COMMODORE

MAGAZINE

VOL 5 NO 1

MAY 1985

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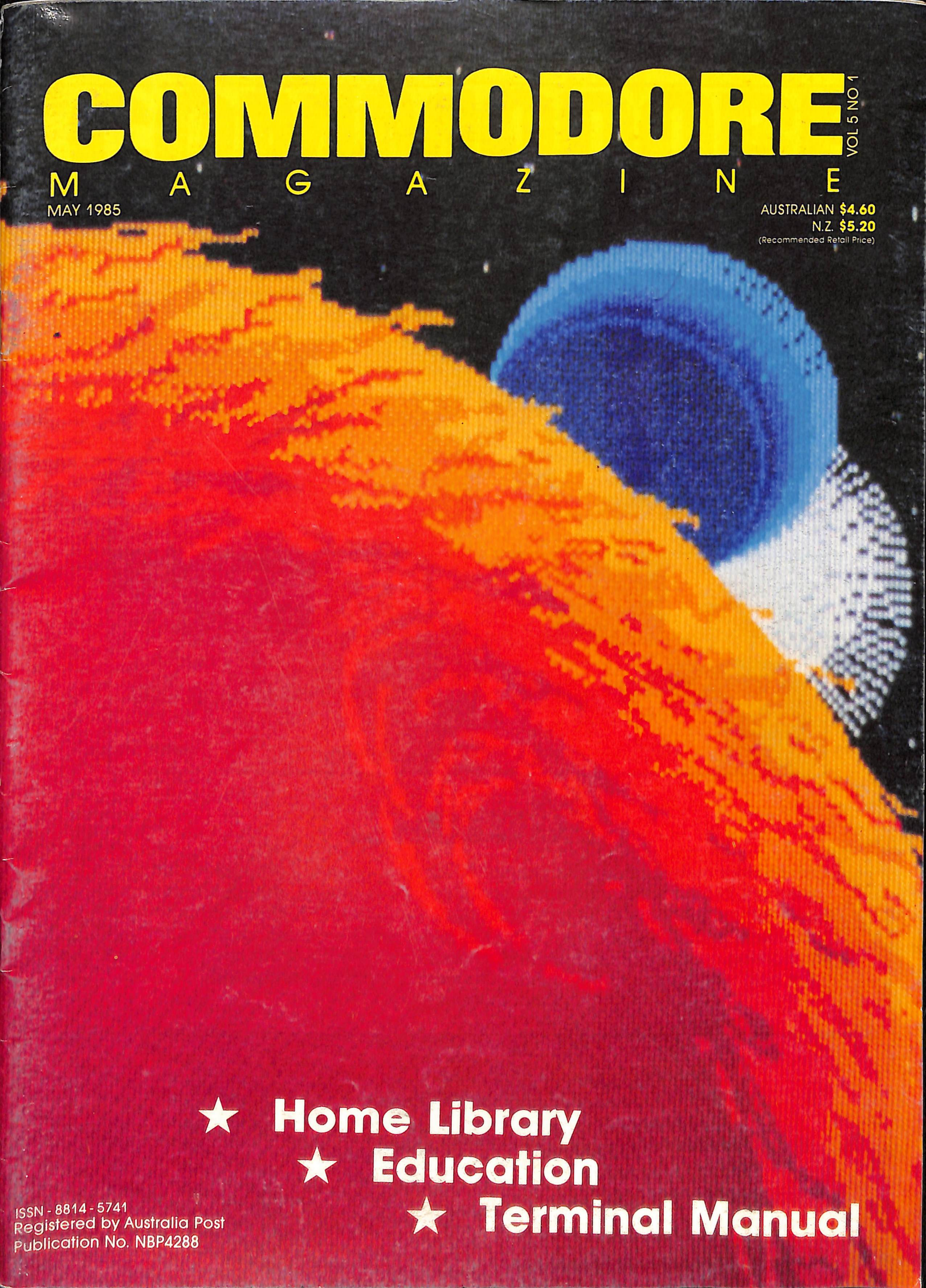

★ Home Library
★ Education
★ Terminal Manual

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Commodore Makes Software For Every Member Of The Family.

Almost.

Commodore make software for people. All kinds of people. Software for fathers, mothers, brothers, sisters, uncles, aunts, nieces, nephews, grandparents and even brothers-in-law who fix cars. Everybody. Software for fun, profit, homework, housework and officework. We do not however, make software for dogs. Yes, we are working on it, but as research in this area is fairly limited, we're calling for all the help we can get. If you have any suggestions please contact your nearest Commodore dealer.

commodore COMPUTER

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BMS/cc 304

COMMODORE MAGAZINE

AUSTRALIAN COMMODORE USERS MAGAZINE

VOLUME 5 NUMBER 1 ISSUE 29

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EDITORIAL

MERVYN BEAMISH

Mervyn Beamish

COVER

Computer art using CADPIC. This was 'painted' by our editor on a OKI-SIGMA. Refer image transfer article Vol.4 No.6.

BACK ISSUES $5.50 includes P&P.

Vol4 No 1..... AVAILABLE
Vol4 No 2 ..... LIMITED SUPPLY
Vol4 No 3 ..... LIMITED SUPPLY
Vol4 No 4 ..... SOLD OUT
(some 2nds. available)
Vol4 No 5..... AVAILABLE
Vol4 No 6 ..... SOLD OUT

BIRTHDAY HONOURS

Volume 5 No. 1 is a coming of age for the Commodore Magazine. It was just under twelve months ago that KIM BOOKS took over and resuscitated the old and dying Commodore Magazine. At that time six months had passed since the last issue and approximately 50% (as far as we can tell) of its subscribers had withdrawn. When we first took over a further percentage of the remaining subscribers also cancelled we had inherited a lemon. KIM BOOKS was being blamed for all of the publication's past deeds.

While the majority of subscribers, at that time, yawned and took a wait an see attitude a small minority were very vocal and aggressive. I personally was called a leftist and a rightist both on the same day.

However the editorial, production team, and you the readers, have, in a mere six issues, developed an Australian, International quality magazine. The COMMODORE MAGAZINE is distributed throughout Australia, New Zealand and the Pacific. Soon we expect to go further abroad.

An ego trip? – Too right!

If we were to award Birthday Honours they surely must go to Gregory Perry and Paul Blair. It has been their determination, expertise, hard and poorly paid work that has raised this publication like the proverbial Pheonix.

It should be noted that in the past year both have received lucrative offers from local and overseas publishers but opted to stick with us.

Greg says "I feel like the magazine is part of me and I'm proud of its quality and local content." We've all taken pride in the publication's development and our readers encouragements.

Greg and Paul on behalf of the readers and all at Commodore Magazine a big heartfelt thanks. Stick with us fellas.

Next issue we'll have a peek at peripherals and interfaces. Copyright and the end user. Listings and a few surprises.

Mervyn Beamish
Editor

NOTE: IN ENTERING PROGRAMS DO NOT USE **HELPOUT** CODES 'xxxx IF NOT USING **HELPOUT** PROGRAM. (Refer page 28)

NICE LISTER CONVENTIONS

1. All control, colour, function, and shifted and Commodore key graphics are converted to 'words' (or the abbreviations as represented on the keyboard) enclosed in square brackets [ ].
For example, [DOWN], [CLR] and so on.

2. Multiple cursor controls are represented by one word plus a number. For example, [DOWN 15].

3. Shifted graphics (right-hand symbol on key) are converted to the corresponding alphabet character enclosed in square brackets. A shifted 'S' heart character becomes [S].

4. Any character accessed by the Commodore (C=) key is indicated by further enclosing the alphabet character inside the symbols <>.
A Commodore 'A' becomes [<A>].

5. With multiple characters, the redundant brackets][are replaced by a comma as:-
[CLR,DOWN5,WHT,<A>]

6. With multiple shifted graphics, the alphabet character is simply repeated, numbers are not used as [AAAAAAAAAAA].

7. Multiple Commodore graphics are repeated as [<A>, <A>, <A>, <A>].

8. Spaces and shifted spaces within quotes are represented by the words [SPACE] or [SHSPACE] followed by a number if required.
For example, [SPACE15].

9. Extra words are used for the following control characters.

Keyword	CHR$	
DEL (CRTL-T)	20	
INS	148	
TEXT (CTRL-N)	14	converts character set to upper/lowercase mode.
GRAPH	142	converts character set to uppercase/graphics mode.
LOCK (CTRL-H)	8	disables the C = key and locks the keyboard in the current character mode.
UNLOCK (CTRL-I)	9	enables the C =key sequence.

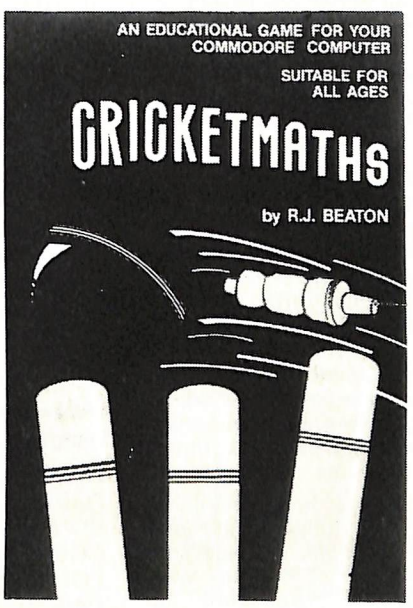
PES

PITMAN EDUCATION SOFTWARE

EDU-KIT

Software for Australian Primary Schools

Mathematics



★ **Cricket Maths**
Players practise their Maths facts whilst playing against the computer in a cricket setting.

★ **Number Maze**
To get through the maze you must know your tables!

★ **Number Snake**
A game similar to Snakes an Ladders that fosters the learning of number facts at varying levels of difficulty.

English

★ **Wordmaster**
The computer challenges you to spell the words correctly!
With Wordmaster you can compose and store your own word lists.

★ **Save Our Sal**
Choose the correct homophone and save Sally from the dreaded shark Knaws!

★ **Funky Punky**
The player types the missing punctuation marks into sentences on the screen.
Capital letters, full stops, commas, question marks, apostrophes or any combination of these.
Compose and store your own passages!

★ **Zap the Letter**
A strategy game which challenges the player to unjumble the words in a block puzzle.

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News Releases

Items received since the previous issue

The Office Automation Show 1985

The World Trade Centre, Melbourne

On display were hundreds of different communications equipment ranging from a little home computer adapter modem to the huge MINERVA electronic mail communications systems. The British have recently released their Tandata communications modem in Australia. For $400 you can buy a little Spectrum-like keyboard to conect you to Tendata and for a small user charge you have access to hundreds of pages of information. C64 users can purchase ($400) a little cartridge adapter that plugs in to the 64's cartridge port giving full compatability with Tandata, BUT with a big advantage of being able to download programs into your 64.

Telecom have also released at the expo a true Australian communications modem VIATEL (not to be confused with the service), Australia's answer to Tandata. It seems to me the name Tendata has just been changed to VIATEL, because they are very much the same. The difference is that a VIATEL adapter is not yet available for connection to the C64. For more information on these products contact Telecom. Also on display were a variety of business machines, photo-copiers, printers, disks and other hardware.

The show was reasonably large and all of the displays were spread out allowing room to move about. Although the salespeople were friendly the flavour of the day was generally 'HAND-OFF". There were no refreshments available.

For Your Diary

7 – 20th July – The 5th Personal Computer Show
World Trade Centre, Melbourne.

On display will be the latest personal computer software and hardware for the home and business.

A LOW COST DISK DRIVE

A low cost disk drive for the Commodore computers has been announced by Porchester Computers Pty Ltd, Melbourne. The machine, the SKAI Disk Drive, retails for $349 and is designed to compete with Commodore's 1541 unit.

This machine is claimed to be smaller, lighter, 20% faster and has less ventilation problems than the 1541.

It is believed a Commodore compatible printer from the same distributor will be released soon.

A.C.T. User Group

MEMBERS' INDICATED INTERESTS

John Hambley of the Commodore User Group ACT recently analysed current membership applications, for both new members and renewals, where members indicate the topics which interest them.

Table 1 shows both the percentage of all forms for which the appropriate box had been selected. In addition 14.5% of forms showed something in the write in item for "Languages". The percentage of all these forms are shown in Table 2.

Only 3.9% of forms showed anything in "Other", a residual write in item at the end. These were: disk drive; modem/telephone to assist the deaf; file handling; communications; speech; hardware; interfacing; music writing; printing; accounting applications; and control systems.

TABLE 1 : TOPICS SELECTED

Topic	Percent
Word processing	49.3
Education	48.8
BASIC - advanced	47.2
Spreadsheets	43.2
Graphics/sound	42.9
Adventure games	41.1
Arcade style games	38.7
BASIC - introductory	37.2
Machine code	36.5
PASCAL	25.2

TABLE 2 : LANGUAGES MENTIONED

Language	Percent
LOGO	9.9
FORTH	8.9
COMAL	1.1
COBOL	0.7
FORTRAN	0.7
PASCAL	0.4
PILOT	0.4
MACRO ASSEMBLER	0.4
Other than BASIC	0.4

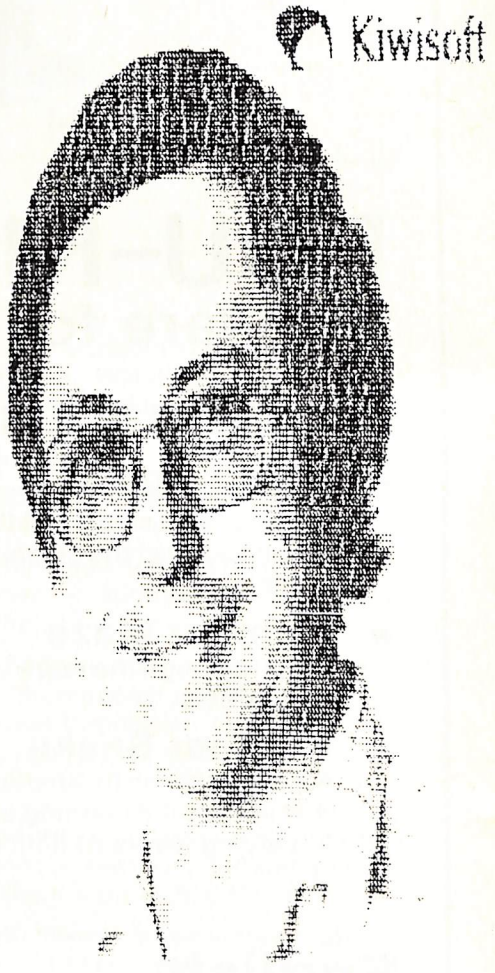
EDUCATION versus FUN

The Goulburn Commodore Users Group meet on the first Tuesday of the month – 7.00pm at the Southern Tablelands Educational Centre. In their latest News Letter Judy Barrass comments, "I have noticed that many parents who come to STEC to select software ask for 'educational' programmes and decry their children's interest in games, seemingly believing that education should not be fun. However many of the better games are excellent teachers of spatial relationships, thinking and keyboard skills, hand-eye co-ordination, etc. The playing of games is a learning experience that should not be overlooked.

TAKE A LOOK AT THIS

Kiwisoft just couldn't wait to try out their new MICROTEK scanner. Look who they used as a model.

The scale relates to the printer, they have offered to fix it. However, the editor expressed interest in having a full frontal, "it would save dieting".



THE AUSTRALIAN BEGINNING

The Australian Beginning (TAB) is back on line after the being "off the air" for the last couple of months.

During that time their has been a considerable restructuring within the Company, and their problems have been resolved in a new and permanent manner. TAB are therefore happy to advise that they are now back "on line" with all their services such as Chat, Electronic Mail, Telex, Bulletin Boards, etc, back in full operation.

A new charge structure will be imposed as of May 1985. This will include an account maintenance fee. TAB claim increasing costs have forced them to do this. On line fees will range from $5 to $13 (peak) per hour plus a small log on charge (33c) and a minimum connection time fee of 40c. Auspac charges are passed back to the customer at cost.

Welcome back TAB

Meyertronix ComputaControl Module

This module is an attempt to give the man in the street greater use of his computer. The module contains 8 relays which can be used to control external equipment, 8 input lines which can be used to monitor external

News Releases

Items received since the previous issue

devices and an 8 step digital to analog converter. The relays are of high industrial standard and are capable of switching 240 volts at one amp. The relay contacts are accessed by screw terminals on the edge of the printed circuit board. The 8 input lines are held high by hold-up resistors and are operated by pulling the appropriate input to ground (0 volts). Again the inputs are accessed by screw terminals on the printed circuit board.

The digital to analog converter can be set up in two ways. The first is to select 8 resistors to operate in the adjust circuit of an adjustable regulator chip. the second is again to select 8 resistors to be placed in the base circuit of an open-collector transistor, e.g., a 2N3055.

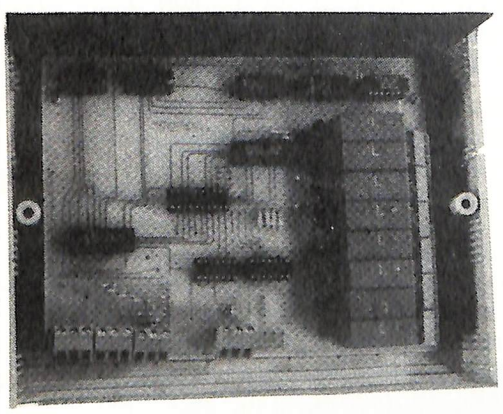
The output relays are addressed at 129 (DEC). Therefore by using the basic command "OUT 129,XX (a number representing the binary configuration of relays required on)".

Similarly the input is addressed at 128 (DEC). Therefore by using the basic command "INP(128)" this port can be read into your program.

The digital to analog converter is addressed at 130(DEC), and uses the same basis as the out relays.

The instructions set out here are for the VZ200. The Commodore 64 works along similar lines but uses the PEEK and POKE basic instructions.

The unit comes supplied complete and tested in an ABS instrument case for $159.00. The unit can also be supplied in kit form if so desired for $98.00 but does not include an ABS instrument case.



ROBOTS

Electronic wizz, Jeff Edwards, has designed a home robot that should market for under $400. The robot can walk, talk, carry and find their own way around the house. Similar overseas units retail for around $3000.

Jeff's robots interface with the Vic-20 and C-64 computers.

MULTI LINK

Commodore 64 Network

MULTI LINK is a local area network for the Commodore 64 computer. Developed in Canada it is marketed in Australia by CYBEX Computing of SA and distributed through appointed dealers in each state.

By the start of the 1985 school year 40 systems had been installed in SA, 5 in Victoria, 7 in NSW, 3 in the ACT, 4 in QLD and 5 in WA. Commodore Business Machines have recognised the value of the systems and have been very supportive in referring enquiries on dealers.

FEATURES of the MULTI LINK system.

1) Teachers are able to link together up to 48 Commodore 64 computers to a central master terminal.

2) Computers are linked to the master terminal by means of an interface connected to their cartridge port.

3) The teacher uses the master terminal to control a computer lesson in a manner similar to a language laboratory. Software can be downloaded and uploaded rapidly, student's work can monitored, and the teacher has a range of commands designed to carefully manage the student access to periferals etc. Such controls include "halting" a students cursor, viewing the student's screen on the master terminal, disallowing access to disk drives and printers, and password protection of files.

4) Fast downloading of software is very important. Time is precious and cannot be wasted waiting for half a lesson to load a piece of software. With the MULTI LINK system your time is kept to a minimum when preparing the network with software. The system involves the master terminal being loaded with software off the disk drive and then sending this software to all, or a specified group of satellite computers with a memory transfer technique. Thus disk access is kept to a minimum. A program such as LOGO can be loaded into 12 computers in a little over 6 minutes. This is a marked saving over the Vic Switch where it takes over 15 minutes to load a maximum network size of 8 computers.

Another major advantage of the system is in saving on multiple copies of software. Only one copy of any piece needs to be purchased for use in the network.

A complete range of schools have installed the system. Many large city high schools use it with networks of up to 24 on one master terminal. Schools with plans to expand their networks beyond 8 satellites find that the system is the most economic solution. Many country area schools and small independant schools are also users of the system because it offers similar features to the BBC Econet for about half the price. Primary schools find it suits their needs because of the software availability and their extensive use of LOGO and word processing.

For further information contact CYBEX Computing (08) 267 5855 also refer to review in Commodore Magazine Volume 4, Issue 3.

WA VIC-UPS

Jon Gundry, secretary of the Vic-Ups Computer Users Group has sent us this brief history of the Group.

Back in early 1982, a small group of keen Vic 20 enthusiasts banded together to pool their ideas and broaden the uses of this new machine. Little did they realise what lay ahead.

As sales of the Vic increased, so the group grew until May of 1982 the "Vic-Ups" users group was formed. Meeting at the Victoria Park Primary School, under the leadership of Greg Padfield and a dedicated team, the numbers continued to swell. So by late 1982 the ranks had swollen to over one hundred. Each new member was welcomed, irrespective of their knowledge, to learn or to teach, it didn't matter. As time progressed, the group was soon manufacturing their own memory expansion boards, mother boards, Vic-tins and so on.

It soon became obvious to all concerned that "Ye olde school hall" was reaching bursting point and that a larger meeting place was urgently required, so after considerable effort, a new venue was arranged at the Queen Elizabeth II hospital complex in Nedlands. With the use of three lecture theatres and a large open amenities area this new environment seemed almost palacial, but, as air expands to fill a vacuum, so the membership continued to increase.

With even more new activities being provided, such as regular tutorials in programming (basic, advanced basic, machine code, Forth etc), the expansion of an already comprehensive software library, demonstrations, and the help of local Commodore dealers the membership was soon over the three hundred mark.

By now it was obvious to all that Commodore computers were here to stay and were not just another passing fad.... the uses for the humble Vic were endless. 1983 saw the advent of the forerunner to the Commodore 1520 printer/plotter in W.A. (albeit an old Ovaltine can, two model aircraft servo motors and lots of rods, gears and wires), computer controlled robots, computerised telephone diallers, and even a primitive RTTY unit.

Thus, with this large membership, the large sums of monies passing thru the Treasurer's hands, and the intention to enter the field of marketing, the decision was made to apply for incorporation, thus putting the group on a true business footing. So by late 1983 the "Vic-Ups Computer Users Group, Incorporated in W.A. was in being.

By mid 1984 this now large organisation had expanded to include the C-64 and was becoming somewhat unmanageable. What with a large central group and affiliated country groups, the members were now

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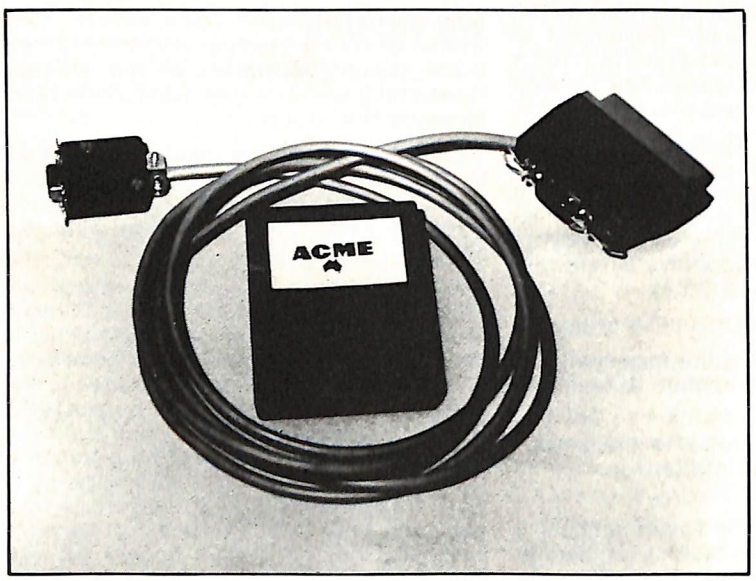
EDUCATION

Compiled by Lawrence Hulse



ACME Network

A network system for the Commodore 64 called 64 NET has been released from ACME software. The network is of special interest to educational users as it has features which make it directly competative with much more expensive systems.

64 NET allows users to converse via the network, BASIC or machine language programs may be transmitted at high speed to a specific user or to all users. The teacher may retrieve any students' screen (or program) to assess progress or offer help. If the teacher does not want students to communicate with each other then a special 'Lockout' command can be entered to cease computer to computer communication but still allow the teacher full access to the students computers and the students access to the disk drive and printer.

64 NET is compatible with the widely used Vic-Switch network and can be used with or without a Vic-Switch. 64 NETs' operating system is contained in a cartridge which plugs directly into the rear of the computer so it is available immediately from power up and does not interfere with the normal operation of BASIC.

Bill Dimech of ACME says that the desired capabilities of 64 NET was determined after talking to a range of teachers to get their opinions as to not only what was desirable in a classroom network system but what was of actual practical use. Further refinements were added during the development and testing of 64 NET. "Watching 16K programs being transferred between 64's in three seconds was a bit of a thrill" he said.

Further information on these products may be obtained from most Commodore computer dealers or directly from ACME Software at P.O. Box 3, Brighton North, Victoria, 3186.

The Step from the AEC to Education Software was BASIC

For Dr Jeffrey Tobias the step from Australia's Atomic Energy Commission to being greatly involved with educational software was basic, he was good friends with the developer of the DIRECT Helper Scheme for learning to read by computer.

Dr Tobias said, "John Pollard, who developed DIRECT Helper for his son who had difficulty reading, and I worked together at the AEC. He often received telephone calls from distraught parents whose children had trouble reading. John would photocopy the documentation and do a set of tapes which took an awful lot of his time. It also cost him a lot of money out of his own pocket.

"I became involved through him and DATAFLOW Computer Services Pty Ltd which acts as an interface between the general public, the teachers and himself. That is how Dataflow started two years ago."

"When I started consulting with Dataflow there was really nothing in educational software, then about a year ago a lot of companies decided that they would get into educational computer software. Now a lot of companies are getting out of it because you really have to know what you are doing. You are not going to make a million dollars overnight, it is a much more long term thing of estavlishing your name and reputation with good products.

"An educational program must have high quality teaching value. It has to be something that offers a child, or the teacher using it, sound teaching value. It can take many forms, games for example are highly motivating to those children who are not motivated by normal teaching materials. It must also be well presented and easy to use and something we would be proud to support.

"In publishing programs 90% of the time is spent on 10% of the product. You can develop the product very quickly, but getting the documentation and the packaging up to standard takes the time. If there are programmers who have a good idea, it would be interesting to look at, but there is much involved in making a program useable by a third party than in making a program to be used by yourself. A lot of teachers have developed programs that they themselves can use, but they have required a lot of time to make certain that someone else could use it.

"Teachers look at computers through many different glasses, either they are afraid of them or they think they are going to solve all their teaching problems. Computers are actually just a tool like an overload projector. Teachers should not have too low or too high expectations of what computers can do," Dr Tobias said.

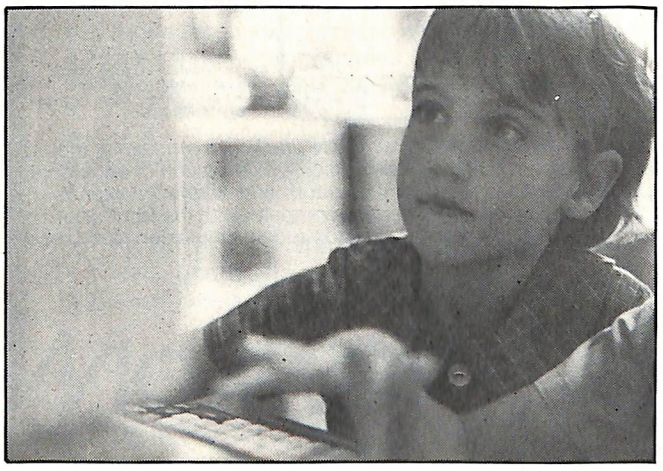
Home Computers Active In Primary School

Home computers are becoming commonplace in primary school classrooms, and one of the most computer-integrated primary schools in New South Wales education system is the Denistone East Primary School at Eastwood near Sydney.

continued next page

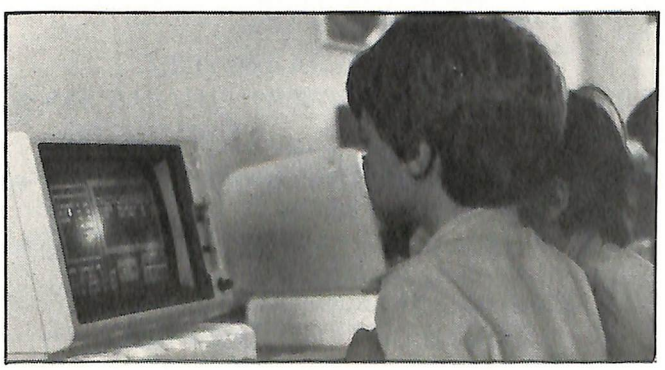
The school's Principal, Barry Manefield, says, "We use a number of programs developed by local programmers. There is the drill practice variety, games and simulation and we spend a good deal of our time with our fifth and sixth grade pupils using a word processing package. The drill and practice programs give a wide range of activities, particularly in language and maths.

"We like programs in particular where teachers can input their own class work and therefore relate the total work across the curriculum. There are a number of these programs where teachers can input the work they are doing with their class each week, and make a new one for next week. These programs which take data input are very valuable.



