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Editorial

THE HOME computer market is changing — some would say “maturing” — and the easiest way to gauge the changes is to look at the products in the shops. Underpowered machines like MSX, Electron, and even the C64, are being “dumped” — sold at low prices to clear out stocks. While some of these represent worthwhile purchases, some, considering the lack of software and service support, will not be worth buying.

What we must now look forward to are the age of bigger memory sizes, (256K and 256K minimums), faster processors, and more powerful machines. Any industry which does not move on, stagnates.

That's why from next month you'll see changes in *Commodore Horizons*. No, we're not being forced to merge with the opposition, and no, we're not cutting down on our coverage of the 64, C64, C16, Plus/4 or Vtc. What we're adding to the magazine is a section devoted to what should be the marketing of the late rightsies and minorities — the Commodore Amiga.

In next month's issue you'll get a free 18-page supplement which will give you a taste of what's to come. Get yourself ready for *Commodore Horizons* and *Amiga UK!*

Next Month

Amiga UK

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Commodore Horizons is published monthly by Star Press Ltd. Typeset by In-Slay Ltd, 31-41 Dullingham Street, London EC1. Printed by Greenway Harlow Ltd, Southend-on-Sea, Essex. Distributed by SM Distribution, 16-17 Shipp Gardens, London SW9, telephone 01-274 9611, telex 261441.

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SUBMITTING ARTICLES *Commodore Horizons* invites readers' contributions, either program listings or articles. Articles should be typed, double spaced with a wide margin. Where possible programs should be submitted on cassette or disk with a printout on plain white paper. Please keep a copy of your submission — do not send your only copy. Please include an a.s.c. if you wish your submission to be retained. All submissions must be your own original work.

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64 trade-in to boost 128

COMMODORE'S latest plan to boost sales of the C128 involves trading in year tired old computers.

Available through all major retailers and independent dealers, the offer entitles existing Commodore 64 owners to a 15% discount on the normal £269 price of the C128 when they trade in their old computer. Owners of any other computer will receive a free diagnostic, worth £41, when they trade in their machine.

Commodore marketing manager Chris Keady explained



that the offer was meant to appeal to present owners of 64's and other machines who want

to upgrade to the 128K system, which can use powerful CP/M programs.

High Street retailers denied Amigas

COMMODORE'S 68000-based Amiga computer will be sold exclusively through specialist retailers, it was revealed at a recent press conference.

Carl Wellington of Commodore Electronics commented "We believe that we have the most exciting computer any specialist store can deal in; we are not about to let it fall through falling between two piers for a business machine or a home machine and not do our

believe that high street stores have sufficient experience to demonstrate the machine effectively."

Plans to sell the basic system at around £1800 will be affected by the state of the market and the dollar rate at the time of the launch. At the moment Commodore anticipate American NTSC versions to be available in Europe in March '86, UK PAL samples available at the same time, and full production

of PAL models to be underway by June.

In the States, the peripherals hoped to be available at the date of the UK launch are already on sale: the monitor at \$598, 512K memory expansion at \$200, 3½ inch disk drive at \$308, and 5¼ inch disk drive at \$408. Low-end software packages such as Tracraft, GraphicCraft and MusicCraft are selling at around \$79, and high-end packages like Deluxe Paint at \$129. Plans for UK software are progressing, with around 80 Amigas in the hands of developers, but at the moment most are keeping a low profile.

As to what will happen in the trade-in arena, a Commodore spokesman would only comment: "There are a number of options open to us, but at the moment I'm not in a position to say what will happen".

The trade-in offer closes on January 31st, indicating that Commodore's main hope is that sales of the C128 in the Christmas period will outweigh those of rival manufacturers' machines, setting Commodore up for a year in which the C128 and the Amiga will dominate the market.

"Lord" is delayed

MELBOURNE HOUSE'S *Lord of the Rings, Part One*, will now be available for the Commodore 64 early in the New Year.

Already released on the Sinclair Spectrum, the long-awaited follow-up to *The Hobbit* features recognition of names up to 128 characters long, full interaction between characters, 680 word vocabularies, over 280 locations, and a choice of characters to play. One of the programs included is a simple introductory version for players who have not encountered advanced games before, and the complete package contains a copy of the paperback *The Fellowship of the Ring*, a user guide, and two cassettes.



Digital 64 images

THE COMPUTEREYES video digitizer, first seen in the UK at the Commodore Show in June, is now available through Sore Computing. The hardware device connects your computer to any standard video camera or recorder, and produces black and white scanned images on

the computer display.

Computereyes supports pattern recognition, an aerial measurement function, and can produce 64-line screen dumps.

Contact Sore Computing, 3 Blackmore Ave, Duxford, 0082-60813.

Plus/4 patterns

DISAPPOINTED by the lack of software for the Plus/4, industrial designer Ken Blake has written his own graphics program, *Pattern Designer*. In conjunction with an Oxford school, Ken wrote the program in order to make better use of the Plus/4's powerful graphics capabilities. The menu-driven package includes such facilities as free-hand drawing, printing points, polygons, fill, block, clear, screen flip, mirror, zoom, rotate, screen wrap and copy, disk load and save, and full use of the Plus/4's 121 colours.

The program is almost totally joystick controlled, and Ken is making it available at £10. If you're interested, contact him at 25 Cornhill Crescent, North Shields, Tyne and Wear NE29 8LN.



The price of the Commodore 64 version is £19.95, with the forthcoming disk at £19.95. Contact Melbourne House, Castle Yard House, Castle Yard, Richmond TW9 0TF, 01-840 0094, for more details.

Ocean enters utility field with Laser

OCEAN'S first utility program for the 486, Laser Basic, is now available. An advanced programming utility designed for game creation, Laser Basic costs \$14.99 on cassette or £9.99 on disk.

The package allows the user to use 250 extra commands, an extended interpreter, a sprite and graphic designer and two sets of predefined sprites.

Up to 255 sprites can be defined, each up to 255 by 255 characters in size. Additionally, scrolling, enlargement, rotation and inversion of sprites and screen windows is possible. Screen handling, movement operations and procedures with local variables and full parameter passing are also possible. Developed by Oasis Software, the company behind the White Lightning series, Laser Basic



will eventually be accompanied by a compiler package which will allow you to produce free-running machine code from ordinary Basic or Laser Basic files.

Review and laser research contact Oasis, 4 Central Street, Manchester M2 2NS, 061-832 8633.

Ariola's Western

ARIOLASOFT'S latest game release for the 486 is another an adventure game set in a exotic game. Wild West is a bit of both: a semi-driven graphic action adventure which features animated sprites, as well as more familiar puzzles to solve.

Costing £12.95 on disk, with the 48.85 cassette version to follow, Wild West casts you as a cowboy hero trying to survive a fort captured by outlaws. On the way you'll encounter bank robbers, gangsters, rudies and salarivators. Alternative actions are selected from a menu using the joystick, and to help or hinder you along your path there are two "agents" who pop up to offer advice. For more details contact AriolaSoft, Suite 101/6, Appleton House, Palace Street, London SW1, 01-834 5387.



Crowned

THE LATEST software release from Argus Press is The Evil Crown. Set in feudal England in the year 1286, it places you in the position of an ambitious baron making a bid for the crown. The program is fully text-driven. The highly graphic simulation includes features in which you hire soldiers, recruit the peasants, amass treasure and finally take on the king in a jousting contest. The rewards for success are immensure, and the failure there is only one possible penalty!

For more information on The Evil Crown, which costs £9.99, contact Argus Press Software, Liberty House, 222 Regent Street, London W1, 01-734 6478.

Hot range coming from Firebird

THE LATEST range of games from British Telecom's software house Firebird Sports from tradition is being sold price, at £7.95 per game. But as you'd expect the quality is even higher than that of the popular Super Silver range.

Titles for the 64, available shortly, include Regatta, an Ultimate-style animated arcade adventure; Code Kaper, a platform and ladder epic set in a holiday resort; Bannister, a



sophisticated graphic adventure; and Climb the Green, an arcade game featuring Keith Hubbard music. Contact Firebird on 01-379 6715.

Robcom cleans up



THE LATEST aid to Commodore computer system maintenance is from Robcom, the Turbo cartridge people. The Alignment system works with the C16-Plus/8, 64, 128 and V6 26.

The kit consists of two cartridges, a head cleaner and an alignment program, plus a miniature screwdriver. The routines contain a reference signal which produces a pattern of moving lines on the computer display.

Cost is only £4.95, contact Robcom, 56 Market Place, London NW11, 01-209 8116, for details.

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Top Twenty CBM 64 Games

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2 (WD)	Monty On The Run	Grands Daughters	£8.99
3 (D)	Who Does Who 2	Allgate	£7.95
4 (D)	Business Games 2	Eyes On Gold	£9.99
5 (WD)	Last Y8	Masterton	£1.99
6 (WD)	Fighting Warrior	Melbourne House	£8.99
7 (WD)	Racing Destruction Set	AtariSoft	£12.95
8 (17)	Arise! Biker	Masterton	£1.99
9 (4)	Way Of The Exploding Fist	Melbourne House	£9.95
10 (WD)	Rambo	Ocean	£8.99
11 (WD)	Fight Night	US Gold	£9.95
12 (15)	Kix Start	Masterton	£1.99
13 (8)	Beach Head 2	Access/US Gold	£9.95
14 (WD)	Commando	Elite	£9.95
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16 (110)	Elite	Firebird	£14.95
17 (8)	Six Pac	AtariSoft	£9.99
18 (WD)	They Sold A Million	Hi Squad	£9.95
19 (20)	Firebird Sweepers	Masterton	£1.99
20 (7)	Billy McGuigan's Racing	Activision	£8.95



Bubblers

1	Archie Hall Of Fame	US Gold	£9.95
2	Little Computer People	Activision	£9.95
3	Battle Of Britain	PSI	£9.95
4	Inheritop	Ultimate	£9.95
5	Star Trek	AtariSoft	£9.95
6	Robin Of The Wood	Ode	£9.95
7	Thunderbirds	Firebird	£9.95
8	Super Zaxxon	US Gold	£9.95
9	Kennedy Approach	Microware/US Gold	£9.95
10	Scalptic	Leisure Genies	£9.95

Top Three CBM 64 'Non-games'

1	MiniOffice	Datamax	£5.95
2	Music Studio	Activision	£12.95
3	Admuth 2000	Intercept	£8.99

Top Five C16 Games

1 (1)	Formula One Simulator	Masterton	£1.99
2 (3)	BMX Racers	Masterton	£1.95
3 (4)	Equinox	Masterton	£1.99
4 (2)	Davey Thompson's Star Event	Ocean	£8.95
5 (5)	Speedpede	Masterton	£1.99

Bubblers

1	Vegas Jackpot	Masterton	£1.99
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2	Air Wolf	Elite	£6.95

Top Five Vic 20 Games

1 (1)	Cozy Cavity	Masterton	£1.99
2 (1)	King Tut	Masterton	£1.99
3 (4)	Rockman	Masterton	£1.99
4 (WB)	Doodlebug	Masterton	£1.99
5 (WB)	Rig The Game	Masterton	£1.99

Bubblers

1	Psycho Shopper	Masterton	£1.99
2	Buller	Masterton	£1.99
3	Neutron Zapper	Masterton	£1.99

Data compiled by Gallup from a panel of specialist and chain stores, for the month ending November 22nd.



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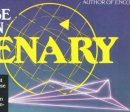
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Slasher

If *Bananas* is the acceptable limit of film/game tie-ins, then *Friday 13th* from Demark must be the inevitable sequel. *Friday*... the game is based on the slash cycle of movies about writhing Jason down an agony over Crystal Lake, and the game retells the film's gory approach with a cover shot of Jason's famous hockey mask, though Demark are keen to point out that the game isn't a "computer party" in which

...and, what's the point? When the game begins you find yourself playing one of 10



characters, drawn from the film. A random choice, it changes every game, as does the

identity of Jason, who is incorporated in one of the other characters. Your task is to locate the Sarcophagus Cross (which repels Jason), and lead the other characters to it. Should you encounter Jason yourself, you may alert yourself of one of the weapons lying about the place to defend yourself.

The action is set in a 7 x 3 screen landscape, containing a frozen church, a house, a barn, and so on. One nice touch is that each location carries an appropriate hint to be played —

The *Teddy Bear's Piano*, in the word for example, if Jason kills another character — which happens fairly frequently — a blood-splattering screen is heard, and the characters "burn" at the bottom of the screen turns into a tomb stone. Graphics are fair, but involvement (which after all is the point of a game like this) is sadly lacking.

Program: Friday the 13th, 64
Supplier: Demark
Price: £7.95

Graphics: ★★★★★
Sound: ★★★★★
Gameplay: ★★★★★

Bananas

Play the game that took 35 million years to create! Beats the infamy. Well, Mastertronic's *Bananas* Here should help you pass more than a few life hours.

What you have to do is refer: you begin as an ape-like character clambering around a wood jungle trying attempting to collect bananas while fending off the unwanted attention of

giant gnats and the like.

Second on the "platforms and ladder" style screen, and a slightly more evolved ancestor of home-stap game to try his luck crossing stairways apparently constructed from a variety of conveyor belts — only quick reactions and a bit of thought'll save you from sudden death.

Further screens feature even more diverse challenges, all set to the accompaniment of another very good Rob Hubbard soundtrack, as our hero clambers up the evolutionary ladder, mastering challenges in

belts, factories, and finally a computer app city in his search for expertise. It most confuses it's not a goal I've reached myself yet.



Graphics throughout are bold and colourful, and the positions direct enough to keep you on

your toes. (Though since you've "collected" each screen, its appeal is somewhat lessened.) First touches abound, the animated face of Pete (which appears when you lose your third — and final — life), the background jungle noises on the first screen, to name but two... Yet, Mastertronic has done it again. A bargain-priced gem!

