

Commodore **HORIZONS**

The independent Commodore magazine

75p April 1984

**MACHINE CODE INTRODUCED • NETWORKS EXPLORED
BUSINESS AND GAMES SOFTWARE REVIEWED**

UNDERSTANDING THE GRAPHIC COMMANDS



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



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EDITORIAL

DEPARTMENTS OF DISINFORMATION or Ministers of Active Marketing? It's hard to work out which is the most accurate interpretation of many microcomputer companies' activities.

Product announcements can provide the arrival of working models by many months — and even then any user finding bugs may think that "working" is an over-generous description. Stories of abandonment, models being driven by outside boards, or even other misdeeds, offer little reassurance. Other companies, mini and mainframe manufacturers, are said to have displayed "hands-off" models protected by glass cases, while one launched a machine by showing it in video. Similar stories circulate about software houses. For example, passing off the arcade version of a game due to be released on cassette as the actual model offering.

It makes it hard to say exactly what a company intends to do, let alone when. Perhaps some of the doubt arises because firms have to change their plans in the light of "rush" announcements. Customer demand can also prompt manufacturers to revise their plans — if you announce that you intend to drop a product but demand for it continues, there there's an obvious temptation to change your mind. Companies can also face problems with outside suppliers. If a particular chip is hard to get hold of while a cheaper equivalent with the same specification is readily available, then a change in supplier is bound to be considered. Working out how many machines to stockpile for a busy period like Christmas is also difficult, with market projection sometimes sounding suspiciously like a euphemism for guesswork.

It's hard to work out whether this flux is deliberate or merely inefficiency. For instance, some of our 64 readers had problems getting hold of Commodore cassette decks. A cynic might be forgiven for wondering if sales of cartridge and/or disk drives increased during this period.

Waiting for the new Commodore micros promises to be equally intriguing. There have already been conflicting reports in the US press on when these machines will be available. As there are modular models, there's plenty of scope for maneuvering. But if memory serves as well, a Vix 10 and 15 were once expected to take their place beside the 26. The Vix 10 had a low quality keyboard with some features for synthesizing music. The Vix 10 had the 26's keyboard as well as 16K of RAM. Don't write to ask where these machines are now, because we wouldn't be able to tell you. However, we're curious about how similar the Vix 10's keyboard is to the one on the 116, the possible junior in the new 264 family. Keeping users in suspense, and competitors off your track, may yet end up being a rewarding marketing policy.



DISK GAMES

FOR THE
commodore

If you've got a 1541, you don't need to spend ages waiting for cassette games to load. Freed from the restraints of loading times, *Multiquest Disk Games* can give you typically around 300 of machine model main code memory/game, better graphics and several more variations, and those little extra touches that you will come to expect from a game. Here are our first great releases!

FORBIDDEN FOREST

Forbidden Forest is more of a quest than just a game! The action takes place in a four dimensional scrolling forest landscape which every time you enter, but none has returned. Yes, I did say FOUR dimensional - they fall into night as the action unfolds! The quest is to seek out and slay the Demogorgan, mystic ruler of the Forbidden Forest. Before you can even set eyes on him you will have to contend with his army of fearsome creatures, including mutant spiders, showers of giant frogs, snakes, dragons, skeleton soldiers and more! You have only your trusty bow and arrows to depend on!



AZTEC CHALLENGE

A challenge on an epic scale! *Aztec Challenge* takes you on a journey to Mexico and the ancient pyramid of Tenochtitlan. The ancient Aztec gods and their devotees have ensured that no ordinary human can learn the secrets of the temple and live to tell the tale. The pyramid is protected by all

manner of treacherous traps and hidden perils - an epic test of your courage and cunning. *Aztec Challenge* features no less than seven totally different screens - here are just three of them - each of which presents a brand new challenge. We hope your joystick can stand up to it!



SLINKY

Slinky, the spring, was having fun hopping about when suddenly he came upon a pile of coloured blocks, so he thought he'd play around on them for a while. Much to his amusement he found that they changed colour when he landed on them. Would that along to taste our poor hero. *Slinky* is a real fun package with ninety-nine levels, amazing reward displays, and action replays. Where else could you meet such charming characters as Dusty the dust cloud, Marge the magnet, Ralph the random raindrop, and Lorenzo the chameleon hopper!



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FRANTIC FREDDIE

Frantic Freddie is fun all the way! Played to an unbelievable soundtrack of brilliantly arranged tunes, Frantic Freddie contains all the ingredients that make a game into a classic! Freddie is a telephone line engineer who has to climb up and down the telegraph poles, picking up pairs of gold and avoiding the dreaded Greeshes. The Greeshes take on a different form with every new screen, but one thing is for sure - they may look cute, but they show no mercy! Frantic Freddie also features wacky messages, funny interludes and silly bonuses. Frantic Freddie - a game with a sense of humour!



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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, fire and sword. Avoid them all before they can remount. In order to keep airborne, you must keep your wings flapping with the



joystick's 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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INDEX

LETTERS PAGE

Price of inflation

CONGRATULATIONS on producing an entertaining, interesting and informative magazine.

One point which may be of interest to anyone having read Peter Gerard's article on printers in issue 1. The *Hydromatic* daisy-wheel printer of which he speaks no longer seems to be available at a shade under £400. The price quoted to me by the Discos Trading Company was £485 plus VAT. A pity, as it makes it even further out of my price range, and it was just when I was looking for it! Peter (Dorchester) Wimbeldon London

Rate of return

I WAS interested to read Market View on Commodore system rates (February issue). I wonder if my own case was typical? I purchased a 64 in November 83. Returning home I opened the box in great anticipation, and found everything worked — except every second letter on the third row of keys! I exchanged it for another, and this time the second generator didn't work.

I exchanged it again, and this time *voilà*! 1 and 2 appeared to work, but not voice 2. By this time the

dealer looked at me with some suspicion, but they agreed that it was faulty. They had to test five machines before finding one which appeared to work perfectly, but I must say it has since performed faultlessly, and it is a joy to use. So I'm wondering what exactly the true rate of return is. Alison Nevill Aylesford Gloucestershire

Colour blind no more

I RECENTLY purchased a Vix 20, and have attempted to program in some of your listings. I have found that I'm unable to do so because I cannot find some of the special key symbols. Can you assist?

R Covert
Newbury
Wiltshire

WE'VE HAD dozens of letters and phone calls dealing with problems concerning the graphic command symbols. Just read Kevin Bergin's article elsewhere in this issue, and you should never be confused again!

Interfacing cassettes

WITH REFERENCE to Linda McColl's letter in February's issue, "Cassette Complaint", I know of a company selling cassette interface leads which are designed to allow the Commodore and Vix 20 to be used with standard tape recorders. The leads cost £12.95 and are

available from L. W. Steane & Company, Unit 2 Reading Trading Estate, London Road, Barking, Essex. D.P. Price
Aylesbury Vale
Glouce

THIS is one of several letters pointing out that interface for standard cassette recorders are available. Other manufacturers include Swallow Electronics, 31 Golden Road, Swallow, Kent, and Data Electronics, Hamley, Stoke-on-Trent. Tel. 0782-23885. If the current shortage of Commodore £15 cassettes continues we may review some of these interfaces.

Words of warning

CAUTION! Basic programs which call for M-C files to be loaded like this:
10 LOAD "M-C",1,1
20 REM ... rest of program
will never work.

This is because having loaded the machine code, Basic re-runs the program from the beginning; that is it attempts to load the machine code again and again until it fails. One solution would be:

```
10 T=T+1  
20 IF T=1 THEN LOAD  
"M-C",1,1  
30 REM ... rest of  
program.
```

Similarly a Basic program which LOADS another Basic program will be overwritten, but the new Basic program will survive. S.P. Popleton
Camden
London

Going back

CONGRATULATIONS on a very good new magazine dedicated to Commodore users. I got tired of wading through the material on other computers which fills the other popular computing mags.

Unfortunately I didn't get your first issue (Nov 83) and won't find a back issue anywhere. Would any reader be kind enough to lend me a copy of the first issue for a few days — postage refunded. If so please contact me first on 0423-898450 (ext. 158)

between Pam and tips. J. Maxwell
Aylesford
Ayles
UNFORTUNATELY we've sold out of back copies of issue one. You can however help Mr Maxwell! Other back copies are available from our subscription department, and photographs of particular articles can be sent in exchange for an issue.

Hold on, there's more

ON OUR review of the SO-66 portable last month we missed out some of the software included in the price. Four packages, worth over £200 if bought separately, come with the machine: Future Finance (financial planning), Easy Script (word processing), Easy File (information handling) and High Flyer (a business simulation game). We also noted false hopes that the portable, which was available in the shops before Christmas, could be used with a television set.

Commodore says that 64 users can safely assume that their software will run on the portable — they only know of one exception, the *Protopack* compiler. And there should be no problems with the machine either. As ever, we'd suggest that you get the software now (even running on the portable before involving in other). The same goes for the machine.

Commodore adds that a testing facility is not necessary but we still think that the signal being lost from any users is unlikely to remain constant, so a tester might come in handy.

Commodore also says that a lightweight keyboard and small monitor are part and parcel of a portable system. Again we think the keyboard doesn't match the 64's and that manufacturers may have misjudged the advantages of this style of built-in monitor.

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



"It is almost to have got all that wonderful a monkey — he says a Commodore 64 most of the time!"

NEWS DESK

Games follow-ups arrive

A NUMBER of the latest games available for the Vic 20 and CBM 64 are neatly packaged Follow-ups in previous big success.

Jeff Miller of Llamasoft has completed *Blitz Carr* for the 8K expanded Vic; it's a fast-paced arcade style game with 20 play levels and a challenging control action.

Blitz Carr costs £6.80 on the Vic, and is also available for the 64 at £1.08 less.

While *Blitz Carr* is keeping you occupied, Jeff is working on his next 64 epic, *Sleep in Space*, which should be available later in April.

Meanwhile, Virgin is planning to follow up on the success of Steve Loo's *Valiant Patrol* with *Hobbes Bill* and the *G-Men*, for the 64. Like *Quadrant's* *Hot Attack* for the Sinclair Spectrum, *Hobbes Bill* features you as a fearless hero aiming to rescue the heroine from hands of vicious arms. *Hobbes Bill* costs £7.95 and is played with a joystick.

On the subject of heroes, Birmingham based Adventure International has announced a new series of graphic adventure games featuring well-known Marvel Comics superheroes.

The first, starting *The Incredible Hulk*, should be released on May 14. Games featuring *Captain America* and *Spiderman* will come later. Each game will come with a comic which leaves the action at a crucial point, then it's up to you to play the part and save the day.

The games should be available for the 64 from an early stage, at a cost between £9 and £15. It's unlikely that they'll be available for the Vic.

Finally, Ferranti and Davenport Software has released what is claimed to be "the first real flight simulator for the unexpanded Vic 20". It's called *Flight Zero One Five* and costs £5.95.

Introducing the Valiant Turtle

FOLLOWING last month's article on Prime Technology's robot turtle Fred, Valiant Design has announced the release of its own turtle to be used with the Commodore 64 and Commodore's version of the language Logo.

Like Fred, the Valiant turtle is controlled by an infra-red line from the CBM 64. In this case the range is around 28 feet.

The turtle has a pen holder, enabling the patterns designed to Logo to be reproduced in graphic form, on a sheet of paper.

The language Logo, which is particularly suitable for control of turtles due to its simple use of directional and movement commands, is becoming more popular for educational purposes. The



Valiant turtle — able to show Logo-designed patterns.

Commodore version of the language has been written by Terrapin Software.

The Valiant turtle, infrared transmitter and interface package will be priced at around £180, in line with Commodore's current policy

of promoting educational sales, substantial discounts will be offered to educational institutions.

Details from Valiant Design, Unit 14, Park House, 140 Baines Park Road, London SW11.

More commands at your service

SOFTWARE'S pick-it-yourself command cartridge service is to be extended to cover a whole new range of CBM 64 functions.

The unique service, from Whitty Computers, offers a list of over 100 new commands which can be used to augment the less-than-adequate Basic on the 64. You select the commands you want from a list which gives the number of bytes required for each command. Whitty Computers then places these commands on a cartridge with a maximum capacity of 8K, at a cost of £34.95.

Commodore's own Simon's Basic has been augmented by an extension package, which includes commands dealing with editing, trigonometrical functions, lists, graphics and others. SIM costs £18.95 on cassette or disk.

The Software service has been available for the Pet for two years, and the original set of CBM 64 commands was

based on those Pet originals. They covered areas such as editing, MERGE, DELETE and so on, new Basic routines such as BORDER and TIME, and special business functions.

New Whitty has developed a range of commands covering the 64's sound and graphics functions. David Tinsdale of Whitty Computers explained: "Although there are several companies offering good command routines on cassette, we are the only ones to make the users' own choice of commands available on cartridge."

"The new sound and graphics commands — which include a series of EFFECT-like pointers, and DRAW and CIRCLE commands for graphics, will obviously make it easier to use the great potential of the 64. We also expect a lot of interest to be shown in our new series of disk commands."

"In the near future we'll

be trying to introduce some 10 routines, and features such as garbage collection (automatic sorting of alphabetical information) which was available on the Pet but is not on the 64."

For those of you who feel the selection of commands can be left to the experts, Whitty offers two cartridges as CIO — the Programmer's Friend, which is a form of compiler, and Business Command, which is self-explanatory.

Simon's Basic has come in for some criticism over the way it has crammed 114 commands onto 8K.

David Tinsdale argued that: "Even if the Simon's Basic Extension, which adds another 88 commands when used with Simon's Basic 1, eliminates some of the faults which have caused it to be criticised, we still think the choice offered by Software will make it the best way to improve the Basic offered on the 64."

Taking serious steps

SERIOUS software and hardware for the Commodore machines is making great strides forward, with a special offer to schools from Commodore and a selection of new business and education programs.

Commodore's plan is to make it economically viable for schools to invest in IBM systems, which were left out of the government's Micro in Schools campaign in favour of Sinclair and Acorn machines. The offer, which lasts until the end of April, consists of a IBM 48, 1M4 disk drive, Logo language package and Siman's Basic 1 at a price of \$299.99.

Meanwhile, Chalkboard of Worcester is converting most of its educational programs for use on the 64, despite the problems in writing educational software for the 64, which centre around its inability to look at more than 64K of its 64K memory at once.

On the business side, Keogram Systems of Hoveham has released a new Purchase Ledger for the 64, based on Commodore 8000 software. At £75, Purchase Ledger deals with invoicing, reminder advice notes, balances, statements and customers' names and addresses. There's also a Sales Ledger program on disk for £75.

Simple Software of Brighton has released Simply Account, for the 64 and Pet, to join the Simply Write and Simply File programs. The assembly features, among other functions, full screen editing and automatic conversion of the assembly listing into Basic. Simply Account costs £22 plus VAT on tape or disk.

Finally, Oxford Computer Systems has launched a range of three Integer Basic Compilers. One is for the 8000/4000/3000 series, one for the C104 disk and one for the 700 business machine.

For further details, contact OCS at The Old Signal Box, Hittington Road, Woodstock, Oxford.

Rivals promise network choice

COMMODORE users will soon have access to a choice of two national networks. One is Commodore's own Computers, the other Microsoft 800, which has been around longer in the UK.

Databases operate through a mainframe computer, which is accessed from the home via ordinary telephone lines. The computer "talks" through a modem, which must be designed to be compatible with the particular computer.

Microsoft 800, which already serves Spectrum, BBC, Apple and Pet users, is now developing a IBM 64 service for a Spring launch. Users will be able to download software (some free of charge and

some at around 20% less than shop prices), send messages to other users, receive newsletters and access Telecom's Personal service.

Subscription charges are £13 per quarter for Microsoft and Personal, with a 5p per minute charge at peak hours plus telephone charges. Modems cost £66.95 for the 1080 model, and £84.95 for the more software controllable 2080. Additional software will bring the price up to nearer the £100 mark.

Commodore's Computer system operates at a similar fixed rate — number of bytes transmitted or received per second — to Microsoft, so operation charges should be

about the same.

Commodore's modems for the 64 should cost around £108. Computer is likely to be linked to other databases, such as The Source in America, and will offer facilities such as telecopying and telemailing. No subscription will be charged, although there will be fees for downloading certain programs and a connection charge between certain hours.

Contact Microsofts at Tolmap Ltd, Scripser Court, 155 Farringdon Road, London EC6 2TS 5045, and Commodore Computers at 675 Alan Avenue, Trading Estate, Slough, Berks RG75-76111.

