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BUYERS GUIDE ISSUE

FEBRUARY 1986

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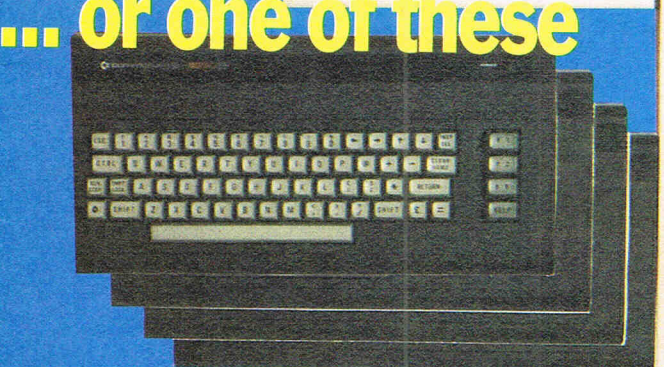

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... or even one of these

...then you really need what's in this magazine

get the best

The key guide for the new and experienced Commodore 64, Plus/4, C16 or 128 owner... graphics, sound, games, education, business, communications and much, much more... plus Basic for *absolute* beginners and many mega reviews of disk and cassette games.

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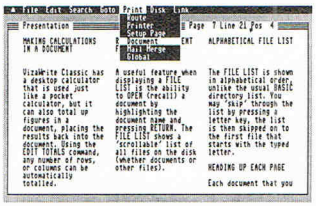
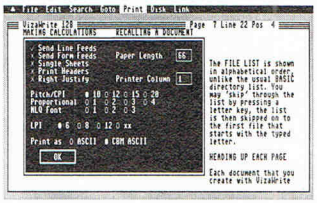
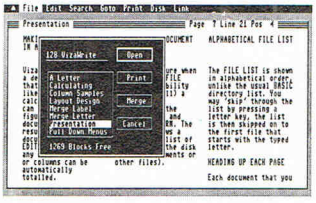
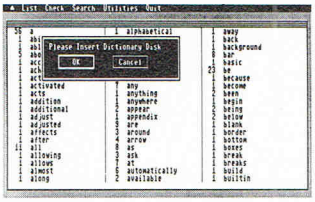
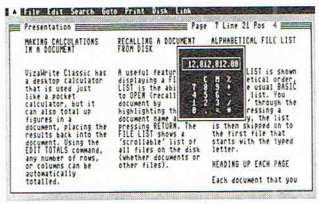
Classic 128











VizaWrite Classic is a high performance, easy-to-use word processing program designed for the Commodore 128 computer.

VizaWrite Classic takes full advantage of the colour, graphics and memory capabilities of the Commodore. Creating the full power and style of a dedicated word processing station, without the expense.

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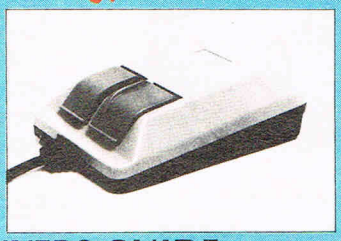
The one magazine every Commodore owner needs

Inside

COMMODORE COMPUTING INTERNATIONAL

Vol 4 No 7
New Year/
February 1986

Feature of the month



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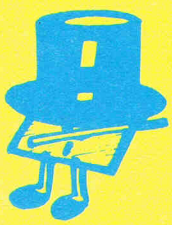

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Ocean hold the number one slot for the second month running, but competition from new entries is fierce.

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Do disk games really offer you more sophisdiskation (groan!) than cassettes? CCI reveals all.

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NEXT MONTH

CCI focuses on sound and music for your micro, plus a competition you can't afford to miss and much, much more...

Software for your Commodore 64 *from Orpheus*

PASCAL 64

Orpheus Pascal 64 is based on standard Pascal with numerous extensions for graphics sound and hardware control. A comprehensive 128 page ring bound manual is supplied with the package which explains with examples, the working of each command. As Orpheus Pascal 64 is expected to be popular with educational and domestic users Orpheus will be providing a free technical update service to customers when they send back their user registration forms.

£24.95

MEGABASE

Records are created efficiently in memory, and date files can be easily saved onto disc and tape (a quick loader/saver is provided). You can define up to 26 fields, which give you meaningful names for later reference. The fields in each record can be either numeric or strings of characters. You do not need to specify limits to the length of the fields.

Megabase provides an instant sorting mechanism, resequencing your file according to any number of fields, in ascending or descending order. Your records stay in order even after records have been added, deleted or changed.

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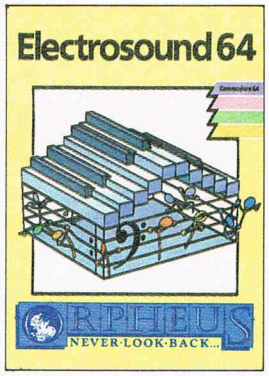

ELECTROSOUND 64

The complete electronic music package for the novice and the professional musician.

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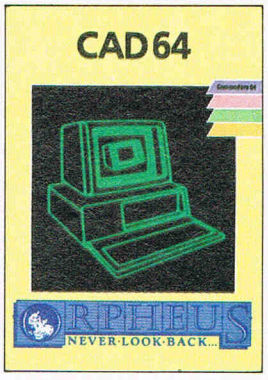

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Computer Aided Design on your Commodore 64. Design 3D objects on the screen, rotate them, expand them, amend them and print them out.

Use CAD 64 at home or at school for technical drawing, graphics design or simply for fun.

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...news...news

The new Young Computer Brain of Britain is 13-year-old Joseph Saumarez Smith of London. He won the Sunday Times/ Commodore competition with a program for computerising dental patient records. In addition to a trophy, Joseph received £1,237 worth of Commodore equipment including a 128, disk drive, a cassette unit, colour monitor and £250 of software.

PLUS/4 DEAL SECURED BY COMMODORE

Commodore recently announced a deal 'with Harris Queensway and Comet' for 150,000 Plus/4s. Claimed to be one of the biggest home computer purchases of all time; the Plus/4 will be bundled with a 1531 datacorder, joystick, interface, and 10 pieces of software for £99.99.

The package will be sold through the retail outlets of Comet, Greens, Supreme and Ultimate. Market response is said to be responsible for the upping of the order from 100,000 to 150,000.

SOFT AID SORTED, FINALLY

In a deal recently concluded, Rod Cousens -the mastermind behind Softaid – agreed a sum "in excess of £130,000" which Microdealer UK would pay to the Band Aid trust. Microdealer also anticipate collecting another £70,000, bringing the total raised for the very worthy cause to somewhere in the region of £350,000. Well done!

Opinion...

Dear Reader

For many of you CCI this month will, I am sure, be a new experience. Commodore, we are informed, has been pouring machines onto the market at incredible prices offering, as they say in the commercials, 'never before equalled value'.

They are selling not just the recently launched 128 but C64's, Plus/4's even C16's. The computers are offered 'bundled' with joysticks, data recorders, games and other sales promoting add-ons and are reputed to be finding customers by the hundred thousand.

Many thousands of these buyers will find, as have established owners, that knowing what is available and what it can do for you takes you half the way toward really getting the best out of your Commodore computer. That's why in this and coming issues of CCI, we are presenting a complete guide to everything you need to enjoy totally the enormous potential of your machine.

This month we are covering many different aspects including ways of using your micro and in depth reports on graphics and monitors. And you'll find there is, as we say, much, much more...

In fact, there's something for everybody – and all the machines. We also have lots of games megareviews and a sharp, new games rating system to keep you right on top of all the best of the current – and coming soon – releases.

The faithful CCI reader – and there are many who have been with us since CCI started nearly four years ago as the first real Commodore magazine – will recognise this combination as the unique CCI mix. You see we have the strange idea – strange anyway to some magazines – that you should be treated as an intelligent human being who is interested in not just one thing but everything you can do with your computer. We believe that you want more than just kids' stuff, that you want the fun and the power that really understanding the computer can give you. Power to the Commodore people – that's what CCI means.

In this CCI, as in all CCI's you'll find you'll be reading the magazine that ranges right across the whole Commodore field – and sometimes outside it, too – in search of what will interest you and help make you feel you're getting the very best out of your computer – and out of your life...

This time next year, by the way, we will be giving away a special CCI Oskar. It will go to the Reader of the Year, as will some very special other prizes and privileges. Whether you are a new or a longtime reader, you will have an equal chance. So keep on reading the one magazine that every Commodore owner needs and 12 months from now you could be our powerful Reader of the Year...

Yours sincerely
Antony H.Jacobson,
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A Flash Of Genius!

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The 64 Multimodem is menu driven and multispeed, with CCITT V21/23 and Bell 103 standards, handling baud rates of 300/300, 1200/75 and 75/1200. Functions include save and print frame and automailbox with edit and save.

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...news...news

HIGH TECH HELP

Honeywell has set up the Honeywell Enabling Technology Task Team (ET3 for short) with the aim of applying the latest computer and microprocessor technology to the problems of the handicapped.

EYECOM is a project aimed to help those who cannot speak to communicate fluently via special optical sensors, even if they are completely paralysed apart from their eye muscles.

Special spectacles display an array of symbols to the user and a sensor uses tiny beams of infrared light to detect which symbol the user is focusing on. The symbol is then displayed on a screen, printed out, or used as input to a computer.

ABLENET aims to help children with severe mental and physical disabilities to use toys and educational aids.

Another successful project has led to a voice-activated telephone interface which enables quadriplegics to obtain jobs as switchboard operators.

On the subject of computers and the disabled, the British Computer Society's Specialist Group for the Disabled (North), are organising a conference entitled Computers In Therapy.

It is scheduled for 9-11 April 1986 and will be held at the University of Manchester Institute of Science and Technology. Running alongside the Current Perspectives 86 conference run by the Health Informatics Groups, it is anticipated that the two events will merge for joint sessions.

The organisers are looking for papers and contributions from people working in relevant areas. People wishing to submit papers, offer help or assistance (practical or financial) or requiring more information, should contact: Mr F Ellis, 9 Almond Tree Road, Cheadle Hulme, Cheadle, Cheshire SK8 6HW. Tel: 061 485 4467 Ext 204 (office hours) or 061 485 7738.

BT RAINS OK!!

British Telecom recently announced details of its newest software label, Rainbird. Named after its founder, Tony Rainbird, it will be concentrating on "state of the art" simulations, applications, adventures and simulations.

Firebird, Telecom's other software label, (which Tony Rainbird co-founded) will continue in its present position. The first 64 product to be released is the Advanced Music System (reviewed last issue). Rainbird are also developing software for Commodore's eagerly awaited Amiga, including a rumoured flight simulation/Star Wars game called Starglider.

Rainbird products will also be marketed in the States by Firebird Licensees Incorporated, a wholly owned subsidiary of British Telecom.

ELEPHANT SITED IN IRELAND!

Success of the Elephant brand of floppy disks and computer supplies has led American manufacturer Dennison to open its first European floppy disk factory, in Southern Ireland.

With the installment of the latest state of the art equipment, the new site is claimed to be the most automated and modern floppy disk factory in the world. The disks are virtually untouched by human hand and are manufactured in an environment of filtered and refiltered air, which is 100 parts per million clean!

The completion of the factory will add another 200 to the 10,000 people already employed worldwide by Dennison.

Commodore Comments...

Commodore's Consumer Products Manager, David Tomkins, is CCI's guest writer in this month's Commodore Comment.

The opinions published here are those of Commodore, and do not necessarily concur with the views of CCI.

After a busy Christmas, Commodore's home computer division are well into the busiest time of the year.

The 64 Compendium pack has really caught the imagination of non-computer owners and soon you'll be joined by close to 100,000 new 64 users. One of the items in the Compendium is the Music Maker Software and keyboard which has shown just how versatile the 64 is and how easy it can be to use the powerful features of the SID chip. Music Maker however, is just beginning and now becoming available are some really sophisticated sound devices. 'Sound Sampler' is my favourite, being able to record voice or sounds and then play them back higher or lower in pitch or even backwards. It's great fun and provides many of the gimmicks used in today's pop music. There's 'Sound Studio' for really professional synthesiser effects and 'Sound Expander' using the latest digital technology to produce up to 8 notes at a time of high quality synthesized sound – Hey, I've just thought of a great name for a pop group – The Commodores!

Commodore's activity is by no means slowing down in the New Year, if anything we've got even more going on. We're launching 'Passport to Pleasure' from January 1st – a special offer giving holiday vouchers worth up to £250 away with any piece of Commodore hardware – so if you're thinking of extending your system, now's the time to do it!

1985 was certainly a watershed for the home computer market. In the early months of the year, the pundits were preedicting gloom and despondency for the industry and in the case of some manufacturers, these predictions proved to be accurate. There is no doubt that Commodore itself suffered from the uncertainty in the market place but now, thanks to excellent products like the 64 and the 128, and the support of its customers, Commodore is through this period and looking forward to 1986 with great excitement and optimism.

In conclusion, I should like to thank you for your support during 1985 and wish you Happy New Year from myself and all at Commodore.

David Tomkins
Retail Product Marketing Manager

128 Business Software

Dialog has released enhanced versions of four of its business packages for the 128.

Transact is a book-keeping system and nominal ledger package suitable for accountants and small business applications.

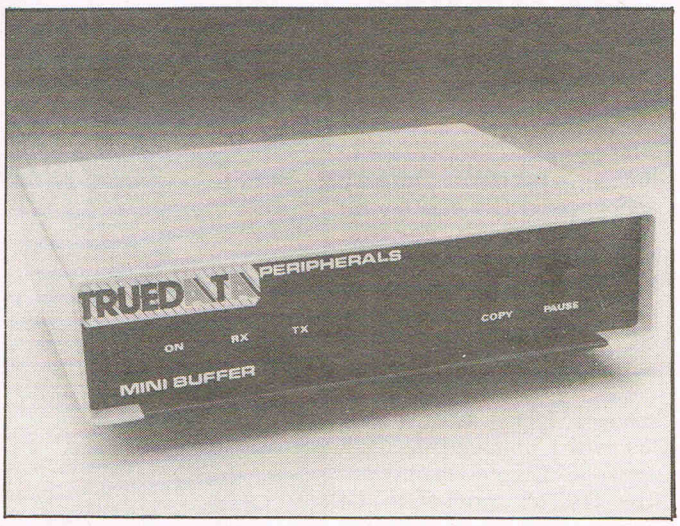
Sales Ledger and invoice processor is an open item accounting system with extensive reporting to screen and printer.

Purchase Ledger is another open item accounting system; and finally Stock Aid which is a stock control system.

All four packages are fully integrated and can be bought separately at £39.95 or together for £90.

Contact: Dialog, 20 New Row, London WC2N 4LA.

Buffer them up



DN Computer Services recently announced the Trudata printer buffer to free your computer while your computer is busy churning out your life history!

The buffer absorbs all the data to be printed as the computer can send and then feeds the information at a speed the printer can accept, while leaving the computer free for other tasks.

Both 16K (enough for 10-12 pages of text) and 32K (20-24 pages of text) buffers are available for either parallel or serial printers.

Prices range from £115 for the 16K version to £153 for the 32K versions. All units have an integral power supply.

Contact: DNCS, Truedata House, Green Lane, Heywood, Manchester OL10 2DY. Tel: 0706 67567.

Four In One For 128

Team Mate is a package for the 128 including a wordprocessor, spreadsheet, database and high resolution graphics - all for just £49.95.

The wordprocessing mode utilizes an 80-column format and contains all the usual functions.

In spreadsheet mode, there are 17 columns and 50 rows and frequently used calculations can be duplicated throughout these.

The database allows you to store and retrieve mailing lists, inventories, personal files, etc.

High resolution graphics enable the creation of pie charts, line graphs and bar graphs.

As the programs are intergrated as a single system, data can be moved between programs. A window capability allows data to be viewed in one screen while working with another set of data in the other screen.

Contact: Team-Mate Software, Debden Green, Saffron Walden, Essex CB11 3LX. Tel: 0371 830 848.

Keep it Clean

Whatever the make of your computer, it needs to be kept clean and free of static.

A new series of anti-static wipes has been announced by The Process Control company called Protostat wipes. Available in fully-sealed 10-wipe packs, they each measure 6" x 4".

The Protostat wipe is impregnated with a static eliminating additive suspended in a solution containing ISP.

The fluid used in Protostat wipes is harmless and non-toxic and can therefore be kept on the work bench safely.

A pack of 10 wipes costs £1.70.

Contact: The Process Control Company, Griffin Lane, Aylesbury, Buckinghamshire HP19 3BP. Tel: 0296 84877

Accessories from Lightwave

Lightwave, importers of The Stick, now offers a range of accessories for Commodore computers. Included in the range are cables, dustcovers, accessories and boards.

All are said to be well-packaged with an illustrated description where applicable, showing lead ends and machine compatibility.

For more details and a price list send a SAE to:

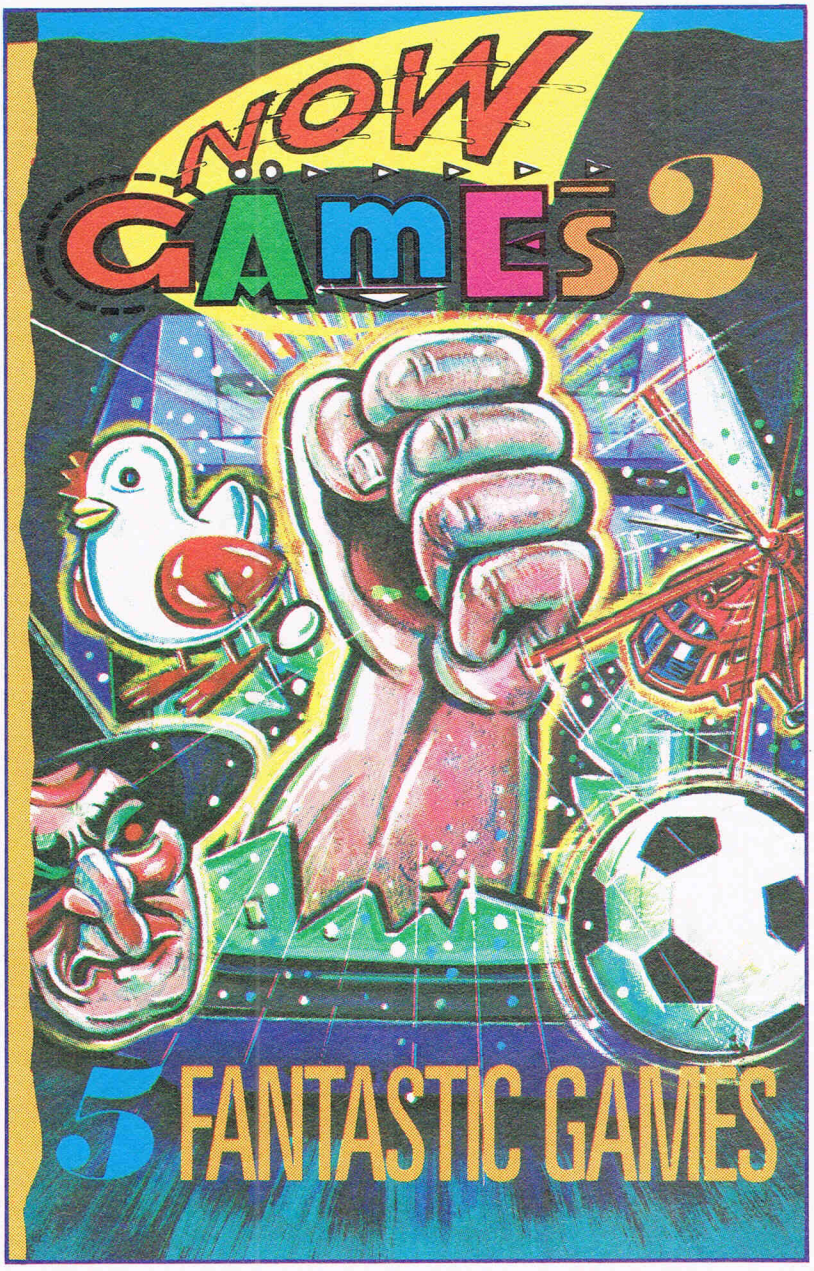
Lightwave Leisure, PO Box 23, Wallasey, Merseyside L44 1EW.

Five Fantastic Games

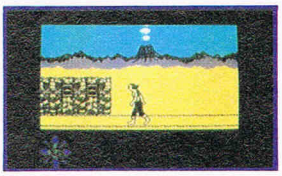
Keep your eyes peeled for NOW GAMES 2. Five major software hits jostle for your attention on this packed-solid-with-fun cassette.

Available for COMMODORE 64 and SPECTRUM 48K and for only

£8.95



1. AIRWOLF – Elite Systems Ltd
Stringfellow Hawke must use his helicopter to free five imprisoned scientists in this exciting arcade game which takes place in a subterranean terrorist base!



2. TIR NA NOG – Gargoyle Games
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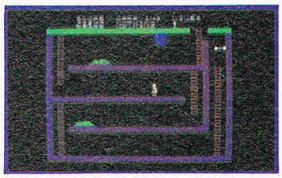

4. CHUCKIE EGG 2 – A & F Software
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All screenshots from the Commodore 64

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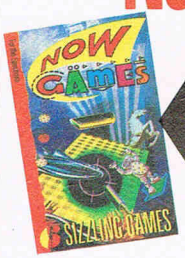

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The Age of Light

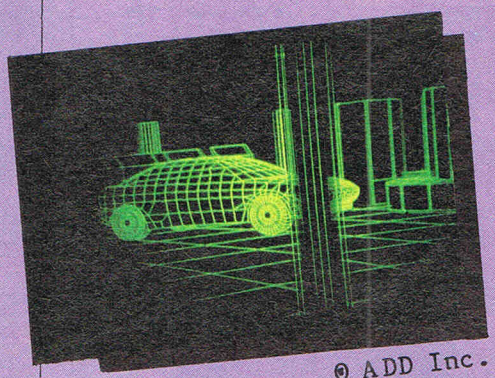
A hologram is a form of photography which is 3D. When you take a photograph you record light – both the direction and intensity. You record direction and intensity with a hologram, but also the phase of light. Phase differentiates between the light arriving at the fornt of an object and at the back, giving the appearance of 3D.

The tricky thing with holography is that the only way to reconstruct a hologram is to use the same laser which you recorded with in the first place.

A technique was developed whereby you make a transfer hologram from a master. For example, if a hologram is made with a red laser, when you shine a light on it, it will absorb or reflect off at different angles all the light which is red – it selects the wave length. That is what happens with white light holograms.

There exist a number of problems with current methods of producing holograms. When you make a hologram using lasers, you movethe slightest bit, the result on the exposing plate is similar to the results of camera shake. Because the reflection or information is so tightly packed, you end up not seeing anything at all.

Holograms were originally a British invention in 1947 by Dennis Gabor, a Hungarian working at Rugby. At that time lasers had not been invented and holograms were treated as an optical curiosity. When lasers were invented in the States, white light holograms really took off. Britain is now back in front with many companies producing commercial holograms as security devices. Computers and holography are developing very close ties as Sue Pearce discovers.



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Movement causes problems

You cannot make a hologram of living or animate objects. Wayne Clarke of Richmond Holographic Studios illustrates this point with what one would assume to be an inanimate object – a loaf of bread! He explains: "If you try to make a hologram of a freshly baked loaf of bread, nothing will come out as bread is constantly undergoing movement. If you leave it a couple of days and try again, you will start to see something. Only when the loaf is completely stale and all moisture has evaporated can you successfully make a hologram. And that hologram will show what to all appearances is a completely fresh loaf of bread."

Another problem is that holography is still a medium in which there is no way of reducing or enlarging images. A hologram acts as a window. If it is a small window it reduces the amount of the object you can see. With a large object, you either have to use a very large plate or make a model of the object.

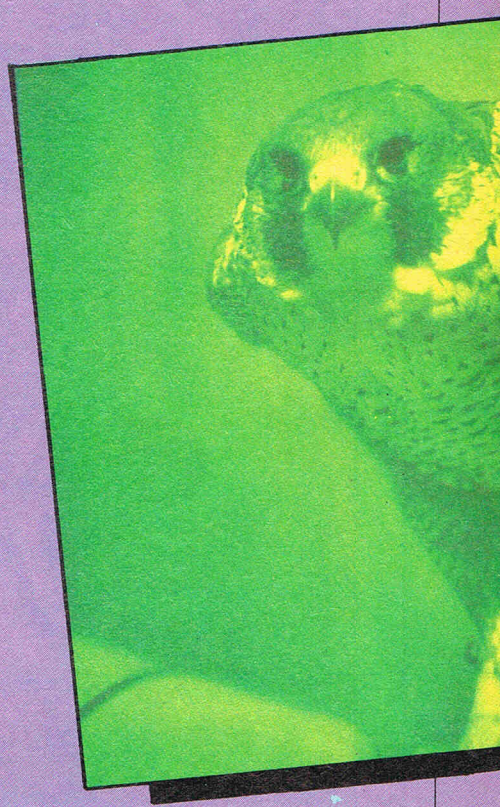
There are, however, solutions to these problems. The problem of living or animate objects can be overcome by using a pulsed laser. This operates by giving bursts of light which are very short – something like 30 nanoseconds. Therefore, it records an object before it moves. You can also achieve an action sequence as in photography.

It is still not possible to take a hologram of natural scenes, but there has emerged an amalgam of photographic principles and holographic principles, based on stereoscophy.

The aim is to make a film using ordinary cinefilm. Shots of an object are taken through a number of angles. The negative of the film is then used as the object. It is then projected onto the hologram plate and is passed along the plate one slit at a time. Three hundred and sixty views are compressed onto the plate. When you view that, you are looking at 2D views, but compressed in such a way that your brain creates a 3D picture.

Current state of the art

At the recent Graphics 85 exhibition, examples are shown of the current state of the art concerning computers and holography. Andrew Pepper, who lectures on holography, explains the main areas people are working on.



"There are two main areas people are working on as far as computers go. The first is ray tracing".

"This is using a program on the computer which you give perimeters and it works out how light reflects off the object. You can get the computer to then draw out points on a graphics plotter. The actual points are then photographically reduced so small that they relect light. These points take on the form of a hologram. It's not particularly 3D, because there is not an incredible amount of information."

The second, and most used method, is a hybird of photography and holography – holographic stereograms.

Pepper says: "You can ask a computer to draw a drawing and then ask it to rotate through 360 degrees and photograph each degree." This is the process explained above by Wayne Clarke.

Although most work in holography is being carried out on very large computers, it was a home computer which was used in the original stages of a method employed by Polaroid.

Pepper says: "Software was written using a home computer to draw a stereo image and to clculate the areas in between, using the output from the graphics plotter to make a hologram. In this way a 3D image of something that has never existed is created."

Another large company using computers in holography is Chryslar. Somewhere in the region of 40% of new engineering parts are produced by CAD systems. Designs are then converted into a hologram. This offers a saving in the expense of constructing models of parts of, or the whole car.

Photography: Tim Hawkins
Holography: Richmond Studios

Photography as an intermediary

By using photography as an intermediary, you are able to make a hologram of anything that you can film. These are generally termed multiplex or integral holograms.

Considering the nature of the problems currently associated with holography, computer graphics provide an ideal solution.

Wayne Clarke says: "The potential of computer graphics is immense. For example, you can set up a camera and computer system and then write a program that will supply a sequence of views of an object. The camera takes a picture, the screen is cleared and another view is drawn. This process can either be carried out manually or through the computer. For example, the program draws an image and sends a signal to the camera which takes a picture. The camera then sends a signal back to the computer to clear the screen, and so on. This sequence of images is then translated into a hologram."

There are all sorts of possiblilties. With computer graphics, an image has to be dealt with screen by screen because the information is 2D. With computer graphics applied, it is possible to see the end result, as with CADCAM (computer aided design, computer aided manufacture).

"The ideal is to develop a system which is a kind of black box peripheral that can be logged into a CADCAM system," says Clarke. "This black box will, in some way, write onto a hologram plate. This maybe five years away, maybe ten or fifteen years. There's a difference between what people accept technically and what they accept commercially."

Current graphics programs will handle perspective and changing views. There are 3D programs available on very expensive systems, but it is still a very slow process.

Clarke says: "If you want wire frame images you can get them quickly, but a solid, coloured model has to be taken one screen at a time and each screen can take two or three minutes.

"If you want an image through 120 degrees, and three views are required for each degree, you're talking about 18 hours of solid work. Once you've got the film, you have still got to bring it back to the laboratory... hence the attraction of the black box."

The problem is one of overcoming the technical and design equipment problems. In all these cases one is still hampered by the colour problem. New emulsions need to be developed. Some are available but only in research and development quantities. Another solution would be a laser which would provide light at three different wave lengths.

Computers and holograms coming together

"There's going to be a lot of work in marrying computers and holograms as computers become more sophisticated, cheaper and have greater storage capacity and, at the same time, holograms are becoming more sophisticated," says Pepper.

"The two are coming together. There's going to be a hybird of computers and holograms which will allow the generation of a hologram from computer graphics or things that have never existed."

He continues,"Holographic computer games are a long way off. They are not possible with current technology.

"There was a game in the States in 1980 called Cosmos. It was a table top shooting game. The screen was a hologram and you had to shoot at holographic images. However, it didn't seem to take off and I've heard nothing of it since."

Most of the major innovations have come from scientists working either on their own or with big companies. It is the colleges studying the subject who really show people what can be don. Wayne Clarke says: "Some computer companies are interested in holography as a storage medium. A large amount of inforamtion can be stored in a small place.

"Provided that a suitable material could be found you could, for example, take the entire contents of the British Library and store it in holographic memory the size of a sugar cube!" Clark compares the currently used magnetic medium to a car, in that there is only much you can do to improve on the original standards.

He says: "We are moving from an electronic age into the of light – satellite communications, fibre optics, use of lasers and optical computers.

"In the next 25-30 years there will be an enormous change in the direction in which people are heading.

"Lasers are following a path similar to the development of the micro-processor," he continues. "Only it is about 19-20 years behind.

"The use of holograms is tied in with the development of optical computers. When you have got optical computers, you are going to require enormous amounts of storage. At that point holograms will be used as a storage medium."

If you would like to see some examples of holograms, London's Trocadero has a permanent exhibition. Called The Light Fantastic, the exhibition is on between 10am and 10pm daily. It will cost you £2 to get in, but it is money well-spent.

Brentford's Waterman Art Centre has been running an exhibition of holography, but do check before going, as the exhibition is due to move on.

If you find yourself in Paris, it is worth visiting the museum of Holography.

If you want to learn more about holography, Richmond Holographic Studios run a series of courses.

The original aims of the studios were firstly, to provide a facility where the medium could be explored and developed through experimental and creative work.

Secondly, to provide courses in holography at all levels.

Thirdly, to make all facilities available for hiring to practising holographers and undertake commissions.

Currently, Richmond Holographic Studios is the only establishment in Europe offering courses in basic and advanced holography.

The wide variety of courses now offered at the studios are a one day seminar, a weekend seminar which includes making a hologram, a five day basic practical workshop and a five day advanced workshop.

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The Key to the Future – is it the Super Computer?

Super computers are not just important, but beginning to play a vital role in many sectors of industry. The research they make possible is basic to the economic life of industrial countries. Anthony Mael examines the Report which tells us why.

When you can buy a perfectly good computer for a few hundred pounds, you might ask why someone should be saying that we need to spend about £50 million on a single jump in advanced computer power. Yet a report has just been published in the U.K. saying just that and warning that if the UK government does not come up with the cash to buy its way into 'supercomputer' world then the whole of the country s economic future will be put at grave risk. What is needed now, the report insists, is not the development of something in the next decade but immediate access to one of the already existing supercomputers of the Cray series, preferably the fastest commercially available computer in the world the Cray X-MP Model 48. ('commercially avialable' because the US Department of Defence and the CIA both possess massive specially created supercomputers specially created. And you can be sure nobody can buy them!)

The report was produced by a prestigious working party drawn from the official bodies that guide the British government on research budgets and computer resources. It also included top industralists and was chaired by an eminent scientist Professor Alex Forty of Warwick University.

The report links the U.K.'s future directly with its need for a supercomputer. 'Without access to supercomputers... industries in Britain will find it increasingly difficult to compete in international markets'.

It shows how already countries like the U.S., Japan and West Germany are well advanced in providing their scientists with super computer power.

In the U.S. for example a programme was launched last year to buy time-sharing for college scientists on already existing supercomputers. (In addition to the Cray, in the U.S. there is also the CDC Cyber 205). The U.S. programme also plans for the early establishment of four supercomputer research centres linked by a national communications network. The cost will be about $26 million a year for each centre – a total of $520 million over five years.

The SuperComputer League

At present, the U.K. lies second to the U.S. in supercomputers installed. But it is a long way behind – 13 to 77. France and Germany have 10 each. Interestingly Japan has only five but it plans for a fast growing number of new installations, mainly in the universities. The U.S. has 20 super-computers installed in government research laboratories, the U.K. only one. Aerospace – which includes defence spending and, of course, the Star Wars plans – runs next with 13 in the U.S. (U.K. one again). The largest non-government sector is oil. The big oil companies are rich enough to buy and use the supercomputers economically. In the U.S. there are 12 installed in the oil industry, in the U.K. 3, France, and West Germany 1. One other interesting area where the massive computational calculations required need the 'supers' is weather. The U.S. has 4 working on naming and tracking their hurricanes and the U.K. has 2 to predict what has always been thought unpredictable – the British weather.