"We find a continually high level of response by the children to the work on the computer. It hasn't been something which is a seven day wonder. We are into our fourth year of work with the computer now and we still have the same high level of interest in the computer now and we believe that where the computer work is actually related to the work programmed for lessons that week, it is more reliable as a reinforcing agent.

"In co-operation with four other schools, we sponsor what is called the "Care Project" (Computer Assisted Remedial Education Project). It is funded jointly by the New South Wales Department of Education and the Curriculum Development Centre in Canberra and there we have developed a series of programs called "Decide Your Destiny".



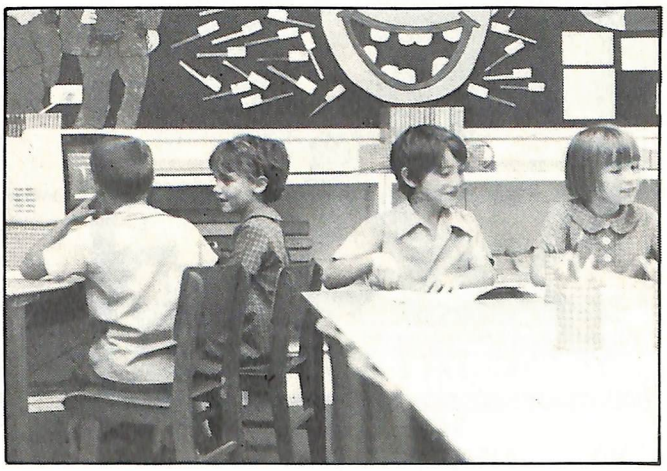
Photographs courtesy of Denistone East Primary School

"They are choose-your-own adventure type of story whereby the pupil reads a part of the story and decides which direction to go by answering questions. This leads off in another direction, sometimes of course it ends the story with the wrong answer and they go back and begin again.

"We find these are highly motivating, but we have experienced problems with people developing programs - you are not sure of how your program is going to be used by the purchaser. So in co-operation with the Catholic Education Office and the Northern District Education Centre, the project funded the making of a video. This explains to teachers the way in which the programs can be used within the classroom across the curriculum. This has proved successful and has been favourably received.

"We do a lot of corresponding with user groups and we have a lot of visitors to the school, and we like to correspond with user groups," Mr Manefield said. (Write to the CARE Project, c/o Denistone East Primary School, Lovell Rd., Eastwood N.S.W. 2122 Australia.)

There is an opportunity for a Commodore user group to become involved because presently their programs are on Microbee, and they are developing Apple versions which could be important for the New Zealand readers.



Tafe Expanding Home Computer Courses

An indication of the rapid expansion in home computer education is found at Sydney Technical College, which is part of the governments' Technical and Further Education (TAFE).

One of the teachers, Doug Nelson, says, "We offer several courses which are suitable for home computers. The first is, the use and management of micro computers which talks about understanding the criteria for selecting and using personal computers, some programming, awareness of hardware and software, and terminologies.

"In the computer programming area there are courses in BASIC, COBOL, FORTRAN and others."

"There are a new range of courses under development which should be available next year, for instance, spread sheets, and file management."

continued on page 9

ASHTRON SOFTWARE

announces a leap forward in science education

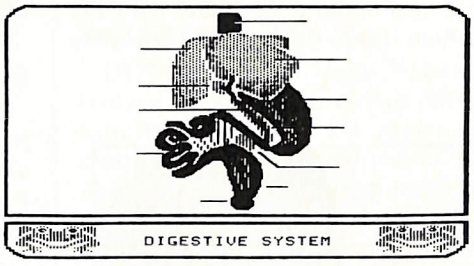
Compatibility Memory	Apple II Plus/IIe/IIc 64K	Commodore 64 64K
System Requirements	Disk Drive Optional Joystick or Mouse	Disk Drive Optional Joystick

OPERATION: FROG

OPERATION:FROG
Now, for the first time ever, you can teach your students/children about anatomy — and allow every child to pin, probe, snip, pick up and examine a frog's organs — on a microcomputer.

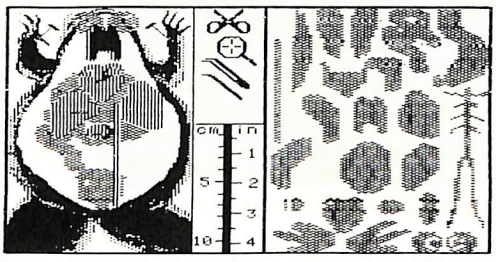
A valuable learning experience

COMPONENTS: one program, a quick reference card an illustrated instructional booklet



System Graphics — allows you to examine the body system more closely and correctly name the organ the lines point to.

Operation:Frog is a revolutionary yet totally practical instructional tool. It brings you the unique results of a remarkable collaboration of educators, scientists, science writers, science illustrators and computer experts. It combines the fantastic power of the microcomputer with the fascination of participating in a scientific process. It adds a new dimension to science learning.



Dissection Screen — Once the organ is removed by the surgical tools, it can be measured then placed in its correct position on the examination tray.

Simulates actual laboratory procedures
Operation:Frog is a unique computer simulation for ages 9 and over. Based on realistic, scientific procedures that enable students/children to participate in every major step of dissecting a frog. Working at the computer a child learns to select the proper instruments — surgical scissors, probe, forceps, tweezers and magnifying glass. They learn how to probe and snip body organs, remove organs to examination tray, magnify the organs and investigate frog body parts and systems.

By using the puzzle portion on *Operation:Frog* your students/children can even become knowledgeable enough to reconstruct the frog.

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DSE

* Railway Cres., Lisarow NSW 2251

EDUCATION – continued from page 7.

"At some colleges students need to have the hardware, but generally speaking we provide the computers including Commodores and other types," Mr Nelson said.

For information about TAFE computer courses contact the nearest TAFE Information Centre.

USER GROUPS

USER GROUPS – A couple of user groups have found that education applications for their Commodore computers warrant establishing education sub-groups.

The Queensland Commodore Computer User Group has set up a Primary Education Sub-Group which meets after the main meeting in Milton on the first Tuesday of the month. The contact is Bill Weeks on 208 8620 during business hours or on 341 2823 after hours.

The A.C.T. Vic-20 User's Association has an education section in its bi-monthly publication which reviews relevant programs. In their February 1985 association publication, the editors have listed the educational programs they have reviewed since June 1983

UNIVERSITY ADVISORY CENTRES

An education application which may have escaped notice is the important role of university computere advisory centres. Sydney University is a good example. Not only does the university's computing centre have details on machines and peripheral items, but they also provide support services for machines. It could be worthwhile for user groups to establish contact with their local university, college of advanced education, or technical college because it could be a way of increasing group membership.

MACHINE JUSTICE????

AND . . . . . A mathematician–turned–lawyer at the University of Sydney Law School has received Australian Research Grant Scheme funding to apply computers to case law. The researcher says that because many ordinary people now find it too expensive to seek legal advice, ". . . it may not be a choice between human and machine justice, but between machine justice and no justice at all."

ERRATUM
How to Write Music – Vol4/6

Prog 1.

420 T = T + (S * 3·3) not 33

Prog 3.

110 READ S$.....S was missing.

Fig 3.

Had a couple of minor errors we will reprint the figure next issue.

Educational Software
from PITMAN PUBLISHERS

FUNKY PUNKY

"FUNKY PUNKY" is a punctuation game. The player selects passages; the TV screen fills with sentences. Then the player types in the correct punctuation marks which are missing. At the end
of the passage the computer shows the player the correct answers.

Game can be played using:

A – Capital letters.
B – Full Stops.
C – Commas.
D – Question Marks.
E – Apostrophes.

or any combination of these.

One of the features of this programme is that players can type in their own passages and store them on a clean blank tape or disk.

SAVE OUR SAL

Many words sound the same but are spelt differently and have different meanings e.g. to, two, too; there and ftheir. Such words are called homophones.

This programme helps you with homophones in a fun way. Sentences appear on the screen and you have to choose the correct homophone. If you get 10 correct, you will save Sally from the dreaded shark Knaws. If you get 10 incorrect, Sally will be dragged away.

Here are some of the homophones which are used in Save Our Sal.

to too two	here hear	boarder border
their there they're	write right	draft draught
new knew	road rode	bass base
which witch	piece peace	current currant
hair hare	pair pair	whether weather
aloud allowed	lightening lightning	horse hoarse
where wear	through threw	council counsel
by buy	caught court	led lead
bear bare	effect affect	licence license

CRICKETMATHS

Cricket maths is a game which is designed to allow players to practise their maths facts whilst playing against the computer in a cricket setting.

Cricket maths was designed to allow players to experience the fun and uncertainty of the unpredictable nature of cricket.

Throughout the game, animated players and umpires give an indication of the action on the field. Players can practise addition, subtraction, multiplication, division, or all four processes jumbled up.

Each of these processes can be played at seven levels of difficulty. In the game, the computer sets a random score which the player must attain in the required number of balls without losing 10 wickets.

Runs are scored randomly by answering questions correctly although it is possible to be caught L.B.W., or run out on a correct answer.

If the answer is wrong, the batsman gets out. Players can also get out if they do not type in the answer quickly enough. The higher the level of difficulty the less time players have to answer the question.

The C64 version allows the palyer to press the INST/DEL key to rub out the last number when a mistake is made. It also allows the player to re-start the game by holding down the SHIFT key and pressing the CLR/HOME key.

NUMBER MAZE

NUMBER MAZE helps you with your 2 to 9 times tables. The aim of the game is to move from the white number at athe bottom of the screen to the white number at the top of the screen as quickly as possible. Or perhaps you may like to ignore speed and try to ignore speed and try to see how many different ways through the maze.

But to get through the maze you must know your tables. Lets say you choose to play using your 2 x tables. You can only move via numbers which are divisible by 2. If you choose 7 x tables you can only move through the maze via numbers which are divisible by 7.

Every game has a different pattern of numbers.

ZAP THE LETTER

Zap the letter is a game of strategy, a real brain teaser. There are 3 puzzles from which to choose. In each puzzle there are 3 words. These will then disappear, then will reappear all jumbled up.

The aim of the game is to move one letter at a time ,up, down or sideways until you have all the letters back in their original position.

There are 5 levels of difficulty for each game. Level 1 is the easiest, level 5 is the most difficult. If you can solve level 5 then consider yourself a genius.

Home Library

ALL MACHINES PART I

by Bob Hoffman

When I bought my first computer (a VIC-20) I justified it on the basis that it would help me to keep track of my 2,000 books.

Off I went to buy myself a 'home inventory' program for $12 and smugly rushed home to show off my purchase to a skeptical family and prove that I had more than a 'toy' cluttering the lounge room. I sat down to read the manual and found out that a file could only consist of 25 items and that the only search facility was labelled 'destructive'; it certainly destroyed my faith in simple solutions.

I eventually learnt a lot about BASIC, spent many happy hours with adventure games, and found a number of useful applications for my machine....when I could summon up the authority to disperse the little folk permanently surrounding it. It was certainly a success but my books remained uncataloged.

An expensive 'database' system I invested in proved a disaster.

It took hours to enter a few shelves of books because each title went to disk as it was entered. Searches involved loading a new program and changing disks; then they took 10 minutes for even a moderately sized file. Sorting was even slower and worthless as soon as I put in one more item. Backup took hours and could not be left as the data disks had to be changed regularly. In the end my disk drive broke down (from overwork) just before I did.

About a year ago I decided to write my own. Along the way the way discovering a number of trade-offs. To get speed and ease of use huge files were out of the question; thus I have separate files for each catagory of books (e.g. science fiction, computing, art, history, etc) rather than in one large lump.

The HOME LIBRARY has the following features:

1. Up to 500 books on the C+4 and C64, 400 on the VIC-20 with 24K expansion (250 with 16K), and 100 on the C16. A cut down version of the C+4 can list 1000 or more. (ED – imagine what Bob will do with a 128!)

2. Total menu control.

3. Fast search for author (all versions), title (all except C16), title keyword (C+4 and C16), and subject (C+4 only).

4. Print-outs available immediately for any search or for complete listings in author or title order (except C16 which cannot provide title listing).

5. Either disk or tape storage can be used.

6. All records can be modified in any way or deleted completely.

7. Sorting is done automatically as new records are input. Short delays occur once the file grows a bit.

8. Completely written in BASIC. I use several versions of the C+4 program for different categories of books.

Part two of these series will provide a complete user guide but you can start without it by using the menu system.

HINTS

a). if you have many more that 50% of the titles your computer can handle (see 1. above) divide them into catagories and create separate file for each.

b). Pick names for your file which sound right with the word 'BOOKS' after them; it is always added when the file name is shown above the main menu.

c). When you want to finish putting in new books, enter '0' (zero) against author.

d). If you are typing in a number of books by the same author, only put the author's name in the first time – after that 'RETURN' will automatically insert author.

Part three will take a look at the program itself and describe the techniques used. I will also demonstrate the creations of different versions for particular categories of books. If anyone has a version they would like to see, write to me c/- KIM BOOKS (address page 1).

LISTINGS

Below is the C64 listing of HOME LIBRARY. Unfortunately to give all four variations would take a great amount of space. Hardcopy ($3.50), and Cassette ($7.50) copies of each version is available from KIM BOOKS the price includes postage. Please NO CREDIT CARDS and dont forget to specify which machine. DISK#3 has all four versions and cost $10 (refer elsewhere).

KIWIS a master disk will be sent to our NZ representatives so contact them for your copies and prices (refer page 1).

Note: if you are not using HELPOUT do not enter last 5 code characters in each line.

HOME LIBRARY 64

```
1 REM HOME LIBRARY FOR COMMODORE 64'BATG
10 PRINT "[CLR,DOWN]NAME FOR FILE"'BABB
20 INPUT F$'BCNX
25 IF F$="" THEN F$="TRIAL" 'EEJH
30 F=500: DIM A$(F),T$(F),A%(F),T%(F),B%(F)'CJTH
40 DEF FN A(A)=INT (.5*(H+L))'GMYG
199 REM MENU'BEUO
200 PRINT "[CLR]"F$" BOOKS" 'BCHY
205 PRINT "NUMBER ON FILE:"N'BBSF
210 PRINT"[DOWN2]WHAT DO YOU WISH TO DO?[DOWN2]"
    'BADE
220 PRINT TAB(3)"1. INPUT NEW BOOKS" 'CCSE
230 PRINT TAB(3)"2. LOAD FILE" 'CCED
240 PRINT TAB(3)"3. SAVE A FILE" 'CCSE
250 PRINT TAB(3)"4. DISPLAY" 'CCGF
```

```
260 PRINT TAB(3)"5. PRINT" 'CCYF
270 PRINT TAB(3)"6. SEARCH" 'CCRG
272 PRINT TAB(3)"7. DELETE" 'CCPI
274 PRINT TAB(3)"8. MODIFY" 'CCMK
280 PRINT TAB(3)"9. END" 'CCAG
290 PRINT "[DOWN2]TYPE YOUR CHOICE" 'BASK
300 Q=9: GOSUB 900: PRINT "[CLR]" 'DHDB
305 L=1:H=N'CFBE
310 ON X GOSUB 1000,3500,4000,2500,3000,5000,6500,6000,700
    'CTDH
320 GOTO 200'BDBA
700 CLOSE 8: CLOSE 15: END 'DFJD
799 REM WAIT'BEUU
800 POKE 198,0'BFXD
810 PRINT "[DOWN2]HIT ANY KEY" 'BAKG
820 WAIT 198,1: POKE 198,0: RETURN 'DMOI
899 REM GET A NUMBER FROM 1 TO Q AND RETURN X'BDUD
900 GET X$: IF X$="" THEN 900'EIEH
910 X=VAL(X$): IF X<1 OR X>Q THEN PRINT "TYPE A NUMBER
FROM     1 TO"Q: GOTO 900'JPDT
920 RETURN 'BAQF
949 REM SELECT FIELD'BLDT
950 PRINT TAB(3)"1. AUTHOR" 'CCQL
960 PRINT TAB(3)"2. TITLE" 'CCKM
970 PRINT "[DOWN3]TYPE YOUR CHOICE" 'BAKP
980 Q=2: GOSUB 900'CGXN
990 RETURN 'BAQM
999 REM STORE NEW RECORDS'BPYB
1000 PRINT "[CLR]TYPE 0 FOR AUTHOR TO END[DOWN2]" 'BARA
1010 N=N+1: IF N>F THEN 1060'FKKY
1020 PRINT "[RED]AUTHOR:[BLU]": INPUT A$(N)'CGUY
1030 IF A$(N)="0" THEN N=N-1: GOTO 1100'GNYC
1040 IF A$(N)="" THEN A$(N)=A$(N-1)'FQAD
1050 PRINT "[RED]TITLE:[BLU]": INPUT T$(N)'CGHC
1055 P=N: GOSUB 2000'CHQF
1060 N=N+1: IF N>F THEN N=F: PRINT "[DOWN2]FULL UP":
    GOSUB 800: GOTO 1100'JSVK
1061 IF N>F-10 THEN PRINT "[DOWN,RED]ROOM TO
    ENTER"F+1-N "MORE[BLU,DOWN]" 'HHOL
1080 GOTO 1020'BEAC
1100 RETURN 'BAQT
1999 REM SORT. USES P AS POINTER. RETURNS A%() AND T%()
    AS SORT INDEXES'BBJJ
2000 T$=T$(P): GOSUB 2400:B%(P)=B'DTGA
2010 IF N=1 THEN T%(1)=1: GOTO 2150' FNDA
2020 L=1:H=N-1:B=B%(P)'ENTB
2030 IF H<L THEN M=H+1: GOTO 2100'GKHD
2040 M=FN A(0):S=T%(M):U=B%(S)'ETIF
2050 IF RIGHT$(T$(P),B)< RIGHT$(T$(S),U) THEN H=M-1:
    GOTO 2030'IBGJ
2060 IF RIGHT$(T$(P),B)> RIGHT$(T$(S),U) THEN L=M+1:
    GOTO 2030'IBHK
2070 IF A$(P)<A$(S) THEN H=M-1: GOTO 2030'GSII
2080 IF A$(P)>A$(S) THEN L=M+1: GOTO 2030'GSJJ
2090 S=T%(M+1):U=B%(S): IF RIGHT$(T$(P),B)=RIGHT$(T$(S),U)
    AND A$(P)=A$(S) THEN M=M+1: GOTO 2090'NBVW
2100 IF M=N THEN 2140'DGTX
2110 FOR E=N TO M+1 STEP -1'GFXB
2120 T%(E)=T%(E-1)'CLVA
2130 NEXT 'BAEX
2140 T%(M)=P'BGZB
2150 IF N=1 THEN A%(1)=1: GOTO 2280'FNNF
2160 L=1:H=N-1'DGPE
2170 IF H<L THEN M=H+1: GOTO 2230'GKLI
2180 M=FN A(0):S=A%(M)'DMSH
2190 IF A$(P)<A$(S) THEN H=M-1: GOTO 2170'GSNL
2200 IF A$(P)>A$(S) THEN L=M+1: GOTO 2170'GSOD
2210 U=B%(S): IF RIGHT$(T$(P),B)< RIGHT$(T$(S),U)
    THEN H=M-1: GOTO 2170'JIGK
2220 IF RIGHT$(T$(P),B)> RIGHT$(T$(S),U) THEN L=M+1:
    GOTO 2170'IBMI
2225 S=A%(M+1): IF RIGHT$(T$(P),B)=RIGHT$(T$(S),U) AND
    A$(P)=A$(S) THEN M=M+1: GOTO 2225'MTBU
2230 IF M=N THEN 2270'DGXC
2240 FOR E=N TO M+1 STEP -1'GFXF
2250 A%(E)=A%(E-1)'CLIE
2260 NEXT 'BAEC
2270 A%(M)=P'BGGF
2280 RETURN 'BAQE
2399 REM INDICATES SIGNIFICANT LENGTH OF TITLE.
    RECEIVES T$, RETURNS B.'BEUF
2400 B=LEN (T$)'CFCA
2410 IF LEFT$(T$,2)="A " THEN B=B-2'GJVF
2420 IF LEFT$(T$,3)="AN " THEN B=B-3'GJCG
2430 IF LEFT$(T$,4)="THE " THEN B=B-4'GJMH
2440 RETURN 'BAQC
2499 REM SCREEN DISPLAY. LISTS RECORDS L TO H'BFGA
2500 PRINT "[CLR]DISPLAY IN WHICH ORDER?[DOWN]": GOSUB
    950'CEQH
2510 ON X GOSUB 2600,2700'CKAD
2520 RETURN 'BAQB
2599 REM AUTHOR ORDER'BLVU
2600 C=.: PRINT "[CLR]" 'CDMC
2610 FOR G=L TO H:A=A%(G)'EKUF
2620 IF LEN (A$(A))<40 THEN PRINT A$(A): GOTO 2640'GTOJ
2630 Z$=A$(A): GOSUB 2800'CMIG
2640 IF LEN (T$(A))<40 THEN PRINT T$(A): GOTO 2660'GTEL
2650 Z$=T$(A): GOSUB 2800'CMCI
2660 PRINT :C=C+1'DEEI
2670 IF C=4 AND G<>H THEN GOSUB 800: PRINT "[CLR]":C=.
    'JLEP
2680 NEXT : GOSUB 800'CEYJ
2690 RETURN 'BAQJ
2699 REM TITLE ORDER'BKPV
2700 C=.: PRINT "[CLR]" 'CDMD
2710 FOR G=L TO H:T=T%(G)'EKDH
2720 IF LEN (T$(T))<40 THEN PRINT T$(T): GOTO 2740'GTQK
2730 Z$=T$(T): GOSUB 2800'CMVH
2740 IF LEN (A$(T))<40 THEN PRINT A$(T): GOTO 2760'GTFM
2750 Z$=A$(T): GOSUB 2800'CMCJ
2760 PRINT :C=C+1'DEEJ
2770 IF C=4 AND G<>H THEN GOSUB 800: PRINT "[CLR]":C=.
    'JLEQ
2780 NEXT : GOSUB 800'CEYK
2790 RETURN 'BAQK
2799 REM PRINTS LONG STRINGS. RECEIVES Z$'BDCC
2800 Z=LEN (Z$):U=1'DIQG
2810 V=0:W=U+40: IF Z=40 THEN GOSUB 2990: RETURN 'IQBL
2820 FOR E=W TO U STEP -1: IF MID$(Z$,E,1)=" " THEN V=E-U:
    E=U'MTVQ
2830 NEXT : IF V=0 THEN GOSUB 2990:U=U+40:Z=Z-40:
    GOTO 2860'KWIQ
2840 IF V>0 AND V<40 THEN GOSUB 2980:U=U+V+1:Z=Z-V-1:
    GOTO 2860'NYBU
2850 IF V=40 THEN GOSUB 2990:U=U+41:Z=Z-41: GOTO 2860
    'JWFR
2860 IF Z<1 THEN RETURN 'ECDK
2870 IF Z<40 THEN PRINT RIGHT$(Z$,Z): RETURN 'GKIP
2880 GOTO 2810'BEIL
2980 PRINT MID$(Z$,U,V): RETURN 'DJCO
2990 PRINT MID$(Z$,U,40);: RETURN 'DLTQ
2999 REM LIST TO PRINTER'BNUA
3000 PRINT "[CLR]SELECT ORDER IN WHICH ENTRIES ARE TO
    BE PRINTED[DOWN2]": GOSUB 950'CEHK
3005 L=1:H=N'CFBC
3010 PRINT "[CLR,DOWN2]CHECK PRINTER AND PAPER." 'BAPD
3020 PRINT "[DOWN3]DO YOU WISH TO PRINT NOW? (Y/N)"
    'BAYF
3030 GET Z$: IF Z$<>"Y" AND Z$<>"N" THEN 3030'ILIG
3040 IF Z$="N" THEN RETURN 'ECMC
3050 OPEN 4,4'BDAB
3060 PRINT#4, CHR$(14);F$; CHR$(15)'DOKF
3070 PRINT#4, CHR$(13); CHR$(13); CHR$(13)'EQAH
3080 C=5: ON X GOSUB 3200,3300'DNTH
3110 GOSUB 3400: CLOSE 4'CGWY
3120 RETURN 'BAQX
3200 FOR G=L TO H'DDCY
3210 A=A%(G): PRINT#4,A$(A);". ";T$(A)'CVHD
3215 C=C+1+ INT (( LEN (A$(A))+ LEN (T$(A))+2)/80): IF C>55
    THEN GOSUB 3400'NHUR
3220 NEXT 'BAEY
3230 RETURN 'BAQA
3300 FOR G=L TO H'DDCA
3310 T=T%(G): PRINT#4,T$(T);" / ";A$(T)'CVKF
3315 C=C+1+ INT (( LEN (A$(T))+ LEN (T$(T))+3)/80): IF C>55
    THEN GOSUB 3400'NHDT
3320 NEXT 'BAEA
3330 RETURN 'BAQB
3400 FOR E=C TO 66: PRINT#4: NEXT :C=1: RETURN 'HLFF
```

