack.
Program: Jungle Quest, 64
Supplier: Solar Software
Price: £1.95
Graphics: ★★★★★
Sound: ★★★★★
Gameplay: ★★★★★

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Opening up the world of networks

Hardware and software reviewed by Brian Lloyd

MAIN-FRAME business computers have long had the ability to communicate with each other, passing information backwards and forwards at will. Until recently this has not been possible when the home micro was concerned. However, it is now possible for the humble home micro to communicate with another micro, and also talk to, and even be answered by, their giant brothers.

This opens a very big door for the home computer, for not there is a wealth of information and facilities waiting for you. The list of things you can do is endless, and would take up several magazines the size of this one to cover them. Among the networks that await you are Prestel, Microsoft 800, Bulletin Boards, and the latest innovation by Commodore, CompuNet.

What can you do on all these systems? Well, have you ever wished you could get information on your dream holiday, or book a theatre ticket, or see what's new in software for your computer and if you liked what you saw, download it? All this is now yours for the asking. Before you can do all of these things you must have some way of connecting your computer to the outside world. To do this, you will need a MODEM to connect your computer to British Telecom's telephone network.

A word of explanation of the various systems available so you would not go astray at this time. The main band rate is 1200/75. This means you receive at 1200 bytes per second and transmit at 75. This is the system that Prestel and Microsoft use, and some Bulletin boards. Probably the next most used band rate is 300/300 full duplex, as this is used by most Bulletin boards and can be used for communications. Finally there is 1200/1200 half duplex — this means you receive and transmit at 1200 baud but can only operate in one direction at the time. 1200/1200 baud half duplex is used mainly for use to user communications.

Systems

Now for the various systems available. Prestel is run by British Telecom and provides every kind of information you could imagine, as well as allowing you to book your next holiday or just browse through the latest share prices. Incorporated in the Prestel network are various other organisations such as Microsoft 800. This service is aimed mainly at the computer user and provides such things as downloadable software as well as many other facilities. Bulletin boards are run by volunteers who are prepared to give up their spare time and quite a bit of money, to

run these excellent services, mostly free of charge to the user. There are so many bulletin boards up and down the country it would be impossible to cover them all, but what can be said is that they all provide a very friendly information service on a variety of subjects.

Choosing the right modem is not an easy task, so it may not work on your computer, or it may not have the facilities to get onto the services you require. I will concentrate on one modem for the Commodore 64, but what follows is common to all computers.

There are several aspects to consider when buying your modem and they are:

- (1) Is it compatible with my computer?
- (2) Can I get an interface and software to make full use of it?
- (3) What do I want to use the modem for and will it carry out that task?
- (4) If I want to download software are there facilities to do so?
- (5) Can it send messages or programs to other home computer users?
- (6) Is it good value for money?
- (7) If I change my computer will it still work?

The first modem we will look at is the TELEMOD 2 together with the CBM 64 Commu Pak. This is the one supplied by Microsoft 800 and the only one recommended for downloading their software. The Telemod 2 is a very neat unit, just the right size to stand a telephone on. On the front there are just two switches and three LEDs. One switch is to control the on/off

line function whilst the other controls the baud rate modes. The LEDs are for power on/off, carrier signal and line on/off. The CBM 64 Commu Pak comes in a neat plastic unit that fits snugly into the cartridge port. Connections are very simple. A telephone lead supplied plugs into a BT wall socket, whilst your telephone plugs into the back of the modem. The next connection is from the modem to the cartridge. Finally plug the modem into the main supply.

The Commu Pak takes care of the RS 232 interface and the operating software. On power up you are presented with a menu and by selecting one of the options you are taken into the sub menus. The instruction books are a bit sparse, but with the way to follow menus they are not really required often.

The whole operation from first power up is menu driven, and whatever option you choose you are guided to the next steps to take.

Functions

From the menus you can see there are a lot of functions that are available to you. Although the manufacturers claim it to be mainly a Prestel modem you will see from the options that you are being quite modest. It can be used for Prestel, Microsoft 800, Bulletin Boards, or any other system on 1200/75 Band; User to User 1200/1200 Band Half Duplex; Chat Mode 1200/1200 Band Half Duplex.

Another modem from the OE list enables it to be Telemode 2. This is a multi band rate modem with 300/300, 1200/75 full duplex and 1200/1200 baud half duplex. An added feature is auto answer; that is, if it is left on in the main mode it will answer the phone with a tone so that a message can be left on your computer, or, with the right software, you could run your own bulletin board. The Telemode 2 works with the CBM 64 Commu Pak but requires an overlay program to run on 300/300 baud. It's the



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To start off with, though, follow this week's Starter Course! Further classes will continue the course next weekend!

GOTO * TO START...

■ same size as the Teledial 2 but has two switches, one for auto or manual answer and one for on/off line. There is also a knob to switch between the different baud rates and an impressive ten LEDs. Features are as for the Teledial 2 but with the added features of 300/300 baud full duplex, or you will be able to use the bulletin boards and information services that use this system. You can, of course, transfer the user to meet on the same baud rate, slower but easier than 1200/1200 half duplex.

The Faxdata TM 110 modem is quite large as modems go but nevertheless quite smart. There are no controls to worry about as everything is software controlled. The only indication that the modem is on are the two LEDs in the front right hand corner.

The interface and software come on a small PCB with all components exposed and plugs into the cartridge port. The interface board, in my opinion, should have been put into a case as plugging it in and out of the cartridge port is not easy and it could be damaged. The TM 110 has auto-dial and is capable of storing eight telephone numbers plus your ID and password. Entering the telephone numbers is quite simple, and is done in the off line mode from within the program. Once entered the modem retains the numbers in its memory with the aid of built-in buffers. Once you have mastered the tricky art of plugging in the interface board and connected up the relevant cables you may then power up the computer.

Options

On power up you are presented with a menu giving various options. Before you can proceed you must set up the output device — disk drive, printer etc. All operations are menu driven and are fairly simple to follow.

On test, the Faxdata TM 110 worked well except when it came to downloading software. Downloadable programs have to be initiated when using the TM 110 with the Commodore 64 interface pack. To get your programs to run you first have to download a teletype program from Prestel, then you have to type in and save a short program from the manual or from a listing on Prestel. This is where you may have some problems, for the program in the manual and the program listing given on Prestel differ and the manual is not at all clear on how to use the teletype program. With trial and error I did manage to tolerate a program and receive it.

The TM 110 is a 1200/75 baud modem but with an overlay program available at extra cost it can operate on 300/300 baud. Again, it can access Prestel, Microsoft 800, Bulletin boards, or any other system operating on 300/75 baud or with the overlay program 300/300 baud services.

My big worry with this package is the interface board. I would have been much happier if it had been in a case. Otherwise on test it proved very easy to use and apart from the size of the modem it is very neat.

The Miracle Technology WS 3000 modem is truly a multi standard modem with every type of baud rate and system you



are ever likely to need in the UK or abroad. All controls are very clearly marked on the front of the modem and are controlled by three knobs. There is also a lot of add-on accessories available such as auto-dial and auto-answer plug-in boards. To use the modem with the CBM 64 you will have to decide what software you are going to use with it, as only a listing is supplied with the modem and this only allows 300/300 baud operation. The only options I am aware of do not allow full use of the many options available on the WS 3000. What software you use determines what interfaces you will need and, in fact, what add-on accessories you can use. One option that works very well is the CBM 64 Comm Pack with the Teledial 2 cable and the 300/300 baud overlay program from OE Ltd described earlier. This will allow the modem to be used on 1200/75, 1200/1200, 300/300 baud rates, but will not support the auto-dial and auto-answer boards.

Another alternative is disk based software from PSL. To use PSL's software you will require the RS 232 serial interface supplied by Miracle Technology, as this software uses the user port to communicate with the modem. As supplied the disk based software will support 300/300, 1200/1200, 400/400, and 1200/75 baud

operation. One of the unique features of this program is that it allows you to store a vast amount of telephone numbers on the program disk. When the program has loaded the pages of names stored are presented on the screen, just pressing the letter next to the service you require will automatically dial up the number if the auto-dial board is fitted. If not, you just dial the number displayed yourself.

Dialling

There is also a ring-round facility that allows you to choose several numbers you want to try and will ring each one in turn until it gets an answer. This is most useful when dialing up Bulletin Boards as they always seemed to be engaged. The more alternative I discovered by accident, but it might prove to be the cheapest way of using the WS 3000. The software and interface that is supplied as an extra for the Protack 1200 (see next review) will work just as well on the WS 3000, although you will have to change the plug from the 5 pin DIN supplied to a 25 pin D connector. However for the price it is well worth it.

The WS 2000 worked well on all of the options I tried, and can be used on any system for which PSL can supply suitable

Product	Supplier	Price
Telephone 2	G.E. Ltd, North Point, Crawley Industrial Estate, Peterslee, Cheshire, CH11 9BN	689.95
CBM 64 Commo pack	G.E. Ltd	186.95
Telephone 3	G.E. Ltd	615
TM 100	Tandata Marketing, Albert Road North, Malvern, Worcs., WR14 2TL	6119.85
CBM64 board	Tandata Marketing	148.95
200/200 board master prog	Tandata Marketing	179.95
W3200	Miracle Technology Ltd, 30/31 St Peter's Street, Ipswich, IP1 1SR	6129.95 + VAT
RS112 LV	Miracle Technology	218.95 + VAT
Protek 1200	Protek Computing Ltd, 1A Young Square, Moorfield Industrial Estate, Livingston, West Lothian, EH26 9EX	519.95
DF + software	Protek Computing	114.95
Compuart modem	Commodore, 1 Hunter's Road, Walsden North Industrial Estate, Cury, Yorkshire	599.95 inc. 1 year Compuart membership

software.

Miracle Technology has come up with an excellent modem, but has unfortunately neglected the software side. A bit like a car without an engine. If you decide you need more than the hand rates that are found on more traditional modems then this is the one for you. However, if you just want Protek then this would be an expensive way of getting it.

The Protek 1200 is quite different from the modems we have looked at so far; this one is an acoustic modem so therefore does not require one of BT's new plugs to work. The modem is completely self contained and only needs four AA type batteries to power it. The interface and software pack come as an optional extra, and together with the modem, is by far the cheapest package I have seen for the Commodore 64. The modem does require you to have a telephone that has round ear and mouth pieces as is unsuitable for triphonges.

The software is cassette based and also loaded in menu driven and supports auto load on/off, save and load frames, change ID and user to user options and has 1200/75, 1200/1200 baud. However the software does not allow downloading of telesoftware. The user to user seems to be unique as it allows machine code programs to be loaded into the computer at a different location to which it was saved and also allows the receiving computer to relocate it when saved. This option would be quite useful when into different computers are being used. However to use this option both computers must have to be using the same software, but not necessarily the same modems.

The modem itself is quite straightforward and is typical of acoustic modems in operation. All that is required of the user is to make sure the telephone handset is pressed firmly into the eye of the modem and switch to the hand rate required, the rest is handled by the software (except dialling the telephone). On test, the program and the modem worked well. If

you want a portable modem then this would appear to be the one to test your requirements. It can be used for Protek, Microsoft RM, Balfour boards on 1200/75 baud, plus 1200/1200 baud half duplex user to user.

The Protek 1200 must be one of the cheapest ways of getting into Protek or other 1200/75 modems. Despite the price the whole unit is more than adequate for



the job if you are not interested in downloading programs. You will also be equipped for 1200/1200 half duplex user to user.