Other places that have installed supercomputers are Australia (1), Canada (2), Italy (1), Middle East (2), Netherlands (2), Sweden (1), and Switzerland (1).

The Forty report points out that it is not a question of some recondite research in ivory tower academic laboratories. It declares that progress across a whole range of critically important sectors cannot be made without access to supercomputers. Massive computing capability is not something, the report makes clear, that should be restricted to an elite but it must be like water, electricity or gas freely available to all who need it.

Advanced computing – the term used to describe supercomputers – in such areas as engineering is absolutely vital. Professor MacFarlane of Cambridge University, a member of the Forty working party, pointed out that without it the UK is 'already falling behind in our ability to do the large field calculations required for aerodynamic and similar work and in the large scale system simulation techniques required for integrated circuit developments'. He went on to predict difficulties in a number of industries and specifically serious damage to the U.K. computer hardware and software industries if the U.K. did not keep up with super computing developments.

The £50 million the Forty Report called for was to be spent over five years. First to buy, immediately, the Cray X – MP Model 48. Then to begin to plan in 1988 to install a second supercomputer. The Report also recommended the spending of £8 million on improving JANET, the university data communications networks. It wanted to see the creation of high speed packet-switching long distance lines between the major centres.

About 20 years ago, another committee produced the Flowers Report. It led the way for spending on university computing which, it is generally agreed, thrust the UK up with the leaders of scientific research in many areas. The Forty Report clearly states that the time has come for another similar, if expensive leap forward. Super computers and the vast power they contain are, it suggests, a vital key to the future of the U.K. and all industrial countries. Any country that does not possess them may well find itself behind in the highly competitive race for world economic advantage...

Advanced Computing

Supercomputers which make 'advanced computing' possible have the enormous advantage of solving huge computational problems at speeds which mean that key questions can be responded to in time for practical use to be made of the answers.

For example, when Halley's Comet passes the earth the large astronomical telscopes that observe it are all controlled by computers – normally mainframes. The telescopes – and observation satellites – communicate their information in computer language. This stream of data is now so vast and complex that it needs a supercomputer to classify and interpret it properly.

Astronomers are coming to believe that the processes they thought they understood are really much more complicated than they previously imagined. They consider that today's mainframes, powerful though they are, simply cannot cope with the enormous variations required in creating all inclusive

Making Supercomputers more Super

computer models of astronomical phenomena and processes. One interesting point is that computer programs devised to help understand complex events that may take place light years away in distant stars can also be used to aid the understanding of such earthbound processes as the metabolism of animals and human beings.

In weather forecasting too, there is a direct practical result of advanced computing. The early computers were at once used to solve the huge computational problems involved in long range weather forecasting or tracking – and predicting – storms and hurricanes. Now, they can provide cheap and flexible ways of testing theories and predictions which could only be otherwise tested in very expensive experiments.

In medicine, recent developments in laser plasma physics in the UK and the U.S. have brought the possibility of three dimensional X ray photographs. This would require huge computational power to interpret the billions of variations possible but it would provide an outstanding aid in many areas of medical diagnosis and treatment.

This 'non-destructive testing' also has its uses in other fields too; allowing the testing of solid materials such as machinery or piping without in any way damaging the object being investigated.

Perhaps the field in which there is the greatest present demand for advanced computing power is in biology. It is the molecular biologists, investigating life in terms of the chemistry and physics of the basic molecules, who hunger for the use of massive computing power to explain the mysteries of what makes us what we are.

Laser accelerators connected to super computers could accelerate elementary particles in experiments into the fundamental nature of matter. Laser accelerators could be 100 times more powerful than in the linear accelerators in use today. Data from accelerated particles will be collected at a far greater rate than today and will need supercomputers for their management. This is particularly true of X-ray crystallography, the technique which led to the discovery of the structure of DNA and its role in heredity. This technique is now being applied to larger and larger molecules, with the idea of understanding the structure of every aspect of physical being. This kind of research however does not need to be limited to human or animal structure but can also be applied to things like better design of medicines or foods.

So the Supercomputer will be reaching out and touching more and more aspects of our lives.

A supercomputer is not like HAL in 2001. It can't get close to what we call "thinking". It is not necessarily even involved in the development of Artificial Intelligence (see CCI March, etc). It is merely a mainframe writ very large indeed. The Cray series or the CDC Cyber 205 are designed to carry out very special kinds of calculation at the maximum possible speed. They are often compared in motoring terms to a racing car but a better comparison would be for a home computer to be thought of as a canoe; a business (PC) comuter as a motor boat, a mini as a cargo vessel, a mainframe as a passenger ship and a supercomputer is one of those ungainly but extremely large oil tankers – hell to turn round but carrying enough oil to light a big city for a week.

The main force for the development of supercomputers has been the enormous improvement in semi-conductor technology. While the home computer has gained power slowly and fallen in price quickly, the greater power availble has been applied massively to create super computers. For example, the super computer of just 15 years ago was the Ferranti Atlas. There are many mainframes today that equal the power possessed. Today's supercomputers are about 200 times more powerful.

However, techniques are being developed to add even more muscle to the heavyweight supercomputers.

Vectoring

'Vector computers' are programmed to manage vectors (large ordered sets of numbers) with a single instruction as if they were single numbers. The purpose is to achieve results for operations done through vectors much faster than they can be gained by carrying out the same calculation again and again on each number. So if you have a large set of numbers requiring calculations many times, it can be done in one operation, saving time – which, in computer terms is money.

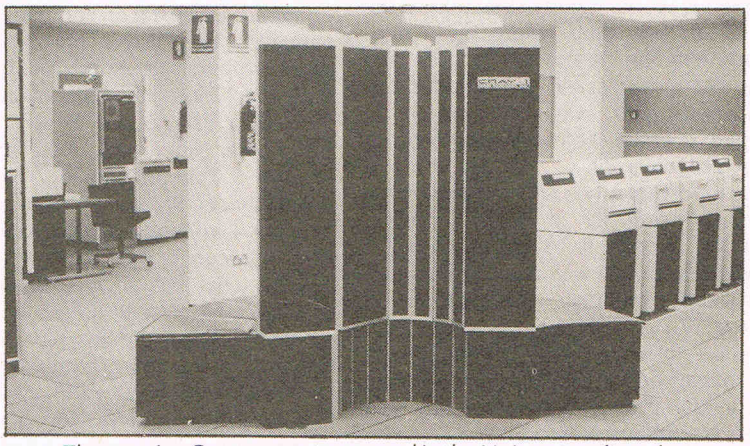
Pipelines

"Pipelining' is a kind of simulaneous multitasking. Its like manufacturing, where you break down a process to be carried out into seperate sections on different machines. In pipelining, a calcualtion is broken down into series of sub-operations; each sub-operation handled by a separate processor. This means that while one calculation is being carried out the next is already moving up the pipeline and does not wait for the first to be finished Time – and money – saved again.

Array Processing

Array processors are, as they sound, on 'array' or multitude of small or simple processing units each carrying out the same instruction but each working on different elements of the data. It is like a factory of people carrying out differing tasks but all starting and finishing at the same time and producing one product. This means the supercomputer can work with widely varying data but, because it is using a single instruction, it is able to complete a task much more quickly.

ICL's Distributed Array Processor and GEC's Grid are good examples of this kind of machine already in operation.



The massive Cray computer as used in the University of London.

Parallel Processing

We have been promised this for a long time in small computers. In the super computers, it is already beginning to operate. Parallel processors can carry out more than one calculation at the same time employing a number of separate parellel processing units. This is technically very difficult to achieve, especially when very many units are used . But it is thought to be the most likely avenue toward farther potential increases in supercomputer power. However, developemnts are taking place that will almost certainly bring it – and its advantages – fully into the next generation of supercomputers; and, it is to be hoped, the next generation after that of small computers.

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A Concise History of the Home Computer (or how to impress your friends!)

In the beginning was the ZX80, a real gem of a computer, with nearly 1K of raw unadultered power. Its black and white unanimatable graphics were so outstanding, and its keyboard was so radical, that Sir Clive (or plain Clive as he was then) had to go ex-directory to avoid ferriol purchasers from phoning him at 3 in the morning to order one of these £100 wondermachines.

After this came the even more amazing (and just as excitingly named) ZX81. With a wide choice of graphics colours (Black, White, White or Black) – some great games were programmed on this machine.

If buying a ready made computer was all too much for you, and you needed to feel that the machine was created by your own fair hands, a new company had the answer for you! The Acorn Arom was a easy to assemble kit (requiring only a BSc in electronics to assemble).

As time passed – please excuse me if I'm going too fast – colour graphics became almost as accepted as a fifteen year wait for a Sinclair product, and within a matter of two years Acorn – in conjunction with the BBC – announced the BBC (wow did these people have a way with names!) Micro. For £400 you got no screen, no cassette, and a product with no software backup. No wonder it was a success!

Meanwhile Clive was trying to produce a cheap alternative, and soon he came up with the Spectrum – so named because it had a coloured stripe on the black box. This computer was hailed by the medical profession as a great addition to their research into arthritic fingers, as the keyboard was so appalling that arthritis of the hand soon became called 'Spectrumistis'.

By this time the rush for cheap microcomputers had really begun, and Clive – in his normally astute way – spotted this trend, and produced an advertisement offering a black box, complete with wires, lumps, dongles, and a wide variety of fiddly bits – all for £400.

Meanwhile Commodore, Apple, IBM all laughed away merrily at the failing British computer world, only to produce products of such incomprehensible incompatibility that some people were not sure if Clive had not emigrated.

The close of this saga has to include one man – Mr Alan Toffee (oops, Sugar) who, having made millions producing twin tape players, ideal for copying software, decided to produce a computer that was cheaper and better than any English competition – with a monitor and cassette recorder thrown in.

At a time when both Sinclair and Acorn are in dire trouble, one being bailed out by the Italians, the other by Dixons, we at CCI wonder what this Quantum Leap into the quicksands of the microworld has really achieved?

Francis Jago.

DUCKWORTH HOME COMPUTING

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This is an essential book for any C16 user. Starting with a refresher course in Basic programming, it moves on to explore the more sophisticated facilities available on the C16, including windows, graphics and sound commands, disk commands and the use of the built-in machine code monitor.

With the aid of numerous examples the book shows you how to master everything from a simple game in Basic to machine code programming. A full-blown database, a complete adventure game and several other amusing and instructive programs are also included. Each program is accompanied by detailed notes enabling you not only to understand its structure but also to modify it to meet your own needs. A chapter is devoted to peripherals, including the creation of sequential and relative files.

THE COMPLETE COMMODORE 16 ROM DISASSEMBLY
by Peter Gerrard & Kevin Bergin *£6.95*

This book is for anyone who has ever wondered how the C16 really works. Intended for the serious programmer, it includes the fundamental memory map, ROM memory map, the disassembly itself and (for reference) the complete 8501 machine code instruction set.

Peter Gerrard is the former editor of *Commodore Computing International*. He and Kevin Bergin are co-authors of *The Complete Commodore 64 ROM Disassembly*.

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101 Uses For a Home Computer

So you are the proud owner of a home computer. What are you going to do with it? Whether it's a new experience for you or you're tiring of zapping and blasting your way through the latest games extravaganza, this article will give you some ideas on how to get the best from your computer.

Perhaps we exaggerate when we say 101 uses for a home computer. It all depends on whether we accept some of the more questionable uses suggested to us by those who know (or those we thought knew). Suggestions like using it as a doorstop, bookends, paper weight, or even building a giant dinosaur (along the same lines as the submarine built out of tyres)!

Seriously though, a computer is far more than just a games machine, so read on.

The Gamer

Most computer users will, at some time, want to play computer games. You will find a vast selection of excellent games for your Commodore computer catering for all tastes. There's the good old arcade game designed to test your reflexes – and the strength of your joystick as you blast away at the 399th screen. Test your imagination and logic with complex adventures, or combine the two with arcade adventures.

Childhood desires of becoming a pilot or even a train driver can at last be fulfilled with realistic simulations – sometimes notorious for the massive instruction booklets. After reading some manuals you may well feel competent to try the real thing, although we don't actually advise this!

And for the more serious games player, there is a selection of computerised board games ranging from competition level chess to Monopoly.

The Musician

Computers provide the ideal tool for music. From a beginner to an advanced musician, you will find something to satisfy your needs. Many programs are available that will teach you how to write music, how to read music, or just how to play well-known tunes with absolutely no musical knowledge.

It is possible to use your computer keyboard as a musical keyboard, but there are also cheap keyboard overlays with several of the packages plus an immense variety of keyboards which you can interface with your computer just £70 to £700.

MIDI (Musical instrument digital interface) is a term you will quickly become acquainted with. Using a MIDI interface, you can plug all sorts of instruments into your computer for professional sounding results.

Another fun peripheral is a sampler. This enables you to record any sound and to play around with it: reverse it, speed it up, loop it. Records such as Paul Hardcastle's 19 were produced using a sampler.

The Artist

As well as amazing sound, your home computer is also capable of producing graphics. In this issue we tell you about graphics peripherals – devices to add on to your computer for some outstanding results. There also numerous graphics programs which can be operated by joystick or keyboard to help you produce anything from abstract designs to colourful pictures, and also sprites if you are keen on writing your own games.

The Teacher

Learning can be fun. Especially with a computer. Many children would much prefer to sit down in front of a computer than studying a text book and the computer is also a convenient learning tool for adults keen to swot up a new subject.

Educational programs range from those designed for five to seven-year-olds up to A Level standards. A variety of subjects are catered for including maths, geography and languages. Several focus on books from the O and A Level syllabuses.

On a lighter level, there are programs to teach you new recipes, or how to diet, exercise and discover your own IQ.
One word of warning, do shop around when considering educational programs. Some do little more, if as much, as a text book. Others recognise the users'grasp of a subject and automatically move onto harder questions.

The Communicator

Communications is an area of computing which can be both fun and useful. You will require a modem, which is a device connecting your computer to the telephone. Compunet is a communications network designed for Commodore owners. It enables you to leave messages in the electronic mailboxes of other users, contains software for you to download (both free and at a price), and many other sections. A popular feature of Compunet is MUD (multi-user dungeon). Through Compunet you can take part in a massive on-going adventure with hundreds of other players. (See our MUD pages.) With a modem you can also access Micronet 800, Prestel and more.

The Businessman

Computers are now a feature of many businesses. The home computer can play an important part in business, both in the office and at home.

Word processing is one of the most commonly used functions. Look around and find a package which suits your needs and you will never want to go back to using a typewriter.

Computers are also used to keep accounts, as spreadsheets, for the payroll, as databases – the list is almost endless.

Again think carefully about what you require a business package to do for you.

The Controller

With the use of software packages and a little imagination, you can set your computer up to act as a controller. Just a few uses to set your imagination going are: to control household lighting, as a measure of economy or as a deterrant to burglars if you are away; as a security device, rigged up to a video camera or infra-red sensors; and to control robotic devices, such as robot arms or turtles.

We only have space here to touch lightly onall these uses, but we hope we have fired your imagination.

Don't forget though. If you want to get the best from your computer, look after it! Smoke and everyday dust and grime can play havoc with a computer. We do advise you to invest in some form of cleaning kit. They are not expensive and will extend the working life of your computer with anti-static wipes, compressed air, brushes, etc. Don't attempt to clean a computer with household detergents, you'll do more harm than good. And if your computer does develop a fault, in most cases it is advisable to have it repaired professionally. Don't forget, taking the lid off your computer can invalidate the guarantee.

With that word of warning, we will leave you to get to grips with your computer!

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128

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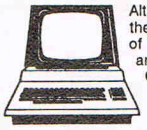

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Graphic Detail

All you need to know about the peripherals which will enable you to create graphical works of art.

Computer graphics have become part of everyday life. Even the computer illiterate will have marvelled over the special effects of the cinema created by computers in such films as Star Wars, Tron or even the more recent Weird Science.

Television is another platform for the computer generated graphics used by advertising companies. And anyone who has walked into an amusement arcade, or played a computer game will be aware of the increasing sophistication of graphics.

The home computer is an ideal tool with which to become familiar with the generation of graphics. Don't expect to become Van Gogh overnight, but with the help of the numerous graphics peripherals around you'll probably impress even yourself.

There is a vast selection of programs designed to help you create graphics on your computer, but what we are concerning ourselves with here is the range of graphics peripherals designed to help you to make the most of the graphics capabilities of your computer.

Before parting with your hard-earned cash, you should decide what you want to achieve with a graphics peripheral and which type will you find easiest to use.

Graphics Tablets

The newcomer to computer graphics will most likely feel more confident discovering hidden talents with the use of a graphics tablet.

Graphics tablets generally come in the form of a graphics tablet, a sensing device which electronically senses the movement of the control arm and translates that movement to your television or monitor.

The many features incorporated into graphics tablets include: colours, clear, draw, fill, erase, circles, lines, and boxes. All these features are easily accessible, although they may vary in accuracy from package to package.

One of the biggest advantages of a graphics tablet is that you can rest it on a table or your lap for comfort and for ease of use.

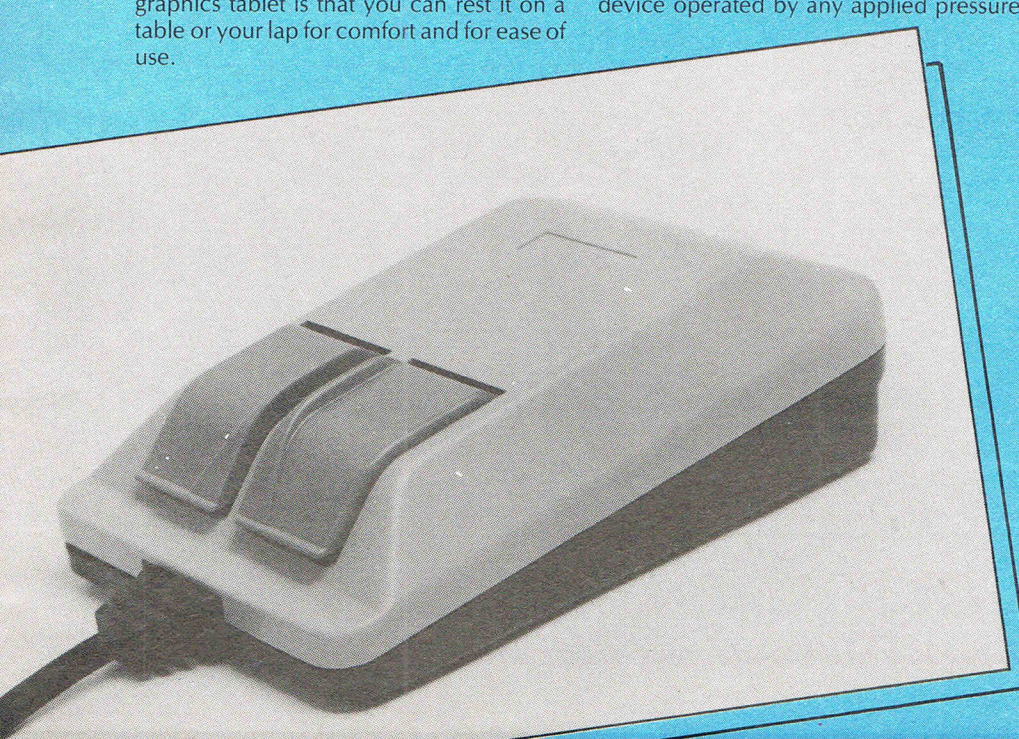
Anirog market a package called Super Sketch (although unfortunately we hear that there are supply problems, so if you are interested look in your local computer shop while stocks last). Super Sketch is constructed of clear white plastic and has a clear plastic control arm which moves the pen holder around the tablet. You can place a pencil or other drawing utensil through the pen holder. Paper is held in place by clamps which are released by the release bar at the head of the tablet.

An added bonus wuth Super Sketch is the thoughfully provided collection of line drawings which can be held in place by the clamps and which allow you to explore the many features of the package before embarking on your own masterpiece.

The Touchmaster, distributed in the UK by Panorama, says it all in its name. Touchmaster is easy to use and provides a large working area. It is a pressure sensitive device operated by any applied pressure, using a stylus, pen or pencil. This graphics tablet is ideal for the first time user, but also provides a sophisticated graphics tool for the more experienced graphics designer.

If you want to 'buy British', British Micro offer Grafpad II. This digitising tablet and pen can be used with various graphics programs to create high resolution graphics. You can design graphics, trace outlines of pictures or graphs and do free hand drawings in a choice of colours. For the more advanced, Graftpad II also enables you to design circuit diagrams, mechanical engineering and kitchen designs!

Koala Pad, from Audiogenic, conjures up pictures of flying to Australia with a small furry companion. (Just get on with it – Ed!) It is a touch tablet and accompanying graphics program which enables you to manipulate objects on screen and to enlarge any pictures created.



Light Pens

If you've a steady hand, a strong arm and a desire to stray away from the 'pen and paper' approach of graphics tablets, then a light pen may be the answer for you. Light pens are also usually substanially cheaper than graphics tablets if you are limited by a tight budget.

Light pens get their name from the light sensor at the tip of the pen which picks up information from the screen. A switch tells the pen whether to ignore or act on signals. With a light pen, you quite simply sketch your drawing on the screen. Some people find this easy, others find their hands slipping and their arms tiring before the masterpiece is complete.

A choice of drawing styles is usually available including such options as lines, dots, turtle, continuous and erase.

Datapen Technology have a light pen called – wait for it! – the Datapen. This is accompanied by a comprehensive and easy-to-understand manual. An introductory program includes a section on how to find routines for your own programs, and a Hi-Res draw option to produce high resolution drawings.

If you are a C16 or Plus/4 owner, then you may want to look at the Trojan Lightpens from (here we go again!) Trojan.

Also compatible with 64 and VIC-20, Trojan Lightpens will draw freehand, can magnify or reduce and can fill in with either colour or two different patterns.

Mice

First Koala's, now mice! Do we have a fixation with small furry creatures? No, a mouse is the name given to a graphics peripheral which is operated by sliding it slowly over a smooth surface, such as a table top, with your hand.

Mice are the ideal graphics tool for those who require very precise graphics. For example the business man who would like to create impressive pie charts and diagrams for his reports.

The quality of circles and diagonal lines is often better with the use of a mouse and the speed in which shapes fill is an added bonus, serving to justify the price.

Another advantage in purchasing a mouse is that several companies are producing utility and word processing packages designed for use with the mouse for the more serious graphics user.

The Datex Graphics Mouse System, from EEC, is icon driven with pull-down menus making it easy to use. A variety of functions are offered from the usual draw, paint, fill and erase to text, brush styles and a choice of spray and fill patterns. This is an excellent package to get to grips with, although the absence of an 'erase last move' option had us tearing our hair out on more than one occasion.

The Magic Mouse, from SMC, suggests all sorts of graphical marvels with its name. Indeed it is a comprehensive package enabling you to create high resolution graphics which can be incorporated into your own programs. It comes with a choice of disk or tape software which includes a hi-res graphics package, mouse controller, sprite designer, and an icon designer.

Newest in the family is the MS2000 mouse from Wigmore House – well-known for their BBC mouse-equivalent. Designed for the 64 and 128, the MS2000 mouse comes with a software program delightfully named 'Cheese'! I suppose someone had to do it! Another icon-driven program, it contains all the necessary commands and more (including an 'undo last move' command).

Our review sample of the MS2000 turned up just too late for inclusion in this issue, but if you can wait until next month...watch this space!

Trackerballs

"Built like a battle ship." We've said it before, but it is an apt description of the Marconi RB2 tracker ball from Central Trade Exchange.

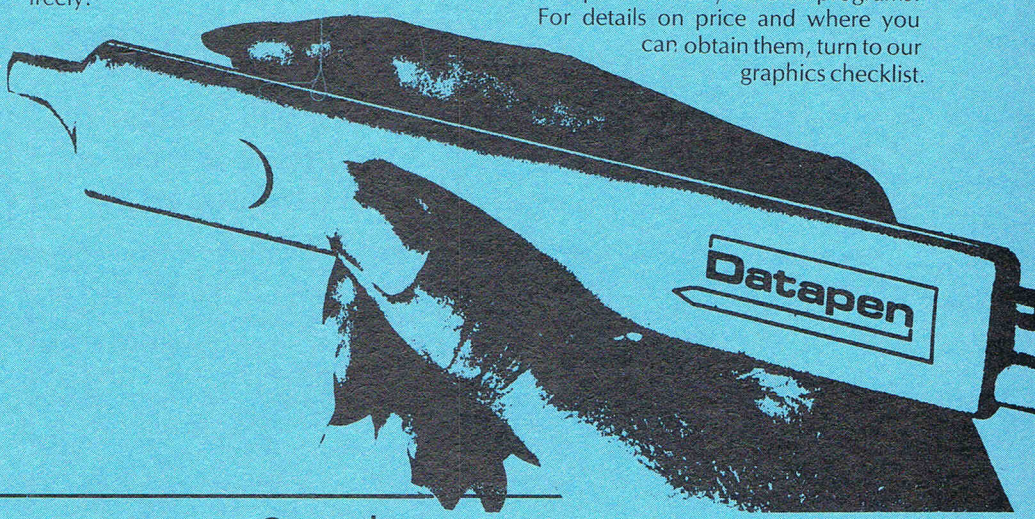
Joystick and mouse controls are replaced by a central ball which rotates freely.

This really is a precise graphics instrument – and so it should be designed as it is along the same lines as the tracker balls used by the Ministry of Defence and air traffic controllers. Software is given away free with the tracker ball, based on the popular Panorama H program from Talent.

Designed as a quality device for the serious hobbyist, for educational uses, and for low cost CADCAM applications, the tracker ball also doubles as a joystick for some nifty games playing.

All the graphics peripherals mentioned here allow you to save your works of art on disk or cassette, and many enable them to be incorrporated into your own programs.

For details on price and where you can obtain them, turn to our graphics checklist.



Lightpens

	Features	Commodore Machine	Price	Guarantee	Company
Datapen	Buff casing, no interface needed	64, VIC 20	£25.00	12 months	Datapen
Trojan Lightpens	Black. Will draw freehand, can magnify or reduce, can fill in with either colour or 2 different patterns	64, VIC 20, C16	£17.25		Trojan

Graphics Tablets

	Features	Commodore Machine	Price	Guarantee	Company
Grafpad II	Use to design circuit diagrams, mechanical engineering & kitchen designs, in general CAD packages	All	£44.95 (interface £23.95)	6 months	British Micro
The Touchmaster	A4 size surface which generates coordinates. Free graphics program. can fit different overlays	All	£99.00 (including interface, pad, stylii & overlay)	12 months	Panorama
Super Sketch	Graphics tablet with many features, which comes complete with Starter Kit	64	£51.95	12 months	Anirog

Mice

Datex Mouse	Mouse, tape & disk software	64	£76.00	12 months	EEC
The Magic Mouse	Mouse, tape & disk software	64	£59.95	12 months	SMC
MS 2000 V	Optical encoding and a comprehensive cassette-based software		£69	12 months	Wigmore House

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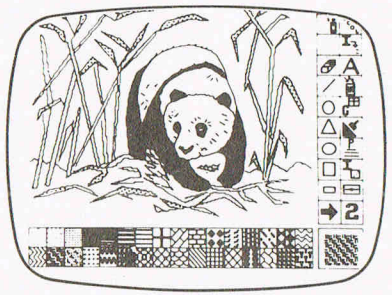

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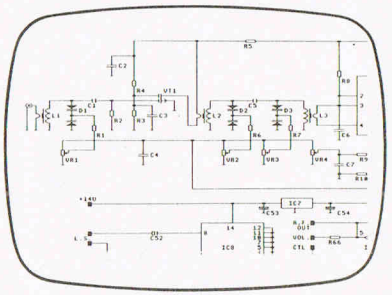

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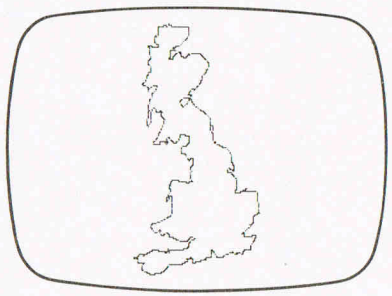

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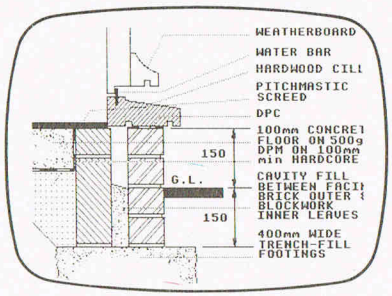

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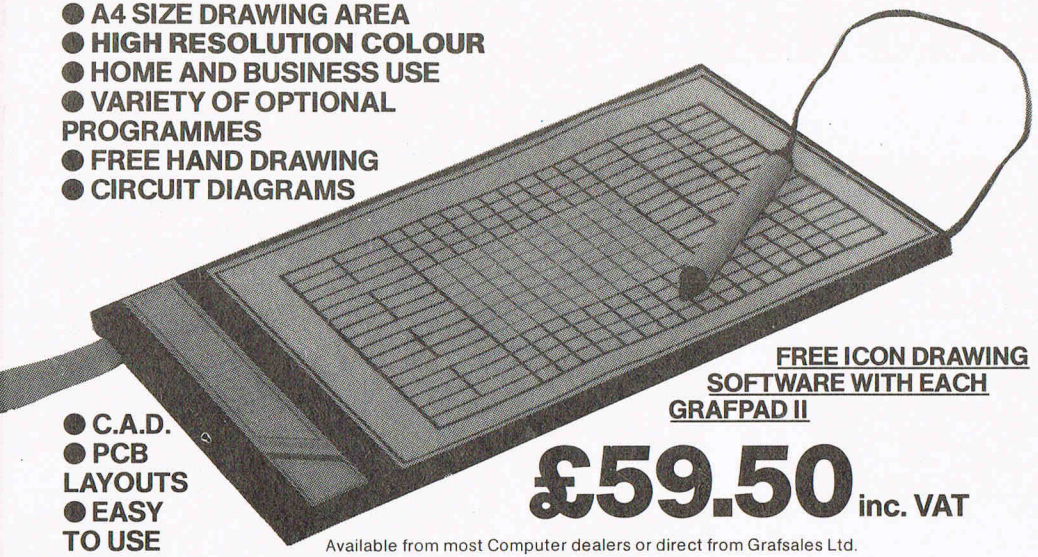

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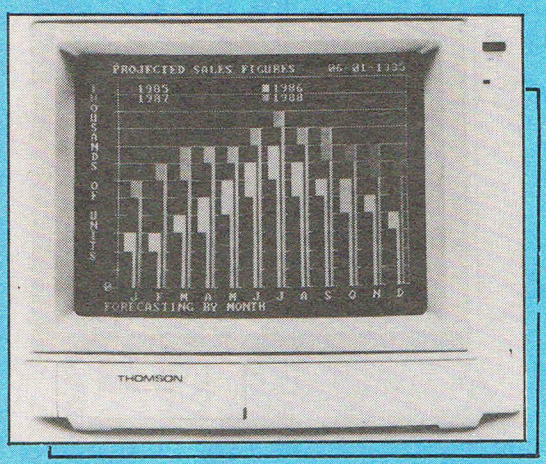
Sound familiar? If it does – and maybe even if it doesn't – it's about time you considered becoming a two television set home. Better still get yourself a monitor to get the best from your computer.

Why a monitor as opposed to a a second television? Well, it really depends on what you use your computer for. If you regard it merely as a games machine (shame on you!), then a television set may be fine – if you don't mind a fuzzy picture and the odd flicker.



Television vs monitor

Consider this. There are two ways of producing an on-screen display from a computer. With a television you have to fiddle around with the aerial socket at the back of the set and tune a spare channel into the computer.

Alternatively, with a monitor you plug directly into the back of the computer without the aggravation of tuning in the set to the computer.

Looking closely at the two processes, it becomes apparent that although both types of set produce an on-screen display of information, they do it in different ways.

The conventional television produces its picture by receiving the signals from the computer through its aerial socket using the same system that it uses to receive, or produce, broadcast television pictures. That is, Radio Frequency (RF) – it uses its own tuner. Monitors produce pictures by a more direct means, by cutting out the tuner section thereby eliminating RF interference inherent in this system. The signal from the computer is transfered directly onto the screen. Another advantage of monitors is that home computers also demand a signal bandwidth capable of displaying 80 characters across the width of the screen. This is more than the ordinary television set can manage.

Five main groups of monitors

A bewildering selection of monitors are available as manufacturers rise to the requirements of the end-user. Coming in all shapes and sizes, they can be divided into five main groups: monochrome, TV/monitors, standard, medium and high resolution.