continued overleaf

```
3499 REM LOAD A FILE'BJQU
3500 PRINT "[CLR,DOWN]DO YOU WISH TO LOAD
     FROM[DOWN2]" 'BAMH
3510 PRINT TAB(3)"1. TAPE"'CCUE
3520 PRINT TAB(3)"2. DISK" 'CCWF
3530 PRINT "[DOWN2]TYPE YOUR CHOICE" 'BASI
3540 Q=9: GOSUB 900: ON X GOSUB 3600,3800'ERMK
3550 RETURN 'BAQF
3599 REM LOAD A TAPE FILE'BNHW
3600 PRINT "[CLR,DOWN2]PUT DATA TAPE IN CASSETTE
   PLAYER" 'BAHL
3610 PRINT "[DOWN2]DO YOU WISH TO LOAD NOW? (Y/N)"
     'BAWK
3612 GET Z$: IF Z$<>"Y" AND Z$<>"N" THEN 3612'ILOM
3614 IF Z$="N" THEN RETURN 'ECMJ
3620 N=1'BCXE
3630 OPEN 1,1,0,F$'BIFG
3640 INPUT#1,A$(N),T$(N),A%(N),T%(N),B%(N)'BGGL
3650 IF ST<>64 THEN N=N+1: GOTO 3640'HMUN
3660 CLOSE 1'BBIH
3670 RETURN 'BAQI
3799 REM LOAD FROM DISK'BMOY
3800 PRINT "[CLR,DOWN2]INSERT DISK" 'BAUH
3810 PRINT "[DOWN2]DO YOU WISH TO LOAD NOW (Y/N)" 'BAIM
3820 GET Z$: IF Z$<>"Y" AND Z$<>"N" THEN 3820'ILPN
3830 IF Z$="N" THEN RETURN 'ECMJ
3840 N=1'BCXI
3850 OPEN 8,8,8,"0:"+F$+",S,R": PRINT "[CLR,DOWN2]LOADING"
     'EJGQ
3860 OPEN 15,8,15'BHAK
3863 INPUT#8,N: IF N>F THEN PRINT "[RED,CLR,DOWN2]FILE
     TOO LARGE![BLU]": GOSUB 800: GOTO 3900'HPWY
3867 FOR L=1 TO N'DDLS
3870 INPUT#8,A$(L),T$(L),A%(L),T%(L),B%(L)'BGDQ
3880 GOSUB 4450'BEOM
3885 PRINT "[HOME]"L'BBWQ
3890 NEXT 'BAEM
3900 CLOSE 8: CLOSE 15'CEYG
3910 RETURN 'BAQF
3999 REM SAVE A FILE'BJFA
4000 PRINT "[CLR,DOWN2]DO YOU WISH TO SAVE TO[DOWN]"
     'BAFD
4010 PRINT TAB(3)"1. TAPE" 'CCUA
4020 PRINT TAB(3)"2. DISK" 'CCWB
4030 PRINT "[DOWN2]TYPE YOUR CHOICE" 'BASE
4040 Q=9: GOSUB 900:R$=CHR$(13): ON X GOSUB 4100,4300'GYAI
4050 RETURN 'BAQB
4099 REM SAVE A FILE TO TAPE'BPKS
4100 PRINT "[CLR,DOWN2]PUT DATA TAPE IN CASSETTE
     PLAYER.": PRINT : PRINT 'DCTI
4102 PRINT "[DOWN2]DO YOU WISH TO RECORD NOW? (Y/N)"
     'BACI
4104 GET Z$: IF Z$<>"Y" AND Z$<>"N" THEN 4104'ILLJ
4106 IF Z$="N" THEN RETURN 'ECMG
4110 OPEN 1,1,1,F$'BIGA
4130 FOR L=1 TO N'DDLC
4140 PRINT#1,A$(L);R$;T$(L);R$;A%(L);R$;T%(L);R$;B%(L)'BSQK
4160 CLOSE 1'BBID
4165 PRINT "[CLR]"L"RECORDS SAVED" 'BBQN
4170 PRINT "[DOWN2]REWIND AND LABEL TAPE "F$:
     GOSUB 800 'CGJM
4180 RETURN 'BAQF
4299 REM SAVE TO DISK'BKOT
4300 PRINT "[CLR,DOWN]INSERT DISK" 'BADD
4310 PRINT "[DOWN2]DO YOU WISH TO SAVE NOW? (Y/N)"
     'BAMI
4320 GET Z$: IF Z$<>"Y" AND Z$<>"N" THEN 4320'ILLJ
4330 IF Z$="N" THEN RETURN 'ECMF
4335 OPEN 15,8,15,"S:"+F$'CKBK
4340 OPEN 8,8,8,"0:"+F$+",S,W": PRINT "[CLR,DOWN2]SAVING"
     'EJGL
4345 PRINT#8,N'BDXJ
4350 FOR L=1 TO N'DDLG
4360 PRINT#8,A$(L);R$;T$(L);R$;A%(L);R$;T%(L);R$;B%(L)'BSXO
4370 GOSUB 4450'BEOH
4380 PRINT "[HOME]"L: NEXT 'CCEI
4390 CLOSE 8: CLOSE 15'CEYK
4400 RETURN 'BAQA
4449 REM READ ERROR CHANNEL'BQUS
4450 INPUT#15,A$,B$,C$,D$'BOBI
4460 IF VAL (A$)>0 THEN PRINT A$,B$,C$,D$: GOTO 700'GUIN
4470 RETURN 'BAQH
4999 REM SEARCH'BGSA
5000 PRINT "[CLR]SELECT SEARCH FIELD[DOWN]": GOSUB 950
     'CEFE
5050 PRINT "[DOWN2,RED]SEARCH FOR[BLU]" 'BAMF
5060 INPUT D$'BCLD
5070 ON X GOSUB 5100,5300'CKWH
5080 IF I=0 THEN 5090'DGRI
5085 ON X GOSUB 2600,2700'CKAN
5086 PRINT "[CLR,DOWN2]DO YOU WANT A PRINT-OUT (Y/N)"
     'BAJT
5087 GET Z$: IF Z$<>"Y" AND Z$<>"N" THEN 5087'ILWU
5088 IF Z$="Y" THEN GOSUB 3010'EGNR
5090 RETURN 'BAQG
5099 REM AUTHOR SEARCH. SEARCHES FOR D$'BBBW
5100 L=1:H=N:I=1:D=LEN (D$)'FOTE
5110 IF H<L THEN PRINT D$" NOT FOUND":I=.: GOSUB 800:
     RETURN 'HMJI
5120 M=FN A(0):A=A%(M):S=A%(M-1)'FUGH
5130 IF D$<> LEFT$(A$(A),D) THEN 5160'FPXH
5140 IF LEFT$(A$(A),D)=LEFT$(A$(S),D) THEN H=M-1:
     GOTO 5110 'IBMM
5150 GOTO 5180'BELE
5160 IF D$<A$(A) THEN H=M-1: GOTO 5110'GPPK
5170 L=M+1: GOTO 5110'DIAI
5180 L=M:H=M'CFDI
5190 IF LEFT$(A$(A%(H)),D)=LEFT$(A$(A%(H+1)),D) THEN
     H=H+1:
     GOTO 5190'JKIT
5200 RETURN 'BAQY
5299 REM TITLE SEARCH'BLXU
5300 T$=D$: GOSUB 2400:L=1:H=N:I=1'FSLH
5310 IF H<L THEN PRINT D$" NOT FOUND":I=.: GOSUB 800:
RETURN 'HMJK
5320 M=FN A(0):T=T%(M):S=T%(M-1):U=LEN (T$(T))-B%(T)+1
     'JKRP
5330 IF RIGHT$(D$,B)<> MID$(T$(T),U,B) THEN 5360'GVWL
5340 IF MID$(T$(T),U,B)=MID$(T$(S), LEN (T$(S))-B%(S)+1,B)
     THEN H=M-1: GOTO 5310'LRAU
5350 GOTO 5380'BENG
5360 IF RIGHT$(D$,B)< MID$(T$(T),U,B) THEN H=M-1: GOTO 5310
     'IAUQ
5370 L=M+1: GOTO 5310'DICK
5380 L=M:H=M'CFDK
5385 Z=LEN (T$(T%(H+1)))-B%(T%(H+1))+1'GYBW
5390 IF MID$(T$(T%(H)),U,B)=MID$(T$(T%(H+1)),Z,B)
     THEN H=H+1:U=Z: GOTO 5385'KRVY
5400 RETURN 'BAQB
5999 REM MODIFY RECORDS'BNED
6000 PRINT "[CLR,DOWN]BEFORE MODIFYING, ESTABLISH THE
   RECORDS" 'BAWJ
6005 PRINT "YOU WISH TOCHANGE WITH AN AUTHOR SEARCH
   [DOWN2]' "BAMO
6010 PRINT "[RED]AUTHOR:[BLU]": INPUT D$: GOSUB 5100'DIFE
6015 IF I=0 THEN 6120'DGMH
6020 FOR G=L TO H:P=A%(G)'EKKE
6025 IF D$<> LEFT$(A$(P),D) THEN 6110'FPJL
6030 PRINT "[CLR,DOWN3]"A$(P): PRINT T$(P)"[DOWN2]" 'CLPF
6040 PRINT "TYPE IN NEW ENTRY OR[SPCE2]PRESS RETURN TO
   [SPACE4]LEAVE UNCHANGED[DOWN2]" 'BAIR
6050 I=.:A$="":T$="" 'DIVG
6060 PRINT "[RED]AUTHOR:[BLU]": INPUT A$'CDMI
6070 IF A$<>"" THEN A$(P)=A$:I=1'GMAL
6080 PRINT "[RED]TITLE:[BLU]": INPUT T$'CDEJ
6090 IF T$<>"" THEN T$(P)=T$:I=1'GMHN
6095 IF I AND (A$(P)>A$(A%(G+1)) OR T$(P)>T$(A%(G+1)))
     THEN G=G-1'KLXA
6100 IF I THEN PRINT "[CLR,DOWN2]MODIFYING": GOSUB 6400:
     GOSUB 2000'FLVH
6110 NEXT 'BAEA
6120 RETURN 'BAQB
6399 REM DELETE INDEX ENTRIES. P MUST INDICATE NUMBER
OF RECORD BEING DELETED.'BJFL
6400 V=.:W=.'CFQE
6405 O=N: IF O=F THEN O=O-1'GIUN
6410 FOR R=1 TO O'DDSF
6420 IF A%(R)=P THEN V=1'EIRI
6430 IF T%(R)=P THEN W=1'EIMJ
6440 A%(R)=A%(R+V)'CLUJ
6450 T%(R)=T%(R+W)'CLJK
6480 NEXT 'BAEK
```

continued on page 33

Direct Helper

by Lawrence Hulse

Dataflow Computer Services Pty Ltd are releasing soon a revised C64 version of the popular DIRECT Helper education program.

The DIRECT Helper Scheme is a highly – motivating means of helping students of all ages overcome their reading difficulties.

Dr Jeffrey Tobias, Dataflow's resident consultant says, "When parents become worried and frustrated by their inability to help their children with any reading difficulties, and when children find it hard to stay calm after long sessions of fruitless study, the DIRECT Helper Scheme offers a practical and caring method of assistance."

The Scheme aims to establish word – decoding, good reading habits and spelling skills, as well as motivate students to enjoy reading.

DIRECT (Dyslexic Imaginative Reading Encouragement using Computer Techniques) Helper Scheme was developed in 1978 by a computer scientist whose ten year old son was dyslexic, which meant words appeared back-to-front.

Dr John Pollard and his son Peter

The new C64 version of DIRECT Helper comes with disks, a revised manual, an audio cassette tape which introduces the system, TREND supplementary books and final program polishing information. Also a small item of hardware to interface a standard cassette recorder for vocal interaction.

Other educational programs available from Dataflow are:

- Freddy's Puzzling Adventures which are logic and problem solving games for children aged 7+;
- Hartley Medalist Series of Australian study programs including:

  Australian mammals, Captain Cook, Word Radar, Verb Viper, Master Match and Idea Invasion.

SPELD NEWS the official journal of SPELD N.S.W. recently reviewed Direct Helper and has given us permission to reprint the review. Thankyou!

DIRECT HELPER REMEDIAL READING COMPUTER BASED SCHEME

One of the main problems facing parents, trying to teach their children, is in getting the child interested in learning and maintaining that interest during the lesson. Unless you are a gifted teacher this is often very difficult to do. Problems of boredom, inability to concentrate for any length of time, frustration and anger, often make the lessons very difficult. Thus, to keep the lesson interesting, ancillary aids are often used to aid in the learning process and break the monotony. These may be picture cards, black-boards, private teachers, reward systems, cassettes and now computers. This is where the DIRECT (Dyslexic Imaginative Reading Encouragement using Computer Techniques) HELPER SCHEME comes into its own. It is basically a remedial aid which utilizes a computer as its teaching instrument.

The main benefit of this is that it makes learning fun. The different programs are graded on order of difficulty, eventually covering all the most commonly used words. These are displayed on the screen as slowly as required and can be varied according to the ability of the user. Animals, animated people and a rocket ship all help in the display to make learning easier and more fun. Both spelling and reading programs are present, some of which require setting up on the parents pare. This is quite easy to do as the instructions are clear and comprehensive. No previous experience with computers is necessary.

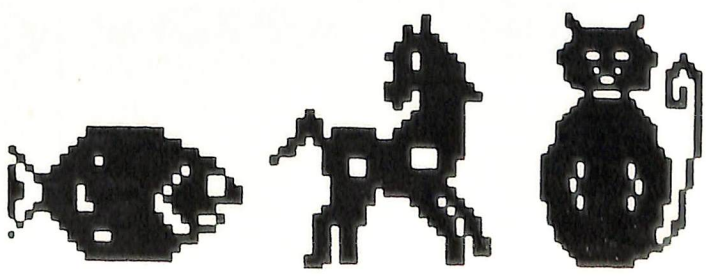
However, what are the disadvantages? First, you have to borrow or buy a computer. Then, as each child has a different disability, it may be better for an experienced teacher to guide you in the selection of material and assess progress. In spite of the excellent material in the DIRECT HELPER SCHEME, it may not be applicable to your child. Not all parents have the ability to judge this. Finally, it does take a lot of time on the parents part – this is not a burden, however, but very rewarding (and fun also).

I borrowed a computer and also used a revedial teacher in addition to teaching my son myself. In our case I hope to be able to use the DHS again, as it has been a great help, mainly in keeping up interest in a lesson, providing a ready reference as to progress and also in increasing P.J's concentration span.

By the way, the cost of the DHS is $220 (including Tax)

Dr M.H.

For Further information on DHS write or telephone: Dataflow, 134 Barcom Avenue, Rushcutters Bay 2011 331 6153



Ladders to Learning

McGraw Hill Australia have come out with a major new innovation in Educational software, under the title of **Ladders to Learning.** The Company has produced 40 educational packages for the Commodore 64. Very soon there will be an additional 40 released and it is planned that up to 500 titles will be released within the next 3 years. From what we can understand, **Ladders to Learning** is the brainchild of Ms. Sharon Ottley, the software co-ordinator for McGraw Hill, and she would have had quite a co-ordination job.

I am told that there were 40 teachers and 40 programmers employed by a Canberra company to produce this system. With all these 40's around it's almost getting to sound like a fairy tale, but there is no fairy tale to **Ladders to Learning.**

The system has used a structured programming technique to reduce repetition of effort and easy interaction of each program within the total system. Each program has a recommended age group, and each age group forms a step on the ladder of education. The age group range are 3-6, 6-8, all the way up to 15 plus. I can feel a certain amount of shuddering going on out there in computer land. Systems of this nature that have come in from overseas have generally been totally unrelated to local conditions. However, one of the big selling points and advantages of **Ladders to Learning** is that it is a locally produced system.

Each module has been prepared by subject matter specialists with considerable experience and expertise in Primary education. The programming has been undertaken by professionals who have been able to get the most out of the Commodore 64, in terms of colour, sound and movement. In short, here is a major company that has put its money where its mouth is and done it right for the Australian market, and, not only the local market. Already there is interest from McGraw Hill's parent company in the States to export the system. As one journalist from "Your Computer" magazine has pointed out - it is going to be rather interesting to see the reverse roles. Changing a 'colour' to 'color' and getting rid of the s's and replacing them with z's, that's usually our role.

Affordability is another major factor, at $11.95 for cassette and $14.95 for disk, the software is quite well situated in the market place.

The topics included in **Ladders to Learning** are quite wide ranging and reproduced below is the initial chart produced by McGraw Hill of topics and their relation to various age groups.

The current modules on the market are aimed at home education, to supplement, not replace a school education. The company has announced that, in the near future, they will be releasing school packages within the same series.

There are a number of reasons why **Ladders to Learning** should be quite a success for McGraw Hill. The fact that is was produced locally, for local conditions, by local experts must be a big plus for any educator or parent considering the purchase of these educational modules.

The whole system has been in the boiling pot for the last 18 months, and professional programmers have beeen called in to work alongside experienced educational specialists, thus, guaranteeing quite a high standard. Affordability and availability are two other pluses for the system. McGraw Hill are selling **Ladders to Learning** through Myer Stores, Commodore dealers and other software outlets.

The Commodore Magazine have a set of current releases in this series, if there are any teachers or educationalists out there who wish to have one of the modules for review purposes and wish to specify the title, plus maybe two alternatives, along with their experience within the specific area that the module covers, we would be willing to send them a copy of that programme, if available, on disk in exchange for a short 400 word review (refer Volume 4, Number 1 for review policy).

NOTE: This offer is through the magazine and has nothing to do with McGraw Hill.

Contact Mervyn Beamish, Editor, Commodore Magazine. 82 Alexander St., Crows Nest, 2065

LEARNING ENGLISH

No.	Title	Age
	SPELLING	
21	HANGMAN III	C
22	HANGMAN IV	CD
17	HANGMAN V	DE
18	HANGMAN VI	DE
19	CORRECT SPELLING I	DE
20	CORRECT SPELLING II	DE
	READING SKILLS	
8	ALPHABET KNOW-HOW	BC
9	EXPLORERS I	DE
10	EXPLORERS II	DE
11	EXPLORERS III	DE
12	EXPLORERS IV	DE
13	EXPLORERS V	DE
14	EXPLORERS VI	DE
15	GEOGRAPHY	DE
	GRAMMAR & VOCABULARY	
16	WORD POWER - NOUNS	C
41	* WORD POWER-ADJECTIVES	C
42	* WORD POWER-VERBS	C
43	* WORD POWER-ADVERBS	C
44	* SENTENCE BUILDING	C
45	* JOINING SENTENCES	C

LEARNING MATHS

No.	Title	Age
39	SHAPES	A
40	COUNTING	A
46	* SPATIAL RELATIONS	A
47	* TALLY AND TOTAL	A
48	* TAKING AWAY	B
49	* EARLY ADDITION	B
50	* CORNER STORE	B
25	DIVISION I	C
26	DIVISION II	C
27	SET THEORY	C
28	ALGEBRAIC RELATIONS	C
29	FRACTIONS I	C
30	FRACTIONS II	C
31	DECIMAL FRACTIONS	C
32	PLACE VALUE	C
33	MULTIPLICATION I	C
34	MULTIPLICATION II	C
35	ADD/SUBTRACT I	C
36	PROBLEM SOLVING I	C
37	PROBLEM SOLVING II	C
38	SKILL TESTER	C
51	* ADD/SUBTRACT II	C
23	GRAPHS I	D
24	GRAPHS II	DE
52	* PROBABILITY	DE
53	* INTRODUCTION TO AREA	D
54	* CIRCLES	DE
55	* GRIDS GALORE	DE
56	* MONEY, MONEY, MONEY	DE
57	* SET THEORY REVISITED	DE
58	* ELEMENTARY STATISTICS	DE

LEARNING SCIENCE

No.	Title	Age
1	BALLOON GAME	DEF
2	WATER CYCLE GAME	DEF
59	* CIRCULATION	DEF
60	* GROWING GREEN	DEF
61	* EVOLUTION	DEF
64	* FOOD FOR LIFE	DEF
	GEOGRAPHY	
3	AUSTRALIA	DE
65	* U.S.A.	DE
66	* UNITED KINGDOM	DE
67	* CANADA	DE
68	* NEW ZEALAND	DE
69	* SOUTH AFRICA	DE
70	* SOUTH AMERICA	DE
	PHYSICS	
71	* ELECTRICAL ENERGY	DE
72	* HEAT ENERGY	DE
73	* MECHANICAL ENERGY	DE
74	* SOUND ENERGY	DE

LEARNING TO LEARN

No.	Title	Age
77	* MOVING PICTURES	A
4	MEMORY TRAINER	BCD
5	DICTIONARY USE	BC
6	PHONE BOOK SKILLS	B
7	MAP READING I	CD
78	* NORTH, SOUTH, EAST, WEST	CD
79	* USING THE LIBRARY	C
80	* HOMEWORK MACHINE	C
81	* DAYS, MONTHS, YEARS	BC
82	* EXTENDED MEMORY TRAINER	CDEF
	LEARNING HISTORY	
62	* EXPLORATION	DEF
63	* OVERLANDERS	DEF

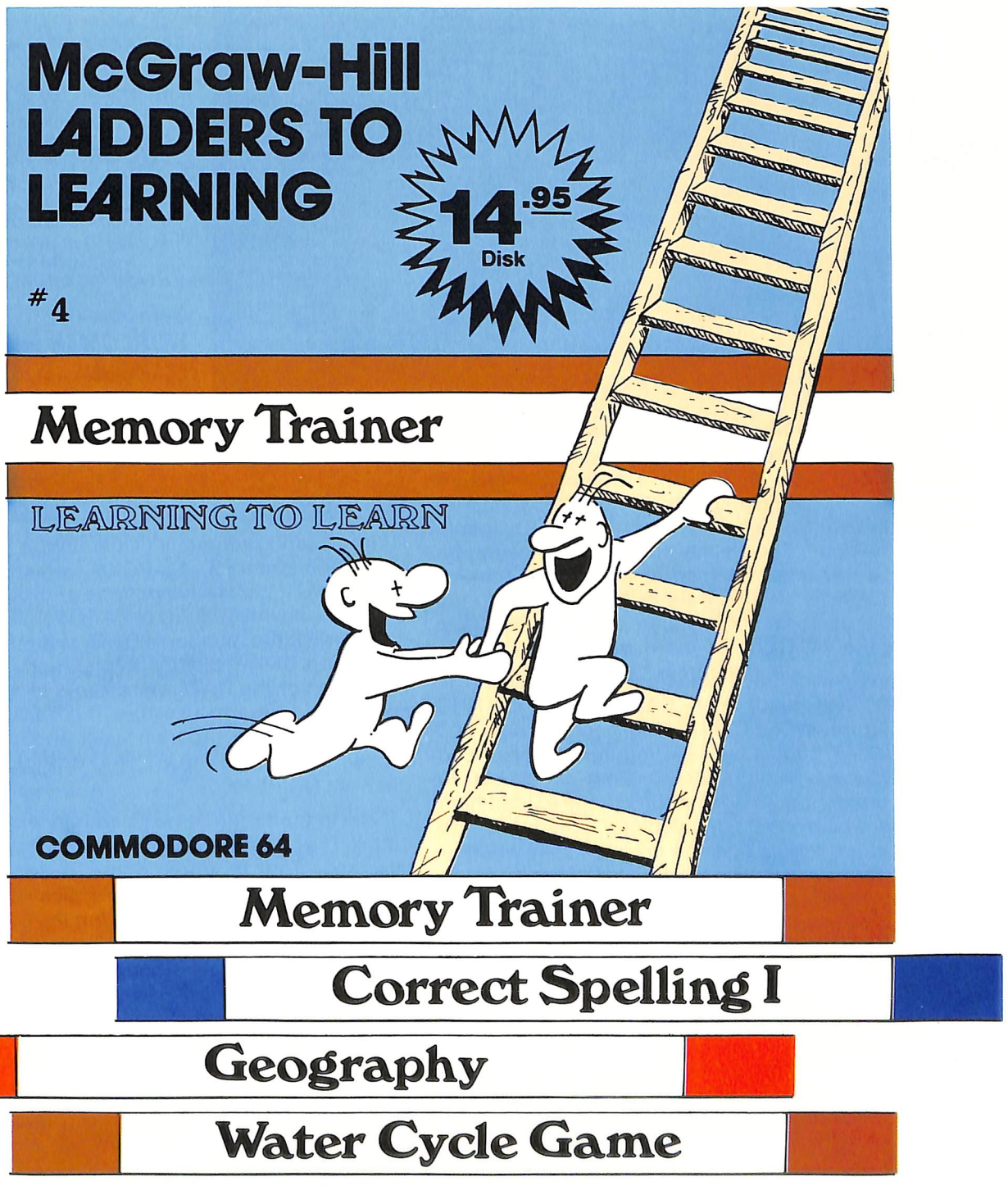
KEY TO AGE RANGE

A 3-6
B 6-8
C 8-10
D 10-13
E 13-15
F 15 plus

McGraw-Hill Australia releases

"Ladders to Learning"

Balloon Game
Water Cycle Game
Geography Tutor
Memory Trainer
Dictionary Use
Phone Book Skills
Map Reading I
Alphabet Know-How
Explorers I
Explorers II
Explorers III
Explorers IV
Explorers V
Explorers VI
Geography
Word Power
Hangman V
Hangman VI
Correct Spelling I
Correct Spelling II
Hangman III
Hangman IV
Graphs I
Graphs II
Division I
Division II
Set Theory
Algebraic Relations
Fractions I
Fractions II
Decimal Fractions
Place Value
Multiplication I
Multiplication II
Add/Subtract I
Problem Solving I
Problem Solving II
Skill Tester
Shapes
Counting



Educational software for the young

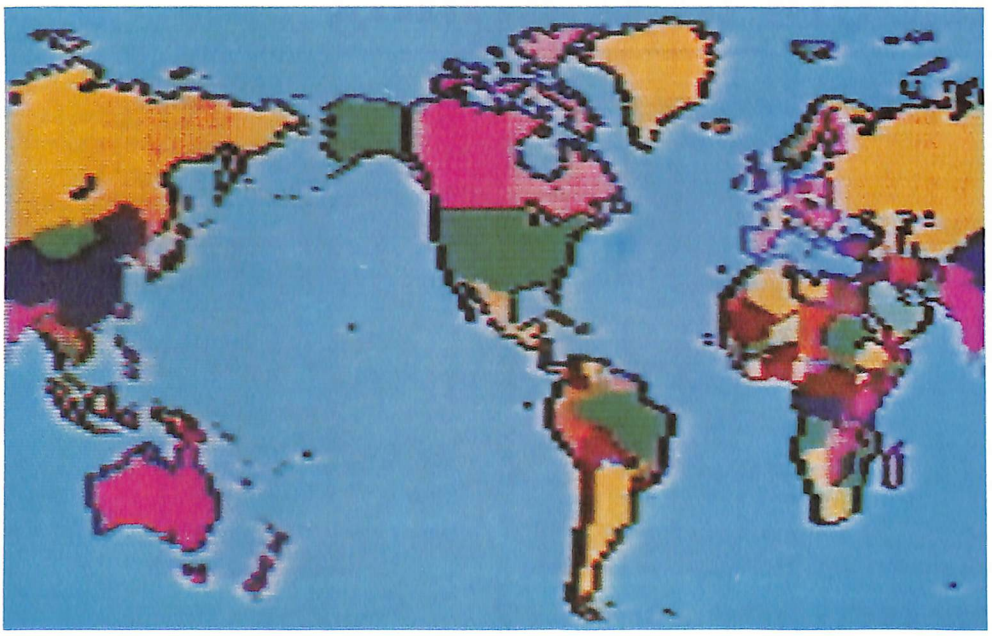
40 titles for ages 3 to 13 years

Cassette $11.95

Disk $14.95

A Display Program & Graphics Generator

by Harold T Salive
– Kiwisoft Programs Ltd



WORLDMAP generated by MAPGEN

This article includes a full detailed multicolour world map for display on any C-64 along with a multicolour picture display program. The world map is built-in to a program with detailed checks to help you get it correct (you have a double check – refer 'helpout'). The display program can not only be used for the world map, but can also be used for any PAINTPIC or CADPIC picture. As a bonus, the world map picture can be used with the same software which is available from the VIC CENTRE in Brisbane.

Two programs are included at the end of this article. The first, DISPLAY, will load in a CADPIC or PAINTPIC multicolour picture, WORLDMAP, from tape or disk and display it. DISPLAY begins by READing in the high speed picture load subprograms and POKEing them out to memory. The program then does a SYS to the loaded high speed routine which clears multicolour memory to the background colour. After a title, the program asks whether you are using tape or disk. The WORLDMAP picture file is then opened on logical channel 1 and checked to make sure it is a legitimate picture file. The background colour is loaded in and set and the multicolour screen turned on so you can watch WORLDMAP being loaded. The program then does a SYS call to the high speed load code which proceeds to load the picture. When the high speed loader completes the load, the main program then sits there displaying the picture for 10 seconds waiting for you to hit the "–" key to change the border colour or to hit "Q" to quit. You rerun the program by typing RUN.

MODIFYING

DISPLAY can easily be modified to display other pictures or extended to provide a background for a game or lesson. To modify DISPLAY to show other pictures, change the picture name in ID$ in program line 7. To extend the program, you should add a line "3 POKE 52,90:POKE 56,90:CLR" to move the top of BASIC memory below the multicolour screen and possibly Sprite memory; then add in your own extensions.

MAPGEN

The second program included in the listings is a picture generator program, MAPGEN, which will generate a WORLDMAP picture file on tape or disk for you to use with DISPLAY or with CADPIC or PAINTPIC. The program mostly contains a large number of DATA statements which contain the WORLDMAP picture information. The program first checks all of the DATA statements to make sure they are correct and reports all errors. If the DATA statements are correct, then the program asks about tape or disk and proceeds to create the WORLDMAP picture file for you to use with DISPLAY.

Type in the program very carefully exactly as it is shown below. Then run the program to see if you have made any mistakes. The program prints a "#" for every DATA statement line of 12 numbers plus checksum which is correct. Errors are reported giving the DATA statement line number which is wrong. Correct any errors and save the corrected version. When all DATA statements are correct including a check at the end of the 12 column totals for the DATA statements, then the program will proceed to save the picture file. The program prints "%" characters on the screen as each DATA statement line is saved into the picture file.

As a final check of the generated WORLDMAP, run DISPLAY to see the picture. You should see all of the continents with all major countries showing in separate colours.