The last modem we are going to look at is completely different in many respects to all the others we have looked at. Commodore's own system for the Commodore 64 is the Communications Modem. Where the Communications Modem differs from all the other modems is that it allows you to get into Commodore's own system designed especially for the CBM 64, called Compuart. Buying the modem on its own however is not going to get you very far. When your modem arrives it will be accompanied by an application form to join Compuart, which you will have to fill in and send back together with all open bankers standing order. You will then be sent your ID and pass word to allow you to use all Compuart's facilities.

To access Protek from Compuart you will have to download a windows program. This also applies to user to user communica-

tions. At the time I reviewed this modem the programs were free but I understand that these will be charged for at a later date.

Back to the good points. As I said earlier there is a lot of good quality free software plus lots of commercial programs at discount prices. The Jungle area, as it is known, is for Compuart users to use as they wish. Programs can be uploaded and sold although Compuart take a share of the price you charge. There is a mailbox so you can send messages to other Compuart users. The list of user and facilities is quite long. I must at this point warn you that if you want to use Compuart during the day it is very expensive (over pounds per hour) so you will have to take it from the kids when they are on holiday!

The modem cannot be used for Protek and user to user communications without additional software which again you cannot obtain without joining Compuart.

Decisions

It may be very difficult to make your mind up what modem to buy, as most of the ones I looked at would allow you to access all the options open to you. Some of the modems were capable of operating on many different hand rates, but did not have the software to drive them. No other modem except Commodore's own would be capable of accessing Compuart. Although most of the software for the modems was written by YJ Computing, it did not seem possible to use different types of software on user to user communications, which means if you intend sending messages or programs to use particular people you would both have to buy the same software.

I was perhaps most impressed with the three Miracle modems, considering the high level of software support from PDI. We'll be looking in future articles at some of the services you can access with a modem, and this may help to make the choice of product easier. ■

Lazy rides



Jones again

Terminal's David Whitaker presents a new screen for his idle hero

THIS MONTH'S Star Game for the 64 is from David Whitaker of Terminal Software.

Terminal started up four years ago as Terminal Music, a cassette, label and distribution business. It was the idea of Andy Hicke to explore the computer software field, and the company soon developed through the mail order field into direct selling to retail outlets.

Early Terminal games such as *Super Daylight* and *Super Gobbler* made way for more ambitious and advanced programs like *Star Commando* and *Phant Grey*.

David Whitaker's programming career developed via an interest in electronic music. He now has four synthesizers, and also plays guitar. During a break between tours with various bands in 1982 he took up programming on the Tiv 20, and soon produced games such as *Mr Miller's Hamper*. David, now 27, is working in 6800 and 280 machine code, and is looking forward to using 16 and 32 bit computers. Consolees themselves market his games *Hamper*, *Maxxon* and *Phant*, but many would say that his greatest achieve-



ment to date is Terminal's *Lazy Jones*.

Lazy Jones is an idle hotel cleaner who would rather play video games than do any work. Terminal's game allows you to control *Lazy Jones* around the floors of his hotel, trying out each video game and avoiding the manager and the deadly cleaning trolley.

David has written a new screen for *Lazy Jones* which you can type in and play yourself.

The listing is in two parts, one to print the character/code data and one for the game itself. Since there's a lot of data to type in, David's allowing a copy of the program on cassette to anyone sending a cheque or postal order for £1.99 to him at 58 Cedar Place, Lower Brighthelm, Salford, M7 9WE.

To play the game use a joystick in port 2. You must control your missile projectors, which move left and right and up and down, and fire when the opening artifact is aligned between them. Each time you hit the artifact it changes colour and you score points. You are playing against a time limit, so shoot fast if you want a high score! ■

Program 1

```

0 REM ***** PROGRAM *****
1 PRINTCHR(147) "JUST A MOMENT..."
2 FORN=20168TQ22996
3 NEXTN:G=0:0
4 FORN,0
5 NEXT
6 IF(X>201638THMFWHT"ERROR IN YOUR DATA.")END
7 PRINT"DATA SEEMS O.K."
8 PRINT"NOW LOAD PROGRAM"
9000 DATA 10, 170, 160, 10, 170, 160, 10, 170, 160, 10, 170, 160, 10, 170, 160, 10, 170
9001 DATA 160, 10, 170, 160, 10, 170, 160, 10, 170, 160, 10, 170, 160, 10, 170, 160, 10
9002 DATA 170, 160, 10, 170, 160, 10, 170, 160, 10, 170, 160, 10, 170, 160, 10, 170, 160
9003 DATA 10, 170, 160, 10, 170, 160, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
9004 DATA 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
9005 DATA 0, 0, 0, 21, 00, 04, 42, 170, 160, 42, 170, 160, 42, 170, 160, 42, 170
9006 DATA 160, 10, 170, 160, 10, 170, 160, 10, 170, 160, 10, 170, 160, 10, 170, 160, 2
9007 DATA 170, 120, 2, 170, 120, 2, 170, 120, 0, 0, 0, 0, 0, 0, 0
9008 DATA 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
9009 DATA 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
9010 DATA 0, 0, 0, 00, 00, 00, 00, 00, 00, 00, 42, 170, 160, 10, 170
9011 DATA 160, 2, 170, 120, 0, 170, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
9012 DATA 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
9013 DATA 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
9014 DATA 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 170, 0
9015 DATA 2, 170, 120, 10, 170, 160, 42, 170, 160, 00, 00, 00, 00, 00
9016 DATA 00, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
9017 DATA 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0

```


5155 DATA 165, 142, 281, 126, 174, 247, 24, 185, 54, 141, 45, 3, 141, 8
 5156 DATA 288, 32, 151, 224, 145, 142, 281, 78, 176, 247, 24, 185, 54, 141
 5157 DATA 44, 3, 141, 1, 288, 169, 1, 141, 47, 3, 145, 141, 41, 3
 5158 DATA 248, 5, 169, 225, 141, 47, 3, 169, 1, 141, 48, 3, 32, 151
 5159 DATA 224, 165, 141, 41, 1, 248, 3, 169, 225, 141, 48, 3, 169, 8
 5160 DATA 141, 78, 3, 169, 18, 141, 73, 3, 169, 8, 141, 49, 3, 141
 5161 DATA 78, 3, 173, 8, 228, 74, 174, 5, 142, 228, 142, 49, 3, 74
 5162 DATA 174, 5, 142, 1, 142, 49, 3, 74, 174, 5, 142, 228, 142, 49, 3, 74
 5163 DATA 3, 74, 174, 5, 142, 1, 142, 78, 3, 173, 49, 3, 281, 1
 5164 DATA 288, 13, 173, 42, 3, 281, 161, 248, 4, 228, 42, 3, 32, 8
 5165 DATA 52, 173, 49, 3, 281, 225, 288, 13, 173, 42, 3, 281, 74, 248
 5166 DATA 4, 288, 42, 3, 32, 28, 52, 173, 78, 3, 281, 225, 288, 13
 5167 DATA 173, 42, 3, 281, 48, 248, 4, 288, 42, 3, 32, 42, 32, 173
 5168 DATA 78, 3, 281, 1, 228, 13, 173, 42, 3, 281, 178, 248, 4, 228
 5169 DATA 42, 3, 32, 28, 52, 173, 42, 3, 141, 3, 288, 173, 42, 3
 5170 DATA 141, 4, 288, 173, 8, 228, 41, 14, 288, 14, 173, 78, 3, 288
 5171 DATA 14, 169, 1, 141, 78, 3, 32, 219, 54, 24, 144, 3, 169, 8
 5172 DATA 141, 78, 3, 173, 79, 3, 248, 3, 78, 233, 54, 288, 72, 3
 5173 DATA 288, 49, 169, 3, 141, 72, 3, 174, 42, 3, 232, 224, 8, 288
 5174 DATA 5, 169, 11, 141, 39, 288, 224, 18, 288, 8, 162, 8, 173, 48
 5175 DATA 3, 141, 39, 288, 142, 41, 3, 174, 44, 3, 232, 224, 199, 288
 5176 DATA 2, 142, 187, 142, 44, 3, 142, 248, 7, 32, 151, 224, 145, 142
 5177 DATA 281, 8, 174, 9, 169, 8, 54, 237, 47, 3, 141, 47, 3, 32
 5178 DATA 151, 224, 145, 142, 281, 8, 174, 9, 169, 8, 54, 237, 48, 3
 5179 DATA 141, 48, 3, 173, 45, 3, 24, 189, 47, 3, 281, 47, 248, 7
 5180 DATA 281, 183, 248, 3, 141, 45, 3, 173, 45, 3, 24, 189, 48, 3
 5181 DATA 288, 78, 248, 7, 281, 153, 248, 3, 141, 44, 3, 173, 45, 3
 5182 DATA 141, 8, 288, 173, 44, 3, 141, 1, 288, 32, 94, 57, 288, 73
 5183 DATA 3, 288, 8, 169, 18, 141, 73, 3, 32, 147, 57, 173, 74, 3
 5184 DATA 288, 4, 173, 77, 3, 288, 1, 78, 76, 156, 55, 169, 2, 141
 5185 DATA 32, 288, 174, 8, 288, 148, 28, 224, 42, 3, 248, 4, 232, 124
 5186 DATA 14, 247, 48, 81, 174, 1, 288, 148, 28, 224, 42, 3, 248, 4
 5187 DATA 232, 124, 14, 247, 48, 42, 32, 111, 57, 169, 1, 141, 79, 3
 5188 DATA 169, 8, 141, 32, 288, 169, 11, 141, 3, 212, 169, 164, 173, 3
 5189 DATA 288, 282, 1, 288, 248, 3, 284, 8, 288, 173, 2, 288, 282, 8
 5190 DATA 288, 248, 3, 228, 2, 288, 148, 1, 212, 169, 128, 141, 4, 212
 5191 DATA 169, 129, 141, 4, 212, 162, 8, 282, 288, 253, 124, 288, 212, 248
 5192 DATA 3, 169, 8, 141, 3, 212, 169, 4, 141, 1, 212, 169, 32, 141
 5193 DATA 4, 212, 169, 32, 141, 4, 212, 32, 94, 57, 169, 8, 141, 32
 5194 DATA 288, 94, 169, 4, 123, 288, 169, 8, 123, 281, 198, 251, 288, 222
 5195 DATA 198, 288, 288, 244, 94, 248, 173, 74, 3, 24, 188, 1, 141, 74
 5196 DATA 3, 173, 75, 3, 188, 8, 141, 78, 3, 214, 41, 15, 24, 188
 5197 DATA 48, 141, 127, 4, 173, 74, 3, 148, 74, 74, 74, 74, 24, 188
 5198 DATA 48, 141, 128, 4, 182, 41, 15, 24, 185, 48, 141, 128, 4, 94
 5199 DATA 248, 173, 74, 3, 54, 233, 1, 141, 74, 3, 173, 77, 3, 233
 5200 DATA 8, 141, 77, 3, 214, 41, 15, 24, 185, 48, 141, 148, 4, 173
 5201 DATA 74, 3, 148, 74, 74, 74, 24, 185, 48, 141, 147, 4, 182
 5202 DATA 41, 15, 24, 185, 48, 141, 148, 4, 94
 5203 REP BET YOU'RE SLAD!