Program: The Human Race, 64
Supplier: Mastertronic
Price: £1.99

Graphics: ★★★★★
Sound: ★★★★★
Gameplay: ★★★★★

Alienated

Chimers, an *Alien-3* Super Silver budget label, marks another collaboration between multi-white Rob Hubbard, and one of his favourite programmers, Shadd Alienated. The game begins immediately, coming with a host of digitised speech including "Chimers" in various doom-laden tones, but as play begins, a certain sense of déjà vu descends.

The scenario alone may ring a few bells: your space-suited hero has been sent aboard a mysterious space ship, with orders to locate and initiate its self-destruct mechanism before



it has time to drop a big one on Earth. To complete this task you will have to explore the many maze-like rooms of the ship, find a variety of weapons,

and work out how to use them while simultaneously keeping an eye on your food and water situation.

Yes folks — what we have

here is an *Alien-3* clone, right down to the peristaltic blocks, 3D room graphics (found also on *Knightmare*). The one significant difference, however, is that unlike *Alien-3* or *Knightmare*, your hero (looking, in his large, cubic space-suit more robot than human) cannot manipulate any of the room-blocks in order to reach his objectives — a significant part of the gameplay of the above-mentioned games and rarely missed.

Nonetheless, it's an interesting romp.

Program: Chimers, 64
Supplier: Fleethold
Price: £3.99

Graphics: ★★★★★
Sound: ★★★★★
Gameplay: ★★★★★

Durr

Ocean's officially licensed game of box office hit *Banjo* falls into the same category as *Who Runs Who* and *Commander*: head-on death-splitting opposites! Handling his way through battalions of help-less cannon fodder. To his credit, Ocean has introduced a few activities, such as retaining a

comrade, locating the helicopter, returning to the POW camp to free the other prisoners, and a miscellany of weapons, including knife, arrows, rocket launcher and machine gun.

The maze-like jungle with another dimension, though you can blast your way through it if you're not afraid to alert the enemy.

The graphics and animation, especially of muscle-bound

Banjo himself, are pretty good, and, although the music isn't by



Rob Hubbard, it might as well be — pitch bends, soaring lead

lines and all. You can switch it off if you want to concentrate on the explosive sound FX, though.

Banjo certainly lives up to its hype, and adds an element of strategy and forward planning to the *Commander*-type games.

Program: Banjo, 64
Supplier: Ocean
Price: £7.95

Graphics: ★★★★★
Sound: ★★★★★
Gameplay: ★★★★★

Into gear

Good games for the C18 are few and far between. But Mastertronic's **Formula 1 Simulator** is the exception that proves the rule. Using the by now familiar cockpit point of view, this particular variation on the classic **Pole Position** focuses smoothly — scrolling, varied backdrops (cosmotrails, cities, racetrack, other cars, and

a flexibility devices (rivals, marked out by parallel rows of 'roadside markers', 'Sound



effects are few, but passing another car elicits a nice "Eek-ew!", and crashing (which cer-

tainless your god) is suitably catastrophic.

The cars are nicely drawn, large, colourful, and rather cartoon-like, with overall realism enhanced by the presence of a steering wheel on the lower half of the screen, which also features hi score, speed, number of laps completed, and so on. The better you hold your car on course (no easy matter on the numerous tight corners), the faster you will go. An additional level of

control is provided in the position of hi and lo gears, which can be toggled using the joystick fire button.

I have now written leading games on more sophisticated machines, at five times the price. If you have a C18, you must have this game.

Program: Formula 1 Simulator
Supplier: Mastertronic
Price: £1.99

Graphics: ★★★★★
Sound: ★★★★★
Gameplay: ★★★★★

You spin me around

Mastertronic's latest arcade effort is based very closely on a hugely popular cabinet game, the name of which Melbourne do not like to hear mentioned (but it's **Marble Madness**).

As in the original, your task is to pilot a weird object (in this case a spinning gyroscope) along a course of ramps, gullies, planes and dips as quickly as possible. The whole landscape is presented with a clever three-d effect, and the effect of inertia,



gravity and velocity are very cleverly programmed.

As you teeter around the course, your gyroscope is

showered by areas of sudden inertia, causing new blades, strange holes and other menaces. Keeping an eye on the

lines, you must race through the obstacles before your life runs away.

Gyroscope is very good, although Melbourne House cannot take credit for inventing the game. Made in non-copyrighted, and there's a tedious wait in between runs as you losses is calculated; but other than that I would have thought this one would make a very pleasant alternative to all the current sports simulations and Command-a-dome.

Program: Gyroscope, 64
Supplier: Melbourne House
Price: £3.99

Graphics: ★★★★★
Sound: ★★★★★
Gameplay: ★★★★★

them about objects, or motivations.

This preview copy demonstrated no evidence of the intelligent interaction promised (the most appropriate your actions are to your character, the better you are opposed to do, and all the toying and toying led me. A game which will take time to get into, I think. For the moment, I'll give it the benefit of the doubt, and wait for the final version.

Program: The Young Ones, 64
Supplier: Orpheus
Price: £9.95

Graphics: ★★★★★
Sound: ★★★★★
Gameplay: ?

Oh, shut up, Neil

Orpheus's **Young Ones** has a lot to live up to. Almost everyone in the comedy is familiar with the quartet of absurdist eternal students portrayed in Ben Elton's anarchic TV show — so can any computer game based on their exploits match its appeal? On the evidence of this pre-production version it's hard to say.

Having chosen which of the four characters you wish to be, your objective is to move around the house, collecting

together certain items which belong to you, so that you can move out of the house, and win the game. Simple? No. To begin with, you don't know which items are important to you. Is it the H-bomb? The CAT (Richard Adams)? Secondly, the other characters are all busy doing their own thing, in a *Marble* style, and may hamper or help your quest, depending on how you interact with them.

Unlike the Hobbit, however, the screen display here is animated, split into two, to show both the room you character is in, and the rooms where the most interesting thing is happening! — Vivyan-Stradling

Neil with a sledgehammer, perhaps. Your participation in the action is via menus of options (Talk, Walk, Talk context) which is then given way



to sub menus (Talk to Neil about the Lardis...), The other characters' responses to you, and indeed to each other, take the form of comic-style 'speech bubbles', which often contain

pretty dense.

Ballistics, like UK's **Basket Ball**, is a clever idea because it takes the current fad for sports games and turns it on its head by inventing a new sport rather than slavishly imitating an existing one. More please!

Program: Ballistics, 64
Supplier: Activision
Price: £9.99

Graphics: ★★★★★
Sound: ★★★★★
Gameplay: ★★★★★

from the cable of a strange wedge-shaped craft. These craft



up (under joystick control) over a chess-board like grid, fighting for possession of a ball of

energy. Catch it in your sensor field, then dash for the goal posts and run it home before you're tackled by the opposition.

Since the craft is automatically aimed towards the ball, and then towards the goal, there doesn't seem to be much skill involved. Still, you can practice bounding your opponent around the game grid if you prefer, or those tricky over-the-fence shots, or just watch the

Future football?

The second of the Lucasfilm games from Activision, **Ballistics** sets new standards for speedy 3-D perspective graphics. Like many American games, though, the initial title might challenge if you like an intellectual challenge in your games.

The screen is divided into two; each half shows the view

SOFT★HITS

Z is for zap

A top game which boldly attacks aliens in its "strategy of attacking aliens" can't be all bad, no wings! (seriously, just a heads-down, no-compassion shoot 'em-up). When the game — 4, from new software house Rio — also boasts some pretty superb hardware graphics and

perfect fast scrolling in eight directions, then there is cause for celebration indeed.

Z opens with your ship hovering over an endless expanse of techno-city, and immediately faced by a pleasingly diverse range of alien spaceships, missiles, and wacky enemies.

From the word go, the action is frantic. After every tenth "standard" alien has been destroyed by your lasers (an autofire joystick is a help), an "energy unit" will appear. Destroy that in turn, and an

energy bomb will be released, which you can collect by flying over it before it "blows" and



vanishes. These bombs may then be fired (by pressing the space bar) at the rotating grid

lines which guard the Transporter Unit. Punch enough holes in the fence, and you can enter the Transporter, and walk to the next sector, a beautifully detailed countryside back-drop, with, yes, you've guessed it, more and more alien nasties...

An excellent blast from the author of Hyperspace.

Program: Z, 64

Supplier: Rio

Price: £8.95

Graphics: ★★★★★

Sound: ★★★★★

Gameplay: ★★★★★

Heroic Autobots

Transformers, produced by Ocean by the established team behind *Madagascar*, *Scram*, *Demolition*, drops you in the final stages of the eternal conflict between the heroic Autobots and evil Decepticons for control of the Earth.

Your task, as commander of the last five Autobots on Earth, is to guide them through a large

"planet" complex, collecting the 4 parts of the vital Energon energy Cube, and eventually, reassembling them at the centre of the complex. To negotiate the slopes, stairs, sudden drops and surprises which make up the



planet you will have to exploit not only each Autobot's

form (which allows them to walk, and to fly) but their individual abilities — an aircraft, tanks, sports car and so on. Each Autobot has individual levels of strength and firepower, which may be changed by dividing them under the various "defence-point" scattered throughout the game — and since only one Autobot can be in use at any one time, playing of each machine's strengths and drawbacks against the others is a major part of gameplay.

Gameplay is fast and furious,

with smooth scrolling in all directions, clear, distinctive graphics, a great theme tune, and a really nice overall feel — though between running my sports car Autobot off sudden drops, and attempting to select a second autobot without "blistering" the first, I haven't really had time yet to do anything about these claims. Disappointing! Program: Transformers, 64

Supplier: Ocean

Price: £8.95

Graphics: ★★★★★

Sound: ★★★★★

Gameplay: ★★★★★

Yee-Hai

Qwen marks a continuation of a trend Ultimate established with their previous release, *Intrepid*. Ultimate seem keen to diversify "buying in" different game types from outside. Your lugs, well-animated figure begins his mission in the desert (well draws swirling backdrops complete with burning oil and oil rigs), shooting it out with five mounted desperadoes. (Sophisticated joystick controls lets you horse walk, trot, gallop and jump over obstacles while you duck, and shoot backwards or forwards.) Taking care of them allows you



to cross the border into town, where more villains appear briefly at windows and doors, at

ground level and above, necessitating some quick diagonal-joystick sharp-shooting... From

there on in, it's all uphill, with valleys, ridges, rocks, arrows and lord knows what else coming at you as you progress into ever wilder new territories.

Sound-effects are adequate, if not startling (crackling gunfire, screams), and the action is enlivened with bonus points for particularly sticky targets.

All in all then, a satisfying shoot-'em-up, though maybe something of a let-down for Ultimate's old guards fans.

Program: Qwen, 64

Supplier: Ultimate

Price: £9.99

Graphics: ★★★★★

Sound: ★★★★★

Gameplay: ★★★★★

Messy

Following the recent controversy over various versions of the arcade smash *Commando* will no doubt be keen to check out the uncut-throat version, just released by Elite.

As many of you will already know, *Commando* places you in the role of a soldier, only armed with a machine gun and a limited supply of grenades, fighting his way through overwhelming odds up the screen, and through

4 distinct sectors — jungle, compound, camp and stronghold. At first, you will face only rolling waves of fanatical infantry, attacking from all sides, or springing from the corners of doors, trenches and walls which bar your progress. Your supply of grenades can be replenished by running over mine-bombs scattered about the place, and extra points can be gained by liberating allied prisoners from their cages of guards, or by shooting the coloured-uniformed "officers",

As time goes on, though, the odds get tougher, and you'll have to contend with enemy cars, motorcycles, and more...



The action is fast and furious, but things can get rather flaky at times, and although *Commando* plays faster than its obvious

rival, *Alligato's Who Dares Wins II*, there is an undeniable sense of mission about the whole thing: there is always so much going on that there can be no sense of achievement, no feeling of precision, in any particular maneuver you make. Great Bob Hubbard made a good shoot-'em-up — but not a great one.

Program: *Commando*, 64

Supplier: Elite

Price: £8.95

Graphics: ★★★★★

Sound: ★★★★★

Gameplay: ★★★★★

MINTER MANIA

From a British Airways flight between San Francisco and Heathrow, Jeff reports on the COMDEX Show, the condition of Muzak and the Amiga VS. The ST

WELL, here I am back in the UK again. I've just been to the COMDEX show in Las Vegas. Commodore were supposed to have a booth there, and I went with high hopes of seeing plenty of Amigas and lots of good stuff...

No chance! Commodore didn't show up at all, and each group present as to the reasons, are all the AMIGAs broke or had Commodore simply run out of cash?

Funky!

Anyway, Atari made up for that, with some of the nicest stuff I've got seen for any computer anywhere. Sierra Online had a number of Disney-themed titles on show, along with an excellent animated 3-D graphics adventure called Kings Quest III which really blew my brains out. AGI games were proving HACKER for the ST; already a hit on the 64, the ST version looked really good. A firm called Midbox, unknown to the Commodore field, had an arcade adventure program called TIME BANDIT that looks and plays better than about 99% of REAL arcade games!

Oh Commodore 64's I saw not one throughout the show. It seems that people are starting to ignore the humble 64-biters and everyone's eyes are Amiga-ised or on Atari ST-frank and our-ne's doing much 64-bit stuff any more.

And something really tragic has happened, too. If you've ever played my staff like Matrix, Sleepin' Mama, you'll have noticed references to the number 136, which I put in the games in honour of KMBL 136FM, a very good radio radio station in SF. Upon arrival in San Francisco, I retreated to my motel room (I was pouring with rain) in order to listen to KMBL and some good heavy rock. It started on OK, I turned it on and they were playing ZZ Top, but after the ZZ Top...