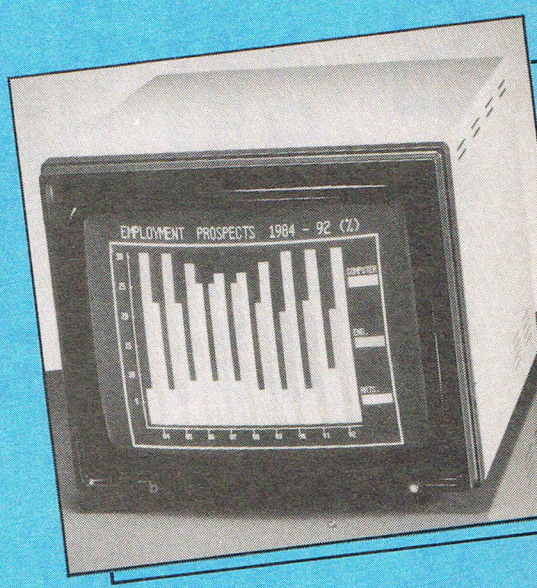
Monitor resolution governs the quality of a monitor's display. It is the ability of a monitor to clearly display a number of pixels or computer defined dots. Pixels are the units which make up the graphics or text images on the screen. The higher their density, the better the quality of visual display.

Before rushing out and parting with your hard earned cash, sit down and think about what you use, or intend to use, your computer for.

For purely games use, you will find your needs adequately met by a lower quality monitor. If you use your computer mainly for word processing, programming and business uses, you will easily pick up a relatively cheap monochrome monitor. These are usually available with either amber or green screens.

A standard resolution monitor is satisfactory for games, but will only produce a display good enough for a 40 column screen. The next step up is a TV/monitor which combines the standard monitor facility with a television.

Medium resolution monitors can usually just manage an 80 column screen and they also eliminate much of the eye strain commonly associated with low-resolution sets. At the top end, the high-resolution monitor. Although perfect for 80 column use, the price of a high resolution monitor sets it above the financial reach of the average computer user, but makes it ideal for businesses.



Shoparound

Do shop around when choosing a monitor. Beware inflated prices and the shop assistant who like to appear knowledgable, but actually know less about the products they are attempting to sell than a worm! Yes, we've all come across them in our time.

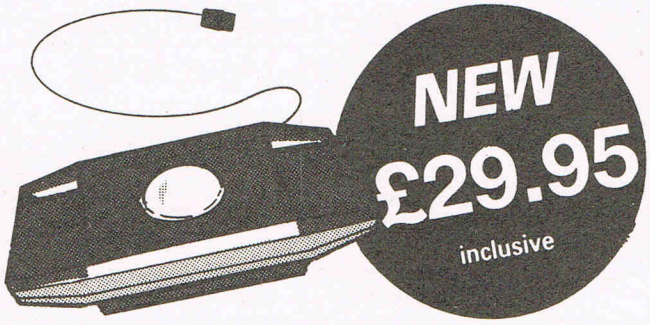
Look out instead for the models which include extras such as anti-glare screens (far more convenient than draping the lastest copy of CCI over the monitor in order to cut out glare on those sunny days!), and remote control units for the same price as a similar monitor lacking these features.

Arm yourself with our monitor checklist and go forth into the world of monitors!

MONITORS

Product	Features	Price	Guarantee	Company
BM 7502	P31 Phosphor, green screen 12" Mono	£87.95	12 months	Philips
BM 7522	LA Phosphor, amber screen 12" Mono	£91.95	12 months	Philips
BM 7542	WD Phosphor, Paper white screen, 12" Mono	£91.95	12 months	Philips
BM 7513	P39 Phosphor, green screen 12"	£119.95	12 months	Philips
CM 8500	Std. resolution, grey glass screen 14" colour, composite video	£222.95	12 months	Philips
CM 8501	Std. resolution, grey glass screen RGB 14" colour	£243.95	12 months	Philips
CM 8524	Std. resolution, dark glass etched screen, composite video + RGB 14" colour	£279.95	12 months	Philips
CM 8533	Med. resolution, dark glass etched screen, composite video + RGB 14" colour Compatible with 64, +4, 16, 128, PC	£314.95	12 months	Philips
CM 14	14" monitor, RGB, Scart, composite video. Colour.	£199.99	12 months	Fidelity
KX 14 CP1	14" monitor, new and specially designed unit for use with personal computers. High resolution, video input connector enables it to be used with VTR or TV tuners and direct broadcast satellite.	£462.50	12 months	Sony
1701	14" colour monitor gives the sharpest picture with the most vivid colours possible from any Commodore home computer. It has two inputs. The composite video input at the front will accept a signal from the VIC 20 or a suitable video recorder. The second input accepts chrominance and luminance signals output from the 16, 14 and +4. Comes complete with 8 pin connecting lead.	£230.00	12 months	Commodore
1431 AP	14", standard resolution, low complexity colour display, high quality resolution	£259		Microvitec
2030 AP	20", standard or high resolution	£465		Microvitec
CM 31481 VI	80-column text display, green or amber text switch	£270		Thomson
VM 3102 VG	Flat-face monitor with green text (amber text-VM 3102 VA)	£85		Thomson
CM 36632 V	40-column text display, built in speaker	£189		Thomson

STACK 100 PRODUCTS



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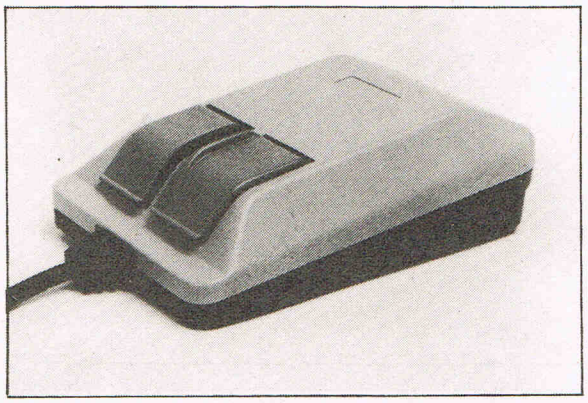

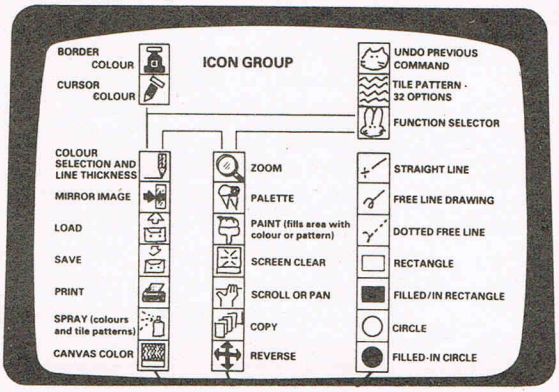

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BASIC for beginners

This is the first of series of articles in which we will be looking at how to get the most out of your computer using the BASIC programming language. It doesn't matter which model of computer you have bought, one of the main functions of this series is to cover ALL the current Commodore computers, i.e. C16, PLUS/4, C64 and C128. There are several assumptions that I have made during this series. The first being that you have set up correctly and switched on the computer. The second that you have read a little of your USER MANUAL which was supplied with the computer and know how to SAVE and LOAD programs from your cassette unit or disk drive. Finally, you WANT to learn something about computer programming. I will not be providing program listings which draw pretty patterns and have novelty value of 5 minutes, plenty of other places to find these. We'll be looking at the whys and wherefores of BASIC programming.

Although there are a large number of books which you can buy about programming your computer in BASIC they tend to be rather general purpose as opposed to specific to your own machine. The best advice here is to look before you buy. For C64 owners there are two books which I feel are indispensable and which I can personally recommend. These are "The PROGRAMMERS REFERENCE GUIDE" by Commodore which costs £9.95 and "PROGRAMMING The COMMODORE 64" by Rae West which costs £14.95.

A computer is really only a box full of electrical switches which can be set either ON or OFF. The position of these individual switches and the relationship that they form to other switches within the computer determines what the computer will do at any one time. Because the switches can only be ON or OFF, this forms the basis of a simple mathematical formula represented by 0 or 1, i.e. 0 represents OFF and 1 represents ON. Thus the relationship of groups of switches can be written down on paper like this: 001 meaning switch numbers 1 and 2 are OFF whilst switch number 3 is ON.

These switch groups I mentioned are of fixed sizes and can be either 4,8,16,32,64. etc. You will notice that these numbers are

If you have just become the proud owner of a Commodore computer (or even if you've had one for a while) and would like to learn how to program in basic, then this series is for YOU!

multiples of 2 and this is the connection between the representation 0 and 1 as switch positions because 0 and 1 are BINARY numbers or base 2 numbers. The group width to give them their correct name are termed bits, so a computer whose switches are grouped together in banks of 4 is termed a 4-bit machine. Home computers such as the ones we are involved with here are generally 8-bit machines: business personal computers such as the IBM-PC and APRICOT are 16-bit machines; and the super personal computers such as the Commodore AMIGA are 32-bit machines. As a rough idea as to how many switches your own machine contains, multiply the RAM size by 8, so a C16 contains (16000 x 8) = 128,000 whilst the C128 contains just over 1 million, (my AMIGA contains 16 million!).

What is a program?

A computer without a program is rather like a car without petrol, you won't get very far! The easiest definition of a computer program is a set of instructions in a form the computer can understand and execute. The idea of programming a computer is really the setting of these switches and in fact the very early computers of the 1940's and 1950's used programs which consisted entirely of 0's and 1's. This is called machine code and is extremely difficult to follow and understand by people so obviously the ideal became to use programs which contain just statements in plain English.

Machine code is called a low level language because it is close to the computer in the sense of the switch settings. The development of computer programming languages still continues today and although there is still no programming language that completely emulates everyday English, some are very close. This concept of 'language level' is very important, BASIC is called a high level language since it is closer to English than machine code.

The following table shows some programming languages and where they lie in the scheme of levels:-

LOW Level.....	Machine Code
	Assembley Language
	FORTH
	C
HIGH Level.....	FORTAN
	COBOL
	PASCAL
	BASIC
	COMAL
	LISP

Some of these languages may be familiar to you, you may have seen some programs using them or even programmed in them yourself. Of these BASIC is the most common since it is generally supplied with the home computer and Commodore computers are no exception to this.

A high level language program such as BASIC is executed by the machine in line sequence order; in other words the computer reads the first line, acts on the instruction and then moves on to the next line. The program flow patch is very rigid. If it isn't the program 'crashes' as the computer tries to execute an instruction it can't. For instance if the program directs that the next instruction should be 'move to line number 100' and line number 100 is not in the program then the machine will 'crash' or stop. The effects of the program crashing will be usually a screen which is full of mixed characters and colours and the keyboard will not respond to anything. The solution is to switch off the machine or use the RESET button if one is fitted

Basic as a language

BASIC is argueably a good programming language to start learning. The most compelling reason is because it comes free with the computer. It is also relatively close

to English and depending on the application or purpose of the program, BASIC runs at a reasonable speed. So let's get going and try some BASIC programming.

One of the very first thing any program usually does is to clear the screen of any characters and set up the opening screen using colours and/or characters, rather like the start of a film. There are a number of ways in which this can be done. Type the word NEW and press RETURN and type in the following program.

PROGRAM 1:-

```
10 PRINT "(CLR)"
20 PRINT "WELCOME TO
THE COMMODORE
COMPUTER SHOW"
30 PRINT "I HOPE YOU
WILL ENJOY IT"
```

When you have done this type the word RUN which is the instruction to the computer to start your program. You will notice that I have used line numbers which are always at the beginning of each line. This is very important since the machine will recognise that it is starting to read a new line. For instance if you typed:-

```
10 PRINT "CLR" 20
PRINT "WELCOME"
```

you will not produce the same result as program 1. This program is quite easy to understand since it reads more or less as to what the computer is going to do. Line 10 uses the word PRINT meaning display on the screen all of the following words or numbers enclosed in the quotation marks (the " "). In this case we have asked it to print the CLEAR character which is opbtained by pressing together a SHIFT key with the CLR HOME key. Your screen should show a heart symbol at the point when you press these keys.

Line 20 and 30 are next and after executing the instruction to clear the screen in line 10 the computer displays the contents of the quotation marks on each line. Try changing these contents to make a message of your own. You can also add further lines and fill up the complete screen.

When you type in a program the line numbers are stored in the computers memory in sequence. You don't have to type in the program in line number sequence. You can if you want to, type in line 20 then line 10 then line 30, the computer will automatically store them in its memory in sequence. Try typing the word LIST by itself; you will see that the program will be displayed with the line numbers following each other. The command LIST tells the machine to show that it has in its BASIC program memory. The command NEW instructs the computer to empty its memory. Try it and see.

There was no particular reason why I chose to start with a line number 10. You could start at line number 0 and use a line number spacing of 1. You will see later on that most BASIC programmers start at line 10 or line 100 and leave gaps of 10 or 100. The maximum line number you can have is 65535, try changing the line numbers in program 1 to exceed this value and observe what happens. Similarly, there is a maximum to the number of characters you can have in one line of a BASIC program which is 88, (80 on the Commodore 64), again try this out. Remember the most useful way to learn is by doing; you cannot damage your machine doing the above things.

Adding to a program

The main reason why gaps are left is so that you can add further lines to the program without hassle. Sometimes you may want to make some comments or description of what the program is about or what a particular section is meant to achieve. This becomes even more important if someone else has to read your program. BASIC allows for this by the use of the word REM which is short for remark. I must admit when I first started programming in BASIC I woundered why the computer wouldn't accept the word COM for comment. Suffice it to say for the present the reason being that the machine would confuse it with COS the mathematical cosine function. Using REM your program would look like this.

PROGRAM 2:-

```
5 REM THIS LINE CLEARS
THE SCREEN
10 PRINT "(CLR)"
15 REM THIS LINE
DISPLAYS THE FIRST
PART OF THE MESSAGE
20 PRINT "WELCOME TO
THE COMMODORE
COMPUTER SHOW"
25 REM THIS LINE
DISPLAYS THE LAST PART
OF THE MESSAGE"
30 PRINT "I HOPE YOU
WILL ENJOY IT"
```

If you find yourself getting into a mess don't worry just NEW the program and type it in again. One tip worth remembering, if you try and chage something whilst the cursor is between the quotation marks " " you will see some funny characters appear on the screen which seem to stick like glue on the cursor. Whatever you do, the result is a mess. Try pressing the SHIFT and RETURN keys together. This will break the cursor out of what is called 'quote mode' and move it on to the line below.

Another tip is line removing. If you want to erase a line just type the line number by itself. Again LIST the program to see the effect of this. Remember to press RETURN if you have made any changes on a line and you wish the computer to accept these changes. BASIC on Commodore computers has a built in safety net, this is the?SYNTAX ERROR message which is displayed if you spell a command word incorrectly. Try typing in some words at random and see the effect after pressing RETURN.

Let's try some variations on Program 2. Change line 10 to read:-

```
10 PRINT CHR$(147)
```

You should find that this has the same effect as before, namely clearing the screen. In the Appendix of your USER MANUAL you will see a table called ASCII and CHR$ Codes. These numeric values have the same effect as pressing keys and apart from making your program look a lot more professional, have the side effect of using less memory.

Remember, the shorter the program the faster it will run. Let's try some of these CHR$ or character codes to enhance our program.

PROGRAM 3:-

```
5 REM THIS LINE CLEARS
THE SCREEN
10 PRINT CHR$(147);
15 REM THIS LINE
DISPLAYS THE FIRST
PART OF THE MESSAGE
20 PRINT
CHR$(129):PRINT
"WELCOME TO THE
COMMODORE
COMPUTER SHOW";
25 REM THIS LINE
DISPLAYS THE LAST PART
OF THE MESSAGE"
30 PRINT
CHR$(152):PRINT "I
HOPE YOU WILL ENJOY
IT"
```

There are two new items in Program 3 other than the CHR$ codes, the colon ':' and semi-colon ';'. The semi-colon acts as a visual line linker and couples lines together. Remember each line in a BASIC program can only be 80 characters long and each new line in the program will be placed beneath the previous, the semi-colon prevents this. The purpose of the colon is to break up into sections each line of the program and prevent the computer from misinterpreting our instructions.

Ok that will do for now. I have deliberately not gone too deep into BASIC, you'll be earning your keep in the next article! What I would like you to do is to keep experimenting, keep practising and don't worry if it all seems too much. Learning computer programming is rather like the old adage "10% inspiration and 90% perspiration"!

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The Top of the Floppi

The floppy disk is an ideal storage medium as games become more sophisticated, requiring faster access particularly in the case of multi-part games. CCI looks at a selection of the latest disk-based games and sees what they have to offer.

At last you have it! That game you have been waiting so long for. Ah, the anticipation as you wait eagerly for it to load... you wait... and you wait... If only you had bought the disk version you could be engrossed in the game now rather than idly staring at the tape happily winding round!

Speed in loading is just one of the advantages a disk-based game has over a cassette. Okay, so many cassette games incorporate speed loaders, but these have their own problems.

Disks also come into their own when a game has to be loaded in several parts. After all, there's nothing more frustrating when you think you have almost cracked an adventure to be told to load side 4 and be faced with a wait of several minutes during which time your mind may wander away from the solution.

As the number of disk drive owners increases, more software houses look to the possibilities of releasing games on disk and the selection is now vast.

liskated

THE EIDOLON

Activision are really making the most of having the rights to the Lucasfilm range of games in England. Last month I reviewed Ballblazer and Koronis Rift, and this month I am reviewing the last of the four currently available - The Eidolon.

As with Koronis Rift and Fractalus, Eidolon uses the Fractal graphics technique to give a more realistic three dimensional image, only in Eidolon you are underground and the graphics are of caves.

As this is not a full review, (the game is not due for release for a couple of months) I went to Activisions offices to be shown the game by two of their playtesters, John Davey and Matin Gysh. Having played the game a great deal they seemed more than familiar with the ins and out of the game - and I must thank them for their cooperation.

The Eidolon is a small craft and it it you must travel around a maze of caves, killing various Biter Birds and other baddies. Having done that you must collect a variety of different coloured crystals which will allow you to travel further into the network of caves.

Graphically Eidolon is very good. Although the movement is a little jerky, it does not detract from the excellent effect that Fractal graphics give. The sound effects were also good, if not totally outstanding. They added to the atmosphere of the game well.

Overall this game is another impressive Lucasfilm title. The screen display is good and attention to detail is obvious throughout the game, I just hope they keep up the good standards!

Price: £9.99
Graphics: ****
Sound: ***
Playability: ****
CCI Rating: CRISP
Contact: Activision UK, 15 Harley House, London NW1. Tel: 01-935 1428.

WILD WEST

What can I say about this game? Admittedly it's unlike anything I've ever played before, but is that necessarily a good thing? I for one have absolutely no idea!

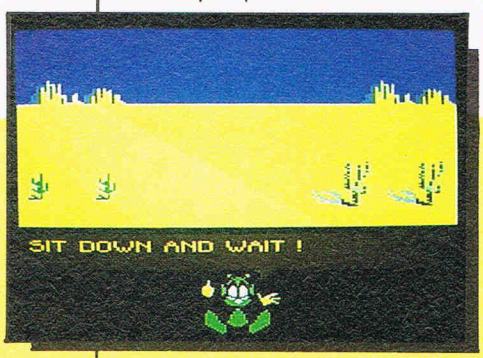
Unquestionably it is a graphical adventure, but I'm not really sure if the multiple choice type of gameplay is one I would choose to use on a game intended for owners of disk drives. Wild West is programmed by Andromeda, the company responsible for Ariolasoft's best product yet, Scarabaeus; and this shows in the jolly sound track, and smoothly animated sprites.

Basically, Wild West is an adventure in which you, with the help of your cuddly sprites, must recapture Fort Snake from the baddies. To do this you must work your way through three different 'modules' of the game.

The graphics are nice, with good definition and an excellently done split screen, and the sound – especially at the beginning – is very twee, to say the least.

Wild West makes the most of what is defintely an innovative idea, using the joystick to display three options, each given you by one of your sprites, but I think it will take a long time before anyone completes this game!

Overall I think I liked this game; I'm not sure, but I think so! Giving gameplayers something new can only be a good thing, and new this sure is!



Graphics: ****
Sound: ***
Playability: ***
CCI Rating: CRISP
Price: £14.95
Contact: Ariolasoft, Asphalte House, Palace Street, London SW1 Tel: 01-834 8507

More Sophisdiskation

CCI RATINGS

AWESOME – few and far between, but a must!
MEGA – excellent, one of the best games this month
CRISP – very good, a game that we all enjoyed – truly playable
IFFY – good, but should be tried first
DODGY – not one of our favourites, but had some redeeming points
NAFF – pretty bad, not really worth a look
PRE-BASIC – the pits, not worthy of the tape it's on!

GOONIES

I haven't seen the film, I have no intention of reading the book, but here I am reviewing the game, ah well!

Goonies is basically a platform game, but with a difference, and it is this difference that makes it both more interesting and more challenging than most of the other platform games floating around at the moment.

This difference is that you do not just play one character, you play two on each screen! To do this you press fire to alternate from each character. This may sound like just another gimmick, but in many ways it means that to succeed at the Goonies you must not only be able to react quickly, but use your mind (Oh NO!! Ed).

Having not seen the film, I will take Datasoft's word for the fact that the little animated characters represent the films, and in many ways I can imagine that the film - in true Spielberg style - will be a glorious adventure.

One point of criticism I must raise; the music! Although it changes with each screen, the notes are so piercing as to make listening almost impossible, and the tune is nothing special either.

The graphics are nice, although I can imagine that on a television screen they will be less impressive, something that must be taken into consideration.

Overall it is a good game, not amazingly special', but good. It will sell if the film is a success, and for some things it deserves to sell anyway. The moral of this one is 'try before you buy'.

Price: £9.95 cassette, £14.95 disk
Graphics: ***
Sound: **
Playabiltiy: ***
CCI Rating: DODGY
Contact: US Gold, Unit 10, Parkway Industrial Estate, Heneage Street, Birmingham B7 4LY Tel: 021-359 3020

ACE - AIR COMBAT EMULATOR

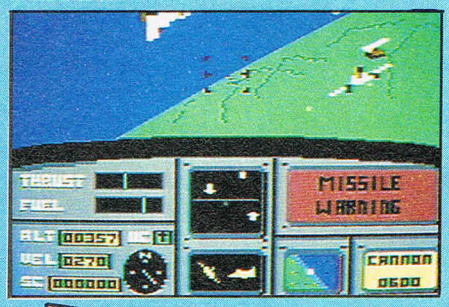
I did not look forward greatly to reviewing this game - another flight simulator test was not my idea of an enjoyable Sunday morning! Ace however provided me with some real thrills, without having to spend 15 hours reading up on technical documentation.

Ace is a very different kind of simulator, allowing you to select ability, as well as what type of mission you want. If you choose the lowest option you are allowed to practice flying, getting used to the controls, and trying a few avoiding tactics - when there aren't any planes chasing you! You will need it too, as later on ACE really puts your abilities to the test.

Graphically ACE is very good, although the graphics are block, and not the more 'trendy' wire line graphics in many ways this increases the realism of the game. Your cock-pit view gives you all the essential information you need, including speech in moments of dire trouble, such as being shot at from behind!

Sound too is good, and although it does not have a title tune, the effects are convincing and carefully thought out.

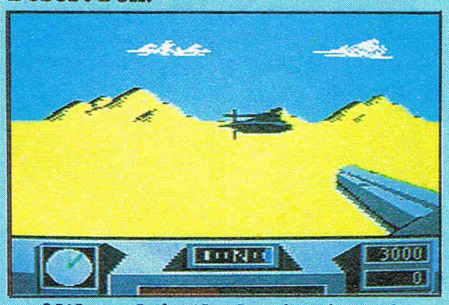
Overall, ACE is one of the best simulators (sorry Emulators) I have ever played. Unlike so many it provides immediate enjoyment whilst not becoming boring after two or three games. It is highly playable, especially in air-to-air combat, when you can almost feel the sweat on your brow as you duck and dive to avoid enemy missiles.



Price: £12.95
Graphics: ****
Sound: ****
Playability: ****
CCI Rating: MEGA
Contact: Cascade Games Ltd, 1-3 Haywra Crescent, Harrogate, North Yorkshirre, HG1 5BG. Tel: 0423 504526

DESERT FOX

Fight Night managed to improve on a well known theme - boxing; and in its own way, so does Desert Fox. You play the British Tank forces, the Desert Rats, and you must capture the German depots – the strongholds for Rommel, the Desert Fox.



Although in the beginning of the game you must work out a few tactics, or rather approaches, most of the game consists of out and out arcade action, and excellent it is too!

The first menu given allows you to choose to practice any of the five different arcade sections. However, to make the most of the game, you must take on a full campaign and try to defeat Rommel.

Graphically Desert Fox is very good, and although it breaks very few barriers for originality it manages to provide excellent gameplay which certainly kept me hooked. Sound too is nothing really special, although the software speech certainly is (even a German accent!).

Overall I was impressed, it manages to combine many different games in one for £14.95 on disk, and that's good by anyone's standards. This just confirms my view of Sydney as a software house – one of the best!!

Graphics: ****
Sound (speech): ****
Playability: ****
CCI Rating: ****
Price: £14.95
Contact: US Gold, Unit 10, Parkway Industrial Estate, Heneage Street, Birmingham B7 4LY Tel: 021-359 3020

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* Note due to memory limitations ACE on the C16 and VIC20 (+8K Ram) do not have any ground objects.

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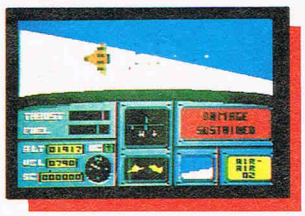

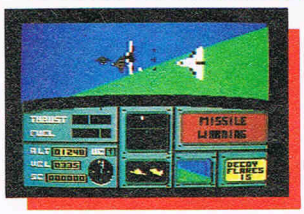

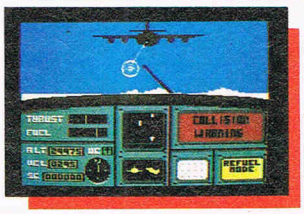

Screen shots are for CBM 64 version. Other versions may vary.

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CCI/2/86

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COMING SOON - BORROWED TIME

This really is a coming soon! I've only seen the game for twenty minutes at Activision, but I couldn't resist tempting you with this little morcellette! Basically the game is another Dashiel Hammet type dectective story, but from what I've heard and seen it should be really special. The opening screen alone is excellent with an animated man smashing through the glass in your door!

There are twenty suspects you must track down, all of whom seem eager to put that final nail in your coffin. Using excellent three way split screen and a good vocabulary, this is definitely one to look out for mid '86. It could be a MEGA!

MASQUERADE

This game is one which really shows why people need disk drives. It is an adventure, but more than that, it allows you to have a laugh as well as being neverendingly frustrated.

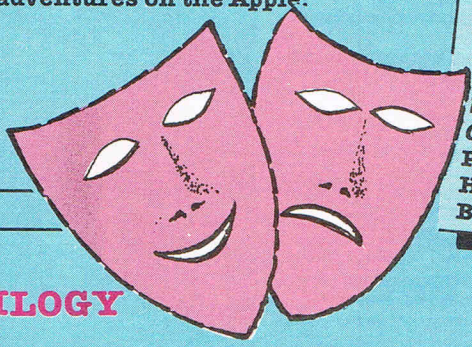
If there are any Raymond Chandler or Dashiel Hammet fans out there this is a real essential for your collection and, if not, maybe it will be the game that converts you!

Being a private dick is a tough profession, I thought to myself as I looked at the unconscious body on the floor beside me. Having searched him I realised one thing; this was going to be a hard assignment. I couldn't have anticipated how true this would turn out to be! (Enough! Ed!).

The graphics in Masquerade are good, with well over sixty different pictures stored on disk, and some of them are really outstanding. Of course you can choose to play without graphics, but something is definitely lost.

When Masquerade first arrived, I thought it was the game of the dreadful book by Kit Williams. To my delight it turned out to be a game of real quality, reminiscent of the large batch of detective adventures on the Apple.

Graphics: ****
Sound: N/A
Playability: ***
CCI Rating: ***
Price: £14.95
Contact: US Gold, Unit 10, Parkway Industrial Estate, Heneage Street, Birmingham B7 4LY Tel: 021-359 3020.



TEMPLE OF APSHAI TRILOGY

This game is enourmous, that's the only word for it! It's based on Epyx's three Apshai games; The Temple of Apshai, The Upper Reaches of Apshai and The Curse of Ra. Now all three have been combined on one disk, and as such it will provide hours and hours of enjoyment for anyone who is dedicated enough.

Altogether there are twelve differing levels for you to enter, and three completely different scenarios - as the name suggests.

To start the game you must choose which dungeon you want to play in.

When you have done this, and chosen the level of play you are asked to name your character. To start with it is better to let the Innkeeper choose you characters attributes, but later on you can really do that on our own to create a fighting superhero!

Next you choose what weapons you want, and haggle with the Innkeeper over how much each will cost. Again you must think - too many weapons and you will be immobile, too few and you'll be killed immediately.

Having armed yourself you will enter the dungeon, and from then on you must keep a sharp eye on your various ratings: Wounds and Fatigue especially.

All the way through the game you will have to fight a variety of monsters, ranging from Jackals to Criosphinx, and during battle you are likely to be injured, so make sure you bought some Slaves from the Inkeeper!

It would be very easy to go on and on about this game, as the eighty page manual hardly does it justice! I did not expect to enjoy this game, but I soon found myself very involved indeed!

Price: £14.95
Graphics: ***
Sound: N/A
Playability: ****
CCI Rating: CRISP
Contact: US Gold, Unit 10, Parkway Industrial Estate, Heneage Street, Birmingham B7 4LY Tel: 021 359 3020

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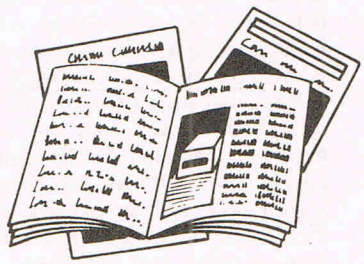

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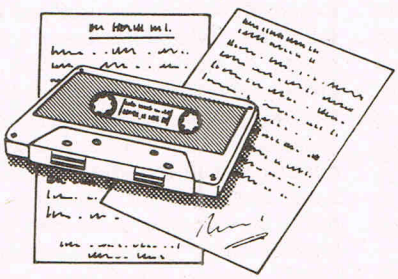

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CCI/FEB'86

Things That Go B

Two years ago I bought my first Commodore 1541 Disk Drive, and although I now know how slow it really is, at that time I was delighted at the freedom it brought from the tedium of cassettes, and I still remember the pleasure of using really useful software like "Vizawrite", "Easy-Script" and "Superbase 64".

At last my micro was freed from the taunt "but what can it do?" Then as time went by and I built up a very useful database, helping the local Deanery with monthly date sheets, personalised letters etc., and a friend of mine with a Pigeon Racing Federation result-calculating programme based on 'Superbase', I began to be aware of the importance of really accurate and reliable results.

I had noticed the horrible rattle produced when loading "protected" software, but had not realised that it was anything but an irritation. I accept the fact that a programmer is worthy of his royalties, and having had truly wonderful backup from several firms as I struggled in the early days, I would have accepted the "bumps" as a necessary evil. Then one awful day I got a "data mismatch" error on a laboriously constructed and very important database. I switched to the backup disk which had been up till then unused. A cold shiver quite literally ran down my spine as that quickly succumbed to a "read error", and I spent a whole day frantically trying to rescue my databases. Shortly afterwards I lost a rather important letter.!

I had joined I.C.P.U.G. (the Independent Commodore Products Users Group) and in their magazine I found the reason for my troubles. That nasty rattling was causing my disks to become misaligned. The cause, briefly, for those who are new to the subject, lies in the cheap method used by disk drive manufacturers (not just Commodore) to bring the disk head into alignment after it has detected a read error. It "hunts" a little, "thinking" it is off track, then if it still detects an error it quite literally goes back to the outside of the disk and bangs itself against a very hard metal stop which marks the position of Track 1. Having relocated itself, it then goes back to the track it was trying to read, and, if the cause of the error was an accidental minor wandering from the correct track, it carries on quite happily.

The trouble arises when the severe banging shifts a tracking pulley from its original position on its shaft and the drive becomes permanently misaligned, reading only the outer or inner part of each track. To make matters worse, any disks which are recorded after the pulley has shifted may be read my by the misaligned drive which made them, but cannot be ready by a correctly aligned drive. If you own two disk drives, one of which has knocked itself silly, and the other only half-bonkers, you will see the problems which swiftly spread through all your disks.

The point which divides users is the fact that much protected software has deliberate errors introduced, which are then checked for by the program, which will not run without them. These errors cause the head-banging every time the program is loaded. Some users blame the software firms, while others attribute the problem to the designers of the disk drive. I will not enter the argument except to say that I wish there was some other simple way of protecting software, but if there is not, then I wish the 1541 had been designed to stand up to its own error detecting mechanism. I had to have both my drives realigned, and the pulley mounted more firmly on its shaft. This was an expensive business, and left me with a sense of unease in case it happened again. I have now found and used a program which cured my troubles, and gives me a sense of security.

The program is called "1541 Physical Exam", and is an American program marketed in this country by Evesham Micros, one of the very helpful companies I spoke of before. The software is a specailly recorded disk with a series of asterisks spaced at 1/1000th inch intervals across Tracks 1, 16 and 35 (outside, middle and inside tracks). These asterisks are picked up by the head and displayed on the screen of the monitor or TV together with two upright bars rather like goal-posts. If the asterisks fill the posts and are spread out to either side fairly evenly, your drive is in perfect alignment. If half the goal is empty and the asterisks are spread away to one side then you are in trouble. It is as easy as that!