Program 2

8 REP ***** PROGRAM *****
 1 F0RKS32,44:F0RKS34,44:CLR:PRNTCH48 185:F0RKS3272,29
 2 F0RKS3288,8:F0RKS3281,8:F0RKS3249,8
 3 GOSUB2888
 4 HI=8:F0RKS3274,7:F0RKS3277,8:F0RKS3271,8:F0RKS3275,8:F0RKS3264,8
 5 F0RKS4294,15:F0RKS4272:1084278:F0RKS4295:F0RKS4296:F0RKS4297
 6 GOSUB1888
 7 F0RKS3248:1083263:F0RKS4296,8:NEXT
 18 F0RKS3288,15:F0RKS3264,2
 28 GOSUB2888
 32 F0RKS3249,31:F0RKS2843,197:F0RKS2844,282
 33 F0RKS3288,328:F0RKS3287,228
 34 F0RKS3298,9:F0RKS3291,18
 35 F0RKS4277,12:F0RKS4276,128:F0RKS4276,129

Continued on next page

```

26. F099=254101389TEP-2
27. F0E54273, 255-8; F0E53254, R; F0E53254, R; NEXT
48. F0E53288, 1; F0E53289, 1
98. SC=8; F0E542, 8; F0E543, 8; REP SCORE
92. F0E544, 103; F0E545, 9; REP TIME
188. SYS14832
118. SC=FPEK(1673)-40+188+FPEK(1674)-40+12+FPEK(1675)-40
115. F0E53269, 8
128. PRINTCHR(147)SPC(2180)"YOUR SCORE WAS"SC
123. PRINTSPC(98)"THE HI SCORE IS"HI
124. IFHI<SCTHENPRINTSPC(124)"YOU HAVE THE NEW HI SCORE OF"SC+HI+SC
125. FORT=8701999;NEXT
128. PRINTSPC(167)"PRESS SPACE TO REPLAY"
148. GETAB:IFAB<"*"THEN148
158. GETC
168. F099=13887019801
162. PRINTCHR(PEEK(R));
164. NEXT
178. RETURN
1888. PRINTCHR(147)SPC(288)"WELCOME TO THE WORLD OF"
1818. PRINTSPC(134)"LACY JONES"
1828. PRINTSPC(178)"BY SAVID WHITTAKER"
1838. PRINTSPC(1201)"JOYSTICK PORT 2"
1848. F0E54277, 13; F0E54284, 13; F0E54291, 13
1842. F0E54275, 4; F0E54288, 4; F0E54287, 4; F0E54272, 8; F0E54279, 8; F0E54286, 16
1844. F0E54276, 32; F0E54283, 32; F0E54290, 32
1846. F0E54276, 33; F0E54283, 33; F0E54290, 33
1858. FORT=8703999;NEXT
1868. RETURN
2888. F099=327681032884; READS: F0E5, 8; NEXT: SYS32768; RETURN
2881. BATA149, 192, 133, 288, 133, 252, 149, 78, 133, 251, 149, 46, 133, 283, 148, 8, 177, 258
2882. BATA145, 252, 238, 258, 238, 252, 288, 246, 238, 251, 238, 252, 162, 253, 281, 58, 288, 238
2883. BATA94

```

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Make sense of sorting methods

N. Gregory deals with 64 data sorting problems.

IF YOU HAVE ever wanted to program your 64 to sort data, alphabetically or numerically, but haven't been too sure how to go about it, I hope this article will be of some help. The program, SORT DEMO, is a menu driven demonstration of three different sorting routines which will sort the data you have entered, giving at the end of the sort the time the routine took to execute. This time should be used as a guide only, and not as a law, because it does not take into account the time taken for the program to find line numbers, and as the routines are one on top of the other this may be significant.

SORT DEMO is not a very useful program on its own; it wasn't written to be. I am using SORT DEMO to illustrate the routines, and a couple of other things like using the FUNCTION keys, instead of just giving the routines an initiation.

Any program which sorts data must first be given that data. How you go about this depends on your program; you can use DATA statements as this program does, user input via INPUT, or read the data of a disk or tape file. Whatever method you opt for, you should know two things. Firstly you should have some idea how many pieces of data you are going to collect so that you can DIMension the array which will hold your data. The second thing is to count your data as it is entered, so that at the end of the input you know exactly how much data is in the array. Do not assume that there are ten pieces of DATA for example. Once you have counted the number of elements used, it is a good idea to keep this information safe. I would suggest that you store the value in the first element of the array, that is element ZERO.

By doing this you will always know where the information is, and it can be stored on tape or disk as part of the array. All you need to do when reading the array back is use lines such as

```
40 INPUT # 2, TEMPS
50 NUMBER = VAL(TEMPS)
60 DIM ARRAY(NUMBER):
ARRAYSIZE = TEMPS
70 FOR INDEX = 1 TO NUMBER
80 INPUT # 2, ARRAYSINDEX
90 NEXT INDEX
```

Using this technique you can use the data in other programs without having to worry about how much data is in the file.

To show you how you can set arrays, type in SORT DEMO. One thing you must do is add a few more DATA statements otherwise the program will not work properly. To do this all you have to do is type in line one as it is listed, followed by lines two and three. Once you have entered line 3 and pressed RETURN go back over the line number and change it to a 4, then a 5 and so on. Remember to press RETURN for each line. I suggest you enter at least 30

more lines because you will then get a good idea of the speed of each routine. When you have done this change the variable to line 100, NMAX, to equal the number of data statements you have, and counting line 1. You can now continue typing in the program, when you've finished SAVE it before you RUN it.

When run, SORT DEMO first asks you to input words to be sorted. These should be a maximum of 14 characters long, and the list finished with the END of DATA character (). The limit on word length is not imposed by the sorting routines themselves, but by the DATA statements at the beginning of the program. Because each line has 16 columns in it (you typed them in, so I hope they have!) this leaves enough room for a 14 character word and two inverted commas ("). The only reason for this was that I didn't want you to type the word list in every time you used the program.

After you have finished entering the words you are asked to RECALL the program. Again this is only to stop you

```
1 DATA 0: REM DATA FLAG
2 DATA: REM 16 COLUMNS
3 DATA: REM 16 COLUMNS
4 REM ADD MORE DATA STATEMENTS FROM HERE (SAME AS LINE 2 & 3)
100
110 NMAX=2: REM SET NMAX TO NUMBER OF DATA STATEMENTS
115 POKES(2000,20): POKES(2001,15)
120 PRINTCHR$(14): REM LOWER CASE CHARACTERS
125 DIM SORTS(NMAX): HOLD(MEMORY,2): INDEX(NMAX): REM RESERVE MEMORY
130 GOSUB 520: REM BUILD CURSOR POSITION ARRAYS
135 REM FLAG: REM DATA FLAG
140 IF VAL(FLAG) < 1 THEN GOSUB 600
145 PRINT":": REM CLR
150 GOSUB 700: REM READ DATA STATEMENTS
155 GOSUB 740: REM READ TEXT
160 GET PMSHERE: AMMSHERE=AMMSHERE+CHR$(C)
165 IF PSC(PMSHERE)=94 THEN END
170 ON AGG(PSC(PMSHERE))-132: GOSUB 700,185,270,440
175 GOTO 160
180 REM ----- BUBBLE SORT -----
185 TYPE="BUBBLE"
190 PRINT:PRINTTAB(12):" 1 2 3 4 5 6 7 8 9 10": REM "SORTING"
195 TIME="000000": REM SET INTERNAL CLOCK
200 INDEX=1: FLAG=0
205 IF SORTS(INDEX) <= SORTS(INDEX+1) THEN 230
210 TEMP=SORTS(INDEX)
215 SORTS(INDEX)=SORTS(INDEX+1)
220 SORTS(INDEX+1)=TEMP
225 FLAG=1
230 INDEX=INDEX+1
```

Continued on page 29



You shot
my rapids.
I should...

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AUTHOR - JAMES DAILY ORIGINAL MUSIC - BRANN DOB

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shoota
kids, then
ota you!

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AUTHOR - PAUL BLINN

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Shoot the Rapids.

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hazards like rogue speed boats and interfering beavers to worry about.

This multi level game features increasingly difficult river courses with superb graphics and smooth scrolling along the river.

Qualifying times have to be reached to move onto the next course.

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```

235 IF INDEXCOUNT THEN 285
240 IF FLAG=1 THEN 300
245 TX=TI/60-REM SET TIME OF SORT
250 GOSUB 505-REM SHOW SORTED ARRAY
255 GOSUB 740-REM MENU TEXT
260 RETURN
265 REM ----- SHELL METHOD SORT -----
270 TYPE="SHELL METHOD"
275 REM "DEVCPCREV OFF/COUNTER OR (REV/CREV OFF)DENTS"
280 POC=0:HT=0:WT=0:GOSUB915-PRINT"*****DENTS *****":INPUTM
290 IFPOC/HT=50 THEN POC=1:FORI=0 TO COUNT:INDEX(I)=I:NEXT
300 IFPOC/HT<100 AND POC/HT<57 THEN 280
305 PRINT(PRINTTAB(12)*" I = 1 2 3 4 5")
310 TI="000000"-REM SET INTERNAL CLOCK
315 RANGE=COUNT
320 RANGE=INT(RANGE/2)-IF RANGE=0 THEN 305
325 INDEX=1
330 FLAG=COUNT-RANGE
335 LELEMENT=INDEX
340 LELEMENT=LELEMENT+RANGE
345 IF POC=1 THEN GOSUB 410-ON POC GOTO370,380
348 IF SORTS(LELEMENT)<SORTS(LELEMENT) THEN 370
345 TEMP=SORTS(LELEMENT)
350 SORTS(LELEMENT)=SORTS(LELEMENT)
355 SORTS(LELEMENT)=TEMP
360 LELEMENT=LELEMENT-RANGE
365 IF LELEMENT>1 THEN 330
370 INDEX=INDEX+1
375 IF INDEX > FLAG THEN 310
380 GOTO325
385 TX=TI/60-REM SET TIME OF SORT
390 GOSUB 505-REM SHOW SORTED ARRAY
395 GOSUB 740-REM MENU TEXT
400 RETURN
405 REM ----- POINTER ONLY -----
410 IF SORTS(INDEX(LELEMENT))<SORTS(INDEX(LELEMENT)) THEN POC=1:GOTO 430
415 TEMP=INDEX(LELEMENT)
420 INDEX(LELEMENT)=INDEX(LELEMENT)
425 INDEX(LELEMENT)=TEMP:POC=2
430 RETURN
435 REM ----- SHUFFLE SORT -----
440 TYPE="SHUFFLE"
445 PRINT(PRINTTAB(12)*" I = 1 2 3 4 5")
450 TI="000000"-REM SET INTERNAL CLOCK
455 FOR INDEX=1 TO COUNT:HOLD(I)=INDEX:G=CHR(I):HOLD(I)=CHR(I):NEXT
460 HOLD(1,G)=SORTS(1):F=0:H(0)=1:H(1)=0
465 FOR INDEX=2 TO COUNT
470 IF SORTS(INDEX)<SORTS(INDEX-1)THEN F=OF+1:H(0)
475 H(F)=H(OF):F=SORTS(INDEX)
480 NEXT INDEX
490 IF ASC(HOLD(1,G))<33 THEN 500
495 SORTS(0)=CHR(1):H(0)=0:H(1)=1
500 FOR INDEX = 1 TO COUNT
505 TEMP=SORTS(INDEX-1)
510 IF ASC(HOLD(H(0),G))<C THEN H(0)=2:GOTO 540
515 IF ASC(HOLD(H(0),G))<33 THEN H(0)=1:GOTO 540
520 IF HOLD(H(0),G)>TEMP THEN H(0)=1
525 IF HOLD(H(0),G)>TEMP THEN H(0)=H(0)+2
530 IF H(0)=0 THEN H(0)=3
535 IF H(0)=0 THEN H(0)=2-IF HOLD(H(0),G)>HOLD(H(1),G) THEN H(0)=1
540 IF H(0)=2 THEN SORTS(INDEX)=HOLD(H(0),G):H(0)=H(0)+1
545 IF H(0)=1 THEN SORTS(INDEX)=HOLD(H(1),G):H(0)=H(1)
550 H(0)=NEXT INDEX
555 GOTO455
560 TX=TI/60-REM SET TIME OF SORT
565 GOSUB 505-REM SHOW SORTED ARRAY
570 GOSUB 740-REM MENU TEXT
575 RETURN
580 REM ----- DISPLAY ARRAY -----

```