Write your own adventures



Howard Gilbert of Quill — planning a disk version of The Quill

ADVENTURE fans will welcome the arrival of a version of Gilbert's The Quill for the C104 64, at the end of April.

This unique program enables you to write complex adventure games with no knowledge of computer programming.

The original Sinclair Spectrum version of The Quill has been nominated in the annual Micro Computer Awards.

Howard Gilbert of Quill explained that the C104 64 version will be essentially the same program, although with minor differences in screen presentation. "As slightly more than the £14.95 one of the Spectrum version, The Quill for the 64 will represent excellent value". Howard commented, "There will also be a version on disk at a slightly higher price, partly dependent on the kind of packaging and presentation we decide on."

The Quill is menu-driven, and comes with a complete 32-page manual. It allows you to map out locations and specify objects found in your own adventure, then input explanatory text.

Gilbert encourages users of The Quill to market their programs, asking only that The Quill be credited. One successful adventure created using The Quill is Drink Through the Drinking Glass, which comes from Applications Software.



The best books for the Commodore 64

Working Commodore 64



The Working Commodore 64
A library of practical subroutines and programs.
"The style is easy to follow and informative."
Personal Comp. News August 1983
ISBN 0-7446-0113-7

Commodore 64 Machine Code Master



Commodore 64 Machine Code Master
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Popular Comp. News 28 August 1983
ISBN 0-7446-0114-4

Commodore 64 Adventure



Commodore 64 Adventure
A blueprint for the construction and playing of Adventure programs based on a full text editor.
ISBN 0-7446-0114-4

Graphics Art for the Commodore 64



Graphics Art for the Commodore 64
How graphics facilities can be fully developed by using built-in Graphics techniques.
ISBN 0-7446-0117-2

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Datapen sheds light

A HAMPSHIRE-BASED Datapen Microtechnology has released a CEM 64 version of the successful Lightpen for the Vic 20.

The new lightpen comes complete with three introductory programs. The first is an explanation of the pen's features, which includes a software listing which should enable you to incorporate the lightpen's functions into your own programs. Item also includes a routine to move spots around the screen.

The second program, Colour-Draw, allows the 64's colour graphics characters to

be transferred from an on-screen menu to any required position using the lightpen.

The third program, HiRes-Draw, uses the maximum resolution of the computer to produce fine drawings. All drawings may be saved to tape and reloaded later.

The Datapen is British designed and features a data control switch and ambient lighting intensity. It costs £27.90 and is available through dealers or by mail from Datapen Microtechnology, Kingsley Road, Overton, Hants, telephone 0234 776488.

Break into print

IF YOU WANT to take your first steps in computer journalism, or simply pass on your knowledge of Commodore micro, this is your chance. Just fill in this form and send it to *Commodore Horizons* — we'll try to get back to you as soon as possible to discuss your chosen subject areas in greater detail. Or simply send us a sample of your work (don't be shy) and we'll let you know what we think — for further information on submitting articles see page 3.

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SOFTCHIP-64

POWERFUL NEW COMMANDS FOR THE COMMODORE 64

What is Softchip? ... a Softchip is a plug-in cartridge custom-made to your specification that slots quickly and simply onto the back of your 64 giving you immediate access to powerful new commands like:

RENU	.....	renumber all or just part of your program
FUNC	.....	use the function keys (press F1 for 'LIST' etc.
BASIC4	.....	all the powerful disk commands Commodore left out
MERGE	.....	merge one program into the heart of another
SORT	.....	sort your arrays into order at lightning speed
SEARCH	.....	shoots through an array till it finds what you're looking for
DESIGN	.....	get those sprites designed on the screen, not in DATA statements
VOICE, FILTER	.....	the 64 makes great sounds
EFFECT	.....	built-in sound effects ... explosions, helicopters, jingles
MODE	.....	use the hi-resolution modes
DRAW, CIRCLE	.....	draws lines, circles (coming soon in 3-D)
SPLIT	.....	split the screen into half-graphics, half-text

But this is only a small selection - we have over 100 different commands available now. We're on the end of 0947-804986/8 ready to help or write to us for free details at the address below. At £34.95 all inclusive for so many commands as will fit into an 8K cartridge, can you find better value for money?

SOFTCHIP-64 another fine product from **Whitby Computers Ltd.**
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giving machine code executable on VIC/64 £125.00

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Compilers are supplied on disks. Intercept supplied 7-disk,
80-track.

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Step right up for Clubland

An introduction to the world of the Association of Computer Clubs by its chairman Rupert Steele

ARE YOU a member of a computer club? Have you visited your local club? Do you know where your local computer club is? If the answer to all these questions is "NO", then you may be missing out on something which may broaden life and interest into your Commodore computer.

Computer clubs come in three varieties: there are National User Groups, local computer clubs and closed computer clubs. The national user groups are associations of users of a particular computer system, and they tend to operate largely by a postal newsletter system, since they are too widely dispersed to have meetings. Some of the national user groups are run on a commercial basis, with one or two people treating it as a full time occupation. Others are run by a much larger number of amateurs, using what time they can find.

Local

Another type is the "closed" computer club. This is the kind of club that is usually started at a place of work or at a school, and opens exclusively for employees or pupils. Some such clubs do have an open affiliate membership (particularly the clubs attached to Colleges or Universities), but others do not. Such clubs work well in large organisations where people have free time in the vicinity of the normal premises, and I have had reports of clubs being formed among the British Troops in West Germany, and at various army bases. Other institutions which have brought forth computer clubs include banks and Government Departments.

The main type of club I'm writing about is the local computer club. This kind of club has membership open to all those in the area who are interested in personal computers. Some local clubs are specific to a certain machine, but many others are of general scope, so allowing members to gain from the cross-fertilisation of ideas, and to see a variety of computer systems in action when considering a purchase. So what goes on at a local computer club?

That rather depends on the type of club it is, but two

activities are very common. They are speaker meetings or lectures, where an outside speaker or a member of the club gives a talk of perhaps an hour and workshop sessions where members mix informally and spend time in hands-on use of computers. Some of the larger local clubs have machine specific sub groups for discussion of, say, Commodore related topics, with general meetings to discuss perhaps artificial intelligence or robotics. And many local clubs will run such things as communications workshops.

So what is the ACC's role in all this? The ACC is the national Association of Computer Clubs, which is the representative and liaison body for computer clubs across the country. It is

controlled by the computer clubs which it represents, through a representative Council of club delegates. It is a non-profit making organisation.

One of the areas in which ACC is active is in putting people in touch with their local clubs. The ACC maintains a clubs database and we can give people the details of their nearest clubs. But of course we can't do this if people don't tell us about their clubs, so if you run a club please write to the ACC and we will make sure it gets on the database.

The ACC is also active in the communications field. We run an area on **PRESTEL** called Club Spec 800 (part of the Microsoft 800 database). Starting on page 9800*, you will find pages of news and

views from around the Club Scene. And you can edit your own club's pages on club spec. Write to me for details of how you can edit on club spec — there are no charges apart from the phone bill!

There is a club affiliation scheme, which allows clubs to affiliate to ACC for a nominal fee of six pounds per year to cover our administrative expenses. Affiliated clubs are able to send a representative to ACC Council and can take part in Club Spec. We are also arranging an insurance scheme for affiliated clubs, so that they can be covered at a large discount on a standard policy. One of ACC's four working groups works on thinking of ways that clubs can, by pooling their resources, gain benefits all round. One example of this is the speakers list, which we hope to make available to affiliated clubs (in first edition from April). If you would like to be on our speakers list (and to be invited to give talks at nearby clubs), please write to me.

National

The ACC is also involved with the National User Groups at computer shows and exhibitions. At the major shows, there is a feature often known as Clubs Avenue where the computer clubs exhibit on special stands. The allocation of these stands is handled by ACC, who are given the space by the exhibition organisers for the purpose. At recent exhibitions, many of the major national user groups have been represented, along with one or two major local clubs, the Association of London Computer Clubs (ALCC) and Club Spec 800 (the ACC Prestel area).

If you are running a local computer club, wanting to find a nearby computer club or thinking of starting your own computer club, then please write to me. The ACC has a "Club Information Kit" available free which gives advice on setting up and running computer clubs, as well as the database enquiry service.

Please address any enquiry resulting from this article to: Rupert Steele, 17 Lancia Park, Croxson, LONDON, SE26 6HH or Tel: 01-778 8926, and I will pass it on to the correct officer. ■



Computer clubs — the answer to your prayers?

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On the ball

Pete Gerrard hits some losers and winners

THE MAJORITY of the action this month is taking place on the Commodore 64, but to start off with something just a little different (and to keep Vic 20 owners from cancelling their subscriptions immediately), Galactic Software has kept into the latest handwagons amongst software suppliers and produced a games designer, impressively called Games Designer, for the unexpanded Vic 20.

With this £9.99 program, so the theory goes, you need no programming experience to be able to create great games, and just to press the point the cassette with the Games Designer on it comes complete with three sample games which were themselves created by using the facilities of the Games Designer program.

This appeared to be the logical place to start: not what sort of high quality, arcade action games could be created using the

program, and if the games were up to a suitable standard, then surely the program itself must be worth considering.

With this premise in mind, the first sample game was loaded into the Vic, and yet it did indeed run on the unexpanded machine.

However, *Kango*, as it was engagingly called, proved to be as exciting as watching paint crack. You take on the role of a kangaroo, who has to toe the tiny races by trawling down to the bottom of the screen and getting some food from your good friend Andy Ann.

Between you and the ant there pass a number of holes and wagons, and inevitably a certain kangaroo will meet with a dismal fate whilst trying to desecrate the screen.

The second sample program has you in charge of a spaceship, whose mission is to

go some fall by trawling down to the bottom of the screen.

Between you and the bottom of the screen there pass a number of space patrol ships, and inevitably a certain spaceship will meet with a dismal fate while trying to desecrate the screen.

Are you beginning to get the drift? This program allows you to create one type of game only, namely the mad panic run across the screen, while trying to avoid various objects floating about the plain.

A laudable attempt to produce a game designer for the unexpanded Vic 20, which does allow you to design characters, position them on the screen, create background music, and to a certain extent "personalise" the game, but there is a limit to how much you can achieve with an unexpanded Vic 20. Unfortunately, Galactic Software has reached that limit, and one can only hope that their Commodore 64 version of this program exploits the 64's greater potential.

Weak link of the month having been reached, the remaining programs are all for the Commodore 64, and without exception they are all GAMES!

You know, some people probably think that we reviewers have an easy life. Get some free games, play around with them for a while, and then write a load of drivel about them. This is, to an extent, very true. On the other hand, when you've seen one game of *Castipede* you've seen them all, and *Wilder's Revenge*, one of the latest offerings from Bubble Box software at £8.99, is yet another version.

Artie

To quickly run through the rules of the game, for the benefit of all those of you who have spent the last three years as an *Archie* expedition, in *Castipede* you are in charge of a garden.

You spend your time at the bottom of the garden (often referred to as the screen), and from there you must keep an eye on everything that happens above you. Whatever variety of the game you happen to be playing, the essential ingredients remain the same. Nasty spiders bob up and down with the accused intention of killing you off, innocent creatures live across the screen to provide you with the occasional chance of a bonus score by wiping them out, and down the screen comes hordes of castipeds (or in this case, spiders).

The rest of the screen is full of little mushrooms, and as the spiders collide with the mushrooms their direction of movement changes and they wander off in the opposite direction, having meanwhile stepped down a row on the screen.

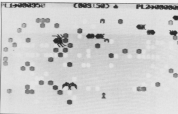
You must avoid colliding with the spiders (either large or small), and simply have to shoot everything that moves, or indeed everything that doesn't.

There are better versions of *Castipede* around, and I can't really imagine why anyone should want to bring out, or buy, another.

Kick-off is a better game, however, as Bubble Box have taken a logical step and decided to implement a version of the old favourite Table Football game. Version 1



Kick-off — an implementation of the old favourite Table Football



Wilder's Revenge — shoot everything that moves, and indeed everything that doesn't

FINANCIAL PLANNING and stock control are two of the most common business applications. This review looks at two CTS Viscont packages providing these functions — *Future Financier*, written by Finerman, and *Easy Stock*, by Anagram Systems. So what do you get for your money?

The *Easy Stock* stock recording and control package is supplied by Viscont packaged in a solid cardboard box. In addition to a large, comprehensive and well written ring bound manual the box contains two heavily protected disks, one of which should be locked away somewhere safe for back-up in case of accidents to the working disk.

The minimum equipment required comprises a single 1041 disk drive and supply of diskettes, a CROM44 and a screen (15V or monitor), and a serial printer which must be from the Commodore range (1150, 1520 or 1520H). No provision appears to have been made for a dual disk drive set-up but, in fairness, for the sake of business at which this package is aimed dual drives are probably unnecessary.

Mention is made in the manual of the facilities to use an ASCII printer but no instructions are given for connection to the user port. Commodore tells me that this is indeed possible but I was unable to make any of the three Commodore printers that I tried work. If this is important to you my advice would be to stick with Viscont that your particular printer will be satisfactory. Viscont has always been very helpful to me in many strange requests and I am sure it will do its best to sort out any problems.

View

In my view a printer is really vital for the production of stock reports and analysis — continuously scanning backwards and forwards through the stock from index, while possible, is hardly likely to be practical.

Where stock is below the previously determined minimum the "In Stock" field is highlighted, in reverse colours. Where the number of stock items is low it is a relatively easy matter to scan the individual records on screen but the automatic report facility which provides output to the printer is obviously of more use.

Easy Stock provides facilities to review and analyse up to 150 items on each disk with no limit to the number of data disks other than in practical terms. A comprehensive system for maintaining stock levels produces a full range of reports and includes a warning report when any stock items fall below a pre-defined level.

The program is easy to use with comprehensive Help screens provided throughout, accessed with the Back Arrow key on the top left hand end of the 64's keyboard. The useful user manual has a good section on transferring from a manual system of stock recording to computerisation. Divided into sections, it also contains a brief introduction, an easy to use tutorial and a comprehensive reference section.

Taking stock to make money

Michael Watts takes a look of two Commodore packages covering financial planning and stock control

Good use has been made of the Commodore function keys:

- F1 Display previous screen.
- F2 Display next screen.
- F3 Requests update function — updates a file.
- F8 Return to previous screen or function — using the F8 key several times will allow you to escape to the main menu.
- Left arrow key — help.
- Run/Stop key terminates current function or closes down system.

Loading the program from diskette takes about 1 minute 50 seconds after which the *Easy Stock* title page is displayed. Remember, however, that if this is the first time you have used the program, you will need to have previously prepared an appropriate quantity of data diskettes. As the File Club program takes nearly 20 minutes to format and set up each disk you would be well advised to spend this time reading through the User Guide. Provisions are made in the File Clubs program to detect and allow you to replace a faulty disk. When the file creation is complete you are offered the option of creating another data file or obtaining *Easy Stock*.

More effective use has been made of the colour facilities offered by the 64 than with some similar programs, which helps to make *Easy Stock* pleasant to use. The

screen of planning you into a program of this quality is evident in the way in which the date field is filled automatically (after the date is entered on the Start or Period or Start of Day screens). Careful formatting of the many input lines makes an incorrect entry much less likely and eases the operator's job.

While *Easy Stock* doesn't take orders for you it does flag stock items which are below a previously determined minimum level; it also allows you to record how many of each particular item you have on order.

Stock items are accessed throughout by a stock number which is used by the program to set up the Stock Index from which you will gain access to each of your individual stock records. In this respect a great deal of forethought is needed on the part of the potential user in that the Stock Number should be allocated in a way that makes finding a particular item as simple as possible. Some thought should be given to the possible use of mnemonics or abbreviations, up to 18 alpha-numerical characters are allowed, and stock should, where possible, be grouped in a logical way. Suitable spaces should be left in the Stock Number Index so that items can conveniently be added at a later date.