After the ZZ Top they played Armistice Jackson. And then they switched and without provocation put out a song with the word 'funky' in it. (At this point I turned off the radio and put some CDs in my Walkman to calm me down a little).

It seems that the station changed owners about a year ago, and that the new owners decided to forsake good rock in favour of bland middle class stuff.

KMBL, reduced to Muzak. What a tragedy...

Anyway, I don't think we need to worry too much about there being hardly any C64s at Comdex — it's mostly a business show anyway, and very few game people were there, the only business staff around was one on the Atari stand. Game people wouldn't really bother going to that kind of show. I'm sure that 64-bit software isn't just going to die off overnight, especially here in the UK where we can't all afford to run out

and get 36-bits as soon as they appear. In any case, I think that the UK is definitely now producing the best '84 games around. We no longer have to rely on US imports to show the '84 at its best...advanced 16-bit-driven ST-like the Demos Design games, and amazing musical stuff like Rob Hubbard's soundtracks for 'Moony on the Run' and 'Crash Course', are technically as good as any of the US stuff, and British software has what much American products lack: imagination. US games tend to be very well-animated and nicely-presented variants on a lot of ideas that we all had 3 years ago, whereas UK people aren't afraid to try out new ideas...



However, not particularly US games we've all enjoyed recently is *Winter Games*. I must confess I like this one, particularly the floor-slipping and the bobbed. This past month I've also been into *Warrior III* and *The Rishites*, both new out by Lucasfilm and both using fractal graphics as in 'Demons on Firestart'. In *KR* you drive a convertible vehicle over a mountainous planet, searching for and looting the hulks of old spacehips left behind by a dead civilisation; you add weapons to your ship while fighting off the Guardian Sectors. The analysis robot, which your ship is particularly nicely animated.

In *The Rishites*, you have an H.G. Wells type of time machine and explore labyrinthine underground caverns. Basically you've got the same sort of displays as with 'Riscure' but the world's fastest screen update, but with the lack of speed for the realism of the displayed scene. If you liked 'Riscure' then you'll like the new ones.

Reviews

Any FORTH friends out there should try to get hold of the latest version of 'Synth Sample' since that's going around currently. This plays the music while generating moving vector graphics on the screen and is quite relaxing and hypnotic to watch.

My Amiga's becoming more interesting these days since I got hold of some really ace demo stuff, including the famous Bouncing Ball demo, some really great hi-res pictures, and of course the partially-completed version of *Water Builders*, a combat flight-simulator currently being developed by Sublogic. This uses real jet-aircraft sonic sampled directly into the Amiga's, and features solid 3-D ground features and the fastest frame-refresh

rate I've ever seen on a home video. I also have a sound totally awesome through my monitor!

It's interesting to note that the famous Ball demo is in fact 2 or 3 years old already! It seems that it was one of the original demos for the prototype Amiga which was being shown to selected people as long ago as autumn 1983.

Speaking of the Ball demo, Atari was being rather snappy at Comdex; they lined up an Atari, an Amiga and a Macintosh all running the Ball demo. The Atari version was noticeably faster and smoother than both Amiga and Mac; Atari pinched the demo as if to say 'anything you can do we can do better'. Indeed, graphically the Atari version WAS better; but the main point of Amiga's version was not to show the graphics capabilities like the Amiga, the graphics are done by a trivial matter of scrolling 2 pixels/line; the hardware makes it easy. The Amiga version is intended to show off the system's native syntax and maintaining; the ball is accompanied by thunderous sounds, in stereo. That is the main area in which Amiga scores over the ST, and the only thing which disappears in the ST: Amiga has advanced sound sampling, the ST has a pitiful little sound chip which isn't even half as good as our own SID! (Mind you, Atari has MIDI, and if you really want good sound there's nothing to stop you buying a synth and hooking it up to your ST).

CompuSense

While in the States, I got a good look at CompuSense, a US network that boasts our own CompuNet. CompuSense has hundreds of thousands of subscribers, and lots of special areas for people with particular interests and computers. There are over 3,100 Special Interest Groups; the one I looked at was the Atari SIG, but groups exist for just about any interest. You can chat to some interesting people online, too; you're likely to rub elbows/shoulders with people like the Amiga designers, and famous programmers are often online and usually willing to chat or give advice. There's tons of free software too. I'd love to see a UK access node to CompuSense, 'cos it'd be really useful for Commodoreians and Atarians alike. You can get into CompuSense from the UK, but you're likely to get phone bills the size of Zaphod Beeblebrox's credit-card doing so...

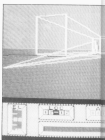
Well that's it for this month. I'm off sticking over Christmas with Tony Crowther and a couple of people off the Mail, which should be a great laugh, although I'll have to take plenty of aspirin in anticipation of the hangovers I'll be getting... I will report on this sporting expedition next time! (bushes)



▲ *Control on the surface of Targ*



▲ *Search for the heliport rooms*



IMAGINE a game in which you have, not a single screen of action, not even a hundred screens of action, but a whole world in your computer to explore and conquer. *Mercenary* is that game: after all the waiting, after being teased by the Atari version, it's finally on the IBM PC, and it's amazing.

Written by Paul Winkler, whose *Battlezone*-derivative *Taskmaster* set new standards for fast-moving solid graphics animation, *Mercenary* comes from the relatively unknown Mirage Software. It just goes to show that bigger isn't necessarily best:

The planet has one major center of habitation, which is surrounded by a wasteland. As the game opens, you find yourself inside your wrecked spacecraft, caught in the middle of a conflict between the normally peaceful Palpaters and the hostile Mechanoids. All you want to do is to find a ship and get off-planet — but there should be an opportunity for profit by exploiting the war you find yourself caught up in.

From there, the game develops exactly as you want it to. You can strike out towards the city, using the joystick to control the

MERCENARY

Amazing animated graphics, complex gameplay and total freedom of movement make Mercenary unique. Half Tasker explores the world of Targ

Mercenary makes the efforts of some of the best software houses look tame.

Mercenary uses a three-D vector graphics system to display the sensor-look representation of the world of Targ. You play your way through a unique combination of flight simulator, trading game, strategy and arcade adventure, with very little idea of what will happen from minute to minute. The graphics are astounding and the scale vast; for the first time, a 64 game gives the impression that a whole new reality has been created inside your computer, and all you have to do is explore it.

The screen display is fairly straightforward. In the lower section is a series of information read-outs from Mission, your portable computer system. These show your altitude, location, speed, bearing, and messages from Mission. The main part of the screen is taken up with Mission's representation of the entire sensory environment which is the planet Targ.

direction and speed of movement. As you get some idea of the vast scale of the game, you will realize that transport is needed if you are to achieve anything!

Mission will offer you the chance to buy a ship for 3000 Credits. It's almost all the money you have — but there's no alternative. Buying the ship, a fast, sleek Dominion Dart, you board by pressing the B key, and your adventures begin. As you take off, selecting your speed with number keys and altitude and direction with the joystick, you begin to appreciate the complexity of the game. The landscape moves past you, huge towers, crystalline ships and strange alien structures flashing past. With no set destination, it is up to you to decide your aim. Do you engage in combat with the craft which approach you, hoping to win a contract with one side or the other? Or do you bring your

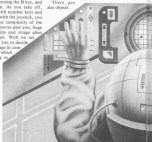
craft to ground, and attempt to enter one of the underground complexes of the Palpaters?

The flight simulation aspects of *Mercenary* are great fun, though it's not difficult to handle any of the ground or air-vehicles. Control is fun too, watching alien ships explode into a million pieces as you bring your cannon to bear.

There are also objects



▲ *Alien ships fly past your Dart*



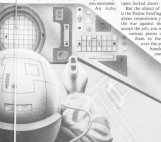


GAME: Mercenary
MICRO: CBM64
SUPPLIER: Novagen
PRICE: £9.95
£14.95 disk

to find, including weapons which can enhance the capabilities of your ship.

If you receive a job offer from the Palays, you immediately develop a sense of purpose — the offer of money is too good to turn down! Heading for the briefing centre at a given map location, you must avoid the trapdoor to destroy the buildings and ships you encounter.

As Italy



▲ In the underground hangar

trigger-finger could have unfortunate consequences: shoot down passing star ships and you might discover that you have destroyed the new owner of the Palayr Commander's brother-in-law. Retribution will be swift. Palayr ships engage you in combat, and despite your attempts to fight them off, you're unlikely to win at this stage. Losing a ship just returns you to the start.

Palays

Should you reach the briefing room without incident, you have to keep an eye on your speed, altitude and location in order to come to land safely rather than plummeting into the ground. The briefing building is a three-sided structure. Landing your star and manoeuvring into the opening, you come to rest and press the E key to operate the elevator.

At this stage you progress into a second, and quite different stage of Mercenary. Emerging in an underground hangar, you leave your ship (by pressing L) and proceed to explore the secret complex.

If you can find your way through the maze of tunnels (working your way backwards if you come to a locked door) you may find many objects which will be of use to you. In one room is a strange alien artifact, which, when picked up (by walking into it) a glowing TL will enhance your weapon system by giving you on-screen gauges. In another is a food unit, and in a third a key which will open locked doors.

But the object of this, your initial quest, is the Palayr briefing room. Here the unseen alien commander you'll fight for them in the war against the Mechanoids. If you accept the job, you will be required to collect various pieces of equipment, and get them to the membership hovering over the planet. You will be paid handsomely for each mission completed, and you can also earn bonuses by supporting Mechanoids. If you accept the mission, don't leave without



▲ The Palayr briefing

exploring the rest of the complex — there are objects there which may be useful later. How, for instance, will you reach the mother ship without aid? Your Dominion Star craft is only a speck in the sky at full height. So you'll need a little technological aid to reach it, and other objects in the complex will help you.

To help you to travel around the complex there are transporter systems, but you will have to explore their limitations yourself.

Once you reach the membership, after conflict with the mechanoids and the solving of some taxing problems, the rest of the action is up to you!

Mercenary is by far the best game of its kind on any home computer. It has a sense of reality which dwarfs that of any straight-forward adventure game; a unique combination of strategy and arcade skills; programming which is impressive to say the least, and the promise that no two games will be exactly the same.

After converting the game for other home computers, Novagen will be getting to work on the sequel, *Mechanoids — Escape From Tang* is only the first in a series of programs which will use Paul 'W-walker' programming skills. If you win through in the first game, escaping from the planet with a high credit rating, you can save your position on tape or disk. This will give you a high start rating on the second game, which so far only exists in storyboard form.

Wastelands

No doubt you'll need the save facility to get through the game, although it's possible to get through in three hours once you have solved everything and mapped the course, the game could literally go on for ever. For instance, if you crash in the wastelands you could "walk" for hours to get back to the city and there are other interminable situations where the only solution is to select CTRL-Q to quit, and start again.

You choose the action in Mercenary, and it was worth the wait! ■



▲ A mysterious object can aid your search

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Worms within worlds

Ken Matthews discovers the perils lurking within Level 9's Paradise and Ocean's Land of Fantasy

OUTE a mixture is the poodles bag for this month, including the long-awaited **Worm in Paradise** from Level 9 to complete the Silicon Dream trilogy??

It has arrived — the first mega-adventure! Over three million locations in the **Worm in Paradise** — if you take the same size as Level 9 did of **Seaquest**.

If you look at the trilogy you can really follow the development of Level 9 into Britain's premier adventure writers, **Seaquest**, a huge text-only game with a staggering amount of text packed into it. Returns in Eden, an enormous and continuously enjoyable game featuring graphics and typographical functions still in the same memory space! And now the **Worm in Paradise** with 1,000 word vocabulary, typewriting, over 90% text compression, making sure you don't have to wait for pictures in the dream and, to top it all, a full sentence parser in the Infocom style — making the game the most sophisticated computer based adventure ever and Level 9's serious contender for the world adventuring title!!

Enoch

All the technical stuff aside, **Worm** is a truly fascinating game and it's clear that a huge amount of work has gone into the planning of the storyline — as usual.

You are given no real idea what to do beyond a clue on the poster/advert that something stinks in the city of Enoch and you must put things to rights.

There is a wealth of information on the game itself which proves my comments on the depth of thought the Asatras have put into devising a city that's now named Enoch without some reason as you'll soon discover. Reading the inlay carefully though is a must — there are several important pieces of information that will help you out later on as you play the game.

You begin in a dream of Paradise complete with apple and temptation but will soon find yourself in the huge Pleasure Dome where many of Enoch's unemployed pass their time. Moving on and almost is simple enough that to be sure that you'll need some map-making gear to hand.

As for ET the Eden transport system, going round Spagheri Junction is a random 13 would be a breeze compared to sorting this one out! And of course you need to see it out to get anywhere useful — including your own Habikome sweet Habikome. Still, with a little maths, some thought and a lot of swearing (it's a bloody long time since I did my degree) this is what

you get on — I think:

There are three transport grids, north, east and west. Your position on each grid is fixed by a seven colour code (a la Spaceball) which can be turned into a number using the electronic "colour code" (don't it say, the first colour/number tells you which grid you're on and never changes). To make you know which colour corresponds to which ET grid you can forget it. With me so far? Good ...

Circles

New picture a huge dial board with not twenty but one million numbers round the edge and twelve locations from this edge to the centre of the board. You could always walk around the edge until you reach your desired exit but you'll probably die of old age before you get there. Fortunately there is the easy way ... The bigger a circle is, the longer the outside edge (circumference) goes. So if you walk around the edge of a smaller circle you move through more of the 360 degrees of the circle. Does that make the right choice? So the easy way to get to higher numbers is to move north towards the centre of the grid and then east or west towards the exit you need. If you go too far you can move out towards the edge again so you cover less ground with each move. A little practice should give you the idea.