```

585 P
590 P
595 1
600 1
605 1
610 1
615 1
620 1
625 1
630 1
635 1
640 1
645 1
650 1
655 1
660 1
665 1
670 1
675 1
680 1
685 1
690 1
695 1
700 1
705 1
710 1
715 1
720 1
725 1
730 1
735 1
740 1
745 1
750 1
755 1
760 1
765 1
770 1
775 1
780 1
785 1
790 1
795 1
800 1
805 1
810 1
815 1
820 1
825 1
830 1
835 1
840 1
845 1
850 1
855 1
860 1
865 1
870 1
875 1
880 1
885 1
890 1
895 1
900 1
905 1
910 1
915 1
920 1
925 1

```


stepping. One word of warning though: the Commodore only checks to see if a key on the Database is being pressed, not the record/play combination. When the program asks you to PRESS RECORD AND PLAY ON TAPE you should press just that — get the tape ready before you view the END of DATA character.

After reviewing the revised program, SORT DEMO will present you with the menu, from which you can do one of five things. There are three sort routines, BUBBLE SORT, SHELL METZNER SORT and SHUFFLE SORT, the facility to RELOAD the data into the sorting array, and END. You should RELOAD the data after each sort otherwise you will find the BUBBLE SORT sorting data in less than a second, something that does not happen in the real world!

Of the three routines I have chosen the BUBBLE sort is the slowest and simplest. I have included it because it is the best routine for translation into machine code if any of you are brave enough.

The two other routines are a little involved but you shouldn't have too much problem working out their logic. The SHELL METZNER sort I have divided into two sections to illustrate another method you may need to sort arrays. Let us suppose you want to sort data in an Address Book type of program. In a program such as this, the chances are that all the data will be linked, that is the names will go with the addresses. Obviously if you just sort the Name file, the Address file may lose all connection so in the end you are left with an unrelated mass of data.

Pointers

You can get round this problem by not sorting the array contents themselves, but set a set of pointers to the array contents. In this way the contents of the array do not change order and if, for example NAME\$(1) was SMITH, and ADDRESS\$(1) was PARADISE ST, then even after sorting the contents of NAME\$(1) and ADDRESS\$(1) would be the same as they were originally. The modification in the SHELL METZNER sort does this, it leaves the contents of the sorting array alone and sets pointers which it holds in the array INDEX\$. To illustrate this, run the SHELL METZNER sort but answer "F" when asked if you want to sort Contents or Pointers (usually answer "C"). Let the sort run until the list giving the sorted array comes on the screen. Note that the list is not sorted but in the order that it was READ from the DATA statements. Now stop the program, press RUN/STOP, and type FOR N = 1 TO COUNT: PRINT SORTINDEX\$(N): NEXT N

You will now see a sorted list being printed. If you want to view the list down just press the CTRL key.

This method brings us on to an aspect of computing which is outside the scope of this article, that of Garbage Collection. Garbage Collection is one of those things which is going to happen to you sooner or later — rather like a disk crash. You will get garbage problems if you move a lot of STRING data about; garbage is for all

just another way of saying used strings. Unfortunately there are few programs better at moving strings and creating garbage, than sorting programs. You may have not come across this problem yet, probably because the Commodore's memory is so enormous, but if your program has stirred up for an apparent reason that that's probably garbage collection going on.

One of the best ways to avoid the time delay in garbage collection is not to use STRING movements at all, which, if you consider is what the modification to the SHELL METZNER does. It shifts variables, which are a totally different thing altogether.

If you do find you are having Garbage problems with a program you are writing, then try one of these remedies (you won't get these problems with SORT DEMO normally)

1) Try to use index sorting, as demonstrated.

2) Wipe all the strings you don't need and force a garbage collection with the statement GARBAGE=FREE

3) Wipe all your data and then do a CLR. This may be a bit drastic but sometimes garbage can take 20 minutes so it may be worth it.

The two things SORT DEMO doesn't illustrate are

4) How to limit the sort to a specified number of characters — the SORT KEY.

5) How to sort numeric data.

Both of these problems are easily got round. The first can be solved by using the STRING chopping commands of BASIC, and replacing any comparative statements, for instance