From the point of view of the small businessman, which I have been for the

Main Menu

- 1 Profit Menu
- 2 Cash Menu
- 3 File Menu
- 4 Report Menu
- 5 Cancel Data On Memory

Report Menu

- 1 Print Sales Totals
- 2 Print Purchase Totals
- 3 Print Expense Totals
- 4 Main Menu

Profit Menu

- 1 Sales Titles & Tax
- 2 Sales Prices & Costs
- 3 Sales
- 4 Costs
- 5 Gross Profit
- 6 Expense Titles & Tax
- 7 Expenses
- 8 Net Profit
- 0 Main Menu

Cash Menu

- 1 Sales Credit Periods
- 2 Purchase Titles & Tax
- 4 Purchases
- 2 Expenses
- 6 Tax Report
- 7 Cashflow Report
- 8 Main Menu

File Menu

- 1 File a Model
- 2 Retrieve a Model
- 3 Delete a Model
- 4 Directory
- 5 Forward a Data Disk
- 6 Call Commodore
- 8 Main Menu

Commodore Menu

- 1 Retrieve a Model
- 2 Commodore a Model
- 3 File a Commodore Model
- 4 Delete a Model
- 5 Directory
- 6 Commodore Report Menu
- 7 Forward a Data Disk
- 8 Call Future Financier

Commodore Report Menu

- called separately from disk:
- 1 Net Profit Report
- 2 Tax Report
- 3 Cashflow Report
- 4 Commodore Menu

past 18 years, I feel that this is an extremely useful program. While it certainly does not offer all the facilities of some of the more expensive packages on the market I am sure that, for the price, *Future Finance* will be hard to beat.

As ever when assessing the relative merits of a variety of business software it is vital that the potential user is able to compare the package of his choice with his existing system. I would strongly recommend that potential buyers set aside time to check the, or any other package, against their existing system bearing in mind the time, effort and potential disruption that changing over to a computerized system could possibly entail.

Future Finance also comes in a substantial cardboard package containing the comprehensive and well-written manual and two protected program disks (one for back-ups).

The program runs on the 64 and requires at least one 1541 disk drive and a monitor or TV. A printer, if used, must be from the Commodore range, i.e. 1525, 1525 or 1526, as the program does not support printers connected through the CBM user port. While not essential, in the planning sense, some kind of hard copy output will almost certainly be required at some time.

Before considering the benefits to be gained from a program like *Future Finance* it may be as well for me to explain briefly the purpose of a financial planning system.

Financial planning is, in one sense, the art of creating a model of the financial structure of a business what it sells, when, how much it costs to make these sales both in terms of unit price and overheads, the cost of running the business (administration) and so on. Having created the model it is a relatively simple, though, at times, somewhat inaccurate, task to forecast the financial structure of the business for a certain period. Obviously the further ahead one tries to look the less reliable become the forecasts.

Modelling

Future Finance is a comprehensive, easily followed program, designed to make the setting up of such a financial model a simple task even for someone who has never attempted, nor even considered, such a thing. Unfortunately, because of the way in which the program has been designed, or so it may seem friendly, it suffers from severe limitations in the way of business that it will support. Each disk holds a maximum of nine models and each model permits only 12 sales items (product lines) with their related material costs, and 30 expense items — rent, wages, power, phone etc. The consolidation of two or more models is provided for but still only allows a maximum of 120 product lines spread over eight separate models.

The entire system is menu driven. Use of the menu involves the selection of the appropriate option by number — followed, in my view unnecessarily, by a Return. I much prefer to be taken straight

into my selected option without unnecessary key depressions — the use of the Return key is obviously to allow for correction of wrong inputs by the Del key — in this program even the function keys need a Return after them before they have effect.

Loading from disk is straightforward, if somewhat long-winded taking about one and a half minutes. Little use has been made of the Commodore's colour facilities, which is a pity as judicious splashes of colour would certainly make for a little variety in what, is, after all, a fairly dry subject.

The accompanying diagram shows the various menu options, and the way in which the menus are linked together should give some idea of the scope of *Future Finance*.

Statistics

From the Main Menu screen the first decision to be made has to do with the selection of an accounting period. *Future Finance* permits three options, 12 calendar months, 12 lunar months or 12 weeks (one quarter). For the purposes the *Future Finance* User Guide provides an extremely well written introduction to the subject with a comprehensive tutorial which should take 2-3 hours to work through and will fully explain the facilities on offer.

The package provides facilities for the analysis and subsequent print-out of:

Sales — by description, quantity, value and cost.

Costs — by sales by description, quantity, value and cost.

Costs Profile.

Expenses — by description (makes allowance for tax).

Net Profit.

Cashflow — with allowance being made for sales credit periods, purchase payments, expenses, etc.

Full disk handling is catered for with the Filter Menu which takes care of Formatting data disks, Filing, Retrieving and Deleting Models and so on.

An mentioned earlier the facility provided by the Consolidation Menu of merging the totals from two or more models is extremely powerful and useful. By setting up four quarterly models it is quite practical to build up a weekly overview of the financial outlook of the company for the coming year. The Consolidation facility also permits the establishment of models for several separate elements in a business, different departments, sales areas and so on, which can then be merged to give a general overview.

In my view, providing the limitations mentioned above is not an important factor, *Future Finance* is an extremely well written, comprehensive package which is considerably cheaper than the majority of business oriented software. This program must be worthy of serious consideration by the small businessman who has not previously considered financial planning on a computer, with all that the concept implies. ■

● On a theme it may be, but it's nonetheless an excellent game.

Oh, it would be if I could play it. Here we have to rely on other authorities, namely everyone I've ever played a game with who has beaten me at it. The real thing maybe, but on a computer... 3

The table is laid out in a traditional manner, with each player having control over four bars of players, otherwise known as rods. These consist of one goalkeeper, two defenders, five midfield players and three forwards. The packed midfield then results from this particular layout can end up in some clear fourth division struggles, but that's what *Bubble Bobble* like (and the makers of the real thing) mean upon, so you'll just have to bear with it.

Control of the game is via one joystick to one joystick and keyboard, and moving the joystick left or right will swap control from one rod to another. Moving up and down will similarly send the appropriate rod moving up and down, and pressing the fire button as well will either rotate the rod (and thus, hopefully, kick the ball), or put the man upright, depending on which way the joystick is going at the time.

Four goals constitute half time, and everyone then swaps sides for another four goals, at which point the game is over.

I found this game difficult to control, although others tell me that they found it easy enough to get on with. It may no longer be possible to do the famed push and pull chess that we all remember from playing the real thing, but if you want a table football game on your office desk, or even if you just want a few laughs, this latest offering from Bubble Bob at £8.95 is the answer to your problems.

Fishy

Nepson's Daughters, a fishy little game from the proudly named English Software Company, was chosen the winner of this month's "Game of the Month" competition. Not quite, as we shall see later on, but in terms of originality, use of graphics and sound, and ease of play, it almost stole the show.

It's certainly a lot better than most of the rubbish that comes out for the 64 these days, and the only people who won't like this game are those who would object to seeing a naked lady shown vaguely, and fleetingly, on the screen. However, you have to get through five levels before you'll ever see her, and even when you do find her she insists on running off home to *Nepson's Palace*, so not even Mrs. Whitehouse should find anything to complain about here.

In this game you take on the role of a deep-sea diver, described in the occasional literature as an intergal aquatican, capable of breathing through the gills in the water of his neck.

You just happen to be around those parts, when some comes through of the evil sea serpent who, tired of a diet of sea horses and chips, has taken to stealing *Nepson's* daughters and hiding them in his lair. ■

LLAMASOFT NEWS

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A very fast-paced Arcade game featuring simultaneous control of 4 high-speed laser cannon. Unique game action is easy to learn yet difficult to master. Features include 20 levels to challenge you; automatic Smart bombs; seven-place High Score table with score signature memory feature and full Attract mode. A superb Jeff Minter design presented immaculately on a 26 x 30 screen.

£6.00

COMMODORE 64: After finishing HELL GATE Jeff took a couple of days to pop the code onto the '64. Whilst this is no Revenge or Hover Bover, we are offering HELL GATE 64 at the bargain price of £5.00... an interesting diversion to occupy a little time while you wait for Jeff's next '64 epic, which we can now reveal will be called SHEEP IN SPACE — for which Jeff promises the usual great graphics and sound — and also a totally new control concept... so prepare to feel extremely sheepish in a few month's time.

Until then — to all our followers

- A) HAPPY BLASTING/MOWING/SPITTING ETC.
- B) DON'T SHOOT THOSE GOATS!!!

BY JEFF MINTER FROM LLAMASOFT

Jeff



Minter

Llamasoft

AWESOME GAMES SOFTWARE

Being an intrepid aquaman who also probably favors his chances with said daughters, you go off in search of paradise... sorry, wrong program... in search of the stolen daughters of Neptune.

On the way you'll have to fight off hordes of angry eels with your trusty harpoon, avoid bumping into the coral-hidden walls, destroy the anemone swarms, kill the deadly nuclear plants, and fend them to the evil sea serpent before he consents to let the stolen daughters go.

After that, the levels get harder, with more eels, anemone swarms, etc., and your time limit before you run out of oxygen appears to creep up as you advance lot faster.

Breathing

A great game, highly enjoyable, but there has to be a complaint I'm afraid. When entering your name into the Neptune Daughter's Hall of Fame, the joystick has to be moved to position the cursor over the correct letter, and that the fire button pressed. All you have to do is locate on the fire button, and three or four letters will instantly appear. Slow

down the repeat rate, and this game would be just about perfect. Neptune's Daughters costs \$9.95.

From the same English Software Company, Marathon is one for the times amongst us, or those who get totally embarrassed in the local pub when asked to add up the farm scores, because this is a test of your mental arithmetic.

A two-player game, again at \$9.95, the Marathon part of it comes in because both players are in control of a little man at the top of the screen, and depending on whether or not your answer to the particular question being set is correct, your little man runs along the screen a little. After answering a number of questions correctly he'll have run far enough to win the Marathon, and the game is then over.

There are four types of test built into the game, ranging from walkie to olympian, and each of these four types has five different skill levels associated with it. The different skill levels basically determine what it is that you'll be tested on, be it mathematics, division, addition or subtraction, and also how long you have to answer any question.

Also on the screen are two boxes,

which, when a question is set, display a variety of numbers. One of those numbers will be the correct answer to the question, and by moving the joystick you have to position your cursor over the correct answer, and thus make your little man move along a bit.

The game goes on until someone scores home, at which point you can change the level and/or type of questions asked, and to keep the kids happy they've given an appropriate comment about their performance.

Definitely one for those of us keen on improving our mental arithmetic, and whether you've aged from 6 to 66 (but probably not 14 to 24), you should find this program both fun, and useful.

One of Konami's latest offerings for the 16, Funtz, at \$9.95, was the clear winner on the day, and the one of all the games that have been reviewed here.

This, I happen to add, is not just my opinion. My resident "mathematics" in matters of games-playing on various machines, Steve and David, also regarded this as the best game of the bunch. Not only for addictiveness and originality, but also because this is one of the Funzone games that I have seen in a long, long time.

The drawing on the cover of the cassette is probably misleading, since it depicts a snooker table showing just three balls, one white, one black, and one red. From this you may be forgiven in thinking that Funtz is some kind of billiards game, requiring skills and dexterity. To a certain extent this is true, but the amount of skill and dexterity required is virtually zero, since this is as similar to billiards as methylated spirits is to a pint of bitter. They may share a common base, but after that all similarity ends.

Manic

Each player has control over one of the balls on the table, either the black one or the white one. Using the joystick, this ball can be moved in any direction, and the movement of the balls has been worked out to perfection, including the gentle "bumps" as they collide with each other at the cushions.

The aim of the game is to knock the red ball down a pocket, cannot of your opponent's ball into the red, or pocket your opponent's ball. If this was all there was to the game, it would be good enough, owing to the very realistic movement of everything on the table.

However, players soon discover that there is a new means element to this game which is not often found in the general world of billiards. Repeated movement of the joystick results the ball whirling about the table at absolutely ludicrous speeds, and the subsequent collisions are enough to make even Alex Higgins blush.

A great game, and a great blow to those who say that you can't write good games in Basic any more. You can, and Funtz proves it. A simple, but highly effective, piece of programming, that is as addictive as anything I've seen for the Commodore 64.



Neptune's Daughters — a fleeting glimpse of the stolen daughters



Marathon — the game goes on until someone forgets to breathe

WALLER



ALLA



MOVi
SOFT

INSPIRED BY the well-known idiom ring, "I got my modem working", a number of modems have appeared for Commodore machines over the years, and the latest one of them all, for the Commodore 64, is generating as much interest outside of the company as it is inside.

It's the most interesting piece of communications equipment to come out of Commodore since, well, the last modem it produced. And that, at least in the UK, was a good few years ago. Modems of all kinds exist in the States, but the chances of getting them to work in this country are remote. The latest piece of hardware, and the possible ComputerLink service that Commodore is supposed to be providing in the next few months, does warrant a renewed look at these boards.

But first, for our less technically minded readers, what exactly is a modem? It's far more than a box that sits between the computer and an ordinary telephone. Connected up in the case of the 64 by the cartridge slot, the hand set of the telephone is then plugged into the side of the box.

Brevity

On receipt of an appropriate signal from the other end of the line (which could be from another 64, a remote mainframe computer, a teletyping machine, or indeed anything with a little bit of micro-technology inside it), the 64 merely jumps into action and starts sending information down the phone.

This information could consist of many things. It could be a program file, it could be a sequential file, it could be a word-processed document, or it could be just about anything that the computer at the other end is capable of receiving.

One of the many interesting uses of modems lately can be seen in certain enhanced teletyping offices. Here the teletyping machine, usually operated manually, is simply plugged into the correct modem and telephone, while at the other end of the line, a word processor (such as you might use with the Commodore 64) starts printing out information.

However, instead of printing that information out onto paper, it sends it down the line to the teletyping machine. With the aid of just a few codes embedded into the text, certainly using nothing more complicated than the codes needed to operate the word processor in the first place, the entire page of text gets typed in a fraction of the time that could that it would normally take.

This is but one use of an extremely useful piece of modern technology.

The term modem itself comes from two words, Modulator and Demodulator, and combining the two gives us our term. In its most simple form, a modem operates in the following way: pulses are modulated onto a carrier and sent to the receiving modem, where they are demodulated and sent to the receiving

equipment. Uh? The pulse gets to modem A and gets modulated (it changed so that it can go down the telephone line). After a quick journey down the phone it is picked up by the modem at the other end and demodulated (it changed again so that the computer, or whatever, at that end can understand the signal coming in).

Modems can communicate at a variety of different speeds, and in a variety of different ways. The speed of communication is measured in terms of the baud rate, which is usually taken to mean the speed at which characters of this article will go full up.

In computer terms, it relates to bits per second, so that a baud rate of 240 bits will be the equivalent of sending 240 bits of information per second down the phone. Since in Commodore's world there are 8 bits to a byte, this is the same as sending 300 B or 37½ characters per second down the line.

Given that one or two characters are used in checking signals to make sure nothing gets skewed up by the phone, 240 baud will usually average out to about 26 characters per second.

The other term you'll commonly come across when people start talking about modems are the phrases full duplex and half duplex. These both relate to the way in which information is passed from one computer to another down the line. Full duplex allows both computers to talk to each other simultaneously, while half duplex is, as you might imagine, a one-way communication. If only certain humans could be programmed to operate on half duplex.

For some reason everything seems to have happened a lot faster in the States

It's modem



A dull-looking box, but full of tricks as

that has ever happened ever here, and such things as Bulletin Boards (which we'll come to in a moment) have been up and running "across the pond" for many years now.

However, no in the UK showed our traditional reserve in such matters, and nothing much happened until the early '80s, at least in the Commodore world. Then, a certain Mr Nick Green (at the time Commodore's special projects manager I believe), and Messrs Holley and Parkinson of Arisler Software sprang something called Power into an unsuspecting and unprepared world.

Next

Power was to be Commodore's own little PowerTel service for users of Commodore machines. It would provide the facility to use a mainframe computer as a host machine, which would be capable of storing a lot of information about a wide variety of different subjects. This information could then be accessed over the phone by Commodore users everywhere, for little more than the cost of the telephone call.

You could leave messages for other users, state how long these messages were to remain on the system, and read messages left by other people. You could download software from the host computer to your own Commodore PC — that is, mainframe programs from that computer to your own. Most of that was to be free.

At the time I wrote "PowerTel is growing all the time . . ." it is expected to expand fairly rapidly. That was the last time I ever believed a press release, because PowerTel unfortunately died a horrible death.

n magic



Pete Gerrard reveals

The system was quite simply never fully implemented, and amidst the rumours and backbiting that went on, it was all quietly forgotten about. The idea of another Point is floated again every once in a while, only to sink once more, and the chances of Point ever getting properly off the ground are about as likely as those of the Conservative party riding Neil Kinnock as their leader.

But while Commodore continued and flourished, others were being a little bit more active. In the early part of 1982 a little something called Mircron began to make itself heard.

Mircron, when it first started, was promoting itself as a "magazine on the air". Pretty much the same sort of thing as Point was once designed to be, but this time carrying all leading makes of micro. They haven't yet got around to implementing a system for Commodore 64 users, but one is said to be on its way.