Once you've sorted that out, life is much easier but you'll still need your wits about you since you score points for doing some odd things around Enoch but those with a social conscience and the right handshake should go far!

I'll say no more, not until you've had the



game, since every right thinking individual will already own it — **Worm** is a true landmark in adventure gaming.

Last for this month is **Neverending Story** which, correct me if I'm wrong, is Ocean's first foray into the adventure genre proper and boasts a graphic text adventure approach.

I like the title, the game is concerned with saving the land of Fantasia from the 'All Consuming Nothing' which is slowly spreading through the land unless someone from the 'Real World' will believe in Fantasia and renew its life.

You play the small boy **Atreyu**, picked by **Carlton** the physician as the only one who can find the answer of Fantasia.

The game itself is over 100K of code and needs to be played in three parts which are loaded as you reach them. You must complete part one before the game will allow you to move onto part two etc. Beware! You will need some items you find in part one in part two etc. so be sure to carry any items you haven't used along just in case.

Comments are entered in the old word/room style and the vocabulary is VERY limited. Happily, all of the verbs that can be used seem to be listed on the cassette inlay and the objects that can be manipulated stand out clearly in the text.

Quicksave

The graphics in the game are quite simply magnificent and among the best I've seen on the 64. They really do enhance the game and not at the expense of locations — there's loads to explore and quite a few problems to solve.

Now the rub — if you happen to get killed in part two — and the chances are very numerous — then you must reload part one and replay it and then load part two to get back to where you were! Because of the way loading is prompted from within the game there is no facility to save. Being rather old and irritable this soon gave me the hump but if you've got more patience maybe you'll see it through to the end!

Neverending Story is a very good game with its fan spotted for me by the constant re-loading — a QUICKSAVE feature saving a position in RAM and Activision one would sort this out as, for the lucky drive owners, a quick loading disk version.

That's it for this month — **Wishbringer** has only just arrived in my covary little hand and I haven't got the room left to do a justice so I'll feature it next time. I'll also be going through a preview copy of the **Nauro Quest** from St. Brice's School. ■

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The nets tangled

*Micronet 800 or CompuNet — which service do you need?
David Janda helps you to make the difficult choice*

THERE ARE numerous modems and software packages available for accessing Micronet, which is a Viewdata type database. Modem House, Tandata, Pace and Miracle Technology produce 'packs' that include the communications software as well as the modem. Most of these manufacturers include a free quarterly subscription to Micronet as an added incentive to buy their package.

CompuNet, however, must be accessed with the CBM modem which costs £79.99. Communications software on Bases inside the modem includes an editor for preparing mail off-line.

The good news is that a free program on CompuNet allows the modem to access other Viewdata databases. Another free program enables users to chat to each other and transfer software. Other programs can be purchased on CompuNet that allow the modem to access scrolling type databases. It's even possible to buy the Mustang package from Micronet, thus enabling CBM modem users to access Micronet/Printed.

Registering on Micronet normally takes ten days, and you'll be sent your ID, mailbox number, personal and local Postnet telephone number through the post. There is no initial payment to make, and the quarterly subscription is £6.50 together with other costs incurred in sent on a bill separate from your phone bill each quarter.

A year's basic subscription is included free with every CBM modem together with a registration form and bank mandate. The basic subscription is limited and doesn't allow users to purchase software. I would recommend 'upgrading' to a standard rate rate, which costs a few pounds more each quarter. The bank mandate is in order to provide you with credit to purchase software/packs on the system.

The Printed/Micronet structure is simple. Numbered pages — called frames — consist of 23 lines by 40 characters and include colour and low resolution graphics (80 by 70). Other effects including double height, fading and hidden text are also possible.

Moving about Micronet is achieved by numbered options. For example press 3 for news, or by going directly to a page by entering its number. There are no commands as such, because different features are

accessed by going to a specific page and keying numbered options.

CompuNet's structure is based on directories. Each directory is numbered and gives a title. Accessing a directory can be done by selecting the GOTO command from the dashboard menu and entering the directory number. Each directory has other directories leading to and from it, and other commands are used to select the previous or next directory.



Entered within a directory can be downloadable programs, text/graphics, special lists/programs or other directories.

Printed's free electronic mail enables Micronet subscribers to send mail to any other Printed subscriber by entering their mailbox number together with the message. A subscriber is informed that mail is waiting whenever they log on to the system. Up to five messages can be stored, and an international rates service is also available.

Two Chatline services allows subscribers to send messages which can be read by anyone using the Chatline. Dataphone allows readers to flip forwards and backwards through messages, while the faster Quickchat operates the previous message when a new message is sent.

Another method of spreading the word is with Gallery. Frames can be listed on a quarterly basis and used to upload text/graphics of whatever you like — as long as it's not abusive!

CompuNet's courier service enables subscribers to send mail to any other subscriber. A mini-mailbox is possible because an item can be sent to five subscribers at once. A mailbox is displayed on

the logon page if mail is waiting for you, otherwise a MAIL prompt is displayed on the next directory you go to.

Chat online is a 'gathering place' for those who wish to chat together, with messages being uploaded onto a specific area for all to see. Partyline is a new development which enables up to eight users to chat together.

The screen is split into two areas: the top shows messages just up for other subscribers while the bottom part of the screen is used to display the message you are entering.

If you can afford it, subscribe to both services; they are worth it! However, you have to make a choice; then consider what your needs are.

Micronet provides a service with a lot of editorial content. Besides the teleframes, chatlines and online options, there are software/hardware reviews, features, news items, interest columns and so on. In other words it's all there for you. You can be assured that there is always going to be something different to look at on a daily basis.

CompuNet is quite different. The users tend to be a bit more technical and CompuNet really is what YOU make of it. This is because there is very little editorial content in good things in some ways. Users are left to upload their own text and programs in an area called The Jungle. On the one hand it results in a lot of confusion for the first-time user trying to get the feel of CompuNet, on the other it provides the reader with some very stimulating reading.

Whatever service you choose, you'll be introducing yourself to a completely different aspect of computing — have fun!

David Janda can be contacted on the following services: One-to-One (1407001); Micronet: 919992477; CompuNet: D.JANDA.

For more details of the services, and available custom hardware and software, contact Micronet 800, 01-278-3143; CompuNet, 01-963-8986; Pace, 0274-892211; Tandata, 06881-88421; Modem House, 0970-88299; Miracle Tools, 0673-216041.

The CBM modem can be purchased direct from Commodore or CompuNet, and the Mustang Viewdata software (for the CBM modem) can be purchased from Micronet 800. ■

WAR MA

ARGUABLY, Man has been playing wargames since the first game of chess, and they have developed over the years to form two main types: The miniature wargame which uses models as the playing pieces, and board wargames which use much more economical of space, since smaller scales can be used and thousands of troops represented by one counter a miniature squad. Now there are computer wargames too.

Wargames are usually played to strict rules and combat is resolved by reference to charts and tables of figures — just the sort of job handled accurately and quickly by a micro.

One particular software house in the USA, Strategic Simulations (SSI) has been producing excellent war and strategy games for Commodore machines for several years now. Its most quality US software, with price tags around the £40-50 mark, not many people were able to pay to play.

In steps our hero — US Gold's exciting **Combat Leader** and **Battle for Normandy** on our screens at bargain prices with other SSI titles promised for future release.

Company based (SSI) software has joined the wargame scene with its commercial **Theatre Europe** and has followed up with **Battle of Midway** and two new games, **Battle of Britain** and **Falklands 82**.

Combat Leader is an excellent tactical game based around modern tank and mechanised infantry platoons.

The game is played on a vertically scrolling map which consists of dark green features on a pale green background. Hills, trees and depressions form the terrain. Unfortunately, both friendly and enemy units are also displayed in dark green making them hard to distinguish from each other or from the trees when in cover. This is the only criticism I have of the game though since the attention to detail (especially SSI) and the variety of options given the player are virtually limitless.

The game options range from a novice game for the complete beginner, an intermediate game and a selection of advanced games, each with a different objective. Various units of mechanised infantry, rifle, armour, machine gun and anti-tank platoons, can be deployed for some exciting firefights.



Military simulations on the 64 can turn your micro into a battlefield. Ken Matthews fights his way through some of them.

If all of the above isn't enough you can construct your own scenarios from scratch with a huge variety of terrain and game elements using vehicles and situations from World War II to the present day.

Combat Leader is an excellent introduction to tactical tank/infantry battles.

The second game you in Hawthorn's place is **Supreme Commander** of the largest



armies in the history of warfare, with the task of getting the line held to allow the Allies to sweep east and liberate Europe.

The whole of the Normandy peninsula is represented in the many screens of the game and you have 33 Allied Divisions at your disposal. You have until the end of June to occupy Cherbourg, Caen and the road network around St. Lo. Extra inventory funds and money units destroyed will give better victory points.

Once again the game is very accurate in the historical sense, and a great deal is made of the very intricate problems of keeping the huge army supplied and supported.

Allies

Although, as I've said, the authors have taken great pains to include as much historical detail as possible, you are given the option at the beginning of each game to change various features to make the details (required) game playable for a novice or intermediate player. The manual thoughtfully gives some suggestions for these changes which won't ruin the experience of the game by making it too easy/dumb.

You can play against the computer or a

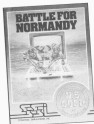
human opponent but there is no facility for the computer to play the Allied role. The game has a Save feature and a handy reference chart given you an at a glance guide of what's going on.

Microgame software have become known, via US Gold, for some pretty popular flight simulators but their two latest games have got me by the throat.

The first of these, **Crossed in Europe** is a real military masterpiece treating the five battles from the World War II liberation of Europe.

The five scenarios the Normandy landings and subsequent battles. The approach to the game though is very different. It is played on an extremely large and colourful scrolling map of the whole of north western Europe from Normandy to the Ruhr, although some scenarios limit the amount of map you can scroll through. The scale is much smaller than the SSI game, so it provides a much better strategic overview of the present situation.

A joystick can be used with the game to issue orders to individual units — very quick



ACHINES



a battle-commander's headquarters.
above All campaigns

and useful it is used. Another helpful feature is the ability to swap between the conventional system of showing the make-up of each unit in a small rectangular box and more evocative symbols like a villager for infantry or a flag for an HQ. This should help the newcomer a great deal.

Handling the units is quite easy, you just tell them where to go — no matter how far



the computer handles the rest by moving them according to terrain and how the unit is formed at that time. You can change orders at any time through which is handy if enemy reinforcements should arrive at the edge of the map behind your lines etc.

An units meet and fight you get an audible warning and sometimes a visual idea of what's happening. Of course you may be fighting off screen, but in that case you'll get a report from the unit on the message area at the top of the screen.

Supply lines are taken into account although not in as great detail as in the previous game — the computer handles it for you but you must be careful not to take on too much at once or units will run out of supplies even if a line of supply exists — a unit in combat uses much more ammo, fuel etc than one in reserve. You can provide alternatives to soften up enemy formations or destroy supplies but there is no facility for naval bombardment.

All of the details of each game and the historical background is supplied in the excellent, well-illustrated manual which weighs massive 200 pages but need not be all read before you play. In fact most people should

be able to play along while reading the manual and pick up the detail by experience.

In this first scenario no fewer than five options are available, such as the German-ruled quickly, or using Rommel's strategy. The other scenarios are: Race to the Rhine, Market Garden (Arnhem) and the Battle of the Bulge. Each of these have at least two options. All of the games allow you to play as Allied or German commander or against another human.

Finally, as if there wasn't enough, the last scenario *Crusade* allows you to play the whole European campaign from Normandy to the Rhine — to try it at least — a mind-boggling lot of programming!

Crusade in Europe is quite simply brilliant — by far the best and most enjoyable wargame I've ever seen on a micro — it's a joy to play and the range of difficulty levels allows new and expert alike to get many months of pleasure at a price to low you'd be insane not to try it.

Also out will be *Decision in the Desert* which covers five of the pivotal battles of the Eight Army in North Africa from 1942-43.

Since it is a follow-up to *Crusade* in Europe the mode of play is identical and the manual is just as thorough with some very nice maps.

The scenarios are well chosen to represent the changing fortunes of the campaign; Salt Bazaar where the British drove the Italians back to the west of Tobruk. Next is Rommel's attempt to push an back out of Libya in Operation Crusader followed by his final tour at Gazala. Fourth is the first battle of Alamein where Forward tried to push the British back to the Nile. Alan at Halfa marked the end for Rommel as the Allies picked up supply lines stretching from Europe across Africa.

There are five then, another masterpiece — a campaign game though but still plenty of meat to get your teeth into and the games are quite long so the pause and save features will come in handy.

Two optional games for us enthusiasts with more to follow including the Vietnam War and a chance for us to win where the Americans failed. I for one will be knocking on US God's door when I hear they've arrived.

Action

Back to the UK for *Battle of Britain*, PDS's latest in their Wargames Series.

Like their previous titles BOB seems to attempt to please, both arcade players and wargamers by combining action sequences and strategic planning — it doesn't quite come off, but if it's any comfort I found the aerial combat sequences better than most 'simulators'.

You can get rid of the action sequences though, and play on the map of England showing major airfield, cities and some radar stations. Enemy formations appear at the edges of the map and you deploy squadrons of fighters to intercept them. Your planes must land to re-arm after each combat, and only carry limited fuel so brightly patterns are one of the questions.

You must defend the cities or your rating will suffer but if your air fields are bombed you must divert you forces or chance suffering the loss of valuable fighters as you land.

