

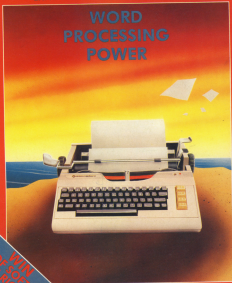
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The independent Commodore magazine

75p July 1984

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EDITORIAL

COMMODORE IS OFTEN attacked for the facilities it does — and doesn't — offer on its micros. One such broadside came from Kevin Yung in a club newsletter earlier this year; Commodore's marketing manager John Baxter resisted the attack, managing to fire off a few rounds of his own in the company's defence. The exchange certainly made interesting reading. The ICPUG newsletter has already published the two letters, which appeared originally in the SE region's newsletter, but they are revealing enough to warrant a revisit.

Kevin began by pointing to the Per's once premier position — and then explained how the specification for the BBC Micro, and the way that Acorn met it, dumped the Per from pole position. "The Basic on the BBC model gave food for thought. It was faster, bigger structured and standard — no plug-in cartridges required here. Commodore curried favour when the 64 arrived and we were stuck with yesterday's Basic. In fact neither that model nor the 6600 series came anywhere close to these new levels of performance." John Baxter viewed this one and came back with: "The Basic on the Commodore 64 was deliberately written to Basic 2 system in order to give compatibility with the large user base who still use Basic 2." But he added: "Some of your criticisms, however, are being addressed and you will see a much improved Basic on the 264 range" — the UK models in this range are now called the 16 and Plus 4.

Kevin continued: "Commodore and other manufacturers, though, seemed slow to appreciate the things that people were now getting for their money. Perhaps a brief reminder of some of them is in order." Kevin's list includes RS232 and Centronics options, built-in communications hardware, range of TV/monitor interfaces and a word/data character set — certainly enough to start your mouth watering for your keyboard fingers twitching if you prefer. Kevin argues that Commodore has fared badly "in all of the above respects". Over to John again: "Were Commodore to implement a machine with some of the BBC's better features, it would cost considerably more. . . . The Electron is a cost-reduced version of the BBC but unfortunately has little of the main benefits of the BBC. Why? — because that would cost money!" US analysis might argue that Commodore could build a more sophisticated machine and sell it for the same price as the 64. But you can't argue with John's sales figures: "In just six months total Commodore 64 sales in the UK exceeded the BBC machine sales by over 100%!"

Kevin went on to ask: "Why then has Commodore apparently left the business and industrial/scientific community?" To which John answers: "We have a number of new machines coming which will be shown at the Hannover Show in April for the first time. Wait and see — I'm sure you will then agree we haven't abandoned, and will not abandon, the serious and/or business computer user." Error, stage set, the C604 26000 Unix machine and the portable IBM PC clone.

If nothing else, the range of new machines Commodore is lining up, from the 16 at the bottom using Basic 3.5 to the Unix machine at the top, confirms the company's desire to compete in all areas of the micro market. But one of the main thrusts of John's argument, that "we make computers for the masses not the classes", may nonetheless lose impetus if the masses continue to get classes.

Sticky symbols

WITH REGARDS to readers' problems with the Commodore graphic symbols, I have just purchased a self-adhesive strip which can be stuck to your 64 or Vic 20, which details all the necessary programming symbols.

It's available mail order from LEO, 12 High Moor Road, Wincoburn, Dorset, BH21 2QZ, and costs £1.81. *M J Birch*
Exmouth
Devon

Infodisk update

I WRITE to clarify a few technical errors that arose in May's article on databases. First, I should point out that, contrary to the table, *Infodisk* can search by field and record; further, modifications to the file structure are allowed as it is always possible to add extra fields up to the limit. When he wrote his article, Mike Watts was unaware that a number of improvements to *Infodisk* were under way so that the newest versions now have a four-field sort routine, together with the facility to support virtually any printer as a Centronics interface is

now provided with the software.

Mike obviously has strong views about our manual style, but customer response has been very favourable. Clearly we are out of line with other software houses on our replacement policy, and we will be happy to drop our charging system from now on and supply customers with a back-up disk free-of-charge at the time of purchase.

Mark W Adams
Renov Software Systems
Sussex

Token gestures

EACH BASIC command has a unique token value, i.e. `END(126)`, `REM(140)` etc. It should therefore be possible to POKE these commands into a program listing under program control.

I found that the first line of a program could be modified quite easily as follows—
`10 REM 12, 13, 14, 15, 16,`
`17, 18, 19`
`19 INPUT "TOKEN`
`VALUE"; N`
`20 POKE 2053, N`

On running the sample program on a Commodore 64 you are requested to input a value. If 121 is input and the program listed you would find that it now reads—
`10 DATA 12, 13, 14, 15, 16,`
`17, 18, 19`
`19 INPUT "TOKEN`
`VALUE"; N`
`20 POKE 2053, N`

This can be repeated with any Token number from 128 upwards.

So what, you may ask, can we use this for? Useful

dynamic changes that spring to mind could be— (a) change to REM at beginning of line to temporarily skip the routines on that line, (b) change to DATA from REM — effectively generates a line of data that was not read before, (c) change to NEW — as a security measure if unauthorised use of program occurred, (d) change to STOP — halt program for debugging etc.

The uses are limited only by the imagination and of course the commands available.

I have tried this successfully on the following Commodore machines— PET — POKE 100, M 104 — POKE 2053, N ; VIC 20 — POKE 4034, N.

I am sure that with a little ingenuity, someone could suggest a way of altering any line in a program.

John Coselline
Faversley
Humberdale

Try for Tornado

AS A regular user of the Vic 20, I am constantly aware of the slowness in loading and retrieval of programs from the cassette unit.

I have read that the solution is to input a small program called Turbo (T) prior to loading, and loading will be 7 times faster. Can you tell me anything about Turbo?
B Lilley
Brighthelm

TURBO is a program used by games software houses. Asking — but you can use Tornado, which works with the Vic + 64 or the 64, from 800 Computer Services, 20-28 Bouverie St, London, phone 0700 148. Tornado costs 99.95.

V364 missing?

CAN YOU explain what has become of the V364, mentioned in your March issue?

There was no mention of this micro in the May magazine's article on the new

CBM computer show. Could you clarify?

Secondly, the simplest way of obtaining a key report on the CBM 64 is POKE 65812; and to turn off POKE 65812?

John Moore
Whitehouse
London

WE'RE STILL waiting for further news on the V364, and of course as soon as details are available we'll cover the machine in greater depth.

Chart success?

BEN ARROWSMITH said in your May edition that Commodore Horizons has two basic faults. I agree with him, I'm afraid — would it be possible to have a monthly chart for best selling Commodore software? Also, would it be possible to have ratings for new software releases, based on graphics, playability, value for money etc?

I hope I'm speaking for other Commodore Horizons readers.

Joe Latta
London

LET US know what you think of these ideas.

... lastly ...

SCAM/TURBO reverse graphics when printed in programs are extremely difficult to discern — particularly for the novice. The following solution works wonders: cut four rectangular strips of blank paper and tape them against the edges of the printed symbols, completely framing them. In this way even the most difficult symbol becomes easy to read!
M J Birch
Exmouth
Devon

This is the chance to air your views — send your tips, complaints and compliments to **Letters Page**, Commodore Horizons, 12-13 Little Newport Street, London WC2R 2JD



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Micro Power to the 64

MICRO POWER, a major producer of software for the BBC micro, is releasing its first batch of games for the 64.

There are four titles, which will be seen for the first time this June.

Micropower spokesman Christopher Payne said: "Each game will cost £6.95, and feature sophisticated music, graphics and sound effects. Some of the games are conversions of BBC originals, and at the moment we have programmers working on both the BBC and the 64 to develop further games."

The first four Micropower titles for the 64 are *Ghola*, *Pelix in the Factory*, *Cyberton Mission* and *Swamp*.

Ghola is a four-level game set in a haunted house, in which you negotiate platforms and unsafe floorboards while avoiding assorted spooky.

Pelix in the Factory finds you climbing ladders and leaping conveyor belts in search of fuel cans in a factory inhabited by monsters.

Cyberton Mission has 64 rooms each filled with dangerous robots — your task is to kill the robots and collect treasure.

Lastly, *Swamp* is an alien invasion game with a twist — the invaders lay eggs which fall to the ground and block the movement of your defending cannon.

All four games are joystick compatible, and feature a Powerloader fast loading system which is seen as a major selling point. "Kids don't want to wait 12 or 15 minutes for a game to load," commented Christopher, "so we feature the Powerload system prominently on all the new-style packages. Reaction from dealers has been very good so far, and we're hoping to do very well in the field of games for the 64."

AMES software prices seem ready to drop sharply, as reported in last month's *Commodore's* Marriages. Following the lead of Mastertronic, which claims to have sold 100,000 of its £1.99 games in three weeks, Ace Software has cut its prices from £6.90 to £2.99.

Spokesman Nicky Shephard said: "We anticipated cutting prices anyway, and in the face of Mastertronic's prices we decided to do it now. Like Mastertronic we are also in the video business, and we're developing (for some outlets) for computer games."

"Although we wouldn't cut prices to £1.99, since all our games are specially written, we can compete at £2.99. We save costs by not using wholesalers or distributors. Since the price out I'm pleased to say sales have shot up."

Ace's games for the 64 include *Pigs in Space*, *Wizarder*, *Island Control* and

Egypton, and there's *Quadmode* for the Vio 20. Further releases are expected in June.

On a contrasting note Atari, well known for the high cost of its game cartridges and cassettes, has announced a version of the arcade favourite *Pole Position* for the 64. The racing game should be ready by June, but the cost of the cartridge will be £24.99.

However, IG Programs of 23 Newell Tuck Road, Chippenham, Wiltshire, is offering the first of a series of Double A-side game packs for the 64, and hopes to release a similar pack every two months. The first tape, costing £3.95, features an outer space shoot-'em-up called *Galactica One*, and a boxing game for two players.

IG's Noel Pierce said: "The next pack should be ready in June, and will feature even better quality games. One of these will be a *Zaxxon* type

with a 3D scrolling background. The games will be available direct from IG for the moment, but we're looking for distributors and more programmers so that we can expand."

Microcode is to transfer many of its popular *Dragon* games to the 64. The *Cutbert* series — *Cutbert in Space*, *Cutbert Goes Walkabout*, and *Cutbert in the Jungle*, should now be available at £8.

Further titles include *Anna 2000*, a version of *Robotnik*, *Peopie*, *Quattro* and *Danger Ranger*. There's also *Sea-Team* for the Vio 20. Certain of the programs will also be available on disk priced at £9.95.

Dareid Software's next 64 game will be *Combat Linn*, a sophisticated war simulation so detailed that the armed forces are said to be considering using it in strategy training programmes.

All the news on the games front

Taking care of business

WHILE HOME computer users wait with bated breath for the release of the new CB84 range — including the 244, now retitled the Commodore Plus Four — CB84 has announced two new models in the business-type 8000 series.

The models are the 8296 and the 8296D, the difference being an optional integrated two megabyte disk drive. Commodore claims that no other manufacturer offers such large storage on a stand-alone floppy-disk system.

The new models are compatible with the whole 8000 series software range. Price for the 8296 is £795 and the 8296D costs £1495.

The computers feature 128K memory, high-res graphics, an 80 column 23 row integral green screen and compatibility with a range of printers and disk drives.



The 8296D — one of the models replacing the 8000 and 8008

WALKER

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GAME
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Coming up with the goods

COMMODORE International has reported record third quarter sales, net income and earnings per share for the period ending March 31st.

Chairman Irving Gould commented that "the primary contributor to Commodore's record results... was continuing strong sales of Commodore's micro-computer systems in the business, educational and home markets."

He went on to emphasize the success of the Commodore 64, and to note that he expected to see further growth in the remainder of 1984 and into 1985.

Meanwhile, Commodore UK has announced its latest set of software. *Music Writer* for the Vic 20 with 8K or 16K expansion converts the Vic's keyboard into a musical instrument. A score appears on the screen showing the notes played, and a variety of different sounds can be produced. The program costs £4.99 on cassette.

In the educational field, there are five new programs for the 64. *Hide and Seek*, designed for 4-10 year olds, is a visual memory game which offers you five different ways of playing, with a series of graphic representations of everyday objects.

Let's Count teaches numerical skills for 3-7 year olds, and *Face Maker* develops visual acuity. *Words, Words* builds up pictures of scenes like a beach, farm or forest, adding objects which are named by the child. The program is aimed at age ranges 5-8.

Perthometer is a Number Painter which is a math game with a strong graphical element set on a building site, and *PerfFinder* which teaches spatial orientation through four different maze-type games.

On the recreational side, kids can relax after all their hard work with *Arcade Extravaganza*, which includes five games for the 80-Megabyte, *Fantasia's Box*, *Pandey*, *Little Icons* and *Hampery*.

Vic and 64 get peripheral action

ONCE AGAIN this month sees a wide range of peripherals being announced for the Commodore machines.

ICB Microsystems has adapted the Dragon speech synthesizer for the 64. Managing director John Booth explained: "The £24.95 speech synthesizer plugs into the cartridge port.

"In 48, ROM adds four commands to CBM Basic — SAY, which causes the unit to say any one of 200 preset words SPEAK, which allows the synthesis of new words through alphabetic; ADD, which allows these methods to be combined; and WAIT, which determines whether the computer pauses or carries on working while it's speaking."

ICB is also working on a speech recognition system for the 64, which will either be used in conjunction with the speech synthesizer, or will reproduce digitised versions of your own speech. ICB has not yet decided which method is the more feasible, but hopes that the system will be ready by September.

Contact ICB at 29 Southbourne Road, Bournemouth, Bournemouth.

Voltaire has announced a 16-way programmable keypad and a joystick for the 64. The *Dataped 16K* plugs into the joystick socket of the 64, and comes complete with a program on cassette which enables you to specify the alphanumeric value of the keys. Keypads will be available in a number of alternative designs.

The joystick, the Delta JSC, is a rotary switched type with three top-mounted fire buttons. It has a spring return and finger-tip controls. The joystick retails at £10.95 and the keypad at £29.95. Contact Voltaine, Park Drive, Bullock, Herts.

Imper Design of Metro House, Beyond Way, Wembley, Middlesex, has announced the Display manager module for the Vic



Imper Design's Display manager for the Vic



Vidmate's programmable keypad and joystick for the 64

20. The module has 8K of ROM and gives the Vic an 80 column screen, terminal and communication facilities.

At the same time the Video Park 80 for the Commodore 64 is being released. It comes in the form of a plug-in cartridge with an 80 column screen expander and terminal emulator. The Word Manager and Film Manager programs are included in the price.

Cheap computer monitors are an offer from Doublemade which, with the help of a grant from the Irvine Development Corporation, has set up an assembly line converting ex-renal TVs into VDUs. The Doublemade VDUs are available in 20in, 22in and 26in screen sizes, and retail at £85 + VAT — a fraction of the cost of purpose-built monitors. Contact Doublemade at 36 Macdonald Place, South Newmarket, Irvine, Scotland.

Lastly, the long-awaited CBM modem is now in the

hands of some members of the users' group ICPUG. The modem, which comes as a self-contained cartridge for the 64 costing £29.95, is being evaluated before the full launch to iron out any hardware or software bugs.

Owners will eventually be able to access Prestel, Mosaic, and Commodore's own Compuserve. Charges to be taken into consideration include subscription fees, page access charges and line charges.

At the moment the modem can be obtained only from John Collins, Commodore UK, 675 Ajan Avenue Trading Estate, Slough, Berks. John, who is in charge of special software projects, commented: "The modem is fully operational as a standard terminal — many of the ICPUG regional organizers have one, and they are helping us to check the Compuserve service before the full launch."

