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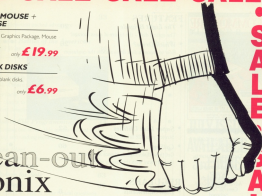
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FEATURES

- **The Light Brigade** 20
 The optical disk - the future of mass storage?
- **Which Drive?** 26
 How to choose a disk drive amidst the confusion



- **Super Disk Utilities** 52
 Stretch your 128 drives to the limit
- **CatSort** 60
 Get those disks organised once and for all,
 the easy way with this handy utility

REGULARS

- **Data Statements** 6
 Keep up to date with the goings-on in
 the Commodore world
- **Games Update** 10
 See what action-packed games are around
 at the moment



- **Bard's Tale II** 17
 A fantasy role playing game
- **Morpheus** 25
 Can you share Morpheus who's boss?
- **Byling into the 6510** 30
 This month we send a textfile to the printer
 and save it onto disk or tape

	2	3	4	5
• The Light Brigade				
• Which Drive?	•	•	•	•
• Super Disk Utilities				•
• CatSort	•	•		
• Data Statements				
• Games Update		•	•	
• Bard's Tale II			•	•
• Morpheus			•	•
• Byling into the 6510			•	

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- | | P | C | C | T |
|--|---|---|---|---|
| • Rim Runner 33
<i>Futuristic action-packed adventure</i> | ● | ● | ● | ● |
| • Decisive Battles of the American Civil War 36
<i>Realistic wargaming from SSG</i> | ● | ● | ● | ● |
| • Competition 40
<i>Your chance to win a hundred pounds worth of board games</i> | ● | ● | ● | ● |
| • Sherlock 42
<i>Your chance to become the world's greatest detective</i> | ● | ● | ● | ● |
| • Relative File Programming 44
<i>Continuing our series, this month we deal with writing and reading records on file</i> | ● | ● | ● | ● |
| • Strike Fleet 50
<i>If recreating recent wars tickles your fancy, this wargame is for you</i> | ● | ● | ● | ● |
| • Software for Sale 63 | ● | ● | ● | ● |
| • First Steps 66
<i>This month we look at some typical questions from confused programmers!</i> | ● | ● | ● | ● |
| • Listings 71 | ● | ● | ● | ● |
| • Back Page 94 | ● | ● | ● | ● |

UTILITIES

- | | | | | |
|--|---|---|---|---|
| • Directory Editor 13
<i>A chance to edit your disk directories</i> | ● | ● | ● | ● |
| • 30K RAM Disk 14
<i>Store Basic programs temporarily in the 64k memory</i> | ● | ● | ● | ● |
| • Basic Lister 24
<i>List a Basic program stored on disk without having to load it into memory</i> | ● | ● | ● | ● |
| • Easy Basic Toolbit 37
<i>Take the strain out of programming in Basic</i> | ● | ● | ● | ● |
| • Disk Sector Editor 56
<i>Examine and edit the contents of your Commodore 1541 disks</i> | ● | ● | ● | ● |

DATA STATEMENTS

Bill Oddie Microset

To many people, computers and conversation lie at opposite ends of the ecological spectrum, but the two were brought together recently when Bill Oddie appeared on Microset's *Celebrity Chatline*.

"Prince Charles hit the nail on the head when he said conservationists need a more up-to-date image and events like this interview with Microset are an excellent example of how we are using today's technology to help preserve the environment," said Oddie, Vice-President of the British Trust for Conservation Volunteers.

The main purpose of Oddie's appearance was to promote the Trust's campaign to plant a million trees. The devastation of the South East's trees in last October's gales formed the grim inspiration for the Trust's initiative and Oddie took advantage of the opportunity to spread the word.

Microset is also taking an interest in the campaign by running a competition offering 'tree-inspired' prizes with all proceeds going to the BTCV Emergency Tree Fund.

Anyone wishing to help out can contact the BTCV at the address below, for details of their Emergency Tree Pack which gives advice on how to plant and care for trees in your area.

Touchline:

The British Trust for Conservation Volunteers Tel: 0457 26766.



A rare sighting of the smiling display of the Gordini graphics in the shade of a fruiting Prawn tree.



Which Witch?

It takes a lot to shatter the calm composure of Fleet Street but Grot Bag's appearance at the unveiling of Caswell's *Frightmare* stopped traffic, frightened the horses and sent kids screaming home to Mum. Never had the Street of Mean horse winners to such a gruesome sight emerging from a London taxi. Yes, folks, the editor was attending another press I (ajajajaj!)

This vain attempt to achieve a lager in his own lunchtime overshadowed the attendance of the *Witch of Pink Windmill* (BBC TV) fame among the fake outbreds of Ye Olde Cheshire Cheese, one of Fleet Street's oldest and best known watering holes.

Frightmare is a game which takes you into the dark recesses of your own

Clive Case (A&E Computing), Grot Bag and Stuart Cooke (Year 6 Commodore) at the Frightmare launch. Which one's Which?

subconscious and releases the phobias and phantasms that lurk there. The Commodore 64 cassette costs £8.95 and a disk version is available from £19.95.

Back at the launch, the proceedings were given an extra touch of class when the Editor created havoc by stuffing his arm firmly up the parson's nose of a roan chicken while saying, "How's this for a Red Hail impressionist?"

Grot Bag's was highly entertained by this bot gag and the game was declared well and truly open.

Touchline:

Caswell Games 1-7 Marston Crescent, Harrogate, North Yorkshire HG7 5BG. Tel: 0423 525523.

Falling Fortunes

No, Gordini are not on the breadline, but the programmers are being dropped from a great height and it's all too charity.

Seven of Gordini's programmers are risking life and limb to raise funds for the Royal National Lifeboat Association by leaping from a plane over the Nottinghamshire countryside. Fortunately, they should all be wearing parachutes at the time.

Gordini has supplied a list of names of the participants: Colin

'Fangus' Dealey, Mark Rogers, Paul Jackson, Rob Toome, Andy Greene, Stuart Gregg and Jon Harrison. Managing Director of Gordini, Ian Stewart would love to take part! I'm sure but he has an urgent theropeody appointment on that day, a bit of trouble with cold but I believe.

The Gordini team would be delighted to receive sponsorship or donations which should be sent to Sue Quinn in Birmingham.

Touchline:

Gordini Graphics Unit 2/3 Redford Way, Redford, Birmingham B26 7AA. Tel: 021-358-2377.

DATA STATEMENTS

Guts News

A trip to hospital has inspired a game by the Special FX team of Robert Tomson and Andy Rison. Guts is based inside the body of an alien and Rison got the idea when he underwent an exploratory business meal which resulted in some stimulating pictures of his inner workings.

The game is a cross between the Fantastic Voyage and the Biblical tale of Jonah and the Whale. After being gobbled up by an alien, the player has to find a way out through the mouth again. On the way the player is assailed by lethal games and microbes and the aim is to bump off the alien's organs one by one before an escape can be effected.

The game is to be released by Ocean Software for £8.95 on cassette and £12.95 on disk.

Teacher:

Ocean Software 4 Central Street, Manchester M2 3NS. Tel: 061-832 6633.



Your Amiga

Argus Specialist Publications are pleased to announce the launch of their new magazine — Your Amiga.

For several months the magazine has been incorporated as a separate part of Your Commodore but now the time has come to sever the umbilical cord and let it enjoy a life of its own.

Your Amiga covers the pages are filled with news, views, facts and program games. A full 72 pages which will help to unveil the hidden depths of Commodore's premier computer.

Your Amiga will be available every second month so don't miss the first issue on May 26th — price £1.99.

Close but...

Red faces and apologies time to Bytes and Picos. The review of Helper 128 in the May issue of Your Commodore credited the package to Financial Systems Software. True, they do supply it but Bytes and Picos were the actual company who supplied the review sample.

Bytes and Picos can be contacted at 37 Cecil Street, Lytham, Lancashire FY8 1NN.

Sorry about that B&P!

Widening the Net

Telemap, the company behind Micronet, is projecting a more positive image for this year with the broadening of the company into new areas.

"Micronet is the most successful service of its kind in Europe but that's no reason to be complacent", explains John Tomany, managing director of the newly renamed Telemap Group. The restructuring has resulted in the creation of five distinct areas: Micronet, Interbusiness, Value Added Services, Open Access Data Services and International.

Micronet is also receiving a general overhaul which includes the revamping of its daily news service for the home and small business market as well as computer specific magazines. The magazines are published weekly and each magazine has a different update day. For Commodore 64/128 users the page day is Wednesday and on Thursday for Amiga and Atari users.

The contents of each magazine are easily accessed from a single index page and back issues and selected articles will remain on-line for four weeks at a time.

Also included in the new system is a conferencing facility containing 58 "rooms". TeleTalk allows a user to hold



A new look for Micronet

live conferences or discussions with up to sixty-three other users and breakout or private meetings can always be convened in any of the other vacant rooms.

Telemap Group's Micronet is the latest information provider on the Prestel network with a user base of 25,000 people accessing 35,000 pages and a free demonstration can still be accessed by dialling into 01-625 8035, entering the ID number 4444 4444 44 and a password of 4444.

Teacher:

Telemap Group Ltd Durrant House, 8 North MK, London EC2R 3EX. Tel: 01-778 4736.

D A T A S T A T E M E N T S

A Fair Cop

The Association of Chief Police Officers has decided to adopt the guidelines laid down by the Data Protection Registrar's Codes of Practice.

The coming of the Data Protection Act has posed new problems for the police force because of the delicate nature of the information they accumulate. Geoffrey Howe states, "There are a number of particularly welcome aspects of the Codes, for example... The detailed guidelines for security, and for maintaining and inspection are also welcome."

Obviously there are some records

which would impair police operations but the Codes recommend that, when collecting personal information, the police should inform the individual concerned as to the purposes for which such information will be, wherever possible. Copies of the police Codes of Practice are available from: Chief Superintendent, Communications Department, Merseyside Police, PO Box 99, Liverpool L69 1SD for £4.00 (cheques payable to Merseyside Police).

Teacher:

Assistant Data Protection Registrar: Springfield House, Water Lane, Hildesley, Chichester S8P 3AJ. Tel: 0932 223206.

YER Bug Fix

Despite the undoubted quality of Precision Software's Script/Plus cartridge for the Plus4, some users have found that it refuses to read more than the first character of a document to an RS-232 printer. Yark Electronic Research have responded to pleas for help by producing a replacement ROM which fits inside the Plus 4.

In operation, the ROM only affects the Script/Plus RS-232 output and is totally invisible to all other software.

The ROM costs £8.99 and an RS-232 interface is also available for £26.99, backed by YER's "guaranteed, to get you working" after sales services.

Toolbox:

Yark Electronic Research: The Fisherys Centre, 4 Fisherys, York YO1 4AB. Tel: 0904 270712.

Datasoft Deal

Stephen Hall of Grandblain Entertainments is a man turning a dream into reality. Since his acquisition of the company at the end of last year, his determination to turn the company's falling fortunes into a success story seems to be bearing fruit. The five-censored lights for the US rights to Grandblain's *The Hunt for Red October* has led to a three year trial marriage between the eventual winners, Datasoft and Grandblain.

The reciprocal deal means that autumn will see Datasoft's follow up to *Ultimate Reality* appearing over



Some of the winners of US Gold's California Games competition look forward to the launch of Egypt's *The Curse* Winter Edition.

here under the auspices of Grandblain. The deal is a result of Datasoft's dissatisfaction at its arrangement with US Gold and its desire for a "positive working operation" for its products over here.

Hall is determined to make Grandblain a major force in the British industry with its launch of the caparri Packard conversion backing up *Red October* with more titles lined up for later release.

Toolbox:

Grandblain Entertainments: Victory House, Leicester Place, London WC2H 7BB. Tel: 01-439 0665.

Joystick Wizards

The Personal Computer Show at Earl's Court will be the venue for the first National Computer Games Championship. Sponsored by US Gold, the organisers will be Newfield Publications and the National Association of Boy's Clubs.

As publishers, Newfield has always shown a passionate interest in the activities of Britain's youth and the first round will be conducted in halls at six regional Boy's Clubs centres around the UK, on both Spectrum and Commodore 64 formats.

London and Leeds will host the semi-finals in August, leading up to the finals during the three public days (16-18 September) at the Show itself.

Toolbox:

MPA Edited: 3-10 Mallon Street, London W3N 5LP. Tel: 01-436 1205.

Power House Sydney

The Power House has concluded a deal with the Sydney Development Corporation of Canada. Before the agreement was made the rights to all Sydney's games were handled by US Gold so the new deal will bring games such as *BC's Quest for Tyres*, *Gregg's Revenge*, *Fight Night*, *Dancebustro* and *Desert Fox* into the budget price arena.



Sydney Opera House?

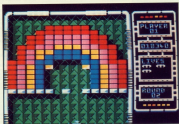
Some of these titles have appeared on Mastertronic's American label but from now on the power lies in the hands of the Power House.

This move underlines Ashley Hitchcock's determination to release games of the highest possible quality and get away from their old image before this year's take-over.

Toolbox:

The Power House: Powerhouse Publishing Ltd, 294 Wimpole Road, London N1W 8PN. Tel: 01-879 7266.

Games Update



Akanishi

A lot of new releases this month but unfortunately, only a few of the titles rise above mediocrity and even among these, there is precious little originality

The spite for addictiveness is undoubtedly ARRANGED - REVENGE OF DOH from Imagine. Even if this Breakout clone does only offer a few new features, there is something about it that demands just one more go. Presentation could be better though. There is no excuse for not including a rotate keyboard option and a game would have been more than useful.

Beginning of the month is again, easily decided. Gremlin's COLOSSAL COMPILATION offers ten games for just under a tenner. The titles are Auf Wiedersehen Meiny, Thing Bounces Back, Hebearden, Jack the Nipper II, Mask,



Seasonal Warrior



Rolling Thunder

Read the Great Mouse Detective, Conroy, Death Wish III, Buldog and the Samurai trilogy.

Beat-'em-ups continue to provide a source of rich pickings for authors although there is nothing here that you haven't seen many times before. SAMURAI WARRIOR from Firebird is set in medieval Japan where not only you go around hacking people to bits with your sword but you must also have to them first. ROLLING THUNDER from US GOLD may be a combination of one of the best known arcade games currently around, but it is so mindblowingly numb it becomes instantly forgettable. PREDATOR from Activision is a tie-in based on the film starring Arnold Schwarzenegger in which he tries to rescue some diplomats in the face of a strange alien threat.

It is interesting that most of the people who will buy this game will not be allowed to see the film. There must be a message there somewhere.

On the more traditional shoot-'em-up front come two titles from the US Gold GO label. SIDE ARMS is a one or two player game, blast the badies and pick up capsules which give your ship extra powers. Where have we seen that before? A free rock tape may or may not persuade you to investigate. REDLAM is a vertically scrolling game



Redlam

and does actually have an original feature (shock horror). However, the chances are that you will not be able to guess what it is. Give it! You get transported into a giant galactic pin-ball game? Don't be too upset if you didn't get it right. I've played the game and still can't believe it's true.

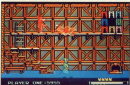
Arcade adventures seem to be making something of a



Magyaron

comeback. That superstar of the cartoon strip GARFIELD stars in his very own game, Big Fat Hairy Deal produced by The Edge. Arlene has been whisked off to the city pound and our eponymous hero must stop stuffing his face long enough to affect a rescue.

BLACK LAMP from Firebird is a good old rescue the princess by collecting assorted lamps while simultaneously



Black Lamp

leaping around the various platforms, avoiding being shot by the multitude of enemies type game. It looks very good but doesn't play quite so well. VAMPIRE'S EMPIRE from Magic Bytes is a similar affair although I may have missed some of the subtleties as instructions were only provided in French and German. You have to manipulate a beam of light through the castle by strategically placing mirrors in the 163 rooms. Again, looks good, plays poorly.

FRIGHTMARE from Cascade is the third of three games all looking vaguely similar. You have two aims. One is to wake up while experiencing the worst dream you can manage. DEMON STALLERS from Electronic Arts is a Quake-like clone that reached number one in the States. It plays very well although some of the rooms may be a little tricky in one player mode. I can't help but feel that it's been launched about six months too late.

MAGNETRON is Steve Turner's first game since joining Firebird from Hewson and it is very difficult to see the



Magnetron

difference in the resemblance to his old game Paradroid is amazing. Grapple with droids to improve your weaponry, etc, etc. Your eventual aim is to disassemble or shut down eight reactors. TROLL from Denton Designs certainly looks

original although closer examination shows it to be little more than a Q-Bert derivative. You bounce round rocks avoiding goblins while trying to collect bits of a crystal. There are holes to be jumped through (although some are death holes) leading to other chambers. What makes the game unusual is another set of boulders on the ceiling which you can spring up to and down from. Your ultimate success though is likely to depend on how well you can control a spinning wheel of fortune, achieved by leaping up and down on short-lived mushrooms.

Very little on the adventure front this month. Apart from the Infocom game (see elsewhere in this issue), the only offering to hit my desk is WOLFGANG from CRL. Wolfgang is from the pen of Rod Pike who gave us Dracula and Frankenstein. The story involves your attempts to discover more about the reasons your face turns hairy every time there is a full moon. If you are lucky, you may even find true love at the end of the road. This game is nowhere near as well-written as its predecessors and is further spoilt by a series of annoying bugs.

A more sophisticated simulation is STEALTH MISSION from Sub Logic whose games are now going to be marketed in this country for the first time rather than having to import them. Their original flight simulator is still the Daddy of them all and it was renowned that it was so accurate that if you could master it, you could land a light plane in an emergency. Here you get the chance to fly three different aircraft as a variety of missions - F-19 Stealth Fighter, F-16 Tomcat and the X-29. As this latter aircraft is still only experimental, I can't vouch for the exact accuracy of the simulation but I don't expect too many people will be in a position to contradict.

A somewhat less hazardous mission is a quick session



Card Sharks

of cards, brought to you by Electronic Arts/Avocado in CARD SHARKS. You have the option to play Hearts (better known as Black Maria in this country) pinochle or three kinds of poker. You can choose from six different opponents including Maggie, Ronnie or Garby. The game lacks the excitement of the real thing and is too easy to beat. The highlights are some of Ronnie's comments such as I told Nancy that I was at one of Ollie Ward's shrodding parties!

For those who enjoy putting some thought into their gaming, SORCEROR LORD from PSS might be just what they are looking for. A traditional wargame but in a fantasy

setting where you can summon demons to your cause should you happen to be near a magic ring. The game is pretty crude graphically compared to some of the more driven games currently available but it will prove to be a tough opponent and experienced wargamers looking for something a bit different should enjoy the challenge.

Electronic Data's CHAMPIONSHIP SPRINT is the officially licensed version of the arcade game. A top down view of a racing track rather than the normal cockpit view is presented as you race around one of the eight tracks. Alternatively, you can design one of your own. The game comes with a complete range of parameters that you can



Championship Sprint

tailor to your own requirements, all controlled by a series of pull-down menus.

POWER AT SEA from Electronic Arts is another naval simulation (see Strike Fleet elsewhere in this issue) recreating the battle of Leyte Gulf in the Second World War in which the Japanese forces launched one last major kamikaze attack in an attempt to annihilate the American Navy. The emphasis with this simulation is very much towards arcade sequences as if you prefer manning anti-aircraft guns and launching torpedoes to plotting courses and watching sonar screens, this could be the one for you.

Last but by no means least this month is Street Sports BASKETBALL from the US Gold/Eggs stable. Choose your team from the local kids and battle it out on one of four different courts. The attraction of these street sports is that they include features not normally present in a professional game. What was the last time you saw one of the Harlem Globetrotters slip on an oil slick? This series aims to put the fun back into sport and succeeds admirably.

You may think that I have taken a somewhat jaundiced view of this month's offerings but I feel that the British Software Industry is going through something of a bad patch at the moment. There is very little original thought about at the moment and when something different does appear, it is quickly closed by everybody else. Even though it saddens me to say it, the Americans are turning out bigger, better games, beautifully packaged and offering much better value for money.

Perhaps it is time that we stopped writing cassette based games and placed a heavier emphasis on disks. We've got an awful lot of catching up to do.

Directory Editor

Give more meaning to your Commodore disk directories

By Tony Crowther

When you use a large number of disks it can become very difficult to remember just what each program in a disk directory does. Furthermore, if you have been scratch a lot of programs on your disks, finding the position of the program that you want in the directory can be very time consuming. The program presented here changes all of that by allowing you to edit your disk directories.

Basically Directory Editor allows you to alter the position of any file in a directory listing, alter the programs name and enter comments in the directory. Yes, there have been programs that allow you to do this which have been published in the past, but this one has a feature that makes it stand out from all the rest.

All other directory editors that I

have seen allow you to enter comments into the directory listing, as does this one. But, they only allow you to edit one line at a time. With Directory Designer you can 'open up' a number of lines to be edited and then use the cursor keys to move around anywhere within the opened area. This makes it very easy to position text, or even to make up pictures using the graphics on the C64 keyboard.

Using the Program

Once you have a working version of the program, using it should present no problems. Simply LOAD and RUN the finished program and the program will start to run automatically. Most of the commands available to you are presented on the screen, together with

necessary messages. The table gives details of all options available to you.

Getting it all in

The program is presented as a Basic loader. This should be typed in using our *Syntax Cheater* see the Listings article for more information on this. Before you RUN the program you should SAVE the program to disk. Now enter the following commands:

```
POKE 43,0:POKE44,18:POKE
44070,NEW
```

Now LOAD and RUN the Basic loader. Once finished this will SAVE the program Directory Designer on disk; this is the program that you should use to RUN the program, NOT the Basic loader.