There are three levels of play, Training for the novice which covers a day of campaign, Blitzkrieg which is also over a day but at a 'hell on wheels' pace. The Campaign game covers a month of battle with a daily re-supply of pilots becoming less skilled as time goes on.

If PDS intend to cater for wargamers I think they would do well to learn from the excellent material above, and use the memory space wasted on arcade sequences and music to production more detail in their games which seem to be very good, well thought out ideas let down by poor execution.



I thought there had been some improvement when I received *Falklands 82* from PDS, with Strategic Wargames Series on the cover.

The game takes place on a portion of East Falkland stretching from San Carlos Bay to Stanley. You can allocate the ships of the Task Force to supporting gunfire or protection of the Task Force. Your fifteen units must take on the twenty defending Argentine units and



liberate the various outcrops on the Island.

No arcade sequences, and the manual read rather well, but reading the game brought great disappointment — the map is all on one screen, and the units are flat. You can only move in four directions, whereas wargamers have been using hexagonal movements for years, leading to 'choking up' of units as they block each other off. Again a very good idea for a wargame has been let down by poor programming.

No doubt you'll be hearing more from me as new titles appear but until then I'm back in the advertisement page — once PDS drives the Germans back to the Rhine. ■

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Digital music making

Commodore's FM sound expander gives your 64 the power of a professional synth

THE SOUND EXPANDER does for the 64 what Yamaha's cheap synth module did for their CX5 Music Composer, turning it into a fully-fledged polyphonic synthesizer with very high sound quality. And there's no real substitute for hearing the sound Expander, because it is quite unlike any conventional 402-04 voice unit.

FM sound generation has revolutionized the world of commercial synthesizers with a new generation of clean, digital sounds, and the Sound Expander gives the 64 eight voices based on FM techniques. In fact Music Sales are buying in their FM chips from Yamaha, who hold a worldwide license on the technique.

The basic software on disk is rather simple, although there's more to come and three further packages will no doubt make the Sound Expander more useful on a professional level. The initial package is of the "Play-Along" variety, and can be controlled either from the popular Music Maker clip-on keyboard now available separately for £299 or from a full-sized four-octave keyboard of Italian origin costing around £85. Once you've loaded

DSS. Obviously many users will be more than happy just to play the Sound Expander as a normal synthesizer, although there's little control over the sounds except for an overall brightness adjustment.

If you do want to become more ambitious, there are twelve rhythmic accompaniments available, each with their own arrangement of bass and arpeggio patterns. The drum sounds are very life-like, although again there's little programmability available — perhaps this is to come. The software also has a section originally known as "RIT

charts" or "Rats" and there's also an option of flashing the border colour as the auto accompaniment feature plays — a sort of resistance light show.

The Sound Expander is impressive as a basic preset musical instrument — even the cheapest decent keyboard instrument costs four times more, assuming you already own a 64 — but its accompaniment facilities (while useful) are more or less for the keyboard beginner.

What's more exciting is the prospect of what Music Sales have lined up for the not-too-distant future. The Sound Expander module has a follow-on cartridge port and this will accept an input from a forthcoming touch-sensitive keyboard. It's also planned to design a Sound Creation package which will allow you to define your own FM sounds from the ground up. Reading University's Musictech department is collaborating on software development, initially to make sure that it is suitable for educational applications, and a pilot scheme is now running in seven schools.

The students on that scheme are going to come away



the disk and hooked up the phone output to a hi-fi (you can use a special lead to connect to a TV's video input if preferred) you're presented with a main page with various playing options — normal or single finger chord playing, octave transposition (vital if using the Music Maker keyboard), Ensemble On/Off for richer sounds limited to four-note polyphony, Chord Memory, Programmable Split point, Stereo and so on.

If you do choose to create a split point there's a separate "Lower Half" menu giving the same choice of sounds — Brass, Electric Piano, Organ and so on, all having the very high degree of life and realism associated with Yamaha's FM synthesizers such as the

Machine" which includes a couple of complex drum tunes but which also allows you to program your own chains of preset sequences. All you have to do is tap in the sequences from the computer's 1-10 keys (on the Music Maker keyboard if you're using one) and the software arranges them for you. The riffs are written so that they'll combine well in almost any order — it's a musical Lego set.

Lego has its limitations though, and while the RIT Machine is impressive in operation, its appeal is likely to wane after a few years. However, Music Sales hope to be delivering an FM Composer package which will allow you to create your own pieces using up to eight different monophonic sounds simultaneously, rather like the Yamaha CX5 software.

One advantage of the existing Sound Expander software is that it could act as an educational aid. All notes played on the keyboard are shown on a screen display representing a music staff, and presumably this display will be further employed in the forthcoming compositional software. You can change the display mode to show either



with some very good basic ideas on FM sound, a handy split-keyboard musical instrument, and either a deep respect or an eternal longing for one-finger chord, lousy automatic harmonies. It's worth checking out the Sound Expander to see exactly what you could get out of it. ■

Product: FM Sound Expander
Manufacturer: Commodore
Supplier: Commodore,
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 Widdow North End, Ltd.,
 Cony, Northants.
 NN15 2DQ 015.
Price: £99.

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More words per pound

Mastertronic looks set to turn the utilities market on its head with a new budget range. Ken Matthews tries the Ski Writer word processor

MASTERTRONIC has been developing a name for high-quality budget games software over the last year. Now they've taken a step into the utilities market, and acquired the rights to Ski Writer, a word processor originally sold in the USA for £79 and released here for a paltry £14.95 on disk or £11.95 on cassette.



Written by Ken Skiles, who helped develop both the Wang word processor and the Epson HX20 computer, the Ski Writer has received wide acclaim in the USA and claims to be so user-friendly you don't even need a manual. This also helps Mastertronic to keep the price down!

Using the sound logic of being able to proof software by testing by users, I was handed a disk and told to produce the results you see below...

"High quality", "a gem", "I was amazed at its speed" enthused the American reviewers, and I must say I agree entirely. I felt at home with the program as soon as the main menus appeared, and had help for its charms a few hours later.

Most important for the new user, help is just a keypress away; the instruction screens give clear, simple instructions to get you started. If you've used a different word processor before, the new user section will show you the main differences and points you to three sample files to illustrate features of the program. You can even change the background and type colours to find a combination that doesn't strain your eyes.

The program is so easy to use that you can 'cut' over 8000 words and type away. Each

feature of the program, edit, format, preview, print and file has its own help function to help you pick things up as you go along. Underlining, custom layouts, word search and replace, merge text etc. etc. are all there for you to experiment with, as you please. The sample files provide worked examples for easy reference.

Formatting is a breeze, and allows the user to make all sorts of changes within the text itself by use of what the program calls 'dot lines' which are short commands that begin with a full stop. You can use dot lines to set margins and page length, spacing of type, headings and comments which don't appear in the text. These features will produce a very professional looking document.

Preview

To save you time and paper the Preview function lets the user see just how the text will look when printed out.

Getting down to the printed itself, the Ski Writer supports the full range of Commodore printers and many other popular makes, although you may need to refer to your printer manual to answer some of the questions the Ski Writer asks you when setting up ready for your particular machine.

You can save your works to cassette or disk as you choose, but obviously disks were designed with this sort of task in mind and prove a lot more flexible in handling files. The software will handle formatting or deleting for you, and even arrange your files into

alphabetical order. The MERGE facility means you can combine several files into one large document or insert parts into other work.

There's really not much more to be said. If you are taking advantage of Commodore's special printer offers, and you're any type of paperwork to produce, Ski Writer is the ideal word processor for laptop or back alike — just pop it in the drive and away you go! It would be a bargain at double the price.

Ski Writer is the first of a series of utility programs from Mastertronic, who hope to do the same in this field as they have in the games market: make a success of offering inexpensive, quality software with no frills, and selling in vast quantities to make up for the decreased profit margins. Major retailers such as Boots have already expressed interest in the Ski Writer package, and the forthcoming database and spreadsheet programs. It seems that Mastertronic will once again stir up the market just when it seems that all the other software developers are giving up on the 64. ■

Program: Ski Writer
Micro: C64/64
Supplier: Mastertronic, 8-10 Paul Street, London EC2,
01-277 6886
Prices: £13.95 tape,
£14.95 disk

File handling

MSX BASIC here for more than a brief mention of a specialised accounts program from Dialog Software. The Transact Book-Keeping System includes sales ledger and invoicing, purchase ledger, stock control and home accounts sections, and comes on disk for the 64 with a separate manual for each section.

Transaction Files simulates the manual entry books, and has optional VAT routines. The accounts file acts as a Nominal Ledger, and can cope with 100 accounts. Full software support is available to registered users.

The complete package costs £79, which Dialog claims is a saving of £79.75 on the cost of such programs separately. There is also a cassette version available, and a similar offer is being made for Dialog's Plus/4 range of programs. For more details contact Dialog Software, 20 New Square, London WC2N 2LA, or phone 0171 811809. ■



Rob Hubbard — the master of micro music

Tony Reed travels to Newcastle to talk to the man whose music programming has squeezed sounds out of the 64 which shouldn't be possible with SID!

IT'S NOT original to remark upon a similarity between the world of top game programmers and the world of pop music — both with their charts, their overnight success stories, and their sudden failures. But the particular case of Rob Hubbard fits the cliché better than most. Uniquely amongst UK programmers, he has made his name, not through writing the best big thing in platform/computer/advent area, but in writing the music accompanying them. And what made it in on iterations like *Crystal's Mystery on the Run*, on *Commando* from Elite, or *Marion's Crazy Cannons*, the 64's poor little 3-voice SID chip suddenly brings forth great-sounding 3 or 4-part, original music, doing things you never thought it could. Hubbard's name on a game these days is a virtual guarantee of a great soundtrack, though not necessarily of anything else. So how does he do it? Quickly, apparently...

"...Anyway, I got a call from Billie the Wednesday evening, they dragged me down to Birmingham on the Thursday, booked me in a hotel room with a machine and a really terrible monitor at about 10 o'clock in the morning — and I finished the music for *Commando* at about 8 o'clock the following morning. I still haven't seen the version that's gone on sale!"

Commando

Rob's native Yorkshire has it overlaid with a *Commando* fever, the result of spending the last nine of his thirty years to date in Newcastle (though continuing success makes an early move to London ever more inevitable...)

"That's about the fastest, start to finish, that I've ever done. I'm still quite pleased with the main theme, but the Hi-beam race, which I wrote at 4 in the morning, really sounds like the kind of thing you put on at a party at 4 o'clock in the morning!"

In the case of *Commando*, Rob was at least

shown a demo version of the game. Sometimes, he's not even that lucky:

"I'm working on one at the moment, provisionally called *Master of Magic*. It's being written by Richard Darling for Microtronix, and all I know about it are the three adjectives he used to describe it to me over the phone: 'Sorcery! Wizardry! Medieval!' Not a lot to go on, but it's musically the most complex thing I've done so far."

Given the opportunity, though, Rob usually takes about two weeks to complete a soundtrack.

"Off and on, not working continuously, I usually get up, chuck some coffee down me neck, switch everything on, and sit at it until my brain starts coming out of my ears. I go to bed for an hour, have something to eat, watch a couple of hours of garbage on the TV, and stagger back again — sometimes for 12 or 14 hours a day, if I'm not playing with my band!" (Rob manages to fit a little busy-making with a local club band in between backing sessions.)

The more time Rob gets to work on a program — and, more importantly, the earlier he becomes involved in the writing of it — the more "integrated" the results tend to be, as his work on forthcoming *Phynked* game, *Gerry The Gem*, demonstrates. Rob was supplied with a 'demo' version which let him see all the screens ("Just as well — I'm useless at games — when I was working on *Thing on a Spring* I managed to doctor it to make it easier for myself — and I could still only get a couple of thousand points!").

Gerry The Gem, which involves travelling around inside a human body, has afforded Rob the opportunity for some pretty disgusting sound effects (such as for the bladder and bowels) and offbeat audiovisual bits (like a stunning 'stair' sequence complete with elevator, and the clack of wheels over track.)



"Basically," he explains, "You have to take your pick — either you have a 'soundtrack' running all through the game, with maybe a few effects thrown in at the right moments, like the motorcycle race in *Commando*, or you have sound effects for every little thing that happens, and no music. Usually, you only have about 3K for all the music and sound effects anyway. I think most times I've ever had was 6K, and I have squeezed into 3K before now, so you have to be choosy." In *Commando* there is so much happening on screen all the time that if you had sound effects for all of them, they wouldn't be any point in having any music...I generally do both music and sound effects, though. Despite the fact that people seem more interested in the music now, so at least the client has the choice if they want. It varies from job to job — on *The Human Race* for Microtronix, all the 'jungle' noises and sound effects had already been written, which left me with only two



pushed a beatered Frank full of band gear through what high snow at 4 o'clock on a January morning?"

Your best TV act currently airing Rob's "concept musical" *Wack*, "about life, society, and the whole bit, y'know?", but it is now competing which offers him his most satisfying — and lucrative — creative outlet. Ironically, since Rob bought his first machine to keep almost of the impact he could see computers having in music. He was considering the now-forgotten Memorex (How history would have been changed if he'd bought it...) but when the price of the Cid dropped that first time to the \$250 mark, Rob, intrigued by it's musical facilities, took the plunge.

Competition

"I was completely self-taught, starting off like everyone else with Basic graphics routines, but the great thing about the 64 is how it encourages you to get into machine coding. I think I wrote my first machine code routine after about two months."

From the very start, Rob had an eye on the commercial applications of his new hobby.

"At the time, about 3 or 4 years ago, the games boom was at its height, and there was no decent educational software about at all. So I wrote two or three music related programmes — Pitch training, sight reading — and sent them out to companies. No response.

