

Only 75p.

Commodore

September 1984

HORIZONS

EXPLORE MICRONET
AND COMPUNET

JOYSTICKS
REVIEW



INTRODUCING
DISK DRIVES

WIN £250
of QS
software



AMERICAN

Big, Bold and Beautiful...



ASTRO CHASE



commodore



34 SCREENS

Atmosphere and Action Adventure
 - Most Intensive Action, 1983
 Software Museum, Chicago, USA
 Computer Entry of the Month
 The Editor's Choice Award, September, 1984
 British Future Fantasy Game of the
 Year, 1984
 American Future, September, 1984



Flip & Flop



commodore



56 SCREENS



Flip & Flop and Flip are the
 Suggs and Alton the Monkey in
 their circus from the wonderful future
 to save their friends back at the circus.
 Great atmosphere, 60 levels of play, 16
 different game systems, 160
 uncoloured levels, 1000 pictures
 and music and more... AmigaWorld
 made you flip!

Cassette £8-95
 Disk £10-95



commodore

Really Something Else.



State soft in association with First Star, N.York, USA.
 STATE SOFT LIMITED,
 BUSINESS AND TECHNOLOGY CENTRE,
 REMEMER DRIVE,
 STEVENAGE, HERTS. TEL: 0438 30591



Commodore HORIZONS

Editor
Brandon Cain

Assistant Editor
Christopher Jenkins

Editorial Secretary
Gardeline Smith

Group Advertisement Manager
David Lake

Advertisement Manager
Janey Kite

Administration
Theresa Lacy

Managing Editor
Duncan Scott

Publishing Director
Jenny Ireland

Telephone Number
(all departments)
01-407 4340

UK address

Commodore Horizons, 12-13 Lisle
Newport Street, London WC2R 2LJ.

US address

Commodore Horizons, c/o Business
Press International, 205 East 42nd
Street, New York, NY 10017.

Subscriptions

UK £18.00 for 12 issues, overseas
surface (including US and Canada)
£26.00 for 12 issues, US and Canada air-
mailed US\$31.95 for 12 issues.

Submitting articles

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



Commodore Horizons is published monthly by Sunshine Books, Sun Press Ltd, Tyrone by In-Step Ltd, 1441 Haddington Street, London EC1. Printed by Riverside Press Ltd, Thames Way, Whitehouse, Kent. Distributed by NM Distribution, 16-18 Trinity Gardens, London SW9 telephone 01-774 8611, telex 281233, 0000 0264-0264. Registered at the Post Office as a newspaper. © Sunshine Books 1984.

CONTENTS

Letters	5	New Games	29
Brandon Cain looks for software designed for the handicapped; some useful programming tips; and the latest contributions to the chat debate		Bebble (Bus programmer Richard Clark provides this month's Vic 20 specialiser, Mission K. Will you survive this space epic?)	
News	6	Games software	29
Tramiel's plans for Atari, a special report from Commodore's new Corey factory, and a new feature — a round-up of the latest software releases			
The disk companion	10	Free Corrad takes on the hoodies of Hell and braves the slippery ski-slopes	
A beginner's guide to using the 1041 disk drive, based on the book by David Lawrence and Mark England. New owners start here!		Extra memory for the 64	30
Modems and networks	18	It's only 1K, but it could make all the difference. David Robson shows you how	
Robin Wilkinson takes a detailed look at the two most popular networks, Modems and Computer — what can they do for you?		Software file	41
Profile	20	Free own Vic and 64 listings, plus missing files from August's "Minors"	
Chris Jenkins takes what may be a final trip to Commodore's Slough HQ, and gets the hard facts about Vic20 from Jane Richardson		Imprint	49
Joystick jury	20	The first of a new series of book reviews on the Commodore micro	
		Sunshine books competition	48
Zap-happy David Fox works out with the latest selection of shooting-iron — which joystick is the best after-Master, and which gun shot down in flames?		The first of this month's two contests — win a complete set of Sunshine books	
		Answer Book	53
		Technical expert Jack Cohen takes on the latest batch of readers' problems	
		Discount Club	53
		Another new feature — Superdell software at fabulous discounts	
		Competition	58
		Twenty lucky winners will receive C64 64 games from Quicksilver software	

EDITORIAL

JACK TRAMIEL IS not renowned for being a forgiving man. He is a gregarious character who built up Commodore from nothing to a multi-million pound company. Commodore was very much his personal fief.

Thus it was a considerable surprise when Tramiel announced his resignation as Commodore's president and chief executive in January this year. At the time he claimed that he was resigning for "personal reasons" and that there was no animosity between him and the remaining members of the Commodore board. However, subsequent reports suggest that there was an acrimonious split between Tramiel and Commodore chairman Irving Gould over Tramiel's desire to bring his sons into the business.

But, following his purchase of Atari for \$240m, Tramiel is back. And the company strong in his sight now is undoubtedly Commodore.

Whether Tramiel can repeat his extraordinary success with Atari remains to be seen, but he has certainly given Commodore something to think about. Atari lost some \$100m in 1983, but two years ago it was the hottest property on the microcomputer scene and worth more than \$1.5bn. With manufacturing plants in the US, Hong Kong, Singapore and Taiwan, Atari is one of the few companies which could match Commodore's volume of production.

Tramiel has already given notice that he intends to move fast by laying off several hundred of Atari's Californian workhorses. Some industry observers now expect Atari to drop the price of its 80081 micro, putting it in direct competition with the Commodore 64.

Commodore has now reacted by taking out an injunction against four of its ex-employees who have joined Tramiel at Atari. The injunction prevents the four engineers from "using or disclosing in any manner whatsoever any trade secrets or proprietary or confidential information belonging to Commodore".

The stage is now set for a head-on clash between the two companies — and to the victor will go the spoils.

**NEWS
DESK**

K-Tel change

RECORD and software distributors K-Tel are to set up a new software subsidiary.

The Frost-Kamner label will be launched in September with two games, one of which, *Scram Warrior*, is a graphic adventure for the 64. Prices are not yet available.

There are three 64 games available from K-Tel, either on tape or disk. Titles include *City Attack* and *Odyssey*.

Frost-Kamner spokesperson Karen Wake said "We're starting up the new label to indicate that the software division is being run independently to the rest of K-Tel, and we'll be making separate distribution deals. There will be several Frost-Kamner games for the 64, but it's too early to give details."

Leeds CBM Show off

THE SECOND HALF of the 5th International Commodore Computer Show, planned to be held in Leeds from 27th — 29th of September, has been cancelled.

Granada micros

HIGH STREET TV rental giant Granada has announced plans to sell home computers.

Following testing through pilot stores, Granada has decided to market the Commodore 64 and Vic 20, as well as the Sinclair Spectrum and the Electron and BBC B computers.

A wide range of computer games, educational software and peripherals will also be sold in over 100 Granada stores. Spokesman John Harper said that apart from the basic machines Granada was also looking at peripherals such as printers and disk drives, and planning to market a range of the most popular software.

Tramiel buys Atari Corp.

THE MICROCOMPUTER industry has been rocked by the news that former Commodore head Jack Tramiel has bought out rival Atari.

Atari, a subsidiary of the giant Warner corporation, has been losing money for some time due to the success of microcomputers over dedicated games playing machines.

New Tramiel, who left Commodore after an argument with chairman Irving Gould, allegedly over the bringing of Tramiel's sons into the business, has paid \$240m for most of Atari. Rather than pay cash, a complicated deal involving shares and stock op-

tions has been made by Tramiel's new company.

Atari's chairman James Morgan was fired hours after the news of the takeover by



Tramiel, son of the founder, to be hired

Tramiel Technology Incorporated. All Atari's plans, for a new home computer, an enhanced machine, and work with George "Star Wars"

Lucas, are now in doubt. Many of the workforce and almost all of the senior executives are expected to leave.

New, although Jack Tramiel will make no comment on his plans for Atari, it seems plain that he intends to fight Commodore, the company he set up, as hard as possible. Already the in-fighting has started, as Commodore has accused defuncting employees of taking secret material on the planned Commodore 2-8000 machine in Tramiel.

Tramiel seems determined to live up to his motto — "I'm not in business to be hired — I'm in business to make money."

Suitable case from Jenart

JENART DESIGN has solved the problem of transporting your Vic or 64 — whether to the computer club, the music studio, or back to the shop to get it fixed.

The Jenart Carrying and Storage case is made in waterproof acrylic and shatterproof ABS plastic, padded with foam and constructed with high-strength plates and metal joints. The computer slips vertically into one pocket, held in place by the padded lid. The cassette and power supply can be stored in another pocket, and there's space enough left for tapes and cables.

The case, which includes fastening straps and a carrying handle, costs £18.25 + £2.25 p.p.h. It comes with a Commodore 64 or Vic 20 logo.

Jenart also manufactures a range of slantcases, including a Commodore model at £1.50 + 30p p.p.h., along with cases and covers for all the popular micros.

Contact Jenart at 19, Spire Lane, Bishopscote, Nympton, South Molton, Devon, EX36 4NS, tel. Bishopscote Nympton 681.

Now all we need is a case for the disk drive...



Jenart — just in case

Corby on stream



Chris Jenkins visits Commodore UK's new Corby HQ and talks to production manager David Briggs

A NEW ERA for Commodore UK will start at the beginning of August, when the new Corby manufacturing facility comes into full production.

Commodore's Slough headquarters have long been too small for the rapidly-expanding company, and with the help of government development grants the 10m Corby plant has been set up to allow for further growth.

At the same time Commodore UK will go into production of the Vic and 64, and later the Plus/4 and C16. Commodore micros have previously been manufactured in Braunschweig, West Germany.

Interviewed at the Corby



David Briggs — 'going well'

site, production manager David Briggs said that the move was going according to plan. "The satellite factory was completed in May, and has been in production since July. The service department is also fully operational."

All departments, including sales and marketing, will be housed in the giant main factory once that building is completed. "Only essential work now remains to be done.

Corby, situated near Kettering, has been an unemployment blackspot since the closure of the British Steel works some years ago. Now Commodore, and other electronics companies such as RS Components, is bringing life back to the area. 300 people have been employed on the assembly lines already, and the full complement should number 500.

Despite some initial apprehensions about the move, David Briggs claims that some Slough employees see the advantages of Corby. "Housing prices are cheaper and you're only five minutes drive from the countryside."

For Commodore micro users, the advantages of having manufacturing and service facilities on one site are obvious. "We've knocked

together a 20,000 and a 30,000 square foot warehouse to set up the assembly lines. The cases, keyboards and PCB's come in assembled, and we burn in the circuits for four hours, assemble the units and test the keyboards, then test the whole unit again before passing it to packing and dispatch. We also have roving quality inspectors on the assembly lines."

Production of the 64 is already on 5,000 per day.

However, there is as yet no production of the Vic, Plus/4 or C16, and David Briggs declined to comment on whether the new machines would be ready in large quantities for Christmas.

tape duplication steps with outside contractors, although disks will be produced at Corby. There are no plans for the production of cartridges, or for peripherals, which will continue to be made overseas.



Corby workflow packed with 64's for dispatch

The 64 Software Centre

1, Princeton Street, London WC1. Tel 01-430 0954

The specialist centre with the widest range of software for the Commodore 64 and the best service. Open 10am-6pm (incl. Saturdays). Demonstration facilities.

● BUSINESS SOFTWARE:

Accounts, Stock Control, Database Systems, Spreadsheets, Statistics Charts, Budget, Word Processors.

● HOUSEHOLD ACCOUNTS:

Banking, Budgeting, Word Processors, Databases.

● UTILITIES & AIDS:

Simon's Basic, BC Basic, Turtle Graphics, Ultrabasic, Pal, Mikro Assembler, Hesmon 64, Victree, Master 64, The Tool, Graphics Designer, Sprite Aid, Turbo Ext, Basic, Accs +, Zoom Pascal, Forth 64, Logo, 64 Doctor, Ultisynth, Synth 64, Scope.

● EDUCATIONAL:

Maths, Biology, Chemistry, Physics, History, Geography, French, Italian, Spelling.

● SIMULATIONS:

War, Flying, Golf, Boxing, Stock Exchange, Commodities.

● GAMES & ADVENTURES:

English and American (Cassette, Disk, Cartridges).

● COMPUTER COURSES:

Dr Watson's Basic and Assembler for Beginners, CBM 64 Tutor.

Friendly assistance and advice given. Export orders welcome. Immediate despatch for mail and telephone orders (Access, Visa, Eurocard, Mastercard). Discounts for package deals.

Video giants hit 64

TWO GIANT video game corporations are set to enter the 64 software market.

Parker's titles include Star Wars, based on the George Lucas film, Dyraco, a complex space arcade game, Mr. Do's Castle, a "ladders" game, and

versions of the arcade favorites Popeye and Q*bert. All the games will be available on disk only in September. European product manager Ken Foster comments "Already we are seeing a marked increase in the disk-drive penetration of mid-range home computer users." The lead series — the games will cost around £18.95.

Activision's plans begin with Pitfall 2, a follow-up to the popular videogame Pitfall. Again the hero is

Pitfall Harry, this time searching a tomb for treasure and his missing niece. Tape version costs £9.99, but the disk price has yet to be announced.

Already available on Beamrider, Pitfall and Decathlon. These are adapted and enhanced versions of videogame originals.

Fortcoming titles include Zaxxon, H.E.R.O.S., Tug Wars and River Raid. All the Activision games should be available by late Summer.

Commodore staff on the move

WITH THE MOVE to the new Corby plant, Commodore will make a number of changes in management structure.

John Baxter, marketing manager, is leaving to work with Andromeda Software. Andromeda has a growing reputation as importers of Hungarian games software (see Commodore Warriors, May).

Although Commodore is "actively looking" for a replacement, no appointment has been announced at the time of writing.

Col Wellington, software

products manager, will not be moving to Corby. UK managing director Howard Stan-



Baxter on the move from CIBW

worth commented that "Col Wellington will be working as

the European software coordinator for Commodore Electronics, at a site not yet decided. The job will be to check the suitability of software, not just for the UK market, but for overseas distribution."

The Corby move will mean redundancy for a number of junior clerical staff at Slough, but in Howard Stanworth's words "We're talking with us almost all those who regard their work with Commodore as a career rather than just a job."

Dataview value

BUSINESS software specialist Dataview have released a high-quality word processor and compiler for the 64.

Spokesman Sid Newman explained "Wordcraft 64 is a version of a program developed for the 8080 series. On the 8080's it costs £425 — the 64 version, which retains most of the features, is only £49.95 on disk. Although it's a forty-column program, it has full screen scrolling, colour control and all the features you'd expect of a top-quality word processor.

"The 1st Pack DTL Compiler comes in two versions — a tape costing £14.95, which allows up to 128 of object code to be compiled, and a £29.95 disk which has no restrictions since the program you speed in and out of the disk. The disk version also has special routines for sprite movements.

For further details contact Dataview at Parkview House, East Bay, Colchester, phone 0206-860303.

SOFT * HITS * SOFT * HITS * SOFT * HITS

THIS MONTH round-up of software releases will be extended next month into a whole new section of Commodore Horizons. From now on we'll be looking at more software and bringing you more news shots, so that readers will get the widest possible coverage of the rapidly expanding range of software for the 64 and 512.



Horizons: 64; cassette; £6.95; Intertec. New concepts, new ideas — fifty frames of arcade adventure set in mythical Greece.
Cassette 50: 64/512; cassette; £3.95.
Cassette: Great value — 50 Basic games on one tape. Matrix, Space Invaders, even simple adventures, quality comparable to good magazine listings. You can break into the program to study programming techniques.
Stenciled: 64; cassette; £9.95; English Software. Graphic adventure with 33 screens. An Special Agent Sid you have to find your missing spaceship and escape from a strange planet.

Muspy: 64; cassette; £3.95; Megal. Megal games get better and better — this one's a fast-moving underground arcade extravaganza with rollers and runaway magnets standing between you and the bags of gold.

Blue Thunder: 64; cassette; £6.95; Richard Wilson. Fair adaptation of the Spectrum original. Pilot your jetpack against a series of enemies to rescue your comrades from the threat of an unstable reactor.
Encounter: 64; cassette £9.95; disk £12.95; Norrags. A game — 2-D! Baroque version with solid figures instead of wire-



frames. Fast-moving "through-the-window" action as you pilot your battle tank across a planetary surface littered with mysterious obstacles. Brain-numbing 200-style spacemap sequence makes this one a must.

Boxes: 64; cassette; £3.95; AudioLogic. More "ladders" game in which you control a workman collecting bones, threatened by intelligent monsters.

Shopper: 512 + 80; cassette; £1.99; Mastertronic. Might be a guide from the kings of the cheapo games, but I haven't been able to get past the first screen yet! At this price, how can you say no?
Guardian: 64; cassette; £6.95; Alligade. Excellent implementation of the arcade classic Defender. Humorous, tender,



musical, poetic, swarthy, babies and bonkers fill the air. Great sound effects, superb graphics and animation. Great your joystick and get it.

Omega Run: 64; £6.95; cassette; CML. War flight simulator in which you must fight off enemy planes, searchlights, anti-aircraft fire and missiles to reach your target. Converted from the Spectrum version — surprisingly, not as good as the original.

Next month's New Releases section will feature more games, more screen shots, and details of new utility and hardware packages too.

SUMMER MADNESS SALE FROM SCI(UK)

Order Today
Print Tomorrow

We challenge you to find a better deal

OPEN
7 DAYS
A WEEK

EPSON PRICE SPECIALS

EPSON RX80 (DOT MATRIX)	£280.00; £199 + VAT =	£283.00
EPSON RX80FT (DOT MATRIX)	£380.00; £239 + VAT =	£283.00
EPSON FX80 (DOT MATRIX)	£330.00; £234 + VAT =	£272.00
EPSON MX100 (DOT MATRIX)	£470.00; £353 + VAT =	£460.00
EPSON RX100 (DOT MATRIX)	£450.00; £385 + VAT =	£442.00
EPSON FX100 (DOT MATRIX)	£500.00; £409 + VAT =	£492.00

DAISYWHEELS at an Incredible new LOW PRICE!