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Business and utilities arrive

BUSINESS and utilities programs are becoming more varied and unusual.

64 Doctor, from Micro Marketing Software, contains a series of diagnostic tests designed to pinpoint defects in the 64 system — whether the problem is in memory, keyboard, disk drive, joystick, i/o port, video display, audio or printer.

At £17.95 on cassette and £19.95 on disk, 64 Doctor is claimed to save time and money when your system breaks down. The tests include on-screen prompts, and a manual comes with the system. Micro Marketing is at Goldhawk Road, Whitehouse Industrial Estate, Ipswich.

Honeyfield has repackaged and reprinted the Dr Watson bookware series. The new editions now cost £19.98 for the Basic course and £12.50 for assembly courses. Titles include 64 Basic Programming Course, Vic 20 Assembly Language Course, and the new Basic Adventures in Space. Contact Honeyfield at Sandline House, Bath Place, High Street, Barnet.

London.

Romik's Multisound Synthesizer for the 64 has been released after some delays in production. All the musical capabilities of the 64 can be controlled using this program, which features a graphic representation of a music keyboard as notes are played. There are eight background drum patterns and definable background tones. Contact Romik, 273 Argill Avenue, Slough.

Lastly, Atlantic has produced two useful utilities for the neglected Vic 20. TOTL Label is a disk or tape program for the Vic plus 16K, used in conjunction with a printer to produce mailing lists or labels. Tape £11.95, disk £12.95.

Atlantic is also distributing the TOTL word processing programs. TOTL Text 2.0 is for the Vic + 8K, and is compatible with Commodore printers and suitable linked parallel and ESI2C units.

For the Vic 30 + 16K, TOTL Text 2.1 adds more versatility through features like embedded footnotes, headings, footings, short-hand format commands, and merging of labels from address files created by TOTL Label. Contact Atlantic Software, 189 Thorpe Road, Kingston, Surrey.

US software crosses Atlantic

THE YANKEE are coming — the latest wave of software is dominated by American games, which are being made available in large quantities for the first time in this country, by distributors US Gold and Softalk.

Centrowall is promoting its US Gold label, which features software licensed from Atari, Datasoft, Micro-Phone, Access and others. Spokesman Jeff Brown claimed: "American software, while recognized as being of brilliant concept and quality, has been prohibitively in cost. We can now offer this software at between one-third and half of the original price."

Titles for the 64 include Forbidden Forest, Astro Challenge, Minky and Caverns of Khatia at £8.95 on cassette or £12.95 on disk; the simulation hole flight at £16.95 cassette or disk; war action from Beach-Head, £9.95 and £12.95; and a number of other arcade type games such as Bruce Lee, Pecos, O'Reilly's Mine and Mystic Mansion. Utilities

include Ad&C Software's Texipso and Dataprog programs.

Contact US Gold, Unit 24, Tipton Trading Estate, Bloomfield Road, Tipton, West Midlands.

Meanwhile Bristol based Softalk has just released a new catalogue featuring over 100 titles on cassette, cartridge and disk for the 64 and Vic 20.

Softalk partner Tony Digwood claims that 50% of these programs are unavailable elsewhere in the UK. "What we're offering is largely US software, backed up with product literature, which has previously only been available in London if at all."

The Softalk catalogue includes cartridge games like Choplifter, educational programs for the Vic, and a wide range of utilities and business programs such as Money Manager and Data Manager from Timework Software.

For the full Softalk catalogue write to 14-16 Princess Victoria Street, CBHS, Bristol BS8 4BP.

Changing media at the Palace

PALACE SOFTWARE, sister company of Palace Video, is releasing a game based on "video nasty" The Evil Dead on June 23.

The game, for the CEM 64, follows the plot of the film in which a group of teenagers, possessed by the spirits of ancient Sumerian demons, kill each other in the accompaniment of gruesome special effects.

Palace Software founder Pete Scott denies, however, that the game is a "Yazzy". "Parliament were then anyone else has created a controversy over the film, I wouldn't accept that the film itself is a 'nasty', and in any case the computer game is not horrific at all. I don't think there'll be any controversy about the game itself."

The game has been under development for some time. "In fact when we started work on it the video wasn't even



... into me, nasty!"

reverted at all — we'd been thinking of writing computer games based on films for some time, and this just

seemed like a perfect scenario, especially since Evil Dead was 1983's best-selling video cassette film."

The Evil Dead and further Palace Software games will be available for a wide range of computers. "We're not tied to the 64, although at the moment all the development for our next game is being done on it. Having gained a lot of experience on the 64 we thought we might as well go ahead with it for the moment."

Although unwilling to commit himself to naming future software releases, Pete indicated that Palace Video holds the rights to a number of potential titles.

The Palace Video catalogue in fact includes such films as the French thriller Diva, David Bowie's Merry Christmas Mr Lawrence, and a number of other horror features such as The Texas Chainsaw Massacre, Halloween and Basket Case, as well as Palace Films' own production The Company of Wolves.

Reggae on, 64

Rastax, plumbax, ants and Zylagons — Pete Gervard shakes his dreadlocks at the latest games

I SUPPOSE it was only a matter of time before someone produced a game where listening to the musical backing was significantly more interesting than playing the game. Such a program has now arrived in the form of *Jammin'* from Tasknet, an unusual game for the Commodore 64, costing £6.95 on cassette, £9.95 on disk.

You are in control of a character called Rastax, depicted on the cover of the cassette case as a Rastafarian World Community. Rastax has to be guided around a series of 28 mazes, collecting musical instruments as he goes, but all the time being on the look-out for beam notes, chords and distortions, which appear on the screen in an odd assortment of displays.

Each maze consists of a set of different coloured squares, with a number of moving pavements scattered about. These pavements are also multi-coloured, and are used to transport you about the place, since you can only move on one colour at a time. To change colour there are a number of flashing diamonds moving about the screen, and by stepping on and off these you can go from squares of one colour to those of a totally different one.

The real highlight of this game, however, is its musical background. Some of the tunes played at the different levels are quite superb, although I can't see how the rendering of the old Status Quo number *Roll Over Lay Down* on level 4 has managed to creep into this largely reggae-based collection of songs.

Still, it was good to hear it, and it makes a change from the usual explosions of the average arcade game.

But unfortunately for *Jammin'* it really is little more than an average game, albeit an

unusual one. I found that Rastax was a difficult chap to control, and the game as a whole was irritatingly difficult. But if you want a game that's got a good soundtrack then listen out for this one in your local store.

Another one to look out for is the second program in our collection from Tasknet, called *Pipeline*, again at £6.90.

Now I've nothing against long loading times on sunny days when you can sit the computer going and go outside to tan slowly pink while the program loads. However, 12 minutes is a long time to wait when you've nothing else to do. Discover turbo drive, Tasknet. (In fact they now have: see Profile-Ed.)

As with *Jammin'*, *Pipeline* is a program that features a multitude of menu options at the start, although they can all be bypassed if necessary. Selecting the number of players, the type of musical accompaniment, and the starting level, are just three of the many things you can change about the game.

When you finally get started, the game consists of you controlling a plumber who has to rush around a pipeline keeping it open so that the water can get through. You have an endless selection of plumber's mates to help you out (preferred in the instructions as "Expendable, like Piers-Ledger"). What are the mates?, although like some plumber's mates you can't help wishing sometimes that they'd get on with the job rather than dawdling along doing nothing.

Lobsters

To make your task more difficult, there are a number of hazards, including lobsters and spiders who roam around eating your

workmates, or indeed eating you if you're not careful. But your worst enemy is the evil ladder man, who runs up the side of the screen and along the top where, if you let him get that far without shooting him, he'll drop a plug into the pipeline somewhere and you and your mate will have to go along and fix it.

Some more good music accompanies this game, including a spirited rendition of The Floral Dance on level 4, and if you like interesting, playable games that are just that little bit different then you could do a lot worse than giving a hand with the plumbing and buying a copy of *Pipeline*.

For *Ant* sounds like an instruction from a rather inverte adventure game ("what happens if we fix the ant at the tooth?"), but is in fact an interesting game for the 64 from Magical software.

This is essentially a game in the same mould if not the same class as arcade classic like Tetrismania. Yes, apparently, are the last surviving ant in a colony that has just been devastated by a group of rather nasty scorpions. Being the sole survivor, it's quite handy that the program gives you three lives in which to go about your ant-tastic task.

That task is to rescue your queen ant, who's been taken prisoner and stored eight levels down in the scorpion stronghold.

Scorpions

After ploughing through the usual page of upper-case only instructions (what's wrong with using an inset, Magical?), you discover that life is not going to be easy. Each level has three scorpions, pulling it, and although these are normally slow and dull-witted, they can occasionally turn people and rock round at great speed.

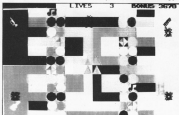
Also on each level are a number of doorways which you must figure out how to open. Some are obvious, as these are usually a couple of keys scattered about, but some are not, and you might well spend a great deal of time trying to figure out how to get past them, or even in some cases how to reach the things at all.

A good, if not a great, game. I'd have been more inclined to praise it if I'd never reached level 5, where what one must assume is a program bug tears its ugly head and renders further progress impossible.

On that level are two special doorways which only open after a certain length of time and you've done a couple of other things beforehand. Under the right conditions the doorways will start shimmering, and with an impressive grating noise will vanish before your very eyes. Or rather, they would do if you didn't get yourself killed at the precise time when one of them is starting the shimmering sequence. This causes the shimmering to stop, never to start again, and the doorway remains forever closed. As the exit from this level is beyond the doorway, there's nothing much to do except start a new game.

Apart from that, this is a competent, interesting program, that should keep you amused for a few hours.

Yet another new 64 software company springs up, in the shape of Alien Data,



Ant — take a game on this, it's their specialty

among its opening efforts is **Alley Oopz**.

Alley Oopz, at £7.99, is a cross between ten-pin bowling and Space Invaders. The action takes place along a series of bowling alleys, and you are in charge of a man who runs along the bottom of them bowling balls up whenever alley ball happens to be standing in at the time, assuming you're pressing the five buttons or spaces.

Down the alleys come a succession of objects, some useful and some deadly if not avoided. To score points you must knock down the groups of pins that continuously fall down the screens, and then manoeuvre yourself to be standing in front of a symbol representing either a strike or a spare. This then fills in the next box on your scoreboard displayed at the bottom of the screen, and getting ten strikes or spares will give you a handsome bonus and put you onto the next level.

However, there are many obstacles put in your way to prevent this happy event occurring. Chief amongst them are the boss battles, which constantly rain down the screen, and from level two onwards you'll also get assaulted by pin sweeps as well (swat men to you and me). Some sections of the alleys on later levels have spots of glare on them, and bowling a ball at this will have the inevitable happens-it gets stuck.

If you ever manage to work your way up to level 4 (I never got beyond level 3) you encounter the challenge round, where apparently you have to get a perfect score of ten strikes in order to win.

Well, one of these days I might make it, for **Alley Oopz** is definitely a game to come back to again and again. All good, then? Yes.

You've seen the adobe banners for **Space Pilot**, new play the game. "Over 400 of machine code" boasts the full page ads, and on seeing the program in action I can well believe it.

Biplanes

There are five basic levels to this game, which is based on the arcade game **Two Pilot**. The first one takes place in the year 1918. You are in charge of a plane roaming the skies looking for trouble. Out of the clouds come hundreds and hundreds of bi-planes, and before you can get past this level you'll need to shoot down 50 of them.

This is not the easiest of tasks, since a large part of your time is spent dodging out of the way of these bi-planes as they come at you from all directions. As the method of control adopted by Atari involves turning your plane to the left or right, rather than just moving it in the direction the joystick's pointed in, this is difficult at the best of times. When they start firing back at you as your tally reaches the 50 mark it becomes well-nigh impossible.

Also charging about the skies are a number of parachutists, who can be picked up for bonus points. When you manage to get that 50th bi-plane, a large Zeppelin appears and starts raining for you. Shoot this one down and you're onto the next level. This features **Spitzkop** from 1988, which can move faster and more manoeuvres than the bi-planes. And so it goes on, until level 5 sees some very determined space

fighters from the year 2000. Unfortunately you're still stuck with the same old loop that you had on level one, and shooting 50 space fighters is that is not simple.

With some excellent graphics, and adequate sound, **Space Pilot**, at £7.99, is a very good and addictive program. Well worth a place in your collection.

Boasting the name of space that it is not meant to be typed out quickly, **Zylogon** from Big G software company is another space arcade game, but with some good use of 3D graphics it might well do better than most. Cost is £6.99.

Androids

Zylogon are apparently a race of sophisticated androids, whose very existence threatens us all with an awful fate. Being a space hero, survivor of countless battles in the depths of the galaxy, you've got to take your spaceship out another one that comes equipped with the latest weapons into the heart of the Zylogon fortress and smash everything in sight.

The game takes place on a diagonal strip across the screen from corner to corner, and this strip is littered with old Zylogon rubbish. Anything that is on this strip can be shot at or dodged, although there are some sections which contain barriers in fly over, under or around. As your plane flies above a realistic shadow follows it on the ground, which is your only real indication of how high you're flying.

After a certain length of time flying on the strip the score changes to a boring battle in space, although your ship appears to be still confined to the strip in terms of movement. This is a very ordinary affair, and it's hard to see why Big G bothered with it. It breaks up the routine of flying along the strip I suppose.

Dispose of a few aliens and it's back to the strip again, with more enemies to shoot at and more barriers to dodge. This seems to be the way the game progresses throughout: a section on the strip followed by a battle amongst the stars, with the two

levels getting more and more difficult each time around.

As with so many games Zylogon is complete without ever approximating computers. Based on the arcade favourite **Zaxxon**, it's better than a lot of other programs I've seen, but nowhere near that slick handful of what can only be called gems. 4 out of 10 for trying.

On now to the **Vic 20** games. Running on the Vic with 16K expansion, **Beano**, at £7.99, is another of Atari's programs that is currently getting the full page colour advertisement treatment. Unlike **Space Pilot**, however, it doesn't really deserve it.

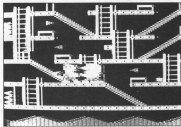
In this one you are in charge of **Beano** the Super Mouse. Beano has been a bit fed up of late, since he's set his heart on marrying the beautiful Princess who lives just up the road. But, being a mouse, he realises that his chances aren't that good, and so he has to resign himself to his fate.

One day he hears the town crier shouting that the King promises his daughter's hand (and presumably the rest of her as well) in marriage to be who finds the stolen diamonds. A bit rash, since she might end up marrying Beano, who immediately on hearing the proclamation has rushed off to help find the stolen gems.

Monsters

Hidden deep in a cave he finds them, but also they are guarded by extremely intelligent monsters who chase him about with amazing accuracy. Your part in the game is to guide Beano around the cave (i.e. the screen) and collect the treasures while attempting to avoid the monsters.

This is not particularly easy, since both Beano and the monsters are very large and the Vic's screen is very small. Dotted around the cave are trampolines to jump about on, slides to move you rapidly downwards, ladders to move you slowly upwards, and a couple of teleporters to take you from one side of the screen to the other. There is also a diamond, and if you manage to get hold of that another one appears, until you've managed to



Beano — what are you, a man or a mouse?

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4) collect them all. As this point Bongo discovers that he's not going to get to marry the fair Princess, but is instead transported onto the next level.

The graphics are good, especially the sprite-like characters and money, and there's plenty of levels of skill and different screens to keep the interest up, but I just couldn't work up any enthusiasm about this game at all. I can't see it living up to its claim that it will be a firm family favorite for a long time*. Not in this family it won't.

With the magic word Llamasoft's writers on the side of a cassette you can virtually guarantee that you're in for a good game, and the latest number for the Vic, **Hell Gate**, is every bit as good as anything else Mr. Minter has written for the machine.