DISPLAY PROGRAM

```
1 REM MULTICOLOR PAINTPIC PICTURE DISPLAY
  PROGRAM'BOIL
2 REM SUPPLIED BY KIWISOFT PROGRAMS LTD'BEDJ
4 BK$=CHR$(144):BL$=CHR$(31):CS$=CHR$(19)+
  CHR$(147):DN$=CHR$(17)'KMNQ
```

```
5 JT=37376:BO=53280: FOR I=JT TO 37565: READ X: POKE I,X:
  Y=Y+X: NEXT 'KKMR
6 IF Y<>33014 THEN PRINT "BAD DATA STATEMENT":
  STOP 'GHAO
7 POKE BO+1,5:ID$="WORLDMAP":BC=2:DP=10: REM DISPLAY
  FOR 10 SEC WITH RED BORD'GUAX
8 SYS 37532: REM CLEAR GRAPHIC SCREEN TO BG'CDMO
10 PRINT CS$DN$DN$DN$DN$BL$ TAB(12);"DISPLAY
  PICTURES" 'CWAH
12 PRINT "[SPACE6]"DN$DN$"** PAINTED WITH"BK$
  "PAINTPIC"BL$" **"DN$'BPGK
15 PRINT " " TAB(13)"SPECIAL OFFER"DN$'CGLI
20 PRINT " " TAB(11)BK$"COMMODORE MAGAZINE"
  'CGKF
25 PRINT " " TAB(7)"VOL 5 NO 1 - $35 P&P INCD" 'CCMK
30 PRINT " " TAB(15)DN$"KIM BOOKS" 'CGOE
37 PRINT " " TAB(3)"82 ALEXANDER ST. CROWS NEST.
  2065" 'CCKQ
50 FOR I=1 TO 5000: NEXT 'EHJE
60 GOSUB 1000: GOSUB 9100: PRINT CS$: RUN: REM NEED
  FULL RESTART SINCE CM NOW BAD'FSQQ
1000 GOSUB 2000: OPEN 1,DEV,SA,ID$: GET #1,A$:
  IF A$<>"P"THEN PRINT "NOT PICTURE": END 'JCIH
1010 GOSUB 9000: POKE BO,BC AND 15
1020 GET #1,A$:UB=ASC (A$+ CHR$(0)): POKE BO+1,UB:
  SYS JT: CLOSE 1:U=FRE (0)
1030 FOR I=0 TO DP: FOR J=0 TO 500: GOSUB 1060: NEXT J:
  NEXT I: RETURN
1060 GET A$: IF A$="Q" GOTO 1070: REM QUIT
1065 IF A$="-" GOTO 9500: REM CHANGE BORDER
1067 RETURN
1070 GOSUB 9100: PRINT CS$: END 'DJHD
2000 CLOSE 1: PRINT DN$DN$"ENTER T FOR TAPE OR
  D FOR DISK": INPUT "[SPACE2](T/D)";A$'DMGH
2010 A$=LEFT$(A$,1): IF A$="T" THEN DEV=1:SA=0:
  POKE 37529,96: RETURN : REM STOP ST CHK'KOGL
2020 IF A$<>"D" GOTO 2000'EGCY
2030 DEV=8:SA=2: POKE 37529,208: RETURN :
  REM SET ST CHK'FDWH
9000 POKE 53272,120: POKE 53265, PEEK (53265) OR 32:
  REM TURN ON GRAPHICS SCREEN'FVVP
9010 POKE 53270, PEEK (53270) OR 16'DPNG
9020 POKE 56578, PEEK (56578) OR 3: POKE 56576,
  ( PEEK (56576) AND 252) OR 2'HJXO
9030 RETURN 'BAQE
9100 POKE 53272,21: POKE 53265, PEEK (53265) AND 223:
  REM TURN ON TEXT SCREEN'FRKP
9110 POKE 53270, PEEK (53270) AND 239'DQLI
9120 POKE 56578, PEEK (56578) OR 3: POKE 56576,
  ( PEEK (56576) AND 252) OR 3'HJYP
9130 POKE BO,8: POKE BO+1,5: RETURN 'ELQJ
9500 POKE BO,( PEEK (BO)+1) AND 255: RETURN :
  REM CYCLE BORDER'GBUQ
9900 DATA 162,1,32,198,255,160,0,132,253,169,216,133,254,169,219,32,83,146
  'BODW
9905 DATA 165,252,201,219,144,245,169,231,197,251,176,239,132,253,169,92,
  133,254'BUFE
9910 DATA 169,95,32,83,146,165,252,201,95,144,245,169,231,197,251,176,239,
  132'BRVY
9915 DATA 253,169,96,133,254,169,127,32,83,146,165,252,201,127,144,245,
  169,63'BRQE
9920 DATA 197,251,176,239,72,72,104,104,76,204,255,141,193,146,32,207,255,
  141'BRYA
9925 DATA 190,146,32,207,255,141,191,146,32,207,255,141,192,146,160,0,24,
  173'BQGF
9930 DATA 191,146,101,253,133,251,173,192,146,101,254,133,252,173,190,
  146,145,253'BVAC
9935 DATA 230,253,208,9,230,254,173,193,146,197,254,144,195,165,254,197,
  252,208'BTRG
9940 DATA 232,165,253,197,251,208,226,165,144,208,179,96,160,0,132,253,
  169,96'BRQC
9945 DATA 133,254,169,192,133,251,169,224,133,252,152,145,253,230,253,
  208,2,230'BTHH
9950 DATA 254,230,251,208,244,230,252,208,240,96'BNPW
```

MAPGEN PROGRAM

```
1 REM PROGRAM TO MAKE WORLDMAP PICTURE IN PAINTPIC
  FORM'BRNM
2 REM SUPPLIED BY KIWISOFT PROGRAMS LTD'BEDJ
10 DIM X(99),VX(11):L=0'CPYB
12 PRINT : PRINT "CHECKING DATA STATEMENTS" 'CBGH
15 I=0'BCRD
20 GOSUB 400: READ X(I): IF X(I)<1000 THEN I=I+1: GOTO 20
  'IXIH
30 IF I<>12 THEN GOSUB 450: GOSUB 500: PRINT I+1;"VALUES
  INSTEAD OF 13": GOTO 15'JRVN
40 FOR I=0 TO 11:X(12)=X(12)-X(I):VX(I)=VX(I)+X(I):
  NEXT 'IKNN
50 IF X(12)<>5000 THEN GOSUB 500:
  PRINT " BAD VALUE ON LINE": GOTO 15'HQCN
60 K=K+1: PRINT "#";: IF K<307 GOTO 15'GMKI
65 IF L GOTO 95'CDFI
68 IF X(0)<>14 THEN PRINT : PRINT "**TOO MANY DATA
  LINES": GOTO 95'HKRV
70 FOR I=0 TO 11: GOSUB 400: READ X(I)'FNQI
80 IF X(I)<>VX(I) THEN K=0: GOSUB 500:
  PRINT " BAD POSITION";I+1;"SOMEWHERE" 'IUFU
90 NEXT : IF K GOTO 100'DFVH
95 PRINT : PRINT "***PLEASE FIX ERRS***":
  STOP 'DCWR
100 PRINT : PRINT "DATA STATEMENTS ARE CORRECT"
  'CBOD
110 PRINT : PRINT "BEGIN STORING WORLDMAP
  PICTURE": PRINT 'DCXG
120 PRINT"ENTER T FOR TAPE OR D FOR DISK STORAGE":
  INPUT "[SPACE2](T/D)";A$'CEWK
130 A$=LEFT$(A$,1): IFA$="T"THENDEV=1:SA=1:B$="":
  GOTO 150'JBGJ
140 DEV=8:SA=2:B$=",S,W": IF A$<>"D" GOTO 120'HRSI
150 OPEN 1,DEV,SA,"WORLDMAP"+B$'CLSG
160 RESTORE : READK: READK:A=2: PRINT#1,"P";
  CHR$(K);: REM EMBER 2 SEMICOLONS'HHON
170 FOR I=1 TO 307'DFJE
175 FOR J=A TO 6'DDBJ
180 D=0: READ C: READ B: IF C=0 THEN D=1'HLDJ
185 PRINT#1, CHR$(B); CHR$(C); CHR$(D);: REM EMBER 3
  SEMICOLONS'FGAT
190 NEXT J: RED K: REM THROW OUT CHECKSUM'DUCL
195 A=1: PRINT "%";: NEXT I'DGRM
200 CLOSE 1'BBIV
205 PRINT : PRINT "WORLDMAP SAVED": END 'DCSH
400 L0=PEEK (63):L1=PEEK (64): RETURN 'FOME
450 IF I=0 AND X(0)=1344 THEN PRINT :
  PRINT "**MISSING DATA LINES": GOTO 95'IOJQ
455 RETURN 'BAQI
500 L=1: PRINT : PRINT "*ERR LINE";L1*256+L0;"-";:
  RETURN 'GPCI
1000 DATA 68,3,92, , , ,2,6,1,2,1,6,5181'BCJX
1010 DATA 10, ,6,11,2,9,18, ,2,6,1,2,5067'BECY
1020 DATA 1,6,3, ,2,11,5, ,6,11,2,9,5056'BDAA
1030 DATA 18, ,4,6,1, ,2,8,2,11,5, ,5057'BCEB
1040 DATA 6,11,2,9,22, ,1,2,2,8,2,11,5076'BFTD
1050 DATA 5, ,6,11,13, ,2,9,4, ,3,9,5062'BCFD
1060 DATA 3,2,12, ,2,9,14, ,2,9,4, ,5057'BCEE
1070 DATA 3,9,1,6,1,5,1, ,1,2,11, ,5040'BCNF
1080 DATA 2,9,15, ,1,9,5, ,2,2,1,4,5050'BCYG
1090 DATA 1,5,2,2,37, ,1,2,1,10,1,2,5064'BEMH
1100 DATA 28, ,2,2,7, ,1,10,2,2,28, ,5082'BDXY
1110 DATA 1,2,1, ,1,7,6, ,1,10,39, ,5068'BCYA
1120 DATA 1,10,248, ,124,203,2,123,10,203,7,171,6102'BQTE
1130 DATA 5,123,15,203,11,123,2,203,7,171,5,123,5991'BRNF
1140 DATA 2,203,1,91,12,203,10,123,1,117,2,197,5962'BQLG
1150 DATA 2,165,5,171,5,123,1,203,2,88,6,123,5894'BOIH
1160 DATA 6,203,10,123,1,117,2,197,2,165,5,171,6002'BQKI
1170 DATA 4,123,1,139,1,203,2,88,1,116,5,123,5806'BOYI
1180 DATA 6,203,10,123,1,117,2,197,2,165,6,171,6003'BQMK
1190 DATA 4,123,1,194,2,88,1,116,5,123,6,203,5866'BOGL
1200 DATA 10,123,1,117,2,197,7,165,2,171,3,203,6001'BQID
1210 DATA 1,210,2,218,1,122,5,123,6,203,1,123,6015'BPTE
1220 DATA 3,117,1,120,6,123,2,203,1,171,6,165,5918'BPPF
1230 DATA 2,171,3,203,1,218,1,122,1,90,1,122,5935'BOMF
1240 DATA 5,123,6,203,1,123,3,117,1,120,6,123,5831'BPDH
1250 DATA 3,203,4,117,2,197,5,203,3,218,2,210,6167'BPSI
1260 DATA 2,123,1,122,1,186,1,202,4,203,3,202,6050'BPRJ
1270 DATA 12,203,4,117,2,197,4,203,1,200,1,120,6064'BQYK
1280 DATA 2,123,1,194,2,219,1,91,2,186,1,202,6024'BOTK
1290 DATA 4,203,2,202,1,138,1,139,2,194,9,203,6098'BPYM
1300 DATA 4,123,6,203,1,88,1,121,1,125,1,200,5874'BOQD
1310 DATA 1,197,1,213,1,219,1,215,2,186,1,202,6239'BPSF
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continued overleaf

Display Program
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1320 DATA 4,203,2,202,1,138,1,133,2,194,12,203,6095
1330 DATA 1,120,1,219,5,203,1,90,1,91,1,125,5858'BNWG
1340 DATA 2,200,2,117,1,216,3,202,6,203,1,123,6076'BPYI
1350 DATA 1,117,2,194,13,203,2,120,2,90,1,91,5836'BOVI
1360 DATA 2,203,1,122,1,114,1,121,1,201,1,123,5891'BPOK
1370 DATA 1,197,1,203,3,202,6,203,5,123,12,203,6159'BQJL
1380 DATA 1,120,1,88,3,91,4,203,1,91,13,203,5819'BNAL
1390 DATA 2,123,3,171,1,162,1,171,10,203,1,200,6048'BQTN
1400 DATA 1,120,1,89,1,88,1,91,3,203,1,199,5798'BMXE
1410 DATA 1,87,1,203,1,91,13,203,5,171,11,203,5990
1420 DATA 1,121,1,118,1,89,4,203,2,199,2,91,5832'BNIG
1430 DATA 1,123,12,203,4,171,3,162,9,203,3,121,6015'BQAI
1440 DATA 4,203,2,199,2,87,13,203,4,171,3,162,6053'BPYJ
1450 DATA 9,203,3,121,6,203,2,87,13,203,3,171,6024'BPLK
1460 DATA 4,162,9,203,3,121,21,203,4,171,3,162,6066'BQML
1470 DATA 9,203,3,121,37,203,3,123,95,203,221, ,6221'BQHM
1480 DATA , , , , , ,1,3,6, ,1,255,5266'BXEJ
1490 DATA 1,247,1,204,1,12,4, ,1,192,1, ,5664'BITM
1500 DATA 1,240,1,92,116, ,1,7,1,29,1,254,5743'BKXF
1510 DATA 1,150,3, ,1,15,1,205,1,117,1,93,5588
1520 DATA 1,85,3, ,1,255,1,87,1,94,1,92,5621'BIQG
1530 DATA 1,127,3, ,1,32,1,224,1,127,1,229,5747'BLUI
1540 DATA 1,85,2, ,1,1,1,255,1,157,1,149,5654'BJDJ
1550 DATA 2,85,1, ,1,15,1,249,5,85,2, ,5446'BGMJ
1560 DATA 1,254,1,86,1,94,2,87,1,85,5, ,5617'BIBK
1570 DATA 1,240,1,48,1,96,15, ,1,1,7, ,5411'BGVL
1580 DATA 1,255,7, ,1,224,14, ,1,126,1,60,5690'BJYM
1590 DATA 4, ,1,102,1,207,1,255,1,96,70, ,5738'BJAO
1600 DATA 1,1,1,3,1,15,4, ,1,29,1,247,5304'BGOF
1610 DATA 1,101,1,112,1,192,1, ,1,112,1,222,5745'BMVH
1620 DATA 1,151,2,85,5, ,1,128,2,192,14, ,5581'BJBI
1630 DATA 1,23,1,31,6, ,2,128,60, ,1,3,5256'BGRI
1640 DATA 2,7,5, ,1,192,1,123,1,207,1,193,5733'BKVK
1650 DATA 1, ,1,56,1,60,1,12,1, ,1,15,5149'BFMK
1660 DATA 1,199,1,195,1,213,1,101,1,54,1,30,5798'BNDM
1670 DATA 1,2,1,27,1,28,1,31,3,85,1,87,5268'BIMM
1680 DATA 1,86,1,252,1,248,1,8,1,195,1,255,6050'BMFO
1690 DATA 1,245,1,30,1,13,1,3,2, ,5,85,5387'BHAO
1700 DATA 1,229,1,57,1,13,24,85,1,192,1,128,5733'BNIH
1710 DATA 1,192,1,96,2,192,1,64,1,192,8, ,5750'BKMI
1720 DATA 2,1,6, ,1,229,1,149,1,231,1,54,5676'BJCJ
1730 DATA 1,28,3, ,1,112,1,224,1,192,1,224,5788'BLVK
1740 DATA 19, ,1,1,4, ,1,3,1,14,1,63,5108'BETJ
1750 DATA 1,252,3, ,1,224,1,160,1,224,1,128,5996'BMVM
1760 DATA 57, ,1,6,1,125,2,85,1,117,2,53,5450'BJAN
1770 DATA 1,21,9,85,1,87,1,95,1,94,4,85,5484'BJGO
1780 DATA 1,128,1,28,1,247,1,87,4,85,1, ,5584'BJQP
1790 DATA 1,112,1,220,1,156,1,93,1,85,1,87,5759'BMIQ
1800 DATA 1,85,1,14,2, ,1,7,1,205,1,121,5439'BITH
1810 DATA 2,85,1,8,2, ,1,240,1,88,1,95,5524'BHNI
1820 DATA 2,85,5, ,1,240,1,88,1,95,6, ,5524'BGPJ
1830 DATA 1,15,1,201,5, ,1,15,1,192,1,224,5657'BKNL
1840 DATA 6, ,1,1,1,7,5, ,1,127,1,234,5384'BFXL
1850 DATA 1,170,6, ,1,252,1,171,6, ,1,3,5612'BHQM
1860 DATA 1,206,1,31,2,53,1,55,1,62,1,15,5429'BKQO
1870 DATA 1,245,1,85,1,255,1,83,1,254,1,195,6123'BNFP
1880 DATA 2,240,1,96,1,127,1, ,1,7,1,205,5682'BJBP
1890 DATA 1,229,1,55,1,16,1,24,1,9,1, ,5339'BHDQ
1900 DATA 1,255,1,92,1,117,1,244,1,209,1,73,5996'BNMJ
1910 DATA 1,206,1,200,1,2,1,203,1,187,1,151,5955'BNJK
1920 DATA 1,53,1,13,1,7,3, ,1,192,1,48,5321'BHTK
1930 DATA 1,248,2,92,1,6,3,2,1,3,2,1,5362'BGWL
1940 DATA 1, ,4,85,1,149,2,213,10,85,5,87,5642'BKMN
1950 DATA 1,84,1,124,2,128,27, ,1,1,1,3,5373'BIWN
1960 DATA 1,13,5, ,1,252,1,87,1,85,6, ,5452'BGGO
1970 DATA 1,192,1,112,1,1,1,3,1,7,1,6,5327'BHNP
1980 DATA 1,3,2, ,1,7,1,16,1,48,1,32,5113'BFMQ
1990 DATA 1,96,1,224,1,248,1,31,1,253,1, ,5858'BKDS
2000 DATA 1,60,1,39,1,103,1,71,1,103,1,167,5549'BMSB
2010 DATA 1,247,1,48,1,240,1,176,2,220,1,28,5966'BNGC
2020 DATA 1,220,1,212,48, ,64,85,1,121,7,85,5845'BMJD
2030 DATA 1,112,1,92,2,86,1,123,1,108,1,199,5727'BNFE
2040 DATA 1,192,1,14,1,10,1,7,1,15,1,139,5383'BKOF
2050 DATA 1,138,1,143,1,3,9,170,1,169,6,170,5812'BNEG
2060 DATA 1,185,7,181,9,85,1,87,6,85,1,255,5903'BMKH
2070 DATA 1,93,6,85,1,240,1,92,1,87,2,85,5694'BKBI
2080 DATA 2,87,1,92,1,241,1,208,1,240,1,96,5971'BMJJ
2090 DATA 1,195,1,240,1,176,1,224,1,214,1,86,6141'BOTK
2100 DATA 1,215,1,151,1,149,1,215,1,55,1,15,5806'BNRC
2110 DATA 2, ,1,192,1,128,1,224,3, ,1,213,5766'BJXC
2120 DATA 3,149,1,213,3,117,1,85,1,87,1,94,5755'BMSE
2130 DATA 1,120,1,96,1,64,1,192,1,128,1,224,5830'BNUF
2140 DATA 2, ,1,1,1,3,1,2,5, ,1,60,5077'BCPE
2150 DATA 1,84,1,92,1,56,16, ,1,3,1,14,5270'BHAG
2160 DATA 1,30,2,58,2,218,1,235,1,107,1,181,5837'BNAI
2170 DATA 3,229,1,233,1,249,2,57,1,92,1,86,5955'BMWJ
2180 DATA 1,227,1,254,1,93,1,125,1,121,1,85,5911'BNUK
2190 DATA 1,253,2,245,13,85,1,87,1,94,1,93,5876'BMBL
2200 DATA 5,85,8,84,48, ,45,85,1,87,1,92,5541'BJMD
2210 DATA 1,88,4,85,1,91,1,255,2, ,1,85,5614'BIUD
2220 DATA 1,117,1,253,1,157,2,55,1,39,1,103,5731'BNUF
2230 DATA 1,85,1,87,1,92,1,248,1,128,3, ,5648'BJSG
2240 DATA 1,64,1,192,6, ,1,6,2,14,2,7,5296'BGJG
2250 DATA 3, ,4,170,1,171,1,236,1,44,1,112,5744'BLOI
2260 DATA 3,170,1,255,1,193,3, ,4,181,1,237,6049'BMDJ
2270 DATA 1,125,1,27,1,15,24,85,1,112,1,96,5489'BMIK
2280 DATA 1,64,3,96,1,112,1,92,1,3,2,6,5382'BIGK
2290 DATA 2,2,1,3,1,1,1,3,1,179,1,236,5431'BHOL
2300 DATA 1,120,1,91,1,94,1,93,2,85,3, ,5492'BIKD
2310 DATA 2,128,1,192,2,112,1,37,1,57,1,15,5549'BMCF
2320 DATA 1,2,4, ,1,128,26, ,1,8,2,40,5213'BFOF
2330 DATA 1,8,1,40,2,13,3,53,1,63,1,3,5189'BHAG
2340 DATA 1,15,1,107,2,172,1,176,1,180,1,176,5833'BOYI
2350 DATA 2,192,1,249,2,233,1,253,1,229,1,85,6249'BOHK
2360 DATA 2,213,32,85,8,84,48, ,17,85,3,86,5663'BLJK
2370 DATA 1,94,1,125,1,121,17,85,1,112,2,96,5656'BNHL
2380 DATA 1,120,4,92,6, ,2,128,1,207,1,140,5702'BLLM
2390 DATA 1,156,1,176,1,240,1,96,2,192,2, ,5868'BLMN
2400 DATA 1,192,2, ,1,4,8, ,1,204,1, ,5414'BETD
2410 DATA 1,1,1,3,2, ,1,48,3, ,1,192,5253'BEVE
2420 DATA 15, ,2,6,1,3,1,1,4, ,5,213,5251'BERF
2430 DATA 1,101,2,53,16,85,1,86,1,87,5,85,5523'BLPI
2440 DATA 1,95,1,14,1,237,1,117,1,85,1,93,5647'BLLJ
2450 DATA 1,89,9,85,1,87,1,112,1,88,1,92,5567'BKIK
2460 DATA 1,84,2,86,1,94,1,255,26, ,3,3,5556'BIVK
2470 DATA 3, ,1,42,2,202,1,203,1,10,1,40,5506'BJXL
2480 DATA 1, ,1,3,1,15,1,12,1,15,2,142,5194'BHIM
2490 DATA 1,46,1,186,1,218,1,3,1,127,1,233,5819'BMCO
2500 DATA 3,250,1,87,1,181,2,85,6,213,32,85,5946'BNUG
2510 DATA 8,84,48, ,13,85,1,86,1,106,1,170,5603'BLNH
2520 DATA 4,85,1,150,1,154,2,170,2,87,1,95,5752'BMMI
2530 DATA 1,127,4,255,1,213,3,245,4,253,1,92,6199'BOGK
2540 DATA 1,88,2,92,1,112,2,115,1,195,2,128,5739'BNLK
2550 DATA 2, ,1,2,1,8,1,208,2,128,55, ,5408'BGYK
2560 DATA 1,53,1,63,6,58,1,85,1,255,6,170,5700'BLJM
2570 DATA 1,85,1,255,6,170,1,95,1,250,1,170,6036'BNCN
2580 DATA 3,171,2,170,1,85,1,213,1,245,1,61,5954'BNAO
2590 DATA 1,51,1,174,2,170,1,87,1,85,1,125,5699'BMOP
2600 DATA 1,235,1,170,1,171,1,173,1,184,1,137,6076'BPQI
2610 DATA 1,136,1,143,1,96,1,240,1,224,1,128,5973'BOAI
2620 DATA 1, ,1,128,2,192,29, ,1,13,1,14,5382'BIWI
2630 DATA 2,2,1,3,1,7,1,254,1,234,1,86,5593'BIFJ
2640 DATA 2,95,1,87,2,93,1,95,1,191,1,188,5757'BLIL
2650 DATA 1,190,2,234,2,122,1,77,1,103,2,213,5948'BOUM
2660 DATA 1,181,1,183,1,180,1,212,1,220,1,92,6074'BOLN
2670 DATA 2,85,1,121,1,217,1,53,1,57,1,14,5554'BLVO
2680 DATA 1,3,2,85,1,95,1,81,1,83,1,86,5440'BIOO
2690 DATA 1,94,1,91,2,85,1,93,1,157,1,149,5676'BLYQ
2700 DATA 1,93,10,85,6,84,1,92,1,124,48, ,5545'BKQI
2710 DATA 1,85,1,95,1,127,5,255,3,170,2,234,5979'BNXJ
2720 DATA 1,250,2,255,2,170,1,171,2,175,1,191,6221'BPJL
2730 DATA 2,255,1,191,5,255,1,252,1,255,2,254,6474'BPEM
2740 DATA 1,252,2,248,1,56,1,24,1,216,1,4,5807'BLXM
2750 DATA 3,6,1,15,1,63,1,59,1,108,1,128,5387'BKGN
2760 DATA 63, ,2,58,1,10,5,14,32,170,1,240,5596'BLYO
2770 DATA 1,176,6,192,40, ,4,218,1,235,1,60,5934'BMHP
2780 DATA 1,31,1,30,1,176,3,192,1, ,1,252,5689'BKXQ
2790 DATA 2,90,1,211,1,63,1,29,1,15,1,113,5528'BLOR
2800 DATA 1,48,2, ,1,71,1,218,1,250,1,62,5656'BJDI
2810 DATA 1,58,1,15,1,1,1, ,1,227,2,174,5482'BIYJ
2820 DATA 1,169,2,165,1,237,1,46,3,89,1,216,5931'BNRL
2830 DATA 1,200,1,253,2,191,2,85,3,149,1,128,6016'BOVM
2840 DATA 2,234,1,85,2,84,2,79,1,63,1,127,5681'BLQN
2850 DATA 1,107,1,124,7,252,48, ,32,255,1,1,5829'BMEO
2860 DATA 3,3,4, ,1,56,2,192,69, ,1,14,5345'BGIO
2870 DATA 4,3,3, ,2,170,1,106,1,89,1,117,5497'BJEQ
2880 DATA 1,221,1,206,1,62,4,170,2,106,2,85,5861'BNTR
2890 DATA 4,170,1,171,1,190,1,192,1,128,1,171,6031'BPHT
2900 DATA 1,175,1,171,1,172,1,236,1,108,1,56,5924'BOBK
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2910 DATA 1,28,40, ,2,48,1, ,2,3,1,13,5139'BFTK
2920 DATA 1,30,1,61,1,57,1,233,1,229,2,133,5750'BMPM
2930 DATA 3,149,3,90,5,86,1, ,1,227,1,115,5681'BKJN
2940 DATA 2,93,2,85,1,149,2, ,1,248,1,107,5691'BKLO
2950 DATA 2,105,2,106,1,46,1,110,1,254,1,186,5815'BOPP
2960 DATA 1,57,2,229,1,245,3,191,1,187,1,106,6024'BODQ
2970 DATA 1,122,1,88,1,94,1,234,2,233,1,229,6007'BNXR
2980 DATA 1,197,1,149,1,225,1,32,1,234,3,106,5951'BOBS
2990 DATA 4,170,1,252,2,188,1,252,1,188,1,172,6232'BPWU
3000 DATA 2,168,48, ,1,175,1,171,4,170,1,171,5912'BNGC
3010 DATA 1,168,1,251,2,171,1,191,2,215,1,86,6090'BOAD
3020 DATA 1,230,7,255,1,92,1,255,1,252,1,253,6349'BOAF
3030 DATA 1,251,1,243,1,128,1, ,1,129,1, ,5757'BJXE
3040 DATA 4,128,57, ,2,8,24, ,1,55,1,52,5332'BHHF
3050 DATA 1,60,3,12,2, ,1,85,2,149,1,213,5529'BJBG
3060 DATA 1,69,1,101,1,53,1,29,5,128,1,199,5589'BMTI
3070 DATA 1,77,1,101,1,28,1,8,1, ,1,60,5280'BHSI
3080 DATA 1,127,1,15,1,195,1,192,5, ,1,128,5667'BLGK
3090 DATA 1,136,1,45,32, ,3,58,5,63,1,149,5494'BKNL
3100 DATA 1,245,1,253,5,255,1,86,2,85,1,87,6022'BMMD
3110 DATA 1,222,1,250,1,234,1,169,1,213,1,191,6285'BPLF
3120 DATA 1,171,3,170,2,171,2,127,1,255,1,191,6095'BPSG
3130 DATA 2,234,2,170,2,245,2,249,1,205,2,179,6293'BPCH
3140 DATA 1,185,1,92,1,87,5,85,1,213,1,143,5815'BMMH
3150 DATA 1,176,4,108,1,188,1,176,1,170,1,234,6061'BPWJ
3160 DATA 1,58,1,42,1,58,1,6,2,2,8,168,5348'BITI
3170 DATA 48, ,1,168,1,160,1,176,4,128,1,64,5752'BMMK
3180 DATA 2,54,1,30,1,13,1,14,3,3,2,159,5283'BJUK
3190 DATA 2,167,1,171,1,175,1,238,1,44,1,,5802'BLWM
3200 DATA 3,3,8,,1,128,2,160,1,48,88,,5442'BHLD
3210 DATA 1,4,1,7,6,,1,85,1,215,1,101,5423'BHQE
3220 DATA 1,54,1,15,1,1,2,,1,192,1,,5269'BFSF
3230 DATA 1,224,4,160,1,225,1,57,5,,1,248,5927'BLEH
3240 DATA 1,191,7,,1,224,17,,1,7,1,1,5451'BGUH
3250 DATA 1,3,4,,2,55,1,51,1,49,1,57,5225'BGCI
3260 DATA 1,9,1,14,1,6,2,255,1,253,2,213,5758'BKBK
3270 DATA 1,71,1,188,1,151,1,166,1,153,1,42,5777'BNGL
3280 DATA 1,47,4,255,4,171,2,170,1,42,1,111,5809'BNXM
3290 DATA 6,255,2,190,1,173,1,168,1,188,1,215,6201'BPXO
3300 DATA 1,213,2,21,1,85,2,214,1,223,1,188,5952'BNVF
3310 DATA 1,240,1,191,2,123,1,240,1,128,6,,5934'BMOG
3320 DATA 4,2,4,,5,168,3,160,56,,2,3,5407'BGG
3430 DATA 1,126,2,106,3,170,1,255,1,175,1,171,6012'BPFK
3440 DATA 5,170,1,85,1,149,1,239,1,79,1,95,5827'BMCK
3450 DATA 1,63,1,255,1,222,1,107,1,106,2,172,5932'BOPL
3460 DATA 3,176,1,192,16, ,1,64,3,8,60, ,5524'BILL
3470 DATA 3,3,5, ,1,67,2,115,1,243,1,221,5662'BJWM
3480 DATA 1,220,1,60,1,31,3,92,1,88,1,235,5734'BLVO
3490 DATA 1,59,1,3,1,64,1, ,1,1,1,33,5166'BFTO
3500 DATA 1,129,1,161,1,97,1,160,1,240,1, ,5793'BLWH
3510 DATA 1,128,1,16,1,242,1,223,1,213,1,121,5949'BONI
3520 DATA 1,25,5, ,1,192,2,160,7, ,1,128,5522'BIXI
3530 DATA 74, ,1,12,1,8,4, ,1,14,1,53,5169'BFAJ
3540 DATA 2,54,4,58,1,165,4,149,1,165,1,166,5770'BNTL
3550 DATA 1,170,8,85,1,88,1,94,1,91,5,85,5630'BKYM
3560 DATA 3, ,1,224,1,112,3,92,24, ,3,2,5465'BHTM
3570 DATA 1,3,1,1,3, ,6,170,1,214,1,213,5614'BIJN
3580 DATA 5,171,1,166,1,167,1,101,4,254,2,248,6121'BPQQ
3590 DATA 1,184,1,232,1,128,95, ,1,7,1,1,5652'BJEP
3600 DATA 6, ,1,80,1,254,6, ,1,48,3, ,5400'BECG
3610 DATA 1,7,1,29,1,125,1,150,1,13,1,15,5345'BKKJ
3620 DATA 1,3,1, ,1,1,1,131,2,130,1,160,5432'BIVJ
3630 DATA 2,168,1,156,1,128,3,96,1, ,1,32,5589'BKOL
3640 DATA 1,40,1,8,26, ,1,128,1,192,56, ,5454'BIGL
3650 DATA 1,54,3,14,2,3,1,1,1, ,3,171,5254'BGNM
3660 DATA 3,175,2,239,1,213,3,181,2,189,1,190,6199'BPMP
3670 DATA 1,186,6,85,2,149,3,92,5,112,27, ,5668'BLBP
3680 DATA 5,3,3,213,3,85,1,106,1,170,1,111,5702'BMJQ
3690 DATA 1,123,1,127,1,255,1,253,1,247,1,255,6266'BPSS
3700 DATA 1,254,1,124,1,220,1,215,1,214,1,246,6279'BPIK
3710 DATA 1,118,2,86,4, ,1,12,1,28,1,52,5306'BIXJ
3720 DATA 1,100,92, ,4,2,1, ,1,2,1,42,5246'BFIK
3730 DATA 1,37,1,165,3,85,1,150,1,149,6,85,5684'BMUM
3740 DATA 1,162,1,106,2,89,4,85,2,96,2,88,5638'BLEN
3750 DATA 4,86,5, ,1,1,2, ,2,64,3, ,5168'BCKM
3760 DATA 1,128,1,192,1,64,1, ,1,32,2,64,5487'BJCP
3770 DATA 76, ,1,107,1,43,1,58,5,26,1,170,5489'BKMQ
3780 DATA 1,154,1,149,1,84,4,85,1,165,2,173,5820'BNLR
3790 DATA 1,245,1,213,1,233,2,234,3,112,1,96,6142'BOMS
3800 DATA 1,224,2,192,25, ,2,3,6, ,1,170,5626'BIYJ
3810 DATA 1,234,1,232,2,234,1,106,2,58,5,250,6126'BOQL
3820 DATA 1,249,2,229,1,92,1,120,3,112,3,96,5909'BNJM
3830 DATA 1,220,6,152,1,216,88, ,5,2,3, ,5694'BIJM
3840 DATA 4,85,4,149,16,85,1,86,7,85,8,128,5658'BMYO
3850 DATA 7, ,1,4,80, ,1,26,6,10,1,26,5162'BFUO
3860 DATA 8,85,1,124,1,112,6,96,40, ,2,58,5533'BKKQ
3870 DATA 6,14,3,42,3,170,2,171,1,224,6,192,5834'BNDR
3880 DATA 1, ,1,112,103, ,1,151,1,158,1,168,5697'BLTS
3890 DATA 1,160,4, ,1,254,1,3,1,1,5, ,5431'BFJS
3900 DATA 1,85,1,89,1,169,1,9,1,57,1,10,5425'BJNL
3910 DATA 2, ,1,87,2,86,1,84,1,92,1,88,5445'BHBL
3920 DATA 1,184,1,224,8, ,1,1,1,2,1,1,5425'BGNM
3930 DATA 2, ,1,1,1,2,1,1,2, ,1,64,5076'BCNM
3940 DATA 2,160,1,144,2,128,72, ,1,26,1,25,5562'BLTP
3950 DATA 1,57,5,41,2,85,1,87,2,86,1,94,5462'BJYQ
3960 DATA 2,88,1,96,1,192,46, ,1,14,1,7,5449'BIXQ
3970 DATA 6, ,1,172,1,248,145, ,1,204,1,168,5947'BLIS
3980 DATA 1,152,1,24,1,40,8, ,1,4,1,9,5242'BGQS
3990 DATA 2,10,1,9,2,40,1,168,2,64,78, ,5377'BIOT
4000 DATA 4,41,4,101,1,112,1,96,1,128,1,192,5682'BNVD
4010 DATA 4,128,216, ,1,168,1,176,1, ,1,32,5728'BKEE
4020 DATA 84, ,1,229,1,165,1,166,1,170,1,234,6053'BNAF
4030 DATA 1,104,1,34,1,58,2,128,3, ,1,28,5361'BJXF
4040 DATA 1, ,1,128,15, ,1,12,73, ,2,24,5257'BGTG
4050 DATA 213, ,1,25,1,2,6, ,1,128,1,160,5538'BITH
4060 DATA 14, ,1,6,247, , , , ,247, ,5515'BBEH
4070 DATA 1344,33915,1537,31416,1612,33550'BHAJ
4080 DATA 1562,32275,1080,34881,1644,32697'BHSK
```