JUKI 6100 Just £329 + VAT = £376.00



20 CPS - Bidirectional & Logic Feeding
10, 12, 15d Proportional Spacing
Wordstar Compatible
2K Buffer - 12 inch Paper
Upholster Backspace - Late tone
Continuous Interface Standard

THE DAISYWHEEL THAT
HAS NO COMPETITION

OPTIONAL RS 232
TRACTOR AND SHEET FEEDER

WE WILL MATCH ANY GENUINE PRICE ADVERTISED -
SCI(UK) IS NEVER BEATEN ON PRICE

MANY MORE PRINTERS AVAILABLE - 1000's OF SCI(UK) BARGAINS
SEND NOW FOR THE **FAMOUS** SCI(UK) CATALOGUE



for cheapest prices telephone 0730 63741 or 0730 61745



MORE SCI(UK) BARGAINS

SHIWA CP80 £179 + VAT = £202.00



Tractor and tractor feed as standard
80 CPS
8-Directional Logic Feeding
12 x 9 dot matrix giving true descenders
Auto end superscripts
Basic printing and auto-underlining
Condensed, emphasised, expanded and
double strike printing (can be mixed in a
line)
Parallel interface fitted as standard

FIDELITY 14"

COLOUR MONITOR
& COMPOSITE VIDEO



£189 + VAT = £222.00

New from the world famous **CANON** Company

CANON 1080A RLQ DM best value ever at £289.00 + VAT = £332.00

We have interfaces for all types of
computers, including CBM 64, VIC 20,
APPLE, TRS 80, IBM, BBC, SPECTRUM, QL, etc.



24 HOUR SECURITY DELIVERY DELAY plus VAT & BARRING ORDERS, BILLING MONTH CREDITS, POSTAL ORDERS - SAME DAY
ALL ORDERS COVERED BY THE MAIL ORDER PROTECTION SCHEME & OUTSIDE GUARANTEE COMPANIES ARRANGED
BULK/INTERNAL DISCOUNTS VERY WELCOME

By SUNDAY - Do you realise you can order NOW - We are open 7 DAYS A WEEK

SCIENCE CITY
SCI(UK)

SCIENCE CITY
PETERSFIELD HANTS GU20 2BN

0730 61745

0730 63741

0730 61745
0730 63741

Personal orders welcomed 15, 16 Mans Lane, Sheet, PETERSFIELD, Hants. TR49 6ADH HANTS RG 0

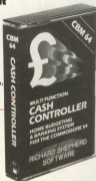
RICHARD SHEPHERD SOFTWARE

A HOME BUDGETING & BANKING SYSTEM THAT REALLY MAKES YOUR COMMODORE 64 WORK!

NOW ON CBM 64 DISK AND CASSETTE



A professional style multi function Cash Controller program. In disk format you can load, and make an entry ... or update your existing records ... in just seconds. This easy to use program can handle up to 400 transactions, giving instant statements of your bank balance. Now there's no excuses for going into 'the red' and paying unnecessary bank charges!



BANK ACCOUNT

- Statements on demand from any date to date.
- Holds up to 400 transactions.
- Standing order facility.
- All transactions can be automatically coded to allocate up to 16 budget headings.
- Search facility for any single item by description or amount.

HOME BUDGETING

- 16 budget headings, e.g. Gas, Rates, Car, Tax - you can choose the headings.
- Highlights under/over spending.
- Full budget expenditure breakdown.
- Budget 're-think' facility.

LOAN/MORTGAGE CALCULATOR

All you ever wanted to know but didn't like to ask! Calculators:

- Interest rates
- Payback periods
- Capital sum
- Period of loan

- PRINTOUT FACILITY
- FULL SECURITY WITH PERSONAL PASSWORD
- SAVE DATA ONTO CASSETTE OR DISK

Available from good computer stores or direct by mail order... **at a price that won't upset the Bank Manager!**

CASSETTE
£9.95
INC P & P

DISK*
£14.95

Compatible only with 1.44 Disk Drive

INC P & P

Dealer enquiries welcome.

Generous discounts.

PRIORITY MAIL ORDER

Please send me **CASH CONTROLLER** (Please tick) **CASH CONTROLLER** (Please tick)
on 5.25 inch 5.25 inch Cassette or 1.44 inch Disk (Please tick) **SENDERS REQUIRED**
including post & packing (wherever orders total £1.50)

Name

Address

I enclose cash in new P.O. payable to Richard Shepherd Software

Or debit my Access/ISA Card Number

Signature

SEND IN FULL ON CASSETTES FOR MICROPRINT

Access/ISA card orders subject to approval by Access/ISA card issuer. Software is sold on a non-refundable basis. Delivery subject to stock.

24 Hour Credit Card Hotline (06286) 63531 REMEMBER TO MAIL IF YOU REQUIRE CASSETTE OR DISK

RICHARD SHEPHERD SOFTWARE

ELM HOUSE, 21-25 ELMSHOTT LANE, CIPPENHAM, SLOUGH, BERKS. TEL: (06286) 63531

(SAME-FAST LOADING TIME)

Commodore 64

electron

B.B.C. MICRO

MEMOTECH

FELIX

IN THE FACTORY

£6.95
1 HOUR FROM
AND 1000 IMAGES
VERSIONS 1.7 (93)

Race along the conveyor belt leaping the packages, and shin up the ladders to the shopfloor. Pitchook the Gremlins off the walkways, use the poison pouch to trap the Giant Rat, and retrieve the oilcan to keep the generator topped up.



COMMODORE 64 VERSION



I THINK YOU'LL FIND SWOOP, GHOULE AND CYBERTRON MISSION ARE WINNERS AS WELL!



MICRO POWER

MICRO POWER LTD
NORTHWOOD HOUSE, NORTH STREET
LEIGH LANE, WALSLEY, WEST YORKSHIRE
LS15 8JG
TELEPHONE 01924 61001
FAX 01924 61002
© 1993 MICRO POWER LTD

MICRO POWER MICRO POWER MICRO POWER MICRO POWER

Living with your 1541

Theory and practice of the 1541 disk drive from David Lawrence and Mark England's Disk Companion

DISK STORAGE, like tape storage, depends on the fact that a thin layer of a ferrous metal compound is capable of being magnetized and demagnetized. When magnetized by proximity to a magnetic field, such compounds have the capacity to maintain their magnetized state.

When spread thinly, tiny amounts of such compounds are capable of recording the fact that an electromagnet has passed near to them, the degree of magnetism is possessed and the direction of the current in it. Having been magnetized, the film can be read by an electromagnet which has no current being fed through it, since it is a property of electromagnets that they produce an electric current when passed through a magnetic field — even the minute field needed by a thin film of ferrous compound.

Provided, then, that an electromagnet can be made to pass over the film sufficiently closely, and the state of the electromagnet can be changed in a controlled manner, and provided that this can be done with sufficient accuracy that the same position can be returned to time and time again, then the magnetic qualities of a thin layer of a ferrous compound can be used to store information.

In the context of a computer disk drive, the film of ferrous compound is held on the surface of a 5 1/4 inch piece of thin, flexible plastic. The electromagnet is provided by the disk drive in the form of a tiny magnetic recording head capable of being moved with great accuracy in a straight line between the centre of the disk and its circumference. The movement of the head over the film is provided by the revolving of the disk. In essence then, a disk system consists of a revolving disk and an electromagnet which can scan in and out across it as it moves.

Information

The advantage of this system compared to tape is not simply the speed with which a single block of information can be stored — some tape systems are very fast indeed. The real power of the disk system lies in the speed at which it can find the information or the place where it is to be stored. A good analogy is the difference between an ordinary audio cassette recorder and a long playing record. Provided that in both cases you know where the information you want is stored, in which track of an album you wish to play, the disk will provide you with

much faster access since you are able to move the needle directly to towards the centre of the turntable until it is positioned correctly. Over there, another kind of movement, in the revolutions of the disk itself, allows you to recall what you want. With the tape system, you have only one kind of movement available to you and you will have no choice but to fast-forward until the correct place is found.

Formatting

Unlike a long playing record, the disks used by the 1541 disk drive do not come with individual tracks laid out in a permanent form. The film recording medium is, or should be, of a uniform consistency over the whole of the disk's surface. Dividing up the disk into easily identifiable "tracks" for the storage and retrieval of data is a task undertaken by the disk drive itself in a process called "formatting".

The purpose of the formatting process is to mark the disk magnetically with a series of areas called "sectors", roughly three quarters of an inch long, spaced full one inch, which, as with long playing records,

are known as tracks, thirty-five of them in all, with the number of sectors varying according to the distance of the track from the centre of the disk — the further from the centre, the longer the track and the more sectors it will contain.

This simple process is accompanied by some more subtle ones which will enable the freely named disk-drive mechanism to identify its place on the disk and serve the revolving head. Each sector is created with an area of 256 bytes for the storage of data but also has written into it other information, such as the identification number of the disk, the number of the track on which the sector falls, and the number of the sector within the track. plus some standard data which the disk drive will later use to check that it is properly synchronized with the disk as it turns.

Apart from the blank sectors prepared for the reception of data, an area of the disk (track 18) is reserved for the use of the "directory" or list of files which the disk will eventually contain. When the disk is first formatted, only the first two sectors of track 18 will be used for this purpose — other sectors will be brought in as programs are added. Included in the directory is an area of bookkeeping information known as the Blank Allocation Map. The purpose of the BAM is to record, for every sector on the disk, whether that sector is available for the storage of information or if it is occupied by part of an existing file.

Sector Zero

The BAM is positioned in the first sector (sector zero) of track 18 and consists of 140 bytes of disk space. This space is itself divided up into 35 sets of four bytes each. The first byte of the group indicates the number of sectors available on one of the disk's 35 tracks. The next three bytes record the state of sectors 0-1, 8-15, and

TRACK = 13

0	SEQ. F	,PRG BLOCK 2
1	EOF. F	,PRG BLOCK 2
2	LIST TAB. F	,PRG BLOCK 14
3	APPROT. F, W/O	,SEQ BLOCK 1
4	LIST TAB. F	,PRG BLOCK 12
5	SEQ ARRAYS. F	,PRG BLOCK 4
6	TEST1	,SEQ BLOCK 1
7	SCREEN SAVE	,PRG BLOCK 1
8	PROG READ	,PRG BLOCK 1
9	SCREEN	,PRG BLOCK 1
10	SEQ. F	,PRG BLOCK 3
11	EOF. F	,PRG BLOCK 3
12	SEQ ARRAYS. F	,PRG BLOCK 3
13	SEQ ARRAYS. F	,PRG BLOCK 3
14	LIST TAB. F	,PRG BLOCK 13
15	SCREEN	,PRG BLOCK 3
16	LIST TAB. F	,PRG BLOCK 11
17	SCREEN	,PRG BLOCK 4
18	PROG READ	,PRG BLOCK 2
19	SCREEN	,PRG BLOCK 2
20	SEQ. F	,PRG BLOCK 4

Figure 1: Allocation of sectors on a typical track

ANIROG

NEW
TURBO 64
GAMES

P.C. FUZZ



Aggro at closing time at the local. Getaway car screeches to a halt outside a bank. Ingenious methods employed by the Mafia to literally spirit away the loot from the High Street. Never fear - P.C. Fuzz is on patrol.

COMMODORE 64 £7.95

ZARCA MISSION



Also available on
Disk at £9.95

An action
thriller by the
COMMODORE

packed 3D scrolling arcade
author of Space Pilot.

64 £7.95

TRADE ENQUIRIES: ANIROG SOFTWARE LTD., 29 WEST HILL, DARTFORD, KENT (0322) 92613/6
MAIL ORDER: 8 HIGH STREET, HORSLEY, SURREY. 24 HOUR CREDIT CARD SALES: HORSLEY (02934) 6063
PAYMENT BY CHEQUE, P.O., ACCESS/VISA. 50p POSTAGE & PACKAGING

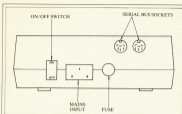


Figure 2: Back panel of the 1541 disk drive.

411-212 of the corresponding track. If sector zero of the corresponding track is available for storage, for instance, bit zero of the value stored in the second of the four bytes will be 'set' (or equal to one rather than zero). If the value of a whole byte (or eight bits) is zero, so that none of its bits is set, this would indicate that the eight sectors in it recording are all in use by a current file. You may note that the RAM makes provision for recording 24 sectors 00-231, even though there is a maximum of 31 on the long outer tracks and less as the tracks near the center. The RAM overcomes this potential difficulty by registering those non-existent tracks as unavailable when the disk is formatted.

Directory

If there are more than eight files on the disk then another sector of track 00 will need to be added to the directory. The last sector of the directory is indicated by the fact that the first two bytes, which normally indicate the address of the following sector, point to track zero, sector 255, which does not exist.

Having set up the disk structure and the initial directory, the disk is now ready for the storage of information in units which are known as 'files'. The two types of file which are used most often are the program file, which is what is created when a program is **SAVED**, and the sequential file, which is created when a file is **OPENED** for the storage of some of data. Both these types are stored on the disk in exactly the same way, so we shall take for an example the **SAVING** of an ordinary program file.

This is the sequence of events involved in **SAVING** a program file.

1) The **SAVE** command is entered by the user and the 64 instructs the disk drive to open a program file of that name.

2) The disk drive checks its directory to see that a file of that name does not already exist.

3) Provided that there is no file of the same name, the disk drive records the filename in the directory with a starting track and sector of 0,255 — i.e. non-existent track.

4) Using the RAM, which is always kept

in the disk drive memory, the drive begins to search for the nearest track to the directory track, either out towards the edge of the disk or in towards the centre, which has a free sector (**SECTOR0**) and marks that sector as allocated in the RAM.

5) Having found **SECTOR0**, the drive records its position and then accepts 254 bytes of the program from the 64 and places them into a buffer in the disk memory.

6) Another search is now made for the nearest free sector other than the one discovered in step 4 (**SECTOR1**).

7) The address of **SECTOR1** (discovered by step 6) is now written into the first two bytes of the disk buffer created in step 5.

8) The whole of the contents of the buffer are now written into **SECTOR0** (discovered in step 4).

9) **SECTOR1** is now regarded as **SECTOR0** and the process is repeated from step 5 until the 64 informs the disk drive to close the file, by which time the whole of the program has been recorded.

10) For the final bufferful of data, the address of the next sector (the first two

bytes) is set to track zero, sector 255, to mark the end of the file.

11) The directory entry for the new file is altered to record the sector used for the beginning of the file and the number of bytes contained in the file.

By the time programs have been written to the disk, removed and overwritten during the course of time, the structure of the disk will appear most confused to the human eye, with a mishmash of sectors on each track allocated to a variety of programs. Provided that nothing happens to corrupt the directory, however, or the two bytes at the beginning of each sector which record the position of the next sector of the file, the disk drive will always be able to find the start of a file that it holds and read that file sector by sector without difficulty. An indication of the kind of disk structure that will be found on a well-used disk is given by table 1. The table displays the contents of a single track of one of the disks used in the development of the book.

Powerful

So far, we have looked at disks and their layout but taken the activities of the 1541 drive itself for granted. It would be wrong to conclude this article, however, without a reminder that the 1541 is an extremely sophisticated and powerful piece of equipment, driven by a 6502 microprocessor and its own internal Disk Operating System program which is as large as the ROM of the 64 itself. The advantage of this is that, unlike disk drives for the majority of other personal microcomputers, the use of the 1541 drive requires no memory to be set aside by the host computer to run it. Rather than relying on the 64 for detailed instructions as to the handling of its affairs, the 1541 internally requires only to be informed of the name of the task to be carried out. It will then proceed without further help on one of the complex procedures it is capable of performing. For this reason, the 1541 is known as an 'intelligent drive'.

To operate a disk system you need all-

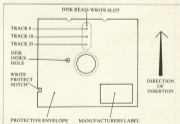


Figure 3: Layout of a typical 5 1/4 inch floppy disk.

commodore 64 disk companion

essential routines for commodore
disk users

david lawrence and mark englund



◆Insert one 1541 disk drive, together with a connecting lead, to add to your existing system. You will also require a set of 254-track floppy disks — these normally come in boxes of ten but can be bought singly. It should not be forgotten that you will also require an extra power socket from which to run the disk drive.

Procedure

Assuming that your 64, its power unit and the television-monitor which you normally use are all properly connected, and that the power is OFF to all the equipment, follow this procedure:

1) Turn the 64 around so that the back of the machine faces you.

2) Reading from right to left, you will find two rectangular slots in both of which may be seen the edge of the 64's printed circuit board.

3) To the left of these two slots are two circular plug sockets. The one on the right is a six-pin socket and is called the serial bus. It is the means by which the 64 communicates with outside devices such as printers and disk drives.

4) If you have a printer connected to the serial bus socket, disconnect it for the time being.

5) Plug into the serial bus socket one of the small round plugs (DIN plugs) on the connecting lead which came with the disk drive.

6) You can now turn the 64 round so that the keyboard is again facing you.

7) Take the disk drive and place it next to the 64 so that its back is facing you.

8) On the back of the 1541 you will find the connections shown in Figure 2.

9) Take the other end of the connecting cable you have just plugged into the back of the 64 and plug it into either of the sockets marked 'SERIAL BUS' in the illustration.

10) If you have a second disk drive, plug its connecting cable into the other socket. (If you wish to operate more than one drive you will also have to alter the device number of one of the drives if the drives have not been permanently modified.) A

whole series of drives can be chained in this way if desired.

11) If you have a Commodore compatible printer, you may now connect it to the spare serial bus socket on the back disk drive to be connected to the system.

12) Ensure that the 1541, the Commodore 64, the TV-monitor (and the printer if connected) are all switched off. Plug the main connection lead into the back of the 1541 and then connect the other end of the lead to the main. Switch on the main power to the 64, TV-monitor (and printer if connected). Do not at this stage switch on the equipment itself.

13) Turn the 1541 around so that its front is facing you, being careful not to snag any of the leads under the drive.

14) On the front of the 1541 you will see a small bar protruding. The bar will be in one of two positions: at slightly below the dot which goes across the front of the drive or at slightly above it.

15) If the bar is in position at, press it in gently with your finger and allow it to move gently upwards on its spring.

16) The disk drive door is now open. To make absolutely sure that the drive does not contain a disk or the square of cardboard used to protect the internal mechanism during carriage, close the door by pressing gently down until it locks and then opening it again.

17) If a disk or the protective card is now visible, remove by sliding gently towards you.

18) Switch the disk drive on (and the printer if connected). Both the green and red lights on the front of the drive will come on, the drive will whirr for a second or so, then the whirling will stop and the red light will go out. If the red light does not go out, switch the drive off, check the connections and repeat this step. If the red light will

remain on, consult your dealer.