See Listing on page 57

KEY	FUNCTION	ACTION	KEY	FUNCTION	ACTION
F1	EDIT	Allows you to edit entries in the directory listing. You can edit any directory entries that are in white on the screen. Upon entry to this function you can't edit program files.	INSF	INSERT	Insert a blank directory entry at the current cursor position.
F2	TYPE	Pressing this key when in EDIT MODE will turn all directory entries white. You may now edit program file entries.	DEL	DELETE	Deletes directory entry at current cursor position. If you try to delete a program entry you will be asked if you are sure.
SPACE	SAVE	Removes the directory entry under the cursor and stores it. You can see the directory entry currently grabbed at the top of the screen.	DOWN	MOVE	Cursor (down) and up are used to move the highlighted bar through the directory listing. When in EDIT MODE use all cursor keys to move the cursor around in the directory.
	PUT	Press SPACE a second time to place the currently grabbed directory entry at the current CURSOR position.	L	LOAD	Load the directory of the disk in the drive into memory.
	CPY	Place a copy of the currently grabbed directory entry at the CURRENT CURSOR position.	S	SAVE	Save the directory that is in memory onto the disk in the drive. Make sure that you really do want to save the new directory before using this command.

30K RAM Disk



What's the best way to speed up your disk drive? Don't use it!

By Fabrice Waglet

Why waste time loading and saving Basic programs on disk when they can be easily stored temporarily in the 64's memory. This RAM Disk program takes care of this with the minimum of fuss and bother.

A simple definition of a virtual machine would go something like this: "a piece of software designed to enhance or replace an actual hardware device performing the same function". This is a precise RAM disk description. It is a program designed to emulate and replace a physical disk drive by making ordinary computer RAM act in the same way as a disk drive would. A program like this, thus provides the user with a cheap alternative to investing in a costly, if not slower disk drive performing a similar job. The advantage to having a virtual drive is obvious. For one thing, tape users can have the same quality of storage as disk users, but at a fraction of the cost. Another advantage is speed. Typically a drive such as a 1541 takes a few seconds to access a file and another few seconds to load it.

Now, imagine a program which performs that same function, but at a much higher speed, typically not more than a few seconds for the entire access and loading operation, no matter how large the program!

Program development can be dramatically speeded up by eliminating the time taken by a drive having to search for a file. Also the chance of errors cropping in are reduced.

The program I have written provides all the above mentioned advantages together with ease of use. It works by adding a number of slightly altered, but well known commands of Basic and yet, is as good as any similar commercial product. I have written a fully intelligent DOS providing loading and saving individual files from disk (RAM disk that is), cataloging the directory and formatting the disk. It has the ability to store up to ten files in memory at once, though, of course, none of these can be very large. Currently the DOS is limited to using 30Kbytes, which should be quite enough for most purposes. The DOS uses 30Kbytes from Basic memory, although this is by no means a great loss. After all, who has written a 30K program? This "woker" RAM is used by the DOS for housekeeping, storing and accessing the directory, and general maintenance commands as well as the first few Kbytes of the RAM disk memory.

All in all, the RAM disk adds six new commands to Basic, written in the form of a wedge routine, each

command preceded by an asterisk (*). The commands are:

- **"LOAD*filename"** — this loads a file from Ram disk (if it exists) into Basic program space. If it is used from program mode (drives within another program), the newly loaded program begins automatic execution.
- **"SAVE*filename"** — saves a file from Basic memory to RAM disk, at all times checking whether the file already exists, whether the directory has reached its file limit of ten, or whether the Ram disk is filled to capacity.
- **"CLR"** — clears the RAM disk thus making all memory available by other programs to be stored in RAM disk (similar to a formatting procedure).
- **"CAT"** — displays a list of all current files in RAM disk, as well as the total capacity remaining for other programs.
- **"ERASE*filename"** — will erase a file from RAM disk freeing the memory used by this program, for use by other programs.
- **"RUN*filename"** — same as the load command, except that when used from direct mode, program automatically begins its loading.

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Bard's Tale II

Ashtad of looting, ale played in front of a Bard in a surefire way to get him to sing. Should you pay for the ale, there is an excellent chance that the exploits recalled in his ballads will be your own. That is of course, assuming that you survive this latest adventure.

The evil Archmage Lagorth Zaara has stolen the Destiny Wand and broken it into seven pieces. These he has hidden somewhere within the Realm, protected by hordes of his evil minions. Not only must you locate and reassemble the various fragments, but also seek out a final encounter with the Archmage himself.

Your party of characters in this role-playing game from Electronic Arts can either be developed from scratch or transferred from the original Bard's Tale. Survival in the Realm does not come easily and many of your lesser characters will be lost early on. There is a starter dungeon for you to practise on but even for that, your party will need to be approaching seventh level to stand a chance of surviving.



There is the usual range of races and professions to choose from all with a selection of skills although the thief is probably the least useful character - traps are better detected using magic. At the start of the game, the various warrior classes will be of the greatest importance as you progress, magic tends to dominate.

There are a total of 79 spells to choose from although naturally, you can only select a few to start with. Magicians come in several classes. You start off as either a magician or conjurer and can progress up through the ranks to sorcerer, wizard and finally archmage. Some of the spells are truly awesome in their power - Magma's Mallet causes up to 800 hit points of damage on every single enemy within 90 foot range of you. Needless to say though, the money are using similar tactics on you.

Combat is much the same as in the original game with the addition of outside combat although oddly enough, this is limited in range. You can't fire arrows at an enemy 40 feet away. Greater experience brings multiple attacks although you can't use these on several different opponents.

Therefore if you inflict 25 points of damage on a six point goblin, your next two hits on the same dead beast are something of an overkill.

The game has been considerably enlarged on the original. Now there are six towns to explore plus a wilderness containing crypts and castles. One particular hut to search out is the Sage's Hut. He will relieve you of vast amounts of your money and in return, give you information which may or may not be useful to you. There are 25 different dungeons to be explored, all of which need to be carefully mapped as secret doors abound and one particular area missed could well mean the difference between success and failure. You will also need to find the spell point regeneration areas if your magicians are not to be rendered impotent.

The game itself plays very well and seems to be much better structured than the original. There are however a number of minor niggles which spoil an otherwise excellent game. Equipping characters and transferring items from one person to another is tedious and badly thought out. Another problem is that when you save your current position, the computer is reset and you have to load in from scratch again - a constant game surely would not have been too difficult to include. Similarly, the game can only be saved in one of the Adventurer's Guilds although there is one in every city. This has the tendency to prolong sessions as you have to backtrack through all the dungeons and reach safety before you can switch off.

These really are minor quibbles though and Bard's Tale II is still one of the best role playing systems currently available. (Ultima and Alternate Reality are the other two.) An excellent game that will require hundreds of hours playing before the world is once more a safe place. - G.R.H.



Conclusion

Title: Bard's Tale II - Daring Knight. **Supplier:** Electronic Arts, Langley Business Centre, 11-49 Station Road, Langley, Nr. Slough, Berks SL3 7TN, Tel: 0753 26442. **Machine:** C84. **Price:** £14.95.

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The Light Brigade

Goodbye Disk Drives, Hello C.D. Romms By Geoff Bains



Not only has the cassette tape nearly vanished from the realm of serious computing but the days of the floppy disk and Winchester also look numbered. All these present-day mass storage devices are based on magnetic material which is, unfortunately their downfall.

Enormous though the 179K of storage available on a CBM64 disk may seem, it is not really large enough for the masses of information (especially high quality pictorial information) in common use on many computers today.

Micros with up to 4Mbytes of RAM are becoming relatively common. Equipping these with a floppy disk drive which requires a handful of disks and takes several minutes to fill the micro's memory is more than a little ludicrous.

Larger and faster permanent storage obviously needed. The future of mass storage currently looks to be the optical disc which is usually seen as an audio compact disc.

Even at the most simple level, optical means of storing data are more efficient than the usual magnetic methods. The density of data from optical storage is much greater. You only have to look at a 35mm slide to see the kinds of densities possible - turn the idea around and imagine the disk space required to store a screen picture of that resolution.

The density of data in optical systems is finally determined by the wavelength of light itself (around one millimetre of a metre for the light used). You can fit an awful lot of wavelengths into a small area and so fit in a lot of data.

However, the density of magnetic storage is limited not by the size of grains of magnetic material on the tape or disk (typically a few thousandths of an inch) but more by the size of the gap in the record/playback head. Even the Japanese, the micro-storage experts, cannot manage wavelength sized magnetic heads.

Of course, the practical methods

of storing data optically do not come close to these theoretical densities, but already they get a lot closer than magnetic methods will ever manage.

The potential benefits of optical data storage have been known for some time and it was in 1967 that Philips engineers in Eindhoven, Holland came up with the beginnings of a practical solution. Their idea was meant for the storage of video and audio signals. A disc covered with marks detectable by reflecting a laser off the surface would be used. A disc was chosen as it was easier than a tape to move at a constant speed and could be stamped out in mass production.

The Philips invention turned into the Laserdisc video system. Although by 1972 Philips had demonstration machines on show and by 1978 (in the US) and 1982 (in Europe) the commercial machines were launched, the system could not stand up to the convenience of video cassette recorders and it has all but faded into obscurity. However, the Laserdisc has great potential, both for video and for storage of data.

The system uses tiny pits in the surface of a 12in disc to modulate the reflected beam of light from a laser shining onto its surface as it revolves. The pits are only about 1µm (a millionth of a metre) across and arranged on a spiral track (like an LP) which makes about 55,000 turns around the disc, each turn only 1.5µm away from the next.

All this gives a data density of about 25,000 bits per inch - miles better than any magnetic media and giving around ten times the capacity of any Winchester.

Although the Laserdisc failed commercially, it served to develop the considerable mechanical problems of optical storage. The laser focusing lens reading the disk must be kept at exactly the right distance from the disc surface (within 8.25µm) and the beam

must follow the centre of the tracks to an accuracy of only 0.1um.

However, such mixed blowing sources are obtainable and the money invested in Laserdisc technology has found rich rewards for Philips and Sony in the CD. It is the audio CD technology that forms the basis of a whole new standard of computer data storage - the CD-ROM.

CD-ROMs are in many ways similar to standard CDs and the old Laserdisc. They use the same pitted surface technique for recording the data but are just three in diameter. The disc spins to keep a constant speed (just over 1 m/s) of the disc surface past the read head - so it must turn faster when the centre is being read (about 500rpm than the outer tracks (around 200rpm).

The laser beam is focused on the surface and the reflections focused onto a photo-detector which can register the changes in light level as the pits spin past the lens. Each change of light level (the leading or trailing edge of a pit) represents a binary 1 and the flat areas between represent 0's. With pits as small as 0.5um, this gives data read speeds of 131.8Kbytes/s - a bit faster than a floppy disk drive!

The data is encoded to reduce the effects of reading errors - whether from scratches on the disc surface or glitches in the system. At these data speeds it only takes an error rate of one in a 100,000 to produce errors more often than one a second.

The data must also be carefully identified to enable accurate random access to be performed on the disc - so the computer can read data from a section of the disc directly, without reading all before it.

The data is split into frames of 28 512 bytes of data, one byte for timing and eight bytes of error correction. Ninety-eight of these frames are collected into a block along with 12 bytes for timing, 185 bytes for further error detection and four bytes holding the address of the block for random access. Each CD-ROM disc holds 17648 blocks - that's over 720Mbytes per disc.

The encoding against error detection is very complex and it closely follows the Reed-Solomon encoding system used on audio CDs. As well as deriving checksum bytes for each frame of data (as do most digital cassette and floppy disk systems) this also involves interleaving the 28 bytes

of data in each frame to split up any groups of bytes affected by errors (holes, say, or a scratch on the disc).

This system can successfully correct error bursts of up to 450bytes long (which would be a clearly visible scratch or mark). Combined with the additional error correction at block level (not found on audio CDs) the CD-ROM system has a rate of uncorrectable errors of just one in 10,000,000,000,000 - about one in every two years of constant access.

This kind of reliability has meant the CD-ROM is now taken seriously as a data storage medium. Mainframe computers have been using large optical discs (not unlike the original Laserdiscs) for some time and now CD-ROMs are entering the world of micros.

At the moment CD-ROMs are available only for IBM PC compatible machines and general works of reference are available as pre-recorded CD-ROM discs.

Hitech is the main CD-ROM drive manufacturer at present. The Hitech drive looks much like a disc drive and it loads a CD-ROM disc just like an audio CD player.

Microsoft has produced extensions to the MS-DOS operating system used on PCs to accommodate the CD-ROM drives and these are accessed in a similar way to a normal floppy disk drive.

The first commercial generally available CD-ROM software was made available recently by Microsoft. 'Bookshelf' is a single CD-ROM disc providing ten reference works for writers using PCs. A comprehensive dictionary is stored on the disk along with a thesaurus, a business information listing, a literary style manual and other useful tools for writers.

All this data costs just £25 - not bad for 1500 floppy disks worth of information available instantly at your beck and call.

Perhaps the most exciting future development of such a system is the incorporation of speech, music and adsps all on one disc with complete computer access and intervention in their reply.

However, although Microsoft is currently producing other reference works on CD-ROM, this is where the problem with the whole system lies. CD-ROMs are just like clip-ROMs - they can only be read and not written to. Once the information is stored on

the disc (by mechanically stamping them out) it cannot be altered or erased. A CD-Ram would be so much more useful - a system with the same speed and capacities but which could be written to by the computer (just like a floppy disc or Winchester).

Writable optical storage discs have been available for about four years. Used only in research and large mainframes, these use larger 12in 180Byte discs with a thin coating of metal (only 0.05um thick) on the surface. As well as the usual low powered laser to read the disc a second more powerful laser is provided which can melt tiny pits into the metal film surface to form the pits which store the data.

By modulating the powerful write laser with the data from the computer, these discs can be written to with whatever data needs to be stored.

A similar system uses organic dyes on the disc surface. These require less power from the write laser to alter their reflectivity. ICJ have recently announced 'Digital Paper' which uses such dyes coated onto a flexible base which can be used in the form of discs or even tapes with a 2400 (and not an average) 12in diameter speed) holding 800Mbytes of data - enough to store three complete films in digitized form.

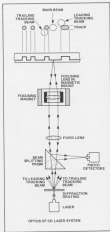
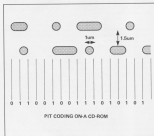
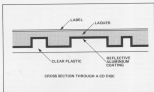
The WORM has Turned

However, once the data pits have been formed in the metal or dye coating on the disc surface there is no going back. The surface cannot be re-levelled or re-coloured and so the data is there for good. Such systems are called WORM drives - Write Once, Read Many times.

The 180Byte capacity of a CD WORM means that room can usually be found for stored data and the operating system instructed to ignore the unaltered data on the disc. These systems are used in large databases for archive storages.

Truly erasable optical disks are still almost exclusively found in research labs and two particular types are attracting the most attention. The first type uses a phenomenon known as the Kerr effect and a disk coating of gadolinium-iron-cobalt. This material has the effect of polarising light reflected from it - in the same direction as it is magnetised.

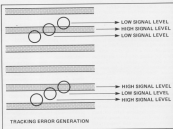
The disk is first magnetised and to



write data onto it a powerful laser is used to heat the coating, which reverses the magnetic field at that spot. The reversal of polarized light from the read laser can then be used to detect the heated spot. The whole disk may then be erased of data by heating it again in a magnetic field to produce an evenly magnetized disk.

The second type of erasable disc uses coatings of a tellurium-selenium alloy or gallium antimonide. These materials have the property of changing their crystalline structure when heated and this affects their reflectivity.

Again, a write laser produces hot spots of a temperature just above the melting point of the alloy coating on the disc surface, under the control of the computer. When the spots cool (almost immediately) they change their reflectivity and so allowing the read

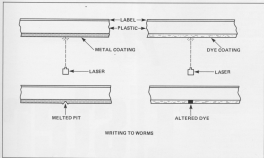
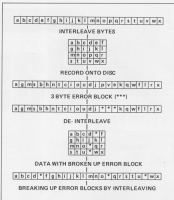


laser to pick them up from then on. The whole disc can be erased by heating it to a temperature just below the melting point of the coating whenever the alloy reverts to its original structure.

Philips have produced reliable erasable discs using the Gallium arsenide coating which can be recorded and erased a thousand times without degradation.

However, with both of these systems, data cannot be overwritten. These are CD-EPRAMs rather than CD-RAM. Much research is of course devoted to finding a suitable material to use for CD-RAM. However, the future for optical storage already looks set. With units containing several drives with a total capacity of a couple of hundred Gbytes, the necessity for overwriting ceases to be really important.

For small systems and even home computers the CD-RDM will surely be a commonplace sight before very long, even before alterability comes along. The convenience and efficiency of vast quantities of data compactly and permanently stored and non-instantly accessible is too great a temptation for the micro industry to shy from for much longer. Then, of course, how about a game of 760Mb program hi-fi sound and video pictures...



The C64's screen editor is very powerful: as screen editors go, anything printed on the screen, be it listed from memory, or typed can be entered easily as a Basic program line simply by moving the cursor to the line, making sure there's a line number up front, and pressing Return.

The problems start when the program lines you wish to edit are not in memory, something else is. Basic Lister is a machine code program that allows you to list a Basic program stored on disk without having to load it into memory. This makes it easy to 'steal' lines or subroutines, etc. from another program, even merge and append programs.

The program is made up from three independent routines. The Basic lister can be used on its own, just use the syntax:

```
SYS49132,"filename"
```

To view the directory, you will need to type in the directory code. Simply use the syntax:

```
SYS49132,"S"  
Or:  
SYS49418
```

The final part is a wedge program purely for your own convenience, allowing you to omit the SYS and just use:

```
"filename"
```

While the program is listing, you can use the space bar to pause; pressing RUNSTOP will halt the listing leaving the material on the screen for editing.

Should you try to list a non-Basic program, you will get the expected garbage on the screen and you might be unable to halt the listing. Should this happen, RUNSTOP and RESTORE followed by:

```
CLOSE2
```

will return things to normal.

If you are using the comma ',' wedge though, it will need re-initialising with:

```
SYS828
```

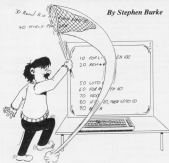
Table 1 — Basic Lister Commands
SYS49132,"filename" to list a program
SYS49132,"S" or SYS49418 to list the directory

SYS828 to initialise the wedge
"filename" to list using the wedge
Space bar pauses the listing
RUNSTOP halts the listing
RUNSTOP) RESTORE and
CLOSE2 if program won't halt.
See listing on page 77

Grab program lines off the screen without loading them into memory

Basic

By Stephen Barker



Lister

Before the world was created, two universes were fused together. They were equal but opposite; one being positive the other negative. On the border of each Aether (universe) was a nucleus - Morpheus which maintained the balance.

Small orbital pods surround the nucleus and keep the negative, positive charges flowing in harmony. Forever growing, learning and creating, the nucleus was fast developing into a threat.

Many time zones have now passed and the threat of the nucleus has become more apparent. A commercial operation is set up to destroy Morpheus before it gets out of control. If this were to happen the entire universe would be brought to a halt. The leaders of the universe join forces to organise a galactic operation recruiting young pilots to fly state-of-the-art space craft, in a bid to fight for the universe.

Well, as in most games you are one of the lucky pilots picked for the mission. To clear space from all nucleus' and sail Morpheus in a one-to-one final battle.

As this is a government project you can not afford to waste time and money, you have fifty time zones in which to get to level fifty, failing to do so will result in the game ending.

If you become bankrupt the research budget into new weapons and systems for your ship will stop. You need all the help you can get in the way of these, as progress is almost impossible without updated equipment. So not only is this a difficult shoot-'em-up, there is a fair bit of brainpower involved too!

To help you locate the orbitals and nucleus there is a window positioned at the top of the screen, (marked as screen), this shows you any other nautics. As well as hostile aliens there are also rocks floating freely in space, that weaken your shield.

So now the time has come to show Morpheus who's boss and blow apart the first nucleus. You must shoot just one orbital, thus creating an imbalance within the two universes and killing the nucleus - easy!

There are 50 levels in this game, each one harder than the last, and as you progress you will need to buy more sophisticated weapons from one of the 60 on offer! You can also build your ship up to a huge craft almost filling the screen, but this takes time and money.

As you blast aliens your score is amassed and at the end of each level, it is transferred into money leaving your score intact. If you have a huge bundle of guineas and suddenly get nagalmed don't worry, it is awarded to the nearest figure and carried over to the next game.

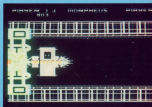
Well, that's basically the inn and outs, now to the play. Presentation is slick with many options available. Options allow you to save your high score and your game position, which is very neat.

What about the expensive asking price? Not a kind of sum the average Grumpy looking kid could afford I'm sure, but the money for the great packaging has to come from somewhere!

Never-the-less, a great game, but having a Swiss bank account is a great help, please make cheques payable... **K.R.**

Touchline:

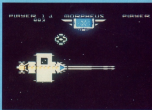
Title: Morpheus. **Supplier:** Rainbird Software, 74 New Oxford Street, London, WC1A 1PS. **Tel:** 01-427 1371. **Machine:** C64/128. **Price:** £14.99 (C64) £17.99 (Disk).



Morpheus

Morpheus

Morpheus



Which Drive?



Disk drives come in all shapes and sizes, how do they measure up?