"Then it occurred to me that there were specialist graphics programmers — why shouldn't there be specialist music programmers too? That's when I decided to get on show. I gave my breakthrough games over *Comedian* and *Misty* since then, I haven't had to look so hard for work." He laughs.

Does he ever worry about the whizkid competition, I wondered?

"As far as music is concerned — not really. There are a couple of people I respect — the guy from Ocean who did *Hyperspace*, the American kid who did *Masters of the Lamp* and *Activision's Book of Rats*. It's good, that I broke into the games to see how he did it — if you've got a machine only monitor and enough patience, then you can break any Turbo — and, from what I can gather, his coding is really inefficient — he just treats the music like any other data, loads of the information each time the every sound, which uses up huge amounts of memory. The system I've developed is very efficient. Musical data — pitch, duration and so on — goes in on one routine, and the actual sounds on another."

One of the strongest features of Rob's best work is the way in which the music enhances the atmosphere of a game — listen to his somber theme for *Masters of Magic* and you'll see what I mean. Does his musical training help?

"It certainly. One of my early games seemed to call for a 'folksy' feel, so I went out and got an album of Bluegrass fiddle music, and a couple of song books." (Rob played me the song, complete with finger-pickin' banjo and stunningly realistic bow-down fiddle. I was, ahem, impressed)...

for instance, on *Masters of Magic*, I've been looking at a few musical scores to help with the feel. In general terms, though, it's fairly obvious what to go for. One of the games I'm working on should be out in time for Christmas, so I've made all the tunes in it Christmasian."

Does his own taste in music influence what he writes?

"My tastes are very wide, but I make a point of listening to the Top 40 every week. After all, most of these games go to young kids, so what's the point of putting in some obscure classical piece? They need to hear something they can relate to...One of my favourite tunes, *Crazy Country*, was a sort of compromise between New Order, who I really like, and a typical funk thing using a sort of 'They here' sound, in all respects. Sometimes the tunes are totally original, sometimes, if inspiration doesn't strike, I adapt things, change them, make them my own. *Misty* was like that — I started out as the theme from the old radio detective show, *Dick Barton*."

Rob draws the line though at the recent trend towards direct transcriptions of arcade game tunes, or his records "I mean, what's the point? If you want to hear *Rabin*, put a record on. I felt really sorry for Tony Crawford over *View to a Kill*. When People have heard something so often, they're bound to be disappointed by a computer version. It's the same with the arcade games. They're very good in a way, pushing programmers to get as much as possible out of micro adaptions, but you have to be realistic. These machines have six or seven dedicated sound channels — you can't compete with that, you have to adapt, and get the best you can out of your machine." And how, since you mention it, do you do that? He laughs. "It takes me long while to develop my routines, and I'm not about to give them away!" (Rob hinted that one company which had made free with one of his demo disks might shortly regret having tried his routine.)



"Mind you, there are some great points that people might be interested in. I think the key for me was understanding how interrupt work — eight-bit persons of all games work on raster interrupts. I just made sure my music routines are run from there. Obviously as time's gone on, I've built up a little set of routines which let me do everything a lot more efficiently and quickly. I like pinball,

voices to do the music with. It was like doing it with one arm behind my back?"

"It's a quite funny," he adds, "I think too much emphasis is put on sound effects, especially in reviews. Clients say to you 'O.K. I want an effect for the bit where the arm drops off and hits the bottle.' Now, what are you supposed to do about that? If the sound doesn't sound right, then the review'll give you a slagging — which is missing the whole point. Of course with things like explosions or bullets, it's easy to make it specific, but generally I think it's preferable to keep things loose."

A relative newcomer to computers, Rob was still about four years ago, keeping things very loose, giving his trade as a professional musician, turning the skills gained from a lifetime's playing and three years at music college to a variety of musical jobs. "I've arranged for string quartets and pub-rock groups, worked as a musical copyist, and even

and use it a lot — a routine I developed while working on *Misty*. I also like things to sound rich, not stingy; I've got two parts with octaves, short and long, and a vibrato routine — between them, you can get some great sounds. Ring Mod and Sync are about the most versatile things on the SID chip though — hard to use, of course, because they take one of the voices, but they offer the best chance of getting distinctive sounds." My personal favourite is the very modern 'metal' drum which punctuates the *Zoids* theme. *Depeche Mode*, watch out!

Timing

"I soon worked out that as long as you keep everything going — the baseline, or a bit of percussion — you can 'read' the other two voices for a quick effect or impressive solo, without interfering with the music. On something like *Commando* I've taken it to ridiculous extremes — there's hardly a moment when the voices rest — voice 1 carries the tune, with the second and third voices filling all over the shop doing different things...though the impression of so many voices playing at once is helped by proper musical arranging as much as being a whizz at programming."

Could you describe the composition of a piece from start to finish?

"Usually, I start by tinkering around with that," he indicates a keyboard, and very basic Casio portable keyboard. "It's a bit of a discman, but it does the job, and it's dead portable. Or, I'll start by sketching a few ideas out on manuscript paper. The baseline goes down first usually, and maybe a bit of

percussion. Once I've got a line that will work out — and so had days, that one takes a long while — then I bring it into the machine, just looping round, and start to develop a little melody on top, adding it in while the baseline is still running. That's when I start experimenting with sounds too, using a big Master Source Code File I set up which can be edited while the pattern's running. Some of my best sounds, like the little 'voices' in the *Zoids* theme have come about from tinkering, happy accidents which I bang on at but obviously, having had a lot of experience of synths and things, I've got a good understanding of ADNR, Ring Mod, and so on... If I've got an idea for a particular sound to mind, I usually know how to go about getting it."

"With the basics worked out, it's a matter of feeding it up as it goes along, using available 'pops' to steal new textures for a moment."

Utilities

Needs are mentioned over the 'typical master system' he uses for all his work. No industrial base here — just a spare little room, a 34, disc drive, and a little black and white TV. Sometimes, he'll try it out through his (perfectly ordinary) M.F.I. and that's it.

"It's like in a recording studio, when you listen to the final cut over tiny monitors — if a track sounds good then, you know it will where people play it at home."

The system approach extends to programming side: "I've got a couple of Turbo loaders for the disc drive, and Audiotek's *Track's*

Assembler package, but that's about it... I was very impressed with the Orpheus *Electromusic* music utility — with that, someone who knows what they're doing should be able to put me in the dustbin."

Had you ever considered a music utility yourself?

"No, because I can't think of any way to make my methods accessible enough to the average punter to make it worth while."

Arriva

What about the future? "Of course, as a programmer and a musician, I'm very keen to get my hands on an Amiga — "Fairlight compatible", 4-channel stereo — I'm trying to get as much technical information as I can about its sound chip right now... As far as the 64 goes, I'm probably going to carry on with Mastertrak; they now pay me over five lines per game when I started not getting! But I'm also keen to do other things."

I can now get the SID chip to do more or less anything I want, I don't think there's anything more cumbersome I can do with it. The next thing would be an absolute master game, with 10 or 12K set aside for sound, that bring very close synchronisation between sound and action, like a car game. I've made contact with a very bright young programmer in London who's been on the idea too — something like a Tom and Jerry cartoon perhaps. I can hear the music for it now..."

I hope it's not too long before we do. Thank you, Bob Heffernan — the first Commodore 64 pop star! ■

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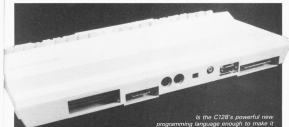
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is the C128's powerful new programming language enough to make it a more attractive prospect for the student of Basic? Tony Harrison-Smith looks at Basic V7.0

C128 – basically better?

MANY CLAIMS have been made for the programming power of the Basic 7.0. Are they justified? Over the next two months I will try to give you an idea as to whether they are true.

The C128 has three modes of operation, C64, C128 and CP/M mode. At this point may I suggest and suggest comments that CP/M will not run on the 1041 disk drive. The CP/M mode will perform ALL functions on the 1041 disk drive, even if it is at a slow speed. Having cleared up that comment, back to C128 mode!

Increment

To aid the writing of programs, the C128 Basic V7.0 has a few extra commands: AUTO, DELETE, HELP, KEY, REMEMBER, TRON AND TROFF.

AUTO will switch on or off an auto line numbering facility. This is very useful for the fast entry of programs. When using auto, the line number increment is set by the programmer to whatever value is suitable. A useful feature of this command is the rate at which a set of lines can be duplicated. Display the lines to be copied on the screen, switch on the auto line numbering and then renumber the first line to the new line number. When you Press returns to store the line, the next line on the screen then displays its new line number ready for you to press the return key. There is an anomaly with the auto command if you are using auto to enter some lines between existing lines of basic. When you come to an existing line it does not display the line's contents to warn you that you are overwriting it.

DELETE allows the deletion of lines of

program from memory. The start and finish lines for deletions can be set by the programmer. Using this command is obviously a lot easier and quicker than typing in each line number and pressing return.

KEY is one of the most time saving commands that has been added to aid programming. This command allows you to redefine the function keys, though this may not seem very useful at first glance. Use the command to reprogramme the function keys to most often used keywords or phrases. A lot of time will be saved by using the single stroke function keys to print a string of characters. Key has another function as well. If you just type in "key" and press the return then all the function keys and their assigned variables will be displayed.

RENUMBER is the last of the program entry aids rather than debugging aids. Renumbering a program has two benefits: the first is that the program will load faster; the second benefit is that renumbering creates space for insertion of extra lines. The renumber command allows either all the program to be renumbered or part of the program starting from a specified line. The new starting line number and the increment between the lines are set by the programmer. A word of warning: before renumbering always save the program. If during the renumbering the line numbers exceed 64000 the system may crash. If you have a large program then switch the C128 into fast mode for renumbering as it can take a long time to renumber. For the correct way of doing this see section 17, page 64 of the system manual.

HELP is the first of three debugging aids.

If a program stops with an error message, then either press the help key or type "help" and press return. The help function will display the line the error was found in, and highlight above the error was found.

TRON and TROFF are two commands used for switching on and off the trace function. It is possible to trace a whole program, but I do not recommend this as every time a line is executed the line number is displayed on the screen destroying the screen layout. The best way to trace a problem is to insert the commands into the program just before and after the suspected area.

Structure

This next section covers improvements to the BASIC for 'structured' programming, that is, not control or graphics, which will be covered later. There are many new commands in this field but they can be broken down into three areas: Disk, Structured and Programmer friendly commands. I will cover each area separately.

Disk commands have been added to the C128 because if you do not have a disk drive then you will under utilize the C128 by about 50%. As an example of this, there is about 15K of memory available for BASIC programs (variables are held in a separate memory area). Imagine how long the tape would take to load a 15K program, even with turbo loading! The disk commands added as the standard BASIC 4 type commands such as DLOAD etc. In total there are nineteen new disk commands available for use. These commands cover auto loading to relative file handling and disk house keeping.

Structured commands have been included to try and help teach better programming methods. The structured commands fall into two categories, looping and error trapping. To help with loops and 'if-then' Commodore has added **EASE**, **DO**, **LOOP**, **WHILE**, **UNTIL** and **EXIT**. The advantage of the loops is that by using the while and exit commands you can jump out of a loop without causing problems with stack addresses. The 'if-then' statement has been improved by the addition of the commands **IFLEN** and **IFEND** as well as **EASE**. Now an 'if-then' routine can cover several lines of program.

The second area of structured commands is the error trapping commands. By using the commands **TRAP** and **RESUME** and error conditions need not crash a program. The programmer has to plan ahead to find what correcting action is required on finding an error but this is just good programming practice anyway.

Control

Programmer Friendly commands are commands that have been included to give greater control over the computer. On the Commodore 64 nearly all the following commands could be achieved, but only through extensive use of pokeys and poles.

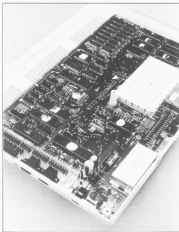
For easier pausing of the programme during running the C128 has two new commands, **SLEEP** and **GETKEY**. Sleep will pause the program by the number of seconds specified after the command. Getkey works like the usual get command but it waits for a key press before continuing. Another command that has changed slightly is **RESTORE**. This now can be restored to a given line number. For the machine coder's two new functions have been added (**DEC**) and (**INC**), these are used to convert between hexadecimal and integer and back again.

The major addition to my mind is the introduction of the **INSTRING** function. This allows one string to be compared with another and the starting position of the first string is reported. This is great for those commands where the first string is the selection and the second string is the master option. By knowing the position of the selection the correct substitution can be called. Other additions to the BASIC are windows and the reading of joysticks, paddles and light pens.

In this first article I have looked at the improved commands which aid the art of an amlay entering the program and debugging it. All told there are 56 core commands or functions for aiding programming. This does not count the new commands for graphics and sound. Of the 56 commands, 24 commands are additional even to the C16 and Plus/4 Basic.

My overall impression of the Basic V10 commands reviewed above are that the C128 machine is very much easier to program and use than the C64. It is a pity that procedures and a merge command were not included in the basic, but you cannot have everything, I suppose.

Next issue we'll look at the new graphics and sound commands which make it easier to control the SID chip and hi-res Graphics of the C128. ■



Space Snakes on the 64

The first part of a high-speed machine-code arcade game by Chris Woods

THIS IS the first part of a high-speed machine code arcade game for the 64 by Chris Woods. Since the listing is quite long, we are publishing it in two parts, so make sure you get next month's issue for the final section.

In *Space Snakes*, you control the grey spaceship using the joystick in part two. To fire your lasers, press the fire button and move the joystick in the direction you wish to fire.

If you hit a *Space Snake*, you will gain points, but to get into the next screen you must obliterate the green laser-like asteroids.

As you progress the number of asteroids will increase, and after the first screen deadly fireballs will appear. When you pass over snakes or asteroids your energy level will decrease, and when it reaches zero you will die.