19) Switch on your 64. (You should see the same sequence as described under step 10.)

20) Switch on your TV-monitor and tune it to the output of the 64.

21) You are now ready to use your Commodore 64 disk system.

Sequence

The recommended sequence for switching on a disk system once it has been properly set up is: PRINTER—DISK DRIVE—COMPUTER.

Given in Figure 3 is the layout of a typical 5 1/4 inch floppy disk. Such disks will serve you well if you observe a few simple rules:

1) The disk is never removed from its protective sleeve. It can receive quite considerable wear within the envelope and will be read through the READ—WRITE SLOT.

2) Floppy disks, or flim-disks, are not designed to be deliberately flopped or flexed. If, by accident, a disk is momentarily bent slightly, it should survive but there is no guarantee of this. There is always a slight amount of give in the disk when inserting it into the drive or removing it — do not worry about this, simply do not go to extremes.

3) Your disks will have been supplied with a protective sleeve which covers most of the disk envelope and protects the READ—WRITE SLOT. When not in use, disks should always be replaced in the sleeve. Disks should preferably be stored upright in a plastic (or non-magnetic) box specially designed for the purpose. Never leave disks lying on any surface, out of their sleeves. It is common to see disks carelessly left lying about unprotected in the belief that, provided that the READ—WRITE SLOT on the 'front' of



Figure 2: the 1541 disk drive — fast and intelligent

the disk (the side with the label) is not touched, all will be well. Since the 1541 actually reads the disk from the back, this is unlikely to be true.

4) Disks should never be exposed to a magnetic field, which includes leaving them on the top of the disk drive or the TV-monitor.

5) Disks should never be exposed to dampness or extremes of temperature, which includes leaving them in direct sunlight.

6) It should go without saying that you should never touch the READ-WRITE SLOT of the disk.

7) Cheap disks, like cheap tapes, can lead to disaster. Only you can decide how much your programs and data are worth to you.

To place the disk in the drive, first ensure that the disk drive door is open, then orient the disk so that the manufacturer's label is upwards and the READ-WRITE SLOT end of the disk is towards the 1541. Push the disk gently into the horizontal slot on the front of the drive. If the disk catches slightly as it is pushed home, do not attempt to force it — remove it and try again. If you continue to have problems, check to ensure that another disk is not caught in the drive.

Provided that no problems are encountered, the disk should be pushed fully home until no part of it protrudes and it remains in the drive without pressure from the fingers. Finally, close the disk drive door — the disk drive cannot be accessed by the 64 until this has been done. Disks are removed from the drive simply

by opening the disk drive door, when the disk will slide out approximately an inch. If the disk does not appear, close and open the door again. Disks which are reluctant to come out of the drive can just be reached with the fingers, though no force should be used.

If disks continually stick in the drive, either there is a problem with the disks (such as a label sticking out over the edge) or the drive is faulty. Never poke inside the drive with any kind of tool to try to free a disk — especially if the drive is connected to the main.

Complex

Never open the door of the disk drive while the red light is on and the drive motor is running, or damage to the disk may result. Note that some editions of the 1541 manual incorrectly state that the disk may not be removed while the green light is on. The green light is the disk power indicator and the only way to extinguish it is to switch off the power to the drive. Do so *never* do this before removing the disk.

Like any other complex piece of equipment, it is possible for the 1541 to lapse momentarily from its usual high standard of reliability. It is possible, for instance, for errors to be encountered in the reading or writing of a program, or for some other problem to arise which prevents a disk command being properly carried out. In this case the red drive light will flash on and off and you should repeat the procedure which led to the error if you are sure that the mistake is not your own.

In some circumstances, it is possible for a situation to develop where the 64 and the disk drive simply refuse to communicate with one another. Following the recommended switching-on procedure, the solution would be to remove the disk, to switch off the 64 and the disk drive and then to switch them on again in the correct order.

If the 64 contains a program which you are trying to save then our experience is that removing the disk and switching off the 1541 (and any other device connected to the serial bus, such as a printer), and then switching it back on again will almost invariably solve the problem. It is as well to remember that, if all else fails, the Datacube recorder may well be capable of recovering the situation by saving the program until the disk system can be sorted out.

It is unlikely that the 1541 will give you many problems if you remember that it is a precision engineered machine which, unlike the 64, has moving parts which should not be subject to vibration, sudden shocks or excessive heat (including direct sunlight).

Though it seems a small point to be given a separate section, do always check that the disk drive door is open and the drive empty before switching off the drive. In actual fact, disks are seldom damaged by being left in the drive when it is turned off, but it can happen. ■

The Commodore 64 Disk Companion by David Lawrence and Mark England is published by Samsing Books at £7.95.

.....
vicer would

.....well I must close now Mary because the
corrow my Wordcraft 64.

Best wishes, see you soon.

Dandy

P.S. I sometimes wonder how I used to find the time to write before
Bob bought his Wordcraft 64.

He uses it to write articles before giving them to his Editor,
Paul uses it to prepare his university project reports.
John, from next door, borrows it to type the golf club reports,
and the Vicars getting quite impatient, he uses it for the parish
magazine.

Thank you Wordcraft 64 for making so many friends for me.

**Wordcraft 64 costs only £49.95 inc. VAT
and is available from all good computer
retailers or direct from ourselves.**

Catherine Wordcraft Ltd.
Head Office and Sales, Radio House,
East Street, Colchester, Essex CO1 2BJ
Tel: 0206 869414 Telex: 987964 MICRO G

PRIORITY MAIL ORDER

Resend me:	Further information <input type="checkbox"/>	Wordcraft 64 <input type="checkbox"/>
Include Cheque/Postal Order for £		(please add £7 for a book)
OR, I enclose my £400000-1000A		
NAME		Card No. _____
ADDRESS		Card holder _____
		Signature _____
		CHS

Depeché modem

With modems getting cheaper all the time, there is a growing interest in all types of network and database. **Robin Wilkinson** reports on *Microware 800* and *CompuTel*

HOOKING up to the public telephone network is the next big growth area in the use of small micros in the home or at work. During the next few months two large online database operators, not to mention various bulletin boards and other service operators, will be covering the Commodore 64 owner.

Microware 800, one of the largest databases on the UK Personal computers network is opening up a special Commodore section in Japan, and Commodore has linked up with a giant American corporation to launch CompuTel in September.

The major advantage of hooking up to the telephone system is the ability to access data which is held on other, very large, computer systems, eg Proxel. Transferring files from your computer to a friend's mine over a hundred miles away — or just on the other side of town — obviously has great potential, both for fun and experimentation.

Alternatively, you can access the bulletin boards — mini-databases often operated by enthusiastic amateurs — which have spread like wildfire in the United States.

Basic components

You need two basic components to connect your machine to the telephone network, apart from a micro and a telephone. Firstly you need a Modem — this controls the speed of data transmission from your micro to the host machine and vice versa. Secondly you need a terminal software package — this interprets what is coming down the phone line to your micro and converts it into a form your micro can understand.

In much the same way that disk drives and printers need interfaces to link them with micros, so communication devices need an interfacing mechanism. For modems, this consists of a serial interface, usually via an RS232 port. However, the Commodore 64 will have a cartridge containing software in ROM.

The data in your micro is transmitted between different circuits simultaneously and in parallel. But the micro generates digital signals, whereas the telephone network transmits the human voice in analogue form.

This is where the modem — it stands for modulator and demodulator — steps in,

by converting analogue signals to digital and vice-versa.

The signals generated by your computer are digital and represent 1s and 0s by separate voltage levels. A group of these bits (binary digits) is called a byte and the object of serial data is to send a byte or bytes from point to point along a single channel — in this case the telephone wire.

When no data is being transmitted, the voltage is kept between -3 and -15. Depression of a key on your micro causes the voltage level to be changed to between +3 and +23.

The full ASCII set in your micro is represented by 8 bit data. Additional bits are added to tell the host machine that the transmission of a byte is about to begin (the start bit) or end (the stop bit).

The letter A, for example, which is represented by an eight bit sequence will have at least 10 bits in a byte when transmitted over the telephone network. In fact it has more bits per byte so that the host machine knows what it has received. This is called the parity bit.

This method of data transmission is called asynchronous and allows the receiver to synchronise with the transmitter at the start of each byte. At the end of 10 or 11 bits of transmission, the receiver events itself and waits for the next burst of data.

Another piece of crucial terminology used in modem communications is



Duplex, which describes how data transmission takes place between two points.

Full Duplex: Two modems operating in this mode are each capable of receiving and transmitting data simultaneously. This is achieved by sending characters of differing tones in opposing directions.

Half Duplex: Allows data to be sent in one direction only at one time, because both modems send characters in the same tone.

The final major factor to consider with modems is the speed at which they transmit data — known as the baud rate. This measures the number of modulations per second where the modulation signals a change in the transmission activity. Proxel and CompuTel, for example, transmit data at 1200 bits per second, while your micro talks back to them at 75 bits per second. Hence a 1200/75 modem.

Most bulletin boards operate at 300/300, although some are now beginning to offer 1200/75. Micro to



micro transmission of long files is usually best done at 1200/1200 for speed and economy or 300/300, though it can be done with 1200/75 as long as the modem has switchable receive and transmit options on it.

Finally, you need to decide whether to go for an acoustic modem (ideal if you want portability) or a hard-wired modem. Generally, acoustic modems can be prone to line noise errors as the telephone handset fits into a moulded case, and there are a wide variety of telephone handset shapes and sizes. Some acoustic modems are extremely efficient having flexible "soft" cups, but tend to be a little pricey. Hard-wired modems are becoming more widespread. They plug into a standard telephone wall socket (the type 800 BT new ones in with all new phone systems) and are therefore less prone to line noise, which corrupts data.

Two years ago, a modem for a home computer would have cost anything from £250 up to, with the advent of large public databases, modems can cost anything from £50 upwards. The ideal modem would be hard-wired offering 300/300, 1200/75 and 1200/1200 with auto-send and transmit plus other bells. They begin at around £130.

Two years ago, a modem for a home computer would have cost anything from £250 up to, with the advent of large public databases, modems can cost anything from £50 upwards. The ideal modem would be hard-wired offering 300/300, 1200/75 and 1200/1200 with auto-send and transmit plus other bells. They begin at around £130.

Software

Once you have decided on a modem, the next thing is to choose the software best suited to your needs. Usually, modem suppliers will recommend a package they

CONTACT

- GOTO 1** Computing
2 Personal
3 Adventure
4 Miscellaneous
5 Starnet Captains

know will work well with your particular micro.

There are some golden rules to watch out for when buying this "terminal emulation" software. The first is that communications can be fun, but watch out for that phone bill. You should examine what facilities the software has to help keep your costs down.

The second rule is ease of use — some software packages come in ROM with screen driven menus, but require a good knowledge of communications.

Simple terminal software will allow you to logon to most bulletin board services, view screens of information and type in messages while on-line. Some bulletin boards will even let you have free software to help in the logon process and download software in ASCII or hex files.

Public databases

Public service databases offer more complex software that can allow you to edit and prepare messages off-line for auto-transmission once on-line, thus saving telephone time. Other features include auto logon and system identity storage and easy frame save and frame tag to view pages of information such as daily news or share prices.

Once you are hooked on communications, the next thing to explore is the massive on-line public databases you can log into.

Communications owners have an extremely wide choice with two services stand directly at them — Micronet and CompuNet. These are in addition to generally available services like bulletin boards and private information retrieval databases aimed at researchers or businesses.

Both services use videotex and both offer different modems and terminal software.

Micronet 800 offers what it describes as a "state of the art communications override" with plenty of fills, which can be used with any standard V18 or V11 modem. The software comes in FROM and other terminal software for other systems can be overlaid onto it from disk or cassette. Price is supposed to be around £8.95.

Special encoding included in the FROM is allow easy, but safe — from a software supplier's point of view — software downloading.

Micronet will sell you a modem with 1200/75, 1200/1200 for around £15.00, although the whole package should be available in selected retail stores.

Cost of Micronet in its basic form is £12 a year subscription which also lets you into many other Prestel services like teleshopping, national and international news, travel and home banking. But, you will incur other costs on Micronet although messaging — at least at the moment — is free and nationally available from September on a local telephone call.

Prestel does charge you access time-based rates during peak telephone time of 3p per minute, but evenings and weekends are free.

Full details from Micronet 800, Durran House, Herby Hill, London EC7.

CompuNet is in its formative stages and is not clear for launch until late September, so direct comparisons are difficult at the time of writing.

There is a big added bonus with CompuNet — the first year subscription (which would normally be £10pa) is included in the price of the modem and special software for CompuNet. At £90 you get a 1200/75 1200/1200 modem, plus software, plus one year's use of CompuNet. However, once hooked up to CompuNet you begin to run into other charges, though their level only really

depends on when and what facilities you use.

CompuNet offers messaging like Micronet, but at 10p a time. Other facilities include downloading of free and commercial software, local call access in major UK centres, off-peak time free access, peak time (ie office hours) 10.0p.

What is really attractive about CompuNet is the ability for users to upload their own information or programs onto the network as the data is error corrected both ways. You can charge for your own software in an area called the Jungle and CompuNet takes a 50% commission. The same applies for information you may sell.

Software Park

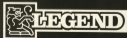
Prestel software is also sold in the Software Park, which is where the modem comes into its own. It has a privacy protection technique which prevents software once downloaded from CompuNet being run on another system.

A commission of 50% is charged in the Park. Users are charged for printing information pages or 1p bytes of programs at 10p a day per unit.

CompuNet expects to have a large teleshopping service operated by CompuNet — you can buy goods at discount prices and have a direct debit account — banking and postdating. Full details from CompuNet Information Centre, 475 Ajax Avenue, Slough, Berks SL1 4BG, or ask a dealer for details.

There are numerous bulletin board services scattered around the country which have evolved from the dominant days of Tandy. These are normally listed on public services and Dial which operates at 300/300 or 1200/75. Run by Display Electronics, it offers teletext, messaging and credit card shopping of components. Write to 28-32 Baggin Way, Upper Norwood, London SE19. ■

THE GREAT SPACE





RACE

MONI
SOFT 2

Vicsoft ready to head North

Will the Corby move mean better service from Vicsoft? Aye, there's the rub! Janet Richardson talks to Chris Jenkins

VICSOFT has been getting some pretty bad press recently — time and again letters appear in the pages of computer magazines which run along predictable lines: "I sent my order to Vicsoft and six weeks later they sent me half of it, I kept trying to phone them, but I couldn't get an answer. I'm still waiting for my five gifts, it's been three months now..." — and so on.

Janet Richardson is new in the Vicsoft hot seat. While acknowledging the service's past problems, she's quick to defend its record. "It makes my blood boil sometimes when I see letters in the computer press attacking Vicsoft's service — firstly we aren't in a position to reply to individual criticisms, and secondly you never see letters being published which praise people. Bearing in mind the size of the service, we only have a tiny proportion of orders which have problems."

Part of the problem has been the unexpected response to the service. Vicsoft catalogues are now sent out with such new Commodore computers, but sales were so great last Christmas that software stocks were inadequate. "We just underestimated the response we'd get — it's a mistake we're not planning to make next Christmas!"

Janet's full title is Customer Support Manager, and her responsibilities include Vicsoft and the Information Service. "I started with Commodore as personal secretary to Howard Starwood, the UK general manager. I didn't have any real knowledge about computing, but the assistant's introduction me — previously I'd been working in the hotel business, so I'd had some experience using VDU's, I'd also had a lot of experience dealing with the public, which was useful, since a large part of a personal secretary's job is involved with keeping the public away from the boss!"

User error

Janet's position as the general manager's secretary gave her a unique insight into the operation of all sections of Commodore UK, and an understanding of the company's customer relations policy. "I got on very well with Howard Starwood — I think you could say his attitude to the public is 'Yes, fair and friendly'. He's aware that we must deal sympathetically with users problems, but the company has no intention of being soft — Commodore isn't the kind of company to dole anything out. Around 90% of the problems we deal with are due to user error, so it's wrong to assume that the company is usually at

fault."

The technical enquiries section has two experienced computer users available to answer questions, with a complete range of hardware and software available to check queries. "It's difficult to answer some telephone enquiries, since if someone claims that they're typing in a program correctly you can't check it over the phone. The only way to deal with user error is to be very patient! Our technicians are kept busy all day answering enquiries, but since we move to Corby we should be getting another three people."

"Some of the questions we get about third-party software, which is sold through the Vicsoft catalogue, are more difficult to answer, and in those cases we sometimes have to refer people to the relevant software house. If you have a technical query you must please the information card number, which is given on all our advertisements — there's no point phoning Vicsoft, since it's purely a mail-order service, which doesn't have any technical people."

Errata

Some problems arise because of mistakes in the 64's manual or the Programmer's reference guide — "There's a six-page correction sheet for the manual, and a short version sheet for the PRG — these are now being included with new machines, but if anyone needs a copy they should just contact the information centre. Also please let us know if you've seen you've spotted any other errors."

In-house training of technical staff should mean that the information centre service becomes even better. Most criticisms, though, are levelled against the Vicsoft mail order service — so what are the problems here then?

"We send out a catalogue each quarter for the 64, and one for the Vic. We try to stagger the release dates so that the peak orders, which come about a month after the release of the catalogues, fall on different dates, but in the past we've been caught out by underestimating the response we'd get. One of the most common complaints against Vicsoft was that the free gifts offered on joining the club were very slow in coming. This is because we ordered a certain quantity of sheet covers and disk boxes, and these were much later than we anticipated. We went back to the manufacturers to get more supplies, and they just couldn't do it. It was partly



Janet Richardson and Vicsoft's unexpected Slough

Vicsoft's fault for underestimating the tremendous number of sales scooped up by the 64 last Christmas.

"Another problem is that since orders peak about a month after the catalogue is released, we can receive anything between 130 and 3000 software orders for each computer each day. This makes it very difficult to control our staffing levels, though staggering the catalogues does help."

In an attempt to control stock more efficiently, Vicsoft has appointed a stock controller. "All operations so far as possible are now computerised. Slough's maintenance is a Honeywell, and the Corby one, which is already running, is an IBM/16. Incoming orders are entered onto Vicsoft's VDU's. Cash checking is done by hand, and invoices are sent to the Vicsoft warehouse, where the orders are packed and despatched. All out-of-stock items are recorded on the stock controller's CBM700, and now, instead of waiting for IBM's stocks to come in, we put in special orders. Orders and tapes we can usually deal with fairly quickly."