Requiring a minimum of 8K expansion, **Hell Gate** is in the 'strategy' everything in sight as fast as possible* mode, with one humorous exception. Don't shoot the goats!

Expansions

Somewhere round about Pluto, as the story line has it, an evil force of Zyxaxians are expected to appear. Being clever chaps the Earth scientists have predicted precisely where this event will take place, and to give the Zyxaxians an unwelcome surprise they've built something called the **Hell Gate** to welcome them with.

This consists of four tracks connected up in a square, on which run four laser heads. It is with these that you'll be giving the alien fleet their greeting. Controlling them and moving them about the sides of the screen is a little tricky at first, but is something that you soon get the hang of. Basically there are two master ships and two slave ones, and moving the ship at the bottom of the screen to the left will cause the one at the top to move to the right. Similarly, moving the ship on the left of the screen down will make the one on the right go up.

These laser heads have a habit of overheating if you fire too much, but they can be cooled down by moving the ship around. Consequently, games tend to consist of always being on the move and continually firing at the same time. The result? A screen filled with bullets, laser heads and money spewerwals all moving about at rapid speed and you, who are supposed to be controlling all this, utterly as completely confused.

From time to time a goat or two will run across the gate trying to reach the safety of the side. Don't shoot the goats, since they're worth a 5000 point bonus for every one of them that manage to make it.

With 20 levels of action (and according to the handbook level 20 goes on for ever), this is another excellent piece of arcade action from Jeff Minter, that every arcade freak should have in their collection. **Hell Gate** costs £8.99 for the Vic, or £3 for the 84, but note that the 84 version is just the Vic version re-coded, and not a more complete game.

From Thors EMI (under their Creative Sports name), **Computer War** this is based on the successful film **War Games**, in which a young kid manages to tap into the American defence system and convince the defence computers that a real nuclear war is imminent.

In this £3.99 game, you have to convince the computers that they're not meant to be launching a salvo of nuclear warheads all over the place and restore peace to the world.

Requiring an 8K expansion, the program maintains two separate displays. The first one to be seen is a map of North America, on which can be seen a number of U.S. missile bases, and the site of the computer that's about to plunge us all into trouble. Also on the map are a set of flashing white dots and one black dot. The former are missiles aimed at the missile bases, and the latter is a missile aimed directly at the computer.

Missiles

Using either the keyboard or a joystick, you must move a cursor around this map until it's positioned over one of the flashing dots. When you think it's directly over one pressing the fire button causes the display to change, and now you get a view of the landscape around the base. This is the relatively easy part of the program.

The hard part comes with this second display, for you've got to find and track the missile around the screen and shoot it down. If you don't, the base you're guarding becomes active, and the thought of war that much closer.

Even if you do manage to shoot it down, your work will isn't over. The display goes back to the map again, and to the left of the map you can see that what appeared to be a

randomly flashing set of lights have stabilised into a set pattern. There's one large stable display, 8 squares wide by 9 high, and one much smaller one that's just 3 by 3. In the large one is a 3 by 3 cursor, and the cursor must be moved so that the area it covers in the large display matches that in the smaller one, which will sometimes have to be rotated around, just to make everything that little bit more complicated. Since you've only got a very limited time in which to do this you've got to have a quick and agile mind. Failing to match the patterns will cause a new missile to appear on the screen.

A game with a lot going on, you've got to do a lot of work to prevent the war from happening. Plenty of varied action makes this one of the better games for the Vic 20, and proves that there's life in the old machine yet.

Another from Thors EMI, **Tower of Evil**, also £3.99, is the latest in a long line of programs that are an attempt to combine arcade action with adventure plotting strategy. As usual, your task is to explore a series of rooms (over 80 in this one for the 8K expanded Vic), picking up the objects to be found in them while at the same time lighting off monsters with fanciful names.

In **Tower of Evil**, your plot is to recover the stolen treasure of King Salomon and rescue his fair daughter Diana from the claws of the wicked Necromancer. A passing wizard has happily given you the ability to hunt fireballs from your fingertips, and with that as your only weapon it's off to the tower and on with the game.

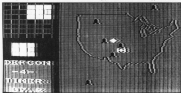
The objects that you're looking for are mainly treasure, although there are a couple of other items of interest on each level. One of these is a golden key, which can contain either **Exorcist of Wild Yovian** or **Clown**. Gaining this will either give you temporary invincibility or greatly increase your fire power in battles with demons.

The other item is a key, which is essential for travelling between the levels. In one of the rooms is a magic stairway, which you can either descend or ascend depending on which way you push the joystick. The stairway can only be used sensibly when you've found the key, otherwise you have no control over where you go when you enter it.

The aliens are quite a vicious lot, and have names like **BooBoobah**, **Adadawaha**, **Demidawaha** and **Euphohawha**, but they all seem to behave in the same way. Basically they're out to get you, and you have to have a quick hand on the fire button to do away with them.

Once you've found all the gold and all the keys, you have to ascend to the top level and open a treasure chest conveniently left there. Put all the gold into it, and a charming little Princess will run towards you, only to be spirited away and the whole game starts all over again.

The graphics are average well done without achieving greatness, and the use of sound is of the same standard. If you like this type of game you'll probably like this, but personally when you've soon one Necromancer you've soon them all. ■



Computer War — proves there's life in the old machine yet

The power of the processed word

Your 64 can become a supercharged typewriter once you add a printer and a word processing package. But which software to choose? Mike Greese studies the field

WORD PROCESSING — that magic art of manipulating text — is for me the ultimate reason for owning a micro. The text with which words can be changed, spellings corrected, chunks of text moved from one place to another, and a printer obtained (which looks as good as your printer will print) is incredible. Thus for a word processor seems to keep cropping up, from the simple letter to the book manager through to a comprehensive book of notes taken during studying (even just an evening class) or a carefully prepared speech that needs rewriting a dozen times.

It's the time saved that really counts — time that would have been spent on reworking or drawing up a timetable again — time that can now be used for something else. But first impressions of using word processing are exactly the reverse. It can seem that the time spent on learning how to use your word processor far outweighs the time and effort spent in just writing out the thing in longhand in the first place. Like all skills, you have to learn how to understand and use the software first — and that does take time.

Power

Choice of software can thus depend on several features — partly the "power" in this context means how clever the software is and how many extra features you can use, the price of course, and the ease of use. You also need to consider why you want to word process, because that must affect your choice. In an article of this length I cannot delve any deeper into these factors, but if you would like to read more on the subject I can recommend my book *Home Applications on Four Micros* published by Samsite Publications, which includes more detail on how to choose software and other related topics.

In this review I have taken 4 word

processing packages for the 64 that open the range and tried to review them from the point of view of ease of use, ability and flexibility. The actual details of how each different package lets you move text, delete paragraphs and so on hardly seem pertinent in a review, as they are easily grasped by reading the manual — what the review should do in my opinion — is to try and compare how the software copes with the requirements of the purchaser.

Types

All word processing software will allow you to add and remove words, letters, etc., and will allow you to print out your text. Most software includes underlining, tabs, margins, search and replace, etc. Again I have not spent too much time explaining these basic abilities, there has been plenty written elsewhere and again my book explains all these in detail.

Let's start by looking at some programs on tape. For the serious user tape is a little limiting (mainly because of the length of time it takes to load and save data) but for the casual user the low cost is a tremendous advantage, and allows you to discover whether word processing is for you or not without a large outlay. Also some tape programs allow you to save your text on disk (which is where the real time-saving can occur) or even save the program itself onto your own disk when you buy a disk drive later.

Word Wizard, available from Bubble Bus, is the cheapest word processing I've seen so far at £6.99 — and for the price the program is quite remarkable.

What you get for your money is a cassette with a pretty label, the basic instructions on the reverse of the cassette label (like a game, but quite adequate for the experienced user) and the ability to write text, move it around and delete lines,

so, etc, save your text to both tape and disk) and print it out. I have an MPS6 481 printer (the Commodore one replacing the 1525) and a Gemini 10-X (a dot-matrix similar to the Epson range) and to my surprise Word Wizard printed out on both without any effort.

But that's all. There is no provision for changing the margins, this means the text is always printed out across the full 80 column width of the paper, which looks a little strange on a letter, you cannot do a search and replace, which is one of the most useful abilities of word processing, nor can you carry out any fancy printing such as justification, underlining or being able to centre text. But using the program is easy, and you have full control of your cursor so that you can edit text anywhere on screen. This is an important point I will return to — the ability to screen edit as you can do normally with your 64.

Database

So, an easy program to use, rather limited in scope, but good value for money. My main difficulty I found when using it was not being able to see the directory (in other words which documents I had on disk) but as it's obviously intended to be used with tape I suppose it's not surprising.

Home Office is really a database and a word processing program on one tape. (The word processing side is **Wordpro**) and as the price of the tape, booklet and attractive box is £14.99 then the price of **Wordpro** alone must be comparable with **Word Wizard**. It is marketed under the name of Navajo Software Complex with Red Indian and distributed by Audiogenic, but I haven't seen it widely advertised in the press.

How does it compare? There is a very good basic manual containing enough information without confusing, and again

Table of prices.

WORD WIZARD	Bubble bus	£6.99
HOME OFFICE	Audiogenic	£14.95
WORD MANAGER	Imaps Design Ltd	Free (with 80-column card)
QUICK BROWN FOX	SPT Electronics	£20.00
PAPERCLIP-64	Kobra Micro Marketing	£29.95

you can save your files to disk or tape. Printing can be performed on either the 1511 printer (later versions) or the option MX-80 (the program contains an integral Commodore Interface module so don't see you own) but in either — and it wouldn't work on my Gemini printer. Otherwise it is very similar to Word Wizard, being restricted mostly to just writing and changing text.

Good points are that for the price it will produce a better result than Word Wizard, because you can set the margins freely, are posed at a very sensible level but are changeable, set tabs, and using the flippen print out using larger or smaller text, bold or double-strike (the 'letter-quality' print), append text and overwrite an existing file (this is very handy if you keep updating a file as you write it). You can also see the directory without loading the text in memory.

Editing

Bad points are the restricted abilities (but then it is very cheap) — but mainly the terrible procedure for editing. If you want to edit a word (say you've spelled it wrong) then you can't just move the cursor up and down the screen to get at it. Instead you have to scroll through the text until you find the word, note the number of the appropriate line, then call up the line. Then you have to rewrite the whole line, correcting the spelling mistake. And if you've misread one word, just rewriting the line doesn't work, so now you have to rewrite the next line and so on until the end of the paragraph. (Because each line needs extra space to accommodate the extra word).

I found this restriction a great handicap as it suppressed some of my creativity in writing (after all, it's such a lag when you want to change whole chunks of text and you end up just rewriting the whole thing — which isn't the idea of word processing).

For the price though it's good value — but of the two Word Wizard must be the better.

Word Manager is a unique little package from Impact Design (UK) Limited — unique in that the cassette is free, and that it works in 80 columns. When I say it's free — you do have to buy the 80-column Video Pak (which costs £145.95) to enable you to convert your 64 to 80 columns, but if you've interested in serious word-processing then 80 columns is almost a must.

So — if you're moving into 80 columns (by the way you also need a monochrome monitor which adds about £70 minimum to the bill) is this cassette package enough for your word processing?

The first thing I liked was the sticky-back strip containing all the controls which you can stick along the top of the 64 — so you don't have to keep looking in the book to see how to print, or move a block of text. Next in its favour is the fact it is definitely more powerful than the other 2 cassette programs, as you can centre lines, search and replace, underline sections or single words, merge documents, left justify and several other advanced functions. There is

an extremely readable and short manual, but the best feature of all is the ability to see all the text in 80 columns — which is marvellous.

There are several more advanced features (mail merge, envelope printing) which I didn't actually see but looked a little limiting. The worst aspect for me was the fact that the text is contained in pages — meaning that all the text fits into one page, — so if you need a longer document you have to start afresh on new page. Although you can link these pages together to print as one, I find the page restriction a "mild restriction" — in other words I find myself thinking of pages as I write, which isn't the best way for me. But if you're mainly interested in letters then this format is ideal.

Inserting text isn't quite as easy as on more powerful packages — but much easier than on both Word Wizard and Wordpro — and I liked the program. But if you're spending £145 to move into 80 columns word processing — I would think it's worth your while looking at some of the better packages around. If you can't afford the more pricey software (though having spent £150 odd on the 80-column card) Word Manager will be more than adequate until you've saved up a bit more.

The quality-named **Quick Brown Fox** from SPT Electronics comes on a cartridge — which plugs into the cartridge port on the 64 and gives instant word processing. You can buy an integrated 80-column board which allows you to use the software in 80 columns (at a total cost of £194) or just the cartridge in 40 columns for £60. I found the latter (just the cartridge) a little strange, as the size of the print was in small as an 80-column print but only took up half the screen of my monitor.

Manual

The packaging is good, and the manual superbly bound in a plush brown folder, each page printed on extra cartridge paper. Although nice to read the manual appears to have been written (occasionally condescendingly) for the secretary and contains statements like "... your computer's Operating system gets glass, green, hairy dragon of all programmists ...". Not exactly an endearing style, I'd have thought, though amusing the first time round.

But what of the program itself. Computer buffs will have noted the incorrect spelling of "program" in my quote from the manual, an example of the lack of attention of the author(s).

Quick Brown Fox looks good on the screen because it prints out the text as it will appear on paper — you can actually see what you'll be getting. The program is pretty powerful, you can edit, insert letters and words, omit sentences and paragraphs, move text, print out reports, etc. It contains all the facilities any decent software would contain. What it falls down in my estimation is in the ease of use.

Presumably because it has been inherited from another machine Quick Brown Fox is clumsy on screen-editing. In truth, it virtually has no screen-editing ability. This means that to remove a letter from a

sentence (say you had spelled green as greene) you can't just display the text, move the cursor to the word "greene" and press the DELETE key. Instead you have to press 3 keys in View mode to see the text, then press a key to get into Edit mode, then try to remember where in the text the word is, you wish to change and tell the computer. The appropriate line (you hope) will appear on the bottom of the screen, and you are asked if you still want to edit. If you press 'Y' you then have to press 'D' for delete (or 'R' for replace or 'I' for insert) and you still have to press another 3 or 4 keys to get your text back on the screen to view it again.

Mouse

This process is the same for moving paragraphs, find and replace, etc. The main benefit is that you never have the text on screen when you actually want to do something, or unless you print out your text first so you've got it to look at all the time it's hard remembering exactly the phrase or area to go to.

That apart, the software is good at actual performance — and it is powerful. It does do all it says it does, and well enough. But the complex and convoluted method of reaching the result seems a shame in view of the fact that Quick Brown Fox is one of the few packages that will run on 80-columns, and as such you'd think some-one would have rewritten the program to take advantage of the screen-editing on the Commodore 64.

Paperclip 64 is the ultimate in word processing, the package is so powerful that I've had difficulty trying to find something it won't do — from tapes and subroutines to other words you can write water as H₂O (in addition and manipulation of columns of figures too you can design very simple spreadsheets). But the best aspect for me is the fact that Paperclip comes in 2 forms on the disk provided — a 40-column version and an 80-column version (although you will need an 80-column card to use it).

I've already mentioned the joy of 80-column word processing, but it has to be experienced to be believed. Once again, I will stress that 40 columns are quite adequate for the part-time user and many people learning on a micro get quite proficient at 40-columns — because they haven't much choice. But using 80-columns is so much easier because you can see the whole page of your text as the screen at one time.