By Norman Doyle

Once upon a time life was easy: choosing a disk drive for your Commodore meant the 1541. Now there are seven to choose from! Commodore have four - 1540, 1570, 1571, 1581 - and then there's the Oceanic, Excellence+ Plus, and Blue Chip 5.25. For C128 users the choice is simpler if full advantage is to be taken of the fast loading 128 mode, only the 1570 or 1571 will do.

Except for the 1581, all of the drives offer compatibility with the C64

5.25 inch disk system but is the saving offered by non-Commodore drives a trade off against full compatibility? What are the pitfalls and benefits?

Commodore 1541

The 1541 is the standard against which the others are to be judged. Based on the PET's old 4040 and 2031 system, the 1541 started life as the 1540 drive for the VIC-20 computer. With the

launch of the C64, the 1540 was soon superseded by the 1541 whose major benefit was a streamlined case to match the colour of the C64, a few small mechanical changes and slightly improved speed.

A few ROM problems which appeared on the 4040 were impacted through the 1540 to the 1541. The main problem being that the save and replace facility malfunctions when the directory fills an exact number of data blocks. It's a pity that Commodore



didn't grasp the opportunity to correct this fault. Even worse, the system still carries this bug through to the updated 1541D and the new 1570/71 drives.

Any reference to the 1541 is usually preceded by an adjective such as sluggish or snail's pace. Most drives for other computers load with the speed of a supermarket packer, the 1541 loads like a dock worker on rollers. The speed problem is not caused purely by the electronics system, it is a restriction created by the physical constraints of serial loading.

A serial loader uses one communication wire to send data in and back and forth one bit at a time. If Commodore had employed the user port it would enable a whole byte to be transferred in parallel, giving an immediate eight fold speed increase. Systems such as Eversham Micros Dolphin DOS fast loader takes advantage of the user port and the improvement in speed is unbelievable.

One advantage that Commodore compatible drives have over others lies in the fact that they are 'intelligent'. This means that the DOS is held on board the drive rather than occupying memory within the computer itself. Consequently, the drive can be programmed and such facilities as spooling from disk to printer can be achieved without tying up the computer. This does have the



disadvantage of making the drive larger than normal, but this is principally a result of the inclusion of the power supply inside the drive's casing.

The drives are supplied with good support software but the manual leaves a lot to be desired. The section on relative files in the old 1541 manual contains an example listing which is actually incorrect and has caused problems for users in the past.

Commodore 1570/71

These drives were developed for use with the C128 and, although they work with the C64, they are not advised as a substitute unless you're willing to accept that half of their capabilities will remain unused.

If you consider the C128 as two computers within the same shell, the 1570 drive actually contains three storage/retrieval systems and the 1571 has four!

Both drives have a fully compatible 1541 system but in 128 mode a special, faster system clicks into operation which can also be used for loading CP/M format disks and, with suitable software, it will format MS-DOS disks so that data can be transferred from C128 format to any MS-DOS PC and back again.

The extra mode in the 1571 arises because it can use both sides of the disk for storage without the need for flipping the disk. C128D machines have the 1571 drive fitted as standard.

The drive automatically selects 1541 mode when it is first turned on and it's the first access by the computer which decides whether normal mode will be continued for C64 use or whether fast transfer mode is used. The DOS does allow for the drive to be locked back into 1541 mode if desired.

The special facilities which permit MS-DOS and CP/M disks to be used relies on an advanced system of disk commands called *basic mode* commands which are also used by some standard C128 programs to enable even faster (faster than fast!) data transfer rates.

Some problems with the 1571 ROM have been discovered which can cause inconvenience to users under certain conditions. Most notably, serious problems have been experienced when two or more files are open simultaneously, writing to one side of the disk is often slow and spurious DEVICE NOT PRESENT

errors are generated. Another problem, which Commodore cannot really be blamed for, is when floppy disks are used.

Normal one-sided disks actually have recording embossings on both sides but only one notch is cut thus inhibiting use of the second side. As Commodore point out, flipping the disk over and cutting an extra notch has two potential disadvantages. Mechanically, a felt pad rides on the normally unused side of the disk and this can cause friction damage. The second reason stems from the fact that some of the single sided disks are rejected double sided disks.

The problem with the twin headed 1571 is that it tests each disk to see if it is formatted on each side and although it will recognise the difference between a double sided disk and a floppy, it is a process which can occupy the drives interest for quite some time.

A solution does exist for this problem in the shape of Financial Systems Software's 1571 Flo ROM (\$24.95) which turns all of the major ROM deficiencies mentioned here and a few more besides.

Commodore 1581

This is a departure from the normal 5.25 inch system into the more professional format of 3.5in disks. The first question that arises is what benefit does a non-standard system offer that makes it worth while switching over when most software houses produce their disk software on 5.25 disks?

The answer lies in the capacity of the disk. Although smaller than the standard size, the new disks are more rugged and have a greater storage capacity. The 5.25 disks has 166 blocks available but the 3.5 disks have a capacity of 1160 blocks. In bytes this means 790K of available storage opposed to a mere 166K on the standard system.

For serious business users and programmers the advantage of such increased storage space becomes obvious and the deficiency of software should be redressed with the popularity of the machine in the States. PDS are looking towards their own interests by offering a range of software and 3.25 to 3.5 conversion software.

As a second drive (with device number switches!) for professionals I can recommend the drive and its full compatibility with both of the C128/64 modes and facilities. 1541 fast disk

utilities will not work with this drive and using a cartridge can cause problems.

Excelsior + Plus FSD-2

This is probably the best known alternative to the 1541 but will not emulate the higher capabilities of the 1570/1. Although possessing total compatibility with a 1541, the drive transfers data at a higher rate and is less than half the size of the Commodore machine, but the power supply is housed separately.

A recent competition hosted by Eventon Micros offered an Amiga for anyone who could find incompatible software and, although the results have not yet been made public, we know from phone calls to the office that some examples have been found but nothing of great significance.

This is the problem with varying from the Commodore brand. If the systems were identical to the 1541, a court case would probably result to them is always the faint possibility that compatibility problems could arise.

The construction of the Excelsior exceeds the 1541 in that the casing is metal and offers an excellent shield against electrical and some magnetic disturbances.

Multiple disk systems have always been a problem with both the 1541 and 1570/71 drives. To use a second drive its device number must be changed which means booting up a software alteration every time the system is powered up or by hardwiring an internal change which immediately voids the guarantee. Excelsior avoids this by having two switches situated under the drive which can allow any device number from 8 to 11 to be easily selected.

The main consideration is cost and the Excelsior offers considerable value. With a basic cost well below that of the 1541, Eventon are currently offering the GDOS system box with each drive.

Oceanic OC-118N

The Oceanic drive has a lot in common with the Excelsior - an awful lot! Housed in an identical casing with identical sockets and switches it would be hard to tell the difference between the two.

As a reviewer this posed me with problems; should I review the same

machine twice, discuss the merits of the company logos or drive design? Peering through the disk slot I could observe a slight difference in the Oceania drive, so equipped with a screwdriver I delved deeper.

The internal construction of the mechanics of the drives is noticeably different and I thought that the Oceania system looked more resilient and it lacked the clanking sounds characteristic of the Excelsior+. Electronically, the circuit boards look very similar with a few telling differences.

There is only one thing that worries me slightly. I know that the Excelsior+ Plus is an improved, more compatible version of the Excelsior Plus to which version does the Oceania drive approximate? Could it be the earlier Plus? Here my knowledge goes out neither company could give me a reliable answer and looking at the circuit boards the Oceania has a higher code number than the + Plus. I will continue my investigations and try to ascertain the truth. In the meantime I'm afraid my answer is that I don't know.

Blue Chip 5.25

Data's machine is twice the size of the Excelsior/Oceania drive but considerably smaller than the 1541. The advertising blurb proclaims a greater compatibility with the C64 than the 1541D, a side swipe at some of the introduced bugs in the updated 1541 machine.

Blue chip certainly looks as if it has more in common with the 1541 than it has with the other drives and possesses a more reliable locking system on the disk slot (the key latch). With the exception of the 1541, the drives all have a key latch which must be swung into position after inserting a disk. This ensures that the drive mechanism engages effectively and prevents the user from wanking a disk by pulling it out while the drive is in use.

One problem I have found with the Excelsior and Oceania drives is that the key latch can be swung into position when the disk is still 0.25 inches from full insertion into the drive. In a hurry, it is possible to trap and damage a disk but with the Blue Chip the disk is only about 0.125 inches out of seat and the mechanics safely pull the disk into position if the key latch is operated too soon.

One less attractive feature which this drive shares with the 1541 is the inescapable device number changes, if something other than device 8 is allocated, the drive casing is removed, a wire or two clipped and then the drive is reassembled. To undo the change presents a delicate soldering job which would have been avoided if proper switches had been employed.

Which Drive?

Before discussing which drive is the best, there is room to mention Commodore's 1351. This was intended as an alternative drive for the C16/Plus4 systems and offered parallel data transfer with vastly increased speeds. I've never actually seen one and I can't find records of any being sold but it's a pity that Commodore didn't investigate this style of machine for the C128.

Back to the real alternatives. The Commodore drives offer assured compatibility with C16/Plus 4, C128 and C64 computers but suffer from higher prices. All of the other drives claim faster data transfer than the 1541

but, as the tests show, this did not appear to be the case. I'd like to see the results of such company's tests.

Both the Oceania and the Excelsior offer GEOS in their price but although the Excelsior is £80 cheaper it does not include the traditional offer of software with the Oceania disk. Dimensions have two offers, a purchaser can choose between accepting five adventures plus five arcade games or the EasyFile Database and Future Finance Planning Package.

I can find little to choose between the machines. For C128 users the choice is limited to 1978/71/81 but for C64 owners any of the machines would do. As a great fan of the speedy Eolynia DOS system my choice would still be a 1541 and careful searches through the want-ads can reveal second hand machines for as little as £80.

If your decision is based on design then the Blue Chip offers a clean, sturdy though slightly bulky finish but my favourite is still the Excelsior/Oceania drives because of their compactness and original switches.

Drive Comparison Table

MACHINE	PRICE	SIZE(mm) L W D	SUPPLIER*
1541	£129.95	370x200x180	Delta PS Software 8 Rowanp Lane N Yorks YO1 1ND Tel: (0947) 680665
1978/71	£189.00	370x200x180	Delta PS Software
1351	£199.95	230x140x65	Financial Systems Software 2nd Floor Arboretum House St Mary's Street Worce WR1 1HA Tel: (0805) 611536
Excelsior +Plus	£129.95	375x150x50	Evesham Micros 63 Bridge St Evesham Worce, WR11 4EP Tel: (0538) 785300
Oceania	£139.95	375x150x50	Dimension Computers 27/29 High Street Leicester LE1 4PP Tel: (0533) 517479
Blue Chip	£139.99	390x170x75	Daniel Electronics Units 8/9 Dunbury Road Foston Industrial Estate Stoke-on-Trent Tel: 0782 276113

The problem with computers is that things are not as straightforward as you would like them to be.

Take for example your average video recorder. Most people have no problem operating a video recorder, because it has a play button for replay, a record button for recording things off the telly and a stop button for stopping either.

What could be more straightforward - except for the technically incompetent, who are worried to press any button, in case the whole thing might explode...

But with computers things are much more complicated. With a computer you get a very confusing looking keyboard and on that keyboard there are no keys marked "Play" or "Record" or "Stop". Nor is there a "Start-the-Printer" key.

So how do you operate your disk drive or database or printer?

Flexibility

In previous articles I have frequently talked about the importance and advantage of flexibility in computing.

A video recorder, in return to our example, is so straightforward as it only has a limited amount of quite specialised functions. You want to be able to record something off your TV with it. You want to be able to replay what you have recorded, and so on.

A computer on the other hand is an extremely versatile data processing device which you can use for all sorts of purposes (including running your video recorder), some quite obvious tasks, like typing text onto the screen or sending data to a disk drive for storage or sending text to a printer, to get a hardcopy. Also some not quite so obvious purposes such as operating a robot!

But how is this flexibility achieved? It's surprisingly simple. The computer is given data (input), and then it is programmed to do something with that data (processing), and the result of all this is an output of data, and where this output goes to and what happens with it entirely depends on what you've got connected to your computer and to which output device you want it to go.

In other words, the output of a database "1" can result in the letter "A" being printed on the screen or that letter being printed or stored on a disk.

Byting into the 6510

In previous articles we have designed a simple wordprocessor. Now we want to send the textfile to the printer and save it onto disk or tape

By Burghard-Henry Lehmann

Or it can result in the arm of robot being lifted or on a more dramatic note - a nuclear missile being launched and the nuclear holocaust being started.

The microprocessor, which I have identified at the beginning of this series as the real computer, doesn't give a damn about what happens with the data it outputs. It just processes the data and then sends it, on its way, as programmed. The result is entirely up to what happens at the other end.

Back to Brass Tacks

In previous articles we developed a simple wordprocessing program. Now we want to save the textfile, which this program creates onto disk or tape, retrieve it from disk or tape and, finally get our printer to give us a hardcopy of it.

I've decided to put all this into one article, because, as you will see, the operations are surprisingly similar. This brings me back to what I initially said.

In terms of output the disk drive or the tape recorder or the printer are nothing more than different output devices. As far as the 6510 microprocessor is concerned they are no different in any way to the screen or the memory.

All we do is send the data which the microprocessor produces, to a different stream or channel. And this is really all there is to it!

Back to our Program

But as always in this series, let me explain matters further to you with the help of practical routines. You'll find the listings of these routines at the end of the magazine.

As a matter of fact, I'd like to show you two different ways of saving our textfile and loading it back in. That is, two different ways for all you lucky owners of disk drives. Because the disk drive is far more versatile for serious applications than the tape recorder.

The third and the fourth routines - Tape Save and Tape Load is for those

of you who only get a database, but they can easily be modified to work on disk too. The first and the second routine Save File and Load File on the other hand will work only with a disk drive. But they are by far the more versatile as I will explain later.

Save File

The first and the second routine are the very good to illustrate the point I made at the beginning of this article: all we really do is send data to a different output channel than the usual or receive data from a different input channel.

To explain what I mean, let me give you a very short program which you can enter in less than a minute (that is, if you're using my assembler, *Speedy Assembler!*).

```
10 ORG 48132
20 LDA 'A'
30 JSR $FFD0
40 RTS
```

All this routine does is load the ASCII-code of the letter "A" into the accumulator and then calls one of the most often used routines in the ROM of the C64 which is called "CHECKOUT", which is short for: "character out".

This means, the character contained in the accumulator is sent to the current output device. And if you haven't given any directions to the contrary, the current output device is always the screen. In other words, the character contained in the accumulator is printed on the screen, and is to precise, at the next print position.

As you might have guessed by now, this is the same as if you would give the BASIC instruction: "PRINT "A"". As a matter of fact, the BASIC interpreter uses the above Kernel routine every time a PRINT instruction is given.

All we want to do now is send our data to a different output device, namely the disk drive. We want to print not onto the screen, but onto a diskette.

And to do this we have to open the correct output channels. This is what lines 130-300 in our Save File routine do.

In lines 170-200 I tell the system which filename I want to use and how long it will be.

First of all I load the length of the

filename into the accumulator. (The actual length - 1 bytes - is given at the end of the routine before the ASCII-codes for the actual filename. This is of course not a very flexible method and I'd like to encourage you to design a routine which allows the user to enter a filename of his own.)

Secondly, I put the low byte of the start address of the filename into the X-register and the high byte into the Y-register.

Finally, I call the appropriate routine in the Kernel - called "SETNAM", which is self-explanatory - which actually initiates the filename I've given.

Next I set the channels I want to be opened. Then, I load the logical file number; in our case three into the accumulator.

Next, I load the number of the output device I want to be used, into the X-register. In our case this is 8, which is always the device number for the first disk drive. If you want to send the data to a second or a third disk drive you have to give the device number which that drive has.

Now, I load the number of the secondary address in the Y-register. (If you are not too sure about all this, I advise you to consult your disk drive manual. The purpose of this article is to show you how things can be done in machine language. If you know what the BASIC-statement "OPEN 'A:,' does, you know what all this is about, because we are doing exactly the same thing here!)

In line 250 I call another Kernel routine - called SETFILES which initiates those values. Then I open the file whose parameters I have initiated in lines 170-250.

Finally I tell the system that I want some output to be done. For this I put the logical file number, first given in line 230, into the X-register and then call a routine in the Kernel - called "CHECKOUT" - which opens the proper output channel.

Now the system is set up to send data to the disk drive instead of the screen. The following routine, lines 200-600 sends the actual data of our textfile to the disk drive. And now that once more, this is exactly the same procedure as if I had sent the data to the screen!

Lines 380-430 initiate the beginning of our textfile and at the same time send the low byte and the high byte of that address to the disk drive. Therefore I store the start of

loading address onto disk. This is of course important for later on, when we want to retrieve the data from disk - except, if we used "forced loading" which would load the data to the start address we would give.

I don't think I'll have to spend much time to explain lines 450-600 to you. The meaning of, what I call "OUTLOOK", should be pretty clear to you by now. "OUTLOOK" simply sends 1000 bytes - a full screen - to the disk drive. This is of course not terribly sophisticated, and I think you will replace this routine very quickly with something better. That is, something that relates more to our wordprocessor and saves only the characters actually written.

One way of doing this is by using the variable "TEXTFILE" as the limit for saving.

Another way is by writing a short routine which puts an end marker - let's say 0 - at the end of the textfile. Then all you have to do is insert the line "HDQ ENH" after line 480 and lines 250-600 can be erased.

Finally I close all the channels I have opened in lines 170-300. This is in order to put output back to normal again - that is to the screen.

First I load the logical file number into the accumulator and call a routine in the Kernel which is called CLOSE. This closes the output channel.

In fact, I could open a different output channel now which I had initiated beforehand and which might go, let's say to the printer. Or I could open an input channel to get data from a disk which I then process and the result of which I send back to the disk drive, by again opening the output channel as we did in lines 200-300. This would be useful for a data base program, where data is retrieved from the disk, processed and new data sent back to the disk to be stored.

But in our case we can close everything and put it back to normal. This is what line 670 does, which calls on another Kernel routine, named CLRCH, which is short for "clear channels".

Load File

In the next routine "Load File" we do the opposite of what we did in our first routine. We retrieve the data we've stored onto disk.

Lines 100-120 open the appropriate input channel from the disk drive.

Lines 360-399 get the start address, we've stored before, from the disk and initiates the beginning of our textfile.

Lines 440-518 get the data itself.

To determine the end of this loop, I use "ST" which is the so-called status variable of the C64. This variable is located at decimal 144 (Hex 90) and is updated after every input or output operation. In the case of input from the disk drive it tells when the end of the file has been reached. In this case ST will contain 84, otherwise it contains 0.

Lines 360-399 close the input channel and clear all channels, as we did in the first routine.

The rest of the routine repeats the textfile onto the screen by converting each byte into its appropriate screen code and outputting that directly to screen - as we've done before.

Again, the disadvantage of this routine is that it is not very sophisticated so that it fills the whole of the screen, which means that you will get alot of garbage after your textfile. But I trust, you've learned enough by now to write a better routine and also to write the whole thing properly into our microprocessor. So that after the textfile has been reprinted, the user can continue straight away to enter more text.

Tape Save

The third and fourth routine I've written for all you datasette users out there. But they can also easily be modified for disk use and thus demonstrate another, less versatile way of saving and loading data onto disk.

All you have to do, if you want to use these routines for disk use, is change the device number in line 190 and line 218 respectively.

Lines 180,210 in the Tape Save routine do exactly the same thing as in the Save File routine. Only that we use two different logical files, because we want to output to the datasette.

We do not need to open or close or close anything, because we will be using the Save routine in the Kernel which will do all that and send the data as its way.

All we have to do is tell the system where our textfile starts and where it ends.

The low byte and the high byte of the start address is loaded into a zero page location of our choice and then the number of this zero page location

is loaded into the accumulator to tell the system which location we've chosen to point at the beginning of our textfile (lines 250-260).

Next, the low byte of the end address of our textfile we put into the X-register and the high byte we put into the Y-register.

And this is all there is to it. Line 360 calls the actual saving routine in the Kernel.

Tape Load

The fourth routine again does the opposite of what we did in the third routine. Therefore, it is similarly structured and needs very little explanation, except for two points.

The Kernel Load routine is also used for verifying a file on disk or tape. Therefore we have to tell the system, what we want. If we load a zero into the accumulator (line 290), it will load the file from disk or tape. If, on the other hand, we put a one into the accumulator, the appropriate file on disk or tape will be compared with what is in memory and at the end we will be told if it verifies or not.

This is done by either setting or clearing the carry flag. If the carry flag is clear, it has verified, if it is set, it hasn't.

Lines 290-300 simply tell the system where we want the file to be loaded to, if we are using the so-called forced loading, which loads the file to that address and not the one given on disk or tape.

After I've called the Kernel Load routine what does the actual loading (or verifying), I test the carry flag to see if an error has occurred (line 300).

If carry is set at this point, it can mean several things. The right file hasn't been found on disk or tape or the loading process has been interrupted with the break key or - in the case of verifying - it doesn't verify.

In this case we jump straight to the end of our routine in line 1230.

Otherwise, if carry is clear, which means that the file has been loaded correctly, we reprint the textfile onto the screen with a similar routine as used in the Load File routine.

Printer Routine

Sending our textfile to the printer, as we do in our I/O routines, is really the same as sending it to the screen

or the disk drive or the datasette. Again, all we are using is a different output device, namely the printer.