Cartridges

"Some cartridges are manufactured in the Far East, they create more problems. By surface, delivery takes six to eight weeks, but in comparison we can arrange for air freight, which is expensive but only takes three days. The last emergency air delivery was of the International Soccer cartridge. It's been outstanding everything else for months, and I expect it will



warehouse — "Only more will mean better service."

continue to do so at least until Christmas. At the moment we've only got seven copies in stock — perhaps it's time for another emergency order!

Occasionally problems arise when programs are advertised, then have to be debugged before full production. Fortunately, Commodore is rarely guilty of this, though supply problems for programs in production are not unheard of. "When we move to Corby, the space allotted to Vicsoft will be much larger than the space we have here in Slough. Unfortunately we're the last to leave, since the section of the new factory which is to house Vicsoft is the last to be completed. Commodore has assigned the space available at Slough, and Vicsoft is expanding as fast as any part of the company. We aim to provide a better service after the move, and don't anticipate much problem in the move itself."

Northover

Janet Richardson is a Northover, and as such is only too pleased to be moving close to home. "I think the move is good for the company, and it's good for me too. Everyone at Slough was offered jobs in Corby and about 50% of the Vicsoft-information centre staff are moving. I believe almost all the software section have chosen to go. There will unfortunately be redundancies among those who chose not to go to Corby. The move should be completed by the end of August."

What of the future of the Vicsoft service itself? What will Commodore owners be getting for their £5 annual subscription fee?

"We'll be continuing the special discount offers and the free gifts on joining, although it's largely a marketing decision what to offer. There'll probably continue to be a promotion based around disk drives, though the free floppydisk offer has now ended. Again, the decision on that is really the province of the marketing department rather than Vicsoft itself."

Mailing list

Janet was quick to point out that anyone can buy from Vicsoft without having to join the club. "We do have many thousands of members, though — unfortunately, at the moment I can't give an exact figure. The situation is complicated because we also have a mailing list, of around 120,000, which is made up from the registration cards we receive from each machine sold. This list is probably very much out of date, and we're revising it so that we can avoid sending out material to people who perhaps bought their Vics several years ago and have now moved on to other machines."

Vicsoft is run semi-independently from Commodore, and is expected to make a profit. "In effect we buy stock from Commodore — although no money actually changes hands — and we buy from outside suppliers. We then operate the mail-order service and hope to make a profit, which at the moment we do. It's not a huge profit, but obviously if it dropped too far I'd be in hot water! The information service, though, is purely that — a service for customers."

Future plans will obviously include software for the Plus/4 and Citi. "We're not planning to push Vicsoft as a hardware supply service, since this involves servicing problems — any equipment sold would have to be posted back to us in the event of a problem, and people are understandably reluctant to do that."

Product

A catalogue devoted to software for the new machines must obviously wait until sufficient product is ready to make it worthwhile. "I know that there are several programs ready, or nearly ready, in the software department, and we have to wait for third party software to come through too. Obviously we'd like a big Christmas launch, but it's really too early to say. A lot depends on the response from outside software houses."

On the future of the Vic 20, Janet was optimistic. "The next Vic 20 catalogue has just gone to the printers, and it's the biggest ever. I don't see any sign of the demand for software falling off. Even if the machine is discontinued, there's such a large user base out there that software should continue to sell. At the moment 64 software is just out-selling Vic, but as I've said the situation fluctuates. It's mostly games for the Vic, many with educational aspects, while for the 64 it's a good mixture of games, education and utilities. There's some sign of a move towards disk, but I think prices and a lack of information about disk drives are still putting many users off."

Catalogue

The other change planned is in the nature of the Vicsoft catalogue itself. "We have a new editor, Jane Lunn, who used to work as the mail order section. She knows the service, and as Commodore likes to encourage people to go into higher posts if they show talent she was the obvious choice." Janet's plans include giving the catalogue more of a "club" feel, reorganising a listing of membership as well as emphasising the financial benefits of joining Vicsoft.

"We're thinking of doing things like giving away budgets, running competitions, having more programming hints, and so on," comments Janet. "We want to make the catalogue fun rather than just a list of software — something you can sit down and read through, perhaps pass around in school. Remember that in the case of the Vic especially many of the readers are very young, and we want to give them more to enjoy."

Future

There's really no telling what Vicsoft will do next if growth continues at the present rate. Already Janet Richardson has taken on 18 people for the Corby plant, and when the move is complete Vicsoft can continue to expand in all directions.

Traveling back to Slough station over the rail driver wanted to know what was going on — "Have you seen that International Soccer game?" he asked — "It is as good as it's made out to be!" Another customer for the Vicsoft! ■

NO DEDICATED GAMER PLAYER can afford to be without a joystick. In some cases you'll find that there are no key control options given with a game, and sometimes they won't do you much good even if they are provided — the games are so complicated that you'd have to have an output for a monitor in order to be able to play them.

You 28 and COM4 64 owners are luckier than most computer users, in that there are joystick ports provided on the machines —



Quickshot 1 — industry standard

so need to worry about interfaces! Since the standard Atari-type D socket has been adopted by Commodore, there's an enormous choice available when you're shopping for joysticks. So here's a guide which will help you to choose the stick that's right for you — and show you how to reach the scores you've always dreamed of!

All joysticks are the same, right? Wrong! When you're choosing the one that's right for you, you'll have to take into account the size of the handle, the type of grip, the



Quickshot 2 — rapid fire

trigger type, any special gimmicks, and more.

Let's first look at an industry standard, the stick you'll find in every shop. The Spectravideo Quickshot One is manufactured in America and distributed here by Yukon Electronics. It's a straightforward stick with a contoured grip

HARDWARE REVIEW

The joystick jury

Mega-zapping David Fox judges the games controllers and fire buttons both on top of the handle and on the square base. Like all the other sticks reviewed here, I tried it out on Alligata's Guardian for the 64, an intricate implementation of the arcade classic Defender which requires the utmost skill in joystick control and quick firing.

The Quickshot One responds well to handling, and the fire buttons are smooth,



Arcade — microswitch control

A great advantage is that the Quickshot One has four sockets which enable it to be attached to a flat surface. This makes it much easier to operate the additional keyboard controls which are required in many of the more complex arcade games. In Guardian, for instance, you need to operate Hyperspace and Smart Bomb controls as you fly your spaceship and operate the fire button for your lasers. Being able to anchor the stick securely means that it's much easier to operate it one-handed, and leave the other hand free. The base-mounted fire button makes left-handed operation easy. Quickshot One costs around £9.95.

Good points: Smooth response, sockets on base, fairly cheap.

Bad points: Probably wouldn't take rough handling.

Another from Spectravideo, distributed by Yukon, is the unimaginatively named Quickshot Two. Again, this one has sockets on the base and a square body, with a contoured grip. It differs from the Quickshot One in two major respects.

Firstly, it has a front-mounted trigger fire button as well as a top-mounted thumb fire button; and secondly, it has a rapid-fire option which built into the base.

I like the trigger-style fire button very much — I find it much easier to operate than a thumb-button. Ten out of ten to Spectravideo for putting the fire button where it should have been in the first place. The rapid-fire option is perhaps not for purists, since it gives you an unfair advantage. Simply switch to rapid fire and



Fire-Air — precision

hold down the trigger, and the stick will fire as fast as your computer can manage. Rather than being able to squeeze-off about four shots per second on Guardian with the normal option, Rapid Fire manages around 12! It may sound like cheating, but there's nothing quite like it if you want to survive more after more of attacking moments and reach 100,000 points. Quickshot 2 costs £11.95.

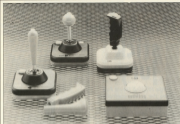
Good points: Trigger-style fire button, sockets on base, rapid fire option.



Holman Delta 200 — precision

Bad points: Handle perhaps a little oversized for some players.

Another nice simple joystick is the Arcade, made in Holland and distributed here by Dynamic. It has a strange wedge-shaped body which fits nicely in the hand, a single base-mounted fire button which is suitable for left- or right-handed



The Atari range — J-Roy, Red Ball, Boss and Pro-Ace!

players, and a shaft topped with a moulded ball. The Arcade has a microswitch contact system which makes it very accurate indeed, and causes it to make a pleasant clicking sound in operation. The fire button is large and operates smoothly. The Arcade costs £15.00.

Good points: Easy to hold, excellent microswitch system, available in Commodore 64 colour.

Bad points: No rackets, though it does have non-slip rubber feet.

The **Pro-Ace Competition Joystick** from Namtek has a pyramid-shaped body surrounded by a long, thin handle. The fire button is on the top, and there's a beam-mounted fire button too. Although the control afforded by the stick is very precise, there's very little movement in the handle. I never really got the feeling that I was flying my space fighter around the sky. The Pro-Ace costs £11.95.

Good points: Precise control, extremely durable.

Bad points: Little movement in handle, no rackets but rubber feet.

The **Voltaire Delta 26C joystick** makes a pleasant change: it has a flat rectangular base with three small fire buttons arranged in a triangle, and the handle is small and delicate. Again, not one for those of you who really like to get into the act of playing as space pilots, but with a little practice you can achieve very precise control. The Voltair was originally designed for the Dragon computer, and is made in England — so if you want to be patriotic, at £13 this is the one to go for!

Good points: Very precise control with spring-centred stick.

Bad points: No rackets, cups or rubber feet.

On over in the impressive range from Winc, who have gained some experience than any other games control manufacturers through their work on actual arcade games. The Winc controllers are notable for their excellent construction and extremely high reliability. Distributed by Computer Games Limited, the Winc range leads off with the **Boss**. Costing around £15, the Boss has a

very comfortable contoured grip with a flat-coating top thumb-button. The shaft is precision-engineered steel, so you can really bash this one about — it should take anything you can deal in. The switch system works on a leaf principle, so in theory it's fast and reliable.

Good points: Well-engineered, nice grip.

Bad points: No rackets, but rubber feet.

In the Winc Command Control series, the standard joystick is the **Famous Red Ball**. At £21, you'd have to be a dedicated games player to fork out for this one, but you'd be getting the best so far as engineering and precision are concerned. It's similar in construction to the Boss, but has a steel shaft with a large ball grip, on top of which is mounted the fire button. There's another button on the base, and a sliding switch which selects between the two — not a good idea in my view, since if your thumb gets tired you should be able to use

the base trigger for a change.

The **Famous Red Ball** has a large base which I found uncomfortable to grip, but I suppose I could get used to it.

Good points: State-of-the-art engineering for great accuracy.

Bad points: Cost, poor non-slip feet.

On to the **Three-Way Deluxe joystick**, which is basically a Red Ball with interchangeable handles. There's a contoured grip, a smooth baseball-like shape and a thicker-shafted grip with a gun-stick like head. An around £20 this stick could be recommended only to wealthy but indecisive computer gamers. Though it has the same high standards of construction as the Red Ball, it seems more possible to try to find a stick the shape of which suits you perfectly — after all, that shape of your hand doesn't change between games.

Good points: Well engineered, choice of handles.

Bad points: Cost, tendency for handles to slip off shaft if you yank them too enthusiastically!

The last Winc device isn't a joystick at all, but a **Trackball**. At around £43, the Trackball consists of a plastic sphere mounted in a heavy rectangular base. You control the movement of your spaceship (or cursor, or whatever) by rolling the ball. This allows you to control the speed as well as the direction of movement. The big disadvantage is that in order to keep something moving, you must keep rolling the ball — you can't just jam it over hard to left and keep flying. The result is that the Trackball is pretty useful in a game such as *Guardian*, but would be perfect for games like *Missile Command*, the arcade game in which it first appeared. It's a pity there aren't any versions of *Missile Command* for the 64!

Good points: Inventing designs method gives full velocity control.

Bad points: Cost — wuch! Limited applications.



Datal Mastery — attractive price, doubles as a "mouse"

Dean Electronics also offer a trackball, the *Mastropolis*. Features are almost identical to the *Wise*, but the price is a much more attractive £79.99. The unit uses magnetic sensors, and, as Dean points out, therefore acts as an almost true analogue input — making it ideal for applications beyond games play, such as "mouse" functions.

Good points: Inexpensive trackball.

Bad points: Again, not suitable for all joystick games.

Back to more conventional joysticks with an excellent design, the *Super Champ* from Dean Electronics. This extensive master joystick features a textured grip, sockets on the base, and both trigger-style and top-handle fire buttons. At £11.99 this one is a really good buy — I enjoyed using it despite the fact that it looks like some fabulous marbled ash. When you've finished playing, just twist the handle and the extra-long cable is wound into the large circular base — no more tangled wires!

Good points: Sockets on base, trigger-style fire buttons, cable storage feature, extremely macho. Top seller in the US for the last two years.

Bad points: Handle probably too big for some players, not something you'd want to leave lying around for Austin to see.

Our last collection comes from the American *Sincom* range, distributed here by Consumer Electronics Ltd. The emphasis of the range seems to be on small, well-engineered sticks which concentrate on performance rather than flash. The *Starfighter* has a small square black base

with a short shaft with a rounded end. The fire button is on the left of the base top. Remarkably easy to hold because of its rounded edges and light weight, the *Starfighter* is fast and accurate, and costs around £11.99.

Good points: Easy to hold, good response, very light and small.

Bad points: No good for left-handers!

Sincom's *TAC-2* (Totally Accurate Controller) solves the problem for left-handers — featuring a base only slightly larger and heavier than the *Starfighter*, with the same excellent response, it has in addition a steel shaft with a ball-end, and an extra fire button on the base. Cost is around £11.99.

Good points: Light, easy to hold, good response, suitable for left- or right-handers.

Bad points: A little expensive, rather inauspicious non-slip foot.

Half way between the two is the *Silk Stick*, which combines the *Starfighter's* base and single fire button with the *TAC-2's* shaft and ball grip. At £9.95, the *Silk Stick* combines the good and bad features of the two others, namely:

Good points: Light and accurate, well-engineered.

Bad points: No good for left-handers, again — they seem to be missing out!

The last in our mainstream round-up of joysticks is, like the *Trackball*, not a joystick at all — it's a joystick simulator. What, I hear you say, how can you simulate a joystick? Well, the *Sincom Jay* features an electronic touch-sensitive controller. The lightest of touches on the circular



Super Champ — a winner

touch pad set on the rectangular base is enough to create a response. A sliding switch controls whether movement is four-direction or eight-direction, which is handy for selecting between, say, space games such as *Guardian* or *Pacman*-style maze games where your choice of direction is limited.

The *Jay* Sensor also has touch-sensitive fire controls, ordinary ones on right and left and rapid fire in the middle. I've already commented on the advantages of rapid fire, so those of you with an insatiable appetite about moving down the enemy in battles will understand the attraction of the *Jay* Sensor. It's very difficult to learn the discipline of moving your thumb around on the pad, but once mastered this controller is great to use. Moves are much faster because there's no mechanical resistance to overcome, and the *Jay* Sensor should be almost impervious to wear! Start saving now! £26.95 now.

Finally, although I'd choose the *Super Champ* or *Quickshot Two* if I were forced to pick a winner, it's worth saying that you can only pick the stick that's right for you by trying out as many as you can. Just don't mention my name to the shop assistant!

Contacts:

Vulcan Electronics Ltd, 100 Brunel Street, London, 01-201-6266

Dynamic Marketing Ltd, Unit 15, Colting Close, Irlam, Manchester, 061-775-1827

Starlock, 198 Deansgate, Manchester, 061-834-6233

Voltmax, Park Drive, Baldock, Herts, 0462-894418

Computer Games Ltd, 6211, Hauer, Holdings 9611, Loughton, Essex, 01-208-5880

Dean Electronics, Unit 8, Preston Ind. Est., Dewsbury Road, Twicken, South-on-Trent, 0782-277819

Dean Electronics, Glendale Park, Farnham Road, Acers, Berks, 0344-553660

Consumer Electronics Ltd, Fallowthorpe, Manchester, M15 6HS, 061-682-2509



Sincom range — *Starfighter*, *TAC-2*, *Silk Stick*, *Jay* Sensor

STAR GAME

SCORE 2315

139

Bubble Bus
presents...

Mission

"X"

An exciting Vic 20 game written by young star programmer Richard Clark of Bubble Bus Software

BUBBLE BUS SOFTWARE lives in a converted garage close to the Midway in Cambridge, and hot off its computer comes a Vic 20 game from star programmer Richard Clark.

Richard walked into Bubble Bus' office at the age of 16 with a stack of programs, being his parental, Bubble Bus school Richard to write a program, *Bumping Buggies*, which turned into one of the company's biggest successes.

Richard started programming on the ZX81, and moved onto the Vic 20 two years ago. He taught himself machine code programming, then graduated to the 64. Writing *Bumping Buggies* took him three months, working at weekends.

Now that Richard's finished his science 'O' levels, Bubble Bus is taking him on full time as a 14 programmer.

His next project is *Cavern Fighter*, in which the player takes on the role of an intrepid explorer battling different monsters in a complex of caves.

As for Bubble Bus, the company, which started two years ago producing Vic utilities, is now concentrating more on games. With the success of the pool simulation *Master* for the 64, and the popular *Back Out*, both written by Nick

Strang, Bubble Bus has established a reputation which continues to grow. Forthcoming projects include *Strike Force*, a war simulation by Falklands veteran Terry Owen, and the utilities package *Qualities*, which includes Word Wizard, Power Printer, Label Printer and Advertiser on one disk.

Bubble Bus will continue to work on the 64, although MSX and Sinclair machines also figure in future plans.

Mission X uses the full potential of the unexpanded Vic 20. It's a fast-moving 3-D game featuring impressive use of sound and colour.

It's a three-stage game, in which the first part involves using your space fighter to knock flags off the top of enemy installations. Once this has been done the only way it is not to be passing through as many fuel gates as possible. Finally you have to land your craft on the landing

Use F1 for upward thrust, and F2 to keep the ship level. Use neither and the ship begins to fall. Each flag scores 180 times the flag number. Going through a fuel gate scores 150 and 50 fuel units. Completing a level scores remaining fuel times the level number.

There are eight levels of difficulty, with

the height of the buildings becoming more varied and more stars appearing in the fuel gate section.

The program is in two parts. You should first type in program one, and save it as MISSION X. Then type in program two and save it after the first part. To load in the game just load and run the first program, and it will load in the main section.