Paperclip is marketed in this country by Kelson Micro Marketing and costs £99.95. It comes in a large presentation box which contains the disk, the manual and a dough (which needs to be plugged into games port!). Listing out the directory on disk shows an incredible number of programs, both the 40-column and 80-column versions, a backup program (to make your copy safe for use whilst the master stays safe somewhere — but of course the copy will only work with the dough to prevent piracy) and a program for just about every printer on the market. Even if you have another printer Paperclip has a program to enable you to write a routine so you can use any printer. ■

Facility	WORD WIZARD	HOME OFFICE	WORD MANAGER	QUICK BROWN FOX	PAPER CLIP
80-column facility			■	■	■
Hidden files	✓		■	■	■
Automatic pagination				■	■
Bold printing		✓		■	■
Centering a line	✓		■	■	■
Column manipulation				■	■
Copy paragraphs	■		✓	■	■
Counts the words				■	■
Delete text	■	■	■	■	■
Directory displayed		■		■	■
Document orientated	■	■		■	■
Global edit				■	■
Headers and footers				■	■
Insert text	■	■	■	■	■
Mailmerge				■	■
Make facility				■	■
Move paragraphs	■		✓	■	■
Page-orientated			■	■	■
Right justification		■		■	■
Save to tape	■	■	■	■	■
Save to disk	■	■	■	■	■
Screen edit	■		■	■	■
Search & replace			■	■	■
Set margins		■		■	■
Sort facility			■	■	■
Super & subscript				■	■
Text formatted on screen			■	■	■
Underlining	■	✓	■	■	■

Table of Features: ■ means the software has this facility
 ✓ means the software does have the facility, but it is either very hard to carry out or you do not have full control.

Both 80- and 80-column versions have exactly the same commands, so apart from the fact the 80-column can be used on your I.L. (rather nice coloring is used) and you need to change the line length to 80 while moving text from one easily after a back to 80 before printing) there's no problem, it is possible to leave the line length at 80 and type in not watching the screen scroll as you go, but I find seeing half a page extremely annoying when I'm checking for mistakes, etc. and would recommend setting all margins at 80 before starting.

Text is "underlined", which means it is entered as one solid block and you have to use various commands to tell the printer how to layout your final version. This doesn't look as nice as a program which "formats" text as you go (like Quick Brown Fox). Moving text around is very logical, and involves only a few key strokes (completely the reverse of QWF), and of course you have full screen editing. All the usual commands are available (like search and replace, merge files, global edit, italic and underlining, etc.) One or two that I found handy are the automatic indentation of every paragraph (so you don't need to tab at every paragraph) and the ability to define characters and phrases in other words you can define the phrase "word processing

package" as X and then type "X" for the appropriate phrase).

The manual is well-presented (although not as professional in appearance as QWF) and would appeal to a micro-owner more as it concentrates well on the simple procedures and has an extensive number of appendices with just about everything you'll need.

Paperclip is my selection — it has to be. At £18.95 it is remarkable value — but then it's for the serious user.

SL88

Word processing is a complicated skill that can only be acquired through practice and time — but the power it gives the user in being able to write well-constructed and presented work is amazing. The main advantage is the ease of moving words around, so any word processing software should also be considered from the point of ease of use as well as price and power.

As in everything you tend to get what you pay for. For the beginner and very part-time user, for the person who wants to play around with word processing just a little) a cassette such as Word Wizard is ideal — but very limited. Home Office has the advantage of a simple database included, but the Wordpro program isn't as easy to

use for text manipulation as you don't have screen editing. Quick Brown Fox is really the secretary's word processing package, and looks better on screen as the text is laid out as it will appear on paper, but is infuriating to edit for a micro-user who is used to screen editing. Word Manager is most flexible in use (and being free quite a bargain) but as you have to buy the 80-column card it seems a shame not to go for a better program. Paperclip has the disadvantage of looking harder to learn at first (as you have to cope with more embedded commands — although you can take it slowly) but it much more powerful and its 80-column really is as good as any other word-processor I've seen costing several thousand pounds, (and better than quite a few!).

I've tried to distil the essence of the differences between the programs for you — as there are plenty of extensive and exhaustive reviews of each program around in other magazines. But when you are unfamiliar with word processing a long and detailed review of what key to press to insert letters or delete paragraphs is pretty meaningless. But as with all things in life — don't buy your software without a demonstration and a chance to play around with it a little. ■

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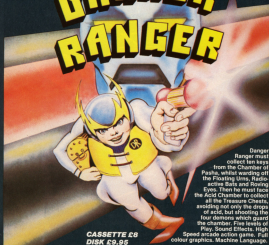
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Printers face up

Daisywheel or dot matrix? When it comes to choosing a printer you have to get it right first time. Ken Coomere compares the Commodore MPS801 and the Smith TPI

BOTH THE Commodore 64 and the Vis 30 have a wide choice of Printers available for them, but the least expensive and most readily available are the dot-matrix IBM MPS 801 and the daisy-wheel Smith Corona TPI.

The Commodore MPS801 is a version of a Tektronix unit, costing £215, and is designed for the Commodore 64 and the Vis 30. Print size is 19 characters to the inch, and the 58 characters per second print speed is comfortable to work at. Printing quality is such that it is acceptable for most social and business purposes.

Although there are no descenders (e.g. j, g, q and y) in business (lower-case) mode, they are the only letters affected out of 129 different characters. Reversed characters are available, plus the user-defined graphics you can create in graphics mode, plus the

standard 9.5 inch wide paper; the width includes the sprocket-holes. Paper costs about £14 for 1000 sheets of single-part plain best-quality word-processed micro-perforated paper. The paper runs smoothly, and is easy to insert into the rollers even if the paper-thickness lever is not released.

If you read the manual carefully, and take your time, you should experience no difficulty in setting up the MPS. There are no expensive add-ons and everything is provided, so that putting the MPS into commission is fairly straightforward.

The serial socket on the 64 is new to the statements part, but the cable may be delay-

ed 20 run lines numbered above 127 will give an extra line-feed.

25 and 120: run printer is "learning" for data. The same file no. is used.

30 print "Control of the printer from within a Basic program."

31 run hard copy is printed.

40 Print "Type "BUSY" when the printer will work according to the program."

43 Print "1" 255; close 255; end

500 printer "initiates" — control goes to screen.

This should serve as a useful introduction.

Before you rush out and buy a word-processor, try the **TEXTEDITOR** listed at the end of this article. It allows you to write on the MPS and the TPI in standard and in business modes with either printer, and on the MPS you can also use expanded mode.



Commodore control characters. The expanded letter mode completes a formidable collection of printable characters on the MPS 801.

The impact dot-matrix system works well, and the machine is modern both in appearance and ease of handling in a working environment, where a variety of tasks are carried out such as listing, printing, editing with the screen-editor, changing and listing of programs, saving and loading, writing assembly language, merging and so on.

The excellent packaging allows the printer to be carried like a medium-sized suitcase as it weighs 11 lbs (5 kg). The ribbon is in a carousel that rides on the undirectional print head, and which has a replaceable felt pad that can be replaced easily.

If you are unpacking an MPS, be careful to remove the protective foam strip from the paper-roll as well as the sleeve that guards the guide-rod for the print-head. A thick foam strip permanently attached inside the printer must not be touched, as its purpose is to reduce noise which it does very effectively.

The tractor feed should be loaded with

chained to a disk-drive as is a second printer. When the separate power is applied, a green light appears close to the paper-advance pressure pad. Check that paper is properly inserted and that the paper-thickness touch-control is in the middle colour-coded position. With the power switched off, put the indicator in the back to "T" for test and engage the serial connection. Now when you apply power, the green light comes on and the 801 will print out the character set until you stop it by pushing the switch from "T" to either number 4 or 5.

Buffer

The MPS has its own buffer and memory chip, just like all Commodore peripherals. The two device numbers, 4 and 5, allow two printers to be on line at the same time. Number 1 can only be used with an MPS; it cannot be used with a TPI however, as that printer has to be accessed with 4.

To get started after setting up the 801, put the reset switch to 4 and key in the following short program. Remark statements need not be typed as they are only for your information—

10 OPEN255,A,B,LINE FILE=DEVICE=MODE CODE=MODE IS STANDARD

15 RUN UP TO TEN LINES MAY BE IN ONE SIMULTANEOUSLY NUMBERED FROM 1 TO 255.

Four follow the directions on the screen. Logo—shift will change the screen from standard to business mode and back again if desired. The menu lets you change to a different mode each time a new line comes up. An extra line-feed is given in line number 100, so should this be necessary, then just amend the program by keying in 100 rrr.

A three-note "beep" warns you not to exceed the line length of 80 symbols. If you do exceed the length of the string, the program must be re-run.

Use the stop—cancel keys should you get into difficulty; no crashes will occur.

If your intended use for your printer is for word-processing and business correspondence, you may prefer the print quality of a daisy-wheel machine — but remember that you will be unable to reproduce graphics command symbols.

The Smith Corona TPI is a larger and heavier machine than the MPS801 printer. Although a tractor option is available at about £80, this is an extra cost for a machine that costs £250, plus another £50 for the Vecorim serial to parallel interface-cable. TPI was supplied with

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Is the Force with Taskset's Skywalker?

Or if not, what's the secret behind the success of Andy Walker's 64 games software company? Chris Jenkins visits Bridlington to find out

IT'S TAKEN some time for the software houses to take the Commodore 64 to their hearts. Many still rely heavily on converting versions of Spectrum games, often with no attempt to improve them. Even worse, many computers simply reproduce the same tired old variants of Pac-Man, Frogger and Space Invaders ad nauseam.

Zap! Kesack! Wallup! — says Andy Walker and Taskset, fearless crusader in the cause of original games and the lovable Commodore 64.

Taskset may not be the biggest or best-known of software companies — Andy Walker says he wouldn't want it to be, not under the Taskset name anyway — but it's pretty certain that most 64 owners will have seen and probably bought a Taskset game by Christmas.

Taskset's headquarters are situated in Bridlington, Yorkshire, a small seaside town kept going by the annual hordes of holidaymakers. "We're here for historical reasons," explained Andy. "I've moved around a lot in the last ten years, and somehow I ended up here. Once you get onto the motorway it's a reasonable drive to London, so we don't feel too cut off. One great advantage is that if someone

comes to visit Taskset we know they really want to talk to us — they can't claim that they just happened to be passing."

Andy's path into the games software industry was not a straightforward one. Though he might be described as a "wild", he's no "kid" — his experience in the industry stretches back through many years involved in the arcade business.

Archie

After a career working in government electronics departments, Andy gave in to his urge to write games programs and quit to move into the arcade business.

"It was a tough business and it finally fell apart because everyone went over the top. The time came when you'd walk into a pub, and there'd be two games machines; then you'd go to the chippie, and there'd be another one; you just couldn't get away from them. We made things worse because we were ripping everyone else off. A lot of the companies who claimed to be producing games machines were just furniture makers — they'd buy one machine, copy the ROM, then churn out the cabinets with flaky artwork and someone else's game loads."

The lack of innovation which booted the UK arcade market rapidly knocked the business out of it. "Of course, another big problem was development costs. Your development budget could only be the amount of money you could afford to lose, because if an idea wasn't successful it would have to be completely scrapped. What the games designers would often do is to complete one prototype, ship it over to Miami and stand it in an arcade on a holiday weekend. They'd empty the cabinets and count up the quarters, and if a game or less than around 1400 then the thing was a failure. There wouldn't be any question of just producing a few units — the American companies deal in thousands. There's no point in trying to pull the wool over their eyes with a budget game — they've got to get their money right."

Working for international corporations like Matsushita and Control, Andy gained a great deal of experience in what makes a game good to play. (Another



Andy Walker — "I don't see any sign of the game"

acquisition was Andy's beige Chevrolet Camaro, which looks so out of place in Bridlington that its owner is recognised wherever he goes. "I was paid for one job in dollars, and I just couldn't resist the car. It's almost ten years old now, and I lost the radiator grille when I drove into a bank of pheasants, but it's still good for the image!"

Also poor Eric

With the growth of the home computer market, it seemed a natural step to try to transfer that experience to a new field. "Some of the early work was done on a Superbrain system which had been dedicated to arcade projects. The first computer game Taskset actually produced was Dig Dog for the Eric, largely the work of programmer Paul Hodgson. It was written on a cobbled-together system made up of Eric, Commodore and Tangent equipment, but we'll never try that again. The problems it produced were horrendous, and in any case the Eric was insufficiently supported — you couldn't get technical details for it. We never figured out how all the basic worked, but of course that wasn't crucial since it was all written in machine code."

Two things put Andy off the idea of writing games for the Spectrum. "First, we left it too late; second, it's not really a games machine. The sound facilities are awful for a start; compare it with the 64's SID chip, which is good enough quality for the arcade industry."





software from coding."

Having opted for the 64, Tasker went ahead with developing his first suite of games. "Again, we had technical difficulties with our development system. We opted for Commodore equipment, and worked it so hard that we were plagued with headaches. For instance, the 1541 disk drive is not designed to be used fourteen hours a day! We'd put in a week's work then find that all our files had been overwritten, and we couldn't salvage them. Obviously we needed something better, so we went in for a Sage system which costs about \$11,000."

Having moved to new premises above a bookshop ("which the wife runs, so she can open it only when she feels like it"), Tasker got down to the hard graft of writing games. Andy explained how the development system works.

"The Sage system has a massive memory and integral disk drives. It also has multi-task capability, so we can generate code using a monitor/assembly we wrote ourselves and use the 'monitor' facility to communicate between terminals. The next task is to use an EPROM compiler to make the 64 think that this code is part of its own RAM. The principle's sound, but although the Sage is supposed to be 14 times faster than an Apple we're still only about 70% happy with this system."

Between them, programmers Andy, Mark Burton, Paul Hodgson and Tony Gibson, with artist Andy Rosen, have come up with some remarkable games using this system.

"Cosmic Convey, which is remember almost a year old, featured a number of 'lines' — for a start, you had to do more than just survive to win the game. Your space fighters have to protect a cargo conveyer from attacking pirates, and although you may sacrifice some freighters you can't afford to lose them all. Secondly, you can have all of your three 'lives' on the screen at the same time, which is a feature you don't see much elsewhere."

Pipeline

Cosmic Convey remains basically a shoot-'em-up, but other Tasker games take off into the realm of the extremely weird. Jammo's springs from Tony Gibson's interest in music, and the power of the 64's SID chip. "We wanted to do a game with good music, so we thought we might as well give it a musical theme. At the same time we had an idea for some sort of animated version of Ende, and what emerged was Jammo's." You'll find a full review of Jammo's in our software review section, as well as Tasker's Pipeline.

"Pipeline was a game that came from actual experience. When we were in our old premises we spent a leak upstairs one night, and narrowly avoided having our Superbits soaked. That experience led to all sorts of ideas about little men running around knocking holes in pipes. We worked on the idea for ages before realising that it was a much better idea to

have the men repairing the holes."

One game which Andy will not admit is based on experience is Ross's night out. "We were talking about laughing at some of the ideas we had for this one — like a display showing a bladder filling up which you have to stop to empty on some way home from the pub. In the end we felt it was getting silly rather than funny so we cut a lot out of it. All the references to alcohol were replaced with 'wobble juice', although admittedly there are characters like G. Jones in the high-score table!"

Boxes

Been is very sophisticated in its handling of sprites and backgrounds, and some of the code which was developed for it may be used in further Tasker character games. Andy's understandable dislike for pirates and capybara stems from the effort put into the planning and writing of original games. "You only have you spend months writing something, but you've created over the original concept and the debugging stage. For instance, when we finished them we found that at one stage it was possible to make the character walk up vertical walls — not what we intended at all! It's a long process: listing out these bugs, and if someone avoids it all by taking your idea and rewriting it, they're making nonsense of that effort you put in. That's why you won't catch us doing versions of other people's games. We've got more ideas of our own than we've got time to develop anyway, so we're unlikely to buy in programs."