Mircron is basically a computerised Press, although the service now extends as far as television shopping, giving you watch forecasts, and so on.

To link up to Mircron 800 is not cheap; it costs about £100 to acquire your modem plus software for most of the computers that the service is currently running for, and even after having paid that you'll still probably have to wait a little while to get all the passwords and phone numbers to dial before you can actually log onto the service.

Once you have logged on you'll find that there's still much to choose between Mircron 800 and Point, one being merely a sub-division of the other.

It may well be worth waiting, if you own a Commodore 64, for the UK imple-

mentation of Computer, Commodore's latest brandish for the 64. To find out what Computer is, let's briefly hop across the Atlantic and take a look at the States.

In America, Commodore has something called the Commodore Information Network, or at least that's what it was called when I read about it. This, like Point of old, is linked up to a host computer, and provides lots of information about Commodore products, news, conferences, user group information, and so on. In this case, the Commodore Information Network is itself part of a much larger service called Compuserve (why are there no original names anymore?).

Compuserve is a national computer network, and using the CIN you can gain access to various parts of this, for the interchange of Commodore-related information. You can, in theory, ask Commodore itself questions using this network, by up-loading your question from your computer via the modem and the phone to the national computer, and then waiting for Commodore to provide the answer for you.

I'd suggest you don't leave your phone off the hook waiting for a reply, it takes at least two days for any sort of answer to appear (Compuserve's rules, not Commodore's), and an top of that you have whatever delay Commodore itself builds in.

Nevertheless, the CIN was seen as a "good thing" by the press; that is, and it was decided that a UK implementation was necessary, incorporating all the features of the American version.

Sweet

However, since there is no real equivalent of Compuserve over here, Commodore has gone its own mad way, and via the services of a friendly DEC-10 computer living down near Heathrow, a postage CIN is shortly to go into action. When you finally get off the ground it will be called Computer (good name), although apparently it is currently working under the pseudonym of the Commodore Information Tree — presumably because it's intended to have branches everywhere?

The Tree part refers to the way in which data is accessed from the host computer, since it operates in a branching procedure. That is, choose your topic, follow that line until it branches, choose your route then, and so on, until you finally get to the subject you were after in the first place.

Once they've finished all their testing of Computer, which involves going the national Independent Commodore Product Users Group hosts a modem (your local computer now), a modem to play with, it is expected to cost something in the region of £50 a year to log onto Computer, plus the "sub-00" cost of the modem itself.

This modem, so they tell me, will be operating at around 1,275 baud, which seems rather fast for Commodore. I'm

also aware that there is full error checking on all transmissions, and if an error is found everything is re-transmitted until it gets it right. Of course, your phone bill soars through the roof, but at least you'll know that the message you sent down the line to your Acute Modem will get to put the chips on will have got through perfectly.

The modems to be supplied by Commodore are unique, in that they are also acting as a storage for any software that you downloaded from the system. Double, security keys, doublets, whatever you want to call them, are just devices that plug into the computer and without which various programs will not run.

Dangle

For instance, it is intended that, like Mircron 800, there will be a fair amount of public domain (read free) software available for users to download. Once you've got fed up with that, there will also be a fair amount of expensive software, which you can also download and be charged for. Here Mircron and Computer part company, since Mircron software can be ripped off by anyone with a bare minimum of computer knowledge, but the Commodore software requires, yes, the dangle, to be plugged in before it will work again. Reasonably enough, we've all got royalties to earn, spouse to feed, etc.

Other differences between Computer and Mircron include the system of billing, since Computer merely charges you an annual subscription, whereas Mircron pays Point, who pays British Telecom, who pays the Government, who still takes the tin, and by the time you've paid the tin or so in addition for the privilege of paying each other, the costs mount up.

Apart from your subscription, the main charge will be that of using the telephone when the modem is hooked up, but even here Commodore would appear to be doing its all a service. The host computer may well live at Heathrow, but if the number of users means it there will be more computers installed around the country, each one in turn linked into the main one. Thus you only pay for a local call each time, rather than long distance from out in Ipswich to Heathrow, or otherwise.

Of course, Commodore will take its small percentage, but we'll keep quiet about that. They're in business too, you know.

If Computer doesn't go the way of Point, it looks like it might be a major contribution to, or no need safety, Commodore's announced growth in the UK.

Computer mailing, and computer shopping, are both hoped to be added to the system as time goes by, and if enough of us get our modems working Computer could well develop into something that's world, rather than just another thing for Commodore to have meetings about.

And all for the cost of a modem, a phone call, and an annual subscription. One it time, ET, give it time. ■



Mastercode Assembler for the Commodore 64

Full Commodore 64 Assembler/Disassembler



£14.95
incl. VAT

Mastercode is a substantial and complex program of use to anyone interested in writing machine code on the Commodore 64. Its features include:

- Machinecode monitor
- File Editor
- Disassembler
- Assembler

Mastercode is a full two pass assembler. It accepts labels, variables and equations within assembly language programs. It is possible to store programs anywhere in memory, even in parts occupied by the Assembler. Programs can be saved to either tape or disc.

The Machine Code Monitor includes:

- OUTPUT OF MEMORY TO SCREEN OR PRINTER ■ MODIFICATION OF MEMORY ■ EXECUTION OF MACHINE CODE PROGRAMS ■ SAVING OF MACHINE CODE FILES ON TAPE OR DISC
- LOADING OF MACHINE CODE FILES FROM TAPE OR DISC ■ STEP BY STEP TRACING OF THE EXECUTION OF A MACHINE CODE PROGRAM, INCLUDING DISPLAY OF REGISTER CONTENTS

The Disassembler will translate into assembly language the contents of any area of memory, whether the 64's ROM or a user program. Output may be sent either to the screen or a printer.

The File Editor includes:

- ENTRY OF NUMBERED LINES OF ASSEMBLY LANGUAGE INSTRUCTIONS ■ LISTING, INDIVIDUALLY OR IN BLOCKS, OF PREVIOUSLY ENTERED LINES ■ DELETION, INDIVIDUALLY OR IN BLOCKS, OF EXISTING LINES ■ REARRANGING OF EXISTING LINES ■ SAVING OF ASSEMBLY LANGUAGE FILES TO TAPE OR DISC ■ LOADING OF ASSEMBLY LANGUAGE FILES FROM TAPE OR DISC ■ ADDITION OF A BLOCK OF MEMORY SPECIFIED BY THE USER TO THE USER'S ASSEMBLY PROGRAM

The Assembler allows the translation of assembly language programs into machine code with full error checking, labelling and a range of assembler directives.

LOOK OUT FOR THE SUNSHINE RANGE IN W.H. SMITH'S, BOOTS, JOHN MENZIES, OTHER LEADING RETAIL CHAINS AND THROUGH OUR NATIONAL NETWORK OF BOOK SHOPS AND SPECIALIST STORES.

Please send me Commodore 64 Mastercode Assembler @ £14.95 plus VAT. I enclose cheque/postal order for £ made payable to Sunshine. 10113 Littlewood Street, London WC2R 2LJ. Or telephone your order through Access to Records on 01-437-4343.

Name

Address

Signature

Weighing software in the balance

Christopher Jenkins meets Commodore program evaluator Martin Croucher — and finds that there's more to the job than fun and games



Martin Croucher at work...

If YOU were given a pile of computer games with no instructions, and told to play them and make comments on each game, would you ever? And could you set a new high score on one of the games? And would you want to take a job doing that sort of thing the other day?

Martin Croucher faced this fearsome task and emerged triumphant, and now works as a software evaluator for Commodore UK. "My actual job title", Martin explained, "is recreational software specialist — but when I applied for a job with Commodore I hadn't any idea what I'd end up doing, and neither did they! There wasn't anyone doing that sort of job at the time, so to some extent the job has defined itself as it goes along."

Interview

After four years working as a laboratory technician in the field of photographic materials, Martin's interest was aroused when a friend who had become a programmer at Commodore told him that there were vacancies at the UK headquarters. "I didn't have any real technical or programming knowledge", Martin recalled, "but when I went for interview in October last year I had owned a Commodore 64 for about two months. I wanted to teach myself something about programming, and I sometimes used to re-play games, but none of the computer know-how I've picked up has been from associating with the real experts at Commodore."

Martin's annual interview started with two hours of straightforward questioning, then developed into a marathon games playing session. "They just gave me a pile of games without instructions and told me to play them and evaluate them. I was amazed at how well I managed to do — in fact I even set a new record score for one of the games! One of the ones that deflated me was the new International Soccer cartridge — what I wasn't told was that it had been on an Level 9, which is almost impossible to beat. Still, the result was 3:1 so it wasn't that bad!"

Martin's early ideas, that the only jobs in computing were for programmers or VDU operators, turned out to be inaccurate. "Often you find that too much technical knowledge is a burden. Although I now know enough to PDKE a new screen colour or format a disk, it's always a good idea to approach a new game with the minimum of technical knowledge — after all, what matters to the customer is how well the game plays, not how brilliantly it's programmed."

Programs

Martin's basic role is to examine unsubmitted programs submitted to Commodore, and work to develop the suitable few to a marketable level. "I see a huge range of programs and it's my job to submit reports on them to the software products group committee. They often fall into familiar categories — it can be of well-written programs which are unmarketable because they're out of all original. Normally, it's true that we would ▶

“I’m more interested in something which is an original idea, on which we can work with the author to get the program up to maintainable standard. On the other hand, we sometimes contract software houses producing programs for other machines, and encourage them to produce Commodore versions.”

Evaluation

The standard evaluation report covers just about every aspect of a program anyone could imagine. There are sections for user friendliness, speed of operation, use of the relevant computer's features, screen format, quality of the instructions provided, and so on.

“On the back of the report I write suggestions as to how I think the program could be improved,” Martin continued. “At this stage I talk to the programmers about whether the ideas I have would be practical. Every fortnight we have a meeting of the software review committee, with the products manager, the sales manager, and so on, all looking at the program and discussing its possibilities. On average I have about ten programs submitted to me every week, and every one is looked at, though of course only a small percentage of them are suitable for development.”

Martin went on to give a number of examples of the programs currently being considered. “One arcade-style game set in a garden had a good basis — it was all to do with watering flowers and clearing weeds. But there wasn't much variation, and only one level of play, so I suggested that perhaps on the second stage the watering can could be leaky, and that there should be a total of about five different stages. That idea would go to the review committee, then we'd go on to the author and suggest that he rewrites the program in that way, with our in-house programmers leading advice if necessary. Most of their work consists of putting the finishing touches to programs like table games and high-score features. They also work on the production of business and games programs.”

Perfect

Some programs are submitted in nearly perfect form, though this is usually because they have been specially commissioned through outside software development houses. “The Patrick Moore astronomy program and Robert Carter's Menu Planner were developed in this way, by a London company called Ivan Berg. In cases like this there isn't too much to be done here, since the software houses are working to a fairly strict set of instructions. John Lottage, my opposite number in the educational area, is working on a whole series of teaching programs at the moment. They'll cover the age ranges from 4 to at least ‘O’ Level, and here again some of the programs will be produced in commission and others have come from individuals. The Five Pack series is based on the work of a UK teacher, for instance.”

Martin's workplace is a crowded desk in

the middle of an enormous open-plan office area. Commodore UK's headquarters, an ex-industrial trading centre in Slough, resembles a huge warehouse. Almost 200 staff work in the various areas, including sales and service, sales and marketing, the Victorian service, packing and testing areas, and a disk duplication section. Here, most of the PCs, and disk drives (shut out disks from Britain), cassette duplication, however, is handled by an outside company.

Idea

Martin's desk is piled with equipment, including a Commodore 64, Vix 20, 1040 and 1041 disk drives, data recorders and a monitor. There are drawers full of software with accompanying instructions. The atmosphere is one of hard work and creative energy — and as Martin says, the

open-plan environment means that it's easy for him to consult his colleagues in other areas, if necessary just by shouting across the floor!

We looked at some of the programs Martin is currently working on. Many come in a very simple form, just a few comments and perhaps a sketch. For example, an idea for a game involving airborne airplanes of flying foam was accompanied by some fairly detailed ideas of how the game could be worked out. Martin's suggestions included the use of sprite graphics, the inclusion of a two-player option, and the development of an animated title sequence. In this instance there was no actual program listing submitted at all — if the idea were to be implemented, a programmer would be commissioned to develop the idea from the sketches and suggestions of the



originator of the idea, with their additions made by the software review committee.

The creation of a title for the game would again be a group decision — "We'd just sit around until one of us got an idea that the others all liked. Commodore holds some names under copyright, and we could use one of these if suitable, but usually we find something based on the author's ideas. I'm also responsible for writing the game instructions in many cases, including International Soccer."

Another idea currently under development is a low resolution graphics program. The author, Paul Jay, is also responsible for the game Face Ache, "In this case", says Martin, "the program was submitted in a well-developed form. You use the cursor to select the colour you want to paint in, then again to choose the

shape you want to put on the screen. From there it's easy to build up attractive, colourful pictures. We think the program will appeal to children, as it has a definite educational value as well as being fun. In line with our policy of involving celebrity names with the programs, we decided to ask Rodd Harris to put his name to this one. He came down here to see the program and use it for himself, was very impressed with it, so we passed him on to our business people to negotiate the details. As a result this program will be marketed as Rodd Harris' Computer Painter. We're also looking forward to developing a high-resolution art program, and we're already planning graphics programs for the new 386 machine. Of course, we'd try to provide unpublished software houses with a new machine to help them in their development work."

Another idea Martin's looking at is a form of flight simulator for the disk. Via 28. "In this case I could see from the start that this had market potential, and it was only a matter of suggesting a few changes, such as introducing a radar screen rather than a tactical situation for drivers."

One field in which Commodore software is likely to expand is disk games. "Traditionally only business programs or massive adventure games came on disk, but the situation's changing. The 524 disk drive is selling well, with the help of a promotion offering a low price when the disk drive is bought in a package with the CBM 84." In future there should be a wide selection of games on disk, including arcade types, individual games like chess, and adventures. There should also be a wide range of educational programs, and Commodore is aiming to persuade schools to go in for CBM 84 and disk-drive packages to take advantage of this.

On the cartridge side, it seems likely that the only cartridges marketed here will originate in America. "If any really good games turn up here, we consider them for forwarding to America for evaluation as cartridges. But we won't be manufacturing any over here. Oddly enough, some of the cartridges that come over from America seem inferior to the programs we send across for consideration — I think it's just a matter of taste. Sometimes we have game programs submitted to us from Europe or America — perhaps because they've been rejected by Commodore in their country of origin — and again they seem to be sold at lower prices in ours. What's popular in one country isn't necessarily to the liking of the users in another country."

Motives

Martin finds that authors of unpublished programs have a wide range of motives. "Some of them think that getting a program marketed is a good way to make money — and they're right! Others have very little idea that it's possible to make money as a software author, and are just keen to see their games on the shelf in the local computer store. Again, in the case of the educational programs, some authors are just interested in making a contribution to education. Still, no-one's been known to turn down money for their program! Since we have such good distribution and high sales volumes for our software, royalties for authors can be very high."

Martin's job is moving away from straight software evaluation, and more towards development work. "Having said that," he adds, "I walk into work every morning with very little idea of what might come up next. I could be organizing demonstrations for overseas Commodore staff, or for the press at a computer show. At the moment I'm helping compile a directory to arcade games, and working on the instruction manual for a number of new games. I should think that after this interview's published I'll also have a flood of readers' programs to evaluate. But after all, that's what I'm best at!" ■





THIS VERSION of Othello for the IBM PC emulates a classic board game for two players. Although the game takes minutes to learn, it can take a lifetime to master. A single move can turn defeat into victory, and although the rules are simple the game is as rewarding and challenging as chess. The program uses multi-colored user-defined graphics, and includes IBM

resources which are valuable aids to an understanding of how the program works.

Players take it in turns to place counters on the board using the cursor keys as joystick in part 2, and the fire button as space bar. If the counter forms a line, either horizontally, vertically or diagonally, with another counter of the

STAR GAME

This month's star game is an intellectual puzzle rather than a test of the speed of your trigger finger. *Othello*, by **S P Rogers**, is a challenging version of an ancient Chinese game

same colour, all the opposing counters on the line change colour.