```
IF SORTINDEX(I) <= SORTX
  INDEX = I THEN 300
```

```
by commands such as
IF LEFT$(SORTINDEX(I),KEY) <=
LEFT$(SORTINDEX(J),KEY) THEN
300
```

where KEY is the number of characters you want to consider in the sort.

Sorting

Sorting numbers can be done by putting the VAL function into the string expression but, as I have mentioned, strings can cause garbage collection problems. If you know your list of data is going to be numbers, then write your routine to handle numbers. It's the same as the routines for strings but we finishing point is longer arrays, not string arrays.

Finally, because I wanted you to discuss the SORT DEMO program so that you can see the routines in it for your own programs here is a list of the variables and, briefly, what they do. ■

List of variables

SCORT\$: Holds the data to be sorted.	INDEX	: This array holds the sorted pointers when you sort by pointers.
TYPE\$: This is the type of sort routine being used, this variable is used to name the sort when the array is displayed.	RANGE	: This is the range over which I elements in the array are compared — it gets halved each time through.
TIE	: This is the Commodore BASIC command variable to read/write to the jiffy clock.	FLAG	: This variable marks the end of the RANGE.
TEMP\$: Used inside routines to hold temporary strings.	ELEMENT & CLEMENT	: These are the two elements in the array which are being compared.
COUNT	: The number of elements in the array SCORT\$.	SHUFFLE SORT	
TR	: The reading of the jiffy clock divided by 60. This gives the result in seconds not 60ths of a second.	HOLD\$: This array holds two sets of data. The data is SHUFFLED in to this array depending on how it compares with the previous piece of data put in to HOLD\$. F
MAX	: The number of DATA statements hence the number (maximum) pieces of data to go into SCORT\$.		: This variable is used to switch between the 2 elements of HOLD\$. The expression F=(F+1) AND 1 makes F go between 0 and 1 each time the expression is encountered.
HT & VT	: Cursor positioning variables which are linked to the arrays HT\$ & VT\$ which contain cursor movement characters.		: The 2 elements of this array contain the respective number of queries into each dimension of HOLD\$.
BUBBLE SORT		H%	: This is used to tell the routine the result of the comparison between HOLD\$ and SCORT\$. It then directs how the next element of SCORT\$ is to be filed.
FLAG	: This variable equals one if any strings are moved. Only when all the strings are in order will FLAG stay zero during a pass through the array.	H0 & H1	: These 2 variables keep count of which element in HOLD\$ the program has to consider.
INDEX	: This is a count variable here, it is set to the element of the array being considered.		
SHELL METZNER SORT			
POP%	: This variable equals one if you chose to sort by pointers rather than contents.		
PPP%	: This refreshes the routine after a pointer is sorted.		

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TOWER OF ADVENTURE

Is this a dagger I see before me...?

Wicked Witch of the West Barbara Censsey is inspired by *Macbeth*, cut up about *Macbeth* and offended by *Alien*

ADVENTURE junkies are always craving new and varied experiences, but even the most hyperactive of us could hardly complain on this score when it comes to the remarkable *Baraka* package offered by Domark. No less than 10 games, five arcade and five quest, crowd onto one tape and in case the challenge alone isn't enough, there's a £25,000 prize awaiting the first adventurer to solve the lot.

This is a massive quest, ranging from prehistoric to modern times with the aim being to track down the five missing pieces of the Temporal Talisman, an alien artefact without which the moon will disintegrate and take the earth with it. Each piece has ended up in a different time sector and, if you don't solve each puzzle correctly you could be stuck in that era. Since all of them are fraught with murderous pitfalls, that is NOT a good idea. Just to complicate matters, the final sector is being held for ransom by the villainous Dr Hugo Von Rey who wants to be Emperor of the Earth. Well, don't we all?

Ingenious

The introductory arcade, which sets your vitality level in the adventure to come, are nothing very special and, as a lone arcade player, I could have done without them. But the quest themselves are a much more attractive prospect.

Each is illustrated with slick, well-drawn graphics windows of varying size and with some scenes animated, such as the attack of an aggressive eagle. The locations include jousting pavilions, Roman palaces, a German prisoner-of-war camp and the Caribbean seas, each of which will eventually yield a coded clue for the final adventure. There are some sound effects, good but not spectacular, but the puzzles are ingeniously constructed and the solutions often rely on a sense of humour. You won't figure out how to free Merlin from his rock prison in the Celtic chapter without one!

My overall indignity comes that I don't have much vigour for fights so the

£25,000 is probably safe from me. I suggest that dedicated adventurers who have the same problem get a bright 12 year-old to do the arcade games and then make use of the resultant strength together with their wits to solve the rest.

Once another multi-faceted game, this time a four-part. Since *Macbeth* was produced by Oxford Digital Enterprises



with the backing of the publishers of this magazine, I had intended this review to be a statement on my fearless independence. Also for good intentions! Unfortunately, it turns out to be a veritable pouch of an adventure, complex, witty, with stunning graphics and sound effects and some remarkable documentation (author W Shakespeare, a computer game scenario-writer who should go fast).

Dussinane

The games follow the plot of the play closely and the "help" facility gives references to the edited version of the play enclosed with the two tapes, which give useful clues about how to proceed and/or dispose of threats, although this too I have

been able to achieve only minor variations in availing Macbeth's comeuppance.

The games vary from text and graphics, which will change according to whether a trapdoor has been opened or a required object deposited (don't jump when you hear the very realistic sound effects from what you see on the battlements — yik!) through mainly graphics to real-time test-only for the final confrontation at Dussinane castle.

Some of the time the player is Macbeth, in other adventures you will be Lady B facing the tricky domestic choice of fixing up a last-minute banquet, persuading hubby to slaughter poor royal guest and finding something a bit more exotic than the odd pinch of salt to add to a boiling cauldron.

After each game you can visit Sigward, Scott's top schemer and a peevishist, for a recap which is both entertaining and informative. The fact that this started life as an educational package is obvious, but the final result is an excellent, and tough, adventure game more than capable of holding its own against the commercial competition.

Secret agent

Another four-part is *The Foreign Chronicle*, which is actually two separate adventures, one of them being the previously-issued, and successful, *Foreigner's Diary*. I didn't see the original game but, having heard very well of it, I had high hopes of this package from Shards Software.

They were not quite realised, although a lot of time and trouble has obviously gone into the programming and lay-out of these games. The first is *Operation Natives* which combines a secret-agent plot with a fantasy quest. In Part One, which features scrolling text on an attractive screen, reaction times are often slowed considerably slow, so much so that I tended to lose interest in the puzzle. The second, fantasy, part is notable for some pleasant animated graphics with the first window in the lower half of the screen. ▶

MACBETH

BY WILLIAM SHAKESPEARE

Edited from the original 1623 version



◀ The "Diary" adventure is more fun, with a varied and often witty scenario, but again reactions can be VERY slow, and I was disappointed with the scope of the vocabulary throughout.

Biggest disappointment of the month is probably "Alone", which looks very tempting from the documentation but turns out to be a highly amusing affair. Graphics include deck chairs from the doomed ship of the SF film of the same name and, despite promises of great sophistication from individual personality programs for the crew members, of whom you are the commander, playing is repetitions. After about quarter of an hour, I couldn't give a damn whether the crew decided to obey my orders or not and was clearing on the ship as it descended them.

Maxwell

Just a few words left for "Front Page", a strategy game based on being a newspaper proprietor in a very right-wing state. Seems to me to be reasonably realistic, apart from over-estimating the number of hacks needed to cover stories, with nice weekly graphic representations of how your papers are doing in readership, income and the likelihood of a government crackdown. You're asked to pick a name (I picked "Maxwell", damn why really) and I'm pleased to say that my dirt-cheap, semi-functional, government-coating rag is now wiping the floor with the more sensitive competition. Now there's realism for you. ■

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Simple synthesiser software scrutinised

Chris Whitehouse plays through JMS/Rosett's MDV music software series

ALTHOUGH MAKING music using the Commodore 64's SID chip can be rewarding in itself, the true potential of computerised music is better realised using the 64 to control a dedicated music synthesiser.

Until recently the only systems able to do this were hugely expensive sequencers manufactured by the synthesiser companies, and because each company used different data transmission standards, it wasn't possible to interface machines from different companies.

The manufacturers recently realised that this situation wasn't in their favour, and came together to develop a standard which would allow musical instruments from different companies to be linked together. This also opens up the possibility of synthesiser control through home computers, of which the most popular is the 64.



Using a MIDI interface between the synthesiser and the 64 enables a new world of musical control through software to be opened up.

The MIDI system has become the new industry standard for interfacing synthesisers, not only with computers, but also with other synthesisers and drum machines. It is now possible, using MIDI, to control large numbers of keyboards and drum machines at the touch of a couple of buttons.

Synthesisers

The system I was shown is by JMS (distributed by Rosett) and was demonstrated using the Commodore 64 with 1541 Disk Drive. The synthesiser used included a Roland JUNO 106, an OSCar, two Yamaha DX7s (what else?) and a Yamaha RMX10 drum machine. The JMS interface plugs into the rear of the 64 and has connections for three synths. Should you be lucky enough to own more than this, don't worry. So long as your keyboards have a TRIGG socket (most have) they can be data-chained in much the same way as Disk drives.

Each instrument is assigned a MIDI channel so that it knows what information to extract and what to pass through to the next connection.

If you should happen to be the proud owner of a DX7 (or DX99 for that matter) you will know that it can be a bit fiddly to program sounds into it, as each parameter has to be adjusted individually using the built-in LCD display. With the JMS SOUND EDITOR program, things are made much simpler, as all the sound parameters are displayed on the screen at the same time. Having created the sound that you want, you can then save it on disk for later retrieval.

Patches

If you don't want to bother making up your own sounds, then you can buy the SOUND LIBRARY disk which contains 192 pre-programmed "patches" for the DX7.

If the Record lights on a tape machine make you nervous, resulting in wrong notes, copywriters, then the MULTITRACK COMPOSER program is for you. Instead of recording straight to tape, you play "into the computer", which stores all the note data in memory. This data can then be displaced and altered via the computer keyboard. You can edit pitch, gate time, velocity and sounds, and you can change the tempo without causing a change in the pitch. This means that you can "cheat" (as if you would) by playing something slowly and then getting the program to replay it at

the correct speed.

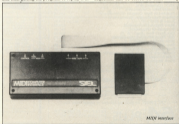
If you own more than one keyboard and you spend a lot of time recording, mixing and dubbing then perhaps the 12 TRACK RECORDING STUDIO program would help to smooth the way. It offers Real Time recording of 12 polyphonic tracks with simultaneous monitoring of all pre-recorded tracks; mixdown of different



tracks into 1 track (and, being digital, there is no loss of sound quality when mixing over and over again); editing, insertion and removal of sound parameters after recording; and loading and storage of compositions on disk. Again, you have temp-change without variation of pitch.

Footswitch

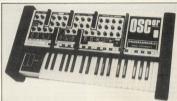
An ARPEGGIATOR program is available which, when used with a footswitch, enables the player to move and arpeggiate up to 48 chords. Arpeggios can be set to run up, down or cyclic and sequences can be stored on disk.



JMS interface

481 If you are something of a Yonkers or Bob Weinstan, then you will, perhaps, have wished that on some occasions you had ten pairs of hands and half a dozen keyboards! Not so much to play any array of keyboards, but more to test them between numbers. Imagine the same . . . you are on stage in front of an audience of millions. You finish playing one song, but before the next one you have to change the sounds on all the keyboards. Not only do you not have much time, but you also have to remember where you put the soup of paper with all the presets and Panic no more! You use the MACHETER KEYBOARD program. This little gem will give you fast control of a series of connected keyboards. You simply set up all the sounds in the privacy of your own home in advance, and set them into a designated area on the Master Keyboard. When on stage, all the sound parameters can be set to all the keyboards at the touch of a button or two. Quite painless.

I was impressed by all the programs (they all worked first time) and, considering their



semi-specialist nature, they are not expensive, costing from about 140 upwards. The interface itself sells for just under £99 which, again, is not a lot considering the amenities that it offers up.

Standard

Now that MIDI has been accepted as the standard, I feel sure that more and more interfaces and programs will become available which will, no doubt, help to drive prices downward. The future of computerized synthesis looks very rosy indeed.

I would like to thank George at Gigawatts of Catford for the demonstrations, and Rowett for showing this way. If you want to discover more about MIDI, then contact your local synthesizer

stockist or try Gigawatts, Bantley Green, Catford, London SE6, tel. 01-898 8621, or Rowett, 138/140 Old Street, London EC1, tel. 01-251 7594. ■

Composor Monitors will be looking at all the new music software and hardware as it appears. Forthcoming articles include LFL's Echo keyboard; the Autographic sound sampling system; and products from Sell, Sequential Circuits and Jorsh.

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Adventures on the magic network

Richard Barthe introduces Computer's Multi-User Dungeon, MUD

WITH THE increasing popularity of adventure and strategy games as opposed to arcade extravaganzas, one of the most interesting new ideas in the computer world is MUD — the Multi-User Dungeon.

This is a new kind of adventure game where instead of playing alone, you interact in real time with a number of other players. All your actions influence theirs, and vice-versa, so that if you write to, say, walk into a room and find a sword lying on the ground and two other people in the room, the chances are that one of them will pick up the sword before you do — and very likely attack you with it.

Systems like MUD obviously require bigger computing power than any home micro can manage. In fact the original MUD was programmed on a DEC-10 mainframe computer at Brown University.

Commodore's Computer system uses a similar host computer, so it's no surprise to find that MUD is now available to Commodore users via their Commodore 64's at home.

Enthusiast

This makes it possible for you to play against other Commodore subscribers living hundreds of miles away from you, all through the magic modem.

As we've seen in previous articles, Commodore's Computer modem comes with one year's subscription to the system for just under £150. Once you've entered the system, MUD can be found using GO TO 10000 and RUN MUD.LINK. Yes, it costs money to play MUD — charges include 25 p/c month for membership of the closed user groups £3 per hour while playing, plus phone charges. It's not cheap.

However, once you're in you can play in the greatest adventure you've yet seen. I'd be even more enthusiastic in my praise of MUD if I hadn't co-written the game, so I'd better not go too far over the top.

The basic fact is that MUDs are just incredibly more fun to play than ordinary adventures. The maximum number of people able to play on the Essex University system was 12, and you used to have to stay up past midnight to get a game since the Dec-10 was in use during the day. Computer's MUD can be played at any time of day or night, and with up to 36 simultaneous players.

With all these players, MUD gets pretty hectic. Although the MUD is a text-only adventure, the main attractions are the immense vocabulary, comprehensive



Richard Barthe, writer

of the Land of MUD

descriptive passages and powerful interaction. You have to keep your wits about you all the time — other players can steal your possessions, or set upon you if you look like an easy target.

The objective of the game is to collect treasures and hide them in a swamp, thus removing them from the game. Collecting treasures also scores points, and allows you to move up levels. You start as a Novice and finally become a Wizard, endowed with magical powers which enable you to influence the actions of other characters, become invisible and observe the action unnoticed, interfere with the course of the game in various mischievous ways, and

reincarnate yourself if you are killed using a special password.

Another feature of MUD is puzzle-solving: if you can figure out how to make the ornate bed, or how to translate the mysterious runes, there are more points to be picked up. It's also possible to play as more than one character, though there are around 40 wizards on the Essex system, many of them also play as lesser characters too.

MUD, of course, isn't the only game available on Commodore software can be downloaded and run on your own 64. Commodore plans to sell around 10,000 modems in the next three months, and although this figure may be optimistic, business users will probably start showing interest later on, as more services become available to suit their needs. Given the popularity of MUD, though, business users might be well advised not to let their employees spend too much time on the modem!

Century Publications, because of MUD, have plans to release a version as a game for stand-alone computers — it would provide a useful "taster" for those of you who want to see the game before deciding to buy a modem.

If you want to find out more about how you can play MUD on the Essex system, contact Richard Barthe, Department of Computer Science, Essex University, Colchester, Essex, CO4 3SQ, enclosing a S.A.E. Contact Computer at Method House, Clippstone Street, London W1P 5DF. ■





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```

300 GOSUB3000
300 POKES4,0:RETURN
400 S=4500:L=L+1:FORM1=1702:FORM2=97015:FORM3=20070282:POKES1,FD
410 PRINT"@"TAB(250)"*****"
420 PRINT"@"TAB(250)" " :POKESC,0:NEXTND,ND,ND:POKES1,0:POKESC,19
430 PRINT"*****"
500 FORM1=17010:POKES4,0:POKESC,0
510 PRINT"@"TAB(240)"***** OVER"
520 POKES37,200:FORM2=170300:NEXT:POKES1,100
530 PRINT"@"TAB(240)" " :FORM2=170100
540 NEXTND,ND:POKES3,0:L=L+1
550 PRINT"@"TAB(240)"EXIT "F"
570 GETIN:IFIN<0:""THENG70
580 CLR:RUN
590 PRINT"@"
600 PRINT"*****CH0(34)"
605 PRINT"*****TAB(19)CH0(34)"
605 POKESC,118:POKEY=9,255:PRINT"*****"
640 PRINT"*****SCORE ADVANCE TABLE"
650 PRINT"@"TAB(40)S:DO.....10 PTS." :PRINT"*****"
660 PRINT"*****SCAF03.....30 PTS." :PRINT"*****BASE AT 1000 PTS"
670 FORM1=170600:NEXT
690 RETURN
5000 CH0=F07=970127:READ:POKE7160+256+J,X:CH0=CH0+NEXTJ:IFCH=162067HEX070255
5005 POKES1,200:FORI=1705000:NEXT:PRINT"*****"
5010 DATA 0,0,0,0,0,0,0
5020 DATA 63,204,63,15,15,3,0,255,233,204,233,255,255,51,40
5030 DATA 240,204,240,150,132,0,0,129,66,36,96,255,126,163,129
5040 DATA 126,255,0,255,60,96,129
5050 DATA 1,3,15,63,127,127,0,128,128,192,240,252,254,254,0
5060 DATA 28,34,56,114,255,255,255,0,0,68,236,254,255,255,255
5070 DATA 0,0,0,0,131,199,255,26,62,126,255,126,74,74,70
5080 DATA 45,63,0,3,192,0,74,137,255,255,255,255,255,255,255
5090 DATA 120,0,120,0,120,0,120,0,96,60,96,255,24,36,60