What then can one do about it? Well, accompanying the program is a very well-written, clearly-illustrated, if somewhat poorly-printed booklet. It doesn't exactly tell you to open up your drive, but it does tell you precisely how a competent engineer would realign it. He would open it up (4 screws). He would take off the bottom case (6 screws). He would stick a simple cardboard pointer on the bottom of the motor, and a semicircle of paper on the front of the drive housing to act as a guide. Then he would slacken the two motor locating screws and turn the motor ever so slightly in the direction indicated by the pointer and screen display. He would run the test disk again to see if he had corrected the distribution of asterisks across the goal posts. If he was satisfied he would tighten the screws and reassemble the drive which he could SEE was in perfect alignment, and run the programme (a matter of minutes) whenever he wanted to check the drive. There is even a built-in screen dump to provide proof that the drive is now all right. Obviously you are intended to be the "competent serviceman"!

But what, I hear you say, is to stop the drive koncking itself silly again? Now comes the simple but very clever answer. Supplied with the disk is the "Hardware" – a tiny spring rather like a paper-clip which takes the place of the hard metal stop which I mentioned as the cause of all the trouble at the beginning of this article. This spring cushions the shock. The booklet tells you *exactly* how to instal it – a very simple job, which does, however involve temporarily lifting the printed circuit board inside the disk drive (7 screws). Trust Commodore engineers to have masked the 'stop' with the circuit board! It could so easily have been mounted clear of the stop locating screw. The screen display then tells you if the stop position is GOOD or BAD, and the booklet explains very clearly what to do about it if it is 'BAD'.

It may all sound complicated as I have described it, but with the aid of the excellent diagrams I was surprised how easy it all was. After all, I could see from the screen how well or badly I was doing. Incidentally 2 spring stops are supplied, in case you have two disk drives. I used the two I was given, but when a friend wished to convert his drive we used part of a small safety pin, which has been going for a month or two now. You can buy the proper spring from America at 5 dollars a time, but that sounds a bit steep when a bit of safety pin does as well. And what in fact does it do? It absorbs the shock as the head bangs itself against it, preventing that vital pulley from slipping on its shaft, and as the booklet says, "your drive will purr like a kitten" instead of making those loud hammering noises which are such a trial to the nerves. The price? A whacking great £39.95, but not much more than the price of a single realignement, and if you belong to a club it could be a joint ownership. After all, you shouldn't need to use it more than once!!

Incidentally, the best £10 I ever spent was on I.C.P.U.G. membership. Not only was I sent the current year's back-issues of their excellent magazine full of meaty articles and news, but I was given access at no extra cost to much public domain software and much free advice. I easily saved my year's subscription by using their amazing discount scheme, and I was only a 'phone call away from some of the big names in Commodore software. The whole organsiation is purely a voluntary one, carried on in their members spare time, so do not fret if the free copy of some valuable software does not arrive by the next day's post. We all know how long the Commodore 1541 takes to copy a disk, don't we? Unless of course you use one of the disk-turbo programs.....

ump — Anytime!

Peter Richardson provides a new hardware answer to the 1541 disk drive misalignment problem, while Malcom North, an ex-Commodorite reveals the history of these problems.

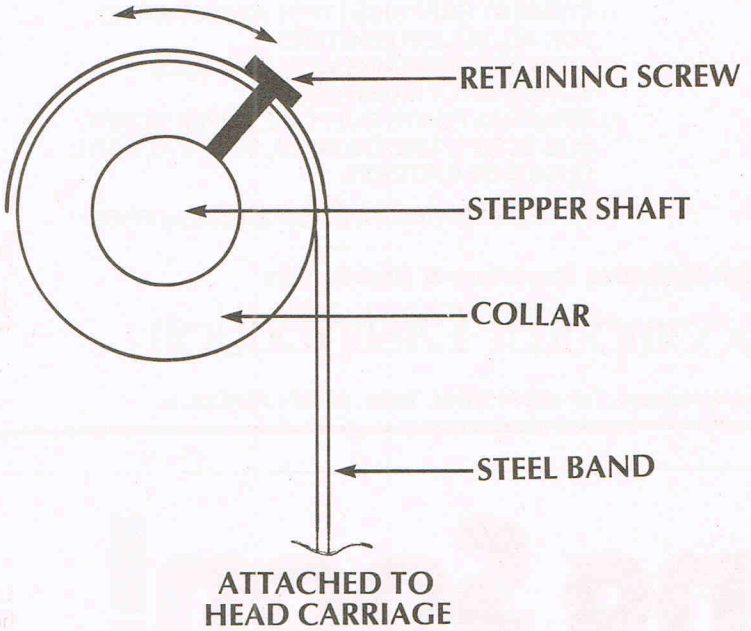

FIG 1

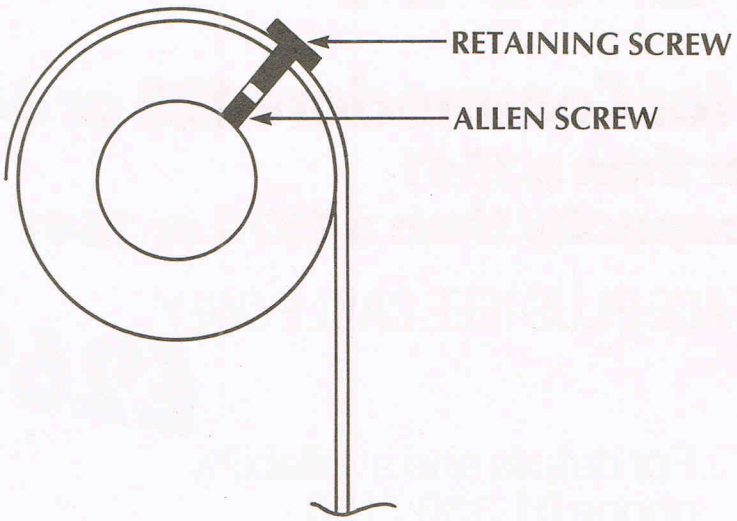

FIG 2

There have been many articles recently concerning a 'Bump Problem' on the 1541. The Bump being the process the 1541 uses when recovering from errors.

The Problems

My experience of this problem (and many others) goes back to the VIC-20 when I used to work for Commodore in their Technical Department. The drive was first introduced as the 1540 which had timing bus problems on the serial bus. This was fixed and designated the 1541. It soon became apparent however that the drive had a few bugs both in the hardware and the software. The problems first showed up during program development when drives were being used 8-12hrs a day. The problems are as listed below...

a/. Drive motor pulley falls off.
b/. Serial bus locks up on power on.
c/. Head goes out of alignment very quickly.
d/. Incompatible with 4040 disk drive.
e/. Plastic case split at the front.

The Fixes

When these problems were discovered all units in stock were returned to Japan for repair. This is the period that 1541s appeared in dark grey cases. The rebuild included a new logic board, a new drive and a new case. The fixes in more detail are...

a/. The use of a longer screw to hold the drive pulley on and the addition of adhesive to hold it in place.
b/. Clamping diodes were added to the Serial bus drivers oin the logic board and later on the 64 also.
c/. This problem was caused by a major design flaw, the head actuation mechanism is driven by stepper motor through a metal band (A very common drive mechanism). The drive manufacturers however had one screw holding the steel band to a collar and the collar to the stepper shaft (FIG 1). This means either the collar slipped on the shaft or the band slipped on the collar. The solution is simple. An allen screw is used to hold the collar to the shaft and a shorter screw is used to hold the band to the collar (FIG 2). Once this modification had been made a green mark was made on the drive casting.
d/. This problem was cured in a new ROM. The GAP between sectors was made to be nearer that of the 4040.
e/. A new case was used.

Conclusion

Although earlier white 1541s may have one or all of the problems lutlined above the later grey 1541s should be OK. Indeed I use 1541s sometimes continously for upto 10 hours a day and have very little trouble. I do not understand however how anybody could use an earlier drive without encountering problems!

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Mega-Review

RAMBO

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RAMBO

Sylvester Stallone, the 'Italian Stallion' has reputedly been offered $20,000,000 to do Rambo 3. I'm not sure what relevance this fact has to the review, but I just thought I'd let you know!

The first thing that hits you about this game is the Music - AWESOME! It is immediatly obvious that Martin Galway, the man behind the Hypersports soundtrack, was behind this effort, and it must be one of the best and most varied pieces yet. Whilst the game is loading it plays, and I must say that I could have spent many hours just listening!

Having got into the game you must enter your name, and even this screen had some brilliant incidental music, or should I say drum beats. The game is similar in many ways to the Commando type of game, only you play John Rambo, Vietnam Vet, and as such you are a small sprite with a huge upper body and a headband on. Using a variety of weapons including knives, grenades and machine guns - to name but three - you must sneak into a Vietnamese POW camp and rescue your compatriots (as with all American dross literature!).

Although your sprite is not amazingly detailed, the background is very well done with a liberal sprinkling of guard towers and palm trees, as well as the POW camp.

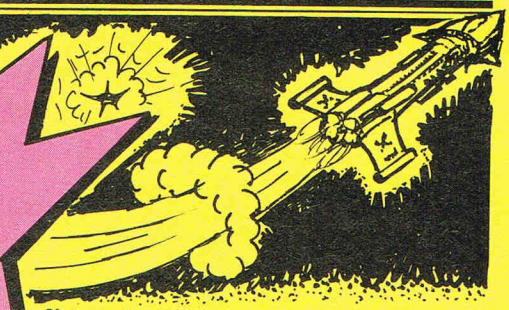
Having rescued your first POW, the game is by no means over! After this you still have to rescue other POW's, as well as cross a river in a helicopter and attack some hangars!

If you fancy taking on the roll of John Rambo this game is definately for you, and if not, the music is worth the price alone, just think of the game as an excellent bonus!

Price: £8.95
Graphics: ****
Sound: *****
Playability: ****
CCI Rating: MEGA, with an AWESOME soundtrack!
Contact:Ocean,

NAFF

MAY THE SPLAT! BE WITH YOU



SPACE PILOT 2

I must admit that I never played Space Pilot, but if it was anything like Space Pilot 2, I can only be described as very lucky. When I saw Space Pilot 2 I was surprised at how similar it seemed to Chris Butler's Z, only slower and less interesting. The background, probably the best thing about the game is also remarkably similar to the Paradroid genre of games.

Perhaps Space Pilot 2's best feature is that you can have up to eight people playing at once, and I can just about imagine that this might be quite fun (maybe).

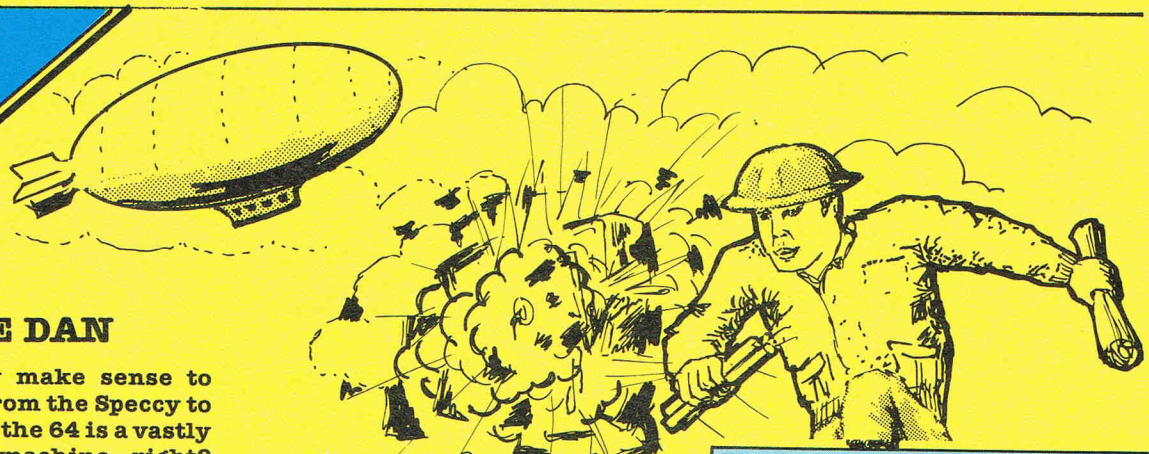
The game consists of you controlling a centrally placed sprite, and you must fly around blasting everything in sight for at least two minutes, and when you have done this you are moved (sorry, Hyperspaced!) onto the next sheet, where you must blast everything in sight fot the next two mintutes and so on.

If the game had managed to retain my interest for more than five minutes I could tell you about the next screens, but I don't think I'll bother! Musically too this game was poor, although the actual effects and explosions weren't bad, the high score tune sounds like a two year old let loose on a Casio VL-Tone!

Anirog have produced some good products in the past, but this is not one of them!

Price: £7.95 (cassette), £9.95 (disk)
Graphics: ***
Sound: **
Playabiltiy: **
CCI Rating: NAFF
Contact: Anirog Software, 29 West Hill, Dartford, Kent DA1 2EL. Tel: 0322 92573

IFFY



DYNAMITE DAN

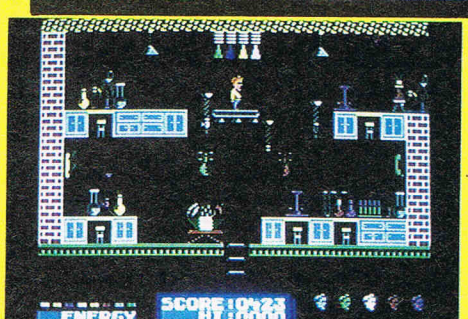
It doesn't really make sense to convert a game from the Speccy to the 64 – after all, the 64 is a vastly superior games machine, right? Wrong!! Dynamite Dan, Mirrorsoft's latest release, was programmed originally on the Speccy, and the conversion for the 64 is really rather good!

Basically DD is a ledge game and, as such, has all the extras you would expect – lifts, transporters, and gravity movements. You play (surprise surprise!) Dan, a tall, bouncy, red-head who must stop the evil Dr Blitzen and his Assistant Donna from using some stolen secret plans! To do this you must travel around a maze, collect eight pieces of dynamite, blow up the Doctors safe, steal the plans and escape in your trusty Blimp. Easy eh?

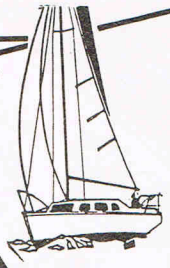
Graphically DD is nice, although my real criticism is that it is just too close to its speccy predecessor. The music is really annoying! Although it does not play during the actual game, it is so repetitive it easily makes you scream.

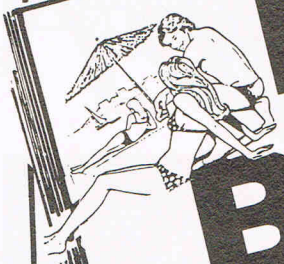
If you don't own a decent ledge game, or if you're not bored with missing frustrating jumps, then DD is definitely for you. I have to admit I was glued to the monitor for quite a while! One small point, when played on a 128, an annoying line appears at the bottom of the screen. A small point I admit, but it should have been checked.

Price: £8
Graphics: ***
Sound: ***
Playability: ****
CCI Rating: ***
Contact: Mirrorsoft, Maxwell House, 74 Worship Street, London EC2. Tel: 01-377 4600



£10,000 HOLIDAY BONANZA





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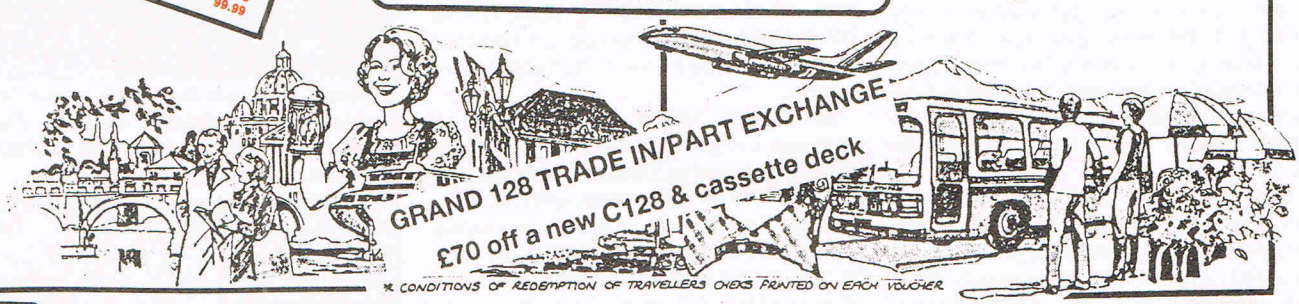

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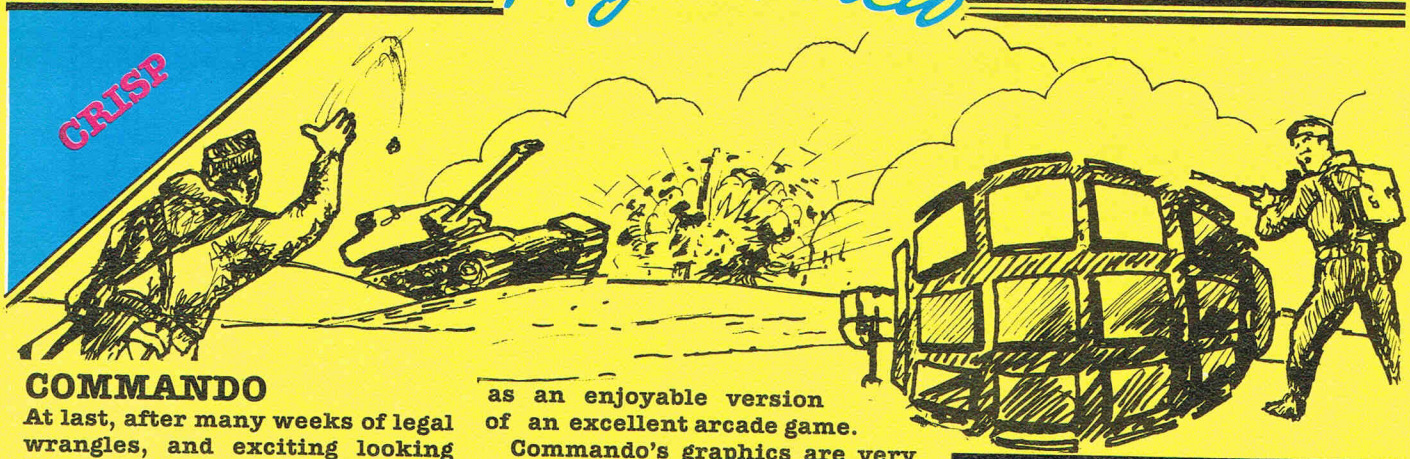
Mega-Review

CRISP



COMMANDO

At last, after many weeks of legal wrangles, and exciting looking press releases announcing its imminent arrival, Commando – the officially licensed game of the arcade smash – is here!

Looking much closer to the arcade original than I would have thought possible, it's just as enjoyable to play as well, giving you a great sense of satisfaction as you blow your enemies to bits whilst saving your compatriots.

With all the publicity surrounding the Who Dares Wins/ Commando arguments, I would not venture an opinion as to who was in the right and although a comparison review will no doubt be done elsewhere I am trying to avoid this, thus allowing Commando to be seen its own right as an enjoyable version of an excellent arcade game.

Commando's graphics are very good, although programs such as this, with scrolling and sprites have gone about as far as they can and I see their future as slightly limited, to say the least.

Soundwise Commando is superb. Yet another mega – sound track from Rob Hubbard. What is getting annoying however is that the more soundtracks this man writes, the more difficult it gets to think of superlatives to describe them! Both the main theme and the high score tune are really fab; I won't say more than that.

If you want a game that combines a good shoot-em-up with good graphics, fabo music and is a true arcade clone, Commando is for you.

Graphics: ****
Sound: *****
Playability: ****
CCI Rating: ****
Price: £9.95
Contact: Elite Systems Ltd, 53 Bradford St, Walsall, W.Midlands Tel:0922 55852

PRE-BASIC

FRIDAY THE 13TH

I like Domark as a company, I once sold them a 64 – quite a few years ago! They send out good press releases, they have pretty covers, and I'm told their parties are excellent. Unfortunately their last two games (Codename Mat II and Friday 13th) are both pretty appalling.

I thought that the Friday 13th films (parts 1,2,3,4,5,6,7 etc), were pretty unoriginal, and tried to make up for lack of contents by shocking the viewer; as opposed to John Carpenter's horror films. In many ways this is the game's problem also.

To play Friday 13th, you take on the roles of various holiday campers, and you must achieve two things; firstly you must find the cross, put it somewhere obvious and tell your friends to go there (where they are safe from Jason). Secondly you must kill Jason, using various weapons such as Axes, Chainsaws, and other attractive numbers, and this is the part I really object to. If you suceed in killing Jason the first time, you change character and must repeat the whole process again.

If there were any form of ratings on games, as there are on films, this would be an 'X'. If one of your friends is killed whilst you are on the same screen, a really vile picture of a man with an axe in his head is flashed up, and this is something I cannot approve of.

I really sound like a prune here, but if you have any sense you will not buy this game. It is uninteresting and not worth the money. I hope Domark read this review and think before they produce another game as tasteless as this.

Price: £8.95
Graphics: *
Sound: **
Playability: *
CCI Rating: Pre-Basic
Contact: Domark, 204 Worple Road, London SW20, 8PN. Tel: 01-947 5624

TOP TWENTY

	GAME TITLE	CHANGE	COMPANY	PRICE (£)
1	Winter Games II	NO CHANGE	Epyx/U.S. Gold	9.95
2	The Sold A Million	UP	Ocean	9.95
3	Arcade Hall of Fame	NEW	U.S. Gold	9.95
4	Never Ending Story	UP	Ocean	9.95
5	Skooldaze	UP	Microsphere	6.95
6	Scarabeus	NEW	Ariolasoft	9.95
7	Robin of the Wood	NEW	Odin	9.95
8	Underworld	NEW	Firebird	9.95
9	Little Computer People	NEW	Activision	14.99
10	The Last V.8	NEW	Mastertronic	2.99
11	Way of the Exploding Fist	UP	Melbourne House	9.95
12	Secret Diary of A. Mole	NEW	WH Smith (Dist)	9.95
13	Crazy Comets	NEW	Martech	7.95
14	Summer Games II	DOWN	U.S. Gold	9.95
15	Fighting Warrior	DOWN	Melbourne House	9.95
16	Batalyx	DOWN	Lamasoft	9.95
17	Who Dares Wins	NEW	Alligata	7.95
18	Battle of Britain	DOWN	P.S.S.	9.95
19	Computer Xmas Card	DOWN	Virgin	2.99
20	Harvey Smith's Showjumping	DOWN	Software Project	8.95

BUBBLING UNDER

Masquerade	U.S. Gold
Wild West	Ariolasoft

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GAMES NEWS

Quite a few morcels of information for you this month. By the looks of things it should be a pretty exciting New Year for all games players, let's hope so!
Francis Jago

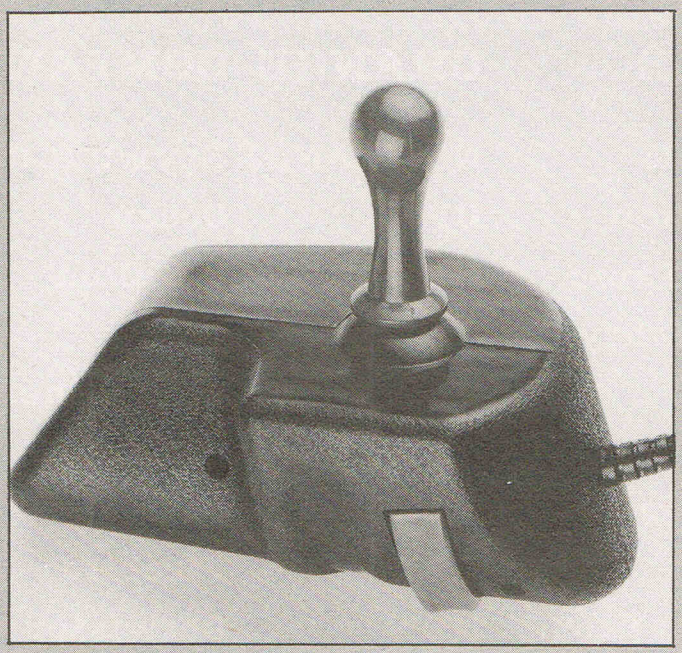
GLOBAL RANGE

Global Software, the people behind the highly playable Magic thingy-majig, have sent us a reasonably (Magic Ball?) funny press release. However I thought that I wouldn't write anything about their games, so I won't!

Well O.K! Old Scores, – 240 location adventure based on the South Banks Arts centre, well I warned you about these people. To tell the truth I think they're taking the P*&S!!

Also announced is Attack of the Mushroom People (oh dear, call the doctors!!!) – which will be available in March (wow!! I can't wait??) – Can You?? If you can't, you can phone them up and scream at them on 01-228 1360.

JOY DIVISION



No, unfortunately this is not an announcement of a game based on the mega-group, instead I thought I'd tell you about a new and really excellent new joystick I got sent to me in the office.

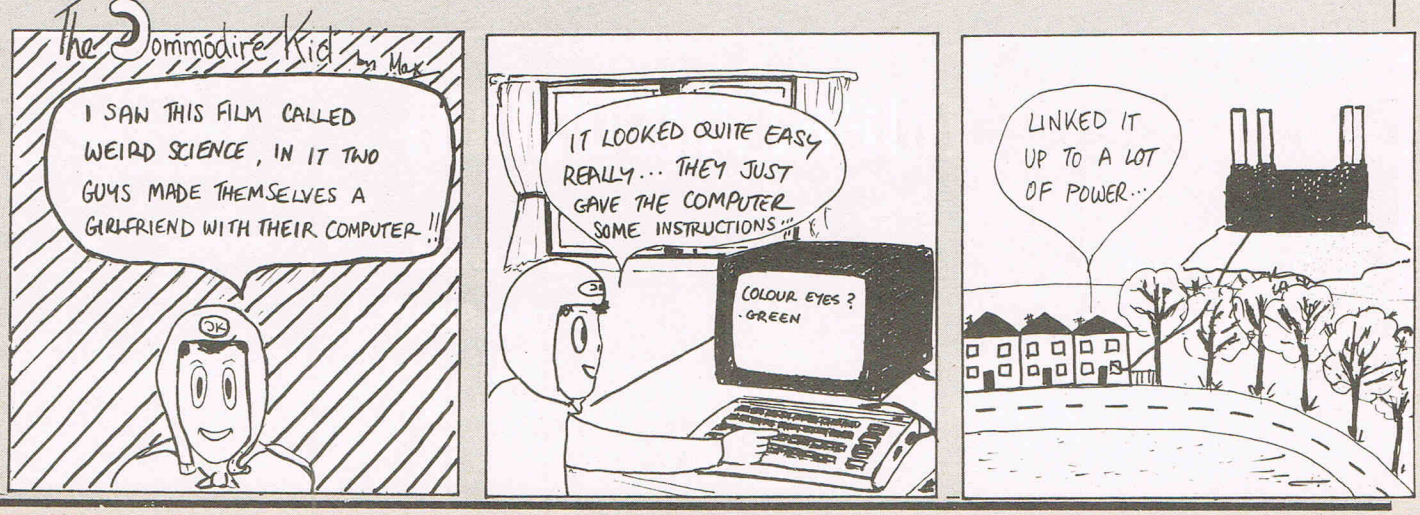
Produced by Konix ("who?" I hear you cry!), it is both unusual and good. It fits your hand really well, and indeed it is currently the one favoured by all the serious games players I have tested it on. Intended to retail at £12.99 it is worth that amount even without the accepted auto-fire switches – who really uses them anyway?

TRANSFORMED

Hot on the heels of Rambo, Ocean have released Transformers. Unfortunately I couldn't persuade it to load in time for this issue, so you'll have to wait until next month, when I'll tear it apart!

Basically the game scenario is one based on the heavily advertised Transformer range of toys. In America this type of toy has been around for a while, with Gobots being a cult trend, and now they are taking of here.

You control the five Autobots, each able to operate in Robot mode or be 'transformed' into vehicles. Hopefully I'll be able to do a comparison between this and Martech's similar title Zoids. Who'll win? I don't know yet, but I'll let you know soon!



GAMES GALORE FROM A.I!

Adventure International have just given us details of their planned releases. First is Seas of Blood, an Ian Livingstone/Steve Jackson book converted to game form. Featuring over 300 locations and many original features, I'll see what I can do about getting a review for the next issue.

Also announced are Davey Jones Locker and The Fantastic Four. Davey is a new type of game for AI, being an Arcade Adventure, rather than the more normal adventure.

Fantastic Four is the third in the now well established Questprobe Series. An adventure featuring the Human Torch, and the Thing.

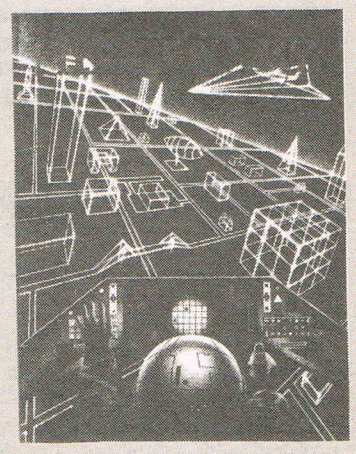
Unlike the two previous games however you control both characters, I look forward to playing this one, it sounds truly novel!

NO, IT CAN'T BE!!

I've heard these dreadful rumours floating about – ones which, if they prove to be true could be for all journalists in the computer games world.

Mercenary, the most discussed game of all time, is out! I can't vouch for the reliability of this rumour, as my source was a pretty shady character to say the least.

If, however, he was right I will have to find something else to fill up games news for the next six months. Maybe I'll phone Paul Woakes and ask him about the sequel! Look out for a full review next month, maybe!



INFINITE WISDOM?

A new games company, based in that hotbed of games producers, Manchester, is Infinate Games. It's first release is Moebius – which I'm told is the name of the world's deadliest force – so there!

The game owes a lot to games such as Jet-pac and DropZone, and as such is not amazingly original. It does have a nice theme tune, and the graphics are pretty, so things aren't all bad!

OUTLAWED

Unfortunately that's what this game should have been! Ultimate's last title, Imhotep, was described as "very difficult" in one magazine I read recently. I'm sure this was because the reviewer was scared of saying he didn't like it. Unfortunately Ultimate have dropped another clanger with Outlaws. Although there will be a full review next month, I am really upset that Ultimate stopped doing they're immensely playable arcventures to produce products of this quality, what a pity!

MORE YABBA-DABBA-DOO!

To make this game even more attractive (read this issue for full review), if you buy your copy of YDD from W.H.Smiths you could win a flight to Los Angeles for you and a companion. There you'll be able to see Disneyland, the Hanna-Barbara studios, and much much more!

So this really could be a red letter day for someone. The competition runs until the end of February, so you've got plenty of time!

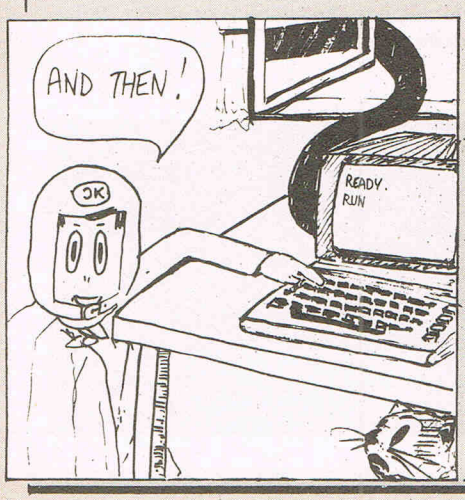
APPEAL

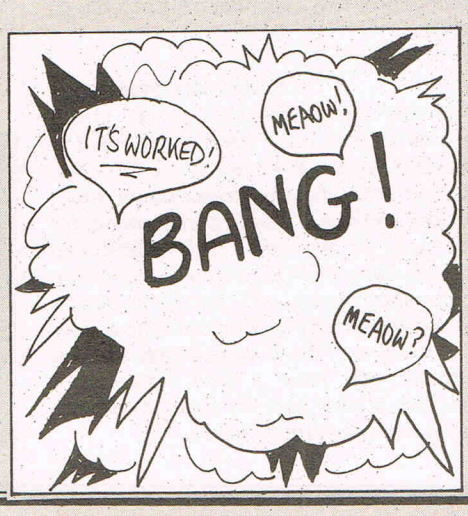
Finally I'd like to make a brief personal appeal. Will all you games players out there who read my reviews write me a brief note on how you feel about them. I try to induce a little reaction, and I'll send a free game each month to the letter I feel says something of consequence!

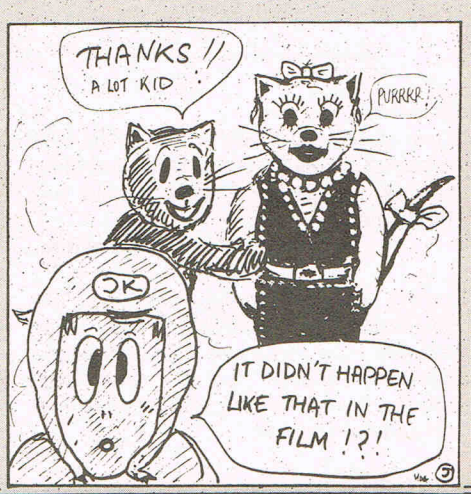
It doesn't matter if you're writing to tell me which games you loved, or that I am a cruddy reviewer and anyone could do better, just put pen to paper and see what happens. I'll publish the letter too, so maybe you'll become famous (I said maybe!!!!).