The program will not allow you to make an illegal move, so you will soon pick up the rules. Counters must be placed touching another counter, and it's impossible to play a go if it's blocked by using it. The program announces the score when every square on the grid is full. ■

```

1 REM *****
2 REM #
3 REM # OTHELLO (FOR TWO PLAYERS) #
4 REM #
5 REM # (C) 1983 S.P.RODGERS #
6 REM #
7 REM *****
8 :
9 :
10 POKE36,56:POKE32,56:CLR
20 GOSUB99999:PRINT" O.K TO CONTINUE? (Y OR N) #":GOSUB1428
30 GETIN:IFIN=""THEN430
40 PRINT":DIPR="M"THEMEND
50 USR"#####"
60 DIRSC(2):DIRTU(1,65):PF=0
99 :
100 REM #### BOARD CELLS ####
110 DIRROW(2)
120 B0#08>="#####CDE#####F"
130 B0#11>="#####L#####PQ"
140 B0#12>="#####L#####PQ"
199 :
200 REM #### HIGHIFIED CHARACTERS ####
210 DIRROW(7)
220 CHR(08)>="#####C" : CHR(11)>="#####L"
230 CHR(12)>="#####L" : CHR(13)>="#####P"
240 CHR(14)>="#####Q" : CHR(15)>="#####R"
250 CHR(16)>="#####T" : CHR(17)>="#####V"
299 :
300 REM #### HIGHIFIED NUMBERS ####
310 N0#08>=CHR(2):N0#11>="#####L"
320 N0#12>="#####L" : N0#13>="#####P"
330 N0#14>="#####L" : N0#15>="#####T"
340 N0#16>="#####L" : N0#17>="#####L"
350 N0#18>="#####X" : N0#19>="#####Y"
399 :
400 REM #### SPRITE #0 ####
410 POKE2040,13
420 POKEY=20,1:POKEY+37,2:POKEY=26,7:POKEY+39,6
430 POKEY,26:POKEY+1,30
499 :
500 REM #### SPRITE #1 ####
510 POKE2041,14
520 POKEY=29,2:POKEY+23,2:POKEY+40,14
530 POKEY+2,220:POKEY+3,93
599 :
600 REM #### SELECT CHARACTER SET ####
610 POKEY+24,30

```



```

699 :
700 REM **** SELECT MULTICOLOUR ****
710 POKEX=22.216 : POKEY=24.4 : POKEY=35.9
720 :
800 REM **** SET UP SCREEN ****
810 GOSUB910
820 :
899 :
1000 REM ***** MAIN LOOP *****
1010 POKEX=24.8 : P=0 : IFF0THENP=0
1020 POKEX=21.6 : POKEY=26+24*(X-1) : POKEY=1.50+24*(Y-1)
1030 IFFFFTHENP=000:REM COMPUTER REPLY
1040 IFC(X1)+9C(X2)=4THEN0000
1050 DETR=J0:PEEK(56320)
1060 IFJ0=125THENR="R"
1070 IFJ0=126THENR="T"
1080 IFJ0=131THENR="B"
1090 IFJ0=123THENR="F"
1100 IFJ0=111THENR=" "
1110 IFR="R" THENY=YY+1 : IFY=0THENYY=1
1120 IFR="T" THENY=YY-1 : IFY<1THENYY=0
1130 IFR="B" THENXX=X+1 : IFX=0THENXX=1
1140 IFR="F" THENXX=X-1 : IFX<1THENXX=0
1150 IFR=" " THEN00(X,YY)<1THENPOKEY=21.2:GOTO1210
1160 IFR="R" THEN010
1170 IFR="F" THENFF=1 : TU=0
1180 GOTO1010
1190 :
1200 REM **** LOOK FOR LINES ****
1210 P1=0
1220 FORI=1TO1 : FORY=1TO1 : P=0 : IFD=0RNDY=0THENI270
1230 FORJ=1TO8 : B=0C(X+J)X=J,YY+D#1 : IFB=0THENB1=0 : GOTO1260
1240 IF1=1ANDB0=PL THENI=0 : GOTO1260
1250 IFB=PL THENP=J : I=0
1260 NEXTJ : IFFTHEN0SUB1310
1270 NEXTDY : B1
1280 IFF1THEN010
1290 GOTO1010
1300 :
1300 REM **** UPDATE BOARD ,SCORES ****
1310 IFF1THEN1300
1320 W=YY : X=X : SC(PL)=SC(PL)+1 : B(X, Y)=PL : GOSUB1410
1330 FORJ=1TO8 : IFB(X+J)X=J,YY+J#DY=PL THENJ=0 : GOTO1360
1340 IFPL=1THENSC(2)=SC(2)-1 : GOTO1360
1350 SC(1)=SC(1)-1
1360 SC(PL)=SC(PL)+1 : GOSUB1510
1370 XXX=J#X : W=YY : J#DY : GOSUB1410
1380 NEXTJ : P1=1 : RETURN
1390 :
1400 REM *** PRINT COUNTER ,NOISE ****
1410 PRINTLEFT#(D+(Y-1)*3+1)TAB((X-1)*3)B0#(PL) : B(X, Y)=PL
1420 POKEX=15 : POKEX=6.01 : POKEX=24.15
1430 POKEX=4.129 : PORT=251030 : POKEX=1.1 : POKEX, T : NEXT : POKEX=4.129
1440 RETURN
1450 :
1500 REM **** PRINT SCORES ****
1510 PRINT"*****"TAB(32) : FORI=1TO2
1520 PRINT#(D)INT(SC(1)/10)*10#(SC(1)-INT(SC(1)/10)*10)
1530 PRINT"*****"TAB(32)
1540 NEXT : RETURN
1550 :
5000 REM **** CHANGE PLAYERS ****
5010 IFPL=1THENPL=2 : POKEY=3.125 : GOTO800
5020 PL=1 : POKEY=3.93
5030 TU=0, TU=0X : TU=1, TU=YY : TU=1+XX+1 : YY=1 : GOTO1010
5099 :
6000 REM **** END OF GAME ****
6010 POKEX=21.0

```



Continued on page 33



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```

6820 FORI=1TO50
6830 POKEY+35,8:FORJ=8TO50:NEXT
6840 POKEY+35,14:FORJ=8TO50:NEXT
6850 NEXT
6860 POKEY+24,21:POKEY+33,8:POKEY+32,8:PRINT"  "
6870 PRINTSPC(14)"*****"
6880 PRINTSPC(14)"  GAME OVER  "
6890 PRINTSPC(14)"*****"
6100 PRINT"0000      PLAYER ONE (BLUE) SCORE="SC(1)
6110 PRINT"0000      PLAYER TWO (WHITE) SCORE="SC(2)
6120 PRINTSPC(14)"*****PLAY AGAIN?"
6130 CLR:Y=54272:Y=53248:GOTO39
6199 :
7000 REM **** COMPUTER REPLAY ****
7010 IFTU=8THEN7030
7020 GOSUB7000
7030 PRINT"LEFT"CODE,18:TRN(29*CHR(8)+CHR(8)+CHR(4)
7040 PRINT"TRK(27*CHR(7)+CHR(2)+CHR(30)+CHR(6)
7050 X=TU(8,TU):Y=TU(3,TU)
7060 POKEY,25+24*(X-1):POKEY+1,50+24*(Y-1)
7070 POKEY+21,3:GETR:IFR=C"2"ANDR=C"4"THENPOKEY+21,8:GOTO7070
7080 POKEY+21,8
7090 IFR="4"THEN7110
7100 IFTU(8,TU+1)>C8THEN7200
7110 FF=8
7120 PRINTLEFT*(CODE,17):FORI=8TO4:PRINTTRK(27)*
7130 GOTO1810
7199 :
8000 REM **** COPY CHARACTERS ****
8010 FORBY=8TO7:Y=8
8020 FORI=8TO7
8030 IF(PEEK(33248+CHR(8)+BY)*AND278)>THENX=X+2*(BI(42)+2*(BI(42)+1)
8040 NEXTI
8050 FORR+BY(2),X/256
8060 FORR+BY(2)+1,X/256
8070 FORR+16+BY(2),X-(INT(X/256)*256)
8080 FORR+16+BY(2)+1,X-(INT(X/256)*256)
8090 NEXTBY:R=R+32:IFR=14376THENR=R+48
8100 RETURN
8199 :
9000 REM **** FRESH BOARD ****
9010 FORI=1TO8:FORJ=1TO8:BO(I,J)=0:NEXTJ,I
9020 BO(4,4)=2:BO(5,5)=2:BO(4,5)=1:BO(5,4)=1
9030 POKEY+33,14:POKEY+32,14:PRINT"2P"
9040 FORI=1TO8:FORJ=1TO8:PRINTBO(8+BO(I,J)):NEXT:PRINT"00"NEXT
9050 PRINT"*****TRK(27):FORI=8TO4:PRINTCHR(13):NEXT:PRINT
9060 PRINT"*****TRK(27)BO(1)
9070 PRINT"*****TRK(27)BO(2)
9080 SC(1)=2:SC(2)=2:KW=1:YY=1:PL=1:TU=1
9090 GOSUB1510
9100 RETURN
9199 :
9900 REM **** LOGO ****
9910 Y=53248:Y=54272:POKEY+33,11:POKEY+32,11:PRINT"  ";
9920 FORI=8TO5:FORJ=8TO19:PRINT"  ":NEXTJ:FORI=8TO19:PRINT"  ":NEXTJ,I
9930 FORI=8TO19:PRINT"  ":NEXT
9940 PRINT"*****
9950 PRINT"12 000 *****
9960 FORI=8TO1:PRINT"12 000 *****
9970 PRINT"12 000 *****
9980 FORI=8TO2:PRINT"12 000 *****
9990 PRINT"12 *****
10100 PRINT"2TWO PLAYERS ,BLUE AND WHITE ,PLACE TILES"
10110 PRINT"ON THE BOARD,( USING SPACES OR #)FIR )"
10120 PRINT" IF THIS COUNTER FORMS A LINE (HORIZ.,)
10130 PRINT"VERT., OR DIAG.) WITH ANOTHER,THEN ALL"
10140 PRINT"THE 'TRAPPED' COUNTERS ARE TURNED OVER"
10150 PRINT"AND THE SCORE CHANGES ACCORDINGLY, #"
```




```

58160 PRINT#8 USE CURSOR KEYS AND/OR JOYSTICK"
58170 PRINT#8 PRESS SP# IN A "NO GO" SITUATION"
58180 PRINT#8 IN COMPUTER REPLAY MODE CTRL "C" USE "
58190 PRINT#8 " " TO CONTINUE , " " TO REJOIN"
58200 PRINT#8 GRAPHICS TAKE 180 SECONDS TO INITIALIZE"
58210 IFPEEK(896)=255THENRETURN
58220 :
58300 REM ***** SET UP GRAPHICS *****
58310 CH=1000:R=14336
58320 REPR0:IFD(255)THENCGSUB03090:GOTO59620
58330 IFD(8)THEN53100
58340 CH=CH+D:POKER,D:R=R+1:GOTO59300
58350 POKE25334,PEEK(56334)+RND234
58360 POKE1,PEEK(1)+RND251
58370 FORI=0TO16:REPR0:CGSUB03000:NEXTI
58380 POKE1,PEEK(1)+RND4
58390 POKE25334,PEEK(56334)+RND1
58400 :
58500 REM ***** CLEAR SPACE *****
58510 FORI=0TO7:POKE14336+32*R+1,0:NEXT
58520 :
58600 REM ***** SPRITE0 *****
58610 CH=1000:R=032
58620 REPR0:IFD(255)THENCGSUB03090:GOTO59320
58630 IFD(8)THEN59400
58640 CH=CH+D:POKER,D:R=R+1:GOTO59320
58650 :
58700 REM ***** SPRITE1 *****
58710 FORI=0TO62:POKE896+1,255:NEXT
58720 RETURN
58730 :
58800 REM ***** CHECK SUM SUBROUTINE*****
58810 IFD=CHTHENCH=1000:RETURN
58820 PRINT#8CHECK SUM ERROR IN LINE "PEEK(64)+256+POKE(63):END
58830 :
58900 :
58910 :
58920 REM***** BOARD GRAPHICS DATA *****
58930 DATA170,170,149,149,149,149,149,149,149,149,2234
58940 DATA170,170,85,85,85,85,85,85,1000
58950 DATA170,170,86,86,86,86,86,86,1000
58960 DATA149,149,149,149,149,149,149,149,149,149,2192
58970 DATA85,85,85,85,85,85,85,85,1000
58980 DATA86,86,86,86,86,86,86,86,1000
58990 DATA149,149,149,149,149,149,170,170,2234
59000 DATA85,85,85,85,85,170,170,1000
59010 DATA86,86,86,86,86,170,170,1000
59020 DATA170,170,149,151,159,159,159,159,2380
59030 DATA170,170,85,255,255,255,255,2700
59040 DATA170,170,86,214,246,246,246,254,2632
59050 DATA191,191,191,191,191,191,191,191,2520
59060 DATA255,255,255,255,255,255,255,255,3040
59070 DATA254,254,254,254,254,254,254,254,3032
59080 DATA191,159,159,159,151,149,170,170,2380
59090 DATA255,255,255,255,255,86,170,170,2700
59100 DATA254,246,246,246,214,86,170,170,2632,-1
59110 :
59120 REM***** MODIFIED CHARACTERS *****
59130 DATA3,5,15,16,19,21,28,31,49,50,51,52,53,54,55,56,57
59140 :
59200 REM***** SPRITE DATA *****
59210 DATA0,0,0,0,12,0,3,252,1267
59220 DATA0,15,240,0,63,0,0,0,60,1370
59230 DATA0,0,240,42,160,240,42,128,1032
59240 DATA240,42,0,240,0,0,240,0,1762
59250 DATA0,240,0,0,240,21,0,240,1741
59260 DATA21,64,240,21,80,252,21,80,1779
59270 DATA0,0,0,63,0,0,15,240,1370
59280 DATA0,3,252,0,0,12,0,1267,-1

```



Making sense of those peculiar little squiggles

Ever been infuriated by those incomprehensible graphic command characters? No idea how to get them to appear on your screen or what they do or where to find them on your keyboard? Kevin Bergin gives you all the answers, in terms you and your *Vic 20* or *Commodore 64* can easily understand

THE EDITORS and staff of *Commodore Horizons* have recently been deluged with their telephones. On the other end of the phone, readers have been posing questions like, "How do I get the graphics symbols on my 64?" The questions all seem to centre around the keyboard, and the use of colour in particular. This article will attempt to clarify the kind of problems encountered by our readers.

The keyboard on any micro is the user's way of communicating with their machine. It is therefore very important that the keyboard is not mysterious to the user. The 64 and the Vic have a "SPECIALTY" keyboard, as on any standard computer. The numeric keys are along the top of the keyboard (1 to 0). No big difference so far, but the rest of the keyboard has special functions.

Tap down

The most logical way to explain how to use the keyboard is to start at the top (numeric keys) and work down, filling in where needed. The key at the top left (left arrow key), has no special functions, but can be used in programs.

The 64 has 16 colours (the Vic has 8), which may be accessed in different ways, but we will deal mainly with colours directly from the keyboard. The keys to use for the colours are the numeric keys 1 to 8. They must be used with the CTRL key or the LOGO key (function left). Below is a list of the keys to use and the colour they will give the print on the screen. CTRL with—

- 1 gives BLACK
- 2 gives WHITE
- 3 gives RED
- 4 gives CYAN
- 5 gives PURPLE
- 6 gives GREEN
- 7 gives BLUE (background colour on power up)
- 8 gives YELLOW

The keys 1 to 8 are marked with the above colours, but the other 8 colours

are not marked but are accessed with the LOGO and—

- 1 gives ORANGE
- 2 gives BROWN
- 3 gives RED light
- 4 gives GRAY (1)
- 5 gives GRAY (2)
- 6 gives GREEN light
- 7 gives BLUE light
- 8 gives GRAY (3)

The above keys, used with the 'CTRL' or 'LOGO' key, will give in the full range of colours when used directly. Any of these keys used within queries will produce a symbol, which the 64 recognises as a colour. There is a program included here which will demonstrate this.

To extend our use of colour, there are various systems that can be set to change the colour of the border, screen, cursor and background colours. They use the above colours, but the numbers do not quite match — for instance BLACK is 9 and WHITE is 1. Each number is one lower from program mode than directly from the keyboard.

Reverse

Here are a few examples of changing colours using POKE command. To change the screen and border colours the contains of locations \$2280 (border) and \$2282 (screen) (\$A679 for Vic border and screen have to be altered).

To change the border to RED use:

```
POKE $2280,2 (and press return)
```

To change the screen to YELLOW use:

```
POKE $2282,7 (and press return)
```

For the Vic:

```
POKE $A679,42
```

Experimenting with the above addresses and varying the numbers after the comma will produce varying colours. Should the display become confusing, press RUN/STOP and RETURN keys together. This will restore the screen colours.

The 9 and 0 key when used with the

CTRL key turn reverse on and off. To turn reverse on, CTRL 9, to turn reverse off, CTRL 0.

The key marked CLR HOME has two operations. Pressed on its own it will place the cursor at the top left of the screen. Pressing SHIFT and CLR HOME will clear the screen. Both of these functions can be used in direct or program mode. In program mode they produce special symbols. The key marked INSDI also has two functions, pressing this key alone will delete the character to the left. If this key is held down it will repeat the repeat all time entry POKE \$50,128, to read, since POKE \$50,180, pressing SHIFT and INSDI will open up a space for insertion.

Cursor

The two keys at the bottom right of the keyboard allow the user to move the cursor around the screen. To move the cursor right press CURSOR (right arrow); to move the cursor left press SHIFT and the same key. To move the cursor down press CURSOR (up/down arrow). To move down, the same key with the SHIFT. Both of the cursor keys repeat if held down. The space bar is in the usual place and repeats if held down.

The 64 and Vic have four large keys to the right of the keyboard. These are the function keys. They have no immediate use, but can be used quite easily in programs. The graphics symbols are used by pressing the symbol required with the SHIFT or LOGO key. Each graphic key has two symbols on it. To print the bottom symbol press the LOGO key and to print the rightmost symbol press the SHIFT key, with the symbol required. Clear now? Will try this:

```
LOGO and A  
SHIFT and A
```

That should make more sense now. This can be repeated for all of the keys with graphics symbols on them.

There are two more demonstration

```

10 PRINT"|" REM CLEARS THE SCREEN
20 POKES3288,6:REM SET BORDER COLOUR TO BLUE
30 POKES3281,7:REM SET SCREEN COLOUR TO YELLOW
40 PRINT"|" REM SET CURSOR COLOUR TO BLACK
50 PRINT"|" REM CURSOR TO TOP LEFT
60 PRINT"##### CHANGING THE SCREEN AND BORDER" :R
EM MOVE CURSOR DOWN
70 PRINT"COLOURS, FIRST THE BORDER (8 TO 15)
80 INPUT"#####WHICH COLOUR"
90 REM MOVE CURSOR LEFT
90 IFASC(A8)-C48ORASC(A8)>57THENPRINT"TTTT" :GOTO8
0:REM MOVE CURSOR UP
100 IFVAL(A8)<C8ORVAL(A8)>15THENPRINT"TTTT" :GOTO8
0
110 A=VAL(A8):POKES3288,A
120 PRINT"#####FORIN (Y/N)" REM MOVE CURS
OR RIGHT
130 GETB:IFB=C"Y"ANDB=C"N"THEN130
140 IFB="Y"THEN80
150 POKES3288,6:REM RESET BORDER
160 PRINT"#####HOW FOR THE SCREEN COLOURS"
170 INPUT"#####WHICH COLOUR (0 - 15)
":A8
180 IFASC(A8)-C48ORASC(A8)>57THENPRINT"TTTT" :GOTO1
70
190 IFVAL(A8)<C10RVAL(A8)>15THENPRINT"TTTT" :GOTO17
0
200 A=VAL(A8):POKES3281,A
210 PRINT"#####FORIN (Y/N)" REM MOVE CURS
OR RIGHT
220 GETB:IFB=C"Y"ANDB=C"N"THEN220
230 IFB="Y"THEN170
240 POKES3281,7:CO=0
250 PRINT"#####WITH THE SHIFT KEYS"
260 FORA=96TO127
270 IFA=126THENR=127
280 CO=CO+1
290 IFCO=08THENPRINT"###" :CO=0
300 PRINTCHR(A):" ";
310 NEXT
320 CO=0:T=23
330 PRINT"#####WITH LOCK KEY
"
340 FORA=161TO191
350 CO=CO+1
360 IFCO=08THENPRINT"###" :CO=0
370 PRINTTAB(T):CHR(A):" ";
380 NEXT
390 PRINT"#####PRESS 'F1' TO CONTINUE
"
400 GETB:IFB=C"|"THEN400
410 PRINT"##### NOW THE CURSOR COLOURS"
420 PRINT"#####FIRST IN BLACK"
430 PRINT"#####THEN IN WHITE"
440 PRINT"#####THEN IN RED"
450 PRINT"#####NOW IN CYAN"
460 PRINT"#####AND ITS PURPLE"
470 PRINT"#####MURKY GREEN"
480 PRINT"#####BLUE FOR YOU"
490 PRINT"#####INVISIBLE"
500 PRINT"#####ORAND"
510 PRINT"#####ORAND"

```

```

520 PRINT"BLIGHT RED"
530 PRINT"BERRY (1)"
540 PRINT"BERRY (2)"
550 PRINT"BLIGHT GREEN"
560 PRINT"BLIGHT BLUE"
570 PRINT"BERRY (3)"
580 PRINT"#:FOR=87015:POKE3281.A:FORSE=170288:HEX:NEXT
590 POKE3281.7
600 PRINT"MPRESS 'F1' FOR LOWER CASE"
610 PRINT"MPRESS 'F3' FOR UPPER CASE"
620 PRINT"MPRESS 'F5' TO QUIT"
630 POKE198.8
640 GET# :IF#<=""#AND#<=""#AND#<=""#THEN#640
650 IF#=""#THENPOKE3272.23
660 IF#=""#THENPOKE3272.21
670 IF#=""#THENPOKE3272.21:POKE3281.6:POKE3288.14:PRINT"II":GOTO690
680 POKE198.8:GOTO640
690 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXGRIN (Y/N)"
700 GET# :IF#<=""#AND#<=""#THEN#700
710 IF#=""#THEN#700
720 END

```

programs to run. The first one deals with text of the above information. The second and shorter program deals with colour in a different way. It turns an multi-colour mode (64 only). There is another colour mode (extended colour) this is named on with POKE 3126,PEEK (3126)for 64 and is turned off with POKE 3126,PEEK(3126)AND191.

The first program mainly takes you through the keyboard and demonstrates the different keys. There is a brief explanation of the program below, and the program contains many REM statements (for documentation).

The first line of the program (line 80) clears the screen. Line 90 sets the border colour to blue, and line 95 sets the screen colour to yellow (for the Vic, only line 95, and line 20 should read POKE

3679,126). Line 40 sets the cursor colour to black and line 50 places the cursor at the top left of the screen (home position). Line 60 re-positions the cursor 1 row down and prints a message, and line 80 finishes the message.

At line 88 an input is needed for the border colour. The symbols in line 80 move the cursor left. Line 90 checks that the input is within range. If it is not the cursor is re-positioned and the program jumps back to the input statement. Line 100 checks for the input being negative or being higher than 15. Again if the number is out of range the cursor is re-positioned and the program jumps to the input statement.

Line 110 sets the variable A to the value of A5 (A is used for the border colour). The POKE statement at line 118 changes

the border colour. Line 120 sets for an input (the symbols are cursor right). Line 130 waits for a legal press (in this case Y or N). Line 140 takes the action depending on the input. The border colour is reset in line 150.

The screen colours are displayed in the same way as the border colours by the routine from line 160 to 198. Line 200 (F1) should read POKE 3679,126) resets the screen colour and initializes the variable CO. The graphics available on page 64 are displayed by lines 210 to 300 (press for F3, for the screen length is different so the variable CO will need adjusting. This is done by using the CHR\$ statements within two loops and using the variable CO to control the line length.

Symbols

The colour symbols are demonstrated by the routine at line 410 to 580. Line 580 sets up two loops which change the screen colours slowly so as to be able to see the different colour combinations (for the Vic, line 580 should read 580 FORA = 170288:NEXT:NEXT and line 580 should read 580 POKE3679,126). Lines 480 to 680 select upper or lower case, and the routine at lines 700 to 720 restart the program or quit. For the Vic the following changes should be made:

line 650 POKE 3272,21 should be replaced with PRINTCHR\$(14)
line 650 & 670 POKE 3272,21 should be replaced with PRINTCHR\$(14)

The second shorter program, for the 64 only, is an example of multi-colour. It allows the user to flick between the standard and multi-colour mode using the function keys. To enter multi-colour mode the statement is POKE31270,PEEK(31270)OR16. To quit multi-colour mode the statement is POKE31270,208. There is hopefully enough useful information in this article for the reader to start on. We're planning to deal with more programming problems in future articles. ■

```

10 POKE3281.7:REM YELLOW
20 POKE3282.1:REM WHITE
30 POKE3283.8:REM ORANGE
40 PRINT"ZBCDEFGHIJKLNOPQRSTUVWXYZ"
50 PRINT"BCDEFGHIJKLNOPQRSTUVWXYZ"
60 PRINT"BCDEFGHIJKLNOPQRSTUVWXYZ"
70 PRINT"BCDEFGHIJKLNOPQRSTUVWXYZ"
80 PRINT"BCDEFGHIJKLNOPQRSTUVWXYZ"
90 FORI=87015
100 POKE3296+I.8
110 NEXT
120 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXPRESS F1 FOR
MULTI-COLOUR"
130 PRINT"XXXXXXXXXXXXXXXXXXXXAND F3 FOR NORMAL"
140 GET# :IF#<=""#AND#<=""#THEN#140
150 IF#=""#THEN#GOSUB170:GOTO140
160 IF#=""#THEN#GOSUB190:GOTO140
170 POKE3278,PEEK(3278)OR16:REM TURNS ON MULTI
COLOUR
180 RETURN
190 POKE3278,208:REM MULTI-COLOUR OFF
200 RETURN

```

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Learning all about machine language the easy way

If you're confused by memory maps, data buses, stack pointers, flags, registers and conditional jumps, software author Stuart Sampson will put you straight

WHY DO people think that machine code is difficult? Why do experts insist that programming should be done in the highest level language possible? What is machine code anyway?

Let's throw some of those problems out the window and tell the Basic user that he has been using a machine code alongside Basic without knowing it. You don't believe me? Then what sort of high level language is—