```

Autorun

This file 20 program comes from *John Gundry's* *Resurrection*

When run, AUTORUN creates a short routine which disables RUN/STOP and RESTORE and then LOADS and RUNS the user program on the tape. The method used to address the autorun is to connect

the Basic warm start link vector (BR000) with the address of our own machine code routine, which then takes over after the load is completed. Save the program before running.

```

0 REM*** AUTO RUN ***
1 REM*** (C) J. GUNDRY 1984 ***
2 REM THIS SHORT PROGRAM WILL PROVIDE AN
  AUTO RUN LOADER WHICH WILL LOAD AND RUN
3 REM THE USERS OWN PROGRAMS ***
4 REM* RUN/STOP & RESTORE ARE DISABLED *
5 :
6 REM*****
7 :
8 FOR A= 673 TO 697
9 READ D
10 POKEA,D
11 CH=CH+D:NEXT
12 IFCH<>2728THENPRINT"DATA ERROR":END
13 POKE43,161:POKE44,2
14 POKE45,16:POKE46,3
15 POKE778,161:POKE771,2
16 SAUC"PROGRAM NAME",1,1
170 SYS64824
181 :
182 REM*****
183 :
673 DATA100,100,162,131,142,2,3,141
681 DATA3,143,119,2,202,202,142
683 DATA48,3,160,1,133,136,76,128
687 DATA227

```


Delete

This Commodore 64 program comes from
J.A. Clark of Oxyden

This short routine can be added to any Commodore 64 program in order to delete a range of lines from within the program. Users with Simon's Basic or a similar package can add the routine using the **RELOC** utility.

Deleting or saving just parts of a program can usually be achieved by listing to the screen, **NEWing**, and re-saving using **RETURN**. But for larger sections, this routine can save time, though it isn't particularly fast.

```
60000 REM*****ROUTINE TO DELETE LINES FROM SPECIFIED START NO TO FINISH NO
60010 INPUT"START NO";SX
60020 INPUT"FINISH NO";FX
60030 INPUT"INTERVAL";IX
60040 CT=SX
60050 PRINTCHR$(147);CT
60060 PRINT"FX=";FX;" IX=";IX;" CT=";CT;IX;" ";PRINT"DOT060050"
60070 POKE631,19:POKE632,13:POKE633,13:POKE634,13:POKE198,4
60080 IFCT>PHTHE60100
60090 END
60100 GETR# : IFR#<0 : THEN60100
```

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User-friendly programming on the C16 and Plus/4

An extract from *Wise Lloyd's Commodore 16 — Plus/4 companion*

FOR A COMPUTER program to be really good it must be "user friendly", which means that whoever uses the program is given full instructions on how to use the program properly, and that whenever that user does, however stupid, the program should carry on working and tell the user what he or she has done wrong. To help you to write such programs your computer has been supplied with error trapping facilities, so that if, for example, you press the RUN/STOP key when you do not want to, then the program will be able to explain what you have done wrong. Figure one is a short program which illustrates this.

```

10 TRAP #0
20 SCNCLR
30 PRINT "PLEASE DO NOT PRESS THE RUN/STOP KEY"
40 PRINT "WHILE I FILL THE SCREEN WITH O'S"
50 FOR N = 1 TO 500: NEXT N
60 FOR N = 1 TO 1024: PRINT "O";: NEXT N
70 FOR N = 1 TO 500: NEXT N
80 RUN
90 SCNCLR
100 IF ER = 30 THEN PRINT "I ASKED YOU NOT TO PRESS THAT KEY" : ELSE STOP
110 PRINT "NOW, I WILL START AGAIN"
120 PRINT "BUT PLEASE DO NOT PRESS THE RUN/STOP KEY"
130 FOR N = 1 TO 2000: NEXT N
140 RESUME 20
  
```

Line 10 of this program contains the first of the error trapping commands — TRAP. This command tells the computer which line to jump to when it comes across an error. In this case the TRAP command tells the computer that if there is an error it should go to line 90 and carry on with the program from there.

The rest of the program is straightforward, until you come to line 100. In this line we refer to a variable, ER, which has not been assigned any value by the computer. This variable is a system variable, which is a variable used by the computer. ER contains the number of the last error which was made. Since the error number for pressing the RUN/STOP key (pressing the RUN/STOP key is classed as an error by the computer) is 30, the computer will carry out all the instructions from line 100 onwards only if the RUN/STOP key had been pressed.

Line 140 has another new command on it. The RESUME command allows the computer to continue with the main program after an error has occurred. RESUME is similar to GOTO except that it also marks the end of the error trapping routine, so when the computer comes

across line 140 it realises that this is the end of the error-trapping sub-routine, and then jumps to line 20 to continue with the program from there.

There is another version of the RESUME statement — RESUME NEXT. This statement tells the computer to go to the main program and carry on with it from the NEXT statement after the one which caused the error. For instance, change line 140 to

```
140 RESUME NEXT
```

then type RUN. At some point press the RUN/STOP key. You will receive the same message telling you that you shouldn't have

PRINT ERROR!!)

You will see the message #ERR01 QUANTITY displayed on the screen. You can use the ERR5 to find the message for any error number except those which refer to the disk drives.

The HELP command is extremely useful for when you are trying to find a mistake in a program line. If, for instance, you have a line with four or five commands in it, and you know that there is a mistake on that line but do not know where, you simply have to type HELP and the line with the mistake in it will appear on the screen. The actual command with the mistake will flash so that you can identify it easily. The HELP command will only work after you have received an error message (pressing the key marked HELP has the same effect as typing HELP).

It is very easy when a program of any length or complexity works first time. Finding real errors (the ones which the computer spots as errors and tells you about) are no problem, especially with the HELP command. However, there are often bugs in the program which, although the program works, prevent the program from doing exactly what it is supposed to do.

In order to make the examination of bugs much easier your computer has been given two commands — TRON and TROFF. The TRON command tells the computer to turn the TRAPON. When this happens the computer will display the line number of the line which is currently being carried out on the screen, so as soon as you see the mistake you can look to see which line is being carried out, and then will be the line with the mistake in it.

For instance, if we wanted the message on line 20 of program two to read SAUSAGE AND MASH instead of BEANS ON TOAST we could use the TRON command to find the line which displays the message BEANS ON TOAST (I know you can see it, but in a program with about 200 lines it would be a lot more difficult to spot, and this is an example). So, type in the program, type TRON and then RUN the program.

```

10 SCNCLR
20 PRINT "BEANS ON TOAST"
30 FOR N = 1 TO 10
40 PRINT "THIS IS A TEST";
50 NEXT N
  
```

As each line is carried out you will see the line number appear enclosed in square brackets []. You will see [20] appear as the message BEANS ON TOAST appears on the screen, so you will immediately

pressed the key, and then, after a short pause, the computer will continue with the program from where it was stopped.

There is another system variable which is used for errors. This variable is ER, and contains the line number in which the last error occurred. So if you change line 10 to

```
10 HELLO
```

and RUN the program you will immediately get an error (obviously). If you now type

```
PRINT ER
```

the computer will display the number 10, which is the line in which the error occurred.

We know that the system variable ER contains the error number of the last error that occurred, but a number doesn't tell you much about what has happened. For instance, if you were told that error number 11 has just occurred you wouldn't be much the wiser. Fortunately, there is a function which helps us in this matter — ERR5. If you type

```
PRINT ERR5(1)
```

the computer will display the message SYNTAX on the screen. This is because error number 11 is a SYNTAX ERROR. Similarly, if you type

4) Know that line 20 displays that message. The trace will remain on until you turn it off with the TRACE (Trace OFF) command.

It is very often useful to be able to have a list of numbers or characters which the computer can refer to and use. These numbers or characters could be a list of names and addresses which you want the computer to search through for a specific name, for example. One way of doing this is to store each person's name and address in a string variable, or possibly a string array, and search through each variable when you want to search for a person's name. An easier way, though, would be to have a list of DATA which the computer could look through for the correct name. To set up such a list we use the DATA statement, like this:

```
1000 DATA "FRED BLOOGS", 123456,  
"JOHN BROWN", 123452
```

Statements

This is just a short list, only two names and telephone numbers, but the list could go on, using several DATA statements. As you can see from the above DATA statement, any characters can be included in the list, and can be enclosed in quotation marks, although this is not essential. Numbers can also be stored in the list, and both numbers and characters can be mixed freely, as you can see.

It is not much use having a list if you cannot do anything with it. What we have to do is READ each piece of data into a variable, the numbers being read into a numeric variable, and the other characters being read into a string variable (numbers can also be read into a string variable if you want, but you cannot perform calculations with them if you do this). Program three is a simple telephone directory which asks you for the person's name and then tells you their telephone number.

NAME' and then wait for a response before assigning that response to the string variable NAME3.

Line 20 Start repeating everything between the FOR and NEXT command 3 times, with the value of the variable N starting at 1 and increasing by 1 each time round the loop until it reaches 3. READ the next piece of DATA from the list and assign it to the string variable A\$, then READ the next piece of DATA and assign it to the variable X.

next piece of DATA from the list at the end of the program (in fact it READs two pieces of DATA, but only one at a time). Each time a piece of DATA is read in the computer remembers where the next piece of DATA is, so that the next time it comes across a READ statement it knows where to take the DATA from.

Several pieces of DATA can be read in with one READ statement, as you can see from the above program. All that you have to do is tell the computer which variables



Line 20: Test to see if the string variable A\$ is the same as the string variable NAME1. If it is then display the message "THAT PERSON'S TELEPHONE NUMBER IS" and then display the value of the variable X before jumping to line 40 and carrying on with the program from

you want the DATA to be assigned to in the correct order, and separate each variable with a comma. You can READ in as many pieces of DATA as you like, as long as the variable list will fit onto a normal program line, if it doesn't you will need to use two lines and two READ statements.

But what happens when the computer reaches the end of the DATA list? Well, once the computer reaches the end of the list it has no more DATA to READ in, so it gives you an OUT OF DATA ERROR if you keep on trying to READ in more DATA. For instance, if you change line 70 of the above program to

```
70 GETKEY A$: RESTORE: GOTO 10
```

and RUN the program for a while you will eventually receive an OUT OF DATA ERROR. This is because the RUN command (which was originally used in line 70) also resets the DATA pointer (the one which the computer uses to remember where it is in a list of DATA) back to the start of the list, whereas a GOTO command does not. To overcome this problem, we use the RESTORE command, which tells the computer to start READING in DATA from the beginning of the list again. If you now change line 70 to

```
70 GETKEY A$: RESTORE: GOTO 10
```

then the program will work perfectly. You may also tell the computer to start taking DATA from a certain line number. For instance, alter line 70 to

```
70 GETKEY A$: RESTORE 90: GOTO 10
```

The RESTORE 90 statement tells the computer to set the data pointer to the start of the DATA in line 90. You will find that

```
10 SCREEN INPUT "WHAT IS THE PERSON'S NAME"; NAME1  
20 FOR N = 1 TO 3: READ A$, X  
30 IF A$ = NAME1 THEN PRINT "THAT PERSON'S TELEPHONE  
NUMBER IS"; X: GOTO 40  
40 NEXT N  
50 PRINT "SORRY, I DON'T KNOW THAT PERSON'S TELEPHONE  
NUMBER"  
60 PRINT: PRINT "PRESS ANY KEY"  
70 GETKEY A$: RUN  
80 DATA FRED BLOOGS, 123456, JOHN BROWN, 123452, BILL  
SMITH, 123451  
90 DATA JACK JONES, 123453, PETER JOHNSON, 123458
```

When you RUN this program the screen will clear and you will be asked for the name of the person whose telephone number you want (choices are from the names in the DATA statements). The computer will then search through the list of DATA and if it finds that person's name it will tell you his telephone number (this is immediately after the name in the list). If the computer does not find the person's name then it will tell you.