Andy believes that the customers who make copies of tapes for their friends aren't the villains of the piece. "It's just not true that every copy made means a purchase lost. At around £1.99 lots of people make copies because they can't afford to pay full prices. The real villains are the mass duplicators who run off 1,000 at a time, and the money made to stop them is far from achieving much. Software Project's idea of putting a colour code on their inserts won't stop



people who own four-colour presses. We're involved in a couple of court cases at the moment, and hope this will be a useful precedent."

Asked whether a cut in prices would drive piracy, Andy was doubtful. "I've seen some of the games put out by computer firms, and some of them say so but they could use them in Bridlington Hospital instead of a stomach pump. OK, some of them are fair, but in any case I can't see the idea of cheap software lasting — if you're working with a normal dealer system where every step in the chain has to take a percentage, I can't see any way to keep going with these sort of low prices. We haven't changed our prices up or down since Taskcat started, though if I thought we could get away with a price drop I'd do it tomorrow. Basically you need sales revenue to put into development costs, and although the production process won't get any quicker the games will be better — so in the end the player will win either way. It's up to the buyer to be more discerning too — you can't expect software houses to put on their packs 'This one isn't too hot but please buy it anyway'. It's worth reading reviews in the computer magazines, though if I was a kid I don't know if I'd be able to afford to buy all the magazines and still have enough money to go to school!"

Andy also had lots to say about overseas markets. "It's interesting to note how things vary from country to country. West Germany is very much disk based, the USA uses disk and tape but prices are higher,

and the UK is very largely tape based. We're now putting all our games on disk, in fact we were one of the first companies to do so, but we're also using Perlechs, from Melbourne House, on our tapes. This makes tape loading times similar to disk loading times, so I don't see the advantage of having a disk drive unless you want to do major programming or use business software."

Apart from the in-house programming utilities Taskcat is developing, Andy doesn't have much time for the idea of writing serious software. "You need a certain kind of mind to enjoy writing or using spreadsheets or databases. I just prefer games." Programmer Tony Gibson added, "I once wrote a word processing program and quite enjoyed it — but I'm happier with games even though it doesn't play them much. I just like looking over people's shoulders as they play, and my idea of a good game is one where you can get a lot of fun just out of doing that!"

Boom

Andy also mentioned that although he likes some adventures, such as The Hobbit and Level Nine programs, he can't see Taskcat writing such programs itself.

"There are already dozens of sub-groups of games: arcade space, arcade chassis, text adventures, graphic adventures, simulations and so on. It's getting more and more like the pop industry in fact, and as games become more sophisticated and more 'crossovers' occur there'll be lots of room for all kinds of different categories. So

we'll just have to see..."

Whatever happens to the software industry, Taskcat intends to stick with the 64. "I'm hoping in many ways that the new range of Commodore machines never take off. What they should do is keep the 64's memory map, add a proper printer port and change the Basic and operating system. We're using the Audiogenic Keypad graphic tablet to help get over some of the screen designing difficulties, but the low price is good and the Programmer's Reference Guide is a big help — it's a pity there isn't that much information made available for other machines."

With the release of Gyrodad, a sophisticated space arcade epic, and two more games on the way around the end of August ("Character games — I won't say more than that" Andy hints darkly), Taskcat is determined to make a big splash before Christmas.

"One regular job is built on a room off, the burning of much midnight oil and a portfolio of varied games. There aren't any programmers in the company — in fact we're having to take someone on to deal with all the business aspects so that I can get back to some programming, which I don't have much time for at the moment!" Andy gazed longingly at his terminal, which looked dusty with disuse. "I'm going to take a holiday then look after the Commodore Show in June, then I hope to get back to programming some games. People have been telling me since 1981 that the games boom was over, but I don't see signs of it fading!" ■

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Vic expander expounded

Sound, peripherals, function keys and hi-res graphics with the Super Expander — Colin Wells explains

THE VIC Super Expander cartridge was introduced by Commodore to make some of the more useful facilities of the computer more accessible. It could be argued that it should have been incorporated into the basic machine! Although it does not really expand the machine (except for the 2K RAM), it generally succeeds in its aims.

The only real problem is understanding what really can be done with the facilities provided. The manual supplied with the cartridge is brief, to say the least, and other references tend to be skimpy or inaccurate. This article aims to clarify some of the useful features of the Super Expander, rather than knock its short-comings. A general knowledge of the VIC and a familiarity with the Super Expander User Guide is assumed.

Sound

The SOUND command is a convenient replacement for the corresponding sequence of POKEs required to generate continuous sounds.

The music facilities are rather fiddly, and I doubt their usefulness in producing real tunes, but they are convenient for simple beeps and tone sequences, since all the timing is taken care of.

It is not made clear that the \square character operates in a similar manner to KEY-ON. Since there is no equivalent to KEY-OFF, it remains active until a RETURN is PROVIDED. This results in the following program fragments being identical (although):

```
1) PRINT "ABC"
   PRINT " "
2) PRINT "ABC"
   PRINT "ABC"
3) A$ = "ABC"
   PRINT A$ : BS
```

Note that the RETURN character, which must be used to exit from "music mode", is always actually PRINTed on the screen. This could easily mean up a nice display, if it caused a scroll to occur. Having the cursor before making music is a possibility or, since the cursor control characters operate, a cursor-up could be included at the end of the music string.

Peripheral control is obtained through the RIOT, RPTN and RPOUT functions, provide a very simple means of driving the devices without all the usual POKEs and PEEKs. This is particularly true with the joystick, since a silly mistake with POKEs can double the keyboard! Note that the

"fire" button value (128) is added to the direction value.

Function key assignment is quite a nice facility. The only thing I dislike is the initial assignment! In the manual it states that the KEY command can only be used in direct mode. I thought this was a shame and wondered why this restriction was placed on the command. I discovered, however, that the KEY command appears to work in programs with no problems. As a result of this discovery, I keep a couple of programs to hand.

This one coats the function keys to their original color:

```
10 KEY 1,CHR$(110)
20 KEY 2,CHR$(117)
30 KEY 3,CHR$(114)
40 KEY 4,CHR$(118)
50 KEY 5,CHR$(115)
60 KEY 6,CHR$(119)
70 KEY 7,CHR$(124)
80 KEY 8,CHR$(120)
90 NEW
```

The second one sets up new strings which I have found useful:

```
10 KEY 1,"INDELIST" + CHR$(110)
20 KEY 2,"MDSQ"
30 KEY 3,"INDELIN" + CHR$(110)
40 KEY 4,"LEFTS"
50 KEY 5,"INDELIST"
60 KEY 6,"RIGHTS"
70 KEY 7,"GETHS:IRKS" +
  " " + CHR$(104) + CHR$(104) + "THEN"
80 KEY 8,"(int + rint + rbin + (rin +
  int + rint) )"
90 NEW
```

Keys 1,3 and 5 can be used where ever the cursor is on the screen. Key 7 is used to produce a "wait for key" statement; a line number is needed before and after the F7. Key 8 speeds up long inserts.

Hi-res

The high resolution graphics facilities really make the Super Expander worthwhile. Although all the functions could be programmed "by hand", it would be a lot of work.

The explanation of the graphics functions in the manual leaves a lot to be desired. I will try to give a clearer description of how the facilities work and throw in a few ideas of my own.

The manual talks about four graphics modes. There are only two really: modes 1 and 2. Mode 0 is the usual character screen and mode 3 is a fancy automatic selection of modes 1 and 2.

If a program enters mode 1 or 2 the

screen area shrinks slightly; it is set to 160x160 pixels. In mode 2 this gives 15800 individually addressable dots. In mode 1 horizontal resolution is reduced (because of the way multibyte mode works) by half, so only pairs of dots may be addressed. Actually addressing the dots is another matter! All the relevant BASIC commands refer to X and Y values in the range 0 to 327. Why this range? Why not 0 to 1587? Who knows? This remains a mystery. Obviously a translation between the two ranges is performed. Try this program:

```
10 GRAPHIC 1
20 FOR X=0 TO 1610
30 DRAW 2,0 TO X,100
40 NEXT
```

It takes rather a long time to fill the screen, because not every DRAW actually draws a new line on the screen. In fact, since 1024 - 160 = 864, it is approximately every sixth DRAW which marks the screen. Add a STEP 6 to line 20 and the screen filling speeds up. 864 is the biggest value you can use in the program and still completely fill the screen. However, the value of 6 is only a very approximate translation factor, since 1024/6 = 170.666, not 168. This is why the faster screen fill is a bit wavy and jerky. What is the translation formula then? Well, if we look for a convenient common factor that we get 160/8 = 20 and 1624/12 = 135. So we need a common set of five numbers which add up to 32. It turns out that the sequence is 7,7,7,6,6 (hence perhaps the phrase "all at 6s and 7's"). There is no theoretical basis for the sequence that I know of, it's just the way it is. Applying this new found knowledge, try this program:

```
10 I=0, N=0
20 GRAPHIC 1
30 DRAW 2,0 TO X,1000
40 N = N + 6 : IF N=1024 THEN GOTO 30
50 IF I=0 OR I=2 THEN N = N + 1
60 I = I + 1 : IF I=3 THEN I = 0
70 GOTO 30
```

The screen is now filled smoothly. Lines 40 and 50 take care of the increments of 6 or 7 according to the sequence.

Table

How can this result be applied in real programs? Well, since we know the relationship between the two systems, we simply have to choose between calculating the conversion when required and looking up the result in a table. The former method is rather slow and the latter uses lots of memory. Isn't life awkward at times?

This function converts a coordinate in the range 0 to 159 to the range 0 to 327: DEF FNTE(X) = INT(X/17)*2 + (X - INT(X/17)*17)*6 + 1 (X - INT(X/17)*17)*4 - 1 (X - INT(X/17)*17)*2

Although it's rather fiddly, it does work. To use it just replace the X and Y which would normally be in the range 0 to 327 with FNTE(X) and FNTE(Y) with X and Y in the range 0 to 159.

This code sets up a translation vector: DIM TV%(159)
1=0 : TV%(0)=0
FOR I=1 TO 159
TV%(I)=TV%(I-1)+6


```

4 IF I=0 OR I=2 THEN TV%(I) =
TV%(I) + 1
I=I+1: IF I=5 THEN I=0
NEXT

```

Put this at the beginning of your program, then use TV%(X) and TV%(Y) like the function above.

Having said all this, a value of 6 (or 6.4 if you prefer) is quite adequate for lots of applications, but I'm a perfectionist (sometimes).

As a last comment on this particular subject, it is a shame that it was decided to do a co-ordinate translation without introducing a compensation (approximate, at least) for the asymmetry of the screen. Using the techniques I have described, but with separate X and Y translations, a 240x160 matrix could actually be implemented.

The CIRCLE command, though useful, has some oddities. To start with, as a result of the coordinate system query, back to the origin, an ellipse is produced unless you do something about it. The facility for drawing an arc of a circle is again useful, but odd.

The specification of starting and ending points is, according to the manual, in radians starting at the 9 o'clock position going clockwise. To the best of my knowledge (and my calculator's) there are 400 gradients in a circle (ie. 100 in a right angle), not 100 as they say. Really the step length is specified as the percentage of a full circle (why didn't they say so? Why not degrees or radians?). The 9 o'clock position seems a fancy starting point (it isn't even during opening hours!).

Confusing

The CHAR command is also useful, but odd. Essentially, the fact that the screen is composed of 20 lines of 20 characters, each a matrix of full pixels, is conveniently avoided (the VIC thinks it's got 10 lines of 100 characters, but forget I spoke). This less than useful fact is re-emphasised by the CHAR command. The row and column are in the range 0 to 19 starting at the top left-hand corner of the screen. By having row specified before column, it means that you put Y before X. Confusing isn't it? It seems to me that CHAR has three constraints which are unnecessary and annoying: characters must be placed in cells on the 20x20 grid; characters must be horizontal and the right way up; and only 128 of the possible 252 (not all different) characters may be used.

My solution was to write a subroutine, listed below, which enables any character to be displayed anywhere. To use it, having entered GRAPHIC 1, set up the X and Y coordinates (X and Y, in the range 0 to 199) of the top left corner of the character (as viewed on the screen). Then set up the character code (CH) of the character to be displayed. This value is 0 to 255 for the capital - graphics set and 256 to 511 for the lower - upper case set. Lastly set up the orientation (D) of the character:

```

0 = horizontal display, upright characters
1 = horizontal display, inverted characters
2 = vertical display, reading down the screen

```

```

1000 XB=X1*Y2=Y
1010 XS=1+YS=1
1020 IFD=1ORD=2THENXB=X+Z:XS=X+1
1030 IFD=1ORD=3THENYB=Y+Z:YS=Y+1
1040 CC=CHAR#32268
1050 KK=KB:YY=YB
1060 FORJ=1TOB
1070 CL=PEEKCC3:CC=CC+1
1080 FORI=1TOB
1090 IF(CLANDI2B)<0THEN#POINT2,TV%(X3,
TV%(Y3)
1100 CL=INT(CL*2)
1110 IFD<2THENKK=KK+KS
1120 IFD>1THENYY=YY+YS
1130 NEXT
1140 IFD<2THENYY=YY+YS:KK=KB
1150 IFD>1THENKK=KK+KS:YY=YB
1160 NEXT
1170 DND=1GOTO1190,1190,1200,1210
1180 X=X+B:RETURN
1190 X=X-B:RETURN
1200 Y=Y+B:RETURN
1210 Y=Y-B:RETURN

```

FIGURE 1

3 = vertical display, reading up the screen
Then call the subroutine (Figure 1). It is a bit slow and only does one character at a time (I suppose a machine code version is possible, but you pay your money . . .)

In addition to those set up before calling the subroutines, the following variables are used:

X, Y: coordinates of the top left-hand corner of the character, corrected for orientation.

M, N: coordinate step value (0 = 1).

X3, Y3: current coordinates.

CC: address of current byte of character cell.

CL: byte of character cell.

L: loop counters.

Note that the subscript of the translation vector (TV%), as above, is assumed, but a convention to use the function FNT% is okay. I experimented with an approximation (read step 94), but it introduces significant distortions. By the way, the X and Y values are updated on return from the subroutines to point to the next logical screen location. This makes repeated calls very simple.

Using the same technique as this subroutine, it would be a straightforward matter to develop a different character set. Other character formats (eg. 3x5 pixels) could then be tried; this would enable an alternative number of characters per row and columns, if required.

Graphics

Now a final point on the subject of Super Expander graphics. In the manual it says that nearly all the commands may be executed in direct (immediate) mode. This is true, but not very useful, because the screen management has been bogged. Type this:

```
GRAPHIC 2
```

You now get a clean high resolution screen. Now type:

```
CIRCLE 2,312,312,99,90
```

carefully, since you can't see what you are doing (you could set up a function key with

this string). An ellipse should appear, as expected. Now try typing a few curves-down, in that order the picture is broken up. This is because the system is trying to scroll the low resolution screen which you can't see! Unfortunately that's the way it is and you can't do anything about it.

The Super Expander basic commands may be abbreviated in the usual way. Here is a list of the abbreviations together with the BASIC token values:

Abbreviation	Token
KEY	66
GRAPHIC	98
COLOR	101
POINT	111
REGION	103
DRAW	108
CIRCLE	117
PAINT	118
CHAR	113
SETCLR	107
SCRND	112
SCR	119
SETVL	115
RGBT	121
RND	117
RND	117
RPT	119
RPN	116
RDT	120

As a parting thought it's worth highlighting that if a Super Expander command follows a TRSN, it must be provided by a colon

```
IF X=0 THEN #POINT 2,S,Y
```

This is mentioned in the manual, but it doesn't leap out of the page at you!