Send them to: Francis Jago, CCI, 40 Bowling Green Lane, London EC1R ONE. O.K!!!!!

That's all for this month, see you soon!!!!!







This month your letters are answered by Rae West. Rae is the author of three large reference books on Commodore computers; the latest is Programming the Commodore 64, following Programming the VIC and Programming the PET/CBM. All are published in the UK by Level Ltd. Rae is also published in the USA by Compute! Books.

Dear Rae
I have a Silver Reed EX44 printer...My main problem is that I've been supplied with a serial interface rather than the parallel version. Assuming this solves my problem with EasyScript, I'm left with a headache – how to use Easyfile? It seems to allow only two options, a 1525 or1526.

B.Clay, Dorchester

Printers are a headache with the 64, since the MPS803, and its forerunners the MPS801, 1525, and 1515, don't have attractive typefaces. Alternatives include: (i) printers which use the 64's standard output: these mimic CBM printers, but are better. (ii) Use the RS232 connection – this means connecting the printer to the user port. (iii) Using a parallel printer, like yours. Such printers can be connected to the user port, with a cable and software designed for the purpose. They can also be connected to the 64's usual output socket, with appropriate hardware.

All non-CBM printers, apart from those which can use the 64's socket, need hardware and software support. Easyscript is a professionally-written package which supports many types of printers; but many programs take the easy way out and don't do this. I'm not familiar with Easyfile, but if it allows only the printers you mention your parallel cable in the user port can't possibly work-you'd need supporting software. Whether this will coexist with Easyfile depends on its position in RAM.

The authors of the program should be able to help you, with definitive information on these points.

Dear Rae,
I own a C64 with a C2N tape unit. My area of interest in simulations is trains, and there are very few of these about. Could you supply me with a list?

J.R.Lygo, Huntingdon.

I can't find any companies with this classification of software. The only example I can recall was a simulation of a main-line station by an educational software house. I'll have to hope they read this and contact you.

Dear Rae,
'I read with interest Bill Donald's views on the C128 in December's CCI. However, the topic that interested me most was his reference to the 1541 disk drive's slow speed.

Bill states the main cause of sluggish loading and saving is a deficiency in the operating software rather than a mechanical limitation. Does any company market replacement ROMs for the drive, or could you explain how the DOS could be modified by those readers with an EPROM programmer? Such a method would be preferable to the 'go faster' cartridges currently available.'

A.K.McKinnon, Barrow-in-Furness

It's true that the 1541 could have been designed to operate much faster with the 64. It was made slow to be compatible with the VIC-20, which in turn was slow because of a hardware fault which was discovered too late.

To improve speed, it's not enough to change the ROMs; the 64's ROMs would also need to be changed, because both devices cooperate in transmitting data. Some cartridges have additonal internal connections in the 64, too. It's not necessarily a good idea to change ROMs in the way you suggest, because some software, particularly commercial packages and games, may not load with these modified drives. All the cartridges have some form of on/off switch because of this.

The cheapest way to increase loading speed is to load RAM routines into both the 64 and the disk drive's RAM; Supersoft in Harrow were one of the first to do this. Their routine is obtainable on my disk for 'Programming the Commodore 64'.

Dear Rae
When pressing letter keys on my 64 I get not one but a series of letters for as long as the key is pressed. And the computer will not stop at an input pause. Considering the double problem, I wonder if the machine is faulty.

H.M.Webster, Staincross.

Most keys on the 64 don't repeat, unless special POKEs have been used, so it is possible your machine is faulty. You haven't said what you mean by an 'input pause', so I'm not able to comment on this one way or the other. I'd suggest you contact either ICPUG or the Commodore information centre, and describe your 64's symptoms directly to someone who knows the machine. They'll immediately tell you whether you have a fault. Since your machine is fairly new, try to do this before the guarantee period expires.

Dear Rae,
Is it possible to get programs back off a disk when the Directory/BAM has been corrupted? The programs are still on disk – I checked by using 'Display Track & Sector' from the Demo Disk.

M.Weeds, Kent.

Yes, it is possible, but not very easy. The program 'DOS Shell', which is on the new demo disks with the 1570 and 1571 drives, has a program to recover deleted files which may work: it depends what happened to your disk. Alternatively, you'll have to read the entries in track 18 from 1 on, until you find the directory entry. The file type and location of the program start are in bytes 2-4 of the entry. They can be altered with the Block-Write command. Before trying this, copy the disk.

Dear Rae,
Can you help me locate black ink for my MPS801 printer? I've been using purple cash register ink...

A.R. Griggiths, Houghton Regis

W.H.Smiths and others sell black stamp-pad ink. I can't guarantee that it's suitable, though.

Dear Rae
I can't find anywhere a clear explanation of the numbers that come after POKE statements; e.g. POKE 650,128. Why 128 and not say 33? Are there standard numbers that can apply to any POKE? Is this explained in your book?

P.G.Miles, Charmouth

There's no standard; pokes serve a large number of purposes. To take a few examples: 128 can be written as 1000 0000 in binary notation; a poke of 128 is said to 'set the high bit'. A completely different use is POKE 1024,1 which sets a location in screen memory, which appears as a letter 'a'. Pokes to the sound chip can set frequencies of sound waves, and so on. My book, as any competent book should, naturally has explanations of all this. But it is quite technical.

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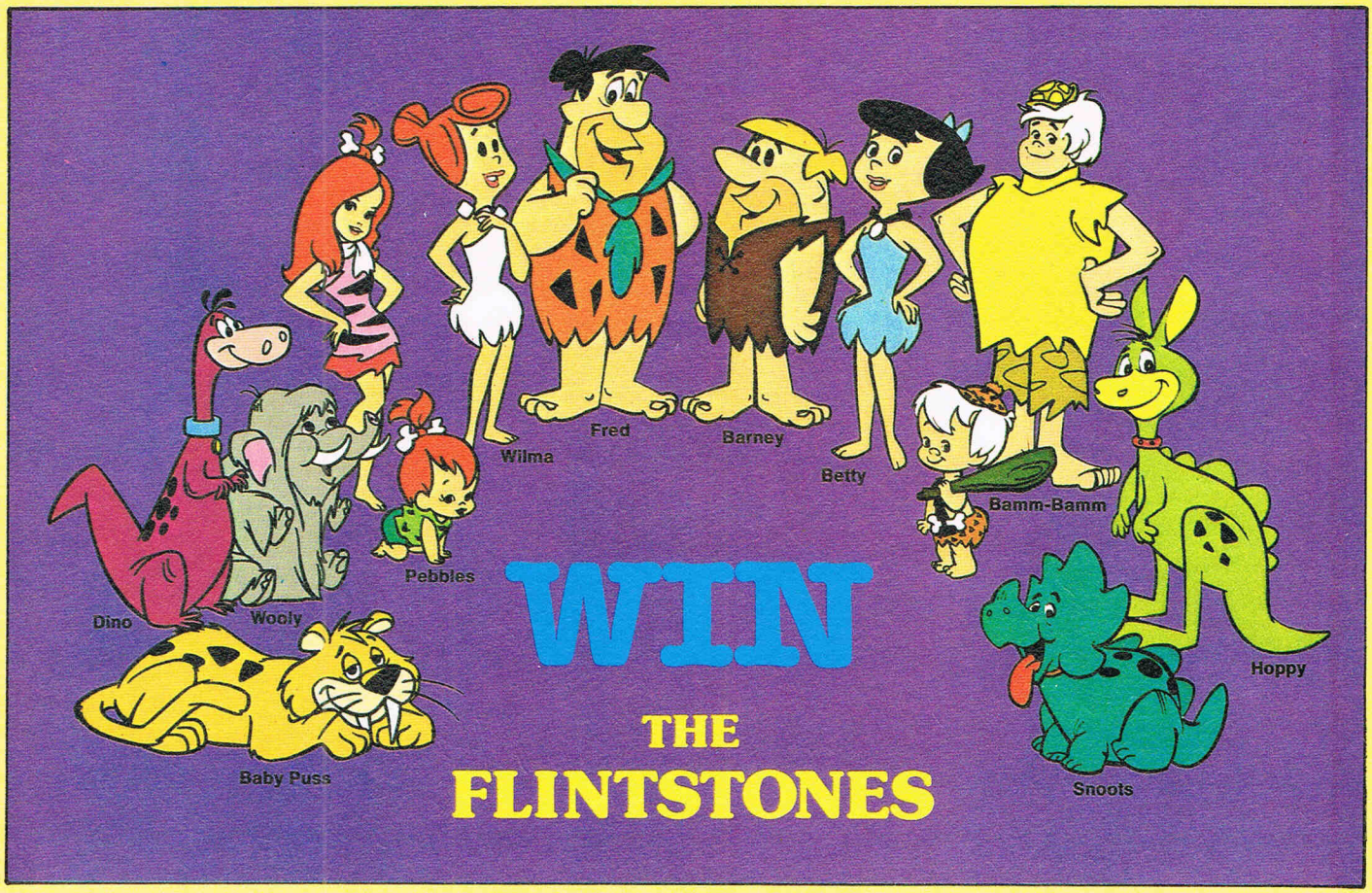


The Flintstones are the lovable prehistoric family that never seem to date, even in this world of micro technology. And now the Flintstones are entering the world computers in a new computer game from Argus Software called Yabba Dabba Doo. The aim of the game is to help Fred build a house so that Wilma will move in with him. It sounds simple, but everyone and everything is against him. It is a really fun game to play, as you will see from our review in this issue.

Argus Software are giving away 50 copies of Yabba Dabba Doo to the winners of this CCI competition.

The Competetion

The entire Flintstone family and friends are pictured above. We want you to use your imagination and suggest new names for each of the characters here.

The Prizes

Copies of the game will be given away free to the 50 entrants suggesting the most apt and original names for the Flintstones crowd.

The closing date for this competition is 7 February 1986. Entries should be sent to:
Flintstones Competition,
CCI,
Finsbury Business Centre,
40 Bowling Green Lane,
London EC1R ONR

If you don't want to cut up your copy of CCI, please feel free to send us a photocopy of the completed competition page.

If you don't win this CCI competition, buying a copy of Yabba Dabba Doo from WH Smith entitles you to enter a Flintstones competition with the incredible prize of a trip to the States to see an episode of The Flintstones being filmed. Look in your local WH Smith for more details!

Name: .....
Age: .....
Address: .....
.....

I would rename the Flintstone characters as follows:

Baby Puss .....
Dino .....
Wooly .....
Pebbles .....
Wilma .....
Fred .....
Barney .....
Betty .....
Bamm-Bamm .....
Hoppy .....
Snoots .....

Win Mad, Mad Games!!

Masteronic is a software company which has made a name for itself by releasing games of incredible value, selling at just £1.99.

Masteronics Added Dimension, or MAD, is a new range of games selling at £2.99 each. Last month we looked at two of them and if the entire range of MAD games matches those standards, Masteronic is onto a winner.

CCI and Masteronic are giving away no less than 200 games to the winners of this screen shot competition.

The Competition

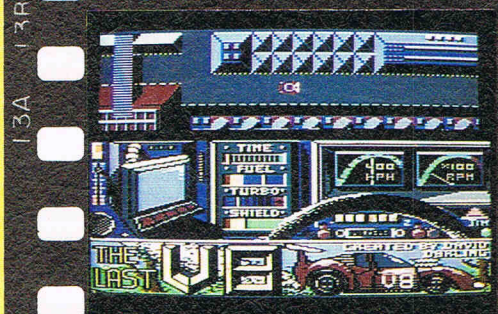
On the right you will see screen shots taken from five Mastertronic games. Your task is to tell us which games the screen shots are taken from. To make things just a little easier for you, we have listed the five games – amongst a list of 10!

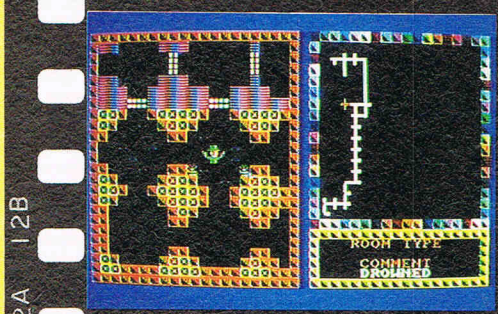
The Prizes

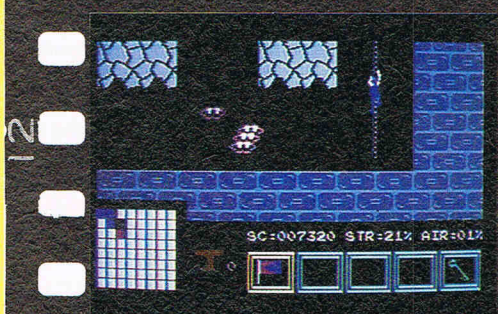
The first 200 correct entries pulled out of our competition sack will each receive the Mastertronic game of their choice from the 10 games listed here.

The closing date for the competition is 7 February 1986. If you do not want to cut up your copy of CCI, please feel free to send us a photocopy of the completed competition page. The address to send your entry to is:

Screen Shot Competition.
CCI,
Finsbury Business Centre
40 Bowling Green Lane,
London EC1R ONE.







Please indicate which game the screen shot is taken from by inserting the numbers 1 – 5 (top screen shot is number 1, second screen shot is number 2, etc) next to the relevant game title:

HERO OF THE GOLDEN TALISMAN .....
THE CAPTIVE .....
THE LAST V8 .....
1985 .....
KIKSTART .....
SKYJET .....
FINDERS KEEPERS .....
SPOOKS .....
ACTION BIKER .....
HUNTER PATROL .....

Name .....
Age .....
Address .....
.....
I would like to win the game .....

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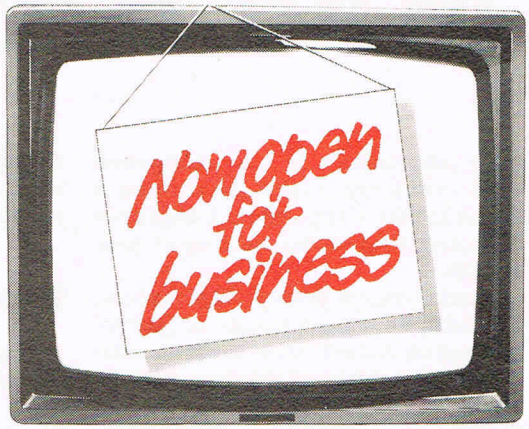

SuperScript **writes letters, invoices, reports, tables, documents, it stores, edits and even checks spelling.**

Versatile SuperScript SuperScript combines word processor, spelling checker, calculator and mail-merge facility, all in one package. So SuperScript gives you all the tools you need to produce high quality reports, tables, lists, personalised letters and prints labels quickly and efficiently.

Simple for the beginner If you are a newcomer to word processing, SuperScript puts you immediately at ease.
Each command is a single word, and for each command you simply move the cursor. You don't even have to type the command.

Good with numbers SuperScript allows you to extend your editing line up to 250 columns for wide documents like financial statements, and with decimal tabs it's easy to enter properly justified tables of numbers.
SuperScript's complete set of calculator functions can be used interactively or you can operate on numbers from the text of your document. Apart from the usual mathematical functions like add, subtract, multiply, divide, and percentages, you have the ability to add rows, columns or even whole tables.

Good with spelling, too The built-in spelling checker goes right through your text, checking for errors. You have the option to correct any error, ignore it, or add the word to its 30,000 word dictionary.

Editing options SuperScript gives you all the editing options of a business-style word processor, with full block manipulation for cut-and-paste; overtype or text insertion modes; search and replace with pattern matching and optional case discrimination; backward search, case shifts for single words or larger blocks of text. And much more.

Powerful for the experienced user SuperScript also gives you the ability to cut work down to a minimum by storing your own command sequences or text on single keys. This means that with a single keystroke you can reproduce commonly used phrases or multi-line addresses from a glossary, load in document formats or execute a pre-programmed sequence of operations.

Mailings with SuperScript Personalised mailings are easy with SuperScript. You can enter the data manually or use data extracted from your spreadsheet or database. Merging can be selective. A mailing labels template is included to help you complete your mailing and you can alter the template to suit your own label format.

Attention Easy Script users! If you're already an Easy Script user, then SuperScript is the obvious next step. With its enhanced features and more powerful facilities, you'll be able to do so much more. There are no compatibility problems either. You can run your Easy Script data or Easy Spell dictionary disks under SuperScript. And by returning your Easy Script disk can obtain an upgrade for just £49.95.

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If you are intending to use SuperScript for a specific purpose, we should be interested to have details. Thank You _____

PRIZE WINNERS!!!

More lucky prize winners this month with the results of our recent Steve Davis snooker competition.

Hundreds of you sent in the correct answers to our three easy questions, but the first ones drawn out of the competition sack were:

1st Prize: Neil Lawrence, of Romford, Essex
2nd Prize: William Hughes of Abercrave, Swansea; and Gray Smith of Rainham, Essex
3rd Prize: Murice Le-Vallois of Paisley, Scotland; and Stephen Squires of Torquay, S Devon

Congratulations to our winners! If you weren't lucky this time, don't forget to look out for our exciting competitions in this issue.

An Epson in Commodore clothing!

NOW AVAILABLE FOR KAGA-TAXAN/CANON

How many Commodore home computer owners, when faced with buying a printer, have longed to own an Epson but been put off by the problems involved? Firstly, it's not easy to connect the two together. Secondly, even when connected, it may be necessary to load driver software or the cartridge slot may be unusable. Finally Commodore-specific characteristics such as graphics and formatting commands will not be available.

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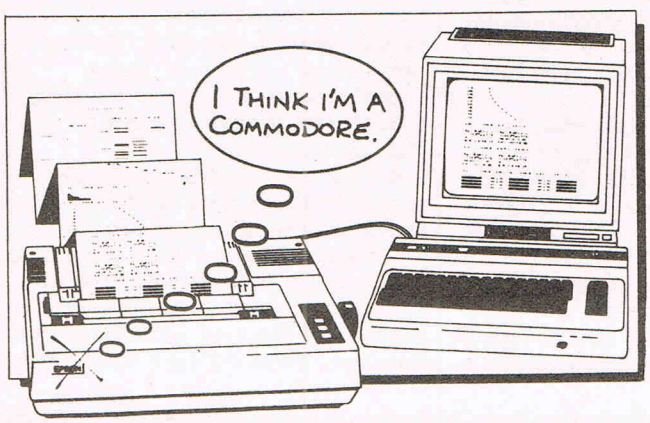
What's more all the additional features that have made Epson so successful, such as condenced print and other type styles, are accessible directly by the Commodore computer. For the business user the ability to use 15 inch paper (in the MX/RX/Fx-100 range) and print a £ sign (or other Epson special characters) will prove invaluable.

So go on – spoil yourself. If you are the owner of a Commodore personal computer treat yourself to an Epson – and a Comprint of course!



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Narrow Road Between Lands

Welcome to my third MUD column. They're getting to be a bad habit you know.....hehehe. Here's the latest round up of news and gossip.

A MUD Spectacular is just about due. For the uninitiated amongst you, a MUD Spectacular is a hack 'n' slay exercise. Basically, the game is open for people to enter for roughly ten minutes. After this period, no-one may enter the game. Those players who have managed to gain access to the game are in it until death....or victory.

The object of a Spectacular is to become the sole surviving player in the game, by killing off all the other participants! Unlike the normal game, weapons are distributed to the player, and there is no shortage of them either. Such weapons as sabres, epees and rapiers are to be found in a spectacular. When a player does a 'who' command, instead of listing the player's rank next to his name, it lists where in the land that player is to be found, thus aiding the killing process!

Spectacular Experience

The last surviving player is the winner, and for every mortal that started the game, he/she gets 1000 points, so in a large spectacular, 15k plus can be made which is quite a help towards wizardship. These points are added onto the players mainpersona. It is not wise to play a spectacular with your normal persona, who may possibly be a legend or some other high ranking character, because it is pretty likely that he will be killed off! Spectaculars are great fun and provide good experience too. Generally two Spectaculars are held, one after the other so a very good player might be able to win two in a row and get 30,000 points! Not a bad catch for an evenings work eh!

In my last column (or page?!) I mentioned MUD2. Well, it is gathering momentum with new versions of the game going up constantly. At the moment, the game consists of VALLEY, because the data for the new MUD2 locations is still being uploaded into BT's computer and having the final touches put to it. More and more features are being added to the game and it is well on its way to being fully debugged (Which I have been informed should have been completed in December sometime). All players have wizard-like powers at the moment whilst the game is being finished, which means that they can go anywhere in the game and create characters out of the blue amongst other things! Unfortunately all personas will be wiped as soon as the scoring system is implemented to stop people from playing characters that have been illegally created.

MUD2 and MUD3

MUD2 will start charging play-time in January assuming the game is fully debugged by then, so take advantage of this and get experience with the game. Map it out whilst it is still free. By the new year there should be 100 lines into the game, and MUSE plans to have 150 lines by July so the game should be pretty packed.

Prestel have just sent out a press release saying that they will have MUD2 on-line soon. Don't ask me how they plan to do this with their antiquated non-scrolling system, but they plan to do it. It will be very interesting to see the speed at which it runs, for with Prestel having no scrolling facilities they are going to have to have software scrolling which could be very slow. Hopefully I'll be able to bring you more on this in next month's column when I'll know more.

MUD3 is being planned already although MUSE won't release any details as to its nature, except that it'll be bigger and better. In between MUD2 and MUD3 however there will be another Multi-User-Game (MUG?). As is the case with MUD3, nothing is being revealed about it. It has, however, been hinted that it will be 'different' and not another MUD. Looks interesting...

MUD is coming out in the states on one of the country's biggest networks, Compuserve, in February. It will be identical to the current MUD that we all know, and will include VALLEY as well. ROCK is not being included for obvious copyright reasons.

Valley Still Empty

I think I'm going to give up trying to get you all to play VALLEY as nobody seems to be taking any notice. It is still as empty and forlorn as ever. Oh well-lets have a final fling just in case. VALLEY does in fact contain quite a lot of treasure even though some people have said that it is boring. VALLEY is what you make of it. Consider this. VALLEY contains treasure but nobody plays it. Therefore that treasure just lies about wasted. WHY don't you go and get it and knock your score up a few thousand points? Its not that difficult in an empty game! Before we had Valley on Compunet you were all complaining. Now that we have it everybody ignores it! Ahhh well, t'is life I suppose.

A lot of you reading this article probably don't play MUD. All I can say to you is, go out there and buy yourself a modem! With it you can both play MUD and use Compunet and a whole host of other services, including Prestel and Micronet. Compunet are doing a VERY good

deal on the Commodore modem, selling it at just £50.00! There probably isn't a cheaper way into telecommunications on the Commodore 64/128. Contact Compunet on: 01-965 8866.

Alternativley you may already have a modem, but are not playing MUD. Well, you do not have to be a Compunet modem owner to play MUD. Contact Compunet on the above number for more details. MUD is the most interactive game ever devised and when you've played it once, you'll be hooked, believe me.

Play And Get Hooked

Playing MUD must definitely be one of the most enjoyable aspects of telecommunications. For the cost of a local phone call, in most cases, and only £1.75 an hour playing charge (almost half of what it was a month ago) you can play MUD to your heart's content. A local 'phone call is only 43 pence an hour and adds peanuts to your telephone bill so long as you don't go bonkers. If you play MUD for five hours a week, at local rates it would add up to only £25.80 per quarter,which I think you'll agree is pretty cheap. So, get on down there and get yourself a MUD subscription. If you have any questions about MUD then you can contact either Compunet on the above number, or your friendly (hehehe.....) neighbourhood Arch-Wizard on Portsmouth (0705) 833830. The phone'll probably be engaged though because I'll most likely be playing MUD, tormenting poor defencless mortals...snigger snigger...

Beware The Necromancer!

On the subject of tormenting mortals, beware wizards playing in mufti as mortals. They will usually play as legends or necromancers, so if you see a high-ranking character whom you've never seen before, it could be a wizard. On no account attack a mortal who you believe to be a wizard, if you value your persona's life, for wizards sometimes come back at you with a vengance when they log back on to the game in wizard form.....

In my last article I was praising Sue to the skies as a brilliant player, and said that by the time the article was published, she would reach wizard rank. Well, a few days later I sent the article in, she did indeed reach wizard, sorry-witch! Strangely enough though, I haven't seen her on since! Each to their own I suppose. Bridrin, who was also rising at a respectable rate, is now too a wizard and is full of mischief at the moment...hehehe...

Rumours are circulating that a new Multi-User-Game is to go up on the Compunet system, and there have been suggestions that it may be set in space. No more information is available at the present but hopefully I'll be able to tell you more next month.

MUNG, which was announced a few months ago as a multi-user-OH I'm not going to type it again-a MUG containing 10,000 locations. A couple of fellow MUG enthusiasts sent off for information and received their letters back a few weeks later from the Post Ofice with 'Gone away' scrawled on them. Looks like it just fell through. Pity because it sounded as if it would be quite good.

Anyway, that's all for now. Back next month with more snippets.

----*Zaphod the Arch-Wizard has just disappeared in a puff of smoke.

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128: Commodore MUSIC MAKER - d19.99 - simple music playing system with keyboard overlay: the latter being of rather more use when used in conjunction with other (64) music packages running the 128 in 64-mode! See following:

(128) 64: THE ADVANCED MUSIC SYSTEM (d39.95) - This is the definitive music generation program for the 64 mode. Compose, edit and rearrange music using icon commands and pull-down menus. Enter and correct music with recording-like multi-tracking functions. Mix and modify sounds in real time. Chain together music files to create full length compositions. MIDI editing. Full printout and lyric addition facility. A quite extraodinary program that takes the 64 SID chip to its limits! The basic version THE MUSIC SYSTEM with the synthesiser, composer and editor costs d17.95 c14.95 and is upgradable to the AMS.

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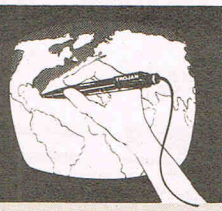

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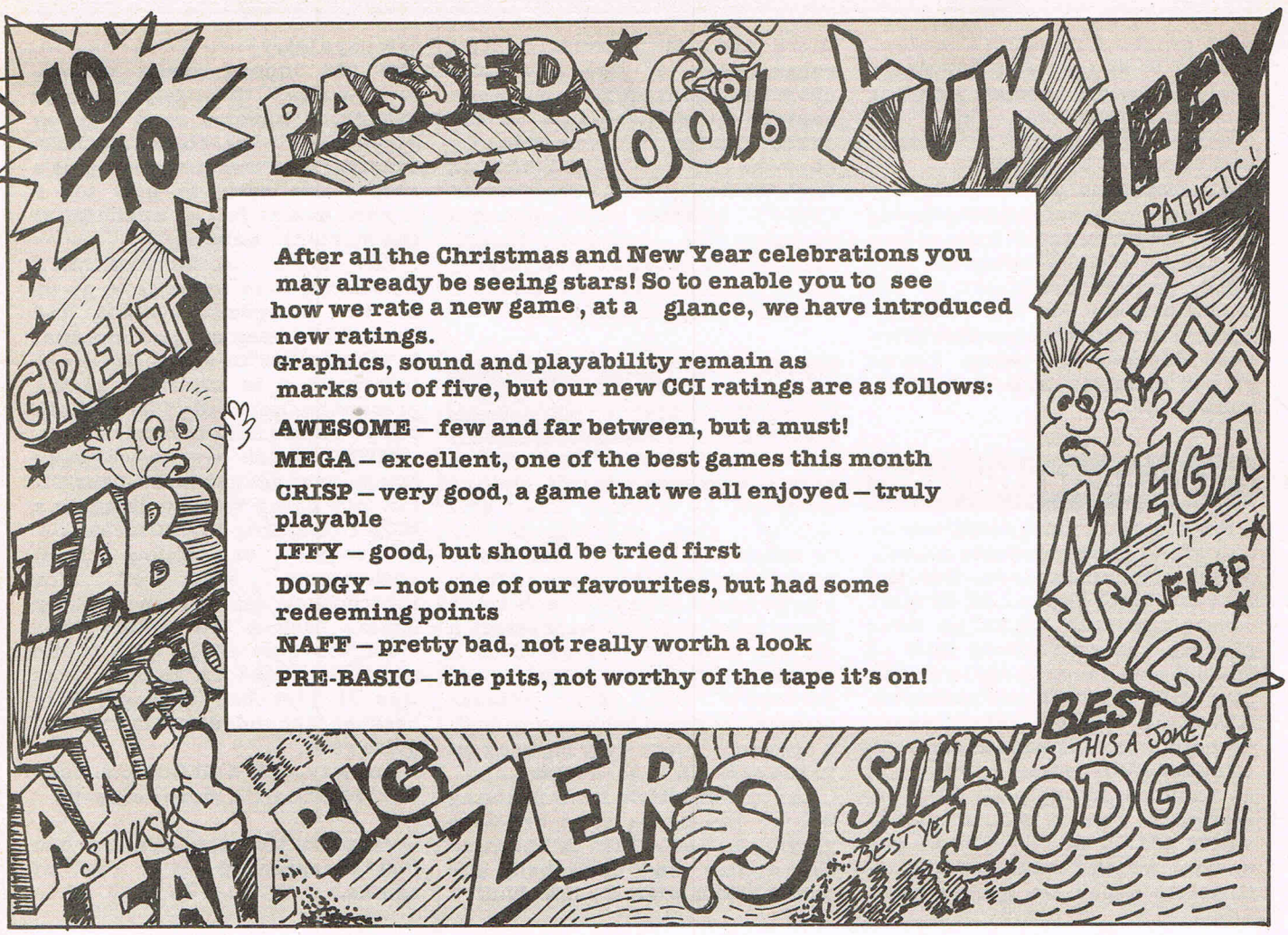

After all the Christmas and New Year celebrations you may already be seeing stars! So to enable you to see how we rate a new game, at a glance, we have introduced new ratings.
Graphics, sound and playability remain as marks out of five, but our new CCI ratings are as follows:

AWESOME – few and far between, but a must!

MEGA – excellent, one of the best games this month

CRISP – very good, a game that we all enjoyed – truly playable

IFFY – good, but should be tried first

DODGY – not one of our favourites, but had some redeeming points

NAFF – pretty bad, not really worth a look

PRE-BASIC – the pits, not worthy of the tape it's on!

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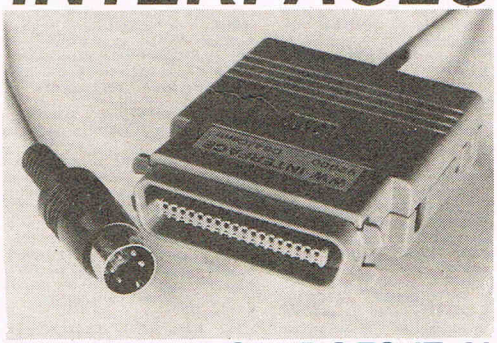

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DEALER ENQUIRIES MOST WELCOME

Mega-Review

CRISP

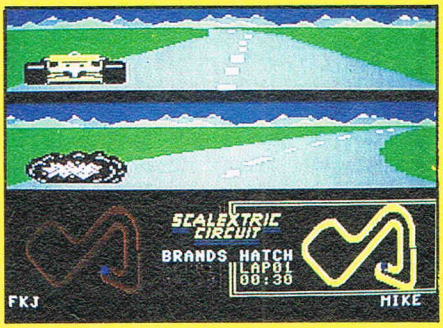
SCALECTRIX!

SCALECTRIX

Did you think Pitstop II was a really magic game? Did you (like me) think Racing Destruction Set was truly wonderful? If so this game from Leisure Genius is definitely for you!

I can hear all you crying "NO, No!! Not another racing game!" Scalectrix however is really good, and although it has become difficult to recommend yet another Pole Position, I will stick my neck out and say that this will be a hit!

When I first heard that the rights to Scalectrix had been acquired I was most intrigued as to how the game would turn out, thankfully it lived up to the high expectations I had. It was not that long ago I was playing the real thing!!!



The games starts with you deciding whether you want to design your own track, or race one of the many already set up, ranging from Kyalami to our own Silverstone. If you decide to design your own track, there are various pieces to chose from, including a huge variety of evil chicanes, (not for the faint hearted!); though unlike true Scalectrix you can't lose vital sections and bend others to fit!!

Having decided to race you can choose how good you want your computer opponent to be (unless you are playing two players!), ranging from easy to beat to bloody difficult!