The first program sets up the defined graphics and a small machine code scrolling routine, and the second program is the actual game.

- 192-228 Set up variables
- 232-258 Set up game display
- 300 Access scroll routine
- 310-328 Check for collisions
- 330 Display spawning
- 400 Call scenery display routine
- 430-750 Update and display score
- 800-830 Check for keyboard inputs
- 887 Check for fuel gate
- 1000-1490 Display buildings and flags
- 1500-1590 Display fuel gates
- 2000-2490 Display landing pad
- 2490-2495 Check for crash
- 4000-4100 Completed level

Take your place in the cockpit, and good luck with Mission X! ■

```

1 P0R14C.2C:P0R145.240:PRINTCHR(0):CLR
2 P0R15:0:P0R152.28:P0R155:0:P0R156.20
3 GOSUB5000
10 P0R167:070673+72:READ:P0R16:3:NEXT
20 INT172.152.72:132.72:56:169:226:133:87:163:90:133:88:165:87:233:1:133
30 INT169.165:89:233:8:133:90:162:12:148:26:136:177:89:145:87:136:200
40 INT16249:163:32:145:87:24:165:87:165:23:133:87:144:2:238:88:24:165:89:168:22
50 INT133:89:144:2:238:90:202:206:217:104:170:184:163:194:96
65 P0R167:165707673:P0R168:PEEK(16+25600):NEXT
    
```


ATTENTION! ATTENTION! ALL COMMODORE USERS!

Do you use tapes? Are you sick and tired of waiting for your programs to be Loaded/Saved from on the tape? Then you need a **TORNADO!** Tornado allows you to Save/Load/Verify your Basic/machine code programs faster than a CDM 1541 disk drive does!! Due to popular demand! Tornado now comes with new and more powerful commands plus extra instructions to assist you in making fast repairs of your existing machine code/tape programs. Tornado is available on tape for CDM 64 and 64C - Vtc 20.

Do your Fun/Stop and Restore keys often fail? Do you want to come out of those crashes?! Or get into those unbreakable programs?! Then what are you waiting for, get yourself a

BREAKER! Reset switch and let your computer know who is the boss! Breaker can be connected to your machine in seconds, no soldering. Included with the Breaker reset switch is extra backup software on tape. Breaker is now available for any CDM 64 or Vtc 20.

Available for CDM 64 and the Vtc 20 now is the

ROM-FILE which contains a complete disassembly of CDM 64/Vtc 20 Rom with comments. As well as a complete description of all 6502/6510 instructions and addressing modes - a complete listing of a machine code monitor and more!

Please make cheques/PO payable to:

BSF COMPUTER SERVICES LTD.
DEALERS AND GENERAL ENQUIRIES
TEL: 079482346

MAD SUMMER OFFER!
A FREE BREAKER WITH
EVERY TORNADO IF YOU
USE THIS COUPON!

Please send me _____ Tornado £28.95 + mystic Breaker

Please send me _____ Breaker £17.95

Please send me _____ Rom-File at £7.00

I enclose cheque/PO/cash in the sum of £ _____

Name _____ Computer _____

Address _____

Please use this form and block letters only. All prices are inclusive of VAT (not order only, add 10% if outside UK). Please post to:
BSF CSL, 20-28 BOLSOWER STREET, LONDON W1.

NEW ORIGINAL GAMES FOR THE COMMODORE 64

• **NIGHTMARE PARK** is in fact a combination of 14 games. The task of the user is to generate many points as possible travelling through maze level by obstacles at every turn. These turnings/obstacles are overcome by a combination of skill, sharp reflexes and strategic but making Nightmare Park a suitable game for all ages.

PRICE £7.99

• **DOTS & BOXES** a intelligent game where the user and the computer take turns in completing boxes by drawing a cross between two dots. The aim of this game and win the most boxes without allowing the number of boxes given away to the computer.

PRICE £8.99

• **HEXAPAWN** for strategic and ambitious play. The opponent chooses their tactical strategy but programmed to react to the user's moves to help to win a strategy.

PRICE £5.99

• **CHOPPER LAND** your chopper is ordered to transfer goods from your base and land SAFELY. An exciting new game full of surprises.

PRICE £7.99

Send Cheques/PO:

A.R. SOFTWARE

66 Avonbrae Crescent

Hamilton, Scotland

Tel: 0498 262036

DEALER ENQUIRIES

WELCOME

Voucher

Collect this voucher and use either one from each issue of Commodore magazine and when you purchase our next issue (issue 100) to receive a £5.00 VOUCHER for any software (MSD) you wish to purchase (maximum £100).

UK'S LOWEST PRINTER PRICES!

PRINTERLAND

ORDERED TODAY - DELIVERED TOMORROW

DOT-MATRIX

SEIKOSHA GP 80	£120.00
SEIKOSHA GP100	£160.00
EPSON RX 80	£189.95
EPSON RX 80 F/T	£214.00
EPSON RX100	£229.00
EPSON FX 80	£317.00
EPSON FX100	£429.00

DOT MATRIX PLUS NEAR-LETTER QUALITY

CANON PW1080A	£275.00
---------------	---------

DAISY-WHEEL

IBM 6100	£345.00
BROTHER HB15	£349.95
EPSON DX100	£366.00

WE SPECIALISE
YOU BENEFIT

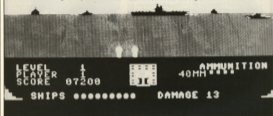
DRAGON PRINTER CABLES
AND ACCESSORIES IN STOCK
VARIOUS COMMODORE PRINTER
INTERFACES IN STOCK

Educational, Government plus Overseas Orders Welcome
Please call 199 7422 (Judy's Printer) 915.00, Repair £12.00, Order 90p
Postage and P.P. Extra Subsidy Rates for Under-16s £1.10 P.P.

TEL: 0494 514100

On the beach

Can you establish a beach head, save Esmerelda and go 10 rounds with a boxing champion? Find out in Pete Gerrard's latest games review



DISPROVING the ancient adage that you can't teach an old dog new tricks, Thom EMS continues to produce some interesting games for the Vic 20 (albeit with 8K expansion).

One of their newer successes is the very good **Tank Commander**, which would have merited a 'rave' review, if I wasn't for the fact that my copy of the program managed to crash every time I played it. Must be the hot weather.

You are in sole charge of a tank, and need time to say your mission is to destroy all the enemy tanks, and in particular you have to keep an eye out for two dumps: one ammunition one and one fuel one. Destroying these two takes you onto the next level of play, where even more enemies are out to prevent you completing your mission.

Some games do give you the bump while playing them, and **Quasimodo** is one of them. An exciting cover to the miniature video box that accompanies the cassette hints at a wealth of graphics about the game. The description on the back of the cover also suggests that you are about to witness the most amazing game that you've ever seen on a Vic 20. But personally, I found this about as exciting as watching Breakfast TV.

Your doubts start to creep in round about the time when the instructions tell you to remove all memory expansion from your Vic, while the cassette informs you that this game requires 8K memory expansion: something appears to have gone

wrong somewhere, since it does in fact need 8K of extra memory.

As **Quasimodo**, it is your job to rescue the pretty gypsy girl Esmerelda, who is about to be hanged by the wicked Count D'Arco for refusing his love. Since **Quasimodo** is apparently an ugly state bookmark, I wouldn't have thought that Esmerelda would have been too pleased about being rescued by him, but there you go.

When different levels of play, it says. You have to race across three fifteen different levels in order to reach the spot where the execution of Esmerelda is about to take place. With enemy guards after you, fireballs being hurled in all directions, and spear-throwing huns about the place, this seems to be no easy task.

Supplied by Advanced Computer Entertainment, who have produced some interesting stuff for the Commodore 64, this is not one of life's gems. There's far better stuff around.

Revelation

Once the Commodore 64 crew, with **Revelation**, from the company that brought you **Light**, the story of the mad criminal who goes around planting eggs from porcupines. Yes, **Sphinx** are at it again, and this is another game that is interesting without being outstanding.

The cassette cover hints at a game of light-like proportions, depicting ancient tanks hidden in mountains, with flying birds and fire-breathing dragons stalking

the countryside. However, the game itself comes over as a cross between **Hoopa-Hoo** and **Space Invaders**.

They are different monsters inhabit the fancy carvings that you have to traverse before meeting the master Monster lord. I hope he's worth the wait, since I never managed to get that far. In each cavern are a number of enemies which have to be destroyed before you can finish off all the monsters living on that level. With a nice graphical touch, everything scrolls around the screen at a reasonable speed as you move around shooting the turtles and shooting or dodging the monsters.

As far as I'm concerned, **Horace** can go and take a running jump, since the lovable little imp seems to be getting everywhere these days, and there is such a thing as overkill. However, **Warrior Goes Skiing**, originally a Spectrum game from Melbourne House, has now made the transition over to the Commodore 64.

As with some other notable games that have appeared on the 64 after starting life out on the Spectrum, nothing much seems to have changed here. You're in charge of Horace, a cute little imp, who decides to go skiing. To do that he must first of all cut his skin (mighty cheap at ten dollars a session) from the local shop on the other side of a busy highway.

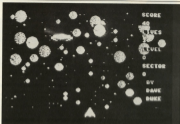
Using keyboard or joystick you must manoeuvre Horace across the road, watching out for the fast moving motorbikes and the slow moving lorries. Cars travel along at an intermediate pace,

and should Horace be unfortunate enough to collide with one of them another ton of your original 40 dollars gets eaten in ambulance fees. Luckily, these collisions are never fatal, and the game only ends when you run out of money. Having got across the road and entered the ski shop, you've then got to get back across the road once more before getting onto the ski slopes themselves.

Here there are five hazards, other than Horace's inability to do as he's told. Trees get in your way every now and again as you race down this slalom course, and a collision with one of them may or may not break your ski, depending on your fortunes at the time. Missing a set of flags wipes some points from your total, and there are also a number of ridges lying around that throw you wicketly off course should you happen to bump into one.

Finishing the course sets you back at the ski shop, and sets for a trip across the road once more before getting onto the second ski run.

This is only marginally different from the first, and presumably the rest of them follow suit. Should you be unlucky enough to break your ski, you start off on the wrong side of the road again. A little thought on the part of the programmer could have turned this very ordinary game into quite a good one, as a number of silly things seem to have been put into it. For instance, running out of money ends the game, but not instantly. You can spend ages trying to get across the road to the ski shop, thinking that you're actually getting somewhere. Only when you've made the



Galactic 1 — a space battle set against a hard multi-coloured background

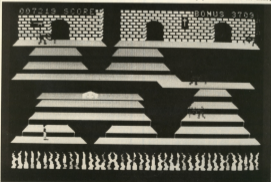
trip are you told that you've no money to hire the ski and the game grinds to a halt.

U.S. Gold is a label that is importing a lot of very good American old software, and *Beach Head* from Access Software is one of their later efforts. Available on either tape or disk two had the tape version, unfortunately, it is supplied in this country by Centronics, who've had the good sense to put it out in turbo load format, as jet load is they prefer to call it.

You are in charge of a fleet of ten ships, whose objective is to reach the shore and

land an attack force to destroy the enemy HQ.

In this multi-score game, the first has you manoeuvring your fleet (represented by 4 little dots) around a harbour. There are two passages into this harbour, and what is referred to as the hidden passage is the one to get for, since this catches the enemy on the top and means that future levels are a little easier. However, getting through this passage requires a little more than 1, and with the subtlety of a charging bull I attained the enemy's



Mr. Maphisto is one of those games that is hellishly addictive

NEW!

AMAZING NEW SPEECH SYNTHESISER FOR YOUR COMMODORE 64

ALLOPHONE BASED SPEECH WITH AN UNLIMITED VOCABULARY

• New basic commands give full control over all speech functions • Approximately 200 predefined words built-in • Speech may be produced simultaneously with graphics and sound • Extended basic commands are very powerful and are well proven on our other speech synthesisers • This must be one of the most advanced and comprehensive speech synthesisers available today. **Nearly has anything been so easy to use on a Commodore 64.**

Order now by sending cheque, P.O. Access number to:
J.C.B. (MICROSYSTEMS),
77 Southdown Road,
Bournemouth, Dorset BH4 5AE.
Tel: (0202) 423473.

Dealers—please contact us now.
Never have our terms been better.



Speakezy

All this at
an amazingly
low price of
£29.95

© 1984 J.C.B. (M) Ltd.

Buffer used for use with hardware £1.50.

J.C.B. (MICROSYSTEMS)

Superbase 64

Superbase 64 is a powerful database management system for the Commodore 64. It allows you to store and retrieve data in a structured manner. It features a user-friendly interface and a powerful query language. It is suitable for a wide range of applications, from simple data storage to complex database management.

VIZAWRITE 64

Vizawrite 64 is a word processing software package for the Commodore 64. It offers a variety of features including text editing, formatting, and printing. It is designed to be easy to use and efficient.

Master 64

Master 64 is a spreadsheet software package for the Commodore 64. It allows you to create and manage spreadsheets with ease. It includes features for data entry, calculation, and printing.

*** MAIL ORDER INFORMATION *** CALL US TODAY *** 0202-423473

Product Name	Price	Product Name	Price
Superbase 64	£19.95	Vizawrite 64	£19.95
Master 64	£19.95	Speakezy	£29.95

For more information on our products, please contact us at the address above. We will be happy to provide you with a free brochure.



Unit 100, 100A, 100B, 100C, 100D, 100E, 100F, 100G, 100H, 100I, 100J, 100K, 100L, 100M, 100N, 100O, 100P, 100Q, 100R, 100S, 100T, 100U, 100V, 100W, 100X, 100Y, 100Z



CBM 64 Software



FLIGHT SIMULATOR
Play your aircraft to the support of your chosen U.S. Inland your joystick on the map at any rate during your flight and experience the joys of true 3D flight and landing. **Speeches included! Complete game £9.95**



YANKZEE
Play the very detailed old Chinese dice game called Yankzee or Yankzee. You'll find it's a challenging game. **Complete game £3.95**



PURE GOLF
Face up the challenge to play Golf on this 3D view map. 18 courses. Play to full PGA standard with the game or improve your handicap at home. **Complete game £3.95**



ASSEMBLER
Help yourself to learn how to write, read and copy your own machine code programs. Some knowledge of machine code is preferable to maximize the use of this tape. **Complete £6.95**

LIFETIME REPLACEMENT GUARANTEE

Provide our complete form (pages 2 and 3) to be sent with your order.

Name _____ Flight £9.95
 Address _____ Golf £7.95
 _____ Yankzee £3.95
 _____ Assembler £6.95

Any combination of programs available on Disk £2 extra.

When you order software from Calco Software you will receive a free copy of our software manual.



Revelation ... from the company that brought you Light!

◆ Don't lead on each time.

This brings you to some 2, where your ship is under bombardment from enemy aircraft, and your only weapon is an anti-aircraft gun. Some scrolling graphics here, as your fire comes under a continuous barrage from the enemy. From time to time a reconnaissance plane flies across, showing that down towards a healthy home, but usually distracts you from the task in hand and you lose a couple of other ships.

Ballad

This scene seems to continue the one, and it is a great relief when you finally move onto the next one. Here the enemy ships themselves are firing at you, and moving your gun up and down determines how far your retaliatory shots will travel. A screen read-out shows you your angle of elevation and how far out your last shot was. Since half a degree of elevation is equivalent to 100 metres travelling distance for your shots, you can soon work out what new angle to fire from.

If you manage to emerge from this level with a few ships left, each ship magically changes into two tanks and a spot of land fighting takes place before you reach the enemy stronghold and the object of the game. According to the instructions you then have to shoot the fortress down on the final level, but this appears to be impossible. I failed every time.

A good and challenging game that is well worth considering by any 64 owner tired of Space Invaders and Adventure games.

Reverting an idea or two from K-111, 1.1.1. Programs has released a double sided tape for the Commodore 64. One side

details about this package is that you've told on the cassette tape card how long the programs take to load; other manufacturers please note.

Galaxies 1 is a space battle, which takes place over a lurid multi-colour high resolution background, which has planets and asteroids of every colour in the rainbow hanging around in mid space. This is presumably there to make the game look visually interesting, since nothing else of note happens. You control a spaceship, which has the unenviable task of saving the universe. The enemy obligingly only send one enemy craft at you at a time, and as far as I could tell that was all there was to life in the entire game. Shoot your opponents, one space-ship at a time, and just keep checking up the points.

Boxing, on this one, was a little better, although it took me quite a while to figure out that the two sprites being used were meant to be aerial shots of two boxers in action; they look quite strange when you first see them.

The idea in this two player game is just to move your boxes around the ring and thump the living daylights out of your opponent. The graphics look quite ridiculous when both players are throwing punches, and it's almost worth buying just to see them in action.

An annoying feature of Boxing is that should you or your opponent be forced onto the ropes, the relevant character is placed immediately back into their own corner, to start again. Points are scored for the number of punches thrown and the number of times that you can force your opponent to hit the ropes, and the best man

at the end of ten rounds wins.

A laudable effort to give value for money, but there are much better programs around.

Mr. Mephisto is one of those games that is mindboggling addictive, and one that deserves consideration for a place in your own software library. It's by a new company called euro-byte.

You are trying to reach the gates of Heaven, in the interesting scenario to the game. Unfortunately for you the way to the gates is blocked by demons and fiendish ghosts, and the stairways that you must walk up to progress onto further levels are, like real ones, continuously moving the wrong way. Thus, in your efforts to dodge the demons and keep out of the way of everything else, you have to carry on moving upwards and the stairs (which you 'kick' into the flaming abyss of Hell, as the cassette cover artfully describes it,

Next level

You control a nicely animated man, and your job is to move him about the place, walking up the moving stairs and avoiding the demons as you go. On each screen there are one or more objects to be gathered, and getting hold of these allows you access to the next level of play.

This description may make the program sound a little like Music Mirror and others of that ilk, but it isn't.

Four speed levels are used (along with three different levels of play), to add interest to the game, and all told this is one of the better new releases for the Commodore 64. ■

Making the most of your 64's memory

Relocating the character set and moving the screen can make additional memory available on the 64. David Bolton explains how to create an extra 1K of ram for programming

THIS ARTICLE will show you how to increase the memory of your Commodore 64 to almost 40K of ram, an extra 1024 bytes over the normal.

Commodore 64 Basic starts off with the screen occupying ram from locations 1024 to 2047. If we can move this elsewhere then we can alter the start of basic pointers, and gain an extra 1K.