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Reviews

Software and Publications

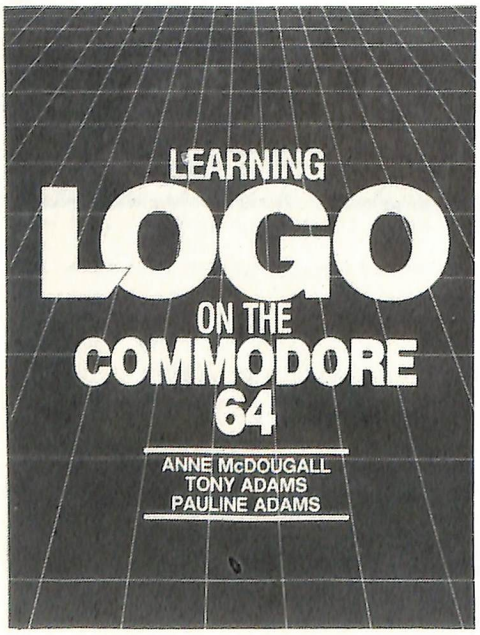
LEARNING LOGO ON THE COMMODORE 64

Comments by Mervyn Beamish

A rather formal looking, medium sized paperback of some 244 pages. Definitely written in the text book mode.The book systematically works its way through the LOGO language and ends in a number of worthwhile and readable appendices. One very nice appendix clearly lays out the procedures used on a chapter to chapter basis.

LEARNING LOGO is well equipped with a good index and sample routines which grow in complexity as the student gets more involved with this exciting language.The book is organized in the following way:

- Chapters 1 and 2 provide the basic tools for using LOGO on the Commodore 64 computer. In these chapters the emphasis is on doing things rather than understanding; complete understanding will come later.
- Chapters 3 and 4 are made up of LOGO projects using the tools introduced in the first two chapters. Some new ideas are introduced, but these chapters mainly develop and consolidate earlier material.
- Chapter 5 is largely about mathematics. Scan this chapter; read it more closely if you are interested in mathematics.
- Chapter 6 is probably the most difficult; it introduces the concepts of text processing in LOGO. Even if you haven't completely understood the material in chapter 6, you will still be able to use the procedures in chapter 7 and 8 to manipulate English language text.



Each chapter is followed by a summary of ideas and LOGO commands introduced in that chapter. At the end of the book, in appendix A, is a complete summary of LOGO commands introduced in the book, for reference.

Appendix G discusses details of how to save procedures on a diskette and use the printer connected to the Commodore 64...."

I have not gone deeply into this book or run any of the listings but it does seem to be a good solid foundation for the learning of LOGO, well set out and illustrated.

Name: *LEARNING LOGO ON THE COMMODORE 64*
Authors: *ANNE McDOUGALL, TONY ADAMS & PAULINE ADAMS*
Publisher: *PITMAN*
Price: *$15.95*
Sample: *PITMAN PUBLISHING PTY LTD (03) 347 3055*

LETS TALK COMMODORE TURTLE

Comments by Mervyn Beamish

A fascinating approach to teaching LOGO to the primary and lower secondary students. I frankly think it could be used with pre-schoolers as well. There are two books:

- Teacher's and Parents' Edition – Obviously set out to explain the process and projects within...
- Student's Edition.

The book is aimed at providing a course for children which:

- Introduces the computer as a aid to learning
- Establishes the child as controller of the computer
- Teaches basic computing skills
- Develops the skills which will be required for programming.

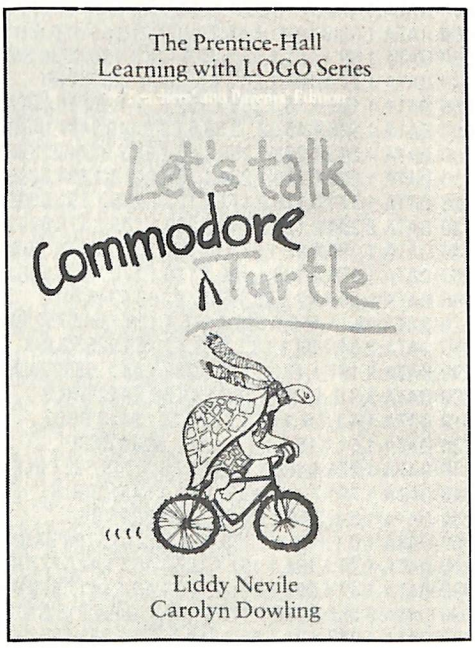
There are both HANDS-ON and HANDS-OFF activities within the book. Who would have thought of having a fancy dress party for your computer or studying the shapes created by a 'Turtle' through folding paper.

The first activity calls on the child to draw a diagram of the computer. "This activity gives them an opportunity to express their initial feelings about the computer."

The HANDS-ON activities are closely tied to the HANDS-OFF activities. The system is so designed that groups do not need vast numbers of computers; the class can be doing different but related things.

The TEACHER'S EDITION takes each activity at a time and explains briefly but clearly what the activity is, why it exists and what the teacher need to do. A very exciting series for the younger children, their parents' and teachers. I would strongly recommend you take a look if you are interested in introducing the computer to children.

Name: *LET'S TALK COMMODORE TURTLE*
Authors: *LIDDY NEVILE, CAROLYN DOWLING*
Publisher: *PRENTICE-HALL*
Price: *Student Edition $5.95*
Parent/Teacher $15.95
Sample: *PRENTICE-HALL OF AUSTRALIA PTY LTD*



PROGRAMMING FOR EDUCATION

Reviewed by Wayne B. Hodges

For those who have a computer - at school, then "Programming for Education" by John Scriven and Patricia Hall is for you. This publication from Sunshine books, written for the Commodore 64, has students clearly in its sights.

The aim of the publication is to lead the reader through a series of BASIC steps, which is highlighted by a series of simple programs, easily explained steps, and logical examples. This one is a fine example for other text-book publications to observe. The text is quite clear and easily understood all the way through.

The first chapter deals with MATHS, and examines variables, strings, input statements, random numbers plus more.

Throughout the books entire length there is a smattering of programs which highlights the chapter's aim. Each chapter contains a series of longer programs and in the chapter about maths there is a BINGO program.

In chapters two and three the authors delve into more short programs, using numbers in a series of short demonstrations; a few scattered programs to fill in missing numbers, sequences, and a program that will cause FIREWORKS. Another program also indicates the careful work that has gone

continued next page

behing the patient planning of this book, to, show an example of a graphics display.

The next chapter investigates and demonstrates clearly with words, on fact..."words, words, words..." Probably you may have seen quite a few of the published programs somewhere (deja vu you may say), but, alas, they are all together like one big happy family now! Throughout this publication there is 'HANGMAN' (yes, here it is!) Spelling and anagrams are also covered.

A close examination of the keyboard is covered in chapter four, and telling stories in chapter five (no scary tales here). Problem solving, pirates gold, submarines are all covered in depth.

Next is the role of the computer in simulations, graphics. Other areas are demonstrated with well designed programs, such as Electricity, locks, and statistics.

CONCLUSIONS: The authors say, "Parents and teachers will find it provides a source of programs in a variety of subjects. Aimed primarily at younger children, these programs show how the Commodore 64 can be used as a learning machine as well as teaching different programming skills."

This book as a novel approaches the task in a most interesting way. It is a fine publication, bewcause it produces the goods. However the programs in no way reflect any super graphics, the book is textbook style, and can be a little labourious in spots. As a learning tool, this book is for you. If you are looking for a book full of high tech programs, this is not for you.

Name: *PROGRAMMING FOR EDUCATION*
Authors: *John Scriven and Patricia Hall*
Publishers: *SUNSHINE BOOKS*
Sample: *PITMAN PUBLISHING PTY LTD*
Price: *$19.95*

A PET IN THE CLASSROOM

Although the Enterprise's dilithium crystals always seemed to breakdown just when they were needed most, both these books (Student's Workbook and Teacher's Guide), from Dilithium Press, are excellent workbooks for introducing computing to the younger grades. Together with "A PET for KIDS", these books form a three volume set designed to provide a self-paced approach for learning/teaching the elements of BASIC programming on Commodore microcomputers. Designed primarily for the 4000 series PETs, these large format books will be equally suitable for teaching the general principles of computing on the C+4, C64, C16 and VIC computers with only minimal changes being required.

Written for "approximately 4th grade reading level", the Student Workbook provides 185 pages of closely set out worksheets beginning with simple keyboard excercises to teach the use of cursor and editing controls and progressing through the BASIC language at an easy pace. The materials are designed to encourage the student to explore and be creative with the computer, to develop flowcharts for program design, to experiment with keyboard graphics, and provide several "fun pages" which include a quiz, crossword puzzle or the like.

The Teachers' Guide provides answers to the student activity worksheets from both of the other books as well as general background material including an overview and objectives of each activity session. The Guide is designed to assist the teacher new to computing by providing complete lesson plans.

Both books suggest several activities which do not require the direct use of the computer by the individual student.

Overall, the three books would provide valuable classroom and general source material for anyone teaching computing.

Maybe computer teaching is really the final frontier?

Name: *A PET IN THE CLASSROOM*
– Student Workbook
A PET IN THE CLASSROOM
– Teachers Guide
Author: *Sharon Boren*
Publisher: *Dilithium Press*
Price: *???????*
Sample: *Holt-Saunders Publishing Pty Ltd*

programs

MAPS AND MAPPING PT.3

Mervyn Beamish

ELEMENTARY GRAPHICS
Refer listing M 1.3

To look at this method of mapping I will split the subject into four sections. This is a basic concept for you to build onto and adjust to your own use.

The sections are.

1. How to draw the map.
2. Display the map within you program.
3. Asking the questions.
4. Moving the map cursor.

DRAWING THE MAP.

There are a number of BASIC rountines available for both VIC-20 and C64 that enables your screen to be used as a sketch pad. The program you are looking for, is one that uses capital and Commodore graphic characters (not HiRes). One of the best I've seen for the C64 is 'ARTIST' from 'The Working Commodore 64' by David Lawrence – a Sunshine book available through KIM BOOKS or most Commodore Dealers.

Below is a simple routine for those who can't wait for the book – VIC people should be able to modify it without too much trouble. On RUNning the program it will STOP at line 1 GOTO 3 to draw your map or GOTO 100 to display it and continue. The use of the program is self explanatory. The green star is your cursor. Most capital or graphic characters can be used in your design – cursor keys control the positioning of these characters. You can delete characters but it would be better to overtype with a new character or space. Restrict your graphics to the screen area above the line. The grid will be reproduced unless typed out.

RETURN will save your map on tape.

Lines 1-40

Line 1. Is the DIMA$ statement.

Line 4-5. Puts in the screen grid and positions the cursor in top LH corner. (One space in.)

Line 6. P= cursor position. C= Character at cursor position.

Line 7. Flashes the cursor. POKE P,42 puts in the star. POKE (P+54272),13 makes the star green. The FOR loop turn the star on and off. POKE P,C brings back the original character.

Line 15. POKE 650,255 gives repeat function on all keys. Rest of the line filters out a few characters we don't want and GETs the character we want put on the screen.

Line 16. Press RETURN routine.

Lines 17-18. Prints the character on screen.

Lines 19-40. Is the SAVE routine. We have to change the numerical value of the characters so they can be stored onto tape as useful DATA statements. Compare Screen Display Codes to ASCII and CHR$ Codes.

After SAVEing your map rewind tape.

NOTE: While saving, the screen will spend sometime just staring at you, just wait about a minute until the flashing cursor reappears.

DISPLAY ROUTINE

GOTO 100 will load you map off tape and display it. This is the routine you build into your Adventure program.

LINES 100-130

I believe the routine is self explanatory. Below I've drawn a demonstration map for you to copy, or make up your own. On this map I have nominated 13 positions (Rooms). These rooms are marked by a little checker board character. By using the Screen Memory map and your cursor controls you can find the memory location of each of these rooms. So that they will stand out on the screen we will make then all RED.

LINES 150-160

We will also need to place ourselves in a start position.

LINE 180

CP= current position. PP= previous position.

ASKING THE QUESTIONS

We'll need to tell the computer where we want to go and indicate on the screen where we move to.

LINES 280-285

The POKEs turn CP to GREEN and PP back to RED.

MOVEMENT

In this case we have limited ourselves to North, South, East, West movements.

LINES 290-330

Line 330 weeds our errors (doesn't work just yet.)

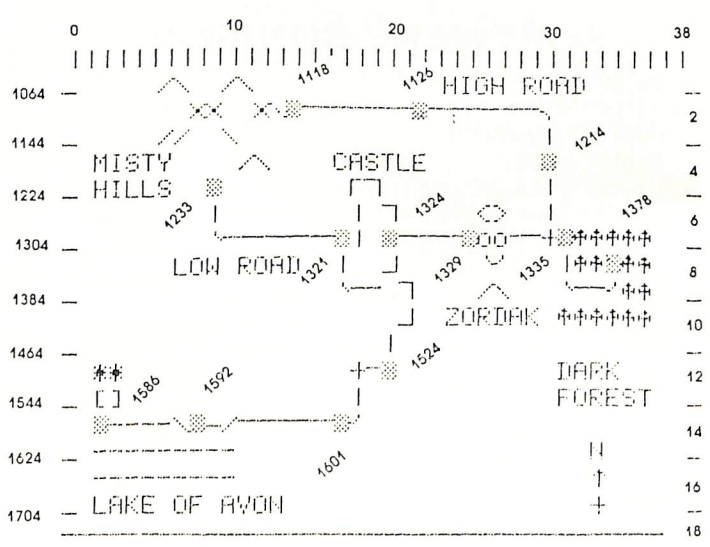
Having got your instruction the computer filters it to see if it is legal. It takes your CP and compares it against a list of CP's where the movement is legal. If legal it changes PP to CP and allocates a new CP. (There is sense in there somewhere!). If movement is illegal it says 'NOT THAT WAY' and asks for further instructions.

LINES 500-835

The routine at line 1000 is for illegal instructions.

LINES 1000-1010.

Good Hunting!



SAMPLE MAP

continued on page 36

Letters

Address letters to: The Editor, Commodore Magazine, Kim Books 82 Alexander St., Crows Nest 2065

FLASH!

Dear Editor,

Further to our conversation, the 1541 FLASH! we sell comes in three models, one for the C64, one for the SX64 and a dual version for two 1541 drives. They are all switchable and fully transparent.

These are the late model FLASH! (the only versions we have ever sold) and should not be confused with the prototype model, which was not switchable and not fully transparent.

That is, the early model would not load all programs and could not be switched out so that the 1541 could revert to its normal slow old loading rate. For those reasons, we declined to handle it.

We sold the first shipment of the fully switchable single drive versions in January for $139 each but, because of our declining dollar, have had to raise the price of successive deliveries until it is now $169. That is, I understand, still less than the local price of the prototype. We achieve this by buying in large quantities direct from the manufacturer.

I trust that, if you review an older model of the FLASH! obtained from some other source, you make clear these differences.

Of course, we should be happy to make one of the current models available to you for review, if you wish.

P.S. The BLITZ! compiler you have fro review is now down to $99, in spite of the falling dollar. That's because of the nice discounts we've been able to get for quantity purchases.

Derek Chambers
Chambers Computer Supplies
Endeavour Hills, Victoria

ED – For readers information.

ZAPMARK!

Dear Sir,

Would your staff know of any programme available for the C-64 which is similar to one (Apple) called ZAPMARK.

I would be very happy to purchase a satisfactory product rather than have to use a spreadsheet.

P.S. Enjoy the Magazine. Must get some back issues.

Brother M. Warner
Christian Brothers' College
Gosford 2250

ED – Can any reader help in this request. The ZAPMARK program includes the following functions:

- *keep records of your students' progress*
- *print out class results in a variety of formats*
- *Combine marks (with any weighting) to give an aggregate.*
- *sort student results into rank order (or alphabetic order).*
- *draw histograms of class results*
- *various statistical analyses of results*
- *correct multi-choice tests*
- *assign estimated marks to absentees in a fair an valid way.*
- *correct or change any part of your records quickly and easily.*

TOTL BUSINESS

Dear Sir/Madam,

In the October Edition a Fairly lengthy report was done on a program from Totl Business about a program called Business Accounting.

Can you tell me if the program had a problem as one Dealer I talked to expressed concern about it. As your write up indicated that it would be just what I need as the programs I have been supplied with will do the job okay except that there is no facility with in it to define your own invoice or statement.It is preset to an A4 READYFORM set and in my situation where 90% of the time there is only one article on the statement.

As I have preprinted stationary that is still to be used, one of the first disks I hope to receive indicates that it will have a demo of this program from this I will determine purchasing. Are you able to give me any information on this.

Steve G Richter
South Australia

ED – we have used TOTL BUSINESS accounting to do our books for the last 18 months. It has given us no trouble. When first setting up the system there is a little difficulty in understanding how to enter data under certain circumstances. But, as with any reasonably complex data base, a couple of times around the circle and the user should understand the concepts involved. Since we introduced TOTL BUSINESS a new and faster version has been released. At the time we took on this system I believed it to be the best one disk system on the market, and I haven't yet seen one better. However I haven't been looking either.

Regarding your specific enquiries, I suggest you contact Bill Brown at C.W. Electronics (07) 397 0888. David Harvey who reviewed the system for us was an independent reviewer.

Plus/4 & 1525 Printing???

Dear Sir,

I am writing this letter on my Plus/4 word processor with a Commodore 1525 Printer. There is nothing terribly remarkable in that except that Paul Blair ('The new machines', February 1985) claims that it can't be done.

Actually, the Plus/4 works perfectly with the 1525. Indeed, that was one of the reasons I chose the Plus/4 when I decided that I had gone beyond the C64/VIC20 stage of computing. If I had had to shell out for a new printer, I may well have chosen an Amstrad or Apple. I would hate think that anyone would leave the commodore fold due to one chart.

For the record, I have used just about every facility of the 1525 in conjunction with the Plus/4 including user-defined graphics. It works in exactly the same way as it does with any other Commodore computer.

While I agree with Paul that DEC and HEX$ can be awkward to use, I still find their presence very useful. If I need to make a few conversions, I redefine the function keys like this:

```
KEY1,"?DEC("+CHR$(34+"
        [SPACE4]"+CHR$(34)+")[LEFT6]"
KEY2,"?HEX$([SPACE6])[LEFT6]"
```

This makes life very easy indeed. If you are looking for a contest for C16 and Plus/4 owners, why not run one for the best use of a function key?

Bob Hoffman
South Hedland, W.A.

ED – Dear Bob,

Thanks for the update for the table I put in the first article about the Plus/4. The information used to prepare the table came from a number of sources, some of which I had to accept in good faith because we (the mag.) did not have a Plus/4 to test. I am pretty choosy about sources, and the info about the +4/1525 came from a very reliable one. Or so I thought.

I have checked back with the source, who tells me that his test was performed on a European pre-release model. He hooked up his computer to a 1525 again, with no joy. All of this suggests some differences between units.

Having said all that, it's pleasing that the spectrum of potential users is wider than I thought. There are not a lot of 1525's around, but it's good to know that owners could contemplate using them with a +4 (and, by inference, a C16).

Nice to hear from you. And thanks for the tip on redefining the keys. My main concern was that you can't use the definitions when in Monitor mode, the clumsy syntax taking second place.

Best Regards,
Paul Blair

Letters

Address letters to: The Editor, Commodore Magazine, Kim Books 82 Alexander Street, Crows Nest 2065.

Not Enough!

Dear Sir,

I regret that I am unable to justify renewing my subscription to Commodore Magazine.

My computer is a Commodore 8032 with disk drive 8050, but the last half dozen or so issues have contained almost nothing relevant to my system, concentrating as they do on the 64.

Thank you for your service in delivering the magazine. I wish it well for the sake of the owners of the 64's.

Jim Board
Mona Vale N.S.W.

ED – Point taken. But a quick scan through Volume 4 will show a fairly significant backup of VIC owners and now C+4, C16 as well.

HELPFUL HINT

Dear Sir,

While typing in a program, especially if it is a long one, add these lines to the start. This will facilitate saving the program to disk at regular intervals.

```
0 GOTO 10
1 N$="PROGRAM"
2 F$="@0:"+N$:SAVE F$,8
3 F$="0:"+N$:VERIFY F$,8
4 END
10 REM: PROGRAM etc.
```

After typing a few lines type 'RUN 1' to save the program. The name assigned to N$ will be the program name. 'RUN' will work as normal. When all the program has been entered and tested these lines can be deleted and the final version saved.

I set up the FAST-DISK load program from the February issue. It worked O.K. except when my printer was switched on. I have a Star Gemini 10X - Turboprint/GT combination. The routine caused the interface to print its' test message on the printer and slowed the action of the loader.

As for the 8 second load of Easy Script! Your version must be different to mone as the loader made no difference.

Congratulations on your magazine. I find it full of good useful, educational and informative articles. Keep up the good work.

Richard Wooller
Paraburdoo, W.A.

ED – Thanks for your helpful hint. Another way of doing the same thing could be:

```
1 GOTO 5
2 SAVE"@0:FILENAME",8:
VERIFY"FILENAME",8:STOP
5 REM
```

And you just say GOTO 2. Please, any other hints and tips are welcome.

"cut in"

And you just say GOTO 2. Please, any other hints and tips are welcome.

Re - Fast disk, Paul Blair dropped me the following note:

"Blush. The copy of Easy Script I use (like thousands of other folks) loads into the C64 at the standard Basic start address, #2049 or $0801. My point was that the program would speed up loading programs that otherwise took an age to stagger along our friendly serial bus.

Could I point readers to a service offered by Cockroach software. They will create a special Easy Script Turbo 64 disk for them on evidence of ownership of a dinky-di copy. Send the original disk together with $10 plus $2 p&p to them at P.O. Box 1154, Southport, Qld. 4215, and they will fix it up for you."

Thanks for your encouragement.

. . . .FAST DISK

Dear Sir,

I also have a problem with the fast - disk program.

When I load a program using fast - disk the screen goes blank as I expected it to, then the red light on the disk drive comes on and the program loads.

The problem is the screen does not return to normal and the disk drive motor keeps running after the program loads.

I know that the program loads because when I press my reset switch and type in a program in the direct mode to restore the old program, that I just loaded, the program lists and runs correctly.

Could you please help me with this problem.

Chris Burgess
Maroubra N.S.W.

Dear Chris,

If you have the checksum right, and have a 1541 in good alignment, the program will work. I can't determine the exact reason for the problem on the information given.

Regards Paul.

CONTRIBUTED A LISTING AND ITS NOT BEEN PRINTED????

We have a steadily growing box of contributors listing that have been submitted to the magazine but not used. Some of them seem very good , but they have been submitted in hardcopy form.

As we're nearly always at panic pitch at KIM BOOKS these programs never seem to see the light of day because of the time involved in loading, checking, debugging etc.

What might be a short listing to a single contributor if you bare in mind that there may be 5 or 6 others the same size, becomes quite a time consuming task this end.

If you've submitted a program (competitions aside) and we seem to have ignored it, please resubmit it on disk or tape, (enclose a S.A.E. & we'll return it to you).

It would be even more convenient if articles submitted were on a sequential file, e.g. EASYSCRIPT.

Don't give up. We are interested. Try again!

HELPOUT

by Paul Blair

If you have ever tried to put material into some sort of form for publishing, you would have struck the problem of program listings. Not that programs are so difficult in themselves, but the representations of Commodore control characters (cursor up, down, colour and what have you) turn any sane editor into a screaming dervish. Most magazines use automatic transfer processes as much as possible, for accuracy and to keep production costs within bounds. But (as I know to my own cost) some way of helping readers to interpret and enter program lines would be a great step.