To open the appropriate output channels we of course don't have to give a filename. So we put a zero into the accumulator, which signifies "No filename" (line 170-180).

Lines 280-290 open the appropriate channels in the printer and send no further explanation.

Lines 320-360 initiate the start of our textfile.

In line 390 I send a carriage return to the printer, which is a good idea at the beginning of every print routine, because it empties the buffer in the printer of any garbage which might be left over from the last printout and positions the print head at the beginning of a new line.

For this I use a ROM routine which saves me two bytes. Because I could do the whole thing like this:

```
LEA # 13
JSR LAB47
```

(LAB47 is a short cut to the CHECKOUT routine which we've used in our "Save File" routine.)

I don't have to explain much about the main print loop in lines 450-600, except for one thing.

In lines 480-470 I send a so-called printer control character to the printer, and I do this every time before sending the actual letter to be printed.

This is an instruction to the printer to do the printing that follows in a certain specified way, that is enhanced or reversed or bold or whatever.

To find the proper control character for what you want to do, you have to consult the manual of your printer. I've got an Commodore MPS 1000 printer which I use in our routine in its Commodore mode. And since I want the text to be printed in lower and upper case (business mode) I tell the printer to do so by sending the control character 17 before each letter to be printed.

Line 540 sends a final carriage return to the printer in order to empty the printer buffer and get the rest of the textfile printed. (Again this routine is not very sophisticated and will print some garbage after the actual text, because 1000 bytes are sent to the printer. But I am quite sure you will have enough knowledge by now to meet this unsatisfactory state of affairs.)

See listing on page 17

RIMRUNNER

Far, far away from the systems of man, at the very edge of the galaxy, uninhabited planets are colonised by a race of insectoids. Because of the constant attack from the metallic scavengers of the Arachnoids the insectoids protect their colonies with laser shields powered by generators. However, these generators need constant support to maintain their charge and that's why the elite force of Rim Runners were formed.

As a Rim Runner you're armed with a pump action laser rifle and supplied with laser reptilian missiles, known as Runners. If one gets shot all you have to do is whistle and another comes running to replace it. The Runner is a good friend and will carry you at great speed through the landscape, but will do nothing to defend itself against the Arachnid Attack.



This attack comes in a variety of deadly critters ranging from Gribbals and boulders to a horrid collection of chomping and mashing machines. These must be shot using your laser rifle as any collisions will cost either you or the runner valuable energy. You begin the game with 180 units of energy and each collision costs you five units, knocks you to the ground and costs you valuable time to recover. The Runner has only six stamina units but only loses them one at a time. When the last one has gone it collapses in a heap, dissolves into a skeleton and then disappears. After a short delay another Runner is at your side and you're on your way.

Although you can move fast on the Runner you must discover to re-emerge the spent generators by discharging your laser rifle into them. These look like mushrooms that hover above the ground and appear as green dashes on your colony display at the top of the screen. As the Arachnoids attack the protective bubbles, the generators drain and fall to the ground as the dashes flash and then turn red. Your mission is to maintain these generators for an allotted time period that also doubles as a bonus. If you succeed you're immediately transferred to a new colony and a tougher mission.



The action is fast and furious as you blast away in six directions at the attacking Arachnoids, and is played on a sideways scrolling background and accompanied by impressive sound effects as lasers fire, generators are recharged and as either you or the Runner collapse on the ground. Even the high score table adds to the game as you punch up your name by shooting the letters.

Rim Runner was designed by Barbarian author Steve Brown and features the same mixture of great graphics and addictive gameplay.

T.H.

Touchline:

Title: *Rim Runner*. Supplier: Palace Software, 273 Pentonville Road, London N1. Tel: 01-258 0351. Machine: C64. Price: £8.99 (C) £12.99 (Disk).

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Almost all commands and functions that are not activated by windows can be selected from a menu bar, which appears on top of the screen after pressing the fire button, either in Basic or from the freezer. The following Basic Toolkit and keyboard extra's are included:

- Freezer
- Auto
- Delete
- Old
- Help
- ESI
- Mail
- Register
- S&K extra
- RAM for Basic
- Append
- DAppend
- Killme
- DDB
- Monitor
- Drive monitor
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Decisive Battles of the American Civil War

Without any preamble, I'd like to say that this is the most impressive dollop of code that I've seen marketed in a long, long, long time (which is actually a pretty sad comment on the software scene).

The first offering, in this country anyway, from the Australian Strategic Studies Group, this is a package that, unlike many, lives up to its portentous sounding title. Here we have the chance to play through six major battles of the tragic war between the States, from the first encounter at Bull Run to the vast and complex maelstrom of Chancellorsville.

Six games on one disk would be good value in itself, but SSG have also been generous to include the complete authoring system, with which all the game scenarios were produced, on the same disk. They cannot lose by this, because apart from pleasing the public, this is barely scenarios.

First of all, let's look at the battles. SSG has gone to considerable trouble to inject as much realism as possible into the usual wargame process of shoving icons around the screen. For a start, the opponent's units cannot be seen unless they are in line of sight with yours, or they are in territory you have controlled. This sounds unremarkable, but almost every other computer wargame I have seen makes the opponent's deployment totally visible, which is about as unrealistic as you can get.

Next, the company has thought about the whole process of military command and control as it was practised in the 1860s. Although units can be commanded individually, as if by radio, switching this off means that orders can only be issued to the troops from your army HQ via intervening levels in the hierarchy - corps and division HQs. Of course these may be out of communication if out of range of mounted messengers, and terrible problems can arise because the wretched corps/division commanders may not have very good ideas of their own.

In short, the game creates the whole 'fog of war' to which 19th century commanders were subject. Even if you get a command through, there's no guarantee that a commander, who may be impulsive or cautious, will obey it. A lot depends too, on whether they have good staff.

It's definitely better, however, to play each of the battles for the first time as though each unit had radio, since this gives you some sort of feeling for the ebb and flow of the battle, particularly if, like me, your knowledge of the Civil War is entirely obtained from reading *Grant's* and *Lincoln's*.

The program gives the player from choosing targets and ordering retreats in minute detail. It units will to a large extent look after themselves, so that you are involved largely in fighting a war of position, just as it should be.



Although *Decisive Battles* looks a lot better than many of its rivals, such as SSG's strategy games, unfortunately, like the SSG offerings, it does betray the fact that it's a conversion from an Apple III package - no smooth scrolling or joystick control, for example. On the other hand, it does use a proper map based on hexes. Most computer wargames are grid-based, which doesn't work out quite right.

The documentation for the game is brisk, including a glossy full-colour map, memo diagrams for the forgetful, and a 72-page manual. This is particularly necessary if you are to understand the game grammar, which comes in two parts, *Warplan* and *Warpoint*.

Warplan is the most important of the two. With this, you can design the battle map and set up all the units on both sides. A very large number of parameters are necessary for this, but it's a relatively painless process. Maps can be up to 27 x 27 hexes in size, but I couldn't find any mention of a limit on the number of units.

Warpoint is the cosmetic part of the program. With this, you can modify the appearance of any of the icons used to represent terrain, units, or anything else. Terrain can be redefined with its effect on movement, cover and visibility in *Warplan*. In short, the authors have thought of just about everything. I cannot commend this package too highly. J.F.F.

Touchline:

Name: *Decisive Battles of the American Civil War* (Vol 1)
Supplier: Strategic Studies Group UK, Court House, 15 Court Hill, Chipping Surrey CR2 6JQ. Tel: 0377 53660.

Easy Basic Toolkit



Tired of Basic V2.0?

Let Easy Basic take some of the strain out of programming in Basic

By N. Higgins

Easy Basic is a comprehensive Basic toolkit package for the Commodore 64. It doesn't matter if you're just getting started or you've been at it for years, there's something here for everybody. This allows you to build up a collection of your favourite subroutines and incorporate them easily into the program you're working on. More on this later.

There are many varied extra commands for Easy Basic which make a HELP function essential. Typing HELP at any time will produce a detailed command summary. I mention this at the beginning in case you can't be bothered to read any further - at least you'll have a rough idea how to get started.

A note on memory usage. Easy Basic uses the RAM under the Basic ROM and the 10000 - 10FFF area. Any Basic program that doesn't use this RAM should run quite happily within Easy Basic.

The Basic Toolkit contains many of the commands no programmer should be without, such as:

AUTO (start, step) This is the command to commence automatic line numbers. For example, AUTO100,10 will start producing line numbers from 100, and incrementing by 10 each time you enter a line. To turn off auto-line numbering, simply press return over an unused line number.

REN (start,step) This command is complementary to Auto, and it will quickly renumber part or all of a program including GOTOs and GOSUBs.

DEL (start,end) This will likewise delete a range of line numbers. Omitting the second parameter will erase everything from the line specified by the start parameter onwards.

FIND (text) If you should want to search a program for a particular keyword such as PRINT or GOTO etc, this command will search the Basic program and report all occurrences. If you should want to find an occurrence of a text string such as a message or

REM statement, enclose the text to be searched for in quotes:

```
FIND"MAIN MENU"
```

Syntax errors are always cropping up and so using the SHY command will list the offending line ready for re-writing. This also applies to other errors, including the error which occurs after pressing RUNSTOP.

VAR will dump all the variable names and their current values to the screen. This can be very useful when debugging a large program. The program must have been RUN before using this command.

OLD is simply the reverse of NEW. Typing OLD will restore a program after you have typed NEW, and very often even after a cold start (reset).

INFO is used to display the locations of the vital bits of your program:

- the start of Basic text
- the end of Basic text
- the beginning of variables

- the end of variables
- the beginning of arrays
- the end of arrays
- the beginning of strings
- the end of strings
- the memory used by variables
- the memory used by arrays
- Basic bytes free

NAME"prog name" and DATE"date" sets the name of your program and the date. This is particularly useful if you have several versions of a program and you want to find the most recent version. Note that the program name can be up to 34 characters long, the last two characters are used as prefixes relevant to other commands. The date needs to follow any particular format, it needs to even be the date! As long as it's not longer than 17 characters.

Wouldn't it be useful if the various bits of a program could be a different colour when listed? The command is Colour (line,colour 0-15). The number refers to the colour you wish that part of the listing to be. When listed, everything after the specified line will appear in the specified colour. It works by adding a new line containing a REM statement and some special characters. Make sure you don't erase an important program line.

The LIST command has been augmented, pressing @ will save you typing LIST every time, and you can pause the listing with the spacebar - any other key re-starts and RUNSTOP halts the listing.

Disk users have not been forgotten. DIR will display the disk directory of device 8, without over-writing Basic. Spacebar and RUNSTOP function as for LIST.

To load a file from the directory (we need to type the file name), simply cursor up to the relevant entry and type @ L, below the program name, and press return. No moving about! Alternatively, @ L"filename" will achieve the same result. Note all disk commands default to device 8.

Saving a program is slightly more complex. Using @ S as its own will save your program using the filename specified by the NAME command (you can check this at any time using the INFO command). Alternatively, @ S"filename" results in the same.

DOS"disk command" can be used to send a command to your drive, DOS on its own will read the drive's error channel. For example; DOS"RDJIM+C:FRED" will rename a program called FRED and call it JIM.

Easy Basic Command Summary

AUTO(start,stop)	Begin auto line numbering
REN(start,stop)	Re-number the program
DEL(line,line)	Delete range of program lines
FIND(keyword)	Search for keyword or text string
WHIT	Display line for editing after ERROR
VAR	Display used variables and values
OLD	Restore a NEWed program
INFO	Display program locations
NAME"prog name"	Set name for program
DATE"current date"	Set date
COLOUR(line, colour 0-15)	
@	Set list colour
	List
DIR	Get disk directory
@L"filename"	Load program
@S	Save named program
DOS"disk command"	Send command to disk drive
APP"filename"	Append a file
MER"filename"	Merge program lines
BSAVE"filename",S,I,SA,EA	Save block of memory
LOAD"filename",S,I,SA,EA	Load block of memory
PROTECT"filename"	Write protect a disk
HTAB(1-99)	Set tab value for F3 and F7
VTAB(1-24)	Set tab value for F1 and F5
SWTCH	Select user-defined function key assignments
KEYF(1-5F"key")	Set function key assignments
DUMPHSA	Display memory in decimal
DUMPHSA	Display memory in hex
DEC(J&4515)	Convert decimal to hex
HEX(J&8008-FFFF)	Convert hex to decimal
LIB	Display subroutine library index
LIB"subname",line,line	Save subroutine
LIBO	Delete subroutines from library
LIBS	Save Library
LIBL"filename"	Load Library
DEVICE(I=map,J=disk)	Select disk or tape storage
KILL	Exit Easy Basic
HELP	Display command summary

APP"filename" (append) and MER"filename" (merge) are very useful for incorporating pre-written subroutines in a program under construction. Append merely tags the new program on the end of an existing program in memory. It is highly likely the line numbers of the appended program will fit the new program, so use the REN command to re-number. Merge is similar, except that it will replace line numbers in the original program where they coincide.

The 64's Basic has no facility for saving blocks of memory, so the next couple of commands rectify this.

BSAVE"filename",S,I,SA,EA will save the memory to disk between SA (start address) and EA (end address). (note BLOAD"filename",S,I,SA will load a block into memory starting at SA (start address).

PROTECT"filename" is a special

command that saves a program in memory in a protected format. This means that when the program is loaded back, you won't be able to list it (the machine will reset), and the RUNSTOP key is disabled thus preventing prying eyes getting a look at your work! There are a couple of constraints here; your program must start at the normal Basic start (2049), you must have at least 80 bytes free, and you mustn't have used line 0.

The function keys can be set up to make things easier for you. Easy Basic automatically defines the function keys in the following way:

F1 - moves the cursor 12 rows up
F3 - moves the cursor 12 rows down
F5 - moves the cursor 20 columns left
F8 - moves the cursor 28 columns right

You can set the number of places the cursor moves using:
HTAB(1-99) and VTAB(1-24)

The shifted function keys are defined as follows:

- F1: pauses Basic
- F2: restores the current cursor position
- F3: moves the cursor to the bottom left corner of the screen
- F4: Toggles quotes made on/off M.B. Don't use F2 to pause Basic while accessing disk!

If you wish to define your own function key assignments, you will first need to SWITCH from preset mode to user-defined mode. Now you can use KEYF1-8/"cm" to assign up to 30 characters to each key. Using SWITCH again will return you to the preset assignments.

To dump the contents of memory on the screen, use the following commands: DUMPDISA will dump memory to the screen in decimal, from SA (start address) onwards. DUMPRSA similarly dumps memory in Hex. To dump the basic Ram to a printer, you can enter: OPENASC:MD4:DU:MPD:40960

Pressing RUNSTOP will terminate the dump. Press #4-CLOSE2 will

return things to normal.

If converting Hex to Decimal gives you grief, DEC(0-65535) will display the corresponding Hex equivalent while HEX(0-FFFF) performs the reciprocal function.

The Subroutine Library, as mentioned earlier allows you to save a separate file containing a list of the subroutines used in a program. The name of the library should correspond to its name on the disk (or tape), to make for easy loading. You can then load the subroutine straight from the library using @L, @PP or @MR. All the commands associated with the subroutine library are prefixed with LIB. To insert a subroutine into the library, use LIBP"name",start line,end line. LIB can be used to check what files are included in the library, while LIBD will delete an entry. LIBS will save the library using the name set with the NAME command, while LIBL"name" will load a library back.

Even though Easy Basic was designed with the disk user in mind, the tape user has not been forgotten. To change the default device from disk

(D) to tape (T), you can use DEVICE: Likewise, DEVICE will re-select the disk drive.

EXIT can be used to return to regular 64 mode, and a tap of the RUNSTOP and RESTORE keys will reactivate Easy Basic.

Getting it all in

Type and save SAVER, EASY BASIC and LOADER by: POKE 45670:449:POKE12850:NEW

Load and run LOADER. Replace DEVICE in line 43 with (D:) or (S:). Next, load and run EASY BASIC, and type NEW. Without resetting the machine, load SAVER. Before running, cassette users should type POKE 40715,1.

Finally run the SAVER program. This creates the file called EASY BASIC V1.1.

To load EASY BASIC, run the program called EB LOADER. The files SAVER, EASY BASIC and LOADER are no longer needed once you've tested EASY BASIC.

See listing on page 67



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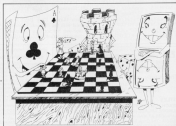
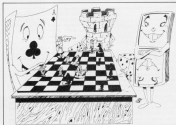
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The world's greatest consulting detective is the latest hero to be recreated in Infocom's classic style. However, in the mystery of the Crown Jewels, Sherlock Holmes discovers it is a trap organised by the evil Professor Moriarty to capture him, so he decides it is best to let you, Dr Watson, take control of the case. As the game begins you know none of this as you are summoned by the loyal Mrs Hudson to help the great man out of a deep depression. Armed with your Col and trusty dog drive you rush to 221B Baker Street.

Infocom packaging has become a legend in its own landing time and Sherlock is no exception as the double-sided game disk is backed up by a full instruction book, a map of Ye Olde London Town, a useless but decorative Sherlock and Watson key ring and a copy of the June 17th, 1887 Thames. This authentic looking paper is packed full of notices covering everything from births to deaths, changes of name and new publications as well as the report on the Cambridge University v Sussex cricket match. All this adds to the atmosphere but means little as the game loads and you are lead by Mrs Hudson up to the apartments of Sherlock Holmes.

As with all Infocom adventures you are faced with a series of puzzles that must be solved to reach a perfect score and finish the game, and I have no inclination of spoiling this process by telling you any solutions. However, if you



SHERLOCK

get really stuck you could resort to the cowardly way out and delve into the on-line 'instructions' for a helping hand as an answer. These bring their own problems as you can spoil the game if you use them too much and they have been written to send a casual looker on wild goose chases! One thing is certain, you are on your own as although Holmes trails along he refuses to help, but you clearly sense some points and even guides you in the right direction. This is, perhaps, just as well as Holmes is at his most infuriating as he immediately punishes or scolds you in the newspaper that you've already read and starts you off on a new logical time to recover the crown jewels.

This trail of mystery and confusion leads you all across Victorian, fog-bound London (some Americans still think London is like this!) where you can either walk, which takes time or call a cab. One of the initial problems you have to solve is how to avoid calling the enthusiastic but useless greasers (that always take you to the wrong place) and find the more efficient cabs.

Once you're solved that you may get round to deciphering the riddles left by the Crown Jewels thief that

will lead you to a mapping problem and a series of challenges, a redherring, a rescue attempt and finally victory at the Palace. On coats you will have to juggle useful and serious objects, find clues, then work out how to get them (this isn't always easy) and even solve the odd medical emergency since, after all, you are supposed to be a Doctor.

The game is populated by the usual blend of humorous but infuriating characters, such as a librarian that distracts you with a constant stream of very interesting facts, a bank guard who is adamant that he can't be bribed and of course, Holmes.

Sherlock is an excellent game that oozes atmosphere and quality from its superb text-descriptions and compelling but frustrating plot. Another one for the collection. **T.H.**

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Title: Sherlock. Supplier: Infocom/Activision, 21 Pond Street, Mansfield, London NW9 2PW. Tel: 01-411 1001. Machine: Col. Price: £39.99 (Disk Only).

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Relative Program

We have one loose end to tie up from the first part (February 78) in which the routine to set up a file was discussed, with the FIELD details in two arrays, FIELDN and FIELD. However, once the computer is switched off then those details are lost, so we have to store those on a file to be read back whenever the program is run for that particular file. For this we use the good old sequential file:

BASIC 3.5 *- HOUSEKEEPING

First of all, we need to create a unique filename for the housekeeping file which is based on the relative file but which will not interfere with it on the same disk. We put the filename NAMES in between HSE, and a row of full stops, and then take the leftmost n zeros characters of the whole string, which will form the unique housekeeping filename.

```
200 n1$=LEFT$(HSE*"...",7-LEN)
```

Then the sequential file is OPENed for a write:

```
210 OPEN "S:1;" * n1$(1);w  
      gosub 3410
```

And write the first of the many variables we will need to update the file after each file access. We will PRINT # the number of FIELDs in this particular file, the Variable C, and check the error channel.

```
220 print # 3;gosub3410
```

Then the loop is opened and the FIELD AND FIELDN arrays are PRINT # 'ed to the file.

```
230 for a = 0 to r  
240 print # 3, FIELDN(a);gosub3410  
250 print # 3, FIELD(a); gosub3410  
260 next a
```

We ensure that the file is closed with a DCLOSE and then we RETURN.

```
270 dclose gosub3410  
280 return
```

Other housekeeping variables will be added to this routine as we progress: there has to be provision made for keeping track of the number of RECORDs in the file, those deleted and so on. Notice the use of the "@" in the OPEN statement. This is the over-write symbol so that the housekeeping can be updated on the file after accesses have changed the data. You will also see that in line 280 we have made this a subroutine with the RETURN command. This is because this routine may be used for creating a file and also updating an existing file when leaving the program.

The read housekeeping routine must be an exact duplicate of the write, in reverse, as it were, otherwise you will get data input errors.

```
300 n1$=LEFT$(HSE*"...",7-LEN)
```

```
310 OPEN "R:1;" * n1$(1);gosub3410  
320 for a = 0 to c  
330 input # 3, FIELDN(a); gosub  
3410  
340 input # 3, FIELD(a); gosub3410  
350 next a  
360 close  
370 return
```

BASIC 1

In BASIC 2 you have to be careful with those commas. The 1541 disk drive manual has itself made an error with the commas which took me many hours to notice before I could get sequential files to work properly, so don't use the manual, use this article!