```
PLAY "BU:123,567;10041" or
SDU (26,32)AAA00 or even
COLOR 2
```

A real high level language should recognise PLAY C MATHS, or at least accept RGB, in fact many micro BASICs instead of numbers to program the microprocessors, but still expect the user to program the peripheral chips via numbers, that is in their machine code.

Reputation

It is this use of numbers that gives computers, and machine code in particular, the reputation of being difficult. The very use of the term 'code' implies an understanding barrier.

Say after me — "machine language". That's better, at least we can think of French rather than English!

Those who have grown to remember the meaning of the numbers used by Basic have no excuse for not attempting to use machine language. In fact it is less numeric when you use an assembler, to such an extent you don't even have to remember Line Numbers, you can point to parts of the program using meaningful labels!

However, you do need to grasp some of the principles of the mysterious microprocessor to get it to sing and dance. (What on 40 bits?)

The microprocessor needs much of its time like a Post Office worker, putting letters into pigeon holes. Let's imagine a demonstration model. Prepare a rack of little pigeon holes, open both sides, and a pile of wooden cubes that fit in the holes. For a true model of an 8 bit processor

your rack should be 256 long by 256 high, but a smaller one will serve to illustrate the principles. We will also have a marker to write on the cubes any number up to 255.

The numbers written on the cubes are the data, the holes represent memory addresses that the processor can attend to.



To make your model more realistic you need to put certain numbered cubes into a few rows of holes, then cover them with a sheet of glass. This represents ROM, Read Only Memory. You can see the numbers but cannot change the cubes. Other rows must be covered also as there is no usable memory in these areas of the rack. Open

This month's gentle introduction to machine coding will be followed by more heavy stuff. Next in line is a Basic assembler/disassembler for all 8000-based machines (yes, that includes the Vic and the 64). This will increase your understanding of bytes, buffers, strings and jumping — and allow you to put that knowledge into practice. As well as being explained in terms of commands, the assembler/disassembler is broken down into sub-routines which can be incorporated into your own programs. For example, there are decimal hex routines, printing to either the screen or a printer and operating codes (by decimal value and mnemonic). Further suggestions are also given for adapting the routines to fit your own needs.

holes represent RAM. Your rack is also becoming a memory map.

You now take the part of the processor. You start at address zero and start reading the numbers. The chances are that this area is under glass and contains instructions that form the beginning of the operating system. To get going they may tell you to copy some data into RAM. Our model the ROM will inform you of an address to find the data, in terms of two numbered blocks. The numbers tell you the count of columns and rows to get to the first cube carrying the data. You will write there on a stamped, your register. The instructions will also tell you the address in RAM to copy the data to, and you note this in other registers, and perhaps a count of how much data to transfer. Then you are instructed to move the data. A microprocessor never moves data, it copies it, so you look at the source value, write the number on a new cube and put it in the destination address, leaving anything in that hole to fall out the back.

Pigeons

Of course we assume the destination is RAM, that is read/write memory represented by open pigeon holes. If it is not, you cannot get the cube in and must discard it.

We can carry the model further by creating a board behind the rack (opposed to cubes can fall over elegantly). In this board we cut a window and call the area visible RAM. As the processor puts cubes into it the user can see the back of the cubes, which carry the character whose ASCII code is the number on the front. We can also give the user lateral cubes which he puts into a pigeon hole representing the keyboard. The processor looks at this on its travels to accept the user's input.

This model may seem trivial, but it illustrates the principles of memory mapping, ROM, RAM, moving by copying, the destination of data when

RAM is written to, what happens if you write to ROM, the fact that not all the map has useful memory, and the action of memory-mapped devices. With the model in mind, let us think briefly of the hardware.

The processor handles numbers between 0 and 255, sometimes called bytes, as on/off signals on 8 wires called the data bus. It also has 16 wires to select an address, called the address bus, and a control bus to send signals for read/write etc. The main bus is a collection of wires-carrying binary signals. Connection to all these can be made via the computer's expansion port, and they also go to ROM, RAM, sound generators, VGA chips etc.

Bytes

Inside the processor these bytes are connected to a vast array of microelectronic, which thankfully can be represented as a small number of blocks in a "programmer's model".

At this point one should realize that all I have said applies to the majority of processors used in personal computers, but once inside the processor one must expect differences. However, there are common points.

All processors have a register called a program counter, which is used as a bookmark in the program of instructions. It carries the address of the next instruction to be executed.

All processors have at least one accumulator. This is where data is stored before number crunching, and it holds the answer afterwards.

All processors have at least two more registers that are generally used as a scratch pad or for noting addresses in some form.

All processors have a stack pointer. This is used to point to an address in an area of memory called a stack. This is an external scratch pad in which data is handled on a last-in-first-out basis. I will be explaining the use of this later.

All processors have a flag or condition code register, which is really a collection of yes/no memories reflecting the most important aspects of the last operation. The state of these can then be used to affect future events. As all useful programs involve getting the computer to act in response to certain conditions, the use of these flags is at the heart of machine language programming.

Of course all processors have an instruction decoder and an ALU. The latter is responsible for arithmetic and logical operations, coming between the instruction decoder and the accumulators. I use the plural because all processors use a temporary accumulator as well as the main one. The programmer need not worry about these two circuits on his model.

What the programmer needs to know in program is a processor's machine language falls into three main parts—the processor's instruction set, the vocabulary; the processor's internal memory layout, the registers; and the computer's memory map.

You will also need to know a bit about I/O, input/output, which covers keyboard, joysticks, graphics, sound, cameras etc., most of which form part of the memory map.

The other concept you need to get straight is the use of the byte. A byte is a whole number between 0 and 255, and consists of eight bits, which can be 1 or 0. The byte is the smallest unit of data the computer uses, and can be thought of as a figure in a number. Our normal figure system ranges from 0 to 9, and to represent larger numbers we use two figures, multiplying the first by 10 and adding the second, and so on with further figures. The computer does this too, but with numbers to the base 256 it needs very few bytes to cope with the biggest numbers we ever need. Addresses are just two bytes and range from 0 to 65,535.

In fact we find that for many programs we rarely bother with more than two bytes at a time, particularly in machine language. The byte is very versatile, it can represent many things, such as—
A boring old number
A text character
A graphics character
A colour, or even "paper and ink" colours together
A group of picture elements in hi-res graphics
A graphics point or ordinate.



A machine language instruction (a pair of oct)

The operations that can be performed on these bytes are called "8 bit" operations, and they fall into three main groups. Firstly, copying or transfer, for instance LOAD (memory to register), STORE (register to memory) or TRANSFER (register to register). Secondly, single byte operations like INCREMENT, DECREMENT, NEGATE, COMPLEMENT, SHIFT, ROTATE etc; and bit-level two byte operations such as ADD, SUBTRACT, AND, OR, EXCLUSIVE OR, COMPARE.

Single byte operations can be done on bytes in registers or memory in buffers. Two byte operations almost always are done with one byte in the accumulator and the other in a memory or, for "808" type processors, in a register. The result is to be found in the accumulator.

All processors can also perform 16 bit addition, although in some it might be confined to deriving addresses, and all can perform some form of bit transfer, albeit as raw adjacent bytes.

I have now listed all but one group of operations of the average processor, and you might be excused for wondering what all this is about. In fact you might wonder how such simple operations can result in the marvelous joint computer performs, particularly when loaded with a machine-code game program. The answer

lies partly in the group we have yet to discuss, but the main reason is the tireless speed at which the operations are done. Just think that every time your cursor gets to the bottom the screen scrolls, and the processor has to read every individual character and write it to the line above. Do you perceive it as taking time?

I have said that all programs of any value require the computer to choose a course of action as a result of a previous operation. Normally the processor reads the instructions from the program and executes them in order, using the program counter (PC) to follow the sequence. Suppose some operation opens the progression of the PC, and loads it with a new value. The next instruction will be read from a different part of the program and a JUMP or BRANCH operation will have occurred.

Jumping

This may mark the end of a particular sequence or routine, in which case the jump will always happen, but all processors have the ability to perform conditional jumps or branches. When one of these is encountered the progression is only disturbed if a particular flag is set or cleared. This of course depends on the result of some past operation.

There are four flags that form the majority of conditional branching, and it is vital to know which are affected by which operations. The simplest is the zero flag. This is set when the result of an operation is zero, and often marks the completion of a sequence of loops, or that a particular condition is met, having compared two bytes and finding they are the same. From this derives the terminology of some processors — "branch if equal", meaning "if the ZERO flag is set".

The carry flag marks carry or borrow in arithmetic operations, just as we do with our sums. This can be incorporated in the next arithmetic operation or used to control a branch. Carry also holds the bit shared off the end by shift operations.

The minus or sign flag reflects the state of bit 7 of the result, which is understood to mean negative if an on-deciding is signed arithmetic. Rather than regard a byte as a number between 0 and 255, this notation allows it values between -128 and +127, and the upper bit is set for negative numbers.

Unfortunately the minus flag can be misleading, for instance if we add +119 to +125 we get +240. However the byte overflowing =240 in normal notation has its upper bit set to 1, and would appear to be negative 1-16 in signed arithmetic. To cope with this, processors have an overflow flag, that warns that the minus flag is lying if it results from a signed arithmetic operation.

Conditional jumps are at the heart of the program structure, and usually harness the flags in your program. Either a jump for the wrong condition, or to the wrong place, sometimes missing a valid instruction altogether causing a crash. This is where many late

4) their base and return to Basic, with its own comforting error messages.

Another variety of jump-type instruction involves subroutines. These are jumps that direct to a much used part of the program and expect to return to the main sequence where it left off, exactly the way GOSUB works in Basic. In order to do this, the address of the next instruction of the sequence has to be stored before the value in the PC is replaced to cause the jump. This is where the stack comes in.

The stack in RAM acts as a last dumping ground where data is stored and retrieved on a sequential basis, last-in/first-out. It is managed by the stack pointer, which holds an address that consistently points to the next room data get into the stack. The stack can be likened to a spring loaded plate dispenser, or rifle magazine. If you put something in, you have to remove all you put in after it to get it out again.

Stacking

In the case of subroutines, the jump, or call, stores the address of the sequence, the return address, on the stack. When the subroutine is finished, the RETURN instruction withdraws the return address from the stack and puts it back in the program counter, causing execution of the program where it left off. In many cases you may want to preserve the contents of some other registers from destruction by the subroutine. The stack can be used for this too; you PUSH the

register contents into the stack, a store operation under management of the stack pointer. To retrieve them a POP or PULL is used to move processor data to have a stronger spring than other(s).

We cannot go much further before the character of the processor steps is talking generally. We now know something about what the processor can do, and how it knows what to do in it. We have both dimensions of the processor's instruction set. We also know that each instruction is provided as a byte, or sometimes two bytes, in the program, and



how the program counter keeps track of progress through this jungle of numbers — but how we cope with the jungle!

This is not obvious on many home micros, and seems to present another barrier to machine language programming. Often we tend to buy extra software just to bypass the Basic interpreter in order to speak to the processor directly. It's as bad as a bike surrounded by accessories, talking you flat's busy.

However, one intermediary is of positive value to those who prefer "words" to numbers, the assembler. This is a program that accepts mnemonics, and

translates them into instruction codes as a one for one basis. It is not to be confused with a compiler which attempts to accept Basic and produce machine language. The mnemonic constant assembly language, which varies according to the processor, but not so radically as the instruction numbers themselves. Assembly language is often called *near code*, which is assembled into object code, the actual numbers.

Scratch

Assembly language mnemonics are meaningful, although very abbreviated, and have to be written with a strict syntax. Some may argue that if you are starting from scratch there is no much to remember in assembly language that you might as well learn the object code, and in fact there are advantages in doing so. However the assembler has other virtues that may fit, so the choice is yours. The alternative is to write in numbers using a monitor. This is a smaller program, that you might need anyway, as an assembler does not help you to debug.

I don't think I can say any more about machine language without choosing a specific processor. When you take the plunge you will need a book on assembly language programming specifically for the processor in your Commodore micro. This should also give essential information on the memory map and peripherals. ■

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game 2 or Q for up, A for down, J for left
and I for right.

The program structure is as follows:
0-37 set up and titles
38-181 main 1
182-229 the movement and scoring

480-483 decrease timing
500-510 the ending
508-549 instructions
550-600 hi-res graphics and program-
mable graphics
600-615 main 2
600-620 hi-score, name input
600-645 main 3
6000-6002 music

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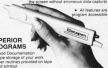
0 REM *****
1 REM *
2 REM * REACTOR FOR C64
3 REM *
4 REM * BY A.CAPE 1983
5 REM *
6 REM *****
7 POKE 1000,"REACTOR"
8 POKE 1000000,"V040"
9 POKE 10000,"P04"
10 POKE 100000,"P04000000"
11 PRINT "C"
12 PRINT "***** COPYRIGHT (C) 1983 A.P.C.E. *****"
13 PRINT "***** SCORE 000 *****"
14 PRINT "***** PRESS ANY KEY TO CONTINUE *****"
15 IF PEEK(107) < 40 THEN GOTO 20
16 IF PEEK(107) < 40 THEN GOTO 24
17 GOTO 10000
18 PRINT "C" POKE 100000,"1000100"
19 GOTO 1000000,"20000"
20 POKE 1000000,"20000"
21 POKE 1000000,"20000"
22 PRINT "*****"
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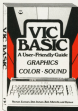
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Sounds

These five short programs for the VIC 20 come from *Astros Dances of Bikini, West Midlands*.

THESE PROGRAMS run on an unexpanded VIC-20. There are four sound routines and one colour one, and also a table of sounds.

The routines are straightforward. They produce some interesting sound effects which you can incorporate into your own programs.

In program 4, line 30 is a pause loop which pauses for the set time until it goes onto the next line. This is set at 80 but can be changed.

In program 5, the colour demonstration program, the value of the step can be changed to any number smaller than 300 but it must be a minus number. In this

program you will have to press run/stop to get out of the loop. Steps 50 to 60 create dazzling screens. Steps 64 to 100 create interesting effects. The table of sounds is easy to use. It makes different sounds by mixing two or three voices together. For instance, for sound 1 you type:

```
POKE META, 1:POKE 36874, 199:POKE 36875, 217
```

The sound programs can be experimented with to create your own sounds.

PROGRAM 1

```
10 S=36876:V=36876:POKEY,15
20 FORP=(870:STEP-1):POKEY,P
30 FORO=15070:190STEP-P
40 POKE5+1,0:NEXT
50 POKE5+1,0:NEXT
```

PROGRAM 2

```
10 S=36876:V=36876:POKEY,15
20 FORP=(57000STEP-1):POKEY,P
30 FORO=24070:125STEP-5:P:POKE5,0
40 NEXTO,P:POKE5,0
```

PROGRAM 3

```
10 S=36876:V=36876:POKEY,15
20 FORP=17010
30 FORO=25070:190STEP-P:POKE5+1,0
40 NEXT:POKE5+1,0:NEXT
```

PROGRAM 4

```
10 S=36876:V=36876:POKEY,15
20 FORP=15700STEP-1:POKEY,P
30 FORO=17000:NEXT
40 FORI=22070:40:POKE5,1:NEXT:NEXT
```

PROGRAM 5 (COLOUR)

```
10 S=36876
20 FORO=170500
30 FORP=220700STEP-1:POKE5,P
40 NEXTP,0
```

SOUND TABLE

POKE	POKE	POKE
36874	36875	36876
1 199.....	217	
2 217.....	199	
3 175.....	162	
4 207.....	167	
5 143.....	197.....	165
6 191.....	128	

Meanies

A GAME for the unexpanded VIC 20 from

Color Dances of Northwick, Clever.

ASTRO MEANIES is an arcade-style game for the 8-bit VIC. You are a scout making your way home across your planet. On the way you run into an ambush. It's the dreaded Astro Meanies! Give the chance

they will attack and destroy you. Kill as many as you can using your laser, without letting them touch you. You begin with three lives, but these won't last long.

Controls are A-left, D-right, X-down, S-fire.

```
1 POKE5,28:POKE52,28:GOSUB2000
5 FORI=50,255:POKE36869,255
10 PRINT"3" :POKE36879,8:FORI=812070:185:POKE1+36720,5:POKE1,5:NEXT
11 PRINT"XXXXXXXXXXXXXXXXXXXX";
12 PRINT"DEC DEC DEC";
13 PRINT"EEEE DEEE DEEE";
14 PRINT"EEEE DEEEEC DEEE";
15 X=5:Y=10:D=1:S=0:SC=7500:CL=38400:R=1
20 DIMX(5),Y(5):FORI=8705:X(I)=59:NEXT
30 FORI=8705:GETA:IFR="":RND=8:THE:POKE36877,8:GOTO100
51 POKE36878,2:POKE36877,240
55 POKE5C+Y*22+X,32:X=X+2:Y
56 REM ##YOUR CONTROLS#
60 D=D+(CR="R")-(CR="D"):IFD(1)THEND=1
65 IFK(1)THEND=-1
70 Y=Y+(CR="U")-(CR="X")
75 IFX(0)THENX=21
80 IFY(1)THENY=1
```

RAM PACKS

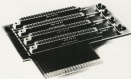


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```

85 IF%21THEN%0
90 IF%15THEN%15
95 POKECL=%%22+K.3+C%0:IF%=-1THEN%0
96 IFPEEK(9C+%%22+K)=32THEN%9
97 R=R+1:POKE36876.258:FORL=1TO2:NEXT:POKE36876.8
98 POKECL=%%22+K.2:IFR>5THEN1000
99 POKE9C=%%22+K.C
100 IF%0="5"THEN%20
101 POKE36876.9:FORD1=255TO238STEP-1:POKE36877.31:NEXT
105 D1=0:IFD1=0THEN%1
110 X1=INT(R)
115 X1=X1+D1:POKECL=%%22+X1.7:P=PEEK(9C+%%22+X1):IFP=32THEN150
120 FORJ=0TO5:IFY=V(J)ANDX1=X(J)THENX(J)=99:IS=IS+1
125 NEXTJ
130 POKE36876.15:POKE36877.130
140 GOTO155
150 POKE9C=%%22+X1.2:IFX1<21ANDX1>8THEN115
155 FORK2=INT(X)+D1TOX1STEPD1:POKE9C=%%22+X2.32:NEXT
160 POKE36877.8
200 IFX1=>99THEN%20
205 POKE9C=V(1)*22+X(1).32:IFR%K1)<C.4THEN%25
210 Y(1)=V(1)+V(1)>99-V(1)>C%
215 X(1)=X(1)+X(1)>99-C(X1)>C%
220 GOTO246
225 X(1)=X(1)+INT(RND(1)*3-1):Y(1)=Y(1)+INT(RND(1)*3-1)
230 IFX(1)>COTHENX(1)=21
235 IFY(1)>C1THENY(1)=0
240 IFX(1)>21THENX(1)=0
245 IFY(1)>15THENY(1)=15
246 IFY(1)=ANDX(1)=INT(C+.5)THENR=R+1:POKECL=%%22+X.2:IFR>5THEN1000
247 POKECL=V(1)*22+X(1).4:POKE9C=V(1)*22+X(1).1
250 IFX1>C-99ANDX1<C.5THEN%20
251 X(1)=INT(RND(1)*22):Y(1)=INT(RND(1)*14)+1
252 POKE36876.15:FORL=255TO150STEP-1:POKE36876.L:NEXT:POKE36876.8
255 NEXTI:PRINT"###SCORE:##":S
260 GOTO50
1000 POKE50.8:POKE36876.8:POKE36877.8
1005 FORI=1TO1000:NEXT:PRINT"###ANOTHER GO Y/N":
1010 GET# :IF#=""THEN1005
1015 IF#="Y"THENRUN
1018 END
2000 PRINT"J"
2010 REM ###I-RES##
2015 FORI=7168TO7168+6*8-1:READ:POKEI.D:NEXTI
2021 FORI=7424TO7431:POKEI.8:NEXTI
2022 FORI=7168+48*TO7168+58*8-1:READ:POKEI.8:NEXTI
2025 RETURN
2030 DATA 68,126,171,126,66,66,129
2035 DATA 129,195,231,255,153,36,36,66
2040 DATA 126,9,255,255,0,126,0
2045 DATA 126,192,224,248,248,248,254,255
2051 DATA 1,7,15,31,31,127,255
2055 DATA 255,255,255,255,255,255,255,255
2060 DATA 126,66,66,66,66,66,126
2070 DATA 8,24,8,8,8,8,8
2080 DATA 126,2,2,126,64,64,126
2090 DATA 126,2,2,126,2,2,126
3000 DATA 66,66,66,126,2,2,2
3010 DATA 126,64,64,126,2,2,126
3020 DATA 126,64,64,126,66,66,126
3030 DATA 126,66,2,2,2,2,2
3040 DATA 126,66,66,126,66,66,126
3050 DATA 126,66,66,126,2,2,126

```

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Drawing

For the Pi 20 with Super Expander, from

Michael Berry. Please contact us with your address, Michael!
THIS PROGRAM enables you to draw a picture or pattern of your choice. The program requires a joystick but can be controlled by key control. The fire button

changes the border colour. You can choose the location where you want to start. First you input the A number (horizontal axis), then you input the B number (vertical axis). You can also choose to draw in a thick or thin line.

```
1 G=0
2 GOSUB2000
10 COLOR0:G,1,7
20 GRAPHIC2
40 X=RJOY(X)
45 IFW=2THENGOSUB300
50 IFX=1THENGOSUB200
60 IFX=2THENGOSUB220
70 IFX=0THENGOSUB250
80 IFX=4THENGOSUB270
82 IFX=128THENGOSUB320
85 IFB<1012THENR=1012
86 IFB>1012THENR=1012
87 IFB<12THENB=12
88 IFB>12THENB=12
90 GOTO40
200 DRAW2,A,BTOR,B-5
205 B=B-5
210 RETURN
220 DRAW2,A,BTOR,B+5
225 B=B+5
230 RETURN
250 DRAW2,A,BTOR+5,B
255 R=R+5
260 RETURN
270 DRAW2,A,BTOR-5,B
265 R=R-5
275 RETURN
300 DRAW2,A-10,B-10TOR+10,B-10TOR+10,B+10TOR-10,B+10TOR-10,B-10
310 RETURN
320 G=0+1
330 COLOR0:G,1,7
340 IFG=15THENG=0
350 FORJ=1TO150:NEXT
360 RETURN
2000 POKE36879,20:PRINT"*****DRAWING*****"
2005 PRINT"STARTING POSITION A(512),B(512) IS THE CENTRE"
2010 PRINT"PLEASE ENSURE THE "
2015 PRINT"LAST DIGIT YOU INPUT IS 2"
2020 PRINT"ANY NUMBER FROM 12-1012 ":PRINT
2025 INPUT" A:NUMBER ";A
2030 INPUT" B:NUMBER ";B
2040 PRINT"THICKNESS OF LINE 1=THIN/2=THICK"
2050 INPUT"THICKNESS";W
2060 IFW=1ORW=2THEN3000
2070 GOTO2040
3000 RETURN
```

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Getting down to printing

A *Printer looks at the running costs of printing*

IT IS SAID that no person who has to act about the petrol consumption of a Rolls Royce can afford such a car. Similarly, if you need to worry about the running costs of your printer, perhaps you made a wrong choice. Just buying a printer is only the start of it all. Once you have taken this irreversible step, you have set the scene for all your running costs and also determined whether the system will work satisfactorily. This article covers some of the things you need to consider before you actually buy your printer.