We here at the Commodore Magazine have been looking around for a way to assist you, and now we are pleased to bring you what we see as the Rolls Royce of helper programs. Here's how it works.

each line will use a checksum. Nothing new in that, but what a checksum this will be. Get it right, and the C64 will give a congratulatory chirp. Muss it up, and get a raspberry. But sound is not all – if there is an error, you will get a helper message as well. So let's enter the program. Unfortunately for you, there are no helpers on the helper, but after that you will be able to use it for our listings.

```
1000 REM: HELPOUT 64
1010 REM:
1020 REM: COMMODORE MAGAZINE
1030 REM:
1040 SA=49152:FA=50052
1050 FORI=SATOFA:READA:S=S+A:POKEI,A:NEXT
1060 IFS<>103233THENPRINT "->ERROR.. CHECK AGAIN!!":
     END
1070 PRINT "OK":NEW
1080 DATA  76, 35,192,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0, 13
1090 DATA   0, 88,193, 94,193,102,193,118,193,131,193,143,193,234,234,234
1100 DATA  76,131,192,162,  5,189, 29,192,149,115,202, 16,248, 96,160,  2
1110 DATA 185,  0,  2,217, 60,193,208, 11,136, 16,245,169,  1,141, 16,192
1120 DATA  76, 31,193, 96,160,  3,185,  0,  2,217, 56,193,208,224,136, 16
1130 DATA 245,169,  0,141, 16,192, 76, 31,193, 96,160,  3,185,  0,  2,217
1140 DATA  52,193,208,224,136, 16,245,160,  5,185,162,227,153,115,  0,136
1150 DATA  16,247,169,  0,141, 24,212, 76, 31,193,230,122,208,  2,230,123
1160 DATA  76,121,  0,165,157,240,243,165,122,201,255,208,237,165,123,201
1170 DATA   1,208,231, 32, 90,192,173,  0,  2, 32,163,192,144,220,160,  0
1180 DATA  76,234,193,201, 48, 48,  6,201, 58, 16,  2, 56, 96, 24, 96,200
1190 DATA 177,122,201, 32,208,  3,200,208,247,177,122, 96, 24,200,177,122
1200 DATA 240, 53,201, 34,240,245,109,  5,192,141,  5,192,173,  6,192,105
1210 DATA   0,141,  6,192, 76,189,192, 24,109,  7,192,141,  7,192,144,  3
1220 DATA 238,  8,192,238, 11,192, 96, 24,109, 10,192,141, 10,192,144,  3
1230 DATA 238,  9,192,238, 12,192, 96, 10,168,185, 17,192,133,251,185, 18
1240 DATA 192,133,252,160,  0,169, 18, 32,210,255,177,251,240,  6, 32,210
1250 DATA 255,200,208,246, 32, 84,195, 32,126,195, 32,228,255,240,251,160
1260 DATA  27,185, 63,193, 32,210,255,136, 16,247,104,104,169,  0,141,  0
1270 DATA   2, 76,116,164, 75, 73, 76, 76, 84, 69, 83, 84, 65, 68, 68,145
1280 DATA 145, 13, 32, 32, 32, 32, 32, 32, 32, 32, 32, 32, 32, 32, 32, 32
1290 DATA  32, 32, 32, 32, 32, 32,145, 13, 81, 85, 79, 84, 69,  0, 75, 69
1300 DATA  89, 87, 79, 82, 68,  0, 35, 32, 79, 70, 32, 67, 72, 65, 82, 65
1310 DATA  67, 84, 69, 82, 83,  0, 85, 78, 73, 68, 69, 78, 84, 73, 70, 73
1320 DATA  69, 68,  0, 78, 79, 32, 67, 72, 69, 67, 75, 83, 85, 77,  0, 80
1330 DATA  65, 82, 69, 78, 84, 72, 69, 83, 73, 83,  0,200,177,122,208,251
1340 DATA 132,253,192,  9, 16,  3, 76,199,193,136,136,136,136,136,177,122
1350 DATA 201, 39,208, 19,169,  0,145,122,200,162,  0,177,122,157, 60,  3
1360 DATA 200,232,224,  4,208,245, 96, 76,242,194,160,  0,185,  0,  2,153
1370 DATA  64,  3,240,242,200,208,245,160,  0,185, 64,  3,240,232,153,  0
1380 DATA   2,200,208,245, 32,215,193, 76, 86,194,160, 11,169,  0,153,  3
1390 DATA 192,141, 60,  3,136, 16,247,169,128,133,  2, 32, 27,195,160,  0
1400 DATA  32,155,193, 32,202,193, 32, 49,194,230,122,230,123, 32,124,165
1410 DATA 160,  0, 32,175,192,240,205, 36,  2,240,  6, 32,215,192, 76, 18
1420 DATA 194,201, 34,208,  6, 32,188,192, 76, 18,194, 32,231,192, 76, 18
1430 DATA 194,160,  0,185,  0,  2, 32,163,192,200,144, 10, 24,109,  9,192
1440 DATA 141,  9,192, 76, 51,194,136,162,  0,185,  0,  2,157,  0,  2,240
1450 DATA   4,232,200,208,244, 96, 24,173, 11,192,105, 65,141, 11,192, 56
1460 DATA 173, 12,192,233, 25,144,  6,141, 12,192, 76, 96,194,173, 12,192
1470 DATA 105, 65,141, 12,192,173,  5,192,109,  7,192, 72,173,  6,192,109
1480 DATA   8,192,141, 14,192,104,109, 10,192,141, 13,192,173, 14,192,109
1490 DATA   9,192,141, 14,192, 56,233, 25,144,  6,141, 14,192, 76,150,194
1500 DATA 173, 14,192,105, 65,141, 14,192,173, 13,192,233, 25,144,  6,141
1510 DATA  13,192, 76,171,194,173, 13,192,105, 65,141, 13,192,160,  1,173
1520 DATA  11,192,205, 60,  3,208, 32,200,173, 12,192,205, 61,  3,208, 23
1530 DATA 200,173, 13,192,205, 62,  3,208, 14,173, 14,192,205, 63,  3,208
1540 DATA   6, 32,100,195, 76,122,192,173, 16,192,208, 17,152, 72,104, 76
1550 DATA 247,192,173, 16,192,240,  1, 96,169,  4, 76,247,192,164,253,169
1560 DATA  39,145,122,162,  0,200,189, 11,192,145,122,200,232,224,  4,208
1570 DATA 245,169,  0,145,122, 32,100,195, 76,122,192,160,  0,185,  0,  2
1580 DATA 240, 17,201, 40,208,  3,238,  3,192,201, 41,208,  3,238,  4,192
1590 DATA 200,208,234,173,  3,192,205,  4,192,208,  1, 96,169,  5, 76,247
1600 DATA 192,169, 32,141,  0,212,141,  1,212,169,  9,141,  5,212,169, 15
1610 DATA 141, 24,212, 96, 32, 65,195,169,129, 32,119,195,169,128, 32,119
1620 DATA 195, 76,113,195, 32, 65,195,169, 17, 32,119,195,169, 16, 32,119
1630 DATA 195,169,  0,141,  4,212, 96,141,  4,212,162,112,160,  0,136,208
1640 DATA 253,202,208,250, 96
```

Take it slowly, type only as much as you can cope with at a time. Save the program at each step, and don't run the program (any program you are typing in, for that matter) until you have a copy safely stowed away.

The program lives at $C000 (#49152), safely out of the way of Basic. You may either keep HELPOUT as a Basic loader program (like the listing given here), or you may store it so that it loads directly into memory. To do this, load and run the program. Now, in direct mode straight from the keyboard type:

```
POKE43,0:POKE44,192:POKE45,133:
POKE46,195:SAVE "HELPOUT.BIN",8
(use ,1 for cassette)
```

To recapture the program at some later time, LOAD "HELPOUT.BIN",8,1 <CR>, (or ,1,1) then type NEW <CR>, and use SYS49152 to get some action.

Now, let's tell you about using the result of your labours. Once HELPOUT is loaded and nudged into life, type TEST <CR>. You are now ready to get cracking. We may give you a line like this:

```
6045 NEXT:GOSUB 6300'CFSI
```

You type ALL of it, remembering to use a single quote ('), not "talking marks". You may use shorthand typing (GO then SHIFT and S for GOSUB, for example), and put in or omit spaces as you like (except, of course, inside quotes). It is features like this that make it such a marvellous program, unlike some others that are in use.

The checksum uses ALPHABETIC characters. Got that? There will be no need to guess whether the character is alpha-oh or numeric zero, alpha-ell or numeric one. With modern day typesetters using very plain typefaces, it is sometimes difficult to decipher between these characters. But not with HELPOUT. I'll repeat it – the checksum is ALPHABETIC.

If you do it wrong, one of six error messages will appear, and a fog-horn will blow. Here are the messages, with some notes on use.

NO CHECKSUM: You probably forgot the apostrophe, or some or all of the four character checksum. Cursor to the end of the line, enter the checksum as shown, and press Return.

QUOTE: HELPOUT checks to ensure that quotes come in pairs. Either you left one out, or got a bit carried away and added one of your own.

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POLAR GRAPHS

Peter Davies

Many articles have been written about presenting data in graphical form using Cartesian axes – the familiar X and Y co-ordinates. This is not the only way of plotting a graph. Using polar co-ordinates is an alternative which allows us to plot graphs which would be very difficult, if not impossible using the Cartesian system.

To visualise the polar system, stand at a particular point, called the POLE, facing east. Now turn anticlockwise through any angle you wish – say 47° – and walk, say, 10 metres in the direction you are now facing. Your new position is described by the polar co-ordinate PAIR [10, 47] relative to the POLE (your starting point). Note that the polar equations are formed so as to calculate the value of the distance R for various angles A. The equations used in this article make use of the sine (SIN) and cosine (COS) functions but any other functions can be used.

Some examples of the equations that can be used are:

```
R = 2 + 2 *COS(A)
R = 4*COS(2*A) + 3*SIN(A/5)
R = 3*COS(A-0.5)↑3
```

If we assign the angle by a loop then we can very quickly calculate polar pairs. Since computers require angles to be radians rather than degrees we need a conversion:

radians = degrees * ▲/180

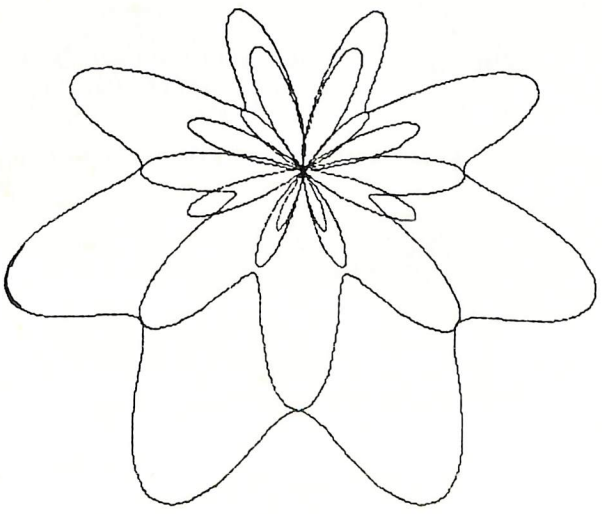
('▲' indicates 'Pi' – shifted '↑')

In the programs, D is the angle in degrees and A its corresponding value in radians.

In the programs, D is the angle in degrees and A its corresponding value in radians.

Computers cannot handle polar pairs directly so each one has to be converted to its corresponding X and Y co-ordinates. This is done by:

```
X = R*COS(A)
Y = R*SIN(A)
```



Sample of graphs supplied by the Author

We can now use the variables of X and Y to locate the polar co-ordinates R and A.

Three programs are given, one for plotting on the screen in high resolution, one for printing on a Commodore 1520 Printer/Plotter (the examples shown were produced on a 1520) and one using the Commodore Super Expander 64 cartridge.

Experimentation is the order of the day but strange things can happen. The SIN and COS functions can have zero values. If your polar equation dividing by either of these then a division by zero error will occur when the appropriate angle is met in the loop.

To plot your own graph, you will have to alter the equation in the program and possibly alter the upper limit in the loop. The equation also contains a scaling factor. Changing it simply alters the size of the graph, the shape remains the same.

The upper limit in the loop is determined by the equation you use. For multiples of A, such as 2*A or 7*A then the upper limit has to be 360. When fractions of A are used, divide the fraction into 360 to find the upper limit. Thus for A/2 the upper limit is 360/(1/2) = 720. For 2*A/3 it is 360/(2/3) = 540.

The speed with which the programs operate can be increased by using STEP 2 thought this tends to give a less satisfactory picture on the screen.

SAMPLE EQUATIONS

Listed below are a few equations to try – they give you some idea of the changes that can be made. Starting with simple equations – those of greater complexity do not necessarily mean more pleasing graphs.

```
R = SIN(2*A) produces a flower with 4 petals.
R = SIN(4*A) has eight petals
R = 2 + 2*SIN(A) creates a cardiod (a heart shape)
R = 1 + 2*COS(A) is a shape called a limicon.
```

My favourites defy description:

```
R = 2*COS(A/5)↑3 - SIN(A/2)↑2
R = 2*COS(A/3)↑3 - SIN(4*A)↑2
```

A very complex graph is given by

```
R = 2*COS(A/7) - SIN(3*A)↑2
```

for which an upper limit of 1260 is required. Try experimenting with other functions such as TAN(A) or LOG(A) – I am sure you will be rewarded by some interesting shapes.

PROGRAM DETAILS

Program 1

Line 10 goes to the subroutine at 150. This is a BASIC loader machine language program to switch to high resolution.

Lines 50 – 120 calculate and plot the polar pairs for the polar equation in line 55.

Line 125 put a colour square at the bottom left hand corner of the screen when the loop has been completed.

Lines 126 – 127 switch back to normal text display after pressing and key.

continued overleaf

Polar Graph
continued from previous page

Line 129 LISTs lines 50 and 55 ready for editing with a new upper limit and polar equation. Type RUN and press RETURN after editing and your new graph will be created.

Program 2

Line 5 opens file 1 for plotting and file 2 for advancing the paper using subroutine at line 120.

Line 10 – 80 calculate the polar pairs and instructs the printer to draw from the last point calculated to the current one.

Lines 85 – 100 advance the paper then initialise the printer before closing files.

Line 105 LISTs the first few lines of the program ready for editing with a new function at line 10 and a new upper limit, if needed, at line 50.

Program 3

Lines 10 – 20 set up high resolution mode, background, foreground and border colours.

Line 30 defines the polar equation.

Lines 40 – 50 calculate and plot the pixel cursor at the starting point.

Lines 60 – 110 calculate and plot the polar pairs, line 65 printing the current value of D in the left hand corner of the screen.

Line 120 keeps the finished display on the screen.

PG PROG 1

(Displays a polar graph in HIRes on the C64 screen.)

```
5 PRINT "[CLR]" 'BATE
10 GOSUB 150'BDJX
50 FOR D=0 TO 360 STEP .5:A=D*▲/180'INGJ
55 R=80* SIN (4*A)'EHWK
56 X=R* COS (A)+160:Y=R* SIN (A)+100'IRDQ
90 BY=8192+320* INT (Y/8)+8* INT (X/8)+(Y AND 7)'LWPR
110 POKE BY, PEEK (BY) OR (2↑(7-(X AND 7)))'GRYD
120 NEXT D'BBWW
125 POKE 1984,80'BHBE
126 GET A$: IF A$="" THEN 126'EIIH
127 POKE 53272, PEEK (53272) AND 247'DQOJ
128 POKE 53265, PEEK (53265) AND 223: PRINT "[CLR]" 'ERPL
129 LIST 50-55'CEVI
130 END 'BACX
150 POKE 53272, PEEK (53272) OR 8'DOUE
151 POKE 53265, PEEK (53265) OR 32'DPTF
200 DATA 0,165,252,197,254,208,7,165'BCVB
210 DATA 251,197,253,208,1,96,160,0'BBNC
220 DATA 173,80,195,145,251,230,251'BBOD
230 DATA 208,232,230,252,76,81,195'BATE
240 RESTORE : FOR M=50000 TO 50029'EMWE
250 READ N: POKE M,N: NEXT M'DHRE
260 POKE 251,0: POKE 252,4: POKE 253,232'DTFH
270 POKE 254,7: POKE 50000,3: SYS 50001'DTKI
280 POKE 251,0: POKE 252,32: POKE 353,64'DTKJ
290 POKE 254,63: POKE 50000,0: SYS 50001: RETURN 'EVBL
```

PG PROG 2

(Prints a polar graph on a 1520 printer.)

```
5 OPEN 1,6,1: OPEN 2,6,0: GOSUB 120'DPCH
10 DEF FN R(A)=40*(2* SIN (A/3)+3* COS (2*A))'LSWH
20 X=FN R(0)+240'DISB
30 PRINT#1,"M",X,0'BGJB
50 FOR D=1 TO 1080:A=D*▲/180'HMSI
55 R=FN R(A)'CFPI
56 X=R* COS (A)+240'EIBL
57 Y=R* SIN (A)'DFOL
70 PRINT#1,"D",X,Y'BGQF
80 NEXT D'BBWE
85 GOSUB 120: PRINT#1: PRINT#2'DHNM
90 OPEN 7,6,7: PRINT#7'CHNH
100 CLOSE 7: CLOSE 2: CLOSE 1'DFMW
105 LIST - 50'CCUB
110 END 'BACV
120 FOR N=1 TO 12: PRINT#2:: NEXT N: RETURN 'GKAC
```

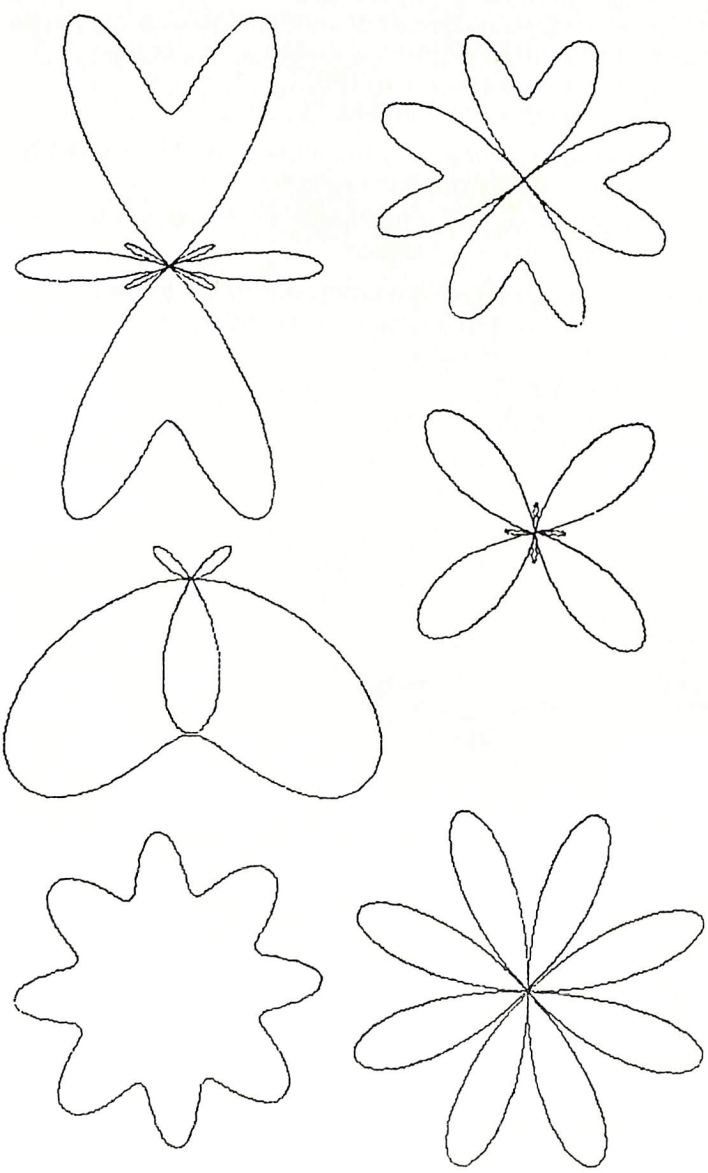
PG PROG 3

(Displays a polar graph using the Super Expander 64 cartridge.

VIC-20 with a Super Expander, C16 and C+4 owners should easily be able to adapt this program.)

```
10 GRAPHIC3,1'AKQY
20 COL OR 15,0,,,15'BMHB
30 DEF FN R(A)=2* SIN (A/3)+3* COS (4*A)'KOCI
40 X=16* FN R(0)+160:Y=80'FOFG
50 LOCATEX,Y'AJXD
60 FOR D=2 TO 1080 STEP 2:A=D*▲/180'INHK
65 PRINT "[HOME,DOWN22]D="'D'BBHJ
70 R=16* FN R(A)'DHJG
80 X=R* COS (A)+160'EICI
90 Y=R* SIN (A)+80'EHHJ
100 DRAW TO X,Y'BHYW
110 NEXT D'BBWV
120 GOTO 120'BDCX
130 REM HELPOUT MAY NOT WORK'BRCD
```

(NOTE: ▲ = Pi or shifted ↑)



THE OTHERS

David Roth

COMAL STRINGS

There is a public domain language called COMAL. Which was developed in Denmark for teaching computer science to high school students. It is superficially similar to BASIC, but has advantages which can make it easier to learn for computer newcomers. The most important are:

- A friendly editor, syntax errors are checked as each line is entered. Automatic line numbering and renumbering commands.
- Meaningful names, rather than being restricted to the BASIC limit of two letters (e.g. NAME$ instead of NM$).
- Structured programming facilities – IF .. ELSE .. ENDIF, CASE .. ENDCASE, PROCEDURES, etc. The COMAL LIST command neatly indents these structures, making program logic clear.
- Simple disk file commands – particularly for RANDOM files. It is easy to merge COMAL programs together (e.g. when adding a standard ("library") subroutine to a program.

For microcomputer learners, the greatest contrast between COMAL and BASIC is probably in string handling. There, however, a restriction which BASIC does not have – all strings must be DIMensioned before use. COMAL needs to know the maximum length of a string in order to avoid the BASIC problem of "garbage collection". The following examples relate to COMAL 0.14 for the C64 – the COMAL example is followed by the BASIC equivalent.

Suppose we want to print the sixth and seventh characters of the word "microcomputer" (i.e. "co").

COMAL

```
10 DIM COMPUTER$ OF 20
20 COMPUTER$ = "microcomputer"
30 PRINT COMPUTER$ (6:7)
```

BASIC

```
10 CM$ = "microcomputer"
20 PRINT MID$(CM$,6,2)
```

Now try the two left hand characters of the same string ("mi")

COMAL

```
100 PRINT COMPUTER$(1:2)
```

BASIC

```
100 PRINT LEFT$(CM$,2)
```

And now the two right hand characters ("er")

COMAL

```
200 I = LEN(COMPUTER$)
210 PRINT COMPUTER$(L-2:L)
```

BASIC

```
200 PRINT RIGHT$(CM$,2)
```

Instead of three different functions of BASIC – MID$, LEFT$ and RIGHT$, COMAL uses just one technique:

STRING (start character:end character)

Therefore this part of COMAL should be easier to learn. For string arrays, COMAL's ease of use is even more marked. Take a simple one-dimensional array, a table of names – we want to print the third character of the third name ("t"), then the second and third character of the first name ("re").

COMAL

```
10 DIM NAME$(1:3) OF 10
10 NAME$(1) = "fred"
30 NAME$(2) = "wendy"
40 NAME$(3) = "peter"
50 PRINT NAME$(3) (3:3)
60 PRINT NAME$(1) (2:3)
```

BASIC

```
10 DIM NM$(1,3)
20NM$(1) = "fred"
20 NM$(2) = "wendy"
40 NM$(3) = "peter"
50 PRINT MID$(NM$(3),3,1)
60 PRINT MID$(NM$(1),2,2)
```

COMAL syntax is simpler:

STRING (index part) (start character:end character).

And the use of brackets is clearer – it is a common experience in BASIC to forget to close brackets, only to be reminded when the program is being RUN. COMAL checks the brackets when the line is entered, and will not accept a line with incorrect brackets.

When handling string INPUT, the COMAL requirement that all strings be DIMensioned before use makes INPUT easier, since we can restrict the INPUT length to a known value. For example if we want to restrict the answer to one letter:

COMAL

```
10 DIM ANS$ OF 1
20 REPEAT
30 INPUT "answer is ":ANS$;
40 UNTIL ANS$ IN "yn"
```

BASIC

```
10 INPUT "answer is ";AN$
20 IF LEN(AN$) = 0 THEN 10
30 IF LEFT$(AN$,1)<>"y" AND LEFT$(AN$,1)<>"n"
   THEN 10
```

The use of the COMAL constructs REPEAT and UNTIL in the above example is clear enough – keep looping until you get the right answer. By restricting AN$ to 1 character, the user is restricted to that INPUT length (all letters INPUT over that length are ignored). In the BASIC example, it is necessary to allow for excess input by using LEFT$ (and for insufficient INPUT by checking on the string length).

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DATA DODGER (Part 3?)

Paul Blair

I got a phone call from America the other day. The caller had gotten a copy of one of my programs and wanted to talk about it. Modesty prevents me telling you what he said (OK, if you must know, he said that the program was excellent but so slo-o-o-w. I told him he should see the companion version I wrote for an IBM. It was slo-o-o-o-o-wer still!!!). But the real point he was making was that there are some very clever programs written by clever people coming up from Down Under. Naturally, I agreed with him.

This all leads up to a problem I posed in the October 1984 issue of the Commodore Magazine (Do Dis Data... on page 15). I sought a way of reading in DATA statements in a chosen order, rather than always starting at the start of the list, or from wherever you last left off.

A solution was printed in the December 1984 issue, but two readers have come up with other solutions, which just goes to show that there are some clever programmers out there.

The first solution comes from Peter (Printer Wedge) Thompson, of Kambah, ACT. Peter's solution uses a small amount of machine code, and the C=64 version looks like this:

```
JSR $AEFD ;Check for comma
JSR $AD8A ;Check for a number
JSR $B7F7 ;Convert to integer
JSR $A613 ;Search Basic for statement..
LDA $5F ;which is then stored here
LDY $60
SEC
SBC #$01 ;step back..
JMP $A824 ;and set DATA pointer to it
```

The code is relocatable, and can go anywhere. One solution is to do this.

```
10 FORX=49152TO49173:READN:POKEX,N:NEXT
20 DATA 32,253,174,32,138,173,32,247,183,32,19
30 DATA 166,165,95,164,96,56,233,1,76,36,168
```

In this case, you would use SYS49152, DATA LINE NUMBER

Another way is to bury it in a hidden line.

```
0 REM" [22 spaces] "
10 FORX=2055TO2076:READN:POKEX,N:NEXT
```

and reuse Lines 20 and 30 from above. Line 10 then puts the machine code into the space between quote marks in Line 0. To use this trick, use SYS2055, DATA LINE NUMBER.

Peter gives some warnings. (1) Don't put any spaces between REM and the first quote in Line 0, and make sure that there are 22 spaces between quotes. (2) Don't renumber your program after you have set up your DATA lines, as the computed READ will not be adjusted. (3) This last routine assumes that Basic starts at $0801 (#2049). If you play around with the bottom of Basic, you will need to adjust the SYS call. Like to see it work? OK, type in the second method shown above, then add:

```
40 INPUT"WHICH SET OF DATA";N
50 SYS2055,N*100
60 READ A$:PRINT:PRINT A$:PRINT
70 GOTO 40
100 DATA "THIS IS DATA ONE"
200 DATA "AND THIS IS DATA TWO"
300 DATA "HELLO FROM DATA THREE"
400 DATA "YOU HAVE DATA 4 HERE"
```

Good gear, Peter.

Another solution came from the far north west, in the vicinity of the Hamersley Ranges, Paraburdoo to be exact. Richard Wooller wrote a subroutine in Basic to solve the problem.

Richard's routine uses Basic pointers to find the line number from where you want to gather data. It then checks that the line does indeed contain data (a nice touch), and lets you know if you did it wrong. Very tidily done, as you can see.

```
10 REM TEST PROGRAM FOR SELECT DATA
20 INPUT"LINE NUMBER";DL:GOSUB9000
30 READ A$,X:PRINT A$,X:END
40 :
100 DATA LINE100,1
200 DATA LINE200,2
300 DATA LINE300,3
400 DATA LINE400,4
500 :
9000 REM VARIABLES
9010 REM DL = LINE # FOR DATA REQ'D
9020 REM CL = CURRENT LINE #
9030 REM CX = POINTER TO CURRENT LINE
9040 REM NX = POINTER TO NEXT LINE
9120 :
9130 REM FUNCTION:GET LOW/HIGH BYTE
9140 DEF FNZ(A)=PEEK(A)+256*PEEK(A+1)
9150 REM LINK TO START OF PROGRAM
9160 CX=FNZ(43)
9170 REM GET LINK TO NEXT LINE
9180 NX=FNZ(CX)
9190 REM IF NX=0 THEN END OF PROGRAM
9200 IF NX=0 THEN PRINT"LINE"DL"NOT FOUND":END
9210 REM GET LINE # OF THIS LINE
9220 CL=FNZ(CX+2)
9230 REM IF NOT NEEDED, GO ON
9240 IF CL<>DL THEN CX=NX:GOTO 9180
9250 REM IS IT DATA? (DATA KEYWORD=131)
9260 IF PEEK(CX+4)<>131 THEN PRINT"NOT DATA":END
9270 REM OK, SO FIX LINE # POINTERS
9280 POKE 63,CL AND 255: POKE 64,INT(CL/256)
9290 REM AND FIX DATA ITEM ADDRESS
9300 CX=CX+4:POKE 65,CX and 255: POKE 66,INT(CX/256)
9310 RETURN
```

Richard's explanation is very clearly set out for your better understanding. It is worthy of study as well for the use of DEF FN, and shows how elegant you can be if you understand its use.

David Balean also wrote to me from Killarney Vale, NSW. I haven't digested all of the interesting points made in his long letter, but it seems that he uses a technique rather like Peter Thompson's. At the risk of offending David, I won't include his routine here, but will have a look see for a later issue.

Thank you one and all, including the gent who wrote (strongly!!) to tell me it couldn't be done. May his floppies go soggy!!!