BASIC 2 - WRITE HOUSEKEEPING

```
200 n1$=LEFT$(HSE*NAME$*  
      "...",7-LEN)  
210 OPEN "S:1;" * n1$(1);w  
      gosub  
220 print # 1;:gosub3600  
230 for a = 0 to r  
240 print # 2, FIELDN(a);gosub3610  
250 print # 2, FIELD(a); gosub3610  
260 next a  
270 close2;gosub3610  
280 return
```

Don't forget to OPEN the channel 5 first, otherwise the disk error check routine 3600 will cause a '%FILE NOT OPEN' error. I think I can now

e File mming

*Learn the correct method
of using relative files by
following our series.*

*The second installment deals
with how to write and read
to records on the file*

By Eric Ramsay

rely on your understanding that, and perhaps OPENing the Error channel right at the beginning of the program.

BASIC 1 - READ HOUSEKEEPING

```
200 a$=LEFT$(NAME$*NAME$
  ".....",10)
260 open:LL1, "L:" as# ("A:"
  gosub:600
270 input# 2:; gosub:610
280 for a = 0 to c
290 input# 2:FIELD$(a);gosub:610
400 input# 2:FIELD$(a);gosub:610
610 write
620 close:gosub:630
630 return
```

The read housekeeping would obviously only be used for loading the details of a previously created file. After branching to it, you would GOSUB to the FIELD pointers routine, and then everything would be set to Read and Write to the RECORDS.

Read and Write Records

Since you may well be using the same program to create many different files, you will want the Read and Write routines to be flexible. You might wish to have one file with three FIELDS and another with twenty in each RECORD so the best method is to use a similar Loop as to the suggested

FIELD length input routine in the first part.

The actual method and presentation on the Data Write into RECORD is up to you, but I will suggest some routines you may find useful. Whichever method you use, you must ensure that the FIELDS are the correct length to match the FIELD pointers already calculated by the program. One suggestion I might make is the following. We can use the same loop as the FIELD input routine used in the first part. First we increment the RECORD counter, RN, and then we fill the collection string, DISK\$.

```
2510 return:|;rn="***increment: RN
  =
2520 disk$=""fill the collect string
  Then we start the loop and clear
  the screen.
2525 for a = 0 to c
2530 print:clearscreen)
  And we display the details relevant
  to this particular FIELD
2535 print:Enter FIELD"#+:
  " Subject: "FIELD$(a)
  And receive the data with the
  INPUT
2540 input#;
  Now we add the FIELDString to
  the collection String DISK$
2550 disk$|= disk$ + ;
```

And continue to collect the next String until the RECORD is complete.

2560 next a

Then, how was that. Well that do?

Well, no. We have relied on the user to type the FIELDS in and they can be of any length, and clearly that, will not do. The FIELDS must always begin in exactly the same place in every RECORD or the display of the RECORD will not work. On the other hand, we could add a carriage return character, CHR\$(10) to the end of each FIELD, but the problem there is that the FIELDS will still be of irregular lengths, and what is more, a separate Read operation would be necessary for every FIELD rather than a maximum of two for each RECORD. So we have to add a padding to ensure that every FIELD is exactly the right length. This is not too difficult if we declare a string full of spaces, call it PADS right at the beginning of the program:

```
30 pads=""
  "pads"=pads+ pads:
  pads=pads*len("***pad$now")
  80 spaces
```

That should be long enough. Now we use the length of the FIELDS already contained in FIELD\$(a) inside the routine:

```
2540 field$|=field$+pads, FIELD$(a)
```

...and every FIELD as it goes through the loop would be of exactly the length stored in the array FIELD\$(a). Now when the loop has finished for every RECORD, the collection String

DISK) would be exactly the same length and we will be able to split up each DISK for display and processing without several Read operations.

Of course, when writing your own routine, you might wish to include details of how many characters are available in each FIELD as it is inputted. My own programs use a reverse bar on the screen on which each character of the FIELD is shown as it is typed and automatically stops INPUTTING when the FIELD length is reached. It also edits out illegal characters from the keyboard input to prevent confusion, but that is really outside the scope of this article.

So now we have the RECORD ready for writing in the string DISK. We have one more check to make. Supposing that, on the 64 the length of the RECORD is greater than 88 characters? Only 88 characters can be inputted by a single read from the disk, which would mean that some of the RECORD would be missing. Now we come to the separators again.

BASIC 7 - Collecting the Record

If we were to separate every FIELD with a carriage return (CHR\$(13)) then we would have to read every FIELD separately, since a READ operation would stop as soon as it reached the first carriage return character in the RECORD. This would also mean that you would lose one byte of the RECORD for every FIELD, which can be very wasteful if you were to have 30 FIELDS. What we must do today if the RECORD exceeds 88 characters for the 64 and 168 characters for the 128) is to split up the DISK at a standard place and then read the RECORD on either side of the separator. Before we can write the string to the RECORD we must check for the length of the string.

```
2565 if len > 159 then go sub 2592 rem
**** special FIELDS.
```

The length of the RECORD, you remember, is stored in the Variable LREC and this line detects if the length of the RECORD exceeds the maximum permitted in the buffer. The following routine will now separate the String DISK into two parts by a CHR\$(13) so that the RECORD will be read in two parts. The Write Routine is not affected, and the FIELD Printers Routine has already detected this change in the RECORD Length. (Refer to part one.)

```
2591 rem **** special case for L
len = 159
```

First the leftmost 159 characters of the string is put into DIS and a carriage return, CHR\$(13), is added.

```
2592 DIS=left$(DIS,159)+
chr$(13)
```

Then whatever is left of DISK is put into D25, using MID\$.

```
2594 d25=mid$(DISK,160,Len(DISK))
```

Then both DIS and D25 is added together and the end result is put back into DISK, which now has a CHR\$(13) in its 160th character.

```
2595 DIS=DIS+d25
2596 return
```

The collection string is now ready for writing to the RECORD in the File.

BASIC 1 - String Collection

The 64 gives us twice this problem, since the buffer can only handle a maximum of 88 characters in a single read from the disk. Since it is conceivable that you might have a RECORD of 254 characters, 254/88 is 2.8, meaning that for a full-sized RECORD you would need two separators.

If at this point you decide to use a separator for every FIELD I would understand, since at the beginning I used this method, and I will give you the routines you need now. There are only a few changes, starting with the FIELD pointers routine:

BASIC 2 - Field Pointers with Field Separation

```
2520 rem **** calculate FIELD
pointers
2530 line=1
2540 for a = 0 to c
2550 line = line+FIELD(a)
2560 if (a) = 1 then
2570 next a:goto 2540
2580 line=line+1
2590 return
```

As you should see an extra byte is added to LREC at each FIELD, and of course, there is now no need for a length of RECORD=rec, except for the maximum permitted.

String Collection with Field Separation

```
2510 rem line = len****
increment Rec no
2520 disk="" add the collect
String
2525 for a = 0 to c
2530 print(a:rec)
2535 print"Enter FIELD "a:1;"
subject "FIELD(a)
2540 input$E
2545 left$(input$,len(FIELD(a)))
2550 disk=disk+ a$ +chr$(13)+rec
****note the separator
2560 next a
```

Both of these routines will work perfectly well, albeit slightly slower in reading from the disk. The speed of the writing operation is unaffected since in every case the writing operation is carried out in one operation. This is very satisfactory bearing in mind that the 1541 and the 1571 actually write much slower than they read. In case you are stubborn and you still want to program a full-length RECORD in the three reads, here is my suggested solution. I28 sources, over your pain. This is why you paid your extra money!

BASIC 2 - Full Record in Three Reads Calculate FIELD Pointers for three reads.

```
2520 rem **** calculate FIELD
pointers
2530 line=1
2540 for a = 0 to c
2550 line = line+FIELD(a)
2560 if (a) = 1 then
2570 next a
2580 if (a) = 1 then 2590
2590 line = line+1
2600 if (a) = 1 then 2590
2610 line=line+1
2620 return
```

String Collection for Three Reads

```
2591 rem **** special case for len
> 88
2592 d15=left$(DISK,87)+
chr$(13)
2593 d25=mid$(DISK,88,Len(DISK))
2594 DIS=DIS+d25
2595 if len < 178 then return
2596 d15=mid$(DISK,175,chr$(13))
2597 d25=mid$(DISK,178,Len
```

```
10450)
238 disk$=disk$+chr$
239 return
```

You might have noticed that in both the above routines, the collection string DISK\$ remains totally unaffected if the total RECORD length does not exceed the buffer limitation. This programming may seem unnecessarily complex, but it does save many bytes which are just wasted in separating FIELDS when this is not strictly necessary. Owners of a 128 have a better time than those on the 64, but still, once the routines are in place you will not be aware that they are in fact processing the strings, apart from a slight decrease in speed. But why all the hassle? You will see now why we have gone to so much trouble to collect all the FIELDS into one string for writing.

BASIC 3.8 - Writing the Record

We saw earlier the routine for collecting all the FIELDS into one string, DISK\$. This may or may not contain a separator but whether it does or not has no effect on the write operation. First, we have to add a line to the very beginning of the input routine:

```
2490 rem ***** enter records
*****
2500 open # 3,3,name$:gosub 3610
```

The relative file is opened. WRFC is not strictly necessary now since the file has been created, you may include it if you wish. Here I have also shown two optional statements, the all in the drive number, always 0 with 1541 and 1571 drives, and the device number. US, if you want to use two drives you may change the U parameter to nine in which case the second drive will be writing the file. We can now read or write to any record mainly by quoting the record number. First of all, we will increment the record counter RN, and then the next part of the routine is the FIELD collection routine you saw earlier

```
2510 rn=rn+1:
rem***** increment Rn to
2520 disk$="" null the collect
String
2525 for a=0 to c
2530 print(disk$+a)
```

```
2535 print"Enter FIELD":a+1:
Subject "FIELD$(a)
2540 input$=
2545 for i=0 to 99:
pad$,FIELD$(a)
2550 disk$=disk$+chr$
2560 next a
Then we have the check for the
RECORD length.
2570 if loc > 150 then gosub 3590 rem
**** special FIELDS
```

This is an important part. Here the program is assigning a variable, WRFC, from the record counter RN before it branches to the write RECORD routine. This is so that the same write record routine may be used by any part of the program. You will see the importance of this in later articles in the series.

```
2580 wrfc=rn:
2590:
2600 gosub 4000:rem ***** write
record
2610 print"Enter another record (y/
n)?"
2620 get$=yy$ if yy$ = "y" then
2630:
2640 delete
2650 goto menu whenever you place
it.
```

The program branches from the input routine to the write record routine. At last we are writing something to a RECORD

```
4070 rem *** write RECORD routine
4080 record # 1,wrfc,1,gosub 3610
```

Here the variable WRFC gives the RECORD number required, in parenthesis, and the last ,1 in the RECORDS statement is the byte number of the RECORD to begin writing. This can be any part of the RECORD, but our write has to be at the beginning.

```
4090 record # 1,wrfc(1),gosub 3610
4100 print # 3,disk$,gosub 3610
4110 return
```

Do you see the simplicity of it? Because we have gone to the trouble of collecting the string DISK\$ together we can simply declare the RECORD number and write the single string onto the RECORD. This is very quick, especially on the 1571. Even when all the FIELDS are separated with CHR\$(9) the RECORD can still be

written in one operation. The only difference will come when it needs to be Read.

BASIC 3 - Record Write

A slight change must be made to the routine for the 64. The essential details are there already, but we have to remember the record pointer routine, so the write record routine itself will be different:

```
2490 rem ***** enter records
*****
2500 open # 3,3,name$:gosub 3610
```

The relative file has already been opened, so even in BASIC 3 the record length does not need to be specified. Now we can use whichever string collection routine may be required; either the read in three or the FIELD separation method:

```
2510 rn=rn+1 rem*****
increment Rn to
2520 disk$="" null the collect
string
2525 for a=0 to c
2530 print(disk$a)
2535 print"Enter FIELD "a+1:
Subject "FIELD$(a)
2540 input$=
2545 for i=0 to 99:
pad$,FIELD$(a)
2550 disk$=disk$+chr$
(1) for separate FIELDS.
2560 next a
```

If the read in three has been used we need the check for record length:

```
2565 if loc > 87 then gosub 3590
2580 wrfc=rn:
2600 gosub 4000:rem ***** write
record
2610 print"Enter another Record (y/
n)?"
2620 get$=yy$ if yy$ = "y" then
2630:
2640 delete
2650 goto menu whenever you place
it.
```

BASIC 3 - Record Write routine

This routine may be used from anywhere in the program, providing that the variable WRFC is declared as the desired RECORD number to access. First we obtain the high and low bytes of the record, using the routine already explained in part 1:

```
4070 rem *** 64 Write RECORD
routine
4080 open
4090 gosub 4114 rem *** get
Record Pointers
```

Then the record pointers are placed in position, twice for safety, using the command channel:

```
4084 print # 13;"p"<chr$(R0)+
chr$(R1)<chr$(R2)
gosub 3610
4090 print # 13;"p"<chr$(R0)+
chr$(R1)<chr$(R2)
gosub 3610
```

And the collected RECORD string is written to the RECORD.

```
4100 print # 5;disk gosub 3610
4110 return
```

You will see the usual rule followed there: the pointers are placed by the command channel, and the actual data is read from the RECORD using the file OPENed. (You did remember to open the error channel, didn't you?)

While the read/write routine will always place the DISKS on the RECORD correctly, you must not try to mix the different string collection or FIELD pointers routines. Each of them, either the three read system or the FIELD separation technique give different results for LREC and mixing the type of string collection will result in a 31, OVERFLOW IN RECORD error. You may check at any time after the string collection that the whole program is setting things up correctly, if you press the RUNSTOP key, and then type in direct mode:

```
>disk$
```

You will then see the RECORD as it is about to be written on the file. Now, test the LENGTH of the RECORD Collection String. Again in direct mode, type:

```
>len(disk$)
and the result will be a number. This number should be one or two less than the Variable LREC, in case three read if you are using the BASIC 2 Read or three method. If it is less than that then you are wasting file space and the FIELD pointers routine is not working correctly. If len(disk$) is equal to or greater than ( = > ) LREC this will result in an Error 31 when the program reaches the Write Record Routine.
```

Record Read - BASIC 1.8+ 2 Read Method

Now we come to the routine which

will read the RECORD, which is not quite as simple as the write routine. I have written the routines required for either the two read method or the FIELD separated method, whenever you have decided to use for your own applications. Be warned however, that once having decided to use one or the other, you must stay with that method throughout the program, using only those routines which apply.

If you try to mix a two read method or FIELD separated method then you will get all sorts of errors and you will be left with garbage on the screen when it comes to displaying the RECORDS.

To read the RECORD I have assumed that you have OPENed the file. Don't forget that once OPENed a relative file may equally be read and written to. I assume for the moment that you wish to use the two read method, rather than separating all of the FIELDS. If so, then the routine you need is as follows.

You must have declared a variable, RREC as the RECORD number you wish to read, in exactly the same way as the WREC is the write routine. In the next articles I will suggest many routines to make the display of the RECORDs in a file easy and efficient, but for now I shall use a simple request for a Read:

```
2730 print(direct$)
2740 input"Which Record to
inspect";a
2750 ifa <= rfilem%rn rem ***
check for valid no
2760 rfilem%rn
2770 disk$="">gosub 4130
```

At this point a RECORD number has been INPUTted, checked to make sure that it exists using the RECORD used counter, RN, and then the RREC has been declared. Now we come to the RECORD read routine. The file is already been OPENed so we go straight to the read.

```
4120 rem **** read record routine
*****
4130 record # 5;(rn-1);gosub 3610
4140 record # 5;(rn-1);gosub 3610
The file pointer has positioned the read/write head to the correct RECORD number. Now the entire RECORD is INPUTted into the DISK$.
4150 input # 5;disk$>gosub 3610
```

But what if the RECORD is greater than 160 bytes? This means that only

the first 160 characters of the record would have been read from the file, so we detect the length of the RECORD using LREC:

```
4152 if len < 199 then return
```

IF LREC shows that the RECORD is within the limits of the buffer, then the routine RETURNS. If not, it continues with the second read, which is why I have called this the Two Read Method. The RECORD pointer now places the read/write head on the 160th character of the RECORD, since the 160th character will be a CHR\$(13). It then inputs the rest of the RECORD into a second, temporary string, dR3.

```
4154 record # 5;(rn-1);gosub 3610
4156 record # 5;(rn-1);gosub 3610
4158 input # 5;disk$>gosub 3610
```

Now the entire RECORD is contained in the two strings, and they are simply concatenated, (joined together) to make the full string. The CHR\$(13) is no longer part of the string because it cannot be INPUTted within a read:

```
4159 disk$<=dR3+dR2
4160 return
```

BASIC 2 - Record Number Acquisition

Using exactly the same routine to obtain the desired read as above:

```
2730 print(direct$)
2740 input"Which Record to
inspect";a
2750 ifa <= rfilem%rn rem ***
check for valid no
2760 rp = a;gosub 4114; rem
*** get Record Pointers
2770 disk$="">gosub 4130
```

... except that for BASIC 2 we need to obtain the RECORD pointer first, in line 2760. The variable RP, as the chosen RECORD number variable will then calculate the RECORD pointers in the 4114 sub-routine. When it RETURNS from that the pointers H and L have been calculated.

BASIC 2 - Record 3 - Read Method

We now have to program our own

version of the RECORD READ routine for BASIC 2 and the 80 byte buffer:

```
4120 rem ****Read RECORD
Routine - BASIC 2
4130 print # 15,"p"&chr$(100)+
chr$(0)&chr$(0):
gosub 3610
4135 print # 15,"p"&chr$(100)+
chr$(0)&chr$(0):
gosub 3610
4140 input # 5,d1&:gosub 3610
4145 else < 88:rem return
```

Now you will see that there is a new CHR\$(0) statement at the end of the read pointer lines. This is the effect, just the same as the last number in the RECORD # statement in Basic 7. Since the 80th character is now a chr\$(0), the next character position from which to be read is 89, hence the CHR\$(89) as the offset:

```
4130 print # 15,"p"&chr$(101)+
chr$(0)&chr$(0):
chr$(89): gosub 3610
4135 print # 15,"p"&chr$(101)+
chr$(0)&chr$(0):
chr$(89): gosub 3610
4140 input # 5,d1&:gosub 3610
```

If the read operation is over, we add the two strings together and RETURN.

```
4145 else # 176:endifd1&=chr$(
d1&:return
```

First then we read the 3 String:

```
4150 print # 15,"p"&chr$(101)+
chr$(0)&chr$(0):
chr$(177): gosub 3610
4155 print # 15,"p"&chr$(101)+
chr$(0)&chr$(0):
chr$(177): gosub 3610
4160 input # 5,d2&:gosub 3610
```

And then add all the strings together to make up the whole Disk3.

```
4165 disk3=d1&+d2&+d1&+
d2&:return
```

When this routine has RETURNed into your main program the whole of the RECORD which you have chosen to view will be in the collection string, DISK3. To see it you may write another line:

```
1780 print disk3
```

and what the program has read will be displayed. However for processing, unlike the FIELD separated routine we need another short routine to Read the Disk3 into the array, DISP\$(4).

Here it is

```
4170 rem **** read records into
FIELDs
4180 for i=0 to disp$(4):
read$(i)=disk3:pos(i),
FIELD$(i):next i
4190 return
```

We will be using this routine extensively in the next of the series.

In the next article I will show how to program the RECORD display routines. But before we leave this subject, we have to program the FIELDS separated method for those who decided against the two or three read method.

BASIC 7 - Fields Separated

If you have decided to use the FIELD separation method of writing the RECORD, you will need a different type of READ routine altogether. This is a loop, the same loop we saw earlier, but inside a RECORD read routine.

Why is this necessary? Well, each of the FIELDS on the RECORD now have a CHR\$(13) after it, meaning that a read operation starting from Byte 1 of the RECORD would only read as far as the end of the first FIELD.

What we have to do is loop the read routine so that it returns to the RECORD to read from the 1st byte of the RECORD. This is why the FIELD POINTER routine has to be different; it has to allow the extra character represented by the CHR\$(13) to the Pointer for each FIELD. In actual fact, the routine is quite simple:

```
4120 rem **** BASIC 3.5 FIELD
Separate Read RECORD
4125 disk3="" for a = 0 to 4
4130 record # 5:(rec$(a):pos(a):gosub
3610
4135 record # 5:(rec$(a):pos(a):gosub
3610
4140 input # 5,d1&:pos(a):gosub 3610
4150 next a
4155 return
```

I am sure this routine is clear to you, but in case it isn't I'll explain it. Line 4125 calls the collection string ready to be looped and begins the familiar FIELD Loop. Then the RECORD # statements not only select the correct RECORD but also selects the position from which to read it, which is contained in the FIELD pointers array, POS\$(4). The FIELD data is read into the array DISP\$(4). For this reason you will need to DIMension this array in a suitable line at the beginning of the program:

```
10 dim disp$(4)
or you will get a program error 'BAD
SUBSCRIPT ERROR' which would
not show itself until you selected more
than 11 (0-10) FIELDS.
```

Additionally, you are now not able to display the RECORD using the statement PRINT DISK3; you have to use a Loop:

```
for a=0 to 4:print disp$(a):next a
```

... instead. Much more to come on Display Routines next in the series.