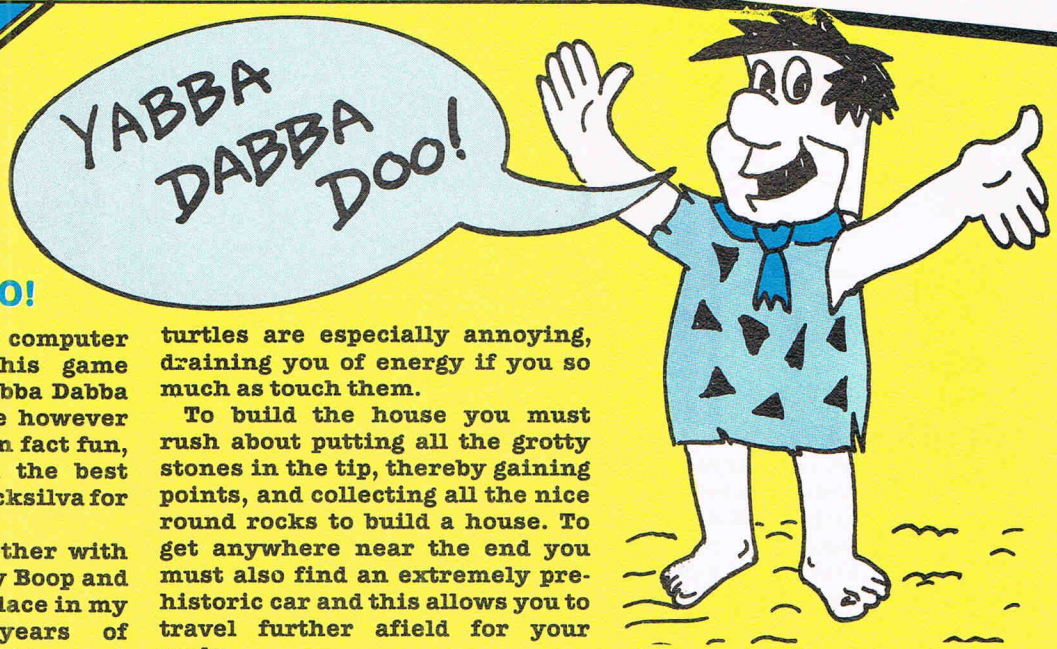
The racing, using split screens (a la Pitstop) is excellent, as are the track diagrams below.

If you already own 50 racing games, then I wouldn't recommend this game, otherwise 'GO FOR IT!'.

Price: £9.95
Graphics: ****
Sound: **
(could have done more with Grand Prix tune!)
Playability: ***
CCI Rating: CRISP
Contact: Leisure Genius, 3, Montagu Row, London W1 Tel:01-935 4622.

MEGA

YABBA DABBA DOO!



If there were a silliest computer game name award, this game would surely get it! 'Yabba Dabba Doo!', really!! The game however is not at all silly, it is in fact fun, well programmed, and the best thing to come out of Quicksilva for a long time!

The Flintstones, together with such favourites as Betty Boop and Mickey Mouse, have a place in my heart from many years of watching them. Ageless is a word I'd use for characters such as these.

Back to the game! You play Fred, in an almost endless toil to build a house for you and Wilma to live in. This may sound easy, but Wilma won't even look at you until that house is built, and no-one else seems willing to give you a hand, quite the opposite in fact, with pre-historic pterodactyls and turtles are especially annoying, draining you of energy if you so much as touch them.

To build the house you must rush about putting all the grotty stones in the tip, thereby gaining points, and collecting all the nice round rocks to build a house. To get anywhere near the end you must also find an extremely pre-historic car and this allows you to travel further afield for your rocks.

Graphically YDD (my shortening, I hasten to add!) is very good, almost cartoon-esque. With all the characters being easily recognisable, Fred is really excellent, and his walk has been captured perfectly. The Music too is good, and soon you find yourself humming the Flintstones tune continually, as my very annoyed girlfriend will tell you!

Overall, a jolly good program, what can I say except: YABBA DABBA DOO!! (Sorry for being so predictable!!!)

Price: £7.95
Graphics: ****
Sound: ****
Playability: ***
CCI Rating: Mega
Contact: Quicksilva Ltd, Liberty House, 222 Regent Street, London W1R 7DB. Tel: 01-439 0666.

Mega-Review

IFFY

THUNDERBIRDS

THUNDERBIRDS

At first, I have to admit, I thought this game was rubbish, "Oh God, another £3.99 flop!" was the cry heard flying around the CCI office. But in true journalistic fashion I persisted, if only to see if I could complete the darn game.

It was during my lunch hour that the dreadful thing happened; having eaten my sandwich I found myself loading Thunderbirds! Hard as I tried I couldn't stop, and the more times I tried unsuccessfully to complete the game, the more I found myself returning!

Graphically Thunderbirds is poor to say the least. The loading screen picture of Thunderbird 2 is nice, but from then on the graphics get steadily worse, culminating at the moment the ships take off – truly tacky!

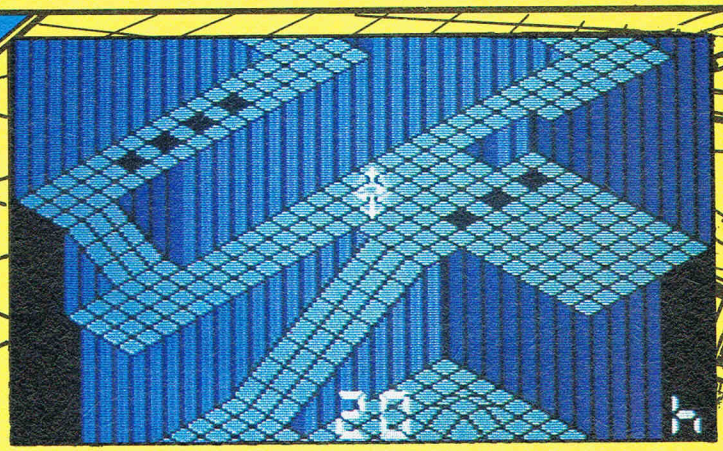
Neither is the sound anything special; a gruff bit of speech announces that "Thunderbirds are GO!", but the rest of the sound is pretty uninspiring.

Although this may sound like a total massacre of the game it's just not true. It is immensely playable, it doesn't matter about its graphics or sound, the puzzles set by the various mazes are enjoyable and frustrating.

Basically you must control Thunderbirds 1 and 2 and using each one to move different coloured blocks – Green for 2, Yellow for 1 – you must work your way through a maze to rescue a group of scientists. If this sounds uninteresting, it's not. Thunderbirds may not be F.A.B, but it certainly is F.U.N.

Graphics: *
Sound: *
Playability: ****
CCI Rating: *** (odd but true!)
Price: £3.99
Contact: Firebird, 6/9 Upper St Martins Lane, London WC2 Tel:01-379 6755

MEGA



GYROSCOPE

When you look at the development of arcade games, there are four or five machines which mark a huge leap forwards both in programming skill and the games contents. Space Invaders, Defender, HyperSports - all these games gathered cult followings in the arcades, and as such were successfully converted to home micros.

My favourite ever arcade game, and perhaps the most talked bout, was Marble Madness. It had amazing graphics, unbelievable sound, and was more playable than anything before or since!

It was, therefore, only a matter of time before someone brought out a version for the 64, and although Electronic Arts own the rights to the name, Melbourne House, with its newest release 'Gyroscope', seems to have produced a very playable alternative.

Instead of rolling a marble down a maze, you are in control of a nicely animated Gyroscope, spinning, which you must pilot down the maze.

The graphics are nice, with a carefully designed maze smoothly animated as you move down; and there are enough different screens to keep even the best Marble Madness fans happy for many hours.

The music was not quite up to standard however. Although the tune was fun, it was quite short and quickly became annoyingly repetitive. Also, it slows down immensely when the first screen is scrolled on.

I really did enjoy this game, it is fun and frustrating, and definitely addictive. If you can't be bothered to wait for the EA version, albeit official, then this game's for you!

Price: £8.95 (cassette), £14.95 (disk)
Graphics: ****
Sound: ***
Playability: ****
CCI Rating: ****
Contact: Melbourne House, Castle Yard House, Castle Yard, Richmond, Surrey. Tel:01-940 6064

WEIRD SCIENCE

What's a film got to do with computers we hear you ask? Well, in this instance quite a lot. But we feel that our readers – and that means YOU – are also film goers...why not drop us a line and tell us if you would like to see reviews of computer-relevant films, or others for that matter!

Dr. Frankenstein is alive and well and living in the bodies of two fifteen year old boys in America. The two boys are Gary and Wyattt who don't seem to be able to make the grade where girls are concerned. They turn their energies into making the woman of their dreams to attend to their desires.

With the help of their home computer (not a Commodore in this case), Playboy centrefolds, a Barbie doll and bras on their heads (?!) they conjure up the ideal woman who calls herself Lisa (Kelly Le Brock). Lisa appears in a puff of smoke and a massive explosion and tells the boys that their wish is her command – well almost...(is this a "family film" Ed?)... What ensues is a sequence of events in which Lisa plays a central part in throwing the boys into situations which will bring out the macho-man in them and make them – "big hits with the girls." The film carries very good performances from both the boys and Kelly Le Brock who has a great deal more to say than in her last film "The Woman in Red"; and it shows her off as a very humorous actress and not just a pretty face – though she is truly gorgeous. The screenplay is riddled with loose ends but redeems itself with very funny scenes, good special effects and some good ol' foot-tapping-in-the-aisle music.

Weird Science could be regarded as extremely sexist – though my female partner wasn't offended by it. The poster claims "It's purley sexual" – I'm inclined to agree.

Here's looking at you, Kelly.

M.J.

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The Micro Maestros

This month sees the first in a two, or possibly three, part series on the programmers behind the amazing sound tracks on the latest games. Martin Galway, Ocean's resident music maestro, is this month's interviewee, so here (or should that read hear) goes.

Name: Martin Galway.

Age: 19. "Though I'm twenty on January 3rd".

How long have you been at Ocean?: "About 9 months".

Who did you work for previously?: "Well I was at college, but I did some work for Ocean, as well as the sound tracks for Ultimate's BBC games such as Knightlore, Atic Atac, and Alien 8".

Musical Taste: "I like electronic music; Level 42, John Michel Jarre, and Thomas Dolby".

Do you consider yourself a programmer or a musician?: "Well, basically a programmer. You have to be good at programming to be able to code the soundtracks, so I suppose the music came second. I also did a little of the programming of Rambo".

What equipment do you use?: "Two 64's, a TV, a Technics Hi-Fi, and sometimes a Yamaha CX5 to play around with for Ideas".

What is your favourite Ocean Game: "Rolands Rat Race".

What is your favourite non-Ocean game: "Pit Stop II – even though the sound wasn't that good"

What's the best soundtrack you've done?: "Well, Rambo is the best loading music I've done, but a new title called Comic Bakery is probably the best game tune I've written".

What is your favourite soundtrack apart from your own?: "I suppose it must be Monty on the Run or Shadowfire. Although Shadowfire was short, it was really good. Rob Hubbard and Fred Grey are probably the only two other music programmers who are really good".

What soundtracks have you done for Ocean?: "Well the early ones were Hunchback II and Kong Strikes Back, more recently however I've done Hypersports, Roland's Rat Race, Rambo and Never Ending Story. I've also done Yie Ar Kung Fu and Comic Bakery, but they're not released yet".

How long does it take to program a soundtrack?: "Using my own program, the loading music for Hypersports took a weekend, but the incidental music took three weeks using a tape of the films soundtrack".

How much RAM is allocated for the loading music?: "Around 6K, with between 10 and 11K for the actual game music and sound affects".

What does the future hold for you?: "Well, as I said, I'm doing Yie Ar Kung Fu, but I've also go to do some for the Amstrad. Then there's Mikie which I have to do shortly".

Will you ever program games?: "It's unlikely, Ocean have a full set of programmers here, and I work full time on the music".

Your Uncle is the Flautist James Galway, has this influenced you?: "No, not really, he is much more the classical side of music. I find I am influenced much more by contemporary musicians such as Level 42 and John Michel Jarre".

Have you seen an Amiga?: "Well, I saw the Micro Live on the machine and it looks amazing, I can't wait to get my hands on one!!"

Finally I must thank Martin for this interview, and say that Comic Bakery sounds really superb. He also asked me to say hello to the programmer who was continually howling in the background (perhaps this is why he's called the Hyena?), so "Hi Tony".

Next month we'll hopefully be featuring Rob Hubbard, the man behind Monty on the Run, Thing on a Spring, The Last V8, Commando and other such excellent soundtracks. If you have any questions you would like us to ask, send them to Music Interview, CCI, 40 Bowling Green Lane, London EC1R ONE.

Francis Jago.

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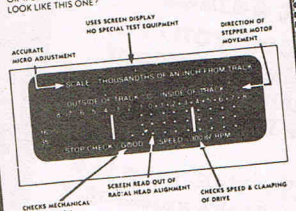

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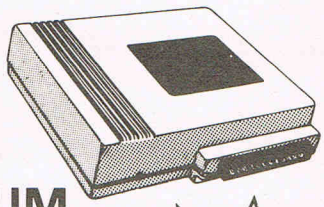

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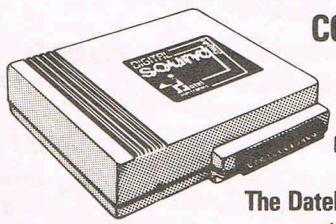

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BOOK REVIEW

THE OFFICIAL BOOK FOR THE COMMODORE 128 PERSONAL COMPUTER by Mitchell Waite, Robert Lafore and Jerry Volpe – £11.50

The Official Book for the Commodore 128 it says, and the official book it is. From past experience, and most people would I think agree, any literature as closely tied to one of Commodore's computers leaves the reader with more questions than answers. This book is like a breath of fresh air!

It is written by independent authors, but with the assistance of Jim Gracely and Bob Kenny of Commodore Business Machines. The book provides a comprehensive coverage of all aspects of the 128: what it does, how it does it, and what you can use it for.

"Comprehensive coverage of all aspects of the 128"

It begins by singing the praises of the 128 and lists the 'firsts' it represents in the computer industry: the first upgrade of the 64...the first low-cost computer to offer 128K of memory...the first computer to combine the high resolution colour graphics of the 64 with a serious business operating system(CP/M)..... the first computer to offer two entirely separate microprocessor brains and video graphic chips...the first computer to offer an intelligent disk drive capable of reading dozens of storage formats...and last – but not least – the first computer to combine in one case what amounts to three separate computers – the 64 mode, the 128 mode and the CP/M mode.

Although written for the American market (immediately noticeable by the American spelling of certain words), it does not resort to Americanese in the way computer books do in a sometimes irritating manner.

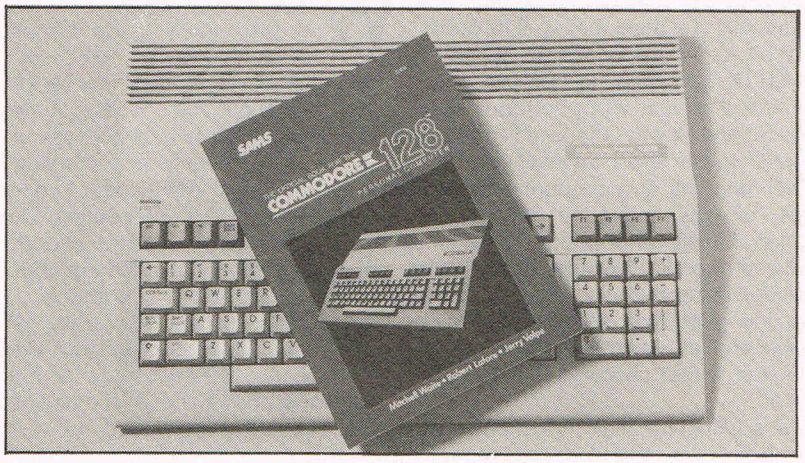
Instead it is a well-planned and carefully thought out tome sectionalised sensibly. The layout of the book is not particularly exciting, but it is set in a very legible typeface broken up by numerous headings and diagrams making it very easy on the eye.

It is not spiral bound – one of my favourite gripes – but it is a book to be read at length and at leisure, rather than one to be propped up next to your computer.

"Easy on the eye"

Looking down the list of contents will give you some idea of the vast amounts of topics covered here.

The story behind the 128 is told along with the advantages of having 'three computers in one'.



Peripherals are the subject of chapter two with explanations of each type of peripheral along with diagrams showing where everything fits in. Here again we are reminded that this is essentially an American publication: the merits of the 1571 disk drive are discussed, a little frustrating for the UK market which is waiting indefinitely for the launch of this drive over here.(The reason for its delay is that it was felt that the UK was not yet ready for such a pricey disk drive.)

The next three chapters of the book go on to explain what each of the three modes of this computer offer, how they can be enhanced and what additional equipment is needed for each.

A substantial section on graphics follows. This covers the kinds of graphics offered with the 128; the history of 128 graphics; how to use the new 128 graphics mode; how bit-mapped graphics work; how to make and manipulte sprites; and what the 80-column mode offers in the way of graphics.

The concluding chapter features sound and music: what you can do with sound on the 128; commercial software and hardware for sound generation; sound ideas; and sound and Basic 7.0

One of the things I really liked about this book was the way in which it cross-refers you to other relevant sections of the book. Never does the book race through a subject, but rather covers them in clear and precise manner. The style of writing results in a book which is easily understood by the beginner, but not condescending to the more advanced computer user.

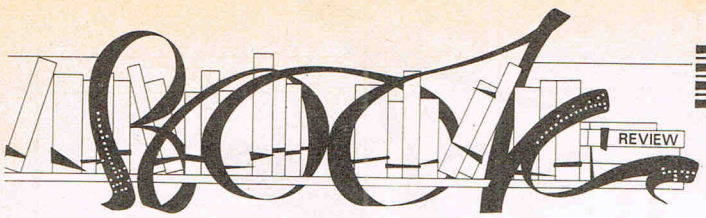
A comprehensive index enables the quick location of specific subjects. Yet another plus point is the list at the back of addresses of companies and organisations listed under the chapters relevant to them.

Incidentally, a new phraseology creeps in under the chapter on the 64 mode – a phrase I have not heard of before anyway. It is Edutainment and describes programs designed to teach a specific subject in an enjoyable way – education and entertainment!

In conclusion, I can only say that there are very few computer books which I have trouble finding fault with – particularly those with an 'official' tag relating to Commodore.

The Official Book for the Commodore 128 is not particularly cheap (what computer book is!?), but it is a worthy investment for anyone who has a 128 or who is thinking of buying one.

Contact: Pitman Publishing, 128 Long Acre, London WC2E 9AN. Tel: 01-379 7383.



Computer journalist Peter Arnott-Job evaluates a selection of newly-released books.

COMMODORE 64 ADVANCED GAME DESIGN by George A and Nancy E Schwenk

TAB Books are another of those American publishers who are generally trustworthy. They publish a wide range of computer books from advanced technical guides to popular, sometimes rather trivial, titles. But on the whole they make a good job of it and are well respected for doing so.

The note of reservation in that first paragraph is a result of a couple of little niggles about this book. Let's get them over with first because many people will undoubtedly think they're entirely unjustified niggles. They are spelling mistakes: 'complete' instead of 'compete' on the back cover (of all places!) and 'calender' in one of the listings. (It should, of course, be calendar.) I found these accidentally and there may well be more.

I don't see why computer book readers should be prepared to tolerate lower standards than readars of books on other subjects. And I always think: 'If I can't trust the spelling, can I trust anything else?'

(Everyone will now be poring over the pages of this magazine looking for mistakes. Unlike a book, this magazine is produced under pressure to a strict deadline. There are occasions throughout magazine publishing when mistakes are deliberately left uncorrected because a correction would cause an unacceptable delay.)

The spelling mistakes are unfortunate blemishes on an otherwise decent, solid piece of work. It's based around three games which are described and listed, with a commentary. The games are based on very good ideas and have more in common with board games than arcade games or adventure games (though one could argue that to some degree they are really interactive adventure games).

In Prime Time you and your fellow players take the part of television executives buying TV programmes and scheduling them to be shown on certain nights of the week. You must take into account viewing figures, your competitors' scheduling, how you spend your promotion and publicity budget and the sometimes erratic activities of the shows' stars. The winner is the network with the highest viewing figures.

WordSquare is just that, a vocabulary game involving a square of words. And Takeover is also self-explanatory. Each player is assigned a major corporation and has to avoid being taken over while attempting to take over others. This is done by buying and selling stocks and shares.

WordSquare is just that, a vocabulary game involving a square of words. And Takeover is also self-explanatory. Each player is assigned a major corporation and has to avoid being taken over while attempting to take over others. This is done by buying and selling stocks and shares.

They are very good games, fun to play and, in some respects, educational. At least they require some intellectual activity on the part of the players. Going through the book and keying in the games (which are also available on a disk) will teach you a hell of a lot about programming. This is good, clean, non-violent family entertainment.

And what is wrong with that?

Contact: TAB, John Wiley & Sons, Baffins Lane, Chichester, W. Sussex. Tel: 0243 784531.

THE PROGRAMMERS' TROUBLESHOOTING GUIDE by Piers Letcher – £7.95

Whatever your degree of competence at programming the Commodore 64, unless you're an advanced programmer, you'll find this a useful book. Anyone who's ever written a program knows the frustration of discovering that it won't work properly and spending hours trying to figure out what's wrong. The Programmers' Troubleshooting Guide is designed to help you find out what the bugs are and how to iron them out.

Non-programmers probably won't understand that sinking feeling you get when your program won't run properly. Discovering there's a bug is only the beginning and can herald the start of a long and frustrating session at the keyboard. Even professional programmers can spend more time ironing out the bugs in a program than actually writing it. This is simply because a computer only does EXACTLY what it's told and cannot compensate for those little human errors which appear at first sight to be trivial. The book deals first of all with the writing of programs, from program structure to typing them in. It then tackles the problems of BASIC, input and output, graphics, sound and memory. There's a more detailed section on structure and finally a section on machine code.

You will find that a lot of the material in The Programmers' Troubleshooting Guide covers the same ground as other books. But it is written from the point of view of discovering errors and while you may already be familiar with the subjects covered you may not be aware of their relevance to troubleshooting.

This is a useful book, well organised, not too technical for the newcomer yet not so simple that it insults the intelligence of the seasoned campaigner. It could make some people's lives a lot easier.

Contact: Century Communications, 12-13 Greek Street, London W1V 5LE. Tel: 01-434 4241.

COMPUTE!'S VIC-20 AND COMMODORE 64 TOOL KIT: KERNAL by Dan Heeb

If you don't understand the title, don't buy the book! If you do understand the title you'll immediately recognise the value of the book. The Kernal is that section of ROM which is mainly concerned with traffic in and out of the computer, not so much – *what* goes in and comes out but how it does so. It handles communication with printers, the screen, disk drives, cassette drives and anything, in fact, that you care to attach to your machine, which makes it a pretty important part of the computer's operating system.

If you program in BASIC and are satisfied with what you can do you won't need to bother with a book like this, of course. But gaining direct access to the Kernal enables you to play around a lot more with the computer's input/output handling. If you're planning to connect anything unusual to your computer – anything robotic, for example – you may have to get to grips with I/O handling in great detail.

There are now a few American publishers who consistently produce computer books to a high standard and Compute! Publications is one of them. The excellent Compute! magazine was one of the first on the scene and the range of books about Commodore machines published by the same company are just as excellent. You could probably get away without buying another book about the Commodore 64 if you bought a selection of Compute!'s books about the machine. Their approach is typified by the spiral binding which enables you to lay the book flat without breaking the spine. British publishers simply can't be bothered with such niceties.

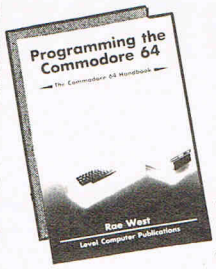
There's one inevitable criticism about Tool Kit: Kernal: a disassembly of the code for the Kernal is not included – for copyright reasons. It is, however, available from other sources.

Tool Kit: Kernal will be welcomed by VIC-20 and 64 programmers but will obviously be joining a row of other books on the shelf. It would be helpful if, amongst those other books were Compute!'s VIC-20 and Commodore 64 Tool Kit: BASIC and either Mapping the VIC or Mapping the Commodore 64.

This is the sort of book that hardly needs reviewing. Those who are deeply enough into programming to know what it's about will know whether they need a book like this and will already be aware of Compute!'s reputation.

Contact: Holt Saunders, 1 St Anne's Road, Eastbourne, East Sussex BN21 3UN. Tel: 0323 638221.

COMMODORE 64 OWNERS
The Ultimate Reference Book



Programming The Commodore 64 by Rae West

Comprehensive and readable teaching and reference book on the 64. Takes over where Commodore's manual leaves off. Much larger than most computer books. Programs available separately on disk or as pack of 2 tapes – saves keying time.
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Programming The Commodore 64 (R. West) £14.90 in UK/Europe. 624 page paperback. 17 chapters & appendices. ISBN 0 9507650 2 3. Published by Level Ltd. (Computer Publications), P.O. Box 438, Hampstead, London NW3 1BH.

Programming The Commodore 64 Disk £8.90 (incs. VAT) ISBN 0 9507650 3 1.

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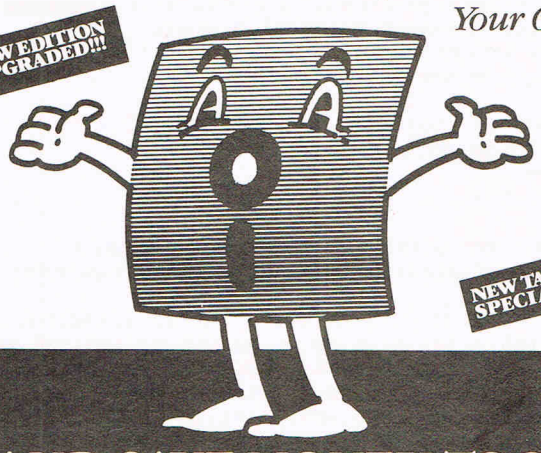

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Resave and Autorun

All the way from Belgium comes this autorun routine written by Paul Gerard

This program allows you to save any basic program on the disk (under the name you want) in such a way that when the new program will be loaded from the disk, it will run automatically. The stop key is inoperative during the execution and a reset is performed at the end of execution.

Use this program to resave your basic programs in a form which is easier for the user and protected from listing.

How to use

1 Enter the program and save it.
2 Run the program. Thenpress any key.
3 Load your basic program from the disk.
4 Type SYS 49329 and press return. Follow the instructions on the screen. When NAME? appear then type the name under which you want to save the new form of your basic program.
5 Now the new form of your basic program is on the disk. In the future, you will load it by LOAD "name",8,1. Execution will follow immediately.

```
100 REM NAME OF PRG= AUTO-RUN ***P.GERARD***SEPTEMBER 85***
110 PRINT"■":I=3:FORJ=5TO35:GOSUB360:NEXTJ:I=22:FORJ=5TO35:GOSUB360:NEXTJ
120 J=5:FORI=3TO22:GOSUB360:NEXTI:J=35:FORI=3TO22:GOSUB360:NEXTI
130 PRINT"■■■■■■■■■■■■■■■■■■■■AUTO-EXEC":PRINT"■■■■";SPC(17);"BY"
140 PRINT"■■■■";SPC(14);"■P.GERARD■":PRINT"■■■";SPC(19);"SEPTEMBER 1985■■"
150 WAIT198,1
160 PRINT"■■THIS PROGRAM ALLOWS YOU TO TRANSFORM  YOUR BASIC PROGRAMS"
170 PRINT"■■■IN SUCH A WAY THAT THEY WILL RUN AUTO-MATICALLY WHEN LOADING."
180 PRINT"■■■■■■■■ PROCEDURE TO FOLLOW■:"
190 PRINT"■■■1 AT THE END OF THE EXECUTION OF THIS PROGRAM,PLACE ";
200 PRINT"THE SOURCE DISK INTO DRIVEAND LOAD YOUR BASIC PROGRAM AS USUAL."
210 PRINT"■■■2 PLACE DESTINATION DISK INTO DRIVE,  THEN TYPE  ■SYS49329■."
220 PRINT"■■■3 WHEN ■NAME■ APPEAR ON THE SCREEN, TYPETHE NAME YOU WANT ";
230 PRINT"FOR THE NEW PROGRAM.  IT WILL BE SAVED ON THE DISK.":GOSUB310
240 PRINT"■LATER ON, YOU MAY LOAD YOUR NEW PROGRAM BY TYPING "
250 PRINT"■■■LOAD ";CHR$(34);"NAME";CHR$(34);",8,1■■■■■■■■":GOSUB310
260 POKE827,0:FORI=828TO830:READA:POKEI,A:NEXTI
270 FORI=844 TO 877 :READA:POKEI,A:NEXTI
280 FORI=49329TO49465:READA:POKEI,A:NEXTI
290 END
300 REM SUB-ROUTINE <TO CONTINUE>
310 PRINT"■TO CONTINUE■ PRESS ="
320 WAIT198,1:GETR$
330 IFR$<>CHR$(61)THEN320
340 RETURN
350 REM DISPLAY * ON THE SCREEN AT ROW I AND COLUMN J
360 K=40*(I-1)+J-1:POKE(1024+K),42:POKE(55296+K),7:RETURN
370 DATA 169,192,96
380 DATA 174,59,3,240,3,76,226,252,162,1,142,59,3,120,169,60
390 DATA 141,40,3,169,3,141,41,3,88,32,94,166,32,142,166,76,174,167
400 DATA 165,43,141,52,3,165,44,141,53,3,169,2,133,43,169,3
410 DATA 133,44,169,76,141,2,3,169,3,141,3,3,32,68,229,24
420 DATA 162,12,160,5,32,240,255,169,7,141,134,2,169,78,32,210
430 DATA 255,169,65,32,210,255,169,77,32,210,255,169,69,32,210,255
440 DATA169,63,32,210,255
450 DATA 160,0,32,207,255,153,132,3,200,201,13,208,245,136,140,54,3,160,1
460 DATA 162,8,169,18,32,186,255,173,54,3,162,132,160,3,32,189,255
470 DATA 174,45,0,172,46,0,169,43,32,216,255,173,52,3,133,43
480 DATA 173,53,3,133,44,169,131,141,2,3,169,164,141,3,3,96
READY.
```

```
A.S.49329/49465N......PAGE 0001

LINE# LOC    CODE         LINE


00001  0000                *=49329
00002  C0B1  A5 2B         BEGIN  LDA 43          ;SAVE TXTTAB
00003  C0B3  8D 34 03              STA 820         ;IN 820/821
00004  C0B6  A5 2C                 LDA 44
00005  C0B8  8D 35 03              STA 821
00006  C0BB  A9 02                 LDA #2          ;TXTTAB=770
00007  C0BD  85 2B                 STA 43
00008  C0BF  A9 03                 LDA #3
00009  C0C1  85 2C                 STA 44
00010  C0C3  A9 4C                 LDA #76         ;IMAIN=844
00011  C0C5  8D 02 03              STA 770
00012  C0C8  A9 03                 LDA #3
00013  C0CA  8D 03 03              STA 771
00014  C0CD  20 44 E5              JSR 58692       ;CLEAR SCREEN
00015  C0D0  18                   CLC             ;CURSOR AT
00016  C0D1  A2 0C                 LDX #12         ;ROW 12
00017  C0D3  A0 05                 LDY #5          ;AND COLUMN 5
00018  C0D5  20 F0 FF              JSR 65520       ;(PLOT)
00019  C0D8  A9 07                 LDA #7          ;CHARACTER COLOR
00020  C0DA  8D 86 02              STA 646         ;IS YELLOW
00021  C0DD  A9 4E                 LDA #78         ;OUTPUT N
00022  C0DF  20 D2 FF              JSR 65490       ;(CHROUT)
00023  C0E2  A9 41                 LDA #65         ;OUTPUT A
00024  C0E4  20 D2 FF              JSR 65490
00025  C0E7  A9 4D                 LDA #77         ;OUTPUT M
00026  C0E9  20 D2 FF              JSR 65490
00027  C0EC  A9 45                 LDA #69         ;OUTPUT E
00028  C0EE  20 D2 FF              JSR 65490
00029  C0F1  A9 3F                 LDA #63         ;OUTPUT ?
00030  C0F3  20 D2 FF              JSR 65490       ;TO THE SCREEN
00031  C0F6  A0 00                 LDY #0          ;INPUT THE NAME
00032  C0F8  20 CF FF     LOOP     JSR 65487       ;OF THE PRG
00033  C0FB  99 34 03              STA 900,Y       ;FROM KEYBOARD
00034  C0FE  C8                   INY
00035  C0FF  C9 0D                 CMP #13
00036  C101  D0 F5                 BNE LOOP
00037  C103  98                   DEY             ;LENGTH OF THE
00038  C104  8C 33 03              STY 822         ;NAME IN 822
00039  C107  A0 01                 LDY #1          ;SA=1
00040  C109  A2 08                 LDX #8          ;DN=8 (DISK)
00041  C10B  A9 10                 LDA #16         ;LFN=16
00042  C10D  20 BA FF              JSR 65466       ;(SETLFS)
00043  C110  AD 33 03              LDA 822         ;RETRIEVE LENGTH
00044  C113  A2 34                 LDX #132        ;AND ADDRESS OF
00045  C115  A0 03                 LDY #3          ;THE NAME
00046  C117  20 BD FF              JSR 65469       ;(SETNAM)
00047  C11A  A6 2D                 LDX 45          ;END OF MEMORY
00048  C11C  A4 2E                 LDY 46          ;TO BE SAVE
00049  C11E  A9 2B                 LDA #43         ;START OF MEMORY
00050  C120  20 D8 FF              JSR 65496       ;(SAVE)
00051  C123  AD 34 03              LDA 820         ;RESTORE TXTTAB
00052  C126  85 2B                 STA 43
00053  C128  AD 35 03              LDA 821
00054  C12B  85 2C                 STA 44
00055  C12D  A5 83                 LDA 131         ;RESTORE IMAIN
```

```
A.S.49329/49465N......PAGE 0002

LINE# LOC   CODE        LINE


00056  C12F  8D 02 03          STA 770
00057  C132  A5 A4             LDA 164
00058  C134  8D 03 03          STA 771
00059  C137  60                RTS
00060  C138                END
```

```
A.S.844/877N......PAGE 0001

LINE# LOC   CODE        LINE


00001  0000              *=844
00002  034C  AE 3B 03    BEGIN  LDX 827          ;CAUSE RESET
00003  034F  F0 03              BEQ FIRST        ;AT THE END
00004  0351  4C E2 FC          JMP 64738        ;OF EXECUTION
00005  0354  A2 01        FIRST  LDX #1
00006  0356  8E 3B 03          STX 827
00007  0359  78          STOP   SEI              ;DESABLE STOP KEY
00008  035A  A9 3C              LDA #60          ;BY SETTING
00009  035C  8D 28 03          STA 808          ;ISTOP=828
00010  035F  A9 03              LDA #3
00011  0361  8D 29 03          STA 809
00012  0364  58                CLI
00013  0365  20 5E A6    RUN    JSR 42590        ;CLR
00014  0368  20 8E A6          JSR 42638        ;TXTPTR=TXTAB-1
00015  036B  4C AE A7          JMP 42926        ;RUN BASIC PRG
00016  036E                END
```

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How to OLD a NEW Program

Ever entered NEW without saving a program? Bob Davis explains how to avoid panic with an OLD routine

Have you ever wondered what it would feel like after spending several hours typing in a program and then entering 'NEW' ... only to realise that you have not saved your program? I'll tell you. As soon as that return key is pressed your heart starts pounding at the same rate as the cursor, blood begins to rush to your head, the dog is sent out of the room ... etc. This can and does happen frequently, particularly around 2 a.m. You need never live with that fear again. OLD is a short routine that can be used AFTER the event provided it is a BASIC program and of course you have not switched off the computer.