The program now in line 20:

Line 10: Clear the screen. Display the message "WHAT IS THE PERSON'S

Name

Line 40: Marks the end of the FOR ... NEXT loop

Line 60: Display the message "SORRY, I DON'T KNOW THAT PERSON'S TELEPHONE NUMBER"

Line 80: Display a blank line then display the message "PRESS ANY KEY"

Line 70: Wait for a key to be pressed and assign the symbol on that key to the string variable A\$ before re-starting the program.

Line 80: List of DATA

Line 90: List of DATA

Line 20 of the program READs in the

you will only be able to find the addresses of Jack Bauer and Peter Johnson.

You may have thought up to now that when the computer reaches a READ statement it jumps to the line which has the DATA on it and looks through that line for the next piece of DATA. This is not the case, however, and to prove this type TRON and RUN the program. You will see that at no time does computer jump to line 88 or 98 to look through the DATA list. This is because the computer knows exactly where the next piece of DATA is stored in its memory, so it does not need to bother about line numbers, it goes straight there.

String variables are extremely useful, and there are many ways in which you can chop them up and re-arrange them to suit your needs.

If you are familiar with the commands IF... THEN, you will understand lines like 158 IF AS = "YES" OR AS = "Y" THEN.

It would be much easier if we could test to see if the first letter of AS is a Y because then we could accept answers such as Y, YES, YEARN, or virtually any other version of the word YES starting with a Y. To do this we use the LEFTS command, like this 158 IF LEFTS (AS,1) = "Y" THEN...

This particular line tests to see what the first character of the variable AS is. If you change line 158 to

```
158 IF LEFTS (AS,2) = "YE" THEN...
```

then the computer will test to see what the first two characters of the variable AS are (the 2 in the LEFTS command tells the computer you want the first 2 characters, changing it to 1 would mean the first 1 character).

Variable

Of course, you don't have to use a string variable with the LEFTS command (or any of the other string handling commands, come to that), you could also use characters enclosed in quotation marks, like this 258 IF LEFTS ("COMPUTER", 4) = "COMP" THEN...

Here is a short example program: 10 SCENCE: INPUT "DO YOU LIKE USING COMPUTERS?": COS

```
20 IF LEFTS COS,1 = "Y" THEN
PRINT "I'M GLAD ABOUT THAT!"
30 IF LEFTS COS,2 = "NO" THEN
PRINT "OEH, I'M NOT TO BLAME!"
```

The RIGHTS command is very similar to LEFTS, except that LEFTS tests to see what the first characters of a string are, but the RIGHTS command looks to see what the last characters of a string are. Try this example

```
10 SCENCE: INPUT "TYPE IN SOMETHING PLEASE": Z23
20 PRINT "THE FIRST 2 CHARACTERS THAT YOU TYPED IN WERE":
30 PRINT LEFTS (Z23,2): PRINT "THE LAST 2 CHARACTERS THAT YOU TYPED IN WERE":
40 PRINT RIGHTS (Z23,2)
```

The 2 in the RIGHTS command tells the computer that you want the last two characters of the string, and can easily be changed, just like the LEFTS command.

The MID\$ command is used to find out



what the middle characters are, rather than the beginning or end ones. Rather than just typing how many characters you want to test, as you do with the LEFTS and RIGHTS commands, you also have to say where you want to start from. For example, if you had a line such as this 300 AS = MID\$(OR,4,5)

then the computer will assign three characters from the middle of the string variable OR to the string variable AS, with the first of these characters being the fourth character of the string variable OR.

It is also possible to replace parts of a string variable by using the MID\$ command. Here is a short example program which does this:

```
10 SCENCE
20 AS = "HELLO HELLO EVERYBODY"
30 PRINT AS
40 MID$(AS,5,5) = "THERE"
50 PRINT AS
```

If you look at line 40 you will see the MID\$ command being used to replace the second HELLO with THERE. This is done simply by telling the computer where in the string variable you want to start (the seventh character in this case) and how many characters you want to replace (in this example we want to replace five characters) and then tell the computer which characters you want to replace the old ones with. As you can see the replacement characters must be enclosed in quotation marks.

The INSTR\$ command is used to find out if one string is contained IN another string. Try this short program:

```
10 SCENCE: AS = "PETER PIPER PICKED A PECK OF PICKLED PEPPERS"
20 PRINT INSTR (AS, "PICK")
```

When you RUN this program the number 13 will appear on the screen, because the P of the letters PICK is the 13th letter of the string variable AS. What you have just told the computer to do is to search through the string variable AS to see

if the letters PICK are contained within it. If these letters are contained in AS then the computer will tell you exactly where the first letter of PICK appears in the string AS.

If you look at the string AS you will see that the letters PICK appear twice, once in the word PICKED and once in the word PICKLED. The computer will only find the first occurrence of the characters which you are searching for. In order to make it find the second occurrence of the letters PICK you will have to change line 20 to 20 PRINT INSTR (AS, "PICK", 15)

When you RUN the program this time the number 30 will appear on the screen. This time the computer has started searching for the letters PICK at the 15th character of the string AS. In other words, the computer will search through the letters CKED A PECK OF PICKLED PEPPERS for the first occurrence of the letters PICK, and find that the P of PICK is the 30th character of the string variable AS.

If the computer cannot find the characters that you are searching for in the string then it will return the number 0.

Brackets

The LEN command is used to find out the length of a string variable, or how many characters it contains. This short program illustrates the use of the command:

```
10 SCENCE: AS = "SUPER CALIFORNIA GILFISTIC EXPLAINED!"
20 PRINT "THE STRING VARIABLE 'AS' CONTAINS":
30 PRINT LEN(AS): "CHARACTERS"
```

As you can see, the string variable that you want to refer to must be enclosed in brackets after the LEN command. ■

Brian Lloyd's article will be continued next month. The Commodore 16 — Plus/4 companion is published by Samsite Books at £3.95, and is available from bookshops or by mail order.

Clear graphics

Book: *Commodore 64 Games Book 2*

Author: Gregg Bennett
Publisher: Milford House
Price: £7.4

Reviewer: Phil Benson

The main problems with books of program listings are usually clarity, especially when graphics symbols are included, and the difficulty of knowing how many spaces to include within PRINT statements. Gregg Bennett's book scores ten out of ten on both counts. Special versions of the graphic characters have been used throughout, and they really are crystal clear. Instead of spaces, strange jump-like symbols have been printed, which are very simple to count, and a checksum routine is included to avoid the dreaded "Syntax Error" message.

The programs themselves are similar to those found in many other books of this type. Most of them are simple arcade-style games which, though inferior to commercial machine-code products, are fun to play and make good use of graphics and sound. Screen photographs are included, some of them being in colour, but the descriptions of the games are rather too brief.

There is also a very useful machine-code routine, presented as a basic loader, for moving sprites around the screen, with examples of its use. This routine works very well and could easily be incorporated in one's own game programs.

All in all, this is an excellent publication of its type, which I can recommend highly.

Games galore

Book: *Game Book of Games for Your Commodore 64*
Author: Tim Hurrell
Publisher: Pooleton
Price: £5.95

Reviewer: Chris Whelan

I'm not a lover of books of games, mainly because they are usually only a collection of programs that didn't "make the

grade", but with Tim Hurrell at the helm the *Game Book of Games for Your Commodore 64* could well be an exception. It is. There are 46 offerings including arcade, card, memory and maze games.

Some of the selections really are very good. *Woods Alive*, *Fransum* (a motor racing game), *Spies and Masters* and *Military King* are four of the titles included. Some are wrap-around screens, some have various levels of difficulty and a couple make good use of the KED chip. There is a Typing Tutor program for those who wish to practice their keyboard skills. Each has an introduction saying what is required of you along with an explanation of how the program works. Some of these are fairly detailed and quite useful to anyone wishing to understand the ins and outs of how to achieve a good program. All the listings have been printed using the Vic 1520 plotter/printer making them easy to read.

At £5.95, that's about nine pence per program. They are considerably better than that price tag suggests. If you are looking for a book of games, this one is well worth considering.

Friendly start

Book: *Vic-20 Machine Code*
Author: Bruce Smith
Publisher: Sine Publishing Ltd
Price: £5.95

Reviewer: David Stephenson

This book is part of Sine's Friendly Micro Series, and is in no subject close to my heart. To me it is not going to be a rival to Honeyford's *Secret Wisdom*, rather the two could be read in conjunction. It is an easy book to read, as the author has a sense of humour which shows through from time to time. Regrettably, the programs appear to have been typeset rather than dumped off a printer. Whilst this makes for easier reading, it may allow many mistakes and omissions to creep in. In general, however, there are very few line explanations which should help to point to missing lines or statements in some lines. In the program examples, the



data for the Machine Code is split into three columns, the first column gave the decimal values, the second the Hex and the third used Memoricals and Assembly. One thing I found confusing here was that in places, the Hex and Decimal values had been mixed up in the Assembly column, rather than sticking to either Hex or Decimal.

One good point is that confusion between 'D' and 'W' (H) is avoided as a zero is shown by using the computer's version de: slash's.

In general, this book is an excellent guide to Machine Coding, just a few problems to be wary of, but a great book with which to start learning Machine Code.

Valuable guide

Book: *The Commodore 64 Handbook*
Author: Peter Lupton and Trevor Robinson
Publisher: Century Communications
Price: £5.95

Reviewer: Phil Benson

Since the first 64's way produced, with their woefully inadequate User's Guides,

there has been a continuing flood of books which have tried to put things right. This publication appears at first to be just one more, but when you examine it closely it proves to be far superior to the majority of such books.

This is the companion volume to *The Advanced Commodore 64 Handbook* by the same authors, and the same high standard is maintained throughout. In itself it is ideal for the beginner and provides enough material to keep him happily occupied for a long while.

In the first chapters deep information is given on setting up the machine and getting started. Then the authors launch into a thorough, step-by-step examination of basic programming. Chapters are also included which explain the 64's special characteristics of sound, sprites and bit-mapped graphics. To illustrate the subject matter program listings are included, some of which are highly sophisticated utilities, such as a sprite editor, a user-defined graphics generator and a database program. All of these are available on cassette from the publisher if required.

The usual appendixes complete the book, which at £5.95 must be excellent value for money.



How to teach your Micro a thing or two

Thousands of home computer owners have yet to discover their microcomputer's potential to help with many of the problems and decisions that come up every day in the home or office.

Perhaps you have always promised yourself that you would teach yourself programming, but have been put off by manuals which seem to assume a lifetime spent studying computer science and mathematics. Maybe you have looked at other computer books, but have yet to find one which is free of unnecessary jargon or where the program examples bear some relevance to real life and not space invaders.

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Tripping the light fantastic

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WHATEVER Commodore machine you own, you can win a copy of Jeff Minter's laser and whackiest program. Not an arcade game, not an adventure game, Psychodelia is a "light synthesizer". Controlled by a joystick, and preferably in tune to your favourite music, you can use the program to create fantastic light shows on your computer screen. You control the position of the central cursor, and as you move it around the screen multi-coloured light displays explode into action.