You can speed up the game by pressing F3, or slow it down by pressing F5. To return to Basic, press F1.

To run the listing, first type in this month's installment and save it. Next month, load up the first part and carry on typing the second part. When you have done so, save the entire listing, then run it. The program will read in each line, check it, and put it into memory.

If there is a mistake in the checklist, the program will tell you which line it is in and stop. When you have corrected all your mistakes and the whole program checks through without any errors (this takes around five minutes), you should save the program again.

To play, load the program and type 575 10304.

You are the last defender of your home planet against the *Space Snakes*, *Monsters*, *Asteroids* and *Minors*. Watch out too for the gaslight which will destroy you if you hesitate too long. Good luck! ■

```

10 FOR V=0 TO 144
20 LH=(80+10*V)
30 CS=0
40 FOR W=0 TO 19
50 READ Z:GOSUB 100:CS=CS+Z:POKE 16384+YR20+H,Z
60 NEXT W
70 READ CH:IF CH<>CS THEN PRINT"ERROR IN LINE":LN:END
80 PRINT LH:NEXT V
90 END

100 IF LEND<0:G2 THEN Z=-255:RETURN
110 ZH=LEFT$(Z,1):ZL=RIGHT$(Z,1)
120 ZH=(ZH+ZH*8+ZH*8)*8 AND ZH=(ZH-1)*8&ZL:ZH=(ZH+8) AND ZH=(ZH*8) AND ZH=(ZH*8)
130 ZL=(ZL+ZL*8+ZL*8)*8 AND ZL=(ZL-1)*8&ZH:ZL=(ZL+8) AND ZL=(ZL*8) AND ZL=(ZL*8)
140 Z=ZH*16+ZL
150 RETURN

160 DATA 20,96,42,20,62,48,99,01,02,08,06,08,20,36,40,20,19,43,20,36, 1414
170 DATA 41,20,11,42,20,08,44,20,08,44,20,08,44,20,08,48,20,08,49,20, 1717
180 DATA 47,48,20,07,48,20,08,49,20,04,49,20,04,49,20,09,49,20,04,54,48,05,03,09, 2147
190 DATA 04,09,19,02,09,48,09,19,02,07,43,09,03,40,12,40,20,31,40,02, 2149
200 DATA 06,48,18,08,20,02,40,40,00,40,40,78,43,09,06,05,09,06,00,40, 1922
210 DATA 10,02,03,40,20,03,40,09,08,06,08,03,03,03,03,03,03,03,03,03, 2351
220 DATA 40,03,20,40,09,08,03,07,43,02,09,09,07,20,46,42,09,20,09,20, 2269
230 DATA 40,40,20,29,40,09,07,00,09,40,40,12,40,00,40,45,00,54,20,20, 1657
240 DATA 03,43,02,45,45,40,20,43,29,20,31,39,30,35,20,43,20,57,49,49, 1233
250 DATA 44,03,03,03,06,21,30,00,20,09,02,04,05,09,90,07,07,09,08, 3075
260 DATA 30,03,09,01,03,09,09,09,01,07,05,03,03,04,00,07,07,07,09,08, 3076
270 DATA 04,09,01,09,09,07,05,09,08,08,20,20,07,07,08,19,08,03,08,06,09, 3010
280 DATA 07,48,09,08,05,08,08,09,09,09,09,09,09,09,09,09,09,09,09,09, 1820
290 DATA 07,05,07,05,09,49,00,05,09,09,18,05,07,05,07,05,09,05,04,05, 2511
300 DATA 00,08,40,06,09,02,00,40,01,07,05,08,06,01,07,05,09,10,03,04, 2507
310 DATA 05,09,09,09,01,07,08,09,09,00,00,40,40,40,40,00,00,09, 2531
320 DATA 09,20,20,07,1,40,02,00,00,34,40,00,09,00,07,40,02,00,30,42,00, 1990
330 DATA 42,00,07,00,02,00,30,42,00,44,40,40,20,03,42,00,00,09,00,00, 2237
340 DATA 00,20,05,42,29,03,03,45,42,00,45,42,09,03,09,16,09,02,09,19, 1750
350 DATA 09,01,09,00,08,08,13,09,43,40,09,41,00,09,40,40,09,41,09,09, 3449
360 DATA 37,40,09,41,00,00,20,09,07,05,30,42,00,44,42,00,06,00,33,42, 2157
370 DATA 06,06,00,33,42,09,09,09,09,09,09,09,09,20,07,1,40,06,06,09,10,09, 3610
380 DATA 06,30,42,00,44,42,09,01,05,09,09,20,20,07,1,40,06,06,09,10,09, 3007
390 DATA 42,00,44,42,40,40,40,41,02,00,00,00,07,00,04,40,00,00,00,01,47, 1797
400 DATA 00,30,42,42,09,06,09,00,00,00,11,42,00,00,06,09,30,34,42,00, 2403
410 DATA 42,40,09,09,00,00,34,42,09,01,00,30,42,00,09,09,00,00,09,09, 1902
420 DATA 20,03,40,09,09,09,00,00,00,00,11,00,34,42,00,30,42,00,20,42, 2502
430 DATA 00,00,34,42,09,00,09,00,09,09,09,09,09,09,09,09,09,09,09, 1277
440 DATA 00,00,00,00,00,14,14,14,14,14,14,14,14,14,14,00,00,00,00,00, 270
450 DATA 00,03,40,09,40,02,07,09,00,00,00,00,00,00,00,00,00,00,00, 3005
460 DATA 40,00,00,10,00,00,44,10,00,02,02,00,00,44,00,07,00,00,44,00, 2202

```



470 DATA 18, F5, 38, 2E, 3C, 44, 2E, 3D, 44, 2E, 3C, 44, 2E, 3F, 44, 00, D0, 3D, 60, 98, 2360
480 DATA 60, 99, 9D, 9F, 44, 60, 99, 3D, 60, F7, 99, 3D, 60, F9, 99, 76, 60, F9, 99, 98, 2362
490 DATA 96, 19, 9D, FF, 3D, CF, D0, F9, F2, FF, 93, CF, 43, 9D, 3F, 63, CA, 99, F7, 99, 2364
500 DATA 97, 3D, 15, 60, 9D, 6D, 60, F8, 67, 69, 6E, 6D, F9, 67, 69, 6E, 6D, F8, 67, 69, 6E, 2366
510 DATA 90, 6D, 61, 58, 6D, 63, D0, 69, 3D, 6D, 60, D0, 69, 14, 6D, 62, D0, 69, 6D, 6D, 2368
520 DATA 18, D0, F9, 60, 6D, 60, F9, 64, 6D, 1C, D0, F9, 62, 6D, 6D, D0, F9, 6D, 6D, 2170
530 DATA 26, D0, F9, 67, 6D, 2D, D0, F9, 6E, 6D, 2D, D0, F9, 6F, 6D, 27, D0, 2D, 02, 47, 2361
540 DATA 90, FF, 6D, F7, 4D, 63, 99, 48, 69, 64, 63, 96, 41, 69, 61, 63, 6E, 41, 6D, 63, 2330
550 DATA 49, 6D, 2C, 48, 6D, 29, 4C, F9, 69, 6D, 67, 4D, 69, 29, 39, 4C, F9, 69, 6D, 52, 1769
560 DATA 43, 9D, FF, 63, CA, 9D, F7, 6D, 14, 63, 63, F8, 43, 6D, 15, 63, 6D, F9, 43, 78, 2365
570 DATA F0, 9F, 6D, 14, 63, F0, 4D, 6D, 13, 63, 58, 3D, 3D, 47, 6D, 1C, D0, 6D, 1F, 3D, 2181
580 DATA 90, 6C, 6D, 61, 49, 6D, 6D, 6D, 9C, 49, 6D, 2C, 3C, 2C, 2C, 2D, 2D, 2D, 2D, 2D, 1760
590 DATA 29, 2D, 45, 4E, 45, 52, 47, 39, 39, 31, 39, 39, 39, 29, 29, 29, 29, 29, 29, 1762
600 DATA 53, 43, 4F, 52, 45, 3F, 3D, 3D, 3D, 3D, 3D, 76, 6D, F9, 43, 6D, 14, 63, 6D, F9, 1872
610 DATA 43, 6D, 15, 63, 58, 63, 6D, 6D, 18, D4, 6D, 7D, 6D, F9, 43, F9, 6D, CE, F9, 43, 2348
620 DATA 58, 6D, 6D, 51, 46, 2D, FE, 6D, 64, D4, 6D, F9, 43, F9, 6D, CE, F9, 43, 58, 6D, 2476
630 DATA 60, 52, 46, 2D, FE, 6D, 6D, 6D, D4, 6D, FC, 43, F9, 6D, CE, FC, 43, 39, 6D, 6D, 6D, 53, 2726
640 DATA 48, 2D, FE, 6D, 3E, 3E, 4C, 31, 6D, 6D, 4F, 47, CA, FF, 6D, 6D, 2D, 52, 47, 68, 2666
650 DATA 6E, CE, 45, F9, 6D, CE, CE, 45, F9, 6D, F9, 2D, 2D, 7E, 45, 6D, F9, 2D, 2D, 7E, 2326
660 DATA 45, 6D, 6E, 43, CE, 67, 4D, D0, F2, F0, 6D, 6D, 39, 4D, 6D, FF, 6D, 6D, 6D, 6D, 1942
670 DATA 6E, 6D, 61, D0, 6D, 61, D0, 6D, 61, D0, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 2340
680 DATA 6D, CA, 6D, FF, CA, 6D, FF, CA, 61, CA, 61, 6D, 61, 6D, 61, 6D, 61, 6D, 61, 6D, 61, 2360
690 DATA 63, FF, CA, 6D, 6D, CA, 6D, 6D, CA, 6D, 6D, CA, 6D, 6D, CA, 6D, 6D, 61, CA, 6D, 61, 1686
700 DATA CA, 6D, 61, D0, 6D, 6D, FF, 6D, 6D, 18, CA, 6D, 18, CA, 6D, 18, 18, 6D, 61, 1146
710 DATA 2D, 18, 64, 48, 18, 62, 48, 18, 62, 6D, 18, 61, 6D, 18, 61, FF, FF, FF, 6D, 18, 1463
720 DATA 61, 6D, 18, 61, 48, 18, 62, 48, 18, 62, 2D, 18, 64, 18, 18, 6D, 6D, 18, 18, 64, 494
730 DATA 18, 2D, 6D, 18, CA, 6D, FF, 6D, 6D, 61, F4, 6D, 62, 36, 6D, 6D, 6D, 6D, 6D, 6D, 1329
740 DATA 6D, 6D, 6D, 6D, 1E, 3A, 6D, 19, 6E, 6D, 15, 6D, 64, 36, CA, 6E, 58, 58, 58, 58, 6E, 2691
750 DATA CE, 6D, 3D, 67, 39, 6E, 6A, 76, 94, 9D, 9E, 67, 63, 64, 59, 6E, 6E, 6E, 6E, 6E, 2823
760 DATA 2E, 58, 6D, 16, 6E, CA, 9D, 1D, 36, 6D, 67, CA, 6D, 41, 6D, 17, CA, 6D, 6D, CA, 2D, 2130
770 DATA 18, F8, 18, F0, 6D, 2C, 48, 3D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 2099
780 DATA 6D, 2D, 2D, 45, 48, 3D, 6D, 2D, F8, 44, 6D, 6E, 61, D0, 6D, 39, F8, 6A, CA, 6E, 2691
790 DATA 61, D0, 6D, 9E, 61, D0, 6D, 6D, F8, 6A, 6E, 61, D0, 6D, 48, 6D, 18, D0, 6E, 2767
800 DATA 6D, D0, 6D, 6D, 6D, 6D, D0, 67, 6D, 61, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 2346
810 DATA 6D, 6D, 6D, 6D, CA, 47, 3D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, CA, 2342
820 DATA 6E, 6D, 6D, 6D, FF, 6D, 14, 6D, 18, 6D, 2D, 61, 3D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 2488
830 DATA 14, 5D, 2D, FE, 6D, 18, D0, F9, 18, 6D, 2D, 61, 3D, 6D, 6D, 11, D0, 6D, 6D, 12, 2174
840 DATA 5E, 6D, 3D, 6D, 6D, 48, 6D, CE, 45, D0, 2D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 2524
850 DATA CA, 45, 3D, CA, 45, 3D, 2D, 31, 45, CA, 6D, F9, 6D, 16, 6D, CE, 45, 6E, CA, 45, 3694
860 DATA 6E, 45, 3D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 45, 2858
870 DATA 6E, 18, 76, 61, 45, 6D, 61, 45, 6D, 6D, CA, 45, 48, 18, 7D, 3D, 45, 3D, CA, 45, 2701
880 DATA 6E, C7, 45, 6E, 6E, CA, 45, 6C, CA, 45, 6D, 6A, 6E, 6A, 6E, 2D, 6D, 6D, 6D, 2647
890 DATA CA, 45, 6C, CA, 45, 6D, 6C, 45, 2D, 6D, 48, 6E, C7, 45, CA, 3D, CA, 6D, 6D, 6D, 2488
900 DATA 6D, 2129
910 DATA 61, 6D, 6D, FF, FF, FF, FF, FF, 6D, 61, 61, 6D, 6D, FF, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 1817
920 DATA F2, 3D, F9, 3E, 6E, 27, 64, CE, 27, 64, D0, 2F, 6E, 27, 64, CE, 26, 64, CE, 26, 1929
930 DATA 64, D0, 24, 6E, 26, 64, CE, 26, 64, CE, 26, 64, CE, 19, 6E, 26, 64, CE, 24, 64, 1851
940 DATA CE, 24, 64, 26, 6E, 26, 64, 6E, 24, 64, 6E, 23, 64, CE, 23, 64, 6E, 6D, 6D, 6D, 6D, 1665
950 DATA 6A, 6E, 6D, 6D, 61, 6D, 64, 24, 6D, 6E, 23, 64, CE, 23, 64, 6E, 6D, 6D, 6D, 6D, 6D, 2099
960 DATA 24, 6D, 6D, 6D, 18, D4, 6D, 64, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 2134
970 DATA F0, 6D, 3C, 2D, 1F, CA, 9F, 6D, 18, 6E, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 2181
980 DATA 6D, 3C, 2D, 6E, 47, 6D, 4F, 47, CA, 6D, D0, 2D, 6D, 6D, 6D, 6D, 47, 2D, 2F, 4E, 1838
990 DATA 6E, 5D, 47, 6E, 51, 47, 2D, 5D, 45, 2D, D0, 41, 6E, 6E, 45, 6D, 6D, 6D, 45, 1888
1000 DATA 6D, D0, F9, CA, 3D, F9, 6D, 4F, 47, CA, F9, 2D, 2D, 2D, 2D, 2D, 2D, 2D, 2D, 2D, 2D, 2684
1010 DATA 4E, 4E, 5D, 47, 6E, 51, 47, 2D, 5D, 45, 2D, 2D, 4E, 4E, 4E, 4E, 4E, 4E, 4E, 4E, 4E, 4E, 1739
1020 DATA 14, 2D, CE, 45, 6D, D0, F9, CA, D0, F9, 6E, 6E, 49, CA, 6E, F8, 49, 6E, 6D, 34, 2675
1030 DATA 6D, 6D, 6D, 48, 6D, 6A, 6D, 61, D0, 3D, F9, 27, 6D, 64, 48, 6A, 6A, 6A, 6A, 6A, 6A, 1886
1040 DATA 6A, D0, 6D, 58, 4D, 6D, 18, 3D, 6D, 6D, F8, 6E, 49, CA, 6D, F8, 2D, 61, 6E, 2654
1050 DATA 6E, 4A, 6A, 61, 3D, 6D, 6D, 6D, 4A, 3D, 6D, 6D, 6D, 6D, 6D, 6D, 4A, 6A, 6D, 6D, 1969
1060 DATA 6D, 6E, 6D, 6E, 4D, 6D, 4F, 47, D0, 2D, 6D, 6E, 5D, 47, 6E, 51, 47, 6D, 6A, 4A, 1969
1070 DATA 3D, 6E, 6D, 6E, 6D, 4C, 18, 47, 6D, 41, 47, 6D, 43, 47, 6E, 42, 47, 6D, 4E, 47, 2288
1080 DATA 6D, 43, 47, 6D, 93, 47, 6D, FF, 6D, 4F, 2D, 61, 45, 6D, 6D, 6D, 6D, FF, 27, 2225
1090 DATA 6D, 61, 2D, FF, 6D, 2D, 61, 6D, 2D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 1189
1100 DATA F5, 6D, 48, 6D, 6D, 48, 6D, 6D, 48, 6E, 5D, 47, 6E, 51, 47, 6D, 6E, 6D, 6A, 6A, 2011
1110 DATA 2D, 2D, CE, 48, CA, FF, 3D, 6D, 6D, 6D, 6D, 4F, 47, 4E, CE, 47, 6E, 18, 6D, 6D, 43, 2178
1120 DATA 47, 6D, 5D, 47, 6A, 9E, 18, 6D, 4E, 47, 6D, 31, 47, 6D, 6D, 61, 6D, 6D, 6D, 2D, 2112
1130 DATA 2D, 6D, 48, 6D, 6D, CA, 2D, F8, 6D, CA, 2C, F8, 6D, CA, 2D, F8, 18, 4E, CE, 47, 2477
1140 DATA F8, 6D, 6D, 47, 47, 6D, 2C, 6D, 2F, 43, 4E, CE, 47, 6D, 7F, 6D, 4F, 47, 6D, 2D, 2369
1150 DATA 6D, 2F, 43, 4E, CE, 47, 6D, 6D, 6E, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 6D, 2635