How to use.

OLD is entirely in machine code around 100 bytes and will occupy address 49152 onwards. To load the routine a secondary address of 1 will be required. ie LOAD "OLD",1,1 for cassette or LOAD "OLD",8,1 for disk. This ensures the code is loaded precisely into address 49152 onwards. But first, the code needs to be generated.

Listing 1 is a BASIC program. It is NOT the program OLD.

Listing 1 will generate the code and save it for you naming it 'OLD'. Type in the program exactly. Pay particular attention to the data statements as an error will cause the program to crash. Do remember to save it before running. When run, respond to the prompt by pressing T for Tape or D for Disk. If you are using disk, make sure that no other program named OLD is on the disk.

Listing 2 is the 'source' program for OLD. If you have an assembler or a machine code monitor then you assemble OLD directly.

Now you have OLD, let's try it. Switch off the computer and on again. Load a PREVIOUSLY saved basic program (just in case!). Type in NEW and return. Try to LIST and of course there will be nothing there. Now load in OLD. Remember to use the secondary address. Now type in SYS 49152 and return ... Hey presto!

How it works

First a brief explanation on how BASIC programs are stored in the computer.

Take line 10 of Listing 1. The line number (10) is stored in two bytes (two ram memory locations). However, preceding these two bytes are two bytes which contain information for the computer telling it where the NEXT program line begins. These bytes are known as the Link Address Pointers.

Following the two bytes containing the line number, the keyword 'PRINT' is stored in one byte. The quotes and text are stored as ASCII codes in individual bytes. Following the last quote mark a zero value is stored in the next byte. This byte is known as the End of Line Marker. The next two bytes are the Link Address Pointers of line 20 (listing 1) and so on.

After the End of Line Marker of the very last program line there are further two bytes containing zeros. These three consecutive zero bytes indicate the end of the program.

When you 'NEW' a BASIC program, all those Keyword and ASCII codes, Link Address Pointers etc, are not erased but simply the computer places three zeros into the first three bytes of BASIC ram. Various other important pointers within the system are then reset and effectively you have now no program stored.

What 'OLD' does is starting from the first available memory space, search the BASIC text area for three consecutive zero bytes and to restore any corrupt Link Address Pointers on the way. When the three zero bytes are found the remaining pointers are then restored. Then CLR, LIST and RETURN commands are forced to the keyboard buffer and the program ends. The effect is as if you had entered those commands yourself in direct mode. The CLR command ensures the computer resets it's own pointers correctly (mainly locations 43 to 74) and the LIST will list the program for you.

Remember, the listings provided is NOT the program itself. OLD will be generated by those listings and most important of all OLD itself MUST be loaded using a secondary address of 1.

```
1 REM          LISTING 1
2 REM
3 REM
4 REM        *** OLD ***
5 REM
6 REM   (C) B.DAVIS OCT '85
7 REM
10 PRINT"■■■■■ SELECT ■T■APE OR ■D■ISK ?"
20 GETK$:IFK$<>"T"ANDK$<>"D"THEN20
30 IFK$="T"THENPOKE186,1:K$="TAPE":GOTO50
```

```
40 POKE186,8:K$="DISK"
50 PRINT"■■■■ ENSURE THE "K$" IS SET UP":PRINT"■■■■■"
60 RS=49152:RE=49278:CS=0:LN=500
70 READD:IFD<256THENPOKERS,D:RS=RS+1:CS=CS+D:GOTO70
80 IFCS<>DTHENPRINT"DATA ERROR IN LINE ";LN:STOP
90 IFRS<RETHENCS=0:LN=LN+10:GOTO70
100 CS=0:POKE183,3:FORL=0TO2:READD:CS=CS+D:POKE512+L,D:NEXT
110 FORL=0TO3:READD:CS=CS+D:POKE251+L,D:NEXT:READD
115 IFCS<>DTHENPRINT"DATA ERROR IN LINE 610":STOP
120 PRINT" HIT ANY KEY WHEN READY":POKE198,0:WAIT198,1
130 SYS49252:END
500 DATA 32,73,192,160,0,32,87,192,177,251,208,249,1653
510 DATA 32,87,192,165,251,145,43,200,165,252,145,43,1720
520 DATA 32,73,192,32,87,192,160,0,177,251,208,247,1651
530 DATA 200,177,251,208,242,200,177,251,208,237,32,81,2264
540 DATA 192,165,251,133,45,165,252,133,46,160,0,185,1727
550 DATA 94,192,153,119,2,200,192,6,208,245,132,198,1741
560 DATA 96,165,43,133,251,165,44,133,252,32,87,192,1593
570 DATA 32,87,192,230,251,208,2,230,252,96,67,204,1851
580 DATA 58,76,201,13,165,186,170,160,1,32,186,255,1503
590 DATA 165,183,162,0,160,2,32,189,255,166,253,164,1731
600 DATA 254,169,251,32,216,255,96,1273
610 DATA 79,76,68,0,192,127,192,734
READY.
```

```
PAL (C)1979 BRAD TEMPLETON
22
                        ;       LISTING 2
                        ;
                        ;      *** OLD ***
                        ;
                        ;  (C) B.DAVIS OCT '85
                        ;
120:    C000                    .OPT P4
130:    C000                    *=    $C000         ;START OF CODE (49152)
140:    C000            TXTTAB  =     $2B           ;START OF BASIC TEXT
150:    C000            VARTAB  =     $2D           ;START OF BASIC VARIABLES
200:    C000            FREKZP  =     $FB           ;BYTE POINTER (ZERO PAGE)
500:    C000 20 49 C0           JSR   INITBP        ;INITIALISE
570:    C003 A0 00              LDY   #$0
580:    C005 20 57 C0 CHECK1    JSR   UPDTBP        ;FIND FIRST ZERO BYTE
590:    C008 B1 FB              LDA   (FREKZP),Y
600:    C00A D0 F9              BNE   CHECK1
610:    C00C 20 57 C0           JSR   UPDTBP        ;FOUND-RESTORE LINK ADDRESS
620:    C00F A5 FB              LDA   FREKZP
630:    C011 91 2B              STA   (TXTTAB),Y
640:    C013 C8                 INY
650:    C014 A5 FC              LDA   FREKZP+1
660:    C016 91 2B              STA   (TXTTAB),Y
670:    C018 20 49 C0           JSR   INITBP        ;RESTORE FREKZP
680:    C01B 20 57 C0 CHECK2    JSR   UPDTBP        ;FIND THREE ZERO BYTES
700:    C01E A0 00              LDY   #$0
710:    C020 B1 FB              LDA   (FREKZP),Y
720:    C022 D0 F7              BNE   CHECK2
730:    C024 C8                 INY
740:    C025 B1 FB              LDA   (FREKZP),Y
750:    C027 D0 F2              BNE   CHECK2
760:    C029 C8                 INY
770:    C02A B1 FB              LDA   (FREKZP),Y
```

```
780:   C02C D0 ED            BNE  CHECK2
790:   C02E 20 51 C0         JSR  TTUPDT       ;FOUND-RESTORE VARTAB
810:   C031 A5 FB            LDA  FREKZP
820:   C033 85 2D            STA  VARTAB
840:   C035 A5 FC            LDA  FREKZP+1
850:   C037 85 2E            STA  VARTAB+1
860:   C039 A0 00            LDY  #$0          ;SEND CLR/LIST/RETURN TO BUFFER
880:   C03B B9 5E C0 LOOP2   LDA  MSG1,Y
890:   C03E 99 77 02         STA  $0277,Y
900:   C041 C8               INY
910:   C042 C0 06            CPY  #$06
920:   C044 D0 F5            BNE  LOOP2
930:   C046 84 C6            STY  $C6
940:   C048 60               RTS
1400:  C049 A5 2B    INITBP  LDA  TXTTAB       ;INITIALISE FREKZP
1410:  C04B 85 FB            STA  FREKZP
1420:  C04D A5 2C            LDA  TXTTAB+1
1430:  C04F 85 FC            STA  FREKZP+1
1450:  C051 20 57 C0 TTUPDT  JSR  UPDTBP       ;TIMES 3 ROUTINE
1460:  C054 20 57 C0         JSR  UPDTBP
1500:  C057 E6 FB    UPDTBP  INC  FREKZP       ;UP DATE FREKZP
1510:  C059 D0 02            BNE  OVER
1520:  C05B E6 FC            INC  FREKZP+1
1530:  C05D 60       OVER    RTS
1620:  C05E 43 CC 3A MSG1    .ASC "CL:L\"
1630:  C063 0D               .BYT $0D
```

CURSOR CHARACTERS

■ - By pressing the cursor down key
■ - By pressing the cursor down key with the shift key
■ - By pressing the cursor right key
■ - By pressing the cursor right key with the shift key
■ - By pressing the home key
■ - By pressing the home key with the shift key
■ - By pressing the control key and key 1
■ - key 2
■ - key 3
■ - key 4
■ - key 5
■ - key 6
■ - key 7
■ - key 8
■ - By pressing the CBM key with key 1
■ - key 2
■ - key 3 ■ - By pressing key F1
■ - key 4 ■ - By pressing key F2
■ - key 5 ■ - By pressing Key F3
■ - key 6 ■ - By pressing key F4
■ - key 7 ■ - By pressing key F5
■ - key 8 ■ - By pressing key F6
■ - By pressing the control key and key 9. ■ - By pressing key F7
■ - key 0 ■ - By pressing key F8

Descenders on the MPS-801

Depressed by the absence of true descenders on your MPS-801? Stephen Chance has solved the problem with this routine to create user-defined descenders.

When I first bought my MPS-801 printer a year and a half ago, I was well aware that it was without 'true descenders'. This did not bother me as I intended to use it primarily for program listing, and there was no other 80-column printer available at the price. However, I soon discovered the joys of word-processing, and was increasingly irritated by the eye-jarring g,j,p,q and y characters produced.

'Descenders' is my solution to the problem, written to console my wallet as the 801's price tumbled in the autumn.

The routine intercepts any of the offending characters on their way to the serial bus, and replaces them with a user-defined version. The line spacing is altered to 'graphics mode' (ie no gap) and the descenders added on the subsequent line. This produces a format similar to '1 and a half' line spacing on a typewriter.

It should be noted that, as the ribbon in the MPS-801 cartridge is running over the ink-pad whenever the carriage moves to the right, the alternative lines on which only the descenders are printed, combined with the carriage having to make more than one pass for each line when the printer-buffer becomes full, can result in the ribbon becoming over-inked. The easy solution to this is to remove the ink-pad periodically and run the printer without it for a while.

The routine is spliced into the operating-system by altering the 'indirect' vector for entry into the kernal CHROUT routine. This enables it to work with all basic programs using the PRINT # command, and some commercial word-processors the main problem with the latter being to find an area in RAM where it will not be corrupted. I have used the routine in its present location with 'Textpro' (a primitive offering from Centre Software) and my own home-grown word-processor.

The routine is provided as a basic-loader and as source-code from a 'MIKRO' assembler. The routine resides at $COOO-$C179, and is initialised by the following pokes which, if entered in direct mode, should be entered on the same screen line.

POKE 806,0: POKE 807,192

```
DESCENDERS - BASIC LOADER

10 A=49152:B=1000
20 FORZ=0TO31:C=0
30 FORY=0TO11
40 READD:C=C+D:POKEA,D:A=A+1:NEXT
50 READD:IFC<>DTHENGOSUB80
60 B=B+10:NEXT
70 END
80 PRINT"ERROR IN LINE"B:RETURN
1000 DATA 72,165,154,201,3,240,5,144,3,76,16,192,1271
1010 DATA 104,76,202,241,104,141,39,193,72,138,72,152,1534
1020 DATA 72,173,39,193,201,80,208,3,76,101,192,201,1539
1030 DATA 81,208,3,76,127,192,201,71,208,3,76,153,1399
1040 DATA 192,201,74,208,3,76,179,192,201,89,208,3,1626
1050 DATA 76,205,192,201,13,208,3,76,231,192,201,32,1630
1060 DATA 144,19,201,145,240,15,201,146,240,11,174,38,1574
1070 DATA 193,169,32,157,120,193,238,38,193,104,168,104,1709
1080 DATA 170,104,76,221,237,160,7,185,40,193,32,221,1646
1090 DATA 237,185,48,193,174,38,193,157,120,193,238,38,1814
1100 DATA 193,136,16,235,76,32,193,160,7,185,56,193,1482
1110 DATA 32,221,237,185,64,193,174,38,193,157,120,193,1807
1120 DATA 238,38,193,136,16,235,76,32,193,160,7,185,1509
1130 DATA 72,193,32,221,237,185,80,193,174,38,193,157,1775
```

```
1140 DATA 120,193,238,38,193,136,16,235,76,32,193,160,1630
1150 DATA 7,185,88,193,32,221,237,185,96,193,174,38,1649
1160 DATA 193,157,120,193,238,38,193,136,16,235,76,32,1627
1170 DATA 193,160,7,185,104,193,32,221,237,185,112,193,1822
1180 DATA 174,38,193,157,120,193,238,38,193,136,16,235,1731
1190 DATA 76,32,193,169,8,32,221,237,169,13,32,221,1403
1200 DATA 237;169,15,32,221,237,173,38,193,240,17,206,1778
1210 DATA 38,193,162,255,232,189,120,193,32,221,237,236,2108
1220 DATA 38,193,208,244,169,8,32,221,237,169,13,32,1564
1230 DATA 221,237,169,15,32,221,237,169,0,141,38,193,1673
1240 DATA 104,168,104,170,104,96,0,0,15,128,184,196,1269
1250 DATA 196,196,252,8,15,128,128,128,128,128,143,8,1458
1260 DATA 15,128,252,196,196,196,184,8,15,132,143,128,1593
1270 DATA 128,128,128,8,15,128,248,196,196,196,184,8,1563
1280 DATA 15,128,135,136,136,136,136,8,15,128,128,250,1351
1290 DATA 128,128,128,8,15,128,128,135,136,136,136,8,1214
1300 DATA 15,128,128,252,192,192,188,8,15,128,128,135,1509
1310 DATA 136,136,136,8,0,32,0,0,0,0,0,0,448

READY.
```

```
 10 C000          *=$C000
 20 C000          IECOUT       =  $EDDD                    ! OUTPUT BYTE IEC BUS
 25 C000          !** TEST FOR SERIAL BUS OUTPUT **
 30 C000 48                    PHA
 40 C001 A59A                  LDA $9A
 50 C003 C903                  CMP #$03
 60 C005 F005                  BEQ LL1
 70 C007 9003                  BCC LL1
 80 C009 4C10C0                JMP DESCENDER
 90 C00C 68       LL1          PLA
100 C00D 4CCAF1                JMP $F1CA                   ! RETURN TO BSOUT
110 C010          !*** CHECK FOR P,Q,G,J,Y OR CARRIAGE RETURN ***
115 C010 68       DESCENDER    PLA
120 C011 8D27C1                STA ASTORE
130 C014 48                    PHA
140 C015 8A                    TXA
150 C016 48                    PHA
160 C017 98                    TYA
170 C018 48                    PHA
180 C019 AD27C1                LDA ASTORE
190 C01C C950                  CMP #'P                     ! TEST FOR P
200 C01E D003                  BNE LL2
205 C020 4C65C0                JMP PSTRING
210 C023 C951    LL2           CMP #'Q                     ! TEST FOR Q
220 C025 D003                  BNE LL3
225 C027 4C7FC0                JMP QSTRING
230 C02A C947    LL3           CMP #'G                     ! TEST FOR G
240 C02C D003                  BNE LL4
245 C02E 4C99C0                JMP GSTRING
250 C031 C94A    LL4           CMP #'J                     ! TEST FOR J
260 C033 D003                  BNE LL5
265 C035 4CB3C0                JMP JSTRING
270 C038 C959    LL5           CMP #'Y                     ! TEST FOR Y
280 C03A D003                  BNE LL6
285 C03C 4CCDC0                JMP YSTRING
290 C03F C90D    LL6           CMP #13                     ! TEST CARRIAGE RETURN
300 C041 D003                  BNE LL7
305 C043 4CE7C0                JMP ENDSTRING
400 C046 C920    LL7           CMP #32                     ! TEST FOR CONTROL CODE
410 C048 9013                  BCC CODE
420 C04A C991                  CMP #145
430 C04C F00F                  BEQ CODE
440 C04E C992                  CMP #146
450 C050 F00B                  BEQ CODE
1310 C052 AE26C1               LDX DREG
1320 C055 A920                 LDA #32                     ! ADD BLANK TO DOUT
1330 C057 9D78C1               STA DOUT,X
1340 C05A EE26C1               INC DREG
1350 C05D 68     CODE          PLA                         ! PRINT UNCHANGED CHAR.
1360 C05E A8                   TAY
```

```
1370 C05F 68                PLA
1380 C060 AA                TAX
1390 C061 68                PLA
1400 C062 4CDDED            JMP IECOUT
1410 C065                   !**** USER DEFINED P ****
1420 C065 A007   PSTRING    LDY #7
1430 C067 B928C1 PLOOP      LDA PUP,Y
1440 C06A 20DDED            JSR IECOUT
1450 C06D B930C1            LDA PDOWN,Y
1460 C070 AE26C1            LDX DREG
1470 C073 9D78C1            STA DOUT,X
1480 C076 EE26C1            INC DREG
1490 C079 88                DEY
1500 C07A 10EB              BPL PLOOP
1510 C07C 4C20C1            JMP EXIT
1520 C07F                   !**** USER DEFINED Q ****
1530 C07F A007   QSTRING    LDY #7
1540 C081 B938C1 QLOOP      LDA QUP,Y
1550 C084 20DDED            JSR IECOUT
1560 C087 B940C1            LDA QDOWN,Y
1570 C08A AE26C1            LDX DREG
1580 C08D 9D78C1            STA DOUT,X
1590 C090 EE26C1            INC DREG
1600 C093 88                DEY
1610 C094 10EB              BPL QLOOP
1620 C096 4C20C1            JMP EXIT
1630 C099                   !**** USER DEFINED G ****
1640 C099 A007   GSTRING    LDY #7
1650 C09B B948C1 GLOOP      LDA GUP,Y
1660 C09E 20DDED            JSR IECOUT
1670 C0A1 B950C1            LDA GDOWN,Y
1680 C0A4 AE26C1            LDX DREG
1690 C0A7 9D78C1            STA DOUT,X
1700 C0AA EE26C1            INC DREG
1710 C0AD 88                DEY
1720 C0AE 10EB              BPL GLOOP
1730 C0B0 4C20C1            JMP EXIT
1740 C0B3                   !**** USER DEFINED J ****
1750 C0B3 A007   JSTRING    LDY #7
1760 C0B5 B958C1 JLOOP      LDA JUP,Y
1770 C0B8 20DDED            JSR IECOUT
1780 C0BB B960C1            LDA JDOWN,Y
1790 C0BE AE26C1            LDX DREG
1800 C0C1 9D78C1            STA DOUT,X
1810 C0C4 EE26C1            INC DREG
1820 C0C7 88                DEY
1830 C0C8 10EB              BPL JLOOP
1840 C0CA 4C20C1            JMP EXIT
1850 C0CD                   !**** USER DEFINED Y ****
1860 C0CD A007   YSTRING    LDY #7
1870 C0CF B968C1 YLOOP      LDA YUP,Y
1880 C0D2 20DDED            JSR IECOUT
1890 C0D5 B970C1            LDA YDOWN,Y
1900 C0D8 AE26C1            LDX DREG
1910 C0DB 9D78C1            STA DOUT,X
1920 C0DE EE26C1            INC DREG
1930 C0E1 88                DEY
1940 C0E2 10EB              BPL YLOOP
1950 C0E4 4C20C1            JMP EXIT
2000 C0E7                   !**** END OF STRING ****
2020 C0E7 A908   ENDSTRING  LDA #8                  ! GRAPHICS MODE
2040 C0E9 20DDED            JSR IECOUT
2060 C0EC A90D              LDA #13                 ! CARRIAGE RETURN
2080 C0EE 20DDED            JSR IECOUT
2100 C0F1 A90F              LDA #15                 ! TEXT MODE
2120 C0F3 20DDED            JSR IECOUT
2125 C0F6 AD26C1            LDA DREG
2130 C0F9 F011              BEQ LL8
2135 C0FB CE26C1            DEC DREG
2140 C0FE A2FF              LDX #255
2160 C100 E8     DLOOP      INX                     ! OUTPUT DESCENDER LINE
2180 C101 BD78C1            LDA DOUT,X
2200 C104 20DDED            JSR IECOUT
2220 C107 EC26C1            CPX DREG
```

```
2240 C10A D0F4                BNE DLOOP
2260 C10C A908    LL8         LDA #8                    ! GRAPHICS MODE
2280 C10E 20DDED              JSR IECOUT
2300 C111 A90D                LDA #13                   ! CARRIAGE RETURN
2320 C113 20DDED              JSR IECOUT
2340 C116 A90F                LDA #15                   ! TEXT MODE
2360 C118 20DDED              JSR IECOUT
2390 C11B A900                LDA #0
2400 C11D 8D26C1              STA DREG
3000 C120 68      EXIT        PLA
3020 C121 A8                  TAY
3040 C122 68                  PLA
3060 C123 AA                  TAX
3080 C124 68                  PLA
3100 C125 60                  RTS
3120 C126 00      DREG        BYT 0
3140 C127 00      ASTORE      BYT 0
3150 C128         !*** DATA FOR USER-DEFINED GRAPHICS ***
3160 C128 0F80B8 PUP          BYT 15,128,184,196,196,196,252,8
3180 C130 0F8080 PDOWN        BYT 15,128,128,128,128,128,143,8
3200 C138 0F80FC QUP          BYT 15,128,252,196,196,196,184,8
3220 C140 0F848F QDOWN        BYT 15,132,143,128,128,128,128,8
3240 C148 0F80F8 GUP          BYT 15,128,248,196,196,196,184,8
3260 C150 0F8087 GDOWN        BYT 15,128,135,136,136,136,136,8
3280 C158 0F8080 JUP          BYT 15,128,128,250,128,128,128,8
3300 C160 0F8080 JDOWN        BYT 15,128,128,135,136,136,136,8
3320 C168 0F8080 YUP          BYT 15,128,128,252,192,192,188,8
3340 C170 0F8080 YDOWN        BYT 15,128,128,135,136,136,136,8
3360 C178 00      DOUT        BYT 0
```

ATTENTION ALL PROGRAMMERS!!

You may be an experienced programmer – you may be a beginner. Either way, you may have come across some useful tips which could make life easier for other CCI readers.

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Checkpoints and Restarts

The recovery of data and processing after a system failure is as much a problem to micro-users as mainframe users. Len Keighley deals with the problems of re-running a program after it has failed.

One of the major problems in the mainframe computer industry over the years, has been the recovery of data and processing after an equipment failure. This was partially solved by the frequent use of file backups, but this method could never give recovery of the updating done by the program running at the time of failure. With the advent of on-line processing systems the problem increased. A failure during this program could involve the user in re-entry of large amounts of data, and of course there was no guarantee that some of the data had not been missed or duplicated.

The restriction of backup procedures was mainly due to the time slots in which they could be taken (an overnight backup was next to useless when the machine crashed the following afternoon, after nearly a full day's processing).

All this you may think is very interesting, but has no bearing on the micro computer user. However, just because the machine is smaller does not make the problem any the less. For example, the Insurance Broker who uses a micro to store his customer policy details, may only take backup once a day, in the evening like the main-frame user, and he has exactly the same problem if a failure occurs in the following afternoon. The problem is only slightly reduced by the taking of copies twice a day.

The reason for comparing the micro and main-frame user will now become apparent because the mainframe manufacturers' solution to this problem, can be utilised by the micro computer programmer. The main-frame market has labelled these routines as CHECKPOINT's and RESTART's. Some of these routines have been developed to such an extent that a machine failure will not corrupt any data, and processing only partly completed will be backed out to a point BEFORE the failure.

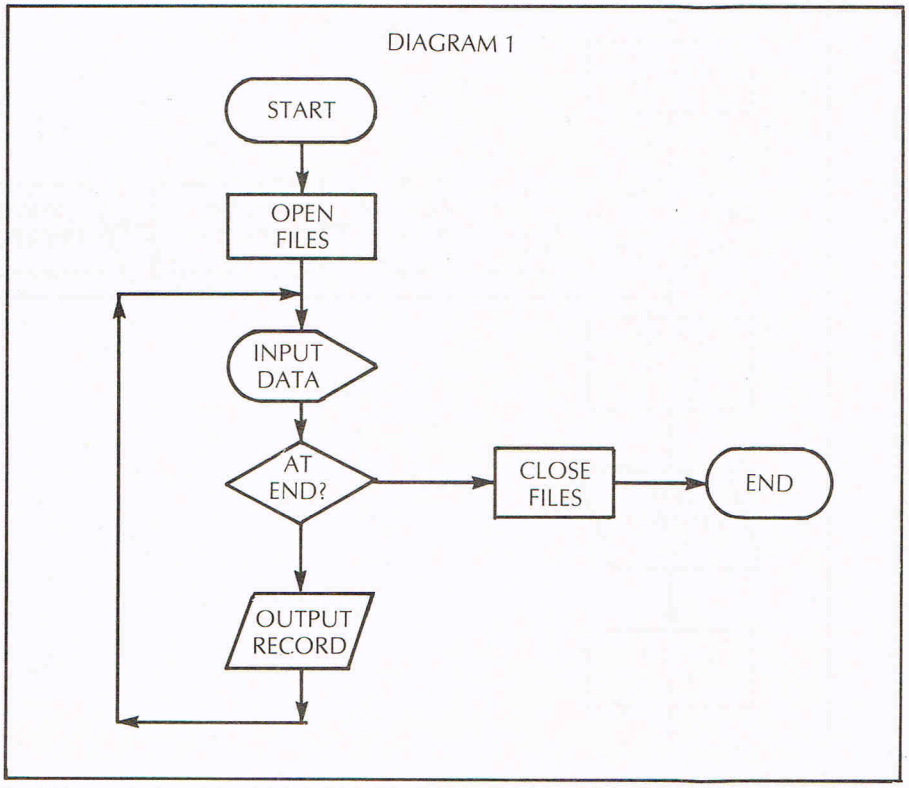
The definition of a Checkpoint, in this context, is a point at which a program takes a 'picture' of the processing and file pointers, before continuing with the main task. A Restart is a routine to read the output of a previous Checkpoint, and from that rebuild the files to a point just before the failure occured. The CHECKPOINT and RESTART procedures that can be used on a file depend on the type of processing that is being actioned on those files. This splits into two seperate categories, Sequential and Random (Indexed/Relative) file accessing.

Sequential

Sequential processing will be dealt with first, as it illustrates how the procedures work before incorporating them into the more complex random file access programs.

The flowchart in Diagram 1, shows the logic required when creating a sequential file from screen input. Only one file is used for output, bu there is no limit to the number allowed, except of course for the restriction on the total number of open files for your computer. The screen input could also be supplemented by any number of input files which may or may not be updated by the program. In other words the combinations are endless.

DIAGRAM 1



It should be noted that no error processing has been included in the flowchart as this would overcomplicate the illustration. As everyone knows, if this program fails or the machine breaks down the whole program will have to be rerun from the beginning. If a Checkpoint is inserted at every 'n' writes, a Restart is then possible, when a failure occurs, to the last Checkpoint. Diagram 2 shows the original flowchart with the processes included. Figures 1 and 2 are the Basic subroutines for the Checkpoint and Restart, with Figure 3 showing a dummy program that uses these routines.

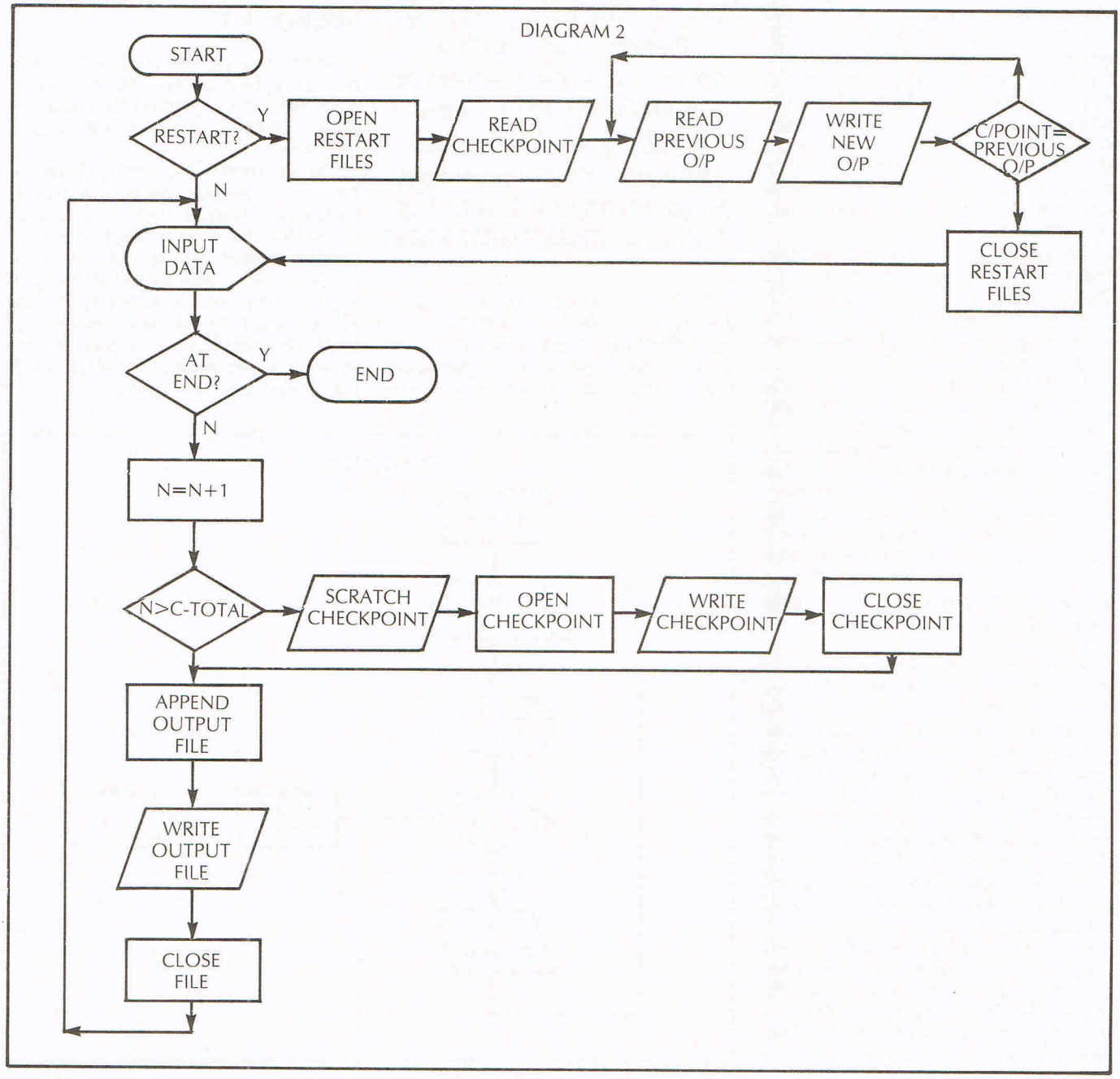
The reason for the Opening and Closing of the output, and it's subsequent appending is simple. If a file is open for writing at the point of failure it is left in an 'open' state by the program and is not accessable by subsequent restart runs. If however, the file is only open while writing is actually being carried out, it allows a failure to occur at any other time without corrupting the file.