BASIC 2 - Field Separation Read Routine

The general rules of the BASIC 2 Field Separation Read technique is very similar. In fact, you should already be able to work this out for yourself, but in case you are not yet a programmer, here it is:

```
4120 rem ****FIELD Separate Read
RECORD Routine -
BASIC 2
4125 for a=0 to 4
4130 print # 15,"p"&chr$(100)+
chr$(0)&chr$(0):chr$(1):pos(a): gosub
3610
4135 print # 15,"p"&chr$(100)+
chr$(0)&chr$(0)&chr$(1):pos(a): gosub
3610
4140 input # 5,d1&:pos(a):gosub 3610
4150 next a
4155 return
```

In the next of the series, I will give you routines to enable your programs to display, amend and print the RECORDs, all inside a browser RECORDS mode. So to come in the series is possibly the most fascinating aspect of relative filing - sorting, deleting and searching. ☺

Strike Fleet

Strike Fleet puts you on the bridge of the flagship of a taskforce sent to patrol new waters of the world. At your command you organize frigates, battleships and cruisers armed with the latest missiles and defenses as you recreate the battles of the Falklands War, actions in the dangerous waters of the Persian Gulf and the global warfare at the outbreak of World War III.

In all, ten scenarios are included on the double-sided game disk which is crammed into the disk box along with a 59 page instruction manual, know your enemy and scenario guide that takes you from single ship patrols in the Persian Gulf, through combined ship and helicopter sub hunts in the Falklands to full scale 16 ship battles in the Atlantic.

Once the game has loaded you are presented with a screen through which you can select one of these scenarios, or enter a campaign game that takes you through the last four WWII scenarios with the survivors of one mission forming the fleet for the next! Since these missions are only for Commanders with steel nerves and lightning reactions you'll go on patrol in the Persian Gulf with the mission of escorting a convoy of tankers out of the Gulf. The next screen, the shipyard, is where you select your forces for the mission by spending points on different classes of ship. For example, a Pegasus missile hydrofoil will cost four points, a quarter of the cost of a Red Class battleship armed with missiles, torpedoes, defense systems and two helicopters. Once you've chosen the ships of your command it's time to set into battle.

During the battle or patrol that follows you will use two screens that are loaded in separately from disk which unfortunately, can cause an annoying halt to the action. The first screen you'll meet is the Commander in Chief (CIC) screen which consists of a map of the battle area and menus to issue general orders to the fleet such as destination, speed and alert status. Once these are set you can swing to the bridge of the flagship and have direct control over the navigation and weapons systems.

Anyone who's played EA's Pegasus will immediately recognize the bridge screen with its joystick or keyboard accessed controls to set the ships speed and direction, display the radar and sonar readings and launch missiles, fire deck cannons and activate chaff launchers.

The men of the task force follow the flagships lead, course and speed but you must command them directly if you want to fire their weapons by swapping to their bridge. This is done by simply pressing the "Z" key with repeated presses cycling through your entire fleet. Even though any tankers you may be escorting have no weapons and must



be protected by the other parts of your fleet, you must keep a check on the bridge of these vessels as you don't want your heroic efforts to fight off enemy planes, ships and submarines to go to waste because you ran aground through poor navigation!

Commanding a task force is a demanding business and to be successful you must know what to expect from your enemy and use your ship's abilities to maximize the defence. If you're expecting any substation you must keep a regular watch on the sonar screens as a single beep could mean big trouble.

Anybody whose played *Silver Service* or *Eye Witness* will know the damage a single sub can do to a convoy. The best defence against submarines is to destroy them before they get too close, and the best way to do this is to send out your helicopters that are equipped with sonar to find the subs and torpedoes to destroy them.

Unfortunately, only one scenario is just a sub hunt and so you have to watch the skies for attacking aircraft, and the sea for enemy ships and even the shore line for landbased missiles. Unless you've got regular helicopter patrols in the right place at the right time, the first you'll know of an attack will be a missile heading towards you!

This is the first threat and must be countered with air to air missiles or deflected with chaff launchers. Then you must search out the source of the attack and respond, otherwise you'll be buried in a constant barrage of missiles. As the enemy gets closer your reactions will have to be quicker, to take out all approaching dangers while shooting it out with the enemy gun boats that are now in cannon range. Now, at last you can switch off the computer guidance systems and aim the cannons through a joystick controlled sight and sink the enemy through your own skill which is often more accurate than the ships computers.

As the battle rages your fleet may suffer damage when you will lose crucial weapon systems and even entire ships. Now, only defense actions will save the day. The way you react in these tight situations will determine whether you'll make a Strike Fleet Commander or end up as a Deck Wiper.

Strike Fleet is an incredibly tense game in which you'll suddenly be thrown into a frantic battle with only a few seconds warning. It's Naval missile combat at its best. **J.B.L.**

Penalties:

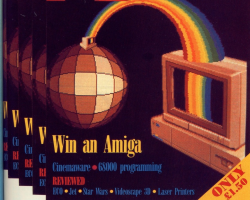
Price: Strike Fleet, Supplies Electronic Arts, Langley Business Centre, Langley, N. Slough, Berks., SL1 8JN. Tel: 0351 49441. Machine: C&A, Police: 07435 (Disk only).

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WIN! OWN IT'S OWN!

A last! An opportunity to put your 1371 through its paces. Super Disk Utilities (SDU from now on) is a menu-driven package for the 128 (in 80 column mode) and 1371 drive and aimed at the serious disk user. Although if you want to get to grips with the inner workings of your drive, you'll probably find this package invaluable. All the utilities will work with or without a second drive, and some will even work with a 1541! A little experimentation will show how!

Super 81 Utilities is basically the same package with several enhancements for use with the new Commodore 1381 (2 1/4") drive. Those of you not familiar with MS-DOS and C/P/M disk formats are unlikely to have come across partitioning before. Partitioning enables you to set up reserved areas and sub-directories within a disk - a little like windows. Setting up and controlling these partitions is worthy of a book at least, so Super 81 Utilities will be of immense use here. The Super 81 Utilities come on both 5 1/4" and 3 1/4" disks, leaving you with the option of loading the program from either 1371 or 1371 drives. Aside from these, Super 81 utilities is virtually identical to Super Disk Utilities.

There seems to be little around to compare this package to (apart from Big Blue Reader, reviewed in our April '88 issue), so you'll have to judge it on its own merits. On the surface, things look very slick - an observation affirmed by more intensive examination. The main menu naturally offers selection of the type of operation you wish to perform, namely disk and file copying facilities, C/P/M utilities, disk editors, DOS utilities, drive monitor and RAM editor. By selecting one of these options will drop you into the appropriate local menu.

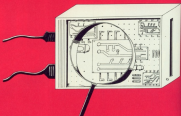
A word on screen layout would seem appropriate here. The top line displays the selected source and destination drive numbers, as well as the menu title so you know where you are, while the next line displays prompts and messages and the bottom line displays drive status and current disk format. The screen cursor is used as a general display area, depending on the particular utility in use. Let's look at the various parts.

Disk Copy: a multi-pass disk copier, with a novel feature which allows the

Super Disk Utilities

Stretch your 128 drives to the limit

By Fred Reid



transfer of data between 1371 and 1341 disks. It's not a saviour, as will not copy your protected disks, it will come in handy for preparing backups, etc. essential, prior to using the sector editor.

File Copy: copies individual files (CRAM format only) to another disk. Up to 50 files can be copied consecutively, with the buffer holding about 120 sectors at a time. At the outset, the source directory is displayed and the files to be copied are marked.

Both the copy utilities read the source disk fast enough, but it does seem slow when it comes to writing.

C/P/M Utilities: probably the most useful part of the package, SDU allows you to examine the format of C/P/M

and MS-DOS, and format MFM and GCR disks in just about any configuration. Epoca, Osborne, IBM and Kaypro-formats are all recognised. Also, you can format GCR disks for use with C/P/M* on the 128.

DOS Utilities: all the usual CBM DOS commands (new, scratch, validate, etc) are easily accessed from this section, together with a few 'specials'. The 'Trash a Track' option allows you to create your own copy-protected disks, 'Bulk Erase' will wipe a complete disk - this might seem a bit drastic, but you can use this option to remove errors that resist normal formatting, rather than throwing the disk!

Disk Editor: be warned - this section is not for the faint-hearted; valuable data can be irreversibly lost at the

touch of a key - use the Disk Copy utility to backup first! Having got that out of the way, this is a pretty powerful sector editor for GCR (CBM) format disks. Using the disk editor, you can pull a sector from a disk onto the screen and edit either in Hex or in ASCII before sending the updated sector back to the disk.

I must say I've seen more sophisticated sector editors for the C64/C65 (check the directory editor published in *Commodore Disk User - Nov/Dec 93*), although that doesn't necessarily mean there's anything wrong with this one. The disk editor can be used to edit directory filenames, repair corrupted files, or just customize system messages (this can be great fun).

Drive Monitor this works the same way as the disk editor, but on the drive's memory. The internal workings of your drive no longer need be a mystery. Every nook and cranny is available for your scrutiny - both RAM and ROM. Memory can be examined and edited (Hex or ASCII) a page at a time, with all the useful

information in front of you. Need I say the page is automatically loaded into the C28's RAM, you can use the M/C monitor to disassemble.

TI Writer this is complementary to the Drive Monitor section and you can flip between Drive Monitor and TI Writer without going back through the main menu. TI Writer lets you assemble code using the C28's M/C monitor and write it to the drive's memory. This is probably not something you'll want to do very often, but if you really want to explore the more hidden features of the C28, this section is vital.

Having looked at what SDU has to offer, I can begin to describe what it's like to use. I ran into a couple of minor bugs while testing the package and although there's no excuse for bugs in commercial software, they don't interfere with things too much. For example - selecting 'Disassemble' from the 'Drive Monitor' section drops you back to the drive monitor again. You can only disassemble through the C28's M/C monitor, so you need to enter the M/C monitor first.

There are occasions when the drive can't read a disk, but keep trying anyway - the only way out is to power down and reboot. The manual leaves something to be desired, too. Although there's a print option on the Disk Editor, Drive Monitor and TI Writer don't permit disassembly to printer. However, it's a simple matter to drop into Basic from the M/C monitor and re-enter after typing `DPEN:4` and `CMEM:MONITOR`.

All disassembly will now be sent to printer, not the screen. As this is such an important operation, I feel this should have been at least mentioned in the manual, if not included in the program! I would also like to have seen a recommended reading list for those of you who wish to go deeper into disks and drives.

Footnote:
Product: Super Disk Utilities.
Supplier: Fire Spirit Software.
Distributed By: Financier Systems Software, 3rd Floor, Ambleside House, St. Mary's Street, Worcester. Price: £24.95. Machines: C128 and C28.

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Sector Editor

Examine and edit the contents of your Commodore
1541 disks

By Mike Fulton

This program looks a very powerful sector editor for use with the C84 and 1541 disk drive. It's very compact in size, yet has all the commands required of such a utility, combined with ease of use and a clear easy-to-follow display. Although intended for experienced disk users, its simplicity makes it ideal for those who wish to learn more about how the Commodore DOS stores files, and allows simple editing of text files by merely typing over the display.

Summary Of Commands

READ T/S:	Displays requested sector in the current mode. Will read current sector upon verification.
WRITE T/S:	Displays next sector in current file.
NEXT T/S:	Displays previous sector in current file.
LAST T/S:	Switches display between alternate modes.
HEX/ASCII:	Outputs display to device if in custom mode.
PRINT T/S:	Allows editing of sector on screen.
EDIT T/S:	Displays current disk status.
ERROR CHN:	Displays remaining sectors in file.
TRACE FILE:	Performs immediate cold start.
ABORT:	

Command Details

READ T/S: Selecting this option causes the cursor to appear beneath the track indicator. A two digit input in Hex is expected, however if the current display is correct then a return will input the value shown. Cursor controls may be used to edit but delete is not available. The same chain of events is repeated for the sector number and assuming that the values are legal, the requested sector is displayed on the screen in the current display mode (Hex or ASCII).

Write T/S: This command will display a message near the base of the screen, requesting confirmation of the write command. Upon receiving the correct key press the displayed sector is written to the disk. If any other key is depressed then the write routine is terminated and the program awaits a further command.

NEXT T/S: This command causes the next sector in the file to be displayed in the same mode as the current one. If the sector on display is the last in the file, i.e. it has no valid co-ordinates in bytes 1 and 2, then the key press is ignored.

LAST T/S: This command may only be used if a file has been followed with the **NEAT T/S** command, and will

only trace back as far as the sector from which the **NEAT T/S** command was initiated. A maximum of 256 previous sectors may be accessed with this command, and it may be alternated with **NEAT T/S** without resetting the original point.

ASCII/HEX: When this command is selected the display mode is reversed, i.e. if display is in ASCII it is changed to Hex and if in Hex then it changes to ASCII.

PRINT T/S: This command causes the screen display to be output to a printer (device 4). Both display modes are catered for. For clarity, columns are separated by semi-colons.

EDIT T/S: This command allows full editing of the sector on display, in either mode. Display mode may not be changed during edit, disks clear and horns are disabled. To exit this mode, press RETURN.

ERROR CHN: This command displays the status of the disk drive. The result is displayed beneath the sector display. Any key will erase the status display and await the next command.

TRACE FILE: When this command is selected, the program requests an

input, to determine the output device (screen or printer). This is displayed on the same line as the status display, and expects a response of P or S. If a valid response is input then the start sector is requested and all remaining sectors in the file are listed. If the display is on the screen then a key press is required to return to the normal display.

ABORT: This key initiates an interrupt drive cold start and is intended for emergency use only.

Getting it all in

Sector Editor is presented as a Basic program. This should be typed in using our *System Checker*, see *LASTPAGE* for more details.

The *Sector Editor* program is actually written in machine code, the Basic Loader just being used to POKE the necessary code into memory.

Our POKE'd into memory for program resides from \$C060 to \$C06E (49132 to 51850). The program is started with a SYS call of 48469 (\$C13D). Memory from \$C100 to \$CFFF (\$C3736 to 53247) is also used by the program.

See listing on page 77

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- 16-bit resolution
- 16-bit resolution
- 16-bit resolution
- 16-bit resolution
- 16-bit resolution
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- 16-bit resolution
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- 16-bit resolution

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- 16-bit resolution
- 16-bit resolution
- 16-bit resolution
- 16-bit resolution
- 16-bit resolution
- 16-bit resolution
- 16-bit resolution



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- 16-bit resolution
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- 16-bit resolution
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- 16-bit resolution
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- 16-bit resolution
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- ☐ Fully programmable software kit
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- ☐ Very simple to use
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- ☐ Resets cartridge you
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- Will delete up to 100Kb ■ Copy software disk to other hardware ■ Full instructions
- Backup system - no software required ■ Plug in controller - no software needed
- Full or 1/2 media ■ No need to re-program correct program data before backup etc
- Data loss through software that allow will not

- ☐ Another software feature is the Disk Nibbler™ but this is not available since we are 'no longer' - will delete 1 and 2 drive any time. An easy 200 copy etc. or 200Kb or compressed information page. Available for you from Dattel in a pure software mode is easy for the system itself. In fact just making backup you are interested in, then you can delete it back.

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- 200k to 1M (1991) function including 8000 records file
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CatSort

Do you have hundreds of disks and can never find the program that you want? Then this program may be for you.

By Stuart Cooke

4001	10	MARCH 88	08-23-88

THIS DISK BELONGS TO: YOUR COPYSTORE			
4002	10	SEPTEMBER 88	08-23-88

THIS DISK BELONGS TO: YOUR COPYSTORE			
4003	10	JUNE 88	08-23-88

THIS DISK BELONGS TO: YOUR COPYSTORE			
4004	10	MARCH 88	08-23-88

WHEELER.DAT	LABEL	LINKER	
MULTIAPP-PROG1	MULTIAPP		
WORMH-HOST			

If there is one thing that really infuriates me it's people who have an immaculate disk collection. You know the type I mean, all disks colour-coded and, a neat list of all programs contained on the disk written neatly on the label! Should you ask them for a program they can go straight to the correct disk, even though they may have more than 200 disks in their collection - cataloging eh?

Now, don't get me wrong, it's not that I dislike the type of person that can be so organised, it's just that I'd love to be able to get my disk collection into a similar state, but even after months of trying my disk collection still consists of disks with no labels, disks with incorrect labels, disks with labels but nothing on them. Finding

a specific program is a work of art never mind the amount of time it takes to go through the 30 or so I know it's on a disk with no label! Slopies.

Or rather that was the case until I got my hands on SuperCat, a disk catalogue system.

There have been many disk catalogue programs in the past, we have even published some in this magazine. Personally, I've quite often found that they did not do everything that I required or were a little difficult to use. If you are in the same boat then SuperCat is the program that you have been waiting for.

Getting Started

To use SuperCat to its full capability you need the program disk plus two blank ones. One of these becomes the Master Directory Disk (MDD) from now on), where information on each disk is stored. The second disk becomes the CatScan disk, where an alphabetic list of all the programs is stored. Up to 640 disks at 5000 titles can be stored, this should be enough for just about everyone's disk collection.

When you first start SuperCat there are four main sections, which I will deal with in further detail later on. These are:

- *Master Directory Builder
- *Utilities
- *Catalog Sort
- *Print Routines

One other point worth mentioning before I expand on the above is that the program makes extensive use of dates. Each time you start the program you must enter the date, this date is written to your MDD so that you have a permanent record of when you last used the program as well as being able to keep all of your disks in date order on the master directory disk.

Master Directory Builder

This is the section of the program that allows you to input disks. Before you can do this for the first time you must set a number of defaults so that the SuperCat program knows a bit about the computer set-up that you are using.

Options exist for using one 1.44 drive, two 1.44 drives or a dual disk system. If you have more than one disk drive the amount of disk swapping that you have to perform is much less.

Each disk in the master directory is given a number by which it is referred to. In the set-up options you have the option of writing this number to each disk that you catalog. This allows SuperCat to realise that a disk has already been cataloged stopping you from cataloging a disk more than once. There is only one problem if you select this option - some commercial disks use protection systems so that the programs will no longer work if you write the disk number onto that disk. My answer to this problem was to set up two disk catalogs - one for my own unprotected disks, the other for

SUPERCAT MASTER DIRECTORY

SEQUENTIAL DISK LISTING

08/23/88

* Y2 MARCH 88

YC

3rd FREE

08/23/88

DISK NO: 001 *

ASSEMBLER.DAT
WDSH94.SOOT

LABEL LINKER

MULTIDUMP-PROG1

MUSLOAD

* Y2 SEPTEMBER 1988

YC

4th FREE

08/23/88

DISK NO: 002 *

1/2 TRACK READ
EDITOR/SCROLLER
F/C SAVE SLDANIMATOR
FLASH ROUTINE
SCROLLER.B970COPIER
HEADMEMORY !!
SYNTAX CHECKERDISK-TURBOTAPE
F/C SAVE CALL

my commercial software.

The last option is set-up is telling the program what sort of printer you are using. Only printers that use the normal Commodore serial port are supported.

Once you have the defaults set up getting information about your disks into the catalog is a breeze. Simply place the disk in the drive and wait for the directory to load onto prompted. As soon as the directory is finished the disk contents will be displayed on screen, the format of the display being reminiscent of a few file copies. It's up to you to select exactly which titles you place on the MDD, after all if you have a program called Disk Editor and it has two more sections called 'Part 1' and 'Part 2' you only want to put the actual program into the MDD.

Various options are available at this stage including the ability to change the name of the disk in the drive, you can write the new name to the disk. You can change the name of a file (but this is only changed within SuperCat, it is not written to the original disk).

Once you have a number of disks stored on the MDD you can start to use the real power of SuperCat. Within the directory builder you have the option to list on the screen the contents of any disk simply by entering the disk number, this number is either assigned by you when you save the disk contents to the MDD or let the computer choose a free number for you. The only problem that you now have is remembering which disk has which disk number, SuperCat will make this easy through its various print options.

Utility Functions

Selecting this option gives you facilities for updating the master directory. This is the same as entering a disk to the master directory mentioned above, however, the information comes from the MDD not from the original disk. Once you have the selected disk on screen you can change the name of files, delete them and even enter new files by hand, the quickest way of keeping your disk library up to date.

This section of the program also gives you the ability to search the CatSort Disk. As already mentioned this is a disk, created from one of the menu options, that contains an alphabetical list of all files on the MDD.

To search this disk simply enter a search string when prompted and wait for a list of the disks containing that program to appear. You can even enter wild cards. For example entering DISK* as the search string will cause a list of all the disks containing a program that starts with the name DISK to appear on the screen. Note, only the disk number and matching filename appears on screen, not the list of all the files on each disk.

Catalog Sort

This is where you create the CatSort disk. Each time that you have updated the MDD this disk needs to be recreated from scratch so that the file contents are up to date.

Creating this disk can take some time as well as a large amount of disk swapping, unless you have more than one drive. You may therefore want to

recreate this disk only when you have entered a significant number of new disks into the master directory.

Printing Reports

There are numerous options for printing out reports. Should you have a 'basic' printer that doesn't support

SUPERCAT MASTER DIRECTORY

ALPHABETICAL LISTING

NAME	DISK
1/2 TRACK READ	000
ANIMATOR	000
ASSEMBLER.DAT	001
ASSETON	000
CATALOG	003
COPIER	000
COPIER	003
DISK-TURBOTAPE	000
EDITOR/SCROLLER	000
FLASH ROUTINE	000
HEADMEMORY !!	000
LABEL LINKER	001
LIST	000
LOW RES B970	000
LOW RES LONGER	000
F/C SAVE CALL	000
F/C SAVE SUB	000
MP01.FORM	000
MP04.F/C	000
MP04.WA01	000
MULTIDUMP-PROG1	001
MUSLOAD	001
SCROLLER.B970	000
SYNTAX CHECKER	000
TAPE HEADER	000
WDSH94.SOOT	001

subscriptions, etc., you will probably only use the print options within the program. If however, you have a printer that is capable of special print functions such as an Epson or a Star then you will be able to use separate print programs outside SuperCat to enable you to get more information on each printed page or label. It is important to note that if you do want to use the external print files then you will have to alter the listing programs yourself so that they call your printer. The programs are well documented and anyone armed with a small knowledge of Basic and their printer manual should have no problems.