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669 XC=XC+LV+1:IFXACCTHENXC=XC+(LV*2)-2
680 YC=YC+LV+1:IFYACCTHENYC=YC+(LV*2)-2
690 POKE2040,193:POKE2041,192
700 IFX<30THENX=X+30
710 IFY<30THENY=Y+30
720 IFX<30THENY=Y+30
730 IFY<180THENY=Y+180
740 IFX<30THENX=X+30
750 IFY<300THENY=Y+300
760 IFY<300THENY=Y+30
770 IFY<180THENY=Y+180
780 IFX<300THENX=X+30
790 IFX<300THENX=X+300
800 IFY<180THENY=Y+180
810 POKEV,NA:POKEV+1,VB:POKEV+2,VB:POKEV+3,VB:POKEV+4,VB:POKEV+5,VB:POKEV+6,VB:POKEV+7,VB
820 IF(POKEV+V)>30:POKEV+3)=3THENG2000
840 IF(POKEV+V)>30:POKEV+7)=17THENG2000
860 POKEV+21,255:POKE2040,192:POKE2041,192
880 GOTO 500
1100 REM DATA BUTTERFLY - SPREAD WINGS
1110 DATA 0,0,0,0,16,4,0,32,2,0,64,1,0,128,0,128,0,60,66,60,127,36,254
1120 DATA 255,193,255,255,255,255,127,128,254,63,126,252,95,126,250,239,90,247
1130 DATA 255,126,255,127,255,254,125,255,190,53,153,220,55,68,236,20,60,56,0
1140 DATA 0,24,16
1150 REM DATA - BUTTERFLY
1210 DATA 129,0,0,129,0,0,66,0,0,66,0,0,66,0,0,36,0,1,165,128,1,165,128,1,33
1220 DATA 128,1,255,128,3,255,190,3,255,190,3,91,64,3,127,64,3,127,64,3,127,64
1230 DATA 3,219,192,3,255,192,3,255,192,3,255,192,3,153,120
1240 REM DATA "KIR"
1310 DATA 0,178,1,125,48,24,254,48,24,254,112,24,254,96,20,124,96,20,56,234
1320 DATA 124,192,14,254,192,15,255,0,7,255,0,1,255,96,1,255,96,1,255,96
1330 DATA 255,96,13,255,96,12,254,200,13,125,144,15,16,32,14,12,192,0,3,0
1400 REM DATA HEART
1410 DATA 0,96,7,129,246,31,195,246,127,231,252,127,231,252,127,239,254
1420 DATA 255,191,254,255,191,255,295,191,255,255,223,255,255,255,254
1430 DATA 127,247,254,127,251,252
1440 DATA 255,254,31,254,240,15,255,224,7,255,192,3,255,120,1,255,0,0,254,0
1450 DATA 124,0,0,56,0
2000 REM RUN OUT OF TIME
2040 PRINT"#####>>> YOU RAN OUT OF TIME <<<"
2010 FORG=1TO10:GOSUB3000:POKEV+21,0:FORH=1TO200:HENDT:POKEV+21,255:HENDT
2000 SC=SC+(60-VAL(CLE$))+CLV*10:HENTLV:GOTO4000
2100 REM SUCCESSFUL LIVE
2110 SC=SC+(60-VAL(CLE$))+CLV*10+200
2115 FORG=1TO10:POKE2040,195:POKEV+21,1:GOSUB3000:FORH=1TO60:HENDT
2150 POKEV+21,0:FORG=1TO60:HENDT:HENDT:POKE2040,192:LV=LV+1:TV=TV+1:HENTLV
2190 POKEV+30,0:GOTO4000
2200 REM FAILED LIVE
2210 SC=SC+(60-VAL(CLE$))-50
2212 PRINT"#####>>> KIR GOT YOU!!! <<<"
2220 FORG=1TO10:POKEV+21,0:GOSUB3000:FORH=1TO200:HENDT:HENDT:HENTLV:GOTO4000
3000 REM "PIP"
3005 POKES+5,5:POKES+6,6:POKES+24,15:POKES+24,15:POKES+1,129:POKES,135
3020 POKES+24,15:POKES+1,129:POKES,135
3040 POKES+4,17:FORG=1TO20:HENDT:POKES+4,16:RETURN
4000 REM END
4010 POKEV+21,0:IFSC>HSTHENH=SC
4020 PRINT"##### SCORE#",SC:PRINT"##### HIGH SCORE#",HG
4030 PRINT"##### NO. OF LIVES#",TV+3
4040 FORG=1TO5000:HENDT:GOTO300

```

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9. Asteroid	24. Tunnel Escape	39. Asteroid
10. Asteroid	25. Tunnel Escape	40. Asteroid
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12. Asteroid	27. Tunnel Escape	42. Asteroid
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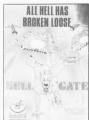
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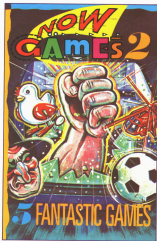
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Game creator

COULD you please advise me on which are the best program development aids for writing games of a commercially viable standard, and tell me where I can obtain them?

D O'Neil
Manchester

IF YOU want to write commercial games you must have machine code. There is no software package which will do the work for you, although the Microsoft Game Creator, and other similar packages, allow you to design graphics, write tapes, define backgrounds and so on, the results are not truly commercial. Find a good book on 6502 machine code and get hold of the Spectrum Miles Assembler (phone 01-881 1840), or look out for details of the new EDNA Assembler from Vics Software, 0634-45861. This new package is said to be faster than any other assembler on the market.

1520 in 80 lines

I HAVE connected my 1520 printer/plotter to device address 4, and am trying to print out at 80 characters per line using Keyscript. At the moment characters shown as lower case on the screen print out as upper case, and vice versa. The same thing happens with Wordcraft 40. Is there any means of correcting that?

B P. Bristow
Just Seven

FIRST, a point to clear up about Keyscript and the 1520. There is no need to change the printer/Plotter's device number by providing P1, 0, and P2, the command line will show "DEVICE NUMBER". You can then enter 4, and P to print out on the 1520. The change will not send the computer to rest or the option card up.

The solution to your

problem is to enter the following in direct mode before loading Keyscript:

```
OPEN 4,0 for OPEN  
4,0 if device number unchanged
```

```
PRINT "4,1 then insert the disk
```

```
LOAD"***.1
```

You will find this explained on page 27 of the 1520 manual, although some editors may deal with it elsewhere.

Tie a ribbon

WHILE using my MPS681 printer with my 64 recently, the print stopped appearing. The usual movements of the print head and needle matrix continued. Even using the self-test switch produced no result. Could this be a blown fuse, as the manual suggests?

Jim Davison
Poole

IT SEEMS more likely to be a problem with the ribbon. Check whether the cassette is still in place, with the ribbon properly level through the print head. If this doesn't solve the problem, try a new ribbon (of the Tektronix equivalent) which can be purchased from any good computer supply store. If you still have no luck, it might be that the print head has worked loose, and you will need to tighten it. Push the head assembly forward and tighten the two screws to either side, beneath the cassette.

If all else fails, you'll have to get the machine serviced, either by Commodore or through a local dealer.

Tape to disk

I HAVE recently bought a 1041 disk drive, but I already have many fast-loading games on cassettes, and I would like to transfer them to disk. Is there any way to do this?

Alan Edward
Chesham

YES IT can be done, by studying and altering the disassembled machine code, but as we've said before we won't give any advice on how to copy protected software, though you will see utilities advertised which will do this.



Fastest cassettes are, in any case, often as fast as normal disk programs, but you could try contacting the software companies concerned, many of whom will be prepared to exchange your cassette version for a disk copy.

Train of thought

I HAVE recently acquired a 64, 1041, printer and daisywrite, and I would like to transfer my manuscript and photographic records to the computer. Can you recommend a program which would fulfil my needs.

Noting in mind that BR has 3000 locomotives, in roughly 20 classes, each has a six-figure number, with a space between the second and third figures; some have the names, the longest of twenty-five letters; each has a home depot with a two-letter code; I have 3000 slides, increasing at around 400 per; the program must be able to access a particular locomotive, and add or delete and preferably the record should be able to indicate whether a particular loco has been "spotted".

B Lynton
Wrighton
Dover

THERE IS a limit on the number of records which you can store on one disk, and your requirements will exceed that limit. Although you could divide the records up into different sections on different disks, you will need

a pretty powerful package which will cost you around £30-£50. Try contacting Precision Software and getting some details of their Superbase package.

This has an option for a hard disk version, although this is very expensive and hardly included only for business use, you will find that hard disk is the only way to get your whole record system on one disk. Precision are on 01-330 7186.

Fixing Vics

I HAVE a Vic 20 but have been unable to use it for some time as I cannot find a shop in my area which can sell me a replacement power supply. Can you help?

F Storm

Arrow

TRY a Vic 20 Power Converter from their Curly headquarters, though the service is notoriously slow. They may, however, be able to suggest a local approved dealer who can carry out repair work for you much faster. Contact Commodore at 1 Hunter's Road, Writtle North Industrial Estate, Chelmsford, Essex, North Essex, 0636-385211.

Rampack problem

RECENTLY I bought a 10K switchable RAMpack for my Vic 20 (10K-30). Will I be able to use BR software? If not, is there a program which allows me to use it?

J J Moore
Dorchester

Northwich

YOU SHOULD be able to use BR software with the switch in the 10K position. The RAM available should be from 5000 to 8000, of which Basic uses 5120 to 8000. If you try to load a machine code program which exceeds past 8000 then it won't load, but it's highly improbable that any software producer would write a package which loaded past the expansion on which it's designed to run.

“dialog...”

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