First, will it run on your computer? Cables may turn out to be extra, and the one supplied may not actually fit the port at the back of your computer. Even worse, you may have to buy an interface, which converts whatever signal the computer sends into something the printer can understand. Some systems have to have "addressable" interfaces. A non-addressable interface cannot tell the difference between a printer and a disk drive. A few printers come complete with one or more interfaces already included in their circuitry. Check these points with the printer salesman and make sure that he understands that the sale is conditional on the printer actually working properly on your computer. If this is clear, you can have recourse to the various consumer protection laws should it fail to work.

Second, what sort of paper does it consume? Ordinary white paper costs around 0.4p per sheet at A4 size. If the printer will only use perforated continuous paper, then you can expect to pay £10.00 or more for 2,000 sheets of cheap paper (about 200 sheets). If your printer is one of the superior thermal affairs, then expect to pay 1.5p or more per A4 sheet in a roll of thermal paper. And the laser type falls only in the daylight. Aluminium-faced paper is even more expensive. So if you are going to do a lot of program development, be careful about the printer and its appetite for paper.

Consuming

There are printers that take plain paper. These either have a roller, like a typewriter, or a feed roller that pushes the paper past the printing dot. On these printers you can use separator rolls (cheaper than perforated paper), or you can make up your own rolls. This is done by arranging the ends of the separator rolls from your friendly local newspaper, and getting them up into sections 1 1/2 ins wide (or whatever) with a hand saw or better still, with a circular saw. You will have to make up a

suitable feed mounting. This gives you an enormous supply of very cheap paper, of poor quality, but just the job for lots of rough work. You can always replace with good paper for final copies.

If you will want to print on narrow paper for any reason, bear in mind that many printers (with or without rollers) grip the paper by two pressure rollers about two inches on each side of the centre of the sides. This means that a narrow paper must also be centred, and you may have to modify your program to print at a TAB position when using this paper. By the way, if you want to print a lot of labels, you can get by with rolls of gummed labels, but with no margin feed the alignment can drift and you have to keep checking.



Next, we come to the small matter of ribbons. A printer that uses ordinary typewriter ribbons is easily maintained. Some manufacturers specify the use of their own ribbons; this is because dot-matrix printers depend on the oil in the pen-head, but many people seem to have found that performance with typewriter ribbons is satisfactory. With a plain-ribbon machine, you only have to buy a typewriter ribbon and, if the spools do not fit, then just re-wind it. If your original ribbon has crystals at the end, then the new ribbon must also have crystals. These remove the ribbon feed at the end of the spools.

The real fun, though, is with printers that have the ribbon in a cartridge as cassette. These always seem to have been designed specially for the particular machine. They are expensive, and do not always last very long. When the printer is made obsolete by the manufacturer, or he just goes out of business, then the cartridge will cease to be available, and you will have problems... I have a perfectly good printer, which has built-in interfaces for IEEE, Commodore and RS232, takes plain paper, and the design is such that it uses the whole width of the ribbon (a nice touch that — some printers only work in the middle of the ribbon). As the manufacturer went bust, I can't get replacement ribbons.

Cartridges can be re-filled, with some difficulty. To do this, you take a new ribbon on the old one, and wind it into the case, pulling the old ribbon out as you go. Joining is difficult, make a careful template first, and stick the two ends together with Eco-stick or Croydex and don't get it twisted. Ribbons have also been revived by opening the cartridge and operating with W D40, or putting in stamp-pad ink. If you want to, you can buy ribbons in wholesale rolls: 500 metres costs about £18.00. See under Typewriter Supplies in the Yellow Pages.

Do not be too impressed by statements of ribbon life. An A4 page, 10 characters to a line and 60 lines on the page, will contain something like 3,000 actual characters printed. A claimed ribbon life of 100,000 characters will only do 33 pages, or six big letters.

Temptation

The fourth matter is the temptation to go all modern and get a daisy-wheel printer. Some of these are now quite cheap, and they do allow you to produce "real" typing from your computer — if that's what you want to do. However, there are snags. There is the matter of the interface — will it meet the requirements outlined above? Where does it get its power from? And has it been properly wired up for your computer? A daisy-wheel printer will take plain paper, almost by definition, but do you have to buy an expensive tractor-feed attachment if you want to use it for continuous paper? And will it work with the paper right at one end of the roller, as a typewriter should, and most dot-matrix printers won't? The ribbon nearly always seems to come in a cartridge. Is it a cartridge that fits a common electric typewriter, so that you can get one locally? And how much ribbon is it? I found only six yards in one genuine Olivetti cartridge.

Then there are the daisy-wheels themselves. The whole idea is that you can easily change one wheel out and put in another, with a different type-face. A great idea, which is somewhat ruined when you discover that the makers of the cheaper daisy-wheel printers or electric typewriters which can be driven from a motor have all gone for the most expensive daisy-wheels. Thus, Olivetti and Adler-Triumph wheels cost £20.00 or more each, with Remdex only a little way behind. The idea that daisy-wheels are cheap comes from the Quam/Dialko wheels, which cost about a fiver a time, but don't fit any of the cheap daisy-wheel printers. When you are shopping for such a printer, always check this point carefully with the salesman, and watch out for being told how cheap and easy they are to get.

Practical operation of your printer should be accompanied by a careful reading of the manual. What it will not tell home to you is such small points as the fact that a printer with a paper-advance or line-supply device will make the whole system "hang" if you run out of paper. You can spend hours trying to discover from this problem if you didn't know.

When you choose a printer, take the time to consider all these important aspects, and you will gain a useful piece of equipment, rather than an expensive liability. ■

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This is it, the ultimate Fruit Machine for the VIC with sound, hold and re-spin KOPs machine code. "Overall Jackpot is a beautifully written simulation giving superb graphics, animation and use of colour. In fact, this program makes Commodore's Fruit Machine cartridge look unbelievably cheap and nasty." Home Computing Weekly No. 2019/7/83.....**£5.50**

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COMMODORE 64 GAMES AND UTILITIES

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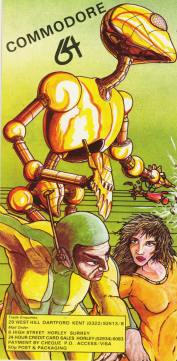
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64



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ANSWER BACK

Taking flight

ALL COMMODORE owners I know are scrambling for a decent flight simulator for the 64 or Vic 20. Any ideas? Are Commodore bringing out a cartridge to upgrade the Vic 20 to a CBM64?

Peter Anthonioz

Harrogate

IT DEPENDS on what you mean by a decent flight simulator! Most of the ones available for other computers display a flight path, and a panel of information showing speed, altitude, time, throttle, fuel and so on.

Amiga Productions, 14, The Oval, Braintree, have just released a simulator for the 64 which includes all of these features and more. It's available for £9.95, or £11.95 on disc, by mail order and from selected computer stores.

As to upgrading the Vic 20 to a 64, it is theoretically possible, but isn't very practical. Commodore thought at one time all of being an exchange deal, but after their substantial price reductions this proved unnecessary.

Making a deposit

I HAD A problem with my 64. When trying to use the RUN/STOP button with the RESTORE button to return the display to its original colour and condition, the RESTORE button works only after repeated presses. Could you comment on this problem?

James C. Pharypaol
Chalfonts

THIS PROBLEM occurs in many 64's. It isn't a special feature to stop you from accidentally **RESTORING** an important program — it's caused by deposits on the underside of the key, which prevent the key making contact with the printed circuit board beneath. Take the machine to your dealer to have the key cleaned with a special solvent.

Altered states

I'M PLANNING to buy a C204 64, 1541 disk drive and 1525 printer. In another year I will be living in the United States. Will I be able to use a British system over there, with their 110 volt 60 cycle current?

Charles Lenton
Southall

THE VOLTAGE could be corrected by using a transformer, but this wouldn't solve your problem. You would need to use a dual standard television (unless you bought a British monitor) because American televisions operate on the NTSC standard, which is not compatible with our PAL standard computers.

Small screen

I AM THE owner of a Vic 20. Though it is a wonderful computer, its drawback is its screen size. Are there any cartridges available to increase the screen size? And is it possible to run Atari consoles on a Commodore computer?

Steven Muir
Canobie

SEVERAL ELECTRONICS manufacturers do 40/80 column card which will increase the screen size appropriately. It's available through Commodore's Kiosk service, among others. There's no way to run an Atari console on a Commodore machine.

Tuning trouble

I HAD recently purchased a Commodore 64, but also I cannot get a clear sound and picture at the same time on my television. However I try to adjust the picture diagonals I lose the sound! My TV is only a few months old so I assume the fault is with the computer.

R J Dover
Weston

I SUGGEST that you take your 64 back to your dealer and check whether it will now successfully with one of their

television. If not, ask them to adjust the timing of the computer in accordance with the CRM service notes dated August 83, which should have been sent by Commodore to all authorized dealers.

Help from A to Z

I RECENTLY purchased a CBM 64 with disk drive and printer for my business, but I cannot find a word processing program which will do an index. All I require is to file items on disk and sort them into alphabetical order at intervals. Can you assist?

A Stuart

Police Review
Stockport

THE ALPHABASE 64, which will allow you to index on any field in your record, software is available from Precision Software, 6, Park Terrace, Manchester Park, Surby, 01-336 7166. This is a database program which seems more versatile than other similar programs which provide for indexes.

Dead heads?

THOUGH I'VE got used to using my CBM 64 by typing in and saving on tape my own programs, no matter what I do I cannot get any of the software I've bought to load into the computer from the recorder. Can you help?

Fredrick Banton

Redhill

IT SOUNDS as if your 64's cassette heads are not properly aligned, since it will read programs recorded on it but will not read programs recorded on properly aligned heads. Your best move would be to take it back to your dealer for adjustment or replacement.

Random problems

I RECENTLY bought a book of computer games supposedly playable on several home computers including the CBM 64. However, the following line seems to occur quite frequently, and is unacceptable to the 64.

RANDOMIZE VALRIGHTS (EMEL2)

I presume it is something to do with the TI chips, but I have tried everything I can think of without success. Can you help?

J J Perin

Barnes open

RANDOMIZE is not used as a keyword in Commodore Basic. In some versions of Basic it would be used to generate random numbers, as in **0=LET A = RND**.

The example you give suggests that the program requires random numbers from 1 to 60, since the rightmost ten characters of TI0 represent seconds. A suitable number for the Vic 64 would be **10 A = RND 1—TI0:REM %0** The random number generator **20 A = RND (100 - INT (A*90 + 1.001):REM** gives a whole number from 1 to 60.

The number would then loop back to line 20.

Graphics answer

WHEN IT comes to coping with graphics on the 64 I haven't got a clue. Can you recommend any books, or is there anybody in my locality that could help? I don't just want to use the 64 for playing games — it's too expensive for that!

Steve James

Widley

THIS IS a question I have to answer, because I can recommend (although I might be biased). Photograph, a copyrighted picture making program written by my son David, using a joystick to draw and paint. Photograph is available direct from me at 58 Braconeur Road, Newbury Park, Bedford. Enquiries, prices to Commodore Electronics require £9.95.

For local help, try contacting the Microvide Commodore Users' Group, c/o JVT Jones, 41 Virginia Avenue, Lytham, Merseyside.

If you need help with a technical query or problem write to
Jack Cohen,
Commodore Hardware,
12-13 Little Newport Street, London WC2R 2JD

Synthesise speech courtesy of Adman

Tony Roberts tests your skill — Adman Electronics presents the prizes

Send your answers to Competition Corner, Commodore Horizons, 13-15 Little Newport Street, London WC2E 8JG — to arrive no later than the last working day in the month on the cover of this issue. The names of the winner, and the solution to the puzzle, will be published in the issue after next. Entries will not be acknowledged and we cannot enter into correspondence on the result.

LAST MONTH'S meeting at the Hill Nook Micro Club only lasted ten minutes — there was a hurried escape when a small piece of boarding fell from the wall with a crash — revealing some looseboards and a considerable quantity of rather open bars. After some minutes Zena, being more intrigued than the rest of us, donned a makeshift veil and re-entered the meeting Hall — and soon

re-appeared to announce that all was now clear — and that the piece of looseboards revealed had an odd property. Taking the cells containing young bees as "1" and those without, "0", all the numbers from 1 to 10 (in binary of course) could be read from straight rows of looseboards cells. When we had a look, however, a couple of the bees had crawled out from their cells — here's the remaining



looseboards: which cells had the two bees occupied?

Answer the question correctly and you could win one of two Adman Electronics Speech Synthesizers for the Vis or 84. The unit plugs into the computer's expansion slot, and has an extensive vocabulary which you can program to add a new dimension to your games or educational programs.

When you've solved the

puzzle, send us the answer with details of which computer you own, and complete this re-breaker in an apt and amusing manner in 13 words or less: "I want to own an Adman Speech Synthesizer because..."

The winner of our February competition is Greg Mulholl of Taunton, whose prize is a 1520 printer/copier from 84 Supplies. The winning line was 120 22474 5,1,3,2,4,1,3,3.

MARKET VIEW

No sign of any let-up

IT MUST BE galling for Commodore chairman Irving Gould that no sooner has the company announced that sales in calendar 1983 passed the one billion dollar mark — 1,062 million dollars to be precise — than the chief executive and company founder Jack Tramiel already envisages, followed closely by a quartet of top managers.

The financial picture is unchanged. At the Commodore Electronics Show at Las Vegas, Gould revealed that first half sales, to the end of December, had topped 600 million dollars, up 121%, and a fortnight later he unveiled handsome profits.

For the last three months of 1983, taking in the Christmas season, Commodore billed profits

from 26.3 million dollars in the same quarter the previous year to 79.2 million dollars to give a first half profit total of 115.3 million dollars, a rise of 230%.

Not does there appear to be any sign of a let-up. At the end of January, Gould said Christmas sales left American consumers short of money for Commodore 84's, and that "What we are now experiencing is extraordinary demand not only for this micro-computer, but also for the peripheral equipment and software that accompanies it."

This puts Commodore bang on target to achieve the analysts' profit predictions for the year ending in June, which range from 150 to 158 million dollars, after tax.

What could prevent these forecasts being met is the present management upheaval rocking the Commodore boat. In mid-January, Jack Tramiel suddenly resigned, saying "Personal reasons prevent my contributing on a full-time basis with Commodore."

This is the story

Commodore is sticking to, but it seems that those personal reasons can be interpreted in a variety of ways. Although Tramiel built up Commodore from nothing to its present billion dollar status, it wasn't achieved without trading on numerous ties.

Former Commodore chief operating officer James

Fisher — who left the company after a row with Tramiel — will happily say "Jack was a terrific marketer and a terrific purchasing guy, exciting, thrilling, frustrating and devastating."

Others are less charitable. Alan Friedman, former finance director who left last April, said Tramiel "ran Commodore like a dictatorship."

At all events, he will be missed. Says Donald Richard, currently one of four top men hired, fired and rehired by Tramiel: "There was always the captain of the ship. With the changing market place, the current, how will it do without him?"

Captain or no, Tramiel's departure gives Gould an

even greater stronghold on the company. Gould has a larger share stake in Commodore than Tramiel — 18% to 7% — and soon to be replaced Tramiel with a personal acquaintance, Marshall Smith, head of the similarly-named Thompson-Hormann group, which has few links with computers.

"I have personally worked with Mr Smith for more than four years. Commodore needs a Chief Executive that is a leader, not an underdog to us," said Gould. Tramiel, in Gould's eyes, had a "a certain style that can take a company to one billion dollars but can't take it to 10 billion."

Smith's early words were: "Commodore has an extraordinary foundation of talented people working for it."

As for Smith, the foundation laid another four of its talents even before he formally took over. Four senior managers resigned, but, Commodore says, because of Tramiel's departure, through one of the four, Donald Richard said is influenced his decisions.

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for programmers

MIRCO is a full 6502 6510 ASSEMBLER with the power that professional programmers need, yet so simple to use that we recommend it to beginners! The *MIRCO* cartridge has many other facilities including editing commands and a machine language monitor, all for £59.50.

There's much more for the 64 in the *SUPERSOFT* catalogue. Ask your computer dealer for a copy, or phone 01-261 1146.



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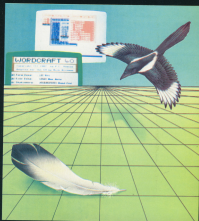
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