The cursor shape, colour depth, pattern mode and sequence speed can be altered to suit you, and you can record your greatest Psychodelia performances to show your friends.

Psychodelia costs £7.98 for the Commodore 64, and £8 for the Vic 20 and C16. We've persuaded Llamazoff to offer five copies of the program for each machine.

All you have to do to win is to suggest a name for the six llama seen in the photo at left. Put your answer on a POST-CARD, with your name, address, and the Commodore machine you own, and complete this tie-breaker in an apt, amusing and original way in 15000 words or fewer: "Llamazoff games blow my mind because..." Send your entry to Llamazoff competition, Commodore Horizons, 12/13 Little Newport Street, London WC2H 7PP, to arrive by the last working day in February. Winners will be announced in the April issue. Normal competition rules apply. ■

The winners of December's *Essential Currah Speech Synthesiser* contest are: James Kennedy of Ealing; T B Thomas of Luton; Stephen How of Burgess Hill; Clive Wild of Isle of Man; Andrew Philson of Hemford; D F Prior of Ebbw Vale; D R Non of Bristol; C C Harris of Woking; B T Edwards of Sidcup; and Peter Drabinski of London. The highest entry, from Lt Col James Kennedy, was 1126 words, culled from the Oxford English Dictionary and all its supplements over a three-day period. The run-up averaged a paltry 800 words. Each will receive a Currah Speech set value equivalent, courtesy of Denmark, the creator of the *Essential* adventure game. ■



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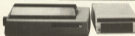
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GEMM DATABASE £8 (incl £20 COM 64 Accessories £4 Savel 170). New unopened plus. Several used. Includes available cheap. Postage extra on all items or collect. 12 Cantuar Close, Hemel Hempstead HP1 3AU. Tel. 0442 64268.

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SWAPS

COMMODORE 64 software to swap, including many utilities and lots of American titles. Write including a list of your best programs to: Carsten Sahn, Bremen Str. 9, 3840 Krotzsch, West Germany. *Disk only.

IBM 64 programs to swap. Have about 1000 titles. Send your list to: Fernando Flores, 27 via Valpurga, Gelves 10723 Turis (Italy). Tel 01145965528.

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I HAVE a Dragon 32 computer, two printers, five books, £160 worth of software, like to swap for Commodore 64. Contact: J. Spinning, 53 Cambridge Park Road, CM 1 1JH, Manchester 18 after 6pm.

LOOK HERE, every IBM 64 a swap? Do you want to exchange software? Contact: Alberto Roggio, via San Rocco 34, 27013 Gallarate (Varese), Italy.

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HEY YOU! We are two German IBM 64 freaks. Write us if you want contact and swap with us. Exchange by disk (optional) or cassette. Send your letters to: P. Franz Wagner - Ring 1 1-2300 Kol 11 West Germany.

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ANSWER BACK

Random access

I AM WRITING a program in machine code which requires a random number between 0 and 255. I would prefer to use the 64's random number generator, but I don't know when to find or how to use any routines already in the 64's memory.
Thomas Horst
High Wycombe
Bucks

RANDOM is equivalent to **RNDH - 5** and needs the random number with a value dependent on **FAC1**. A constant value can be used using this routine, but with machine code it's quicker to store your own seed value directly into **RND** to **RND**. **RND SEED** uses a formula to calculate a new random number leaving the result in **FAC1** and **RND** to **RND**. This sequence is completely predictable. **RND SEED** uses **VIA** lines to generate a true random number, except that, where loops are very short, they may begin to show regularity. Try this routine:

```
RND SEED (new random  
number from 0-255)  
LDH 5C  
FOR 5B (variable data byte)  
FOR 5E L ... (in composite  
byte)  
FOR 5D  
using four bytes excluding  
the exponent.
```

For more detailed information try *Kate's Word's* forthcoming book *Programming the 64*, which is due for publication in March.

Collision routine

I HAVE recently started writing a game on the 64 involving the use of sprites. Could you explain the use of the effect and collision flag? I've read several books but none of them seem to be clear enough on the subject.
Simon Mills
Jarrow
Skelby

TO DETECT collisions between sprites in Basic use the following:

```
100 Y = 5148  
101 IF PEEK(Y) = 0 AND 0
```

X = X THEN ...
and go on into the action of your program. This will check to see if sprite number **X** has collided with another sprite or sprite.

```
102 IF PEEK(Y) = 0 AND 0  
X = X THEN ...
```

will check if sprite **X** has collided with a background character. All of the sprites can be checked in this way, and the sprite number stored accordingly to be used in your game. There is no effect flag in CRM Basic. It may be that the books you have referred to are misnaming the different sprite register positions.

Picture music

I HAVE a 64 and am interested in techniques of displaying a picture while loading. If this is done by a machine code routine in commercial programs, is there any way to achieve the same effect in Basic?

I would also like to know how to play music while loading.

Steve Barber
Farnworth
Bucks
PRINT CREATE your picture, then use as the last line of the program
1000 LDH "CINT" &

where "CINT" is the name of the music program. In Basic, the first program should be larger than the called program, though this is not necessary if calling machine code. The picture will remain on the screen until removed by a new program.

Music while loading is possible in several ways. You could use the music as a wedge in a machine code interrupt routine, in which case the music would continue playing while the new program starts executing.

A Basic program can create music and call a machine code program, while the music is playing, providing the new program does not load into the same area of memory as the Basic program and its variables, arrays and so on. When loading

is complete the Basic program will return, and then can be directed to a 999 call to the new program using the familiar procedure of
**10 A = A + 1: IF A = 2 THEN
99999910
20 REM rest of program**

Portable problem

I AM ONE of those people who could really make use of the Commodore 52064 portable computer, since I am stuck on the move. I already own a standard CBM64 and a good deal of tape software, but how can I connect the 52-64 to a C-20 or a compact disc tape recorder?
If Dept/700
Horne
Arlene

THERE'S no real solution to this problem, since the 52-64 doesn't have a cassette port, and I haven't heard of any company offering to add one. All you can do is convert your cassette programs to disk, either by using a tape-to-disk transfer utility or by exchanging them through your software supplier, if disk versions are available. You will have to be prepared to pay extra, of course.

Screen clear

I HAVE RECENTLY started programming on a CBM64 and cannot understand how to clear part of the screen. The program is a children's game which builds up a shape each time a question is answered correctly, but I cannot clear the previous one displayed and its answer, as it prints immediately below the previous question and answer. If I try **PRINT CHR\$(140)** this clears the screen completely. Can you suggest how to solve this problem?
C.R. Roberts
Cirencester
Oxon

IN BASIC, using the **SCREEN** key as a reference point, you should use sufficient numbers of **CURSOR RIGHT** and **CURSOR DOWN** symbols in your input string (or prompt string) to overwrite the previous question and answer.

Giving a prompt

CAN YOU GIVE me some advice on a program I am writing to produce percentage rates? I have produced the screen format and a subroutine for performing the calculations. However, I do not see how I can bring the cursor to a particular section as a prompt for the operator to enter the figure.
P. Atkinson
Killington
Oxford

AS IN a previous answer, you should use cursor control codes to place the cursor in the right position. The home key acts to give a reference point, and the cursor can be repositioned in placing the screen cursor. The alternative would be to **POKE** the values into screen memory by using **GET** to obtain the answers and converting to the **POKE** value.

Underline method

I SOMETIMES find things I want to copy which feature underlined text, but when I run the programs the underlining in the listing always disappears. Could you let me know how to set underlining in programs?
Kevin Winstone
London

THERE ARE two ways of looking at the question. Firstly, the words in the listings might have been underlined independently of the program in order to give them emphasis.

Secondly, you can use two program lines which have the same effect to achieve underlining, for instance
**10 PRINT "HELLO"
20 PRINT "TTTTT"**
where "T" represents the Commodore logo key with U, giving an underline character.

If you need help with a technical query or problem write to
Jack Cohen,
Commodore Horizons,
12-13 Little Newport
Street, London
WC2H 9PP

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SOFTWARE

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Dash for a Slomo



If you can't keep up with your Commodore 64, this handy gadget can slow it down to your pace — and there are five to win in our simple contest.

THIS MONTH'S five lucky winners will win Commodore 64 Slomo from Cambridge Computing.

The Slomo is a hand-held screen display controller which plugs into the 64's cartridge port. In operation, it introduces an unmistakable interrupt into the video's operating system, at a rate which can be varied by the speed control knob. In other words, Slomo lets you control the speed of programs as they run — slow them down, speed them up, or freeze them completely! And you can leave Slomo plugged in all the time.

It's a great aid in those difficult arcade games where the action is just too fast for you; or if you want to take screen photographs of your own programs, you can freeze the action at any time.

The Slomo sells for £14.95, but all you have to do to win one is solve the Hill Nook puzzle.

Marion has brought a set of pentaminoes into the Micro Club for the others to play with. When they're correctly assembled, they form a square from which can be read ten binary numbers, five horizontally and five vertically. All the binary numbers have three

digits set to 1, and two to 0, but no number is the same as any other.

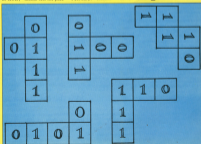
What you have to do is draw a diagram showing the assembled square, and complete the 10 binary numbers in an up, original and amusing way in 1500 words or fewer. "Slomo sets the pace

because . . ."

When you have done that, send your entry on a POST-CARD, with your name and address, to Slomo Competition, Commodore Horizons, 12/13 Little Newport Street, London WC2E 8FP, to arrive by the last working day of February. Results will be

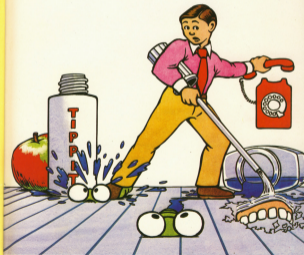
announced in the April issue. Usual competition rules apply.

The winners of the December Commodore competition are Joe Ryan, Officer of Detachable, who will receive a Plus4, and J D Hanco of Birmingham, who gets a C16, from Commodore UK. ■



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COMMODORE



Alice IN VIDEOLAND



**NOW
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Join Alice in her journey through Videoland - an enchanted place populated by strange creatures such as bread-and-butterflies and pipe smoking caterpillars, where little girls change size and flamingos turn into croquet mallets!

Alice in Videoland is a revolutionary new concept in entertainment for the Commodore 64, incorporating some of the finest graphics ever seen on any home computer, accompanied by a charming musical score. There are four different game scenes involved, and your performance in earlier ones will affect your ability to get through later ones and determine your eventual total score.

Scene One - Stunning title page graphics give way to the first game scene as Alice falls into the rabbit's warren. Score points for collecting the objects to be found there - including keys to open doors, bottles to make her smaller, cakes to make her bigger!

Scene Two - Out in the garden the Cheshire cat looks on as Alice meets the pipe-smoking caterpillar. Help her to catch the bread-and-butterflies and the rooking-hoarse flies that change into the balls used in the croquet game in the last scene!

Scene Three - Alice is a pawn in the chess game where her opponents are the Jabberwocky and Tweedledum and Tweedledee. Help her across the board by protecting her with your White Knight!

Scene Four - The most bizarre croquet game ever! Help Alice hit the balls through the playing-card-soldier hoops before the Queen of Hearts steeps on them!

Alice in Videoland is available for the Commodore 64 on disk - £12.95, and now on cassette - £8.95.

Alice in Videoland features graphics created with the Kozak Pad.

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