The main problem is that the screen must be moved completely out of the first 40K of memory. The ideal spot turns out to be in the unused 4K of ram from 49152 to 50347.

Because of the way the Vlc chip works in banks of 16K, we will also have to move the character set so that it falls into the same bank. This affects sprites, but not basic, and we'll deal with those later.

I have chosen 49032 to 51199 for the character set with the screen straight after that at locations 51200 to 52123.

Changing this from normal is a very simple task as only three pointers are needed. POKE 56756,64 changes the bank that the Vlc chip looks at. POKE 31271,31 changes screen and character set positions and POKE 6441,208 tells the 64 where the screen is for purposes of writing to it. This last poke is necessary, otherwise the 64 would think the screen was still at 1024 while displaying 51200 to 52123 which is a very confusing situation.

The character set also has to be relocated, so to make life simple I have

included a short machine code program (listing one) which moves the complete character set, changes the screen, and all in the blink of an eye!

Once you have typed this in, save it before running it. I have included a "checksum" which will tell you if the DATA statements are wrong. If it works correctly it will say FOR NEW CHAR SET JUST TYPE SYS 680

When you do this SYS the screen will be full of garbage. Just clear the screen and all will be OK. You can check that the screen has moved by hitting the (HOLD) key and putting a * in the top left corner. Now enter POKE 51200,64 and you will see the * change to a 0.

Custom memory is not changed, it is still at 51296. If however you do a RUN - STOP and RESTORE you will get funny letters appearing on screen. Type in SYS 680 it will look strange but don't worry, press RETURN and all will be as it should be.

Sprites are now stored in a new where they are stored. Instead of using locations 2048 to 2047 for the sprite pointers, you use 52116 to 52123. The values in these pointers 0 to 253 now refer to memory locations 49152 to 50150 in steps of 64. POKE 52116,48 will set the sprite pointers at 64*48+49152 = 52216 for sprite two.

Program two is rather large and consists

in the main of data statements. This contains a brand new character set for the 64. It has its own pointer for changing memory around so you don't need to use program one first. Just load and run program two.

This only contains half of the character set. The reverse characters are obtained by subtracting each of the bytes from 255. If you don't want reverse characters then you could use the ram from 50736 to 51199 for sprite patterns (numbers 18 to 31), but if you do want them then enter and run this line of Basic.

```
FOR I = 0 TO 160:POKE 50736 + I, 255 - PEEK(49152 + I):NEXT I
```

Program one copies in a full character set with reverse characters. If you don't want reverse, then change the 16 which is the bytes from the end of line 45 from an eight 16 and alter 16445 in line 28 to 16415.

Now to gain the extra 1K of memory just enter the following line:

```
POKE 44,4:POKE 1024,6:NEW
```

The first poke changes the start of Basic to 4 * 256 = 1024 and the second sets this to zero otherwise you will get SYNTAX ERRORS.

This will lose any program in memory so be careful and save it first.

If you now PRINT PEEK(0) you will get -2680 which really means 89921 bytes free (just add 65535). Now you can have even bigger arrays! ■

Program 1

```
10 B=680
15 FOR I=510765:READA:POKEI, A: I=I+A: NEXT
20 IF I < 51044 THEN PRINT "DATA ERROR" : GOTO 25
25 PRINT "FOR NEW CHAR SET JUST TYPE"
30 PRINT "SYS 680"
35 END
40 DATA 169, 0, 143, 207, 2, 169, 208, 141, 208, 2, 169, 0, 141, 210, 2, 169, 192, 143, 211, 2, 173
45 DATA 14, 220, 41, 204, 141, 14, 220, 165, 1, 41, 201, 1, 33, 1, 162, 0, 160, 16, 189, 0, 214, 187
50 DATA 0, 200, 232, 208, 247, 238, 208, 2, 238, 211, 2, 136, 208, 238, 163, 1, 9, 4, 133, 1, 173
55 DATA 14, 220, 7, 1, 141, 14, 220, 169, 32, 141, 24, 208, 169, 68, 141, 0, 221, 169, 200, 141
60 DATA 134, 2, 94
```

20 PORE48,200,PORE53272,321POREBATA,60
 30 2=01PORA=070102228PRA48a3=2=64PORA=1,AHREB1
 40 DF2C=99737878PRA48PDATA EPW06P=STOP
 500 DAT0204,120,180,170,180,120,254,0,0,0,116,140,140,140,118
 510 DAT00,192,192,254,198,198,198,254,0,0,0,254,192,192,192
 520 DAT0254,0,0,0,254,198,198,198,254,0,0,0,254,198,254
 530 DAT0192,254,0,254,50,48,120,48,48,48,0,0,0,254,198
 540 DAT0198,254,0,254,192,192,254,198,198,198,198,0,0,0,24,0
 550 DAT024,24,24,24,0,0,24,0,24,24,24,24,120,192,192
 560 DAT0204,216,204,216,204,0,24,24,24,24,24,24,60,0,0
 570 DAT00,254,214,214,214,214,0,0,0,254,198,198,198,0
 580 DAT00,0,254,198,198,198,254,0,0,0,254,198,198,254,192
 590 DAT0192,0,0,0,254,198,198,254,0,0,0,254,198,198,192,192
 600 DAT0192,0,0,0,254,192,254,0,254,0,0,24,126,24,24
 610 DAT024,24,0,0,0,198,198,198,254,0,0,0,198,198
 620 DAT0198,198,58,0,0,0,198,198,214,214,254,0,0,0,198
 630 DAT000,58,108,198,0,0,0,198,198,198,254,0,254,0
 640 DAT0254,0,58,192,254,0,120,96,96,96,96,120,0,12
 650 DAT00,48,124,48,98,252,0,60,12,12,12,12,12,60,0
 660 DAT00,24,60,90,24,24,24,0,0,16,48,127,127,48,24
 670 DAT00,0,0,0,0,0,0,0,0,0,24,24,24,24,24,0
 680 DAT024,0,102,204,24,0,0,0,0,0,102,102,258,192,258
 690 DAT0102,102,0,24,62,96,60,0,124,24,0,98,102,12,24
 700 DAT048,102,70,0,60,102,60,96,102,102,62,0,0,12,24
 710 DAT00,0,0,0,0,12,24,48,48,48,24,12,0,48,24
 720 DAT00,12,12,24,48,0,0,0,36,24,60,24,36,0,0
 730 DAT024,24,126,24,24,0,0,0,0,0,0,24,24,48
 740 DAT00,0,0,126,0,0,0,0,0,0,0,0,0,48,48
 750 DAT00,0,0,12,24,48,96,192,0,254,198,204,214,220,198
 760 DAT0254,0,24,24,24,24,24,24,60,0,254,198,0,254,192
 770 DAT0192,254,0,254,198,0,20,0,198,254,0,48,96,192,192
 780 DAT0204,204,254,12,254,198,192,252,0,0,48,96,192
 790 DAT0204,198,198,254,0,254,198,0,12,24,48,96,0,254,198
 800 DAT0198,124,198,198,254,0,254,198,198,254,0,12,24,0,0
 810 DAT00,24,0,0,24,0,0,0,24,24,0,24,24,0,0
 820 DAT00,0,24,96,96,96,24,0,0,0,126,0,126,0,0
 830 DAT00,0,96,24,0,0,24,96,0,62,0,0,12,24,0
 840 DAT024,0,0,0,0,258,258,0,0,124,198,198,224,198
 850 DAT0198,198,0,252,204,204,254,198,198,254,0,254,194,192,192
 860 DAT0198,198,254,0,252,198,198,198,198,198,252,0,254,198,192
 870 DAT0240,192,190,254,0,254,198,192,240,192,192,192,0,254,198
 880 DAT0192,192,204,198,254,0,198,198,198,254,198,198,198,0,60
 890 DAT024,24,24,24,24,60,0,0,0,0,198,198,254,0
 900 DAT0198,204,216,240,216,204,198,0,192,192,192,192,192,254
 910 DAT00,254,214,214,214,214,214,214,0,198,230,246,222,206,198
 920 DAT0198,0,254,198,198,198,198,198,254,0,254,198,198,254,192
 930 DAT0192,192,0,254,198,198,198,214,214,254,12,254,198,198,254
 940 DAT0216,254,198,0,126,192,192,124,0,0,252,0,126,24,24
 950 DAT024,96,24,24,0,198,198,198,198,198,198,198,224,0,198,198
 960 DAT00,198,198,108,56,0,198,198,214,214,214,214,254,0,198
 970 DAT0198,108,56,108,198,198,0,102,102,102,126,24,24,24,0
 980 DAT0254,0,12,56,96,192,254,0,124,120,186,142,186,120,124
 990 DAT00,12,24,48,112,48,24,12,0,0,0,0,0,126,96
 1000 DAT00,0,0,0,3,62,108,54,24,0,258,127,67,31,12
 1010 DAT07,3,1,0,0,0,0,0,0,0,0,240,240,240,240
 1020 DAT0240,240,240,240,0,0,0,0,258,258,258,258,258,0,0
 1030 DAT00,0,0,0,0,0,0,0,0,0,0,252,192,192
 1040 DAT0192,192,192,192,192,192,204,204,32,31,204,204,31,31,3
 1050 DAT03,3,3,3,3,3,0,0,0,0,204,204,31,31
 1060 DAT0225,254,252,248,240,254,192,128,3,3,3,3,3,3
 1070 DAT00,24,24,24,31,31,24,24,24,0,0,0,0,15,12
 1080 DAT018,18,24,24,24,31,31,0,0,0,0,0,0,248,248
 1090 DAT024,24,24,0,0,0,0,0,0,258,258,0,0,0,31
 1100 DAT031,24,24,24,24,24,258,258,0,0,0,0,0,0
 1110 DAT0258,258,24,24,24,24,24,248,240,24,24,192,192
 1120 DAT0192,192,192,192,192,192,224,224,224,224,224,224,224,7
 1130 DAT007,7,7,7,7,7,258,258,0,0,0,0,0,0
 1140 DAT0258,258,258,0,0,0,0,0,0,0,0,0,258,258
 1150 DAT0258,3,3,3,3,3,3,258,258,0,0,0,0,240,240
 1160 DAT0240,240,12,12,12,12,0,0,0,0,24,24,240,240
 1170 DAT00,0,0,240,240,240,240,0,0,0,0,240,240,240,240
 1180 DAT015,15,15,15,192

3D COMPUTERS

THE HOME COMPUTER SPECIALISTS

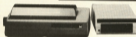
Easy Parking at all branches

With more branches than any other Commodore specialist dealer we offer

ONE STOP SHOPPING
For you



Call at your local branch for friendly advice and service.



See a complete display of hardware and software to build up your second system.

SOFTWARE

All the best sellers from the top U.K. and U.S.A. software houses, eg.:

LLAMASOFT
DATASOFT
EPYX
INFOCOM
RABBIT
INTERCEPTOR
SUPERSOFT
ON-LINE
AMIRGO
BRODERBUND

PERIPHERALS

DISCS
PRINTERS
JOYSTICKS
MONITORS B&W/
COLOUR
LIGHTPENS
CDS CASSETTE DECKS

LARGE RANGE OF BOOKS, MAGAZINES, CASSETTES & FILES FOR PAPER ALONG WITH STOCK

TOLWORTH

330 Tolworth Place South, Tolworth, Sutton, Surrey KT5 9AB
Tel: 01-837-8217

SUTTON

30 Station Road, Belmont, Sutton, Surrey SM4 6BS
Tel: 01-842 2934

BALING

114 Gurneysbury Avenue, Baling, London W5 4PB
Tel: 01-292 5655

RICKMANSWORTH

Chevyne Works, The Green, Cooney Green, Rickmansworth, Herts, WD3 3AJ
Tel: (0823) 779250

NEWBURY

20 Station Road, Newbury, Berks, RG14 3PH
Tel: 06354 30047

LUTON

1 Manor Road, Castlebrink, Luton, Beds, LU1 4BJ
Tel: (0525) 48875

SOPHISTICATED GAMES FOR VIC 3000/604

VIC3A CRIBNET Features game of tactical skill and luck. Set by full commentary with full commentary and all the major rules of cribnet completely interpreted. Includes game save facilities.
VIC CRIBNET for VIC 20 + 2K 5.99
VIC CRIBNET for VIC 30 + 2K 5.99

LEAGUE SOCCER League title game for 2-24 players with automatic fixtures, tables, commentators, results sheets, scores, league table, cup draw etc. Programme save facilities.
LEAGUE SOCCER for VIC 20 + 2K 5.99
LEAGUE SOCCER for VIC 30 + 2K 5.99

WHODUNNIT! 12 games have pathway to drink at Murder Manor. One out of three has more than 2000 on the mind. Addictive and thrilling detective game for 1 to 4 players, with generally different game each time.
WHODUNNIT! for VIC 20 + 2K or any C64 64 (same which) 4.99

TOP OF THE POPE Easy to learn game about the most funniest. To go to 10 levels. Includes programme save facilities.
TOP OF THE POPE for VIC 20 + 2K 4.99
TOP OF THE POPE for VIC 30 + 2K 4.99
TOP OF THE POPE for VIC 64 4.99

ELECTION NIGHT SPECIAL! Lead your own party into the next General Election. A game for 1-2 players. Programme save.
ELECTION NIGHT SPECIAL for VIC 20 + 2K 4.99
ELECTION NIGHT SPECIAL for VIC 30 + 2K 4.99

PARTY 4 Four games to match the progress of your party.
MATTERHORN, A DAY AT THE RACES, SHAM & STARS Poker and **COMEDY QUIZ** for 1-4 players. Includes programme save facilities.
VIC PARTY 4 for VIC 20 + 2K or more 4.99
VIC PARTY 4 4.99

***NEW*, ADULTS ONLY** Fun game for 2-10 breadbasketed players. Lots of gambling and betting, plus many other rewards and bonuses. You never know what you'll end up doing, or with whom! Betting odds and real money! For heavy breadbasketed.
ADULTS ONLY for VIC 20 + 2K 4.99
ADULTS ONLY 4.99

DISC VERSIONS AVAILABLE FOR ALL GAMES - 12.00 EACH, ALL OTHERS WITH ONE (MUST) BUY ONE V1. GAMES SOLD SUBJECT TO CONDITIONS OF SALE. PLEASE ALSO ADVISE US ON REQUEST. PLEASE NOTE OUR PRICES DON'T INCLUDE DELIVERY CHARGES.

SOPHISTICATED GAMES

Dept. 04, 37 Square Rd, Epsom Surrey, Surrey TW20 2JG
Tel: 07525-3437

COMMODORE 64 DATABASE - DATAFILE

Powerful options include: print alternative records, delete, insert, search, fast, fast, fast, alphabetical sort, user-defined fields, memory search, four screens fields, multi field inter-connection, print and program copy protection, etc. Fully menu driven with comprehensive notes to use instructions.
C64 64 compiled cassette £7.95
C64 64 compiled disk £10.95

COMMODORE 64 WORDPRO - TEXTFILE

Powerful word processor. Facilities include: large text buffer, auto centre, variable tabs, insert, amend, delete, copy, move text, word count, right justify, paging, join files, merge file handling, print alternate text etc. Fully menu driven with comprehensive notes to use instructions. Great value.
C64 64 compiled cassette £8.95
C64 64 compiled disk £10.95

All programs with full documentation and guarantee. 100% can be used with all current commercial C64/64 printers including 1500 printers/interfaces. Also many computers with suitable hardware interfaces. Price includes fast delivery to your local post. **Checkers PC's** for **A & C SOFTWARE**
57 Andrew Road, Trivelp, West Midlands B69 2HQ

Hot outside?
You could be even warmer.

LEWDO!

It's new . . . It's naughty . . . It's a game for adults only.

FOR THE COMMODORE 64 - £8.95

Twilight Software, 188 King Street London W8 0DU

LEWDO! is available for order - 12p.

COMMODORE SOFTWARE FILE

IT HAS BEEN brought to our attention by Melbourne House, as well as by a number of readers, that two programs published in the August issue of *Commodore Magazine* are not original. The programs, the Star Game Night Files, and the Software File entry Sea Captain, are in fact taken from the well-known Melbourne House publication *The Commodore 64 Games Book* by Clifford and Mark Ranshaw. Although we encourage readers to send in programs for the 64 and the Vic for our Software File and Star Game sections, we must stress that programs taken from books and magazines are not acceptable, since the copyright for these programs is owned by the authors/publishers.

Our apologies to Melbourne House and to Clifford and Mark Ranshaw. Obviously we can't keep up with all the listings published in the hundreds of computer books and magazines available — but someone is bound to spot a "ripped-off" program if we publish it. So please remember — original programs only!

Lettersort

Frank Shugart from Market Marborough sends this VIC program.

LETTER SORT is an original game in which you have to rearrange the letters in a grid into alphabetical order. You can move the letters using a joystick or the keys W, A, D and X.

When you have managed to manipulate

the letters into the right order, press the fire button or the \square sign. If you try to chess, the computer displays an appropriate message and sound. If you get it right, a familiar sounds and your time and number of moves is shown.

```

2  IE=100000:DT4="100000":POKE36878,15:D=36878:E=36874
4  DIRIG=(5,5):GR4(25):UP=20720:V=7680:SA=20400:TR=0
5  PRINT"███":POKE36879,25:POKE250,255
6  PRINTCHR$(14)"███████████L"11"~ w"-1"
7  PRINT"MMBY JRWK LINDLEY 1984"
8  GOSUB3000
9  PRINTCHR$(142)
10 POKE37151,0:PA=37151:PB=37152:KB=37154
20 PRINT"CHOOSE GAME-(1 2 3 4)"
21 GETS:IFS=0THENG1
22 IFS=4THENG1
20 ONSGOTO31,32,33,34
31 L#="KAVUTSRQPONMLKJIHGFEDCBA":GOTO39
32 L#="EDCBAJIHGFEDCBAKJIHGFEDCBA":GOTO39
33 L#="PQRSTUVWXYZABCDEFGHIJKL":GOTO39
34 L#="UPKRYVZLDBAQRNHCXSHIDTOTE":GOTO39
39 PRINT"Q":Z=1
40 FORX=1TO4
50 GR4(X)=GR4(X,X):NEXTX
60 FORX=1TO5:FORY=1TO5
60 GR4(X,Y)=GR4(X,Z):Z=Z+1
100 NEXTY:NEXTX
102 PRINT"██████████LETTER SORT██████████0000"
110 FORX=1TO5
115 PRINT"██████":FORY=1TO5
130 PRINT"GR4(X,Y)"
140 NEXTY:PRINT:PRINT:NEXTX
150 FORX=8195TO7785STEP-22:POKEX,100:POKEX+U,4:NEXTX
160 FORX=8184TO8164STEP-1:POKEX,102:POKEX+U,4:NEXTX
170 FORX=8164TO7698STEP-22:POKEX,102:POKEX+U,4:NEXTX
190 GOSUB3000
191 TIS="000000"
195 H=7998
196 IFS=10000THENPRINT"000000000000000000000000BEST:??":GOTO198
197 PRINT"000000000000000000000000BEST:TC"
198 IFS=100000THENPRINT"000000000000000000000000BEST TIME:??":GOTO200
199 PRINT"000000000000000000000000BEST TIME:TIME(STR$(Z),2),RIGHT$(STR$(Z),2)
200 A=PEEK(PP):POKER=127:B=PEEK(PB):POKER=255
201 GETM:(P#="W"THENGOSUB3000
204 H1#H1#(TIS,3,2):S#RIGHT$(TIS,2)
205 PRINT"00000000000000000000MOVES:";TH

```

Continued on page 47



Mastercode Assembler for the Commodore 64

Full Commodore 64 Assembler/Disassembler



£14.95
net incl.