If all the above has put you off the Super Expander completely, you might be interested in some useful POKEs and SYSs:

```

SYS 64833 — kills the function keys
SYS 64832 — kills the Super Expander commands
or if you're really sick of it:
POKE640,0:POKE644,0:SYS 64824
converts the Super expander into a 32
RAM pack

```


positioning of the show.

USR01 This is probably the most useful command. The result should be considered as a positive 16-bit number. The top byte is the horizontal character number in the range 0-16, where 0 = left of screen, and the low byte is the vertical row number (in the range 0-24, where 0 = top of screen). For example:

```
ANSWER = USR01
COL = INT(ANSWER - 256)
ROW = ANSWER - 3*256
```

Insert COL with the column, and ROW with the row. Note that, as before, the values reflect the position of the show when the fire button (or CBM logo key) was last pressed.

Note that the information returned gives the position of the top left hand corner of the show's pattern.

In the above functions, the results obtained refer to the position of the show when the fire button (or CBM logo key) was last pressed, probably the most useful reading. However, there may be occasions when an actual current position is required. If so, simply add the number 4 to the parameter of the USR function:

```
e.g. ... USR04 + 3
```

The effect of this is to force the program to find the current position of the show, before performing the chosen task. In the above example, the value returned is the current X-Y character position of the show. Similarly, $USR4 + 1 =$ or $USR01$, the same thing — returns the current X-bit position.

Now on to the program description. Please refer to the Assembly listing when following the description of how the program works. A general overview of the program is as follows:

Overview

- 1276-2158 Initialise and enable Show.
- 2403-3158 Show service program, called every time an interrupt occurs.
- 3226-3390 Handle USR requests, return data or disable show.
- 3640-3258 Program subroutines.
- 3833-3140 Program variable storage.
- 3880-3820 Data giving the sprite pattern for the show.

A detailed look at the program reveals that its construction is in fact relatively simple, and could be modified to suit a user's personal requirements. In addition, the program demonstrates how easy it is to add "transparent" functions that are interrupt driven. Have you ever wondered how music can occur at the same time as the visual action in all those games? Exactly the same principles are used as demonstrated here!

1276-1300: Find the value of parameter A. The answer is left in the Y register. A check is made to ensure that the value is legal. If not, a jump is made into the Basic ROMs to give an error message.

1340-1400: Having found a valid show number, find where the data which makes up the sprite pattern for that show is stored. The start address is put into A and X for easy use.

1440-1500: Using the start address of the data, the sprite pattern is copied into an

unused area of RAM. The Commodore Programmer's Reference Guide identifies memory locations $80A7$ to $80BF$ as unused, which is perfect for the job.

1540-1570: Find the value of parameter B. As before (lines 1276-1300), the evaluation is made and the result contained in the Y register. The value must be in the range 0 to 17 inclusive (the legal colour numbers). Once a legal colour is obtained, it is placed into the colour register for sprite 0.

1610-1650: Find the value for parameter C. This selects whether the show is to appear in front (value = 0) or behind (value = 1) any text on the screen. The show will always appear in front of other sprites, since sprite 0 (the one chosen to act as the show) has the highest sprite priority.

1700-1730: Find the value of parameter D. This selects which device is used to 'drive' the show; whether joystick (value = 0) or joystick (value = 1). Note that if the joystick is chosen, it must be plugged into Control Port 2.

At this point, all parameters following the SYS command have been evaluated and used (assuming that they had legal values). The next stage is to initialise the show and its driving program.

1760-1800: Store the page address of the show pattern data in the sprite 0 address register. Note that the data is stored from location $802C0$, which is sprite page number 300 — the definition of what a "sprite page" is, please refer to the Programmer's Reference Guide.

1840-1840: Enable the sprite so that it can appear on the screen.

1900-1950: When first appearing, the show sprite will be set to minimum size — i.e. no X or Y expansion — since this looks better. However, if the User wishes, the show can be expanded in either direction once initialised without interference from the program.

1990-2030: The initial position of the show on the screen is set to the top left hand corner. The A and X registers combine to form a 9-bit address in the 'X' direction across the screen from left to right; while the Y register gives the 8-bit address in the 'Y' direction down the screen from top to bottom. Sprites are permitted to move off the edges of the screen, but this is no use for a show, so the initial values are set so that the show will appear exactly in the top-left hand corner of the 40x25 screen.

Interrupt

Two subroutines are called, the first translates the coordinates in the show registers into the actual sprite position; and the second stores the position as if fire (or the CBM logo key) had just been used.

The entire program for driving the sprite is interrupt driven, so that it requires no direction from the user or programmer. In view of the fact that the show may be enabled — disabled several times during a session, it's important that the modification of the various interrupt vectors is handled in a methodical fashion. First of all, a check is made to see if the interrupt is already driving the show. If not, the vector is altered to jump to the

show driver before the usual interrupt routine. Furthermore, it is possible that the interrupt vector has been altered previously, so that there is no guarantee that when the driver has finished its work, it should then jump straight into the ROM routines for handling interrupts. Accordingly, the old vector is stored and used when the driver has finished. When the show program is disabled (by the USR03 function), this old vector input back into the vector location.

2080-2140: Disable the interrupts while "tampering" with the vector. Check to see if any modification to the interrupt vector is required.

Vector

2180-2250: The interrupt vector must be made to point to the show driver program. The original vector is placed at the end of the drive, so that when the driver routine has finished, the interrupt can be allowed to continue in the usual fashion.

2300-2350: The alteration of the interrupt vector is now complete if it was necessary, so re-enable the system interrupts. Finally, alter the USR vector so that the interaction between user and show information can be achieved easily.

This new section of the utility is the actual show driver that is called by the interrupt vector.

2410-2470: Preserve all registers on entry to the interrupt routine. This is vital, because it is not possible to tell what information is contained in them, so it must be assumed that the values are important. Accordingly, they are stored on the stack for easy retrieval at the end of the routine.

2510-2520: Find which device is driving the show, and jump accordingly.

The Keyboard has been selected as the driving device.

2560-2580: The current value of the keyboard matrix is loaded into the A register. Although the codes are unique to each key, these codes are not ASCII codes. If the value found is 040, then no key is currently being pressed.

2620-2660: No normal key is being pressed, so check to see if the CBM logo key is being held down. If it is, find and store the current show position. Jump to the end of the driver routine.

2700-2830: One of the normal keys was being pressed, so this routine checks to see if it was one of the function keys, and if so, acts accordingly; thus pressing the F1 key satisfies the test in lines 2760-2720, so that the show is moved up if possible. Jump to the end of the driver routine.

The Joystick was chosen as the driving device. The advantage of using the joystick is that the bits can be used in a logical fashion.

2880-3050: The current status of the joystick is obtained, and processed forward. Each bit is tested in turn by calling a subroutine which returns with the carry bit indicating the status of the least significant bit. When taken in order, these bits show the current position of the joystick, and whether the fire button is being pressed. Note that because several events can happen at the same time, e.g.

3940-3950	3950-3960	3960-3970	3970-3980	3980-3990	3990-4000
3950-3960	3960-3970	3970-3980	3980-3990	3990-4000	4000-4010
3960-3970	3970-3980	3980-3990	3990-4000	4000-4010	4010-4020
3970-3980	3980-3990	3990-4000	4000-4010	4010-4020	4020-4030
3980-3990	3990-4000	4000-4010	4010-4020	4020-4030	4030-4040
3990-4000	4000-4010	4010-4020	4020-4030	4030-4040	4040-4050
4000-4010	4010-4020	4020-4030	4030-4040	4040-4050	4050-4060
4010-4020	4020-4030	4030-4040	4040-4050	4050-4060	4060-4070
4020-4030	4030-4040	4040-4050	4050-4060	4060-4070	4070-4080
4030-4040	4040-4050	4050-4060	4060-4070	4070-4080	4080-4090
4040-4050	4050-4060	4060-4070	4070-4080	4080-4090	4090-4100
4050-4060	4060-4070	4070-4080	4080-4090	4090-4100	4100-4110
4060-4070	4070-4080	4080-4090	4090-4100	4100-4110	4110-4120
4070-4080	4080-4090	4090-4100	4100-4110	4110-4120	4120-4130
4080-4090	4090-4100	4100-4110	4110-4120	4120-4130	4130-4140
4090-4100	4100-4110	4110-4120	4120-4130	4130-4140	4140-4150
4100-4110	4110-4120	4120-4130	4130-4140	4140-4150	4150-4160
4110-4120	4120-4130	4130-4140	4140-4150	4150-4160	4160-4170
4120-4130	4130-4140	4140-4150	4150-4160	4160-4170	4170-4180
4130-4140	4140-4150	4150-4160	4160-4170	4170-4180	4180-4190
4140-4150	4150-4160	4160-4170	4170-4180	4180-4190	4190-4200
4150-4160	4160-4170	4170-4180	4180-4190	4190-4200	4200-4210
4160-4170	4170-4180	4180-4190	4190-4200	4200-4210	4210-4220
4170-4180	4180-4190	4190-4200	4200-4210	4210-4220	4220-4230
4180-4190	4190-4200	4200-4210	4210-4220	4220-4230	4230-4240
4190-4200	4200-4210	4210-4220	4220-4230	4230-4240	4240-4250
4200-4210	4210-4220	4220-4230	4230-4240	4240-4250	4250-4260
4210-4220	4220-4230	4230-4240	4240-4250	4250-4260	4260-4270
4220-4230	4230-4240	4240-4250	4250-4260	4260-4270	4270-4280
4230-4240	4240-4250	4250-4260	4260-4270	4270-4280	4280-4290
4240-4250	4250-4260	4260-4270	4270-4280	4280-4290	4290-4300
4250-4260	4260-4270	4270-4280	4280-4290	4290-4300	4300-4310
4260-4270	4270-4280	4280-4290	4290-4300	4300-4310	4310-4320
4270-4280	4280-4290	4290-4300	4300-4310	4310-4320	4320-4330
4280-4290	4290-4300	4300-4310	4310-4320	4320-4330	4330-4340
4290-4300	4300-4310	4310-4320	4320-4330	4330-4340	4340-4350
4300-4310	4310-4320	4320-4330	4330-4340	4340-4350	4350-4360
4310-4320	4320-4330	4330-4340	4340-4350	4350-4360	4360-4370
4320-4330	4330-4340	4340-4350	4350-4360	4360-4370	4370-4380
4330-4340	4340-4350	4350-4360	4360-4370	4370-4380	4380-4390
4340-4350	4350-4360	4360-4370	4370-4380	4380-4390	4390-4400
4350-4360	4360-4370	4370-4380	4380-4390	4390-4400	4400-4410
4360-4370	4370-4380	4380-4390	4390-4400	4400-4410	4410-4420
4370-4380	4380-4390	4390-4400	4400-4410	4410-4420	4420-4430
4380-4390	4390-4400	4400-4410	4410-4420	4420-4430	4430-4440
4390-4400	4400-4410	4410-4420	4420-4430	4430-4440	4440-4450
4400-4410	4410-4420	4420-4430	4430-4440	4440-4450	4450-4460
4410-4420	4420-4430	4430-4440	4440-4450	4450-4460	4460-4470
4420-4430	4430-4440	4440-4450	4450-4460	4460-4470	4470-4480
4430-4440	4440-4450	4450-4460	4460-4470	4470-4480	4480-4490
4440-4450	4450-4460	4460-4470	4470-4480	4480-4490	4490-4500
4450-4460	4460-4470	4470-4480	4480-4490	4490-4500	4500-4510
4460-4470	4470-4480	4480-4490	4490-4500	4500-4510	4510-4520
4470-4480	4480-4490	4490-4500	4500-4510	4510-4520	4520-4530
4480-4490	4490-4500	4500-4510	4510-4520	4520-4530	4530-4540
4490-4500	4500-4510	4510-4520	4520-4530	4530-4540	4540-4550
4500-4510	4510-4520	4520-4530	4530-4540	4540-4550	4550-4560
4510-4520	4520-4530	4530-4540	4540-4550	4550-4560	4560-4570
4520-4530	4530-4540	4540-4550	4550-4560	4560-4570	4570-4580
4530-4540	4540-4550	4550-4560	4560-4570	4570-4580	4580-4590
4540-4550	4550-4560	4560-4570	4570-4580	4580-4590	4590-4600
4550-4560	4560-4570	4570-4580	4580-4590	4590-4600	4600-4610
4560-4570	4570-4580	4580-4590	4590-4600	4600-4610	4610-4620
4570-4580	4580-4590	4590-4600	4600-4610	4610-4620	4620-4630
4580-4590	4590-4600	4600-4610	4610-4620	4620-4630	4630-4640
4590-4600	4600-4610	4610-4620	4620-4630	4630-4640	4640-4650
4600-4610	4610-4620	4620-4630	4630-4640	4640-4650	4650-4660
4610-4620	4620-4630	4630-4640	4640-4650	4650-4660	4660-4670
4620-4630	4630-4640	4640-4650	4650-4660	4660-4670	4670-4680
4630-4640	4640-4650	4650-4660	4660-4670	4670-4680	4680-4690
4640-4650	4650-4660	4660-4670	4670-4680	4680-4690	4690-4700
4650-4660	4660-4670	4670-4680	4680-4690	4690-4700	4700-4710
4660-4670	4670-4680	4680-4690	4690-4700	4700-4710	4710-4720
4670-4680	4680-4690	4690-4700	4700-4710	4710-4720	4720-4730
4680-4690	4690-4700	4700-4710	4710-4720	4720-4730	4730-4740
4690-4700	4700-4710	4710-4720	4720-4730	4730-4740	4740-4750
4700-4710	4710-4720	4720-4730	4730-4740	4740-4750	4750-4760
4710-4720	4720-4730	4730-4740	4740-4750	4750-4760	4760-4770
4720-4730	4730-4740	4740-4750	4750-4760	4760-4770	4770-4780
4730-4740	4740-4750	4750-4760	4760-4770	4770-4780	4780-4790
4740-4750	4750-4760	4760-4770	4770-4780	4780-4790	4790-4800
4750-4760	4760-4770	4770-4780	4780-4790	4790-4800	4800-4810
4760-4770	4770-4780	4780-4790	4790-4800	4800-4810	4810-4820
4770-4780	4780-4790	4790-4800	4800-4810	4810-4820	4820-4830
4780-4790	4790-4800	4800-4810	4810-4820	4820-4830	4830-4840
4790-4800	4800-4810	4810-4820	4820-4830	4830-4840	4840-4850
4800-4810	4810-4820	4820-4830	4830-4840	4840-4850	4850-4860
4810-4820	4820-4830	4830-4840	4840-4850	4850-4860	4860-4870
4820-4830	4830-4840	4840-4850	4850-4860	4860-4870	4870-4880
4830-4840	4840-4850	4850-4860	4860-4870	4870-4880	4880-4890
4840-4850	4850-4860	4860-4870	4870-4880	4880-4890	4890-4900
4850-4860	4860-4870	4870-4880	4880-4890	4890-4900	4900-4910
4860-4870	4870-4880	4880-4890	4890-4900	4900-4910	4910-4920
4870-4880	4880-4890	4890-4900	4900-4910	4910-4920	4920-4930
4880-4890	4890-4900	4900-4910	4910-4920	4920-4930	4930-4940
4890-4900	4900-4910	4910-4920	4920-4930	4930-4940	4940-4950
4900-4910	4910-4920	4920-4930	4930-4940	4940-4950	4950-4960
4910-4920	4920-4930	4930-4940	4940-4950	4950-4960	4960-4970
4920-4930	4930-4940	4940-4950	4950-4960	4960-4970	4970-4980
4930-4940	4940-4950	4950-4960	4960-4970	4970-4980	4980-4990
4940-4950	4950-4960	4960-4970	4970-4980	4980-4990	4990-5000
4950-4960	4960-4970	4970-4980	4980-4990	4990-5000	

UP and RIGHT (resulting in a movement to top right), and FIRE (resulting in the storage of the current position); it follows that the joystick gives greater control over the show than that provided by the keyboard.