HOME LIBRARY -continued from page 14

```
6490 RETURN 'BAQL
6499 REM DELETE RECORDS'BNIY
6500 PRINT "[CLR,DOWN]INDICATE THE RECORDS YOU WISH
TO DELETE" 'BAYO
6510 PRINT "[RED]AUTHOR:[BLU]": INPUT D$: GOSUB 5100'DIFJ
6515 IF I=0 THEN 6830'DGUM
6520 FOR I=L TO H:A=A%(I)'EKYJ
6525 IF I>H THEN 6820'DGRN
6530 PRINT "[CLR,DOWN]"A$(A): PRINT T$(A)"[DOWN3]" 'CLSK
6540 PRINT "DO YOU WISH TO:[DOWN]" 'BAOL
6550 PRINT TAB(3)"1. DELETE" 'CCJL
6560 PRINT TAB(3)"2. KEEP" 'CCQM
6570 PRINT "[DOWN2]TYPE YOUR CHOICE" 'BASP
6580 Q=2: GOSUB 900'CGXN
6590 IF X=2 THEN 6820'DGLP
6600 PRINT "[CLR,DOWN2]DELETING NOW" 'BAKI
6610 V=.:W=.'CFQH
6620 IF A=N THEN 6740'DGRJ
6630 P=A'BCQI
6640 A$(A)=A$(N):T$(A)=T$(N):B%(A)=B%(N)'DHOQ
6650 FOR E=1 TO N-1'EESM
6660 IF A%(E)=P THEN V=1'EIEO
6670 IF T%(E)=P THEN W=1'EIYP
6680 A%(E)=A%(E+V)'CLTP
6690 T%(E)=T%(E+W)'CLIQ
6700 IF A%(E)=N THEN A%(E)=P'EMSK
6710 IF T%(E)=N THEN T%(E)=P'EMGL
6720 NEXT 'BAEH
6730 GOTO 6800'BELJ
6740 FOR E=1 TO N-1'EESM
6750 IF A%(E)=N THEN V=1'EICO
6760 IF T%(E)=N THEN W=1'EIWP
6770 A%(E)=A%(E+V)'CLTP
6780 T%(E)=T%(E+W)'CLIQ
6790 NEXT 'BAEO
6800 N=N-1'CDQI
6810 I=I-1:H=H-1'EHTL
6820 NEXT 'BAEI
6830 RETURN 'BAQJ
```

PLUS/4 NOTES

The C+4 version of HOME LIBRARY uses a redefined character set. It is easy to create using the built in monitor. Follow these steps (don't worry if you cannot understand what they all do. All will be revealed in a future issue of this magazine.)

1. Go into the monitor by entering:
   MONITOR
2. Enter (to look at ROM):
   > 7F8 00
3. To copy all character definitions into RAM:
   T D000 D7FF F400
4. Enter (to look at RAM)[
   > 7F8 80
5. To look at the first character to be redefined (a comma):
   M F560 F567
6. To change this to a solid black box (it will be the new cursor) move up to this line of figures and overtype them (and press RETURN) so that they now read:
   > F560 FF FF FF FF FF FF FF FF
7. Enter the following to get the remaining characters to be redefined ('<', '=', and '>'):
   M F5E0 F5F7
8. Overtype these and type return on each line (to change them into quotation marks, comma, and colon):
   > F5E0 66 66 66 00 00 00 00 00
   > F5E8 00 00 00 00 00 18 18 30
   > F5F0 00 00 18 00 00 18 00 00
9. (Skip this step if you do not require a disk version.) Put the program disk into your disk drive and enter the following to create your new character set file:
   S 'BOOKCHAR',8,F400,FC00
10. (Skip this step if you do not require a tape version.) Position the tape at the end of HOME LIBRARY program (type X to leave monitor and re-enter with MONITOR).

    Then enter the following
    S 'BOOKCHAR',1,F400,FC00
11. To leave the monitor, enter:
    X

NOTE 0 is (zero) i.e. F400 = F,4,zero,zero

VIC 20 NOTES

The version given here is for a VIC 20 with 16K expansion. If you have 24K expansion change line 30 to read:

```
30 F=400:DIM A$(F),T$(F),A%(F),T%(F),B%(F)
```

This will allow you to enter up to 400 books.

(c) 1985 Bob Hoffman.

HELPOUT-continued from page 28

PARENTHESIS: This is like QUOTE, except that HELPOUT looks for pairs of (and).

KEYWORD: You may have misspelled a Basic keyword (GOSLOB instead of GOSUB) or simply left one out. Recheck the line.# **OF CHARACTERS**: Ignoring spaces outside quotes, you have typed too many or too few characters. This could even be a typo in a keyword, so check the line carefully.

UNIDENTIFIED: The cowards way out. The line is not right, but the error could be any of a number of things – wrong line number, wrong checksum, or you just mussed it up. Read the line carefully to find the error.

If you do get an error, the line WILL NOT be entered into your program. You will have to take some action to correct it before that can happen. To clear the error message, press any key (the line underneath the error message will not be affected if you use, say, the space bar), then get to work to fix the problem.

When the line is OK, HELPOUT strips off the checksum, then enters the line into your program. There is no program space overhead from using HELPOUT.

We like HELPOUT. It comes from Mark Robin, and is the program that Commodore uses in its homegrown magazines. With a pedigree like that, and with the very considerable help it gives, we know it will make your programming more enjoyable.

If you want to add checksums to a program of your own, say for this magazine or a User Group publication, load HELPOUT and get it all going. But this time, enter ADD <CR> instead of TEST.

If your program is already written, load it and LIST it to the screen. Using the cursor keys, put the cursor on each line in turn and press Return. You will get a chirp of sound at each line, but nothing will appear on the screen until you type LIST again.

ADD will include checksums if you are writing new lines. Nothing could be more simple!!

Lastly, you may turn HELPOUT off to suit yourself. Type KILL <CR>, and HELPOUT is disconnected. If you want it again, type SYS49152 <CR> and away you go.

One last point. If you want to enter any of our programs without HELPOUT, omit the checksum at each line. You won't need it. Happy programming from us all.
(ED – now lets see who can get it onto the other machines!)

(C) 1985 Paul Blair

COMAL STRINGS - continued from page 31

Appending characters to strings is similar to BASIC. If A$ = "X" then if A$ = A$ ["X", A$ becomes "XX" (provided that A$ has been DIMensioned greater than 1).

Having praised COMAL a couple of warnings should be given. COMAL leaves only 8 – 10K of memory free for programs. Also, a disk containing the COMAL error file should be available – otherwise no error messages can be given if you enter an incorrect line. The memory space limitation is offset to some extent by the comprehensive functions of COMAL – it tales less code (in most cases) than BASIC to achieve a given result.

I would still recommend COMAL for new programmers, since they rarely want to write long programs. When memory becomes a problem, it is far easier to learn PASCAL after having learnt COMAL. A COMAL cartridge is available from the USA COMAL User Group which leaves about 30K for user programs, but I do not recommend it because of its high price (about A$130).

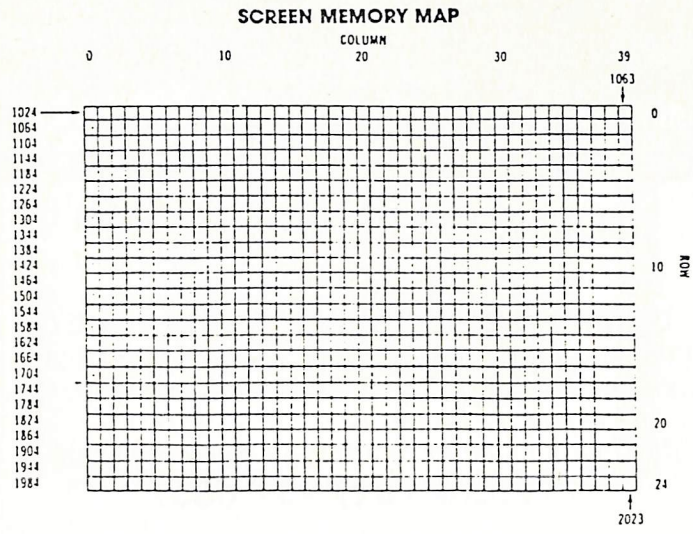
REFERENCES

1. COMAL HANDBOOK by Len Lindsay (Reston)
2. The COMAL 0.14 distribution disk provides extensive documentation and sample programs.

NOTE: David will be writing this column on a regular basis. It will deal with the 'other' languages COMAL, PASCAL, FORTH etc. Next issue will have an article on FORTH ".at a more advanced level."

Any feedback, enquiries or programs would be welcome. Forward them to David Roth, C/- KIM BOOKS (address page 1). – ED

continued from page 24



MAPS & MAPPING - PROGRAM M 1.3

```
1 dim a$(19): stop : rem goto100 to display – goto 3 to draw'dlmk
2 save "@0:m[space]1.3",8: verify "m[space]1.3",8: stop 'dgrf
3 rem 'barb
4 print "[clr,<red>]";: for i=0 to 38: print tab(i)"[up,<m>]": next i: for x=0
to 8: print "[<@>]" tab(39)"[<@>]": next 'nucr
5 print "[home,down18,ffffffffffffffffffffffffffffffffffffffffffffffffffffff,home]": print "[
  »@>,wht]";'ccrm
6 p=peek (211)+ peek (210)*256+ peek (209):c=peek (p)'jysp
7 for i=1 to 20: poke p+54272,13: poke p,42: next : poke p,c'iyrp
15 poke 650,255: get x$: if x$="," or x$=":" or x$=chr$(34)
   then x$="[right]"'1xqo
16 if x$=chr$(13) then print "[home,down19]": goto 19'gjwj
17 if x$="" then 6'ddyg
18 print x$;: goto 6'cfwh
19 open 2,8,2,"0:map/1,s,w"'bgpk
20 for k=1024 to 1744 step 40'elwc
22 for z=0 to 39'deec
23 b=peek (k+z)'dfke
26 if b=32 or b=160 then b$=chr$(160):a$=a$+b$: goto 40'kyvp
27 if b>32 and b<64 or b>160 and b<192 then b$=chr$(b):a$=a$+b$:
   goto 40'oemu
28 if b>63 and b<96 or b>191 and b<224 then b$=chr$(b+32):a$=a$+b$:
   goto 40'pglw
30 b$=chr$(b+64):a$=a$+b$'foaf
40 next z: print#2,a$; chr$(13);:a$="": next k: print#2: close 2: stop 'iwxj
100 open 2,8,2,"0:map/1,s,r": print "[clr]";'cirb
112 for d=0 to 18: input#2,a$(d): next d'fobd
115 for d=0 to 18'deed
120 rem ifa$(d)=""thena$(d)=chr$(13)'bbmd
123 print a$(d);: next d'c if c
130 close 2'bbjx
150 for i=1 to 13: read a: poke a+54272,2: next 'hqth
160 data 1118,1126,1214,1233,1321,1324,1329,1335,
    1378,1524,1586,1592,1601'bopn
180 cp=1321:pp=1321: print "[down]"'doqi
280 poke pp+54272,2: poke cp+54272,5:
    print "[up]instructions[space]";'fveq
285 input x$'bcbk
290 if x$="n" then 500'dfri
300 if x$="s" then 600'dfxa
310 if x$="e" then 700'dfkb
320 if x$="w" then 800'dfec
330 goto 1000'bexb
500 if cp=1214 then pp=cp:cp=1126: goto 280'gvbh
505 if cp=1335 then pp=cp:cp=1214: goto 280'gvdm
510 if cp=1324 then pp=cp:cp=1321: goto 280'gvai
515 if cp=1321 then pp=cp:cp=1324: goto 280'gvan
520 if cp=1524 then pp=cp:cp=1324: goto 280'gvfj
525 goto 1000'bexh
600 if cp=1214 then pp=cp:cp=1335: goto 280'gvdi
405 if cp=1335 then pp=cp:cp=1378: goto 280'gv on
607 if cp=1378 then pp=cp:cp=1335: goto 280'gvop
610 if cp=1324 then pp=cp:cp=1524: goto 280'gvfj
615 if cp=1321 then pp=cp:cp=1524: goto 280'gvco
620 if cp=1233 then pp=cp:cp=1321: goto 280'gvyk
625 goto 1000'bexi
700 if cp=1126 then pp=cp:cp=1118: goto 280'gvej
705 if cp=1335 then pp=cp:cp=1329: goto 280'gvko
710 if cp=1329 then pp=cp:cp=1324: goto 280'gvik
715 if cp=1524 then pp=cp:cp=1601: goto 280'gvdp
720 if cp=1601 then pp=cp:cp=1592: goto 280'gvil
725 if cp=1592 then pp=cp:cp=1586: goto 280'gvuq
730 goto 1000'bexf
800 if cp=1118 then pp=cp:cp=1126: goto 280'gvek
805 if cp=1126 then pp=cp:cp=1214: goto 280'gvbp
810 if cp=1329 then pp=cp:cp=1335: goto 280'gvkl
815 if cp=1324 then pp=cp:cp=1329: goto 280'gviq
820 if cp=1601 then pp=cp:cp=1524: goto 280'gvdm
825 if cp=1592 then pp=cp:cp=1601: goto 280'gvir
830 if cp=1586 then pp=cp:cp=1592: goto 280'gvun
835 goto 1000'bexl
1000 print tab(14)"not[space]that[space]way": for x=1 to 200: next x'glcc
1010 print tab(14)"[up,space12,up]": goto 280'dhcy
ready.
```

NOTE: Line 5, f indicates shifted f

Antonym & Synonym

Michael Spiteri

```
10 REM ###ANTONYM & SYNONYM##'BUXC
15 REM ###(C) MICHAEL SPITERI 1984###'BCVI
20 POKE 53280,13: POKE 53281,8'CQVC
30 PRINT "[CLR,BLK]#########ANTONYMS AND
   SYNONYMS##########" 'BACJ
40 PRINT "[DOWN2]AN[SPACE,RVS]ANTONYM[OFF,SPACE]IS A
   WORD THAT IS OPPOSITE TO[DOWN]ANOTHER WORD."
   'BAHP
50 PRINT TAB(4)"[DOWN]E.G.[SPACE2,RVS]SLOW[OFF,SPACE]
   IS THE ANTONYM OF[SPACE,RVS]FAST[OFF]." 'CCAM
60 PRINT "[DOWN2]A[SPACE,RVS]SYNONYM[OFF,SPACE]IS A
   WORD WHICH HAS THE SAME[SPACE2,DOWN]MEANING AS
   ANOTHER WORD." 'BAMU
70 PRINT TAB(4)"[DOWN]E.G.[SPACE2,RVS]START[OFF,SPACE]
   IS THE SYNONYM OF[SPACE,RVS]BEGIN[OFF]." 'CCWP
75 PRINT "[DOWN]YOU WILL BE GIVEN A 20 QUESTION TEST."
   'BABS
80 PRINT TAB(12)"[DOWN2,RVS]HIT A KEY TO START" 'CDBK
90 GET A$: IF A$="" THEN 90'EHQI
95 POKE 53281,1'BHVL
100 FOR I=1 TO 10'DECW
105 POKE 53280,I'BHOC
110 PRINT "[CLR,SPACE]QUESTION:";I'BCOA
120 PRINT "[DOWN,SPACE]SCORE:";SC'BDLA
130 READ Q$'BCBX
135 PRINT "[DOWN,GRN,SPACE]WHAT IS THE[SPACE,RVS,<
   WHT>]ANTONYM[OFF,GRN,SPACE]OF -'BAPL
140 PRINT TAB(15);"[DOWN2,<BLK>]";Q$'CHOC
145 INPUT "[DOWN2,<RED>]";G$'BDCF
150 READ AN$'BDHB
160 IF G$=AN$ THEN PRINT "[RVS,DOWN2,BLU]CORRECT!!":
   SC=SC+1'GLJK
170 IF G$<>AN$ THEN PRINT "[RVS,DOWN2,BLK]WRONG,[OFF,
   SPACE]IT WAS[SPACE,RVS]";AN$'FJFM
175 FOR T=1 TO 1000: NEXT T'EITL
190 NEXT I'BBCE
200 FOR I=1 TO 10'DECX
205 POKE 53280,I'BHOD
210 PRINT "[CLR,SPACE]QUESTION:";I+10'CEAC
220 PRINT "[DOWN,SPACE]SCORE:";SC'BDLB
230 READ Q$'BCBY
235 PRINT "[DOWN,GRN,SPACE]WHAT IS THE[SPACE,RVS,<
   WHT>]SYNONYM[OFF,GRN,SPACE]OF -'BANM
240 PRINT TAB(15);"[DOWN2,<BLK>]";Q$'CHOD
245 INPUT "[DOWN2,<RED>]";G$'BDCG
250 READ AN$'BDHC
260 IF G$=AN$ THEN PRINT "[RVS,DOWN2,BLU]CORRECT!!":
   SC=SC+1'GLJL
270 IF G$<>AN$ THEN PRINT "[RVS,DOWN2,BLK]WRONG,[OFF,
   SPACE]IT WAS[SPACE,RVS]";AN$'FJFN
275 FOR T=1 TO 1000: NEXT T'EITM
290 NEXT I'BBCF
300 DATA LEFT,RIGHT,LITTLE,BIG'BVED
305 DATA GIRL,BOY,THICK,THIN'BTVH
310 DATA HARD,EASY,CLEAN,DIRTY'BVUE
315 DATA SMART,STUPID,DIFFERENT,SAME'BCKL
320 DATA QUEEN,KING,ANTONYM,SYNONYM'BBRH
325 DATA HUNDRED,CENT,CLOSED,SHUT'BYGL
330 DATA SACK,FIRE,CLEVER,SMART'BWAG
335 DATA DIFFICULT,HARD,ALLOW,LET'BYKM
340 DATA WEIRD,STRANGE,ANTONYM,OPPOSITE'BFVK
345 DATA FINISH,END,TINY,SMALL'BVQM
350 PRINT "[CLR]YOU SCORED ";SC;" OUT OF 20." 'BEUJ
355 PRINT "[DOWN2,<YEL>]" 'BALI
360 IF SC=20 THEN PRINT "OUTSTANDING!!" 'EESK
365 IF SC>14 AND SC<20 THEN PRINT "VERY GOOD!!" 'GITQ
370 IF SC>9 AND SC<15 THEN PRINT "NOT BAD." 'GHGL
375 IF SC<10 THEN PRINT "TERRIBLE!" 'EEVO
400 PRINT "[<CYN>]ANOTHER GO(Y,N)?" 'BAFD
410 GET A$: IF A$<>"N" AND A$<>"Y" THEN 410'IKPG
420 IF A$="Y" THEN RUN 'ECTD
430 PRINT "[<WHT>]GOODBYE!" 'BAUE
```

To modify for your own use alter word lists from line 300 – 345.

Supermath

Michael Spiteri

For the Commodore 64 and Vic-20

When dthis maths program is run, you enter your skill level and operator (e.g.:+ – X etc.). Then you will have to answer a number of sums, which change depending on your difficulty level. If you get the sum right, you get a big tic!...but....if you get it wrong, you get a black cross!

Although this program was designed and written on a CBM64, there are no pokes or special character codes that are not found on the Vic (and other machines) so it should run okay. You might need to change some of the lines to fit on the Vic's screen.

```
10 REM ###SUPERMATHS###(C) M.SPITERI 1985###'BKTF
30 PRINT "[CLR,BLK]##############SUPER MATHS###
   ############"'BAII
35 PRINT "[DOWN2]YOU WILL BE GIVEN 20 SUMS." 'BAYL
40 PRINT "[DOWN]FIRST SELECT YOUR SKILL LEVEL AND THE
   [SPACE3,DOWN]OPERATOR." 'BAWN
45 PRINT "[DOWN]ENTER SKILL LEVEL (1-5)";: INPUT SL'CEQN
50 IF SL>5 OR SL<1 THEN PRINT "[DOWN,RVS]BETWEEN 1 AND
   FIVE PLEASE.[OFF]": GOTO 45'HJBP
55 IF SL=1 THEN A=10:B=5'FJGL
60 IF SL=2 THEN A=50:B=25'FKLH
70 IF SL=3 THEN A=100:B=50'FLEI
80 IF SL=4 THEN A=500:B=200'FMEJ
85 IF SL=5 THEN A=1000:B=400' FNUP
90 PRINT "[DOWN]ENTER OPERATOR (+-*/)";: INPUTP$'CEHM
95 IF P$<>"+" AND P$<>"-" AND P$<>"*" AND P$<>"/" THEN
   PRINT "[DOWN]???": GOTO90'PLIX
100 PRINT "[DOWN2,RVS]HIT A KEY TO START" 'BAEA
105 GET A$: IF A$="" THEN 105'EIFE
110 POKE 53280,6: POKE 53281,1'CPSA
115 FOR Q=1 TO 20'DELD
120 PRINT "[CLR,DOWN,SPACE,PUR,RVS]SUM:[GRN]";Q'BCIA
125 PRINT "[DOWN,SPACE,GRN,RVS]CORRECT:[PUR]";C'BCEG
130 N1=INT ( RND (1)*A)+1'FJJD
135 N2=INT ( RND (1)*B)+1'FJLI
140 PRINT "[DOWN2,SPACE,RED]WHAT IS:" 'BAOC
145 PRINT "[DOWN,SPACE,BLU]";N1;P$;N2'BJNH
150 IF P$="*" THEN R=N1*N2
155 IF P$="/" THEN R=N1/N2'FHFK
160 IF P$="+" THEN R=N1+N2'FHXG
165 IF P$="-" THEN R=N1-N2'FHBL
170 PRINT "[DOWN,SPACE,GRN]ANSWER:";: INPUT G'CDHG
175 IF G=R THEN C=C+1: PRINT "[DOWN,SPACE,RVS,CYN]
   CORRECT!!!": GOSUB 1000'HLXR
180 IF G<>R THEN PRINT "[DOWN,SPACE,RVS,BLK]WRONG, IT
   WAS[OFF,SPACE]";R: GOSUB 1500'GJTN
185 FOR Z=1 TO 1000: NEXT Z'EIGM
190 NEXT Q'BBKE
200 PRINT "[CLR]" 'BATW
210 PRINT "[BLK]SCORE:";C'BCYA
220 PC=(C/20)*100'DKLC
225 PRINT "[DOWN]% CORRECT:";PC;"%" 'BEOH
230 IF PC=100 THEN PRINT "[DOWN]OUTSTANDING!!" 'EFDG
235 IF PC>49 AND PC<100 THEN PRINT "[DOWN]GOOD!!" 'GJEL
240 IF PC<50 AND PC>5 THEN PRINT "[DOWN]NOT GOOD!"
   'GHRI
245 IF PC<6 THEN PRINT "[DOWN]HOW BAD CAN YOU GET??"
   'EDCN
250 PRINT "[DOWN2]ANOTHER GO(Y,N)?" 'BASF
255 GET A$: IF A$<>"Y" AND A$<>"N" THEN 255'IKWN
260 IF A$="Y" THEN RUN 'ECTF
270 PRINT "[DOWN]GOODBYE!!": END 'CBGG
1000 PRINT "[HOME,BLU,DOWN7,RIGHT19]";'BBNV
1010 PRINT "[RVS,SPACE,OFF,DOWN,RVS,SPACE,OFF,DOWN,
     RVS,SPACE,OFF,DOWN,RVS,SPACE,OFF,UP,RVS,SPACE,
     OFF,UP,RVS,SPACE,OFF,UP,RVS,SPACE,OFF,UP,RVS,
   SPACE,OFF,UP,RVS,SPACE,OFF,UP,RVS,SPACE,OFF,UP,
   RVS,SPACE,OFF,UP|" 'BAKH
1020 RETURN 'BAQU
1500 PRINT "[HOME,BLK,DOWN3]"; TAB(20);'CFUB
1510 FOR I=1 TO 8: PRINT "[RVS,SPACE,OFF,DOWN]";: NEXT
   'FGPE
1515 PRINT "[HOME,DOWN10]"; TAB(20);'CFYG
1520 FOR I=1 TO 8: PRINT "[RVS,SPACE,OFF,UP]";: NEXT 'FGTF
1530 RETURN 'BAQB
```

NUMBER FORMATTING

Greg Perry

Sooner or later all of us who program on Commodore computers are faced with the problem of printing a column of floating point numbers (i.e. ones with decimal points), on either the screen or printer, so that the decimal points are aligned. (Plus 4/16 users are lucky – BASIC 3.5 has a PRINT USING command to perform the formatting for you). Everyone seems to have their own favourite routine to align the decimal points. We have published several in recent issues. Some involve several lines of BASIC and some are even in machine code. I too have a favourite routine or at least I did until the other day when I discovered my routine did not survive the following acid test of rounding the number –812.676144 to three decimal places.

Many standard routines use the INT function to round numbers to the desired number of places. By definition, the INTeger function returns the smallest integer (whole number) which is less than or equal to the number. The INT function does not round the number nor does it simply chop off the decimals. For example,

PRINT INT(12.5) gives 12

but

PRINT INT(–12.5) gives –13

Rounding is accomplished by a statement such as
PRINT INT(X*1000+.5)/1000

Which is used to round a number to three decimal places. This works well in the vast majority of cases. However, try the situations where X=821.676144 and see what happens! A further problem can be demonstrated by the line

PRINT 111.5555*1000+.5, INT(111.5555*1000+.5)

Obviously the correct answer is 111556. But notice how the INT function gives an incorrect answer. These problems are caused by slight inaccuracies of the CBM BASIC, primarily due to the limitations of 8-bit arithmetic and the mathematical method used to calculate the INT function.

A solution to the latter problem is to use an adjustment factor of 0.0000307 before taking the INT function as shown below.

(Other CBM functions also integerise but with different results. For example INT(145/3*3) =145 but a PEEK(145/3*3) actually returns PEEK(144)! And, on a slighlty different track 9*9*9 is 729 but 9↑3 gives 729.000001)

A good number formatting routine should provide the following

- Correct rounding of all positive and negative numbers to a given number of decimal places.
- Insertion of leading zeros for numbers with absolute values less than 1. (Numbers between +1 and -1 should appear as 0.X etc.)
- Numbers less that 0.01 should be represented correctly in the 0.00XX format and not in the E format. For example, PRINT 0.00454 gives 4.54E-03.
- Trailing zeros should be added to provide consistency. For example, 25 to three decimal places should be printed as 25.000.

The following routine was recently published by Mike Hart in the November edition of the English ICPUG newsletter. It is one of the most accurate and efficient I have seen to date.

(NOTE This program is formatted for use with our new HELPOUT keyboard entry checker program which checks your typing (and our typesetting!). If you are NOT using this program to check your typing, DO NOT ENTER the 'xxxx at the end of each line otherwise syntax errors will be occur when the program is run.)

```
10 REM FORMAT DEMONSTRATION'BTMD
100 Z2=9:Z3=3:Z4=1000:Z5=0.5:Z6=0.0000307:Z1$= "[SPACE9]":
    GOTO140'HPDJ
110 Z$=STR$(INT(Z*Z4+Z5+Z6*SGN(Z))):IF Z3=0
    THEN Z$=RIGHT$(Z1$+Z$,Z2): RETURN 'PIQN
120 IF ABS(Z)<1 THEN Z$=LEFT$(Z$,1)+RIGHT$("000"+MID$(Z$
    ,2),Z3+1)'LYNK
130 Z$=RIGHT$(Z1$+LEFT$(Z$,LEN(Z$)-Z3)+"."+RIGHT$
    (Z$,Z3),Z2): RETURN 'KEGL
140 FOR I=1 TO 25'DEIB
150 Z=RND(1)*10↑(RND(1)*4)*(1+2*(RND(1)>.5)): GOSUB 110
    'MCJN
160 PRINT Z;TAB(20)Z$: NEXT 'DIYE
170 REM NUMBER FORMATTING ROUTINE VARIABLES'BHSM
180 REM Z = INPUT NUMBER'BNBH
190 REM Z$ = OUTPUT STRING'BPSJ
200 REM Z1$= PADDING STRING OF 9 BLANKS'BBJD
210 REM Z2 = LENGTH OF OUTPUT STRING'BXSE
215 REM Z3 = NUMBER OF DECIMALS'BTXH
220 REM Z4 = ROUNDING FACTOR'BRBD
230 REM Z5 = ROUNDING ADJUSTMENT 0.5'BYHG
240 REM Z6 = BALANCING FACTOR FOR CBM INACCURACY
    'BJCK
```

Line 100 sets up the variables for the main routine as defined in the REM statements. Mike Hart suggests that the balancing factor Z6 of 0.0000307 is the smallest number found by trial and error that works for both positive and negative numbers. If you wish to use a different number of decimal places, use

No Decimals	Z3	Z4
0	0	1
1	1	10
2	2	100
3	3	1000
4	4	10000

These values must be set before calling the subroutine at lines 110-130.

The subroutine routine could be placed anywhere within your program although it is usual to put the commonly used subroutines near the top of the program for maximum speed of execution.

The routine is equally useful for output to the screen or to the printer since the length of the string Z$ containing the formatted number is always of a set length. This makes it easy to calculate the positions across the page.