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

- Machinecode monitor
- File Editor
- Disassembler
- Assembler

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

The Machine Code Monitor includes:

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

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

The File Editor includes:

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

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

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

Please send me: Commodore 64 Mastercode Assembler
@ £14.95 incl. VAT. I enclose the appropriate order form. price
 payable to Sunshine, 12-13 Little Hansport Street, London WC2R 3JG.
Or telephone your order through Access Mastercode on 01-433 4343

Name: _____

Address: _____

Signature: _____

```

206 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXX[HS,]R14"SECS,]R5E"
210 IF (RND4)=0 THEN GOSUB 400
220 IF (RND5)=0 THEN GOSUB 400
231 IF R#="2" THEN GOSUB 400
230 IF (RND120)=0 THEN GOSUB 700
231 IF R#="R" THEN GOSUB 600
240 IF (RND16)=0 THEN GOSUB 600
241 IF R#="D" THEN GOSUB 700
250 IF (RND32)=0 THEN GOSUB 800
251 IF R#="4" THEN GOSUB 600
260 GOTO 200
300 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXX"
310 FOR X=1 TO 4
320 PRINT "XXXXXXXXXXXXXXXXXXXX"
330 PRINT "XXXXXXXXXXXXXXXXXXXX"
340 NEXT X
350 PRINT "XXXXXXXXXXXXXXXXXXXX"
360 PRINT "XXXXXXXXXXXXXXXXXXXX"
370 POKE 7950, 42 : POKE 80678, 6
380 RETURN
400 IF R=44+776 THEN RETURN
410 P=PEEK (R+44) : POKER, P : POKER+4, 6 : R=R+44
420 POKER, 32 : TR=TR+1 : FORO=1 TO 50 : NEXT
430 RETURN
500 IF R=44+7972 THEN RETURN
510 P=PEEK (R+44) : POKER, P : POKER+4, 6 : R=R+44
520 POKER, 32 : TR=TR+1 : FORO=1 TO 50 : NEXT
530 RETURN
600 IF R=7783 THEN G610
601 IF R=7817 AND R<7827 THEN G620
602 IF R=7861 AND R<7871 THEN G630
603 IF R=7905 AND R<7915 THEN G640
604 IF R=2<7958 THEN G700
605 GOTO 650
610 IF R=2<7783 THEN G750
615 GOTO 650
620 IF R=2<7827 THEN G700
625 GOTO 650
630 IF R=2<7871 THEN G750
635 GOTO 650
640 IF R=2<7915 THEN G750
650 P=PEEK (R+2) : POKER, P : POKER+4, 6 : R=R+2
660 POKER, 32 : TR=TR+1 : FORO=1 TO 50 : NEXT
670 RETURN
700 IF R=7783 THEN G710
701 IF R=7817 AND R<7827 THEN G720
702 IF R=7861 AND R<7871 THEN G730
703 IF R=7905 AND R<7915 THEN G740
704 IF R=2<7949 THEN G750
705 GOTO 750
710 IF R=2<7773 THEN G750
715 GOTO 750
720 IF R=2<7817 THEN G750
725 GOTO 750
730 IF R=2<7861 THEN G750
735 GOTO 750
740 IF R=2<7905 THEN G750
750 P=PEEK (R+2) : POKER, P : POKER+4, 6 : R=R+2
760 POKER, 32 : TR=TR+1 : FORO=1 TO 50 : NEXT
770 RETURN
800 TTT#INT(14 : 10=0 : FORO=7774 TO 7956 STEP 2
801 CC=PEEK (X)
802 IF CC=32 OR CC=64 OR CC=32 OR CC=182 THEN G803
803 IF CC=32 THEN G=7956 : PRINT "MATCH!!!" : GOSUB 1000
804 IF CC=32 THEN PRINT "M3" : GOTO 200

```

Continued on page 41

All the Best

100
WARRANTY
COURSES

BASIC Adventures in Space

£9.95

BOOK & TAPE
COURSE



An exciting course for all children from 7 to 77. Learn BASIC while enjoying this most exciting space adventure. Master the computer to escape from the Alien Planet.

The course contains four computer-aided learning programs to teach the major BASIC commands. Available for the CBM 64, VIC 20 (and BBC, Electron and Spectrum!)

**Beginners BASIC course for the
CBM 64**

£10.50

BOOK & TAPE
COURSE

A complete beginner's course for the CBM 64. It assumes no prior knowledge of BASIC and teaches by means of projects. The enclosed software contains a character generator, sprite generator, synthesiser and all six games developed in the text. **Included is also Honey Aid I which adds 28 NEW commands to CBM 64 BASIC.**

Courses are also available for BBC, ORIC, ELECTRON, APPLE, DRAGON, SPECTRUM, LYNX.

Courses for the CBM 64 and VIC-20

**Beginners Assembly Language
for the CBM 64 or VIC 20**

£12.50

BOOK & TAPE
COURSE



A complete beginner's course; contains a full two-pass assembler featuring:

- Labels
- Macros
- Handcopy
- Memory labels
- LOAD/SAVE
- Insert/Delete

Also Binary@BCD/Hexadecimal tutor to explain the maths used in machine-code programming. Covers whole 6502/6510 instruction set.

**HONEY
FOLD**

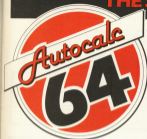
HONEYFOLD SOFTWARE LTD

Shardlow House
Bath Place
High Street, Barnet
London N4 9JG
Tel 08-441-4150



Courses are available from: W.H. Smiths, BOOKS, SPECTRUM stores and all good computer shops and many bookshops.

THE SPREADSHEET IN A CLASS OF ITS OWN



Q: Which spreadsheet is suitable for accountants, engineers, scientists and home users?

A: Autocalc 64 is ideal for any application involving extensive manipulation of data and formulae from financial planning to market research.

Q: Which spreadsheet offers an advanced level of formula handling?

A: Autocalc 64 copes easily with trigonometrical functions, parenthesis and boolean logic as well as totalling and averaging.

Q: Which spreadsheet accepts complex conditional statements?

A: Autocalc 64 can handle statements as complex as IF a1 < 4,000 OR a1 > 8,000 AND a2 = 500 THEN b1 = 0.

Q: Which spreadsheet offers a flexible screen format?

A: Autocalc 64 allows you to select (i) column widths from 3 to 30 characters (ii) the number of rows/cells you need (iii) up to 2,000 cells of information (iv) text or numerical entries lined up to the right or the left, or a combination.

Q: Which spreadsheet offers a choice of numerical formats?

A: Autocalc 64 gives you a choice of (i) integers (ii) floating decimal point (iii) currency (iv) any combination of these.

Q: Which spreadsheet offers a full 'replicate' facility?

A: Autocalc 64 has an advanced replication function for transferring text, data, formulae or conditional statements from any cell (or block of cells) to any other(s) without monotonous retyping. A 'go to' facility will take the cursor instantly to any cell of your choice — saving time.

**24 HOUR
CREDIT CARD HOTLINE
06286 63531**

**CBM64 ONLY
TAPE £14.95**

**CBM64 ONLY
DISK £19.95**

Q: Which spreadsheet is easy to use yet advanced in operation?

A: Autocalc 64 is designed to guide you — helpful error reports diagnose input or formulae errors. A full demonstration program and comprehensive instructions are included.

Q: Which spreadsheet is compatible with standard Commodore printers?

A: Autocalc 64 gives you a printout facility using any of these printers: Commodore 1515, 1525, MPS 801, 1524, MCS 801, DPS 1101, Seibosha GP100VC.

Q: Which spreadsheet is 100% machine code for fast efficient responses, and offers a choice of saving to disk (using 1541 drive) or to tape using a C274 unit?

A: Autocalc 64 — as if you didn't know!

Q: Which spreadsheet sells at a realistic budget price?

A: Autocalc 64 costs just £14.95 on tape, £19.95 on disk inclusive of VAT and P&F.

Q: Where do I get one?

A: Ring us now on 06286 63531 (24 hours) to place your ACCESS or VISA card order, or complete the order form and send it to us today. (Prompt delivery promised). Autocalc 64 is available only direct from Richard Shepherd Software.

Please send me:

_____ Autocalc 64 DISK at **£19.95**

_____ Autocalc 64 TAPE at **£14.95**

(Overseas orders add £1.50 P&F).

I enclose Cash/Cheque/P.O. payable to Richard Shepherd Software Ltd. OR please debit my ACCESS/VISA card No.

Signature _____

NAME _____ ADDRESS _____

RICHARD SHEPHERD SOFTWARE

ELM HOUSE, 23-25 ELMSHOTT LANE, CIPPENHAM, SLOUGH, BERKS. TEL. (06286) 63531

Working Vic

Book: Putting Your Vic20 To Work

Author: Tom Lau
Publisher: Intertec
Cost: £4.95

Reviewer: David Stephenson

This book is well laid out and well printed. The 15 programs are taken from a printer listing and are made of character codes rather than the control codes, which makes the programs easier to type in. All the programs should fit into the unexpanded Vic and, as there is not one PEEK or POKE throughout the book, they would also transfer straight into the C64.

The first parts of this book are not the programs themselves, which are generally short and elementary, but the accompanying pages of explanations. The book starts with an introduction on how to use the book, then follows with a chapter on algorithms. In this chapter truth tables for

logic gates are encountered, not in binary format of (eg) $A \text{ AND } B = Z$, but as questions and answer tables.

In chapter 3, Pseudo-Coding comes up, not in usual in Assembly language, but as



used to explain the program steps. Each of the following chapters consist of a program, a list of variables used, a line by line explanation, the 'pseudo-code', then what they mean, the vocabulary of statements to read, and finally a few exercises for you to do.

This book is aimed at

someone who has mastered the user's manual and wishes to go just a little further. All the programs can be imposed by you as more not any sound, colour or character colours.

Beginner's Basic

Book: Commodore 64 - Vic 20 Basic

Author: Richard Marshall & Thomas Winkelsch
Publisher: Pavilion Hall
Cost: £12.95

Reviewer: Osmar Davran

Pavilion Hall's publication Commodore 64 - Vic20 Basic is a somewhat plodding beginner's book that never graduates to anything beyond the 'learning to park and park' level. It looks very much as though it was written specifically for introductory programming courses in US high schools and junior colleges, hence the emphasis on producing pleasing geometrical patterns, graphs, and the Stars and Stripes.

The principal limitation is that the authors remain firmly

wedded to the idea that the most interesting things you can do with a micro must involve abundant use of the graphics characters. So, before introducing such fundamentals as the PRINT statement, they have you drawing diamonds and underlining trim-lines all over the screen, and it is not long before you start producing little men on skin and writing your name in three dimensional characters across your over-patient monitor. Which is all very well, of course, but what about the spirit?

This, alas, is where the authors let you down, and for a very obvious reason. Since nearly all the algorithms are intended for use on both the Vic20 and the Commodore 64, there is very little space (only a couple of appendices, in fact) for any features peculiar to only one of the two models. What this means is that Commodore 64 users have to exploit their machines to the full are liable to feel that they have been robbed of most of the £12.95 they had to shell out for this book.



Rules

1. All entries must be received by September 30.
2. No correspondence will be entered into.
3. The judges' decision is final.
4. No employees of Sunshine Publications or their families will be eligible to enter.
5. All entries must be on the original computer.

How well do you know Commodore?

A complete set of **Sunshine's Commodore books** to be won. Simply answer the following questions and complete the tie-breaker in 10 words or less.

- 1) What does CBM stand for?
- 2) Which company has recently been taken over by Commodore founder Jack Tramiel?
- 3) Who wrote Falcon Patrol for the Commodore 64?
- 4) What does SID stand for?
- 5) Llamas are a recurring theme in Jeff Minter's games via Megaplanic Llamas Battle At The Edge Of Time — but where do Llamas most commonly reside?
- 6) Which well-known Commodore employee has associations with the Battle of Waterloo?
- 7) Who is Commodore's new president?
- 8) What does VIC stand for?
- 9) Which company has Commodore's ex-marketing manager John Baxter recently joined?
- 10) Commodore is moving from its UK base in Slough. Where to?

Tie breaker

A Po by any other name. . . .



How well do you know Commodore?

1. _____
 2. _____
 3. _____
 4. _____
 5. _____
 6. _____
 7. _____
 8. _____
 9. _____
 10. _____

A Po by any other name. . . .

Complete the coupon and complete the tie-breaker in 10 words or less and post it to:
 Commodore Hardware, 12-13 Lirly Newport Street, London WC2E 8LD.

From
GILSOFT
*The Welsh Wizards of
 Adventure*

THE QUILL
 ADVENTURE WRITER
 FOR THE
 SPECTRUM 48K
 AND
 COMMODORE 64

48K SPECTRUM CASSETTE \$14.95
 COMMODORE 64 CASSETTE \$14.95
 COMMODORE 64 DISK \$19.95

SELECTED TITLES AVAILABLE FROM
 W. B. Booth, Books, John Menzies, and from
 Good Computer Shops Nationwide

Or Direct From Us
 By Post or Telephone

GILSOFT
 20 Hare Hound Road
 Barry
 South Glamorgan
 CF61 1BA, U.K.

Credit Card Order Line 24 hour service ☎ (00222) 41361 ext 438



**MICRO COMPUTER
 AUCTIONS**

REGULAR MONTHLY AUCTIONS FOR
 ALL MICRO HARD AND SOFTWARE.
 SEND NOW FOR ENTRY FORM OR

NEXT
 CATALOGUE.
 TO:

Micro Computer Auctions (CH1)
 Northington House
 55 Grays Inn Road
 London WC1X 8TL
 Tel: 01-242 0012 (24 Hours)



**ARE YOU OFFERING A COMMODORE
 PRODUCT OR SERVICE?**

Offer it where it'll be seen — 649 buys this space
 for one month and puts your business in front of
 thousands of proven Commodore enthusiasts and
 trade contacts nationwide.

Call the **COMMODORE HORIZONS** Ad Dept
 on 01-427 4242
 You could be here next month

DISPLAY AD INDEX

A	.....	18 C
Amiga	.....	14
Amiga	.....	26
A.S.C.	.....	20
A.R. Software	.....	33
B	.....
BBB	.....	33
C	.....
Cable	.....	33 & 38
Chromascan	.....	28
Computations	.....	24
D	.....
DACC	.....	31
Dataview	.....	31
Outdown	.....	40
E	.....
Elitach	.....	31
F	.....
Fancyfield	.....	44
Filmview	.....	31
G	.....
GB	.....	35
Gemsoft	.....	4
Legend	.....	30 & 31
H	.....
Horizons	.....	12 & 30
Micro Auctions	.....	31
I	.....
Interlink	.....	33
Intersoft	.....	40
ISL	.....	2 & 3 C
J	.....
Jetset (Magsoft)	.....	11 & 47
K	.....
Kryptoscan	.....	40
L	.....
L.I.P.	.....	13
Lithotech	.....	17 C
M	.....
Melright	.....	40
N	.....
N.C. Computers	.....	40
N.S. Supplies	.....	28
N.S. Software Center	.....	8
Novo	.....	30

CAN YOU BEAT OUR GREAT GAMES

We've got the biggest (and best) selection of games for the Commodore 64. We think they're unbeatable



MORE THAN GAMES...

Our FREE catalogue lists dozens of programs for your Commodore 64 to help you run your business, write programs, or just enjoy yourself. We've been producing top quality software since 1978. So if you want the best, just remember our name...



SUPERSOFT

SUPERSOFT, Winchester House, Canning Road, Winchester, Hants, Hants, HA3 7SD Telephone: 07-551 7188

ANSWER BACK

Spinning reels

I'VE WRITTEN a program in Basic to represent a fruit machine. The program uses PET graphics for its different symbols, and the RND function to pick one at random. The program runs OK, but at the second 'spin' of the 'reels' the cursor is very disruptive, although it had stopped after loading. The only way to stop it seems to be RUN - STOP.

Although it doesn't affect the operation of the program in any way, I'd appreciate it if you could tell me how to stop this happening.

J Dent

Southam

Co. Durham

THE REASON must be that you are **POKING** values in a computed location, and one of these locations is the one which enables the cursor to move. Bit 0 of location 0 and I control the cursor; **POKE 1,0** to turn cursor on, **POKE 1,0** to turn cursor off.

Simons suggestion

I HAVE recently bought a 1520 printer, Simons Basic and disk drive. Everything works apart from the Simons Basic printer commands, COPY and HDSCOPY.

It appears that these commands are set up for device 4, but the printer is device 0 — can you tell me how to change the device number. I would prefer a hardware rather than a software solution.

Lastly, some programs will not load with Simons Basic plugged in — why is this?

J J Wood

DonKorf

Amc

INFORMATION we have to change the 1520's device number is given on page 4 of the manual at 2b "hardware method". The reason why some programs

will not load is that they attempt to use the same memory area as Simons Basic. The only way around this is to change the memory location of your machine code programs. If they are commercial programs this would be pretty difficult!