3980-3140: The driving of the show is completed for this interrupt, so retrieve the register values stored on the stack, and jump to the old interrupt address. Note that although in the listing the address given causes a jump into the ROMs, in practice the address may well have been altered during installation (lines 2140-2160).

This next section performs the tasks selected by the USB function.

3120-3126: Get the parameter supplied with the USB function. Test to see if the value is 4 or more. If so, find the current show position, then subtract 4 from the value of the parameter; it is the actual command parameter area! (value 0 means double the show).

3140-3150: Disable the show. Restore the interrupt vector to its original value. Switch off sprite 0. Rezero with the value 0.

3160-3170: Check to see if the X-bit position is required. If so, obtain the data.

3180-3190: Check to see if the Y-bit position is required. If so, obtain the data.

3200-3270: Check to see if the character position is required. If not, then an illegal parameter was given, so produce an error. When returning the character position, the bit-positions are used, and then divided by 4 (since 8 bits = 1 character). This division is easily achieved using bit shifts.

3280: The value to be returned is now in the A and Y registers. This instruction

performs an indirect jump that will return the value to Basic, as required by the USB function.

The next lines are the subroutines used by the program.

3940-3950: Used when retrieving the parameters passed by the SYS command. First a check is made to ensure that a comma character is present (line 3940). Then, the expression following the comma is evaluated and the result left in a "Floating Point Accumulator" — some screen locations in 800 page RAM.

3960-4000: These lines take the current value in the Floating Point Accumulator, and convert it into a 16-bit integer in the A and Y registers. The USB function automatically places its argument into the P-F Accumulator, so this routine retrieves it. At no time does this utility program expect any value above 13, so a check is made at this point to see if the number is larger than 255 (i.e. the high byte is checked). If the value is greater than 255 (i.e. the high byte is not zero), then an error is issued.

4020-4080: If the device driving the show is the joystick, then each bit must be tested in turn. This routine returns with the carry flag reflecting the value of the LSB (line 4), if the LSB is 1, the carry flag is set. At the same time, so each bit is tested, it is discarded by shifting, so that the next bit can be tested later.

4100-4170: This routine finds and preserves the current position of the show. Having got the current position, it is stored in memory.

4200-4270: This routine finds the current

position of the show (sprite), by reading the values in the sprite registers of the VIC-II chip. The answers are returned in the A, X and Y registers.

4180-4420: This routine moves the show to the location specified by the contents of the A, X and Y registers.

4470-4500: Moves the show up by one pixel, so long as it is not already at the top of the screen.

4570-4600: Moves the show down by one pixel, so long as it is not already at the bottom of the screen.

4670-4680: Moves the show right by one pixel.

4690-4690: Moves the show left by one pixel.

5040-5130: Returns with the current X-bit (horizontal) position of the show. The value is corrected for the displacement necessary to prevent the sprite disappearing off the left of the screen.

5190-5250: Returns with the current Y-bit (vertical) position of the show. The value is corrected for the displacement necessary to prevent the sprite disappearing off the top of the screen.

The remaining sections are for data storage.

5310-5340: Storage for the number identifying the driving device; for the current position of the show when 'Fire' (or the IBM logo key) was last pressed; and the data for testing joystick bits.

5380-5320: These locations contain the bit patterns for the sprite that forms the show pattern.

Show 1 is a pointing hand. Show 2 is an arrow. ■

C007	BADWAVE	C040	BADWAVE	C066	CHECKEY	C239	DEVICE
C100	DOWN	C106	DOWNOK	C122	EXIT	C180	SETPR1
C140	GETSPRCH	C187	GETWAL	C210	GETXBIT	C220	GETYBIT
C184	IMPDEXIT	C047	IRDSCAN	C110	IRDSERV	C172	

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COMMODORE SOFTWARE FILE

Feenix

This game for the unexpanded 16-bit
comes from *After Burner* from *Blizzard*

FEENIX ATTACK is a fast arcade game
written in two parts. Part One gives the
instructions and defines the graphics, then
sets loads and runs Part Two. The
machine code routine in Part Two could
not be put into Part One because it is

stored in the cassette buffer, and is
recompiled when the cassette is used.

Full play instructions are given in the
program.

Type in and SAVE Part One, then type
and SAVE Part Two, revised and LOADED.

```

50 REM*****PART 1*****
60 PRINT"  " ;POKE36679,8
60 GOTO590
100 POKE646,INT(RND(1)*#7)+1
120 PRINT"*****F E E N I X  A T T A C K*"
140 PRINT"  " ;H ;#66SOFT"
160 POKE646,INT(RND(1)*#7)+1
180 PRINT"  " ;USING YOUR LASER PWR"
200 PRINT"  " ;DESTROY AS MANY ALIENS"
220 POKE646,INT(RND(1)*#7)+1
240 PRINT"  " ;C O U N T D O W N"
260 PRINT"  " ;AS POSSIBLE IN"
280 POKE646,INT(RND(1)*#7)+1
300 PRINT"  " ;TWO MINUTES."
320 GET#;IF#=""THEN#00
340 PRINT"  " ;POKE36669,240
360 POKE646,INT(RND(1)*#7)+1
380 PRINT"  " ;YOU SCORE 10 FOR  " ;A HIT,"
400 PRINT"  " ;YOU LOSE 5 FOR  " ;A MISS"
420 PRINT"  " ;EACH ALIEN YOU DESTROY";
440 PRINT"  " ;IS REPLACED BY ANOTHER"
460 PRINT"  " ;BY THE WAY THE FIRE"
480 PRINT"  " ;BUTTON IS  "
500 PRINT"  " ;PRESS ANY KEY TO LOAD"
520 GET#;IF#=""THEN#00
540 PRINT"  "
560 POKE196,10;POKE631,131;END
580 POKE26,28;POKE252,28;RESTORE
600 FORP=7168TO7239:READ#;POKEP,#;NEXT
620 FORP=7424TO7431:POKEP,#;NEXT
640 POKE36669,255
660 GOTO120
680 DATA150,231,165,150,150,90,24,24
700 DATA8,16,8,16,8,16,8,16
720 DATA129,66,126,90,126,126,231,189
740 DATA32,66,37,24,24,164,66,4
760 DATA24,68,182,231,258,36,66,36
780 DATA24,68,90,258,126,24,36,66
800 DATA255,31,15,15,15,32,32,32
820 DATA255,248,248,248,288,4,4,4
840 DATA126,129,183,161,161,153,129,126

5 REM*****PART 2*****
10 CLR:GOSUB355
15 GOSUB445
20 GOSUB355
25 PRINT"  "
30 PRINT"  " ;PLEASE WAIT"

```

Continued on page 30

```

35 GOSUB10
40 FORK=1TO10:FORF=250TO190STEP-K:POKE3+I,P
45 NEXT:POKE3+1,0:NEXT
50 TI#="000000"
55 POKE0,0:POKE30411,5
60 POKE0+1,7:POKE30412,5
65 POKE0-1,6:POKE30410,5
70 SVS002
75 POKE1,159:POKE2,217:POKE3,220
80 FORK=1TO10:NEXT:POKE1,0:POKE2,0:POKE3,0
95 PRINT"SC":SC
90 PRINT"#####ST INC"RIGHT<TI#,30
95 IFSC>200THEN#R=25
100 IFSC>300THEN#R=10
105 IFSC>400THEN#R=1
110 FORK=0TO#R:NEXT
115 #R=""$GET#R
120 IF#R="8"THENGOSUB105
125 IFTI#="000200"THEN#R=60
130 GOTO70
135 D=252:FORF=HTOESTEP22:POKEF,1:POKEF-22,32:POKE52,0:POKE53,0:D=D-4
140 IFFEEK(F+22)<32THEN#R=75
145 NEXT:POKEE,32:SC=SC-5
150 IFSC<3THEN#R=0
155 RETURN
160 PRINT"##### TIME UP!"
165 POKE1,0:POKE2,0:POKE3,0:POKE4,0
170 FOR#=1TO1200:NEXT
175 PRINT" "
180 POKE1,34:POKE2,60:POKE3,120:POKE4,130
185 F=200:#R=167
190 FORK=22TO0STEP-1:POKE1,12+K:POKE2,30+K:POKE3,150-K:POKE4,174-#R2
195 FORD=1TO#S:NEXT
200 POKE1,F:POKE2,0:F=F+1:#R=#+1
205 NEXT
210 PRINT"#####"
215 PRINT" "
220 PRINT" "
225 PRINT" "
230 PRINT" "
235 PRINT" "
240 PRINT" "
245 PRINT"#####"
250 PRINT" "
255 PRINT" "
260 PRINT" "
265 PRINT"#####"
270 POKE1,0:POKE2,0:POKE3,0
275 FOR#=15TO1STEP-.5:POKEV,K
280 FORL=255TO125STEP-.6:POKE3,L:NEXTL,K:POKE3,0:POKEV,15
285 PRINT"##### AGAIN(Y/N)"
290 GET#R:IF#R=""THEND290
295 IF#R="Y"THENRSH
300 IF#R="N"THENPRINT"#####"
305 GOTO290
310 FOR#=7724TO0142:POKE#>30720,INT(RND<1>#6)+2:NEXT
315 FOR#=1TO10
320 O=INT(RND<1>#396)
325 I=INT(RND<1>#4)+2
330 POKE7768+O,I:NEXT
335 PRINT"#####PRESS ANY KEY TO START"
340 GET#R:IF#R=""THEND340
345 PRINT" "

```

Continued on page 31

The 64 Software Centre

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```

130 PRINTCHR$(X)
140 T=T+1
150 GET#A:IF#A="" THEN150
160 IF#A<>CHR$(X)THEN150
170 Q=(T-I)/50
175 A=(INT(.5+(100*Q)))/100
180 PRINT"*****YOUR TIME"
185 PRINT"*****A"SECONDS":FORI=1TO1000-NEXTI
200 J=J+A
205 H=H+1
210 IFNOTTHEM#T#H
213 IFPOSTHEM#A
225 FORI=1TO1000-NEXTI:H=H+1:IF#=#GTHENGOTO200
230 PRINT"J"
231 PRINT"    SNELL DONE#"  
232 PRINT"    S"EA"#"
235 PRINT"YOUR AVERAGE TIME WAS"J/H" SECONDS"
236 PRINT"YOUR FASTEST TIME WAS"FT"SECONDS"
237 PRINT"YOUR SLOWEST TIME WAS"SS"SECONDS"
240 PRINT"ANOTHER GO(Y/N)"
245 GET#B:IF#B="" THEN245
250 IF#B="Y"GOTO240
260 IF#B="N"THENPRINT"    BYE BYE "E#"#"END
270 PRINT"I SAID Y OR N":GOTO240

```

Sketch

This program from Richard Barton in *Color* requires a 64 with Simon's Basic and a light pen. THIS IS a drawing program for the 64

with a light pen and Simon's Basic.

There are three options which are permanently displayed: 1, draw; 2, save; 3, clear the screen.

The program uses RUP mode to draw mode. In line 90 a formula adjusts the light pen's returned values to and to align with the screen. These values have

been set for a CBM700 monitor and may need to be adjusted for a TV.

Lines 40 to 70 set up the display. Line 80 waits for the light pen trigger to be "on". Lines 100, 103 and 105 select options from the menu. Line 110 prevents off-screen values being plotted. Line 120 actually does the plotting.

```

10 REM HI-RES LIGHT-PEN SKETCH-PR3.
15 REM REQUIRES LIGHT-PEN.
16 REM WRITTEN IN SIMON'S BASIC.
18 REM RICHARD BARTON(1984)
20 COLOURS:1
25 P=1
30 HRES:1
40 LINE0,100,320,100,1
50 LINE270,105,315,105,1:LINE315,105,315,105,1:LINE315,105,270,105,1
60 LINE270,105,270,105,1
61 LINE170,105,215,105,1:LINE215,105,215,105,1:LINE215,105,170,105,1
62 LINE170,105,170,105,1
65 LINE70,105,115,105,1:LINE115,105,115,105,1:LINE115,105,70,105,1
66 LINE70,105,70,105,1
70 CHR271,107,3,1,1:CHR277,107,12,1,1:CHR283,107,5,1,1:CHR289,107,1,1,1
72 CHR296,107,10,1,1:CHR300,107,19,1,1
73 CHR371,107,3,1,1:CHR377,107,12,1,1:CHR383,107,5,1,1:CHR389,107,1,1,1
74 CHR396,107,10,1,1:CHR399,107,4,1,1
75 CHR471,107,4,1,1:CHR477,107,10,1,1:CHR483,107,1,1,1:CHR489,107,23,1,1
76 CHR188,107,4,1,1
80 TO=PEEK(653):A#24:JPTO#THEM#0
90 X=PEEK2-42:Y#PEM#40
100 IFX<270ANDX<320ANDY<100ANDY<300THEN#2
103 IFX<170ANDX<215ANDY<105ANDY<300THEN#4#0
105 IFX<70ANDX<115ANDY<105ANDY<300THEN#4#1
110 IFX<200ANDY<200ANDY<300ANDY<100THEN#0
120 PLOT(X,Y,P):GOTO90

```

Medians +

Two short programs for the unaccompanied file from P.W. Armstrong of Cambridge. MEDIAN5 enables you to find the average of a string of numbers using the median

method. Angle Sum calculates and displays information about regular polygons, given the number of sides in the shape.