The difference between using the internal print options and the external ones become apparent when you realize that you can get a list of 213 titles per page using the condensed print of the external files rather than just 165 for the standard print version. All of the print options should be self-explanatory.

Some examples of printouts are included with this article so that you can see what is possible. The print options are as follows:

- Print list of disks in numerical order.
- Print disk numbers not used.
- Print disks in date order.
- Print alphabetical program names.
- Print disk headers in numerical order.
- Print a table with message 'this disk belongs to...'
- Print one label with six program titles on it.
- Print as many labels for a disk as required to print all titles.

If you use the external print files then you can get up to 30 program titles on each disk label; the option that I have used to print labels for all of my disks. I only found a couple of disks that I had more than 30 titles on.

All labels have details about the disk name, ID, date it was cataloged and the disk number.

Final Thoughts

Since starting to use SuperCat my relationship with my disk drive has changed dramatically. No longer do

I overwork it trying to find a disk that contains a program that I'm sure was called 'XXX.YYY'. Now all I have to do is look at my alphabetic listing of file names and go straight to the disk I want.

The disk is easy to find as it has a neat label on it with the disk number and the names of the files on it.

Some people may be put off using a system such as SuperCat because of the amount of time taken to set it up to start with. (Don't be, it only took me a single Saturday afternoon of on and off disk cataloging to input all of my 300+ disks and it certainly was worth it.)

In my opinion all Commodore disk drives should go on strike until their owners buy them a copy of this program!

FinalLine:

Name: SuperCat. Supplier: Financial Systems Software, 2nd Floor, Andrew House, St. Marys Street, Worcester, WR1 1HA. Tel: 0185 730217. Machine: C64+ or later 1 disk drive.

THE MPS803

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We will design the printer drive to couple any printer to your Amiga. Call us for details.

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Software for Sale

If you think that one of our programs looks very interesting, but you can't afford the time to type it in then our software service will help you out

It's three o'clock in the morning. You sit at the computer keyboard having just finished a marathon typing session entering one of the superb programs from Your Commodore. Your fingers reach for the keyboard and press the letters R, U and N. You press RETURN, sit back and nothing happens.

Everyone has probably faced this problem. What if does happen it's a matter of spending hours searching through the program for any typing mistakes. No matter how long you look or how many people help you, you can usually guarantee that at least one little bug-slip, through unnoticed.

The Your Commodore Software Service makes available all of the programs from each issue on both cassette and disk at a price of £6.00 for disk and £4.00 for cassette. Some of the documentation for the programs is supplied with the software since it is all available in the relevant magazine. Should you not have the magazine then back issues are available from the following address:

INFONET LTD, 5 River Park Estate, Borkhamstead, Herts
SG4 0HL
Tel: (04427) 78661

Please contact this address for prices and availability.

The Disk

Programs on the disk will also be supplied as totally working versions, i.e. when possible we will not use Basic Loaders thus making use of the programs much easier. Unfortunately at the moment we cannot duplicate C16 and Plus/4 cassettes. However programs for these machines will be available on the disk.

When programs are available?

At the top of each article you will find a strip containing the article type, C64 Program etc. So that you can see which programs are available on which format, you will also find a couple of symbols after this strip. The symbols have the following meaning:



This symbol means that the program is available on cassette.



These programs are available on disk.

Please Note

Since the programs supplied on cassette are total working versions of the programs, we do not put disk-only programs on tape. There is no sense in placing a program that expects to be reading from disk on to tape.

JANUARY 1988

80 CHARACTER PRINTOUT — Give your C64 80 columns.

QUESTIONNAIRE 1 — An excellent quiz generator for the C64.

ACKROYD'S SAGA — A mathematical educational adventure (C64).

ENLARGING THE 64 — Create large characters on the C64.

ARRAY DISPLAY SUBROUTINES — Improve your C64's INPUT routine.

C64 TAPE SYSTEM — Provide menu driven access to your C64 cassettes.

ORDER CODE
DISK VIDEOS £6.00
TAPE VIDEOS £4.00

FEBRUARY 1988

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First Steps

Take some good advice and you'll dispell those bugged listing blues forever

By Norman Doyle

"None of your listings ever work"

This is typical of the subtle approach of some of the readers who ring us up. Then there follows a lengthy tirade of abuse but eventually I stop and leave. Normally the fault isn't one of ours but results from a lack of understanding of debugging techniques. To help here are some of the common complaints and their solutions.

"How can I type in all of the parts of this program? The line numbers are the same and just overwrite one another."

There are many reasons why a program can have several parts to it. For example, there might be a basic master program which calls on a machine code sub-routine and has user-defined graphics. It could have been written as one program but the problem is that once the code and graphics have been poked into memory their substantial parts of the program are then redundant and run slow down the execution of the actual master program. The solution is to use three programs. The first pokes the graphics in place, the second positions the code and the third is the real program.

The first two programs look almost identical because they are just exams of data statements with a few short lines of 'real' program. Typically, both programs will start at line 10 and those first few lines will form a loop with a goto command which pushes the data into consecutive memory locations.

Then there repeat the procedure for program two and then, after saving and naming, program three is typed in and saved. If using a cassette as the save device, the three programs should follow one another in the correct order on the tape.

Assuming that everything has been typed in correctly, the program is ready to run. This means that the first program is loaded and run. Often code is stored at 49152 so the program will

fill this area with numbers which form the machine code part of the program. Once the program finishes you can safely use NEW to get rid of the program without losing the code. Why? Well, the NEW command only changes a few bytes of memory and the rest of memory stays as it was. Although you can no longer list the original program, the changes it has made in memory will still be there.

Similarly, after loading and running the second program the values poked into memory will stay ready for the third program to access when it is loaded and run. The only way that the system can be deflated is by switching the machine off between loads.

"The program looks alright when I check it with the listing but it still produces errors."

First re-read the instructions to make sure that there isn't something that you've forgotten to do. If that checks out OK there are several other areas where errors can creep in. Parts of the program within quotes (i.e. print and input statements) can be ignored as well as the contents of REM statements but variables and commands bear closer scrutiny.

If the error is syntactical make sure that you've used the correct spelling, errors that commas, fullstops, semicolons and colons are used correctly. If this all measures up make sure that all of the zeros are actually the number zero and not the letter 'O' and vice versa. The same applies to the number one and letter 'I'.

Sometimes a program line exactly fills one screen line. If this is the case there should be a full blank line left when RETURN is pressed. If this is not adhered to, the next line entered will be concatenated (joined on) to the current line and a syntax error guaranteed when the program runs. When listing the program, the line looks quite acceptable but listings can



be deceptive so keep an eye open for this error.

Data lines are by far the most likely area for mistakes. It's a long and tedious job to type in rows of figures, and errors often occur which are difficult to find. It is difficult to see if a fullstop has been used instead of a comma but the computer reads the value as a decimal and the data becomes one item short. The only solution is to re-read the utmost care when typing in the data. To check for errors, write a short program which will read and print the data on the screen. Substituting a suitable value for x in the following short program should do the trick:

```
FOR A=0 TO X:READ Y:PRINT Y:NEXT:END
```

For data which involves test change Y to 55.

The main rule is to maintain concentration by doing a few lines, testing and then tackling a few more rather than slogging through to the early hours. Always suspect your own work because the listings are created from working copies of the program (occasionally errors do creep in but not very often). I strongly advise that CM events use the Syntax Checker and that everyone reads the Listings advice page carefully. Diligence will reap its own rewards with immediate success - concentrate, persevere and you'll get there in the end.

Listings

Get it right first time with our deluxe program system
for the C64.

You may have noticed that our listings are free of those horrible little black flecks which send you searching around the keyboard for a suitable graphic symbol. You may also have noticed the fancy numbers by the side of each line of the listing. First no more, it's all part of our easy entry aid.

Instead of those nasty graphics and rows of countless spaces in PRINT statements and strings we use a special coding system. The code, or mnemonic, is always contained in square brackets and you'll soon learn to decipher their meanings.

For example, [SA] would mean type in a Shifted A, or an any of spaces in layman's terms, and [SA10] would mean a row of ten of those symbols.

[S+2] means hold down the shift key and press the plus key twice. It doesn't take a great leap of logic to realize that [C+2] means exactly the same thing except that the Commodore key (bottom left of the keyboard) is held down instead of the shift key.

If more than two spaces appear in a statement then this will be printed as [SPC4] or, exceptionally, [SSPC4]. Translated into English this means press the spacebar four times or in the latter case hold the shift key down while you do it.

A string of special characters could appear as:
[CTRL, N, DOWN2, LEFT5, BLUE, FACK]

This would be achieved by holding

down the CTRL key as you press N, press the cursor key down twice, the cursor left key five times, press the key marked BLUE while holding down the CTRL key, press the F3 key and, finally hold the Commodore key down while passing the number two key (C2) would of course make the computer print in brown.

Always remember that you should only have a row of graphics characters on your screen with no square brackets and no commas, unless something like this appears:

[SS][C*]

In this case the two characters should have a comma between them.

On rare occasions [REV T] will appear in a listing. This is a delete symbol and is created by entering the line up to this mnemonic. Then type a closing quotation mark (SHIFT & 2) and delete it. This gets the computer out of quotes mode. Hold down CTRL and press the number nine key (EYSOIN), type the relevant number of reversed T's and then hold down CTRL and press zero (EYSOFF). Next type another quotation mark and delete it again. Now finish the line and press RETURN.

A list of these special cases is given in the table but remember that only one of these mnemonics will appear outside of a PRINT string; the symbol for pi. This may appear when its value is needed in a calculation so this may look something like:

<CC>=PI*PI*PI;

Ignore the square brackets and just type in a shifted upward pointing arrow (ie. the pi symbol).

PROGRAM SYSTEM CHECKER

A NEW SYSTEM CHECKER - ERIC DOYLE

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70 B=10: L=1000: M=100000
80 FOR I=0 TO 10: GOTO 100: NEXT I
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950 B=10: L=1000: M=100000: N=1000
952 FOR I=0 TO 10: GOTO 100: NEXT I
954
956 B=10: L=1000: M=100000: N=1000
958 FOR I=0 TO 10: GOTO 100: NEXT I
960
962 B=10: L=1000: M=100000: N=1000
964 FOR I=0 TO 10: GOTO 100: NEXT I
966
968 B=10: L=1000: M=100000: N=1000
970 FOR I=0 TO 10: GOTO 100: NEXT I
972
974 B=10: L=1000: M=100000: N=1000
976 FOR I=0 TO 10: GOTO 100: NEXT I
978
980 B=10: L=1000: M=100000: N=1000
982 FOR I=0 TO 10: GOTO 100: NEXT I
984
986 B=10: L=1000: M=100000: N=1000
988 FOR I=0 TO 10: GOTO 100: NEXT I
990
992 B=10: L=1000: M=100000: N=1000
994 FOR I=0 TO 10: GOTO 100: NEXT I
996
998 B=10: L=1000: M=100000: N=1000
1000 FOR I=0 TO 10: GOTO 100: NEXT I

```

by Eric Doyle

Checksum Program

The hexadecimal numbers appearing in a column to the left of the listing should not be typed in with the program. These are merely checksum values and are there to help you get each line right. Don't worry if you don't understand the hexadecimal system, as long as you can compare two characters on the screen with the corresponding two characters in the magazine you can use our line checking program.

Type in the Checksum Program, make sure that you've not made any mistakes and save it to tape or disk

immediately because it will be used with most of the present and future listings appearing in *Your Commodore*.

At the start of each programming session, load Checksum and run it. The screen will turn brown with yellow characters and each time you type in a line and press the RETURN key a number will appear on the screen in white. This should be the same as the corresponding value in the magazine.


If the two values don't relate in one respect, you have not copied the line exactly as printed so go back and check each character carefully. When you find the error simply correct it and

















press RETURN again.

If you want to turn off the checker simply type SYNTAX and the screen will return to the familiar blue colour. You can then do whatever it was you wanted to do and if this doesn't use the area where Checksum lies you can go back to it with the same SYNTAX command.

No system is foolproof but the chances of two errors cancelling one Mary of the listings are presented in lower case. To turn your computer to lower case mode press the Commodore key and the SHIFT key at the same time.

78

Mnemonic	Symbol	Keypress
[RIGHT]		CRSR left/right
[LEFT]		SHIFT & CRSR left/right
[DOWN]		CRSR up/down
[UP]		SHIFT & CRSR up/down
[F1]		F1 key
[F2]		SHIFT & F1 key
[F3]		F3 key
[F4]		SHIFT & F3 key
[F5]		F5 key
[F6]		SHIFT & F5 key
[F7]		F7 key
[F8]		SHIFT & F7 key
[HOME]		CLR/HOME
[CLR]		SHIFT & CLR/HOME
[RVS ON]		CTRL & 4
[RVS OFF]		CTRL & 5

Mnemonic	Symbol	Keypress
[BLACK]		CTRL & 1
[WHITE]		CTRL & 2
[RED]		CTRL & 3
[CYAN]		CTRL & 4
[PURPLE]		CTRL & 5
[GREEN]		CTRL & 6
[BLUE]		CTRL & 7
[YELLOW]		CTRL & 8
[POUND]		£
[LARROW]		←
[UPARROW]		↑
[F9]		SHIFT & ↑
[INST]		SHIFT & INST/DEL
[REV T]		rev text
[Ctester]		CBM + letter
[Stester]		SHIFT + letter

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Compaq 1586	849.00
Compaq 1686	899.00
Compaq 1786	949.00
Compaq 1886	999.00
Compaq 1986	1049.00
Compaq 2086	1099.00
Compaq 2186	1149.00
Compaq 2286	1199.00
Compaq 2386	1249.00
Compaq 2486	1299.00
Compaq 2586	1349.00
Compaq 2686	1399.00
Compaq 2786	1449.00
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Compaq 2986	1549.00
Compaq 3086	1599.00
Compaq 3186	1649.00
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Compaq 6086	3099.00
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Compaq 7486	3799.00
Compaq 7586	3849.00
Compaq 7686	3899.00
Compaq 7786	3949.00
Compaq 7886	3999.00
Compaq 7986	4049.00
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Compaq 8886	4499.00
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Listings

RYING INTO THE 6801

```
PROG-NAME: BUTT TEFERKITER
FILENAME: TAPE LOAD
```

```

10      :
20      :          ORG 00400
30      :
40      SCREENMEM EQU 251
50      SCREENOOL EQU 253
60      TEXTFILE EQU 166
70      TEXTFILE1 EQU 168
80      :
90      GETIN EQU $FFD4
90      SETNAM EQU $FFD0
100     SETLFS EQU $FFD4
110     LOAD EQU $FFD0
120     :
130     ;OPEN CHANNELS FOR TAPE INPUT.
140     :
150     LDA FILENAME
```

```

160
170
180
190 :
200 :
210 :
220 :
230 :
240 :
250 :
260 :
270 :
280 :
290 :
300 :
310 :
320 :
330 :
340 :
350 :
360 :
370 :
380 :
390 :
400 :
410 :
420 :
430 :
440 :
450 :
460 :
470 :
480 :
490 :
500 :
510 :
520 :
530 :
540 :
550 :
560 :
570 :
580 :
590 :
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610 :
620 :
630 :
640 :
650 :
660 :
670 :
680 :
690 :
700 :
710 :
720 :
730 :
740 :
750 :
760 :
770 :
780 :
790 :
800 :
810 :
820 :
830 :
840 :
850 :
860 :
870 :
880 :
890 :
900 :
910 :
920 :
930 :
940 :
950 :
960 :
970 :
980 :
990 :

```

LISTINGS

```

370 :
380 :
390 :     BCC R11T
400 :
410 :
420 :
430 :     LDA #<10000
440 :     STA <TEXTFILE
450 :     LDA #<10000
460 :     STA >TEXTFILE
470 :
480 :
490 :     STX <TEXTFILEI
500 :     STY >TEXTFILEI
510 :
520 :
530 :
540 :     LDA #<1024
550 :     STA <SCREENMEM
560 :     LDA #<1024
570 :     STA >SCREENMEM
580 :
590 :     LDA #<55200
600 :     STA <SCREENCOL
610 :     LDA #<55200
620 :     STA >SCREENCOL
630 :
640 :
650 :
660 :
670 :
680 :
690 :
700 :     LDA #14
710 :     JSH #544
720 :
730 :
740 :
750 :
760 :
770 :
780 :
790 :
800 :
810 :
820 :
830 :
840 :
850 :
860 :
870 :
880 :
890 :
900 :
910 :
920 :
930 :
940 :
950 :
960 :
970 :
980 :
990 :
1000 :
1010 :
1020 :

```

: CLEAR THE SCREEN.

:

: JSH #544

:

: SWITCH COMPUTER INTO
: BUSINESS MODE.

:

: LDA #14
: JSH #576

:
: GET CHARACTER FROM TEXTFILE.

:
: LDY #0
: PRINTLOOP LDA (TEXTFILE),Y

:
: CONVERT ASCII INTO SCREEN CODE.

:
: CMP #128
: BCC SKIP
: BCC #04 :UPPER CASE
: BCC #04 :LOWER CASE
: BCC #04
: BCC #04

:
: PRINT CHARACTER ONTO SCREEN.

:
: PRINT STA (SCREENMEM),Y
: LDA #0
: STA (SCREENCOL),Y

:
: ADVANCE TO NEXT PRINT POSITION.

:
: INC <TEXTFILE
: BNE NCHIGH1
: INC >TEXTFILE

:
: NCHIGH1 INC <SCREENMEM
: BNE NCHIGH2
: INC >SCREENMEM

```

1030 NCHIGH2 INC <SCREENCOL
1040 BNE NCHIGH3
1050 INC >SCREENCOL
1060 :
1070 NCHIGH3 LDA <TEXTFILE
1080 CMP <TEXTFILEI
1090 BNE PRINTLOOP
1100 LDA >TEXTFILE
1110 CMP >TEXTFILEI
1120 BNE PRINTLOOP
1130 :
1140 : FINISHED: WAIT FOR EXPRESS...
1150 :
1160 WAITKEY JSH GETIN
1170 BRQ WAITKEY
1180 CMP #32
1190 BRQ WAITKEY
1200 :
1210 : AND EXIT BACK TO BASIC.
1220 :
1230 EXIT RTS
1240 :
1250 :
1260 :
1270 FILENAME STY #, "TEXTFILE"

```

```

PRG-NAME: MYT-TYPENRITER
FILENAME: PRINTER ROUT.

```

```

10 :
20 :
30 :
40 : TEXTFILE EQU 160
50 :
60 : DETRAM EQU $FF80
70 : SETLFS EQU $FFFA
80 : OPEN EQU $FFFC
90 : CHECKOUT EQU $FFFD
100 : CR EQU $A0A7
110 : PRINT EQU $A0A7
120 : CLOCK EQU $FFFC
130 : CLRCH EQU $FFFC
140 :
150 : OPEN OUTPUT CHANNELS TO PRINTER.
160 :
170 :
180 : LDA #0
190 : JSH DETRAM
200 :
210 : LDA #4
220 : TAI
230 : LST #255
240 : JSH SETLFS
250 :
260 :
270 : JSH OPEN
280 :
290 : LDA #4
300 : JSH CHECKOUT
310 :
320 :
330 : INITIATE TEXTFILE.
340 :
350 :
360 : LDA #<10000
370 : STA <TEXTFILE

```

LISTINGS

```

340 LDA #10000
350 STA >TEXTFILE
360
370 ; SEND CARRIAGE RETURN.
380
390 ;
400 JSE CR
410
420 ; SEND TEXT BYTE BY BYTE TO
430 ; PRINTER, INCLUDING CONTROL
440 ; CHARACTER FOR BUSINESS MODE.
450
460 LDY #0
465 PRINTLOOP LDA #17 ;CONTROL CHAR.
470 JER PRINT
480 LDA (TEXTFILE),Y
485 JER PRINT
490
500 ;
510 INC <TEXTFILE
520 BNE NODIAG
530 INC >TEXTFILE
540
545 ;
550 NODIAG LDA <TEXTFILE
555 CMP #11000
570 BNE PRINTLOOP
580 LDA <TEXTFILE
590 CMP #11000
600 BNE PRINTLOOP
610
620 ; SEND FINAL CARRIAGE RETURN.
630
640 ;
650 JSE CR
660
670 ; FINISHED: CLOSE PRINTER...
680
690 LDA #4
695 JSE CLOSE
700
710 ;
720 JER CLOSE
730
740 ; AND RETURN TO BASIC.
750
760 ; RTS

```

```

160 ; JOB SETNAM
170 ;
180 LDA #0
190 LDA #1
200 LDY #1
210 JSE SETLFS
220
230 ; SET BEGINNING AND END OF SAVE.
240 ;
250 LDA #10000
260 STA <TEXTFILE
270 LDA #10000
280 STA >TEXTFILE
290 LDA #TEXTFILE
300
310 LEX #11001
320 LDY #11001
330
340 ;
350 ; SAVE TEXTFILE ONTO TAPE.
360 ;
370 JSE SAVE
380
390 ; FINISHED: RETURN TO BASIC.
400 ;
410 ; RTS
420 ;
430 ;
440 FILENAME BIT 0, "TEXTFILE"

```

PRO-NAME: BYT-TYPEWRITER
FILENAME: LOAD FILE

PRO-NAME: BYT-TYPEWRITER
FILENAME: TAPE SAVE