CADPIC™

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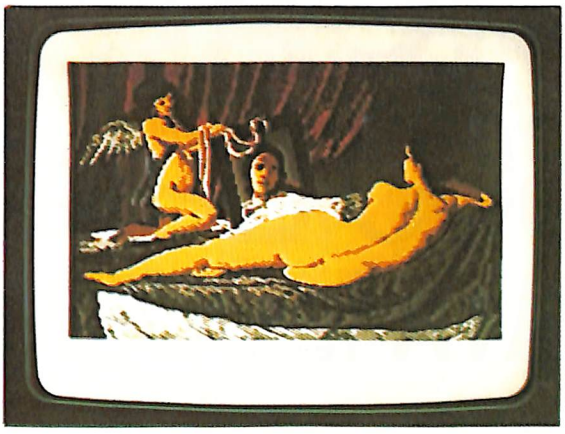
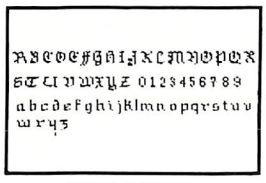
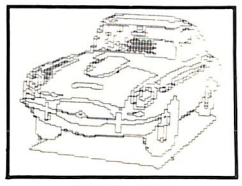
Computer-aided design for the Commodore 64



VENUS by Velazques. A PAINTPIC© enhancement of a MICRONEYE© camera image.



GOTHIC ALPHABET



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(A division of CW Electronics)

MICRONEYE™ is the trademark of Micron Technology, Boise, Idaho.

HAIRSAVER POWER PEACE

Mick Adamek, Boroko PNG

One of the most frustrating problems encountered with the VIC-20 is when a program which is nearly completed, crashes for no apparent reason.

After carrying out test I found that the reason for this was mains-borne 'glitches', usually in the form of short-duration power cuts.

After connecting the unit described below I have had no further problems.

The components used are not critical.

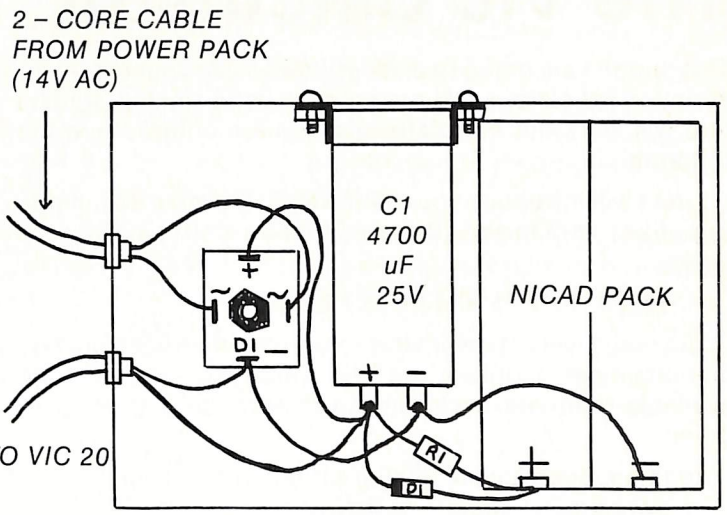
D1 is a rectifier bridge, 4A 40V
D2 is a IN 4006 or any 2A 40V diode.
R1 is 220ohm, 1W
C1 is 4700uF, 25V.

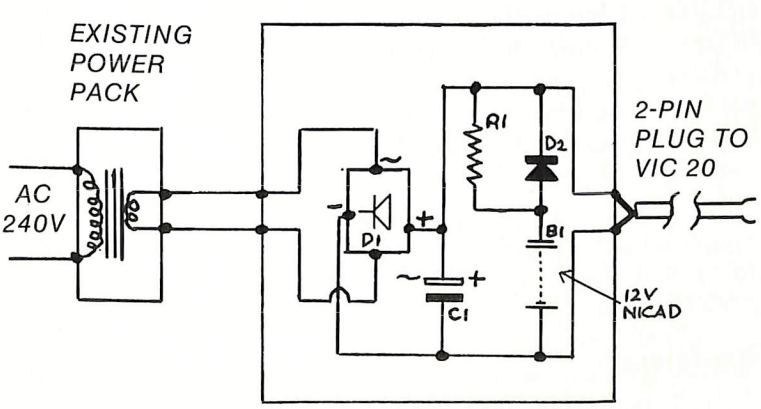
The unit contains no dangerous voltages. I built mine in a small plastic sandwich box. The nicad battery I used was a 225mA/hour 12V one, which runs the VIC]20 for 15 – 20 minutes if the power remains off, before it is advisable to SAVE any program you are working on and continue when the power is resumed.

A larger battery can be used, even a car battery, although this is big and rather messy.

It does the battery good to be discharged occasionally, by running the VIC-20 with no mains supply.

The polarity of the connector to the VIC-20 is not important, as the VIC-20 has its own rectifier circuit.





D1 – 4A 40V BRIDGE RECTIFIER
D2 – 2A 40V DIODE
R1 – 220 OHM 1W RESISTOR
C1 – 4700uF 25V CAPACITOR
B1 – 12V 225mA/HOUR NICAD

(ED – the title was dreamed up by Lawrence our assistant editor – don't worry you've got to humour these Americans.)

THE VIC MAGICIANS APPRENTICE

Michael Spiteri

The Vic Calculator

This month I am going to discuss how to use your Vic-20 for serious applications. We are going to write some programs that will work out calculations of figures entered into the program.

First I will introduce you to the Vic-20's simple calculator. Suppose I want to add 10 and 55 together, all I have to do is type:

PRINT 10 + 55 and press RETURN.

The result will appear on the screen. You can work out any mathematical problem, all the functions are directly available from your Vic's keyboard, here are just some of them:

Addition, Subtraction, Multiplication and Division:

PRINT 45 + 20 press RETURN
PRINT 447 – 555 press RETURN
PRINT 4 * 6 press RETURN ('*' is the Vic's multiplication sign)
PRINT 50/10 press RETURN ('/' is the Vic's division sign)

Suppose you wants to find 4 squared, 6 cubed and 9 to the power of 6, we use the '↑' sign, e.g:

PRINT 4 ↑ 2 press RETURN.
PRINT 6 ↑ 3 press RETURN.
PRINT 9 ↑ 6 press RETURN.

If you want to find the square root of a number, we use the SQR(X) command. E.g :

PRINT SQR(49) press RETURN. The result will be 7.

To find PI, just PRINT PI or PRINT (shift '↑').

There are many commands and functions built into the Vic, for all of them, refer to the complete list at the end of this article.

Formula's

Using the information mentioned above, we can get our Vic to work out formulas. Let's say, for example, we want to the computer to calculate SIMPLE INTEREST, the formula we need to translate is:

INTEREST = (BALANCE x (RATE / 100) x PERIOD of MONTHS / 12)

PHEW!

We are going to write a program that will allow the user to enter the BALANCE, RATE and PERIOD of MONTHS and then use a formula to give the INTEREST. First we will give each variable a pronumeral:

B = Balance, R = Rate, P = Period of Months, IN = Interest

The translation of the formula in computer language is:

IN = INT(B*(R/100)*P/12)

All the INT does is round the final figure off to a whole number. Let's start writing the program:

```
10 REM #INTEREST PROGRAM#
```

This is just a programmers note, the computer ignores this line.

```
20 PRINT "ENTER THE BALANCE:"
30 INPUT B
```

Line 20 tells the user to enter the balance. Line 30 waits for the user to enter the figure, labelling the the figure as B.

The following four lines tell the user to enter the Rate and Period.

```
40 PRINT "ENTER THE RATE:"
50 INPUT R
60 PRINT "ENTER THE PERIOD in MONTHS:"
70 INPUT P
```

Now the computer has all the required numerals, we can transfer the figures into our formula:

```
80 IN = INT(B*(R/100)*P/12)
```

Line 90 prints the final result

```
90 PRINT "THE INTEREST IS:";IN
```

Now run the program, and you should now have a useful interest program.

Here is the complete list of functions and operators:

OPERATORS:

+ – * / PI % # ( ) [ ] = < > . &

FUNCTIONS:

ABS(X)	Returns the absolute value of the expression X.
ATN(X)	Returns the arctangent of X in radians.
COS(X)	Returns the cosine of X in radians.
INT(X)	Returns the largest integer <=X.
LOG(X)	Returns the natural logarithm of X.
SIN(X)	Returns the sine of X in radians.
SQR(X)	Returns the square root of X.
TAN(X)	Returns the tangent of X in radians.

Others are: TI$, USR(X), VAL(X$), STR$(X), TAB(X), SPC(X), TI, STATUS, SGN(X), RIGHT$(X$,I), LEFT$(X$,I), MID$(X$,I,J), PEEK(I), POS(X), LEN(X$), EXP(X), FRE(X), CHR$(I) and ASC(X$)

Exercises:

Using the information given,

a) If A = 81, find the square root of A.

b) If XX = 78, find XX to the power of 50.

c) If A = 5, B = 77, C = 8, D = 67, and Z = A multiplied by the square root of B, divided by C added to D, find Z as a whole number.

d) Write a program that will add up ten numbers(that are entered through INPUTs), print all the numbers on the screen with the total printed at the bottom. Try to label all of the numbers.

e) Write a program that works out velocity. Let V = Velocity, U = Initial velocity, T = time and A = acceleration. The formula

for working out velocity is:

VELOCITY = INITIAL VELOCITY + (TIME x ACCELERATION)

The user must be able to enter U, T and A and the result should be printed on the screen.

And for a game

f) Write a program that works out Pythagoras' theorem. You will have to look up the formula yourselves. Try displaying a triangle during the program using the Vic graphic characters.

Happy calculating, and don't forget Pythagora's theorem.

(ED – I said I'd give Michael's book 'THE VIC FAMILY BOOK' a plug. Michael this is it! Bye-the-bye a solution to (f) is in the book. $16.95 from Superior Software. Their advert is in this magazine.)

SWEET 16

Michael Spiteri

Alright all you CBM16 owners out there, how about proving your programming abilities – write a short program 10 – 100 lines long for the C16. When writing the programs, try use the machine's full capabilities.

To encourage you three of the most original programs will be sent a copy of MASTERMIND16 (valua at $15). All programs published will bear the author's name. AIPlease send your program on tape (SAE if you wish it returned)to: Michael Spiteri, C/- KIM BOOKS (address page 1.)

Now back to business, type in this short program for an impressive display.

```
10 REM ##GRAPHICS##
20 REM ##M.SPITERI##
30 COLOR 0,1
40 GRAPH 1,1
50 FOR A=1 TO 45
60 BOX 1,100-A,50+A,150,150,45
70 NEXT
80 FOR A=1 TO 15
90 J=J+5
100 CIRCLE 1,20+J,20,20,20
110 NEXT
120 FOR A=1 TO 200 STEP 5
130 PRINT 1,20+A,190 TO 50+A,190
140 PRINT 1 TO 35+A,170: PRINT 1 TO 20+A,190
150 NEXT
160 FOR A=1 TO 140 STEP 10
170 DEF 1,235,30+A,25,25, , , ,360/8
180 NEXT
190 FOR A=1 TO 1000
200 X=INT ( RND (1)*300)+1
210 Y=INT ( RND (1)*200)+1
220 PRINT 1,X,Y: NEXT
```

ERRATUM

MULTICOLUMN RECORDS

Contrary to the statement in the last paragraph of this article, the listing was printed in full in the last issue.

VIATEL HINT

If you have a V.I.P. terminal and appropriate 1200/75 modem, you MAY find that you can communicate with VIATEL by setting the Terminal program at 1200 Baud and slow transmit.

Adventure Help

Michael Spiteri

Stuck in a cave? Up a creek without a paddle? Got a monster about to devoure you? Just don't know what to do? ADVENTURE HELP is at hand!

Send us your problem, the name of the game and machine. We will then print it and maybe some courageous adventurer will send in the solution to the problem (or just read it with a knowing smile.)

Also, if we have some courageous adventurers who are loaded with tips and clues for adventure games then please send them in – you might help reduce the suiciderate.

The address is:

Adventure Help
Commodore Magazine
Kim Books
82 Alexander St,.
Crows Nest NSW 2065

I was pretty rapt in myself when I finally solved Scott Adam's HULK, and below I have bestowed unhappy Hulks with some tips.

There are also some tips for BLADE OF BLACKPOOLE, INSTITUTE, PIRATE COVE and SHERLOCK.

Does anyone out there know how to excite the dragon in ZORK II? (only clean suggestions please!)

THE HULK(CBM64) Trouble with bees? Wave the fan outside of the dome. Plugging the outlet with wax can give you a longer conversation with Dr. Strange. And to stay HULK a little longer without skin permeating gas, REMEMBER NIGHTMARE.

BLADE OF BLACKPOOLE(CBM64) To get past the plant you will need the bees (use honey to catch them). Swimming quicksand will help you get somewhere.

INSTITUTE(CBM64) A funny little guy annoying you with a question? The answer lies on a plaque in the room full of patients.

PIRATE COVE (CBM64 VIC20 CBM16 PLUS4) – Looking for some keys? Try under the rug. You'll need something to remove the nails with first.

SHERLOCK(CBM64) Major Forbes lives in Sidmouth Street in London, catch a cab there.

REACH FOR THE GALAXY If you dont have a fleet over your home star it seems unlikely that computer players will attack it. Designers say this should not happen but thats the way it is with my C64 version. (Chris Hindmarsh. WA)

(ED – Michael cannot supply all the hints! So help him out – send in your tips and problem to the address above.)

Good Adventuring!

COMMODORE 64 KERNEL REV -03

SOFTLOADED UPDATE FROM KERNEL -02

Paul Blair

Volume 4 Number 5 of this magazine recorded a change in C64 KERNEL (that's Commodore spelling!) routines to overcome some minor bugs that had been discovered. All new machine deliveries overseas contain the new ROM chip, but the local scene is not known. The -03 set is very like the SX-64 set, except for the essential differences because of the different natures of the two machines. (By the way, although the SX-64 was not configured for use with a cassette for storage, most of the tape commands are in it!).

The differences between -02 and -03 are:

1. Clearing the screen now puts the current character colour into colour memory. If you now POKE directly to the screen RAM, the character will be visible without also having to POKE the colour RAM.

2. No longer need you worry when DELeting characters from the bottom line of the screen.

3. You may now use an INPUT prompt longer than one line without fear of including the prompt in the response.

4. The RS232 routine that marks reception of a start bit has been modified, although the 'fix' looks like it might cause more problems than it fixes. The RS232 has been reported as having data transmission timing problems.

Another patch has been discovered, this time to permit cassette LOADs of VIC tapes. I haven't tried it, so can't give guarantees. Would someone give me some feedback, please.

Here's the program, written by Mike Todd of ICPUG.

```
100 REM"################################
101 REM"#
102 REM"# COMMODORE 64 ROM BUG FIXES
103 REM"#
104 REM"# CONVERT - 02 KERNEL TO AN
105 REM"#              - 03 KERNEL
106 REM"#
107 REM"# VIC TAPES CAN BE READ
108 REM"#
109 REM"# DISCONNECT ALL CARDS ETC
110 REM"#
111 REM"# PREPARED FOR ICPUG (UK)
112 REM"#
113 REM"################################
114 :
120 PRINT"[CLS] CHANGING -02 KERNAL TO":PRINT"[SPACE10]
    -03 KERNAL IN RAM"
130 GOSUB 1000:REM ROM-RAM ROUTINE
140 SYS (L):REM MOVE ROM TO RAM
150 GOSUB 2000:REM MAKE CHANGES
160 POKE 1,53:REM SELECT RAM
170 END:REM -03 SOFTLOADED
180 :
997 REM" ############################
998 REM" SET UP ROM-RAM MACHINE CODE
999 REM" ############################
1000 READ I : L = I
1010 READ X
1020 IF X < 256 THEN POKE I,X:I = I+1:C = C+X: GOTO 1010
1030 IF X <> C THEN PRINT "CHECKSUM ERROR":STOP
1040 RETURN
1050 DATA 828: REM START ADDRESS
1060 DATA 160,0,132,2,169,160,133,3,177,2,145,2,200,208,249,
     230,3,165
1070 DATA 3,208,1,96,201,192,208,238,169,224,208,232
1080 DATA 412: REM CHECKSUM
1090 :
1997 REM" ######################
1998 REM" MODIFY SPECIFIED BYTES
1999 REM" ######################
2000 READ X: IF X = -1 THEN RETURN
2010 IF X>255 THEN I = X:GOTO 2000
2020 POKE I,X: I = I+1 :GOTO 2000
2100 REM"--- FORCE RAM ON RESET
2110 DATA 64982,229
2200 REM"--- -03 ROM RS232 FIX
2210 DATA 61332,76,211,228
2220 DATA 58579,133,169,169,1,133,171,96
2300 REM"--- -03 ROM SCREEN CLEAR FIX
2310 DATA 58586,173,134,2
2320 DATA 59911,32,218,228,169,32,145,209,136,16,246,96,234
2400 REM"--- -03 ROM INPUT/DEL FIX
2410 DATA 58914,146,229
2420 DATA 58748,32,240,233,169,39,232,180,217,48,6,24,105,40
2430 DATA 232,16,246,133,213,76,36,234,234,228,201,240
2440 DATA 3,76,237,230,96,234
2500 REM"--- -03 ROM CHECKSUM CORRECT
2510 DATA 58540,129
2520 DATA 65408,3
2997 REM"--- ICPUG TAPE TIMING FIXES
2998 REM" TO PERMIT VIC TAPE LOADS
2999 REM" OMIT 3000-3080 IF NOT REQUIRED
3000 DATA 63837,50
3010 DATA 63856,40
3020 DATA 63865,32
3030 DATA 63873,37
3040 DATA 63899,16
3050 DATA 63946,141
3060 DATA 64009,185
3070 DATA 64034,124
3080 DATA 64102,185
9999 DATA -1: REM THE END
```

Review

Blitz
A fast BASIC compiler.

Reviewed by Greg Perry

BASIC is quite a good language to use, even the somewhat limited language that is used in the C64. It is probably the easiest language to learn and can be used to write most types of programs from games with sprites and sound to full business programs for accounting and the like. However, on the C64 in particular, it is not very fast. One simply has to write a program which moves two or three sprites around the screen to see just how slow it actually is. For commercial uses, a few more problems appear. For example, the speed of a sorting program or reading and writing a complete set of monthly accounts to disk or the printer. Another major problem for commercial programs is 'garbage collection' of unwanted string information.

How does one overcome these limitations while retaining the ease of BASIC? The answer is to use a program called a 'compiler'. There are various types of compilers which take the original BASIC program and convert it either into machine code or into a shorter from of code which will run much faster than the original.

Many of us have been using Commodore's PETSPEED compiler for some 18 months for commercial programs but several good programs from the US have appeared using a new C64 compiler called BLITZ from the Skyles Electric Works. After a long anxious wait, it is now available in Australia.

BLITZ is a delight to use and offers some advantages over PETSPEED but also has some disadvantages. The programs work in quite different ways. PETSPEED produces a real machine code, not as efficiently as one could write one's self of course but several years faster! BLITZ on the other hand compiles the BASIC program into a shortened high speed code called P-Code. To this it adds 16K of machine code which interprets and runs this P-Code program about four times faster than normal BASIC.

The advantage of BLITZ is that it compiles the original BASIC program in two passes, significantly faster than does PETSPEED. This is particularly usefull when one has made some syntax error in the program, which incidentally shouldn't happen since the program should have been checked and run first!. With its long 5 pass compilation time, PETSPEED may not find the error for 25 minutes! A most annoying waste of time. One must reload the original BASIC program, make the change, and re-compile while hoping for 20 minutes that there are no more errors!

The length of the finished program with both compilers depends on the length of the original provided that the original is longer than 16K. Both compilers add 8k or 16K of their own code for special routines to the start of the compiled program. BLITZ also produces a shorter compiled program making it faster to load. A large sample program on mine (87 blocks on disk or about 22K) took just over 12 minutes with BLITZ compared with more than 35 minutes with PETSPEED. BLITZ produced a compiled version of 83 blocks on disk compared with 106 for PETSPEED.

These times and sizes are not as good a comparison as may appear at first sight. First, PETSPEED takes longer to compile by produces a machine code program which runs 8 times faster than BASIC compared with only 4 for BLITZ. Second, PETSPEED declares all its variables at compilation time, meaning that the program on disk is longer but all the variable space is loaded along with the program.

Both compilers allow you a number of extra statements and functions over standard BASIC. Integer FOR/NEXT loops and more extensive user-defined functions of the type DEF FN(A$)=.... are only two advantages. A greater number of nested FOR/NEXT and GOSUB/RETURN structures are allowed in BLITZ and it also supports expansion cartridges like VICTREE. PETSPEED does not allow dynamic DIMensioning of arrays (i.e. DIM A(N,N)) but BLITZ does. (Usually a poor idea in any case!)

Probably the major advantage of BLITZ is for menu driven suites of programs. With PETSPEED it is not possible to load a second program from within a compiled program and retain all the variables from the first. This is because every PETSPEED program contains its own specific variables. However, it is possible in normal BASIC and BLITZ programs. With BLITZ it is possible to optionally add the 16K interpreter to only the first program of a suite and compile the other sub-programs so that variables are passed from one program to another. This makes for more efficient program structures as well as far shorter programs and hence faster loading times. It also provides excellent protection for the whole suite since the sub-programs can only be run from within the main program.

Garbage collection is eliminated with PETSPEED but only speeded up (although greatly) with BLITZ. Overall, a PETSPEED compiled program run appreciably faster than a BLITZ program but this must be related to the compilation time and other advantages of BLITZ.

Prices are PETSPEED $99.00 and BLITZ $99.00. It is hard to say which is the better program. Both have their advantages for different situations, with BLITZ probably having the edge for large commercial multi-program suites.

PETSPEED is widely available and BLITZ was supplied by Chambers Computer Supplies, 48-50 Monkhouse Drive, Endeavour Hills, Victoria 3802 (Phone 03.7002451).

News Releases

continued from page 5

Items received since the previous issue

spread from Port Hedland in the north, Albany in the south and Kalgoorlie in the east. As a result, the decision was made to rearrange the group into several Sub-groups located in different points around the Perth metropolitan area augmented by Sub-groups in major country areas.

So we reach the current situation where there is now a Central Vic-Ups advisory committee co-ordinating five main groups servicing the metropolitan area (Bullcreek, Gosnells, Hills, Morley and Nedlands) plus country groups (in such areas as Port Hedland, Kalgoorlie and Kambalda). As is only to be expected, the Vic-Ups organisation has now expanded to cover the Vic-20, C-64, SX-64, C-16 and Plus-4 and is already gearing up for the soon to be released C-128. To date we now have a membership in excess of six hundred . . . . and, as Jack Palance says "believe it or not" it's still rising!

Although somewhat detailed, the above provides you with an insight as to the events that have taken place in W.A. over the last few years since the arrival of the Commodore Vic-20.

VIC-UPS SUB-GROUPS

MEETING PLACES, TIMES & CONTACTS

BULLCREEK:

Dates: 1st & 3rd Tuesday of each month
Times: 7-30pm to 9-30pm
Place: Willetton Senior High School. Pinetree Gully Road, Willetton
Contact: Doug Hope 332 3482

GOSNELLS

Dates: 2nd & 4th Tuesday of each month
Times: 7-30pm to 9-00pm
Place: Thornlie Technical College. Burslem Drive, Thornlie
Contact: Allan McIvor 458 4503

HILLS

Dates: 2nd Monday & 4th Tuesday of each month
Times: 7-30pm to 9-30pm
Place: Jorgensen Park Recreation Centre. Mundaring Weir Road, Kalamunda
Contact: Jim Stivey 459 3380

MORLEY

Dates: Each Tuesday of the month
Times: 7-30pm to 9-30pm
Place: Morley Recreational Centre. Walter Road, Morley
Contact: Bill O'Connor 276 5886

NEDLANDS

Dates: 2nd Saturday & 4th Tuesday of each month
Times: 7-30pm to 9-00pm Tuesdays. 1-30pm to 4-00pm Saturdays
Place: Hollywood Senior High School. Smythe Road, Nedlands
Contact: Gus Perger 384 9191

COMMODORE APPOINTMENT

Commodore International Ltd has hired Mr Thomas Rattigan, a former Pepsico Inc executive, as president of its North American operations which encompass the home computer maker's largest, increasingly troublesome market.

It joins a growing number of computer companies hiring top managers with consumer-products marketing experience, among them Apple Computer Inc, whose chief executive, Mr John Sculley, is former president of Pepsico's US unit.

Commodore's hiring of Mr Rattigan and two other executives in recent months – former high-technology analyst, Mr Clive Smith and former Apple vice-president, Mr Frank Leonardi — appears to be aimed at offsetting the lack of high-technology marketing expertise on the part of Commodore's president and chief executive, Mr Marshall Smith.

Mr Smith was hired 14 months ago for his strong manufacturing background. He has been president of the US unit of Thyssen-Bornemisza NV, a diversified manufacturer.

Mr Rattigan, 48, had worked at Pepsico from 1970 to 1984. In 1982, he became president of its Pepsico Bottling International units, taking over that 15,000 employee operation after it was hit with an overseas accounting scandal.

COMMODORE DOCTOR

by Dr. Greg Perry

The aim of this column is to help readers with any problems they have with CBM/PETs, VICs, C64s, Plus 4/C16 and associated Commodore equipment. Send us your queries and we will do our best to provide an intelligent answer.

Alternatively, if you don't have any immediate problems but have discovered some smart tricks or better ways to program some of our answers/articles we would be interested to hear from you. You never know the routine may even win you a prize for the best item published each month.

Write to
Commodore Doctor
The Commodore Magazine
Kim Books
82 Alexander Street
Crows Nest, NSW 2065.

Please ensure that any program listings include a REM statement with your name and address. (By the time it passes through several hands and reaches me sometimes bits of the letter can have been mislayed. If not, I'm also likely to lose it!)

NICE LISTER

A couple of people have written about problems with my NICE LISTER program. Most of the problems stem from the fact that the machine code routine lives in 49152+ and uses some temporary storage in locations 251 on. This will conflict with just about most other machine code wedges, Rabbit, BASIC AID and Pauls MONAD and BASAD, and some printer wedges. The program, as is, will not work with the centronics printer wedges. (I have been meaning to provide an update version for some while now to include the BASIC 3.5 commands.)

Before loading NICE LISTER, either turn off all wedges or reset the C64.

QUESTION AND ANSWER

Q. Is it wise when using my C64 to sit about a foot in front of my TV, or should I be back a couple of metres. Does eye strain occur when sitting right up close?

Geoffrey Kelly, Wanberal, NSW

A. *The light intensity from a home TV screen is in fact quite high and sitting very close is not recommended. I have some specific information somewhere but cannot locate it at the moment! There was once a suggestion that for a 21 inch TV, the minimum recommended viewing distance should be 8 ft. Also, do not view a TV in the dark, always have some light on in the room. This minimizes the contrast between the intensity of the screen and the rest of the room. There has been a long running argument about the safety of VDUs and TVs but the consensus appears to be that they are quite safe providing one is not too close. As a guide, I view my 12in TV from about 3-4 feet away. Eye strain should not be a problem although most viewers have the brightness/contrast too high. When using a TV for the computer, turn the brightness and contrast down as low as comfortable.*

Q. I recently purchased a 1541 disk drive and have been experimenting with various file types; sequential, relative and random. However, when some of the experiments were not successful I was left with a number of files called a comma ',' . Attempts to erase these files by the recommended method of PRINT#15,"S0:," were completely unsuccessful. Therefore I tried to use the method to using the "*" command with PRINT#15,"S0:,*", however my stupid disk drive erased all the files on the disk!!! Can you please comment.

Allan Bird, Richmond

A. *You have fallen into one of the common traps for the beginner. I did that once, but only once, since it took a very long time rewrite the lost programs. Luckily there is a simple solution to your dilemma. The command PRINT#15,"S0:?" will scratch ALL FILES on the disk which have names one character long. That includes comma files and others such as "A" or "V" etc. If you have any other files on the disk which have names one character long, which you do not wish to be scratched, you will have to use the RENAME command PRINT#15,"Rx=yyy" to change them to a longer name.*

For the record, a common method of producing a ',' file is to use, for example, OPEN 2,8,2, F$+",s,w", designed to open a sequential file for write access with name contained in the string F$. However, if F$ is blank, a comma file will be the result. Search around in the 1541 manual and you will find that the '' and '?' are wild cards. The '*' means and anything else while the '?' means any character. For example, ABC* refers to any file starting with the characters ABC such ABC,ABCD, or ABC12547. A name such as A?B means any file of three characters in length with first letter of A, any second character, and third character of C. Using PRINT#15,"S0:*" will then refers to ALL files on the disk and carry out you command to the letter and scratch everything. For a fuller description read Paul Blair's various articles on Disk Commands.*

Q. I have been searching for a program to suit my C64 which will automatically run a program after it has finished loading from disk as is the case with many commercial programs. To data I have been unsuccessful.

David Spence, Greensborough, Vic

A. *There should be an article soon on an auto-load-run program for disk users. Stay tuned.*

Q. I have written a program which sets up data items related to sprite graphics. I have been wondering if there is a simple routine that I could use to delete unwanted program lines at the completion of the program. This would do away with the chore of having to copy down line numbers and retype them in again.

Related to this is there a way to load in a short BASIC program at the end of the one currently in memory so that or doesn't overwrite the first program?

B.J.Giddings, Salisbury Plains, S.A.

A. *Two quite simple programs can be written to solve your problems. Both use the dynamic keyboard technique (See V4, No5). To append or join a second program onto the end of one currently