```
1 POKE36879,92
2 GOSUB1000
3 PRINT"WHAT IS YOUR NAME?":INPUTN$
4 PRINT"PLEASE ENTER NO. OF SIDES THE SHAPE HAS:#####":R#
5 INPUTN
20 R=N:PRINT"ANGLES=";R:PRINT
30 S=N:PRINT"SIDES=";S:PRINT
50 T=N-2:PRINT"TRIANGLES=";T:PRINT
60 D=180#T:PRINT"DEGREES=";D
70 POKE36878,15
80 FORL=1TO100
90 POKE36876,INT(RND(1)*120)+120
100 FORM=1TO10
110 NEXTM:NEXTL
120 POKE36876,8-POKE36878,8
130 FORI=1TO2000:NEXTI:GOTO2000
1000 PRINT"#####ANGLE SUMS#"
1010 PRINT"#####HOW MANY YOU ENTER"
1020 PRINT"#####A NO. OF SIDES"
1030 PRINT"#####THIS PROGRAM WILL"
1040 PRINT"#####GIVE YOU DIFFERENT"
1050 PRINT"#####INFORMATION ABOUT IT"
1060 PRINT"#####HIT A KEY#"
1070 GETI$:IF I$=""THEN1070
1080 RETURN
2000 PRINT"#####HIT /SPACE#"
2010 GETI$:IF I$=""THEN2010
2020 IF I$="" THENGOTO5
```

Program 1: Angle Sum

```
5 PRINT"#"
6 PRINT"#####MEDIAN#"
7 PRINT"#####"
8 PRINT"#####BY P.W. ARMSTRONG#"
9 PRINT"#####HIT A KEY#"
10 GETI$:IF I$=""THEN10
12 PRINT"#####HOW MUCH DATA TO BE ENTERED?#"
14 INPUTZ#
16 S=VAL(Z#)
18 DIMA(S):PRINT"#"
20 FORM=1TOVAL(Z#)
30 INPUTA(M)
40 NEXTM
50 FORM=1TOS-1
60 FORM=1TOS-1
70 IF A(M)-A(N+1) THENG#
80 S=(A(M)+A(N)+A(N+1)+A(N+1))/2
90 NEXTM
100 FORM=1TOS:NEXT
110 PRINT"#####MEDIAN#=";A(M/2):FORM=1TO2000:NEXT:R#H
```

Program 2: Medians

Send us your Commodore programs, enclosing a cassette — and a printout on plain white paper if possible. Each listing must be accompanied by a typewritten introduction describing the program and explaining how it is constructed. We pay \$5.00 for each bug-free listing published. We cannot guarantee to return every program submitted, so please keep a copy. If you want us to return your listing you must include a stamped, addressed envelope. If you have any problems with the programs, please write to the appropriate author. Software File.

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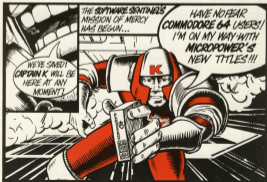
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News of the latest computer clubs and a chance to check on your local ICPUG-affiliated group

THIS MONTH we are reporting the list of ICPUG-affiliated groups first seen in February's issue.

The Independent Commodore Products User's Group meets at the University of Limerick, 100 University Rd, Dublin, Dublin 8, Ireland. Telephone (011) 4105. Meet at Early Professional College, Omeau Rd, Derry at 7.00pm.

Dorset Business and Food Independent Commodore Products User Group, Douglas Stone, chairman, 71 Canford Cliff Rd, Poole, Dorset. Email: Walter Green, 111 The Malvern, Haslemere, Surrey. Email: A G Stridge, 30 Shilley Rd, Cheltenham, Gloucestershire.

Gloucestershire Mrs Alan Pick, Rose Cottage, 30 Old Court, Spring Hill, Cam, Gloucester, GL11 6PF. Telephone (0470) 8778. Meet informally at the above address on the last Friday of each month.

Gloucestershire Mrs Alison SubeMA, 78 Rivers Way Rd, Cheltenham, Gloucestershire. Telephone (0242) 38739 or (0242) 2788. Meet on the last Thursday of each month at Cheltenham Ladies College, Ashway Terrace, St George St, Cheltenham.

Hampshire Tony Cook, 7 Round Way, Fareham, Hants, GU10 4LB. Telephone (Patch) 5284. Meet on the second Tuesday of each month at Fitches School, Fareham at 7.00pm.

Hampshire North Hants Regional Group, Ron Goss, 69 Turf Rd, Parkborough, Hampshire, GU14 5NQ. Meet every third Wednesday of each month at 78 Reading Rd, Parkborough, Hampshire.

Hampshire Tony Cox, 18 Staplers Beach, Bournemouth, Gosport, Hampshire, PO13 8EY. Telephone Fareham 280738. Meet at Gosport Community Association, Burn House, Burn Rd, Gosport, Hants. PO21 1FX, at 7.00pm.

Northampton Non-Tenage Regional Group, Brian Collins, 71 Mindwell Way, Northampton, Hants. Telephone (0432) 32912.

More informally on the last Wednesday of each month at the Premier Mutual Assurance, Purcell Lane, Reading, Hants. Northampton West/West Regional Group, Stephen Ballington, c/o Institute of Grocery Distributors, Green Lane, Luton, Bedfordshire. Email: West, Hants. Meet on the second Monday of each month at the above address.

East South East Regional Group, Wing Commodore Mick Ryan, 104 Charnfield Drive, Rye, East Sussex, East Sussex. Meet on the third and fourth Thursday of each month at Charles Darwin School, 1st Lane, Rye, East Sussex, at 7.00pm.

East Kent Monthly, Rosemary Lord, Lennox Hill Weaving, Maidstone, Kent. Telephone (0222) 2960. Meet on the first Wednesday of each month at 7.00pm.

Leamington David Jervis, 10 Victoria Rd East, Thornton-Cleveley, Leamington, Leam. Meet every third Thursday at Arnold School, Leamington. Telephone Cleveley 8038.

Leamington John Ingham, 70 Arched St, Bursley, Leamington, NN10 1BL. Try to join a Vii group.

London Barry Miles, Business Studies Department, Polytechnic of North London, Holloway Rd, London N7. Put your name to the ACC which meets every other Tuesday at the Polytechnic at 6.00pm.

London Michael Peake, 26 Cavendish Gardens, Cavendish Rd, London W1. Telephone 01-262 0250 or 01-269 7811.

Merseyside Merseyside Commodore User's Group, Jeff Jones, chairman, at Virginia Ave, Lifford, Merseyside, L31 2NS. Telephone (091) 528 411. Meet on alternate Wednesdays at Maghull Depot High School, Liverpool, at 7.00pm.

Middlesex Geoff Scott, 108 Tuddington Park Rd, Tuddington, Middlesex. Telephone 01-801 2318.

Northampton Graham J Saunders, Reading House, 15 From St, Guide Post, Chippingwood, Northampton. Telephone (0870) 823242.

Nottingham Ian Black, 40 Wilson Close, Wincey, Gains, NG21 7TA. Telephone Wincey 117 or 1171.

Nottingham Alan Morris, 30 Eddon Rd, Bury St Edmunds, Suffolk. Telephone Bury St Edmunds 44370. Meet at The Court House, Long Breckford, Bury St Edmunds, Suffolk.

Nottingham Arthur T Ouse, 7 New Ridge Ave, Purton, Surrey, GU1 1AB.

Warwickshire Coventry and Warwickshire Commodore Computer Club, 7th Light, 22 Lydbury Rd, Wythall, Coventry, Warwickshire. Telephone (0562) 41151. Meet at Sault Park School and Community College, Coventry, on the fourth Wednesday of each month at 7.00pm. Please note that no meetings are held in July, August or December.

West Midlands Mrs Mildred Vii User's Group, Joe Rowman, 6 The Oval, Atherington, West Midlands. Meet monthly. Provide a free program library and advice on hardware and software for members of the club. Send a large SAE for information.

Wiltshire Bob Wood, 15 Barnard Cr, Ward Green, Swindon, South Yorkshire.

Wiltshire Brian David Rubin, 17 Cranbury Rd, Cranbury, County Avon, BT18 7SD, Northern Ireland.

Wiltshire Dr Jim MacGregor, 27 Falmers Crescent, Winton, Falmers, Glasgow, Scotland. Telephone (081) 609 9819.

Wiltshire John Smith, 19 Berrylands Rd, Berrylong, Elmstock, Avon, Scotland. Telephone (0843) 83067. Meet on the first and third Thursday of each month.

Worcestershire Barbara Peppercorn, Peppercorn Hall, Telford, Dyfed, and Llanym. Wace F J Troward, The Hill, Brydowen, Llanym, Dyfed, SA14 4QD. Telephone (05400) 1211.

should be obtained from Jack Cohen, 30 Brinscote Road, Newbury Park, Bland, Essex, SS2 7BP.

Two new groups have contacted Commodore Clubnet. The first is Club 84, which operates in Dublin.

Club 84 is a Commodore 48 software user group. Brendan Conroy, the organizer, tells us that the range of services which the club will offer has not yet been fully decided.

"It should be noted," Brendan continues, "that we have a particular interest in hearing from users who cannot attend club meetings because they live in remote areas or do not have free time. We have already established a library of high quality public domain software programs, most of which have been checked and debugged. You disks are available with between ten and fifteen programs per disk. We hope to add two disks per month and hopefully bring out a new issue."

All 48 users with disk drives are invited to make use of the library, at a charge of 45 pence for materials and copying costs, postage and packing. The group is non-profit making, and hopes to expand into tape programs soon.

Club 84 is interested in obtaining news, information, programs and other of related material. Contact Brendan Conroy, c/o 85 Upper Drumcondra Road, Dublin 9, Ireland.

Next we hear from the coldly named Comput-a-Frog. The school computer club of the Collège Pierre Dubois, Laval, France, is looking for pen-pals. The club consists of 11 to 12 year olds interested in all aspects of Commodore computing. Teachers are welcome to correspond too!

So if you want to brush up on your French at the same time as you polish your basic, write to F J Bayard, The French Connection, Section "Franziska", Collège Pierre Dubois, 71 Rue Victor Rainet, 33007 Laval, France.

If you want your club mentioned on this page write to Clubnet, Commodore Clubnet, 15-17 Little Newport Street, London WC2R 2LD

ANSWER BACK

Function ideas

I HAVE a 64 and a copy of the Programmer's Reference Guide. The problem is that there is no mention of the Function Keys. What do they do, and how do you make them do it?

*E. Boyle
Jullington
Northumberland*

THE FUNCTION keys are provided as special keys to be programmed by you, either in Basic or in machine code. All they do is to generate an ASCII code when pressed; values are F1, 155; F2, 171; F3, 184; F4, 188; F5, 189; F6, 126; F7, 134; F8, 146.

Try this short program.

```
10 PRINT "FUNCTIONS"
20 PRINT "FUNCTIONS OUTPUT"
30 -- "F1" -- "155" --
40 -- "F2" -- "171" --
50 -- "F3" -- "184" --
60 -- "F4" -- "188" --
70 -- "F5" -- "189" --
80 -- "F6" -- "126" --
90 -- "F7" -- "134" --
100 -- "F8" -- "146" --
110 GOTO 30
120 END
```

Mode of address

I HAVE a 64, a 1520 printer + plotter and 1941 disk drive with Easy Script. I am unable to output from the word processor using the printer.

Is this because, according to the manual, the address of the 1520 is 4, while that of the other Commodore printers is 4 or 5? Is there any way to overcome the problem?

*Peter Guder
Bangford
Aberystwyth*

SELECT the CBM 60 option in the start-up menu, then press F1. Next press D for output and D for device

number. Enter 6 then press RETURN. If you're not going to print, press RETURN again to exit. This will set the printer device number to 6 until you exit from Easy Script.

Merging ahead

COULD YOU tell me if there is any way of "merging" listings on the 64, as there is on the Spectrum? I have got into the habit of entering programs in sections, and printing each to work before starting on the next. It would be most helpful to be able to save each section on tape then merge when all are working.

*J. & W. Sumner
Barnon Planning
Devon*

YOU SHOULD contact SuperSoft, who produce a merge program costing £9 + VAT on disk or £7 + VAT on tape. SuperSoft, Winchester House, Caning Road, Washwater, Harrow, Middlesex, phone 01-861 1166.

Double height

COULD YOU tell me how to produce double height letters on my Vic 20 and Super Expander — if, indeed, this is possible.

*Andrew Roberts
Northampton*

YOU MUST first define your own character set in memory; refer to page 215 — 134 of the Vic 20 Programmer's Reference Guide for details. Then POKE BANK, FREE, LAMB(100) will enable you to use them.

Usable control

RECENTLY, I accidentally pressed the CTRL key while doing a program on my 64. I found that this lists the program one line at a time. However, I'm worried that this may affect the program — can you advise me?

Normally, how can I find out how much usable

memory is left?

Mark Clayton

Alwyer

Stoke-on-Trent

THIS IS a useful feature of the 64 and will certainly not harm your program.

To find out how much memory is left use the following in direct mode — PRINT POKE(1, FREEMEM) * 16384

Disabling keys

COULD YOU tell me how to go about disabling keys on the 64? The facility to disable such keys as INS + DEL, CLR HOME, the cursor keys and the CBM keys will be very useful in input statements.

Andrew Kay

*Woking
Surrey*

INS + STOP and LINT are easily disabled by codes which change the cursor address. Using machine code, one way is to divert the CHANGED number to your own routine which would ignore the required forwards.

For Basic programs, I suggest you use GET instead of INPUT, provided that you don't have an enormous amount of strings created which would give you garbage collection problems. This routine will show you the general principles;

```
100 GOTO "CLEARANYTHING" L = 1
110 CLEAR
120 POKE 155,POKE 156,BANK:POKE 157,1
130 PRINT "CLEARING"
140 END
150 GOTO "ORIENTAL"
160 SCREEN 0
170 CLEAR:PRINT " "
180 SCREEN 0
190 SCREEN 0
200 SCREEN 0
210 SCREEN 0
220 SCREEN 0
230 SCREEN 0
240 SCREEN 0
250 SCREEN 0
260 SCREEN 0
270 SCREEN 0
280 SCREEN 0
290 SCREEN 0
300 SCREEN 0
310 SCREEN 0
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890 SCREEN 0
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910 SCREEN 0
920 SCREEN 0
930 SCREEN 0
940 SCREEN 0
950 SCREEN 0
960 SCREEN 0
970 SCREEN 0
980 SCREEN 0
990 SCREEN 0
1000 SCREEN 0
```

Power problems

THE TRANSFORMER for my 64 recently stopped working, and it has taken so long to get it repaired that I now want to obtain a spare.

I can't find a reference to the output of the unit. Could you tell me what it is, and how the plug into the computer is wired?

David Meadows

York

Sumner

THE OUTPUT is 9 volts DC, 0.5A watts — for the wiring diagram, check in the back of the Programmer's Reference Guide for the 64.

Upper, lower

CAN YOU tell me if there is any way to produce both upper and lower case letters using my Commodore 64, at the same time? I want to enter sentences using capital letters and write the rest in lower case, as is normal literary practice.

Jon Kall

Stockport

Cheshire

IT'S QUITE simple — the 64 powers up in upper case — graphics mode. To change to upper case — lower case mode just press the CBM key and shift. You can then type in upper and lower case using the shift key as with a typewriter.

BK Vic

COULD YOU supply the memory locations used in the Vic with BK expander?

Mark Skovell

Chesham

Chesham

THE START of the screen memory moves to 4096 (50400), and the start of the Basic text area moves to 4400 (52100).

If you need help with a technical query or problem write to:
**Jack Cohen,
Commodore Horsham,
12-13 Little Newport
Street, London
WC2E 8LD**

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Beating the bandit to pull in the prizes

Solve Tony Roberts' quiz to win Richard Shepherd's packages — worth £250 on disk

THE COMMITTEE running Commodore Hall, where the Hill Hoek Micro Club meets, has decided to raise funds by installing this domino-style one-armed bandit: if all the squares bear the same number of spots, then it pays out a jackpot.

It has an unusual "nudge" feature — pressing a nudge button causes the squares in the corresponding row (vertical or horizontal) to gain an extra spot; the other two rows don't change. Adding one to seven spots leads to a blank (zero) square.

Gerwyn has just got nine nudges . . . how should he distribute them amongst the buttons to get the jackpot?

Simply tell us the number of nudges for each button in the order 1,2,3,4,5,6,7,8, then complete the tie-breaker.

This month there will be four competition winners, so the odds have increased in your favour. Richard Shepherd Software is offering four complete sets of its Commodore 64 packages as prizes, total value £250: Transylvanian Tower, Super Spy, Everest Ascent, Ship of the Line and Urban Uppan — plus the Cash Controller business package.

And you've also given a choice between cassettes and disk formats, so let us know which you would prefer when you send in your entries.

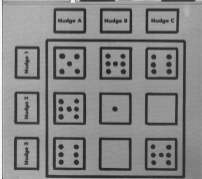
As a tiebreaker complete the following sentence in an apt and amusing manner in 17 words or less: "I want to own a complete set of CRMS packages from Richard Shepherd Software because . . ."

The winner of May's competition is Adrian LaGrande of Camberley, Surrey. Adrian's prize is the Valiant Design Turric and Commodore's Logo package.

Send your answers to
**Competition
Corner,**

**Commodore
Magazine, 13-15
Little Newport
Street, London
WC2E 8LB — to
arrive no later
than the last
working day in
the month on the
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**The name of the
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solution to the
puzzle, will be
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55016

PEGASIS

Pegasus takes us back to the mythical age when the battle between Good and Evil was fought by heroes on winged steeds. As the champion of the forces of Good, you must topple the evil Black Warriors from their jet black flying horses by swooping down on them from above, then land and knock them off before they can reconquer. In order to keep airborne, you must keep your wings flapping with the joystick fire button, and control direction with the stick. The brilliant programming of Pegasus gives you stunning graphics, bonus creatures, great wing flapping sound effects, an incredible simulation of flying horse aerodynamics, plus - two players can play at the same time!



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