As can be seen in both the diagrams and the Basic routines, only the last checkpoint record need be kept. The only failure that can now cause a full rerun of the program, would be the loss or corruption of the Checkpoint file itself. Deletions will cause no problem, as the Checkpoint key is that of the output file and a deleted record will not appear on this file. If the Checkpoint count is set, for example, at 20 records then the maximum processing that could be lost is that of the last 19 writes.

Obviously the loss depends on what actions are being carried out at the time. If the program was in a long process of file copying then the loss is only time, as processing would take up at the last checkpoint and continue with the copy. If, on the other hand, each of the 19 records had been updated the change must again be applied. This however, suggests that 20 would be too high a number for the 'Hit Rate' of the update and a smaller value would be required.

The example shown has only one output file and the user creates each record throughout the run. This is obviously a very oversimplified case and a more complex pattern would be used in real life. However, the principle is the same and the only point that must be taken into account, is that any data input since the Checkpoint will need to be input again. Therefore it is advisable to take a print dump of the Checkpoint record before commencing the Restart so that the data entered by keyboard starts at the correct point also, or as in the example display the point of restart with file keys for identification.

DIAGRAM 2



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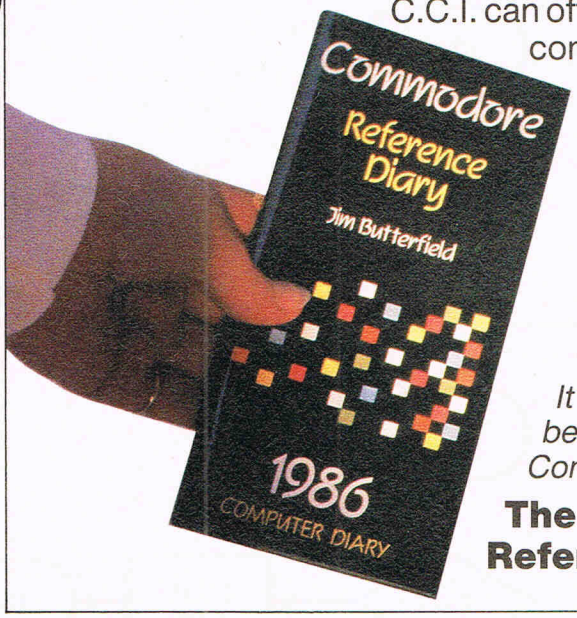

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Random (Indexed/ Relative) Access.

The random accessing of files for update is more complex to secure than sequential, whether it is used in Batch or On-line processing environment.

The first step is to keep a backup version of the file or files that are currently being updated, and as this should be done in any case, it does not pose any extra workload.

Due to the nature of transaction processing being random in its updating, as well as it's accessing, the previous solution used for sequentail files is obviously not viable. However, the title 'Transaction processing' gives a clue to the method by which a security procedure can be derived. A 'Transaction' is defined as an autonomous unit of data, that when actioned agaist the files, leaves them in a consistant state.

This sounds highly complex but simply means that if a failure occurs during a 'transaction', the files will have been left in a corrupt state. Therefore it is only the 'transaction' currently being processed at the failure point that causes a problem, all the rest having been completed, need not be touched. Unfortunately there is no way (on micro computers) in which this can be secured. However, there is a method by which the file can be recreated to a position just before the fatal transaction.

During a 'transaction' all updated random file records have two images, a 'Before' image and an 'After' image. If the key to the record and the 'After' image only, are written to a security file, they may then be used, when a failure occurs, to recreate the file to a point just before the corruption. In additon to the 'After' images a tally is required to show how many successful 'After' images have been written to the backup file. This is then used when restoring the file, to stop the updating when the last completed transaction has been commited.

When a failure occurs the procedure to recreate the files is as follows.

1. Restore the required file(s) from the previously taken backup(s).
2. Read the security file and apply the after images up to the failed transaction.

This will leave the file at the point just before the error and the user program can then be restarted from this point. The means by which this is carried out are very specific and are seen more clearly in the diagrams (4 & 5). It should be noted that some of the 'After' records may be stored at any point in the transaction. At the point the transaction is complete the tally is written to the checkpoint file. When actioning a rerun, the program will read the Checkpoint file and then apply the 'After' images to the file up to that point. Diagram 4 shows the flowchart for a normal on-line update program, and Diagram 5 shows the same with the Checkpoint/Restart included.

The Basic used in these examples is a standard Commodore version, release 4.0, but should, with only minor amendments transfer to any other machine. The savings that these routines make possible depends on your usage and on the sensitivity of your data. It should be emphasised however, that they do not give total protection. There are two failures that would still require a complete rerun of the program. These are

1. A program failure while writing a record.
2. A floppy disk failure or corruption.

The second of these areas can be minimised by firstly storing the Checkpoint and Backup files on different disc drives, and secondly by interpreting the DOS error messages in your own programs. The given examples only display the error message, but it could also initiate an orderly closedown of the files. These areas are however, small when compared with the potential failure points in other areas of the program.

DIAGRAM 4

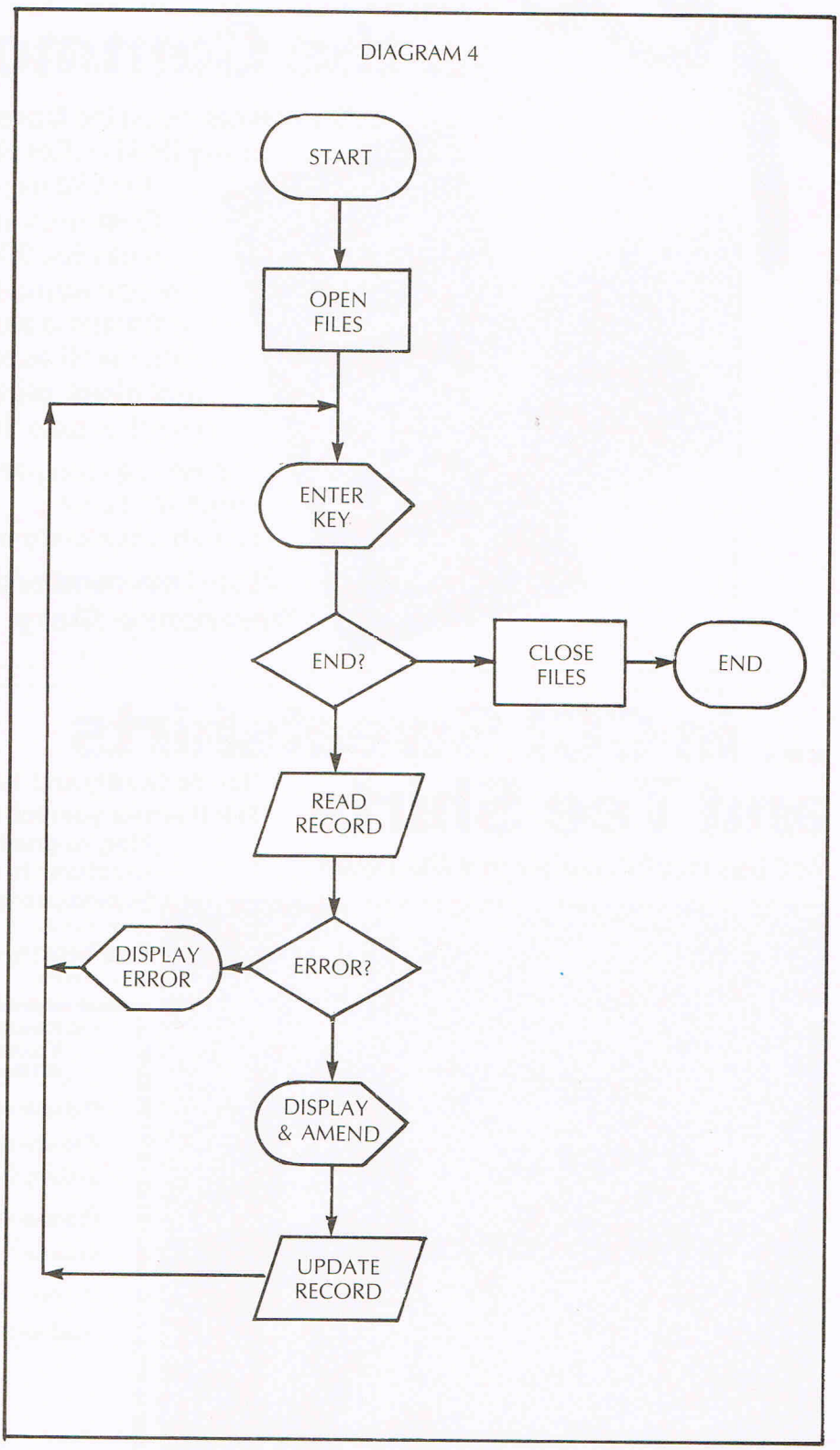


DIAGRAM 5

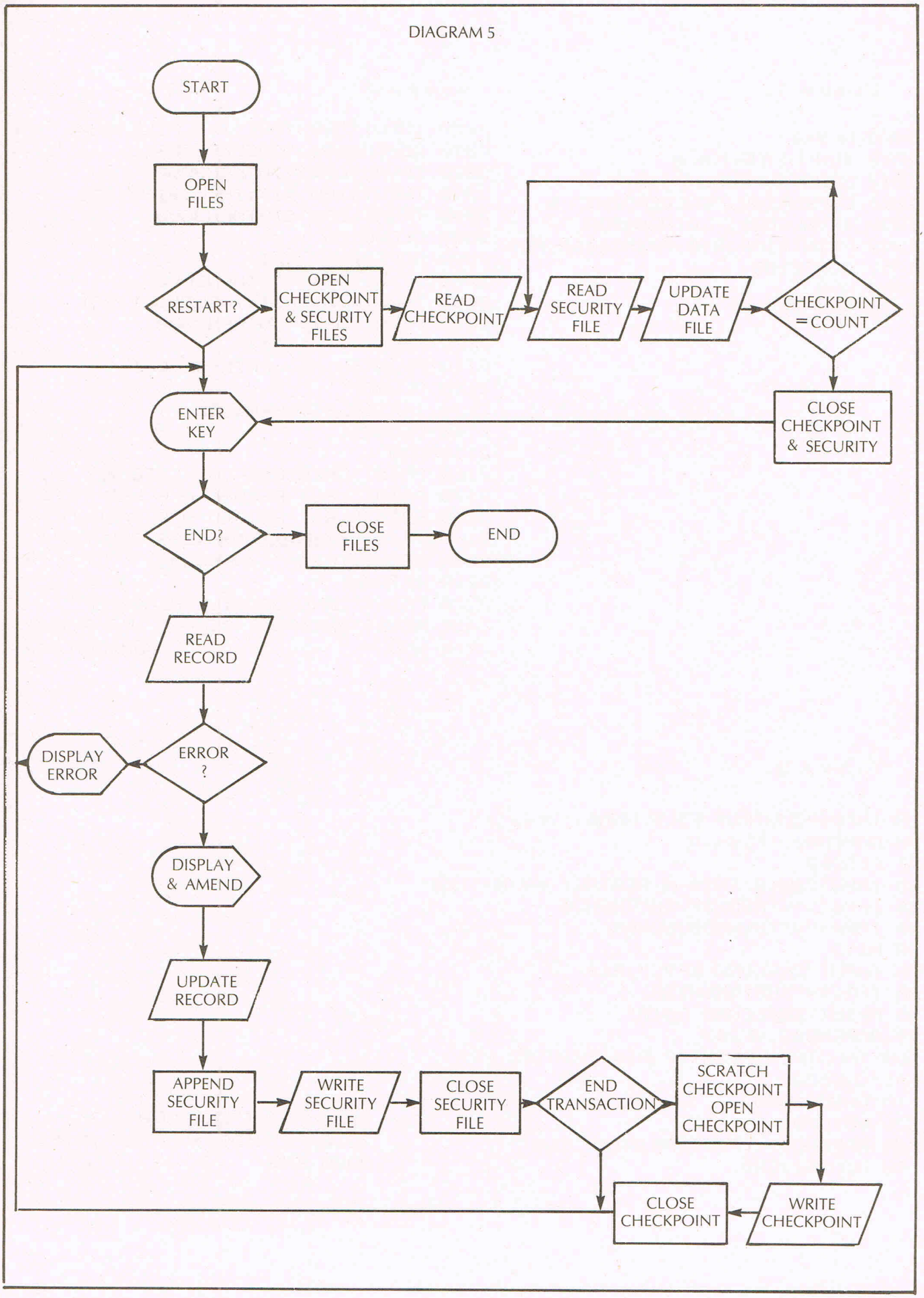

START
OPEN FILES
RESTART?
OPEN CHECKPOINT & SECURITY FILES
READ CHECKPOINT
READ SECURITY FILE
UPDATE DATA FILE
CHECKPOINT = COUNT
CLOSE CHECKPOINT & SECURITY
ENTER KEY
END?
CLOSE FILES
END
READ RECORD
DISPLAY ERROR
ERROR ?
DISPLAY & AMEND
UPDATE RECORD
APPEND SECURITY FILE
WRITE SECURITY FILE
CLOSE SECURITY FILE
END TRANSACTION
SCRATCH CHECKPOINT OPEN CHECKPOINT
CLOSE CHECKPOINT
WRITE CHECKPOINT

Figure 1.

```
1000 N=N+1
1010 IFN<N1THEN1070
1012 SCRATCH"CHECKPOINT"
1020 DOPEN#100,"CHECKPOINT",W
1030 IFVAL(DS$)<>0THEN3000
1040 PRINT#100,R1$:PRINT#100,R2$
1050 CLOSE100
1060 N=0
1070 RETURN
```

Figure 2.

```
2000 INPUT"■RESTART I/P FILE NAME";F$
2010 DOPEN#100,"CHECKPOINT"
2020 IFVAL(DS$)<>0THEN3000
2030 INPUT#100,R1$:INPUT#100,R2$
2040 IFVAL(DS$)<>0THEN3000
2050 CLOSE100
2060 DOPEN#101,(F$)
2070 IFVAL(DS$)<>0THEN3000
2080 INPUT#101,R5$:INPUT#101,R6$
2090 IFVAL(DS$)<>0THEN3000
2100 APPEND#2,(F2$)
2110 PRINT#2,R5$:PRINT#2,R6$
2120 CLOSE2
2130 IFR1$<>R5$THEN2080
2140 CLOSE11
2150 N=0
2160 PRINT"■RESTART COMPLETED■"
2170 PRINT"LAST RECORD O/P KEY "R1$
2180 PRINT"LAST RECORD O/P DATA "R2$
2190 PRINT"■■■■■■■■■■PRESS ANY KEY"
2200 GETX$:IFX$=""THEN2200
2210 RETURN
2220 PRINT"■END OF FILE REACHED"
2230 PRINT"■RESTART RECORD NOT FOUND -
2240 END                    ABANDON RUN"
```

Figure 3.

```
10 INPUT"■OUTPUT FILE NAME ";F2$
20 DOPEN#2,(F2$),W
21 CLOSE2
30 INPUT"■■IS THIS A RESTART (Y/N)";X$
40 IFX$<>"Y"ANDX$<>"N"THEN30
50 IFX$="Y"THENGOSUB2000
60 N1=3
70 INPUT"■RECORD KEY ";R1$
80 IFR1$="END"THEN130
90 PRINT"■■RECORD DATA"
99 APPEND#2,(F2$)
100 INPUTR2$:PRINT#2,R1$:PRINT#2,R2$
101 CLOSE2
110 GOSUB1000
120 GOTO70
130 APPEND#2,(F2$):PRINT#2,"EOF"
140 CLOSE2:END
3000 PRINT"■ERROR■"
3010 PRINTDS$;" F1$=";F1$
3020 END
```

Figure 4

```
1000 APPEND#100,(F1$)
1010 IFVAL(DS$)<>0THEN3000
1020 R1$=STR$(R)
1030 X$=R1$+"*"+R2$
1040 PRINT#100,X$
1050 IFVAL(DS$)<>0THEN3000
1060 CLOSE100
1070 SCRATCH"CHECKPOINT"
1080 DOPEN#102,"CHECKPOINT",W
1090 IFVAL(DS$)<>0THEN3000
1100 PRINT#102,C
1110 CLOSE102
1120 RETURN
```

Figure 5

```
2000 INPUT"RESTART FILE NAME ";F2$
2010 DOPEN#101,(F2$)
2020 IFVAL(DS$)<>0THEN3000
2030 DOPEN#102,"CHECKPOINT"
2040 IFVAL(DS$)<>0THEN3000
2050 INPUT#102,C1
2060 IFVAL(DS$)<>0THEN3000
2070 CLOSE102
2080 INPUT#101,X$
2090 FORX=1TOLEN(X$)
2100 IFMID$(X$,X,1)="*"THEN2140
2110 NEXTX
2120 PRINT"ERROR-RESTART FILE CORRUPT -
2130 END                    CANNOT    RESTART"
2140 R1$=LEFT$(X$,X-1)
2150 R2$=RIGHT$(X$,LEN(X$)-X)
2160 R=VAL(R1$)
2170 RECORD#1,(R)
2180 IFVAL(DS$)<>0THEN3000
2190 PRINT#1,R2$
2200 IFVAL(DS$)<>0THEN3000
2210 GOSUB1000
2220 C=C+1
2230 IFC=C1THEN2250
2240 GOTO2080
2250 PRINT"RESTART COMPLETED"
2260 PRINT"LAST RECORD UPDATED"
2270 PRINTR2$
2280 CLOSE101
2290 RETURN
```

Figure 6

```
10 INPUT"FILE NAME ";F$
20 DOPEN#1,(F$)
30 IFVAL(DS$)<>0THEN3000
40 INPUT"BACKUP FILE NAME ";F1$
50 DOPEN#100,(F1$),W:CLOSE100
60 IFVAL(DS$)<>0THEN3000
70 PRINT"IS A RESTART REQUIRED"
80 GETX$:IFX$=""THEN80
90 IFX$<>"Y"ANDX$<>"N"THEN80
100 IFX$="Y"THENGOSUB2000
110 INPUT"ENTER RECORD NUMBER ";R
111 IFR=0THENPRINT"":END
120 IFR>20THEN110
130 RECORD#1,(R)
140 IFVAL(DS$)<>0THEN3000
150 PRINT"ENTER REQUIRED DATA"
160 INPUTR2$
170 IFLEN(R2$)>25THEN150
180 PRINT#1,R2$
190 C=C+1
200 GOSUB1000
210 GOTO110

3000 PRINT"ERROR"
3010 PRINTDS$
3020 END
```

Hitting The Right Notes:

Joreth Update

Just how easy is it to make music with MIDI? Ian Waugh and his synthesiser plug into Joreth's latest software. Will they make beautiful music together? Read on and find out.

Six whole months have passed by since we first looked at the Joreth Music Composer System. It generally got the thumbs up – and deservedly so – but Joreth have not been resting on their laurels. They have been busy developing new software to compliment the Music Composer System. Let's see what they've been up to.

First of all, they have improved upon the original MCS package. We won't go over the ground which was covered in the May issue but just mention a few of the updates. Many may seem quite trivial, such as drawing the screen faster and designing better screen symbols, but it's little things like that which can niggle. Improvements have been implemented in the Real-Time, Composer and Score Writer modules. The Create function has been modified, too, to include slurs. All of which makes the package even better than it was before. It costs £244.90 and present users can obtain the update details for an SAE or the updated software for a nominal £10 inc VAT (and your old disk, of course).

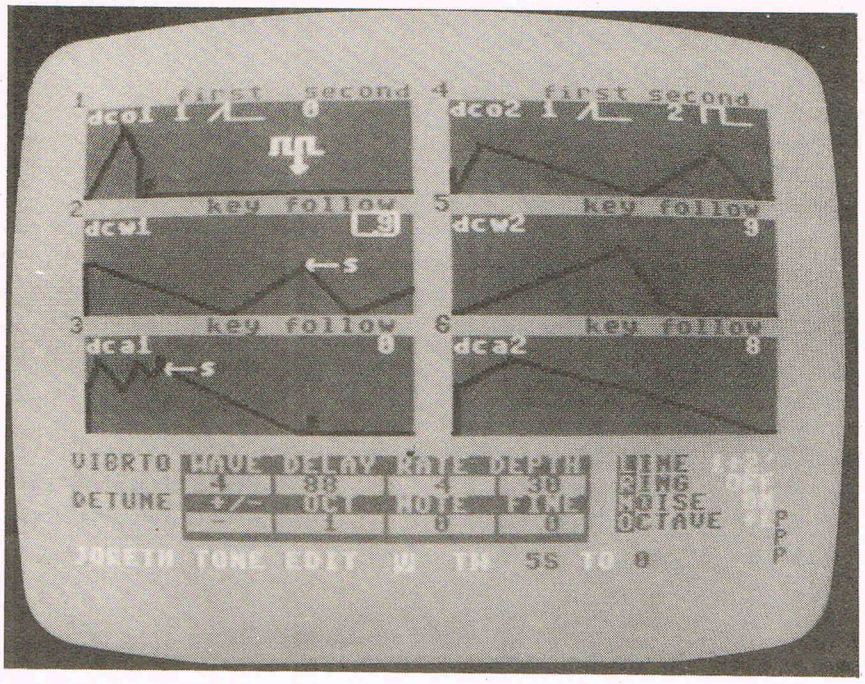
"Load in real-time files"

Another goody for MCS users is the Part Loader program which retails at £14.95. This is loaded into the main MCS program while in the EDIT mode of the Composer. It replaces the Composer segment but this can be reloaded without a full system load. The Part Loader simply allows you to load in real-time files, part by part, from a number of disks if necessary. They can then be saved in their entirety from the real-time system. Many musicians who compose and perform music with MIDI software find it easy to build up pieces part by part. The Part Loader now enables them to sort their parts into a whole, a process which may previously have been impossible or time-consuming.

Yet another program for the MCS user is the Key Programmer, again at £14.95. This allows you input music in any key – or even no key if you're undecided – and select another key for printout at a later date. Another aid for the musician.

Now for something a little different. This is Joreth's Tone Editor (RRP £44.85) for Casio's CZ synthesisers: the CZ-101, CZ-1000 and CZ-5000. It can be used either independantly or from within the MCS. It's purpose is to make easier the task of creating and altering the CZ's banks of voices. The CZ series is not as difficult to program as Yamaha's DX synthesisers (for which several companies have already released tone editor programs) but it can be a bit frustrating at times.

The Tone Editor lets you load and save tones to and from disk and it lets you swap them to and from the Commodore and the synthesiser. This alone could save you a small fortune in cartridges and it's far easier to press a few buttons to load a new sound than to dig out the patch chart and re-program a voice.



"A picture is worth a thousand volume levels"

The most interesting screen, however, is the Edit screen. This presents a graphic display of all six envelopes. As old-time analogue synthesiser programmers will know, a picture is worth a thousand volume levels. This single advantage apart, the sounds can be edited from the computer and the results played immediately upon the synthesiser. Until you try it, you won't know what you're missing. Compared with editing a sound on the CZ itself, this is like rolling down a hill – or falling off a log if your similies are up to it.

Most editing functions require the minimum of key presses, for example, to enter a two digit number you do not have to press RETURN. Other keys cycle through a list of options such as Line Select (output lines), Vibrato and Octave and others toggle functions on and off.

The Appendix lists snippets of technical information such as the relationship between the Rate value and time and the true vibrato speed produced by the Vibrato Rate. Heady stuff, but it can only help you get more from your synth.

There are also commands to help automatically with the alteration of Level and Rate which CZ users will appreciate.

The only sore point was the manual. It sort of leaves you to get on with it yourself. The penny does drop eventually but it took a while. It would have been nice to see some editing examples worked through - for thick reviewers if no-one else. Having said that, once you get into it, it's very easy to get along with.

Using the program made me delve a bit further into Casio's Phase Distortion method of synthesis and I actually got around to programming a few voices I'd been meaning to do for quite a while. I also pinched a few off the disk - some nice sounds there, too.

What else can I say. I want one! All these programs require Joreth's AL25 MIDI interface which is part of the Music Composer System package. Most manufacturers produce their own interface and generally one man's software will not work with another man's hardware. The Joreth interface is no exception. Musicians, therefore, are usually forced to buy software from one company to ensure compatibility with their interface. MIDI may be an international standard but no-one thought of standardising the interfaces.

That gripe aside – and it's by no means directed at any one company – I confess that the Joreth interface puts most others to shame. It is a professional piece of equipment, it is very smartly designed, produced and finished. Proper cables and connectors are supplied and it just gives off an air of competence. It has three MIDI OUTs, SYNC IN and OUT and a few other switches and buttons, all designed to make your life easier. Full marks there. Yes, I love the interface, too.

If you have a commodore and are wondering which MIDI interface and software to plumb for – check out Joreth. I think you'll like it.

Contact: Joreth Music, PO Box 20, Evesham, Worcs., WR11 5EG. Tel: 0386 831615.

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Super Graphix

Computer and printer incompatibility rears its ugly head, but Ian Waugh and Xetec go to the rescue - damsels, white knights and screen dumps first.

I had a problem. My GP could'nt help - it wasn't that sort of problem - but a few headache pills didn't go amiss. The programs was this: I have several problems for the Commodore 64 which have print options. Fine if you have a Commodore printer but I don't. I have an Epson printer which I use with more than one computer, usually without trouble. Commodore computers, however, won't talk to Epson printers.

The solution was either to buy a Commodore printer - which seemed rather silly when I already have a better printer - or to try one of those clever little gizmos which make the computer think it's connected to a Commodore printer. Xetec produce one called Super Graphix which retails for £49.95. You can use it with the VIC, too.

The interface itself is housed in a neat flat case. A centronics plug plugs into the printer and a DIN plug plugs into the computer's serial port or the back of your disk drive. A flying lead from this plug fits into the cassette port and datasette plug plugs into this. After all the plugs have been plugged in you're all set to print. The wires, plug and flying lead looked a little fragile and I would have preferred something a bit more substantial, but as long as you don't yank them they'll probably be okay.

"Compatible with a wide range of printers"

The interface is compatible with a wide range of printers: Axiom, Banana (Banana?), Blue Chip, BMC, Legend, C-Itoh, all Daisy Wheels, Delta, Diablo, Epsons of course, Gemini, NEC, Mannesmann, Okidata, Panasonic, Prowriter, Radix, Riteman and Siekosha. In fact, you'd be pretty lucky to find a printer that was incompatible with the interface.

The printer type is set on three of eight DIP switches on the top of the Graphix. A fourth switch allows you to set the device number to 4 or 5. Another two switches select the print mode and another two are used for font selection. Not simply a 1525 emulator this little interface, I thought.

Let's look at the Modes. There is a 1525 Emulation Mode, of course, which makes your printer act like a 1525, except perhaps for being faster and printing better. The SuperGraphix Mode is similar but it turns on just about everything that the interface can do including all the listing modes, ASCII conversion and font selection. ASCII Conversion Mode turns off nearly all the interface's features except for the command chanel and the conversion from PET ASCII to standard ASCII. The Transparent Mode passes all information straight through the interface. You would use this, for example, if a program had an option for your kind of printer.

"User-selectable fonts"

The other two switches select the font. There's normal printing, NLQ and two user selectable fonts - more of this in a moment.

I'll mention the manual now because it's at about this point that you need to mug up on all the features the Graphix has to offer. If you'd been puzzled by secondary addresses, puzzle no more because the manual explains all. These allow selection of such options as Upper Case or Upper/Lower case text and graphics, hex dump, transparent mode and Upper or Upper/Lower case screen dumps. Auto line feeds are selectable and the interface can be locked into a mode.

Then there's the command channel with another 23 options. These include changing the way BASIC programs are listed. You can list them, graphics characters and all, or select mnemonics, eg. [CLR] for clear screen. Another option will print the keystrokes required to produce a character, eg. [SS] means shift and S and [C*] means the C key and *. You can also opt for an ASCII code print out, too. Brilliant, I call it.

You can send 24 Escape codes through the Super Graphix to select such printer options as pica and elite print, underlining, boldface, super- and sub-scripts and compress and expand modes.

"Absolutely marvellous fonts"

What else could you want from an interface? What? Different typefaces? Ah yes! Fonts, we call them and the Graphix has these, too. The Super Graphix Utility Disk holds 21 extra fonts. These can be downloaded into the interface's buffer RAM into two user-selectable fonts. An excellent program called Creator allows you to create and edit your own fonts, too. Some of the supplied fonts are absolutely marvellous.

Is there more? Yes. There isn't room to mention the high - and low-resolution screen dump programs, the font-retention feature (no batteries required), the BK buffer, the complete and easy to understand manual, the excellent references and trouble-shooting guide in the appendices.

The Super Graphix is probably a good reason for not buying a Commodore printer. If you already have a printer which your Commodore won't talk to, the Super Graphix will happily act as interpreter and give you umpteen extra facilities, too.

Good? You bet!

Contact: Screens Mircocomputer Distribution, 6 Main Avenue, Moor Park, Northwood, Middlesex. Tel: 09274 20664.

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An Alternative to Old slowcoach

Triton's Quick Disc Drive certainly operates much faster than the 1541, but is it a real alternative? Tony Lydeard investigates.

Hands up all those 1541 owners who've never wished that their disks would load just a teensy bit quicker. What, never? Not even once? There had to be one, I suppose. The rest of you will be able to imagine my eager anticipation when I was asked to have a look at the new Triton Quick Disc drive. Not just an alternative to Old Slowcoach, but one that actually bragged about its speed. I could hardly wait to pop my disks into its little mouth and load my programs in the twinkling of an eye.

The QD loads programs quickly - there's no doubt about that. The demonstration disk that accompanied it contained a game that I already own (Sooper Froot - a fruit machine simulator that doesn't normally see the light of day very often!). Loading the game from the 1541 takes 50 secs. From the QD it takes a mere 4.5 secs, a quite dramatic improvement (it doesn't make the game any more exciting once it's loaded - but that's not what the exercise was all about). Before you fill that cheque in and rush off to the Post Office, I suppose I ought to mention that there is a snag. Well, more than one, actually...

Problems running commercial software

Firstly, the QD doesn't take 5¼ inch disks. It uses a 2.8 inch double-sided disk with a capacity of 100 Kbytes. (It's only a single sided drive, though, so the disk is effectively two separate 50K disks - less than a machineful.) Whilst this in itself need not be a desperate problem to those who want a disk drive to save and load their own programs (I assume that the things are on sale somewhere), it does make things a little inconvenient if you were planning to run commercial software. Radofin, the UK distributors of the QD, tell me that they have not made arrangements with any software houses to publish in the new medium.

The second problem with using the QD is that it does not have a device number so cannot be accessed in the normal way. Perhaps it would be easier to tell you what it can do:

What it can do

The QD consists of two plastic boxes connected by a lead. The interface unit is 12cm x 11cm x 4cm and connects to the 64/128 via the cartridge slot. There is a slot at the back of the interface for the insertion of a second unit but the manual advises against putting other cartridges into it, so don't plan on using the QD in conjunction with your Simon's BASIC cartridge. The drive itself is 22cm x 25cm x6cm with a little door in the top into which the disclet goes and a power switch on the front. If you were to set up a twin drive system, you would end up with an L-shaped computer 40cm wide by 44cm deep and 1100 sq cm of disk drive area. In comparison, the 1541's not inconsiderable footprint starts to look positively dainty.

QD's operating system, T-DOS, is loaded automatically from the cartridge, but must be activated by SYS 32768. Once in this mode, normal BASIC commands can be issued as well as the special T-DOS commands. These are @FORMAT, @SAVE, @LOAD, all of which are self explanatory; @DIR which loads the disk directory without overwriting BASIC programs; @ASAVE and @ALOAD, which save and load arrays; @WRITE, which saves a machine code program (you need to define the start, end and execute addresses); @RUN, which loads and autoruns a program; @KILL, which deletes a file; @COPY, which copies a file from one QD to another; @ACOPY, which makes a backup copy using two drives;@CASSCOPY, which copies files from cassette to QD and @QUIT, which exits T-DOS and returns you to normal BASIC. This last command is necessary if you are writing a program that incorporates any T-DOS commands, since these would otherwise be autioned immediately.

As far as speed is concerned, the QD is about 5% quicker than the 1541 on saving a 3K BASIC program but about 65% quicker on reloading it. This discrepancy is probably due to the fact that the QD automatically verifies anything it saves. On the evidence of "Sooper Froot", it is even quicker with machine code. A word of warning to m/c programmers, though:- T-DOS resides in the normal cartridge area so can be avoided, but it also uses the space just above C000 as workspace.

The documentation provided with the unit consists of a 20-page A5 booklet of which nine pages are devoted to actual programming information. There is no hint of the possibility of low-level access or of how to implement serial or random access data files.

Taken overall, the Triton QD failed to impress. At half its price of £119.95, it might be a useful alternative to a datasette for programming purposes. As it stands, it is only likely to find favour with dedicated Sooper Froot fanatics.

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Finnish 64 owner looking for penpals. Male or female, must own a disk drive. Post your letters etc to me as soon as possible. All letters answered!!! Timo Kouhia, Rauhankallio, 08680 Muijala, Finland.

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