Sequential files

I OWN A 64 with a disk drive, but after hours of thought I have come to a dead end. I find it impossible to write a sequential file program that lets you write a file, then call it up at any time so you can add to it (or overwrite it, as I have had to do.) Please can you supply a solution?

Michael Whitaker

Barnum

Northampton

IF YOU WANT to change data in a file without rewriting the entire file, then you will have to use Relative Access files, in which you can access any part of the file without having to read in and process all of the preceding data.

You can find useful information in August's *Commodore Magazine*, or in a book called *Mastering the Commodore 64* by Jones and Carpenter, published by Ellis Horwood. There are two books by this title, so make sure you get the right one.

Curse the cursor

I OWN A 64 and find the flashing cursor a bit demanding. It is possible, with the use of a small program, to replace the cursor with a friendlier single line version?

J Clively

Northfield

Birmingham

THE FLASHING cursor is not a character, but an area changing from normal to reverse on the memory location where you see it.

Press CTRL and SYS 100 then the space bar, and you'll create a reverse bar across the screen. Place the cursor on that bar and you'll see a flashing file cursor. In

program mode you won't have any problems, since the cursor is normally off and you can program any character you want to replace it. In direct mode you will have to divert the CHARSET routine to one of your own, which will put the character you require at the cursor location.

1541 copy routines

I HAVE recently acquired a second 1541 disk drive and would welcome a program which would copy disks block by block using both drives.

I appreciate that it's possible to copy a disk using both drives and the Copy-64 64 program, but this does not give an accurate block-to-block copy. The only other method which will give a true copy is the D option on the 1541 backup program. However, this is a slow and time-consuming operation needing constant attention to change the disks.

J Arliss

Leam

Leam

TIS "The Clone Machine", which is available from Micro-Main Ltd. Inc, at PO Box 103, Pennington Plains, ND 58444, USA. This caters for a number of combinations of different drives.

Ain't no monitor

WHILE at school I discovered that typing SYS 1534 on the PET 4015 would enable the machine code of the present program to be accessed. I was then able to write a short remembering program.

On checking this on the Vic 20 I found that this SYS number would not work. Could you give me the relevant SYS number?

M Walker

Birmingham

Neither the Vic or the 64 has a machine code monitor such as that built into the PETs. So your SYS cannot enter a non-existent monitor. You can, of course, SYS to a location which contains a

BOM routine (such as RESET) and the machine will then execute that routine.

There is a free public domain machine code monitor called Microview which is available to all R.P.U.I. members.

Time delay

I CANNOT find the way to produce a time delay of exactly one second on the 64. Can you help?

Gordon Perry

Coventry

USE 60 for your timing as follows:

```
10 PRINT "CLR": T1 =
```

```
"00000"
```

```
20 PRINT "HOW8": T1 =
```

```
60000.00
```

You will see that T1 corresponds to hours, minutes and seconds, and you can also easily set T1 to the correct time of day (on the 24 hour clock) by using either direct mode or program mode. T1 is not reset by RETURN, unlike other variables.

Direct mode: T1 = "00000" then press RETURN at the right time. Program mode: use input 05.05 — all press return at the right moment.

Code and colours

IS IT possible to stop all machine code programs from auto-running?

Is it possible to mix colours or change luminance levels on the 64?

Gosser Marvey

Devry

MACHINE CODE programs which autorun usually do so for reasons of copyright protection, so it would not be appropriate for us to give advice on this question.

The new C16 and Plus-2 have controllable luminance levels, though not colour mix.

If you need help with a technical query or problem write to
Jack Cohen,
Commodore Horizons,
15-19 Little Newport
Street, London
WC2R 2LD

CLASSIFIED

SOFTWARE

TODDLERS! PLAY WITH YOUR PARENT'S COMMERCIALIZED, MUSICAL FLASHCARD AND SPELLING PROGRAM, DEVELOPED IN CONJUNCTION WITH SCHOOLS, AND EDUCATIONAL PSYCHOLOGIST, SUITABLE 1 1/2-7 YEARS. CASSETTE £4.95 DISC £7 FROM TODDLERSOFT, 1 CATLANE COTTAGE, ENFIELD, MIDDLESEX EN8 8HE.

CDM 84 Software to £450 with people in U.K. includes 100000+ programmes, Books, Articles, M - Q, Megazines, Music, Movies and more. J. Halliday, 264 Kingswood Lane, Bolton, Lancs BL3 2RN or Phone Bolton 2424 after 4.30 pm and see for views.

"E.S. SELL"

CDM IN	MAIL ORDER ONLY
	C D
Footballer Files	7.99/2.99
Atlas Challenge	7.99/2.99
Etiquette	7.99/2.99
Carriers of Knowledge	9.99/2.99
Prose	9.99/2.99
Search Heat	9.99/2.99
Sale Page	12.99/2.99
Queen Database Book	9.99
Reference	9.99
ALSO available 10.00, The Hole 8.00, Soap in Space, Flightplan 10, Arabian Nights, House of Horror, Lord S.A.S. for test for CDM85, Via 80, (BBC 2), Fiction or Specious, (Please state method)	
Prices include P & LK in Cheques - PC's to LIBRA HOME ENTERTAINMENT 200 BOWFIELD ROAD, RICHMOND, LEWIS GU11 2EP	

FOR SALE, The Habitat and Solo Flight for Commodore 64. £14 each, tel. Niagara 8926, Bath Street

484 SOFTWARE For Sale at £3.99 each. The Last Planet, Fantastic Test Adventure with 100 pages of text, a story book, a good game for the family. Space Hunt, with a good eye are needed, no need, 200 puzzle sheets with laughing, jokes, a simple version of the popular game. Buy Any Two and Get One Free. C.J. Jones, 11034 Wayside, Kewbury, Hampshire GU8 2JZ.

WOLF C.P.A. 200, 40 programs - 11 top 100 games, 75 games, 2 educational, 175, Super Expansion 510, Cassette Unit 220, Joystick £2, 4 Books 95, full program £100. Tel. 01452 5848 ask for Peter.

COMMODORE 640 40 640 Database 2K, 200 640 magazines, 100 RAM 48 games on cassette, 1 and 2 and JoyStick and Books, Good 200000 Access 2000 units, Phone Ray 01678 4160 Anytime.

40 GREAT GAMES for the unrepented 80.00 for only £2.95. 2000 word orders payable to Gary Wilson, Send to Gary Wilson, Thomas Close Centre, Telford Road, Telford, Shrop. Send 0.04.04 for details.

I HAVE HOBBIT to trade for Yehatis. Also have 1000 I wish to exchange, 40 for Commodore 64. Please write for details to A. Beale, Moorlands Cottage, Brumpton, Southampton, Southern, Tel. 02049 823.

A SEVERE utility program which will assist IBM owners to transfer their software from cassette to disk. Just £4.99 inc. Also now available a full feature, 2 discs, tape transfer needs only £2.75 inc. Users are notified on Data Cassette for on disk at £2.95 unless program with full written instructions. For a full form request of orders, by first class post, with cheque - P.O. or VISA for details, to Giant Race Software, East, CSM 26, South Lodge Way, Conyng, Northamptonshire, NN12 8DQ.

COMMODORE 64 AND VC 20 SOFTWARE, DRIVES AND SOFTWARE USE ALSO IBM-PC, SAMSUNG 100, CPM 80, 8000 SOFTWARE. THE MONTHLY SEWARD, 21 CLAPS RD, STRATTON, NN 8BS, CORNWALL.

BERNINA 5P, 10000 printer, Shred, 2.95, Tel 081 442 5171.

FOR SALE

MICRO COMPUTER AUCTIONS
REGULAR MONTHLY AUCTIONS FOR ALL MICRO HARD AND SOFTWARE.
SEND NOW FOR ENTRY FORM OR NEXT CATALOGUE.
TO:
Micro Computer Auctions (CH1)
Northington House
59 Gray's Inn Road
London WC1X 8TL
Tel: 01-242 0012 (24 Hours)

COMMODORE 64 1750.00, One Drive £100.00, Screen £20.00, Loads of cassettes and 250 software reference books, Tel. 0204 2644 after 5pm.

COMMODORE 64 plus Cassettes, JoyStick, 2500 worth of 100 software, assembler 1970, reference guide, graphic art, and adventure books, only.

IBM 64 Cassette unit, Software, Books, 1799 units, Phone 0204 2644.

APPLICATIONS

JANUS the educational software £240.00. For your fully comprehensive 24 page catalogue write now to Edgemoor House, Broad Street, Birmingham.

LOOK HERE, every 60M 64 owner do you want to exchange 100 and software? Contact: Evan - Steve Selwyn, Goultard, Toxteth or Steve Selwyn, (Lancs) 82, 240 Toxteth Road, Liverpool.

Here's my FREE Classified Ad.

(PRIVATE ADVERTISERS ONLY)

PLEASE WRITE YOUR COPY IN CAPITAL LETTERS ON THE LINES BELOW

NAME:

ADDRESS:

TELEPHONE:

Please cut out and send this form to:

CLASSIFIED DEPARTMENT
COMMODORE HORIZONS
12-13 LITTLE NEWPORT STREET,
LONDON WC2R 3LD

Save £2.50

Discount Club

Save £2.50

The Commodore Horizons Discount Club is designed to save you money. Simply cut out the coupon at the bottom of the page and send it, together with a cheque or postal order, to:

Commodore Horizons
Discount Club
12-13 Little Newport Street
London WC2R 2JD

This month's special offer, which is only open to Commodore Horizons readers, features five programs for the Commodore 64 from Supersoft.

Free Zoom Monitor

Mikro Assembler

This plug-in cartridge will enable you to write assembler source code as easily as Basic. Written by Andrew Trost, it contains a full screen editor, a three pass assembler and can be used with tape or disk. A free Zoom machine code monitor (worth £11.50) is included in the package.

Usual price

£57.50

Discount Club price

£57.50

(+ free Zoom monitor)

Basick

This simple electronic spreadsheet can be used for accounting, business planning, advertising, etc. It works with the Commodore keyboard accessories and needs a monitor which shows 5 or 25 characters wide lines 5 or 25 lines long. It is available on tape from £9.95 or £19.95. **Usual price** £27.50. **Discount Club price** £25.00.

Music Master

If you have ever wanted to see your 64 as an electronic music synthesizer, this is the program for you. Eleven, wave form and filter parameters can be defined, while any combination of voices can be played in six fashions. A background music feature contains 34 pre-programmed rhythms and patterns. Music Master, written by Nick Higham, also enables you to create a variety of special effects including vibrato and phasing.

Usual price

£17.50.

Discount Club price

£15.45.

Interdictor Pilot

The space flight simulator and all space flight simulators. Written by Lawrence Marshall (Commodore Rat'1), this program puts you in charge of an Interdictor Mk III combat patrol craft. Your mission is to engage and destroy ships of the Jabara-Galax alliance. Extremely complex and comprehensive.

Usual price

£17.95.

Discount Club price

£15.45.

Save £2.50

Graphics designer

Written entirely in machine code, this program contains a demonstration file complete with a sample character set and sprites. In multi-colour mode the number of available colours is doubled, but the number of dots per sprite is halved. Works from both keyboard and joystick.

Usual price

£9.95

Discount Club price

£8.45.

£140.45 for disk

Commodore Horizons Discount Club



Software	Price		
	Tape	Disk*	Cartridge
Mikro Assembler + free Zoom Monitor			£57.50
Basick	<input type="checkbox"/> £15.45	<input type="checkbox"/> £17.45	
Music Master	<input type="checkbox"/> £15.45	<input type="checkbox"/> £17.45	
Interdictor Pilot	<input type="checkbox"/> £15.45	<input type="checkbox"/> £17.45	
Graphics Designer	<input type="checkbox"/> £8.45	<input type="checkbox"/> £18.45	
Totals:			<input checked="" type="checkbox"/> Tick product required

Name _____
Address _____




*If you require a disk, please state type of disk drive _____

Cut out and post to:
Commodore Horizons, Discount Club,
12-13 Little Newport Street,
London WC2R 2JD.
Please allow 28 days for delivery.

Save £1.50

Now your Commodore 64 is a
robot  or a synth .

It's processing words ,
painting pictures  & doing
maths  in machine code .

It's teaching you ,
taking you on an adventure
 & using its brains  ...All
because you've read a book.



Sunshine books make your Commodore mean more.

Start building your library today:

Use this order form to buy the best books available for your Commodore 64.
Please send me the books indicated on this form.

I enclose a cheque/postal order for £ _____, payable to Sunshine Books.

Please charge my Access Card/Visa.

Send:

Name _____

Address _____

Please send me your Sunshine Microcomputer Books catalogue.
Send this order form with your cheque or postal order to: Sunshine Books,
10/11 Little Newport Street, London WC2E 8LN.
Please order: call 01-402 1041 and charge to your Access/Barclaycard.

Computer dealer: Ring your dealer or call us on 01-402 1041.

- | | |
|--|--|
| <input type="checkbox"/> The Working Commodore 64
£3.95
A library of practical information. | <input type="checkbox"/> Programs for Education
£4.95
A collection of primary education software. |
| <input type="checkbox"/> Commodore 64 Machine Code
£4.95
A library of machine code software. | <input type="checkbox"/> Artificial Intelligence for the Commodore 64
£4.95
Newcomer's guide to AI. |
| <input type="checkbox"/> English for Further Commodore 64
£4.95
A collection of high-resolution graphics. | <input type="checkbox"/> 3D Graphics and Beyond for the Commodore 64
£4.95
A collection of high-resolution graphics. |
| <input type="checkbox"/> Commodore 64 Machine Code
£4.95
A library of machine code software. | <input type="checkbox"/> Machine Code Graphics of Assembly for the Commodore 64
£4.95
A collection of high-resolution graphics. |
| <input type="checkbox"/> Mathematics on the Commodore 64
£4.95
A collection of mathematics software. | <input type="checkbox"/> Machine Code Graphics of Assembly for the Commodore 64
£4.95
A collection of high-resolution graphics. |
| <input type="checkbox"/> Business Accounting for the Commodore 64
£4.95
A collection of business software. | <input type="checkbox"/> Machine Code Graphics of Assembly for the Commodore 64
£4.95
A collection of high-resolution graphics. |
| <input type="checkbox"/> Advanced Programming for the Commodore 64
£4.95
A collection of advanced programming software. | <input type="checkbox"/> Machine Code Graphics of Assembly for the Commodore 64
£4.95
A collection of high-resolution graphics. |

THE CONNOISSEURS' CHOICE



3D LUNATACK & FANTASIA DIAMOND
now available on CBM 64
See your local dealer

23 Super

40 LUNATACK - 3D Strategy - 1988 - 1988

40 FANTASIA DIAMOND - 3D Fantasy - 1988 - 1988

40 SPACE WARS - 3D Action - 1988 - 1988

40 COMMODORE 64

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988



HEWLETT PACKARD COMPUTERS



Software titles available from Commodore Dealers and all leading computer software outlets

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

40 RELATIONSHIP AND FINANCIAL CONTROLS - 1988 - 1988

Draw the line and win Quicksilva software

Solve the puzzle and you could be one of twenty lucky winners of Commodore 64 games from Quicksilva.

Fony Roberts sets the problem — solve it and you could win!

THE HILL, 10006 Micro Club members have been trading again.

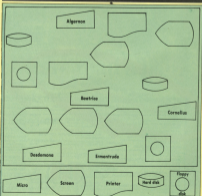
They've set up their equipment in the club house, but as no member will have anything to do with any of the others, they've drawn three straight lines on the floor of the club room, and each member has kept his or her micro and peripherals inside one of the areas marked off by the lines. No two people share an area.

The diagram shows the locations of the various bits of equipment in the room. The name of the owner of each micro is shown — but which one has THREE peripherals? They each have at least one, a monitor.

Find the answer and you could be one of twenty winners sharing £20 in prizes from Quicksilva Software. The prizes include copies of the 64 version of the best-selling 3D Air Attack.

When you've solved the problem, complete the following in-formation in as amusing, apt and original manner as (flood) words or fewer: "I want to play Quicksilva games because..." and send your entry to 12/13 Little Newport Street, London WC2R 1LD, no later than the last working day of September. Winners will be announced in the November issue.

The four winners of our July competition will each receive a full set of software from Richard Shepherd. They are Peter Fisher of Selwyn, J F Capper of Brentford, Andy Bradburn from Chesham, and Andrew Saxon of Leighton.



**"When I got it home, it was
nothing like the picture on the box."**



**"It couldn't have
been Activision."**

How often have you taken a new
piece of software home to find it just didn't
live up to the blurb on its box.

Wild, zany pictures, promises,
promises... And the game play itself is one
big let-down.

Well, those days are over.

Activision software is something
else. What really sets it apart is the way you
go on running it.

It stays on top of the charts months
after others drop right out.

See the first titles in your usual
Commodore software store now.

BEAMRIDER · DECATHLON · H.E.R.O. · PITFALL · TOY BIZARRE · ZENJI



ACTIVISION
Computers were made for us.

Wargaming For The Commodore 64

WARGAMERS SERIES

BATTLE FOR MIDWAY



BATTLE FOR MIDWAY

DATE: 6th June 1942

PLACE: MIDWAY ISLAND

THE SCENARIO

Battle For Midway puts you in command of the US Pacific Fleet as you struggle to win the battle by the Japanese on Pearl Harbor.

The battle for Midway marked the turning point of the battle for the Pacific. If the Japanese had allowed to invade Midway Island, it would give them a strategic base to attack Hawaii, Alaska and then eventually United States that would change the whole outcome of World War II.

THE GAME

Battle For Midway is not a simple game. It has been designed for the player who enjoys a stimulating intellectual game and who enjoys even realism to ensure that whatever the outcome of the game - that is the way it would have happened.

The game is played on three levels - firstly you see direct, a large scale map showing an overview of your own forces. Secondly you have completely updated details of those forces closer to the hot fighter. Thirdly we give you a visual representation of the battle and your forces at every stage.

3 LEVEL GAME

Although complex it is easy enough for anyone to learn to be followed by the fully detailed instructions and we have incorporated a choice of three levels, giving three different Japanese strategies, that makes it suitable for beginners to expert play.

THE AUTHOR

Now this is one of the original UK wargames and has been revised and upgraded responses for nearly twenty five years.



Available on Cassette £9.95
Disk Version £12.95



The U.S. Pacific Fleet's Victory



Admiral Yamamoto's Operational Plan



**NEW RELEASE
AVAILABLE
NOW**