```

10 ORG 50200
20 ;
30 SCREENMEM EQU 251
40 SCREENCOL EQU 252
50 TEXTFILE EQU 166
60 ;
70 SETNAM EQU $FFFD
80 SETLFS EQU $FFFA
90 SAVE EQU $F5DD
100 ;
110 ; OPEN CHANNELS FOR OUTPUT TO TAPE.
120 ;
130 LDA FILENAME
140 LEX #<FILENAME+1
150 LDY #<FILENAME+1

```

```

10 ORG 50200
20 ;
30 SCREENMEM EQU 251
40 SCREENCOL EQU 252
50 TEXTFILE EQU 166
60 TEXTFILE1 EQU 166
70 ;
80 ST EQU 166
90 GETIN EQU $FFFA
100 SETNAM EQU $FFFD
110 SETLFS EQU $FFFA
120 OPEN EQU $FFCD
130 CHRIS EQU $FFC6
140 CLOSE EQU $FFC3
150 CLASH EQU $FFC0
160 ;
170 ; OPEN CHANNELS FOR DISK INPUT.
180 ;
190 LDA FILENAME
200 LEX #<FILENAME+1
210 LDY #<FILENAME+1
220 JSE SETNAM
230 ;
240 LDA #1
250 LEX #0
260 LDY #0
270 JSE SETLFS
280 ;

```

LISTINGS

```

290 JSE OPEN 950 :
300 : 960 :CONVERT ASCII INTO SCREEN CODE.
310 LDE #1 970 :
320 JSE CHIN 980 CMP #128
330 : 990 BCC SKIP
340 :GET START ADDRESS FROM DISK. 1000 BCC #04 ;UPPER CASE
350 : 1010 SKIP CMP #04 ;LOWER CASE
360 JSE GETIN 1020 BCC PRINT
370 STA >TEXTFILE1 1030 BCC #04
380 JSE GETIN 1040 :
390 STA >TEXTFILE1 1050 :PRINT CHARACTER ONTO SCREEN.
400 : 1060 :
410 :CONT DATA FROM DISK BYTE BY BYTE 1070 PRINT STA (<SCREENROW>),Y
420 :AND STORE IN TEXTFILE. 1080 LDA #0
430 : 1090 STA (<SCREENCOL>),Y
440 GETLOOP JSE GETIN 1100 :
450 LDY #0 1110 :ADVANCE TO NEXT PRINT POSITION.
460 STA (<TEXTFILE>),Y 1120 :
470 INC <TEXTFILE1 1130 :
480 BNE NOHIGH1 1140 BNE NOHIGH1
490 INC >TEXTFILE1 1150 INC >TEXTFILE
500 NOHIGH LDA #T 1160 :
510 BCC GETLOOP 1170 NOHIGH1 INC (<SCREENROW
520 : 1180 BNE NOHIGH2
530 :LOADING FINISHED: 1190 INC >SCREENROW
540 :CLOSE DISK INPUT CHANNELS. 1200 :
550 : 1210 NOHIGH2 INC (<SCREENCOL
560 LDA #1 1220 BNE NOHIGH3
570 JSE CLOSE 1230 INC >SCREENCOL
580 : 1240 :
590 JSE CLCH 1250 NOHIGH3 LDA >TEXTFILE
600 : 1260 CMP <TEXTFILE1
610 :REPRINT TEXTFILE ON SCREEN: 1270 BNE PRINTLOOP
620 :INITIATE TEXTFILE. 1280 LDA >TEXTFILE
630 : 1290 CMP >TEXTFILE1
640 LDA #10000 1300 BNE PRINTLOOP
650 STA >TEXTFILE 1310 :
660 LDA #10000 1320 :FINISHED: WAIT FOR RESPONSE...
670 STA >TEXTFILE 1330 :
680 : 1340 WAITKEY JSE GETIN
690 :INITIATE SCREEN AND COLUMN VARS. 1350 BCC WAITKEY
700 : 1360 :
710 LDA #1004 1370 :AND EXIT BACK TO BASIC.
720 STA (<SCREENROW 1380 :
730 LDA #1004 1390 :
740 STA (>SCREENROW 1400 :
750 : 1410 :
760 : 1420 :
770 STA (<SCREENCOL 1430 FILENAME BYT 0,"TEXTFILE"
780 LDA #1004
790 STA (>SCREENCOL
800 :
810 :CLEAR THE SCREEN.
820 :
830 JSE #0344
840 :
850 :SWITCH COMPUTER INTO
860 :BUSINESS MODE.
870 :
880 LDA #14
890 JSE #0710
900 :
910 :GET CHARACTER FROM TEXTFILE.
920 :
930 LDY #0
940 PRINTLOOP LDA (<TEXTFILE>),Y

```

PGM-NAME: BYT-TYPENRITER
 FILENAME: SAVE FILE

```

10 ORG 00100
20 :
30 SCREENROW EQU 201
40 SCREENCOL EQU 203
50 TEXTFILE EQU 100
60 :
70 SETNAM EQU 0FFFD
80 SETLFS EQU 0FFDA
90 OPEN EQU 0FFCD

```


LISTINGS

```

100 CHROUT   BGR BFFOC      430                      JCR CHROUT
110 CHROUT   BGR BFFOC      440
120 CLOGE    BGR BFFOC      450                      ; SEND EACH BYTE TO THE DISKDRIVE.
130 CLOGE    BGR BFFOC      460
140 :
150 :OPEN CHANNEL FOR OUTPUT TO DISK. 470 OUTLOOP   LDY #0
160 :
170 :
180 :      LDA FILENAME      480
190 :      LDX #>FILENAME+1  500                      ;
200 :      LDX #>FILENAME+1  510                      INC >TEXTFILE
210 :      JCR GETNAM        520                      BGR NOHIDH
220 :
230 :      LDA #0             530                      INC >TEXTFILE
240 :      LDX #0             540                      CMP #11000
250 :      LDY #1             550                      BNE OUTLOOP
260 :      JCR SETLFS        560                      LDA >TEXTFILE
270 :
280 :      JCR OPEN          580                      CMP #11000
290 :
300 :      LDX #3             610                      ;
310 :      JCR CHROUT        620                      ;FINISHED: CLOSE DISK CHANNELS...
320 :
330 :      LDA #0             640                      LDA #0
340 :      STA >TEXTFILE      650                      JCR CLOSE
350 :
360 :      JCR CHROUT        670                      ;
370 :
380 :      NOW SAVE FILE BY SENDING EACH 680
390 :      BYTE OF THE TEXTFILE TO THE 690
400 :      DISKDRIVE.        690                      ;
410 :
420 :      INITIATE BEGINNING OF TEXTFILE. 690
430 :
440 :      AND RETURN TO BASIC. 700
450 :
460 :      LDA #C10000        710                      RTS
470 :
480 :      STA >TEXTFILE      720
490 :
500 :      JCR CHROUT        730
510 :
520 :      LDA #C10000        740
530 :
540 :      STA >TEXTFILE      750                      FILENAME   BYT 6, "TEXTFILE"

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MAY I INTERRUPT (PART 2)

(continued from May issue)

PROGRAM: MAY I INTERRUPT PART 2?

```

10 4070 DATA 200,24,0,0,3,3,18,
    74,340,0,120,24,120,7,0,84,0
    20
20 4300 DATA 170,4,140,0,54,140,
    0,80,120,120,104,94,120,0,1
    48,80,120
30 4310 DATA 92,80,80,17,1,1,13
    9,124,20,120,70,120,48,80,10
    3,200,120
40 4320 DATA 140,90,180,80,0,0,
    140,80,140,80,80,81,80,1,13
    0,200,140
50 4330 DATA 120,50,48,120,64,0
    4,8,100,140,144,100,84,144,1
    54,140,4,100
60 4340 DATA 144,94,44,80,84,0,
    80,140,120,140,84,120,0,100,
    80,80,120
70 4350 DATA 80,80,140,170,170,
    180,100,170,170,180,84,170,1,
    70,100,170,180,200
80 4360 DATA 100,120,94,170,0,1
    84,94,80,0,84,80,80,84,80,80
    80,144
90 4370 DATA 80,180,170,170,200
    170,170,200,94,170,0,0,21,1
    54,0,180
100 4380 DATA 4,54,80,0,0,24,80,
    3,0,80,80,180,0,54,80,0,70
110 4390 DATA 0,170,200,170,0,80
    80,100,0,24,170,0,0,80,80,1
    80,120
120 4400 DATA 0,140,120,94,0,0,0

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4,0,3,0,84,0,4,54,80,4,0,20
130 4410 DATA 0,24,80,3,80,100,0
    0,100,0,24,80,3,104,170,104,
    170,120
140 4420 DATA 0,80,80,180,94,170
    4,0,80,80,170,94,180,3,120,
    94,120
150 4430 DATA 0,37,1,0,0,94,80,4
    0,24,80,3,80,80,80,80
160 4440 DATA 0,100,170,180,170,
    200,170,170,0,54,170,7,0,94,
    170,0,140
170 4450 DATA 24,0,0,120,180,180
    0,0,0,0,100,0,20,30,21,80,30,0
    80
180 4460 DATA 20,20,20,20,20,20,
    170,170,100,200,180,180,170,
    170,20,20,20
190 4470 DATA 0,80,80,80,0,21,17
    0,170,0,54,170,0,0,80,94,0,0
    80
200 4480 DATA 2,24,120,0,0,0,100
    1,104,180,54,170,4,100,170,10
    0,100,120
210 4490 DATA 180,84,80,84,0,80,
    140,140,180,180,140,140,170,
    180,180,200,200
220 4500 DATA 104,104,100,100,17
    0,0,24,170,4,180,0,54,170,0,
    0,0,110
230 4510 DATA 54,170,0,40,24,0,80
    0,54,40,0,180,54,170,0,0,40
    0,180
240 4520 DATA 94,170,0,0,0,0,0,80
    1,70,3,104,84,0,4,84,170,0,4
    80
250 4530 DATA 84,0,0,180,180,170
    40,10,200,80,210,110,100,11
    0,120,120,180
260 4540 DATA 100,180,100,200,18

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    0,40,40,100,200,110,200,100,
    200,110,200,54,200
270 4550 DATA 0,4,40,40,40,180,180,
    2,2,10,10,40,40,140,140,140,
    140,110
280 4560 DATA 100,140,7,20,50,20
    2,100,0,4,54,170,3,40,24,180,
    140,110
290 4570 DATA 0,84,40,7,30,0,84
    180,7,0,170,84,180,0,0,0,100
300 4580 DATA 40,10,54,120,0,10,
    0,20,54,40,7,20,140,180,180,
    54,80
310 4590 DATA 0,180,140,180,20,20,
    80,170,170,170,180,100,20,20
    0,54,20,140
320 4600 DATA 4,24,140,100,80,18
    0,100,80,80,80,84,0,4,1,0,
    84
330 4610 DATA 0,54,0,0,10,10,10,
    84,0,0,0,10,10,80,84,0,84
340 4620 DATA 4,120,120,140,240,
    0,40,10,7,20,20,40,20,20,20,
    2,100
350 4630 DATA 0,4,0,21,0,160,54,
    170,0,160,40,54,170,0,40,0,0
    10
360 4640 DATA 84,170,0,40,0,54,1
    70,0,180,20,20,21,0,0,1,0,84,1
    0,120,140
370 4650 DATA 0,180,180,180,84,1
    70,0,200,200,80,80,80,80,20
    0,120,140
380 4660 DATA 180,180,180,54,170
    0,7,0,10,10,10,40,180,0,200
    0,180,180
390 4670 DATA 180,180,180,180,40
    0,20,21,0,80,80,80,80,80,1
    10,200,180

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LISTINGS

59	510	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990																																															
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

LISTINGS

82	130	200A	88,88,78,71,88,88,7	7,98,13,12,30,88,88,88,88,88,7	1811
11	140	200A	88,88,88,88,88,88,88,7	1,88,88,88,88,13,13,30,88,78	1812
20	150	200A	88,71,73,88,88,88,7	2,88,88,88,78,77,88,88,73,87	1813
24	160	200A	88,78,73,78,88,88,7	8,88,77,88,88,88,88,88,13,13	1814
28	170	200A	88,88,88,88,88,88,88,7	8,78,78,88,88,88,88,88,88,7	1815
32	180	200A	88,13,13,30,78,78,7	2,88,88,78,88,88,88,88,88,7	1816
36	190	200A	88,78,77,88,78,73,7	8,88,78,88,88,78,78,78,73,78	1817
40	200	200A	88,88,88,13,13,30,8	8,78,78,88,88,88,88,88,88,7	1818
44	210	200A	88,30,30,88,88,88,7	8,88,88,88,88,88,88,88,78,7	1819
48	220	200A	88,88,77,30,88,78,8	1,88,88,88,88,78,78,88,88,7	1820
52	230	200A	88,13,13,30,88,88,78,7	8,88,88,13,13,30,88,88,78,7	1821
56	240	200A	78,88,88,88,88,78,7	3,78,88,88,88,78,88,88,78,7	1822
60	250	200A	88,88,88,78,88,88,7	8,88,88,88,78,88,88,88,78,7	1823
64	260	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1824
68	270	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1825
72	280	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1826
76	290	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1827
80	300	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1828
84	310	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1829
88	320	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1830
92	330	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1831
96	340	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1832
100	350	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1833
104	360	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1834
108	370	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1835
112	380	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1836
116	390	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1837
120	400	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1838
124	410	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1839
128	420	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1840
132	430	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1841
136	440	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1842
140	450	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1843
144	460	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1844
148	470	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1845
152	480	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1846
156	490	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1847
160	500	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1848
164	510	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1849
168	520	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1850
172	530	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1851
176	540	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1852
180	550	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1853
184	560	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1854
188	570	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1855
192	580	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1856
196	590	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1857
200	600	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1858
204	610	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1859
208	620	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1860
212	630	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1861
216	640	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1862
220	650	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1863
224	660	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1864
228	670	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1865
232	680	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1866
236	690	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1867
240	700	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1868
244	710	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1869
248	720	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1870
252	730	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1871
256	740	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1872
260	750	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1873
264	760	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1874
268	770	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1875
272	780	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1876
276	790	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1877
280	800	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1878
284	810	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1879
288	820	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1880
292	830	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1881
296	840	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1882
300	850	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1883
304	860	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1884
308	870	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1885
312	880	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1886
316	890	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1887
320	900	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1888
324	910	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1889
328	920	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1890
332	930	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1891
336	940	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1892
340	950	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1893
344	960	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1894
348	970	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1895
352	980	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1896
356	990	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1897
360	1000	200A	88,88,88,88,88,88,7	2,88,88,88,88,88,88,88,78,7	1898

LISTINGS

60	2620 DRY 181.04,180.170,000	61	2000 DRY 123,122,000,200,10	72	1180 DRY 122,000,120,170,00
61	75,000,120,000,120,000,120,000	62	0,100,000,00,100,100,100,100	73	30,70,100,30,000,100,30,100
62	100,000,100,100,100,100,100	63	100,000,100,100,100,100,100	74	100,000,100,100,100,100,100
63	100,000,100,100,100,100,100	64	100,000,100,100,100,100,100	75	100,000,100,100,100,100,100
64	100,000,100,100,100,100,100	65	100,000,100,100,100,100,100	76	100,000,100,100,100,100,100
65	100,000,100,100,100,100,100	66	100,000,100,100,100,100,100	77	100,000,100,100,100,100,100
66	100,000,100,100,100,100,100	67	100,000,100,100,100,100,100	78	100,000,100,100,100,100,100
67	100,000,100,100,100,100,100	68	100,000,100,100,100,100,100	79	100,000,100,100,100,100,100
68	100,000,100,100,100,100,100	69	100,000,100,100,100,100,100	80	100,000,100,100,100,100,100
69	100,000,100,100,100,100,100	70	100,000,100,100,100,100,100	81	100,000,100,100,100,100,100
70	100,000,100,100,100,100,100	71	100,000,100,100,100,100,100	82	100,000,100,100,100,100,100
71	100,000,100,100,100,100,100	72	100,000,100,100,100,100,100	83	100,000,100,100,100,100,100
72	100,000,100,100,100,100,100	73	100,000,100,100,100,100,100	84	100,000,100,100,100,100,100
73	100,000,100,100,100,100,100	74	100,000,100,100,100,100,100	85	100,000,100,100,100,100,100
74	100,000,100,100,100,100,100	75	100,000,100,100,100,100,100	86	100,000,100,100,100,100,100
75	100,000,100,100,100,100,100	76	100,000,100,100,100,100,100	87	100,000,100,100,100,100,100
76	100,000,100,100,100,100,100	77	100,000,100,100,100,100,100	88	100,000,100,100,100,100,100
77	100,000,100,100,100,100,100	78	100,000,100,100,100,100,100	89	100,000,100,100,100,100,100
78	100,000,100,100,100,100,100	79	100,000,100,100,100,100,100	90	100,000,100,100,100,100,100
79	100,000,100,100,100,100,100	80	100,000,100,100,100,100,100	91	100,000,100,100,100,100,100
80	100,000,100,100,100,100,100	81	100,000,100,100,100,100,100	92	100,000,100,100,100,100,100
81	100,000,100,100,100,100,100	82	100,000,100,100,100,100,100	93	100,000,100,100,100,100,100
82	100,000,100,100,100,100,100	83	100,000,100,100,100,100,100	94	100,000,100,100,100,100,100
83	100,000,100,100,100,100,100	84	100,000,100,100,100,100,100	95	100,000,100,100,100,100,100
84	100,000,100,100,100,100,100	85	100,000,100,100,100,100,100	96	100,000,100,100,100,100,100
85	100,000,100,100,100,100,100	86	100,000,100,100,100,100,100	97	100,000,100,100,100,100,100
86	100,000,100,100,100,100,100	87	100,000,100,100,100,100,100	98	100,000,100,100,100,100,100
87	100,000,100,100,100,100,100	88	100,000,100,100,100,100,100	99	100,000,100,100,100,100,100
88	100,000,100,100,100,100,100	89	100,000,100,100,100,100,100	00	100,000,100,100,100,100,100
89	100,000,100,100,100,100,100	90	100,000,100,100,100,100,100		
90	100,000,100,100,100,100,100				
91	100,000,100,100,100,100,100				
92	100,000,100,100,100,100,100				
93	100,000,100,100,100,100,100				
94	100,000,100,100,100,100,100				
95	100,000,100,100,100,100,100				
96	100,000,100,100,100,100,100				
97	100,000,100,100,100,100,100				
98	100,000,100,100,100,100,100				
99	100,000,100,100,100,100,100				
00	100,000,100,100,100,100,100				

DISCS

ROCK BOTTOM DISKS

All disks supplied with labels and (5 1/4), also with sleeves

Lifetime Guarantee

	Plain Label	35	100	200	500
5 1/4" DD/DD 5 1/4" sp	1.90	13.80	21.80	38.00	17.00
5 1/4" DD/DD 5 1/4" sp	0.80	14.00	20.50	40.00	19.00

	Plain Label	35	100	200	500
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A stamped, self-addressed envelope for return of the program to you.

Should any of the above be missing then we will not be able to deal with your query.

We will try to point out where you have made errors and place a corrected copy of the program back on to your tape or disk before we return it to you.

Do not send a program to us as soon as it starts working, please check it several times first.

We do get a large number of queries and so it may take a while for us to deal with yours personally.

Note we can only deal with problems relating to programs published in Your Commodore.

PROGRAMS ORDER

08	10	08/11	100-00	00-00000
02	00	0000	00000	00-00 0000-0000
		000000	000000	000000-0000-0000
44	30	0000	0000	00000000
		00000	00000	0000000000
		00		
10	00	0000	0000	
00	00	0000	0000	0000000000
		00000000	00000000	0000000000
		00000000	00000000	0000000000
40	00	0000	0000	0000000000
		00000000	00000000	0000000000
		00000000	00000000	0000000000
10	00	0000	0000	0000000000
		00000000	00000000	0000000000
		00000000	00000000	0000000000
00	00	0000	0000	0000000000
		00000000	00000000	0000000000
		00000000	00000000	0000000000
00	00	0000	0000	0000000000
		00000000	00000000	0000000000

At the Your Commodore office we receive hundreds of letters from readers every month. We do try and answer each individually but sometimes this is impossible due to pressure of work. If you have written to us and not received a personal reply, we apologise for this but we cannot promise to reply to every item of mail we receive. If you feel that your question or letter really needs an answer, then inclusion of an S.A.E. will guarantee a reply, although this may still take time to arrive.

Commodore Where Are You?

At the Your Commodore office we are repeatedly asked for the address and telephone number of Commodore U.K. Many people, after referring to their computer manuals, believe them to be based in Gosley.

The Commodore plant at Corby was closed almost some time ago. Reproduced here you will find the correct address for Commodore U.K.

We suggest that you write this correct address in the front of your computer's manual for future reference.

Commodore Business Machine, (UK),
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Puzzle Corner



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How does our intrepid hero get to the other side of the river with his treasures still intact?

Designer Update

We have decided not to continue the Designer listing as it is significantly longer than we had originally thought. Don't worry though, the complete listing is available from us, free of charge. Simply send an A4 size SAE to our Golden Square address on the Contents page. As usual, the complete program is available on disk - see the Software for Sale pages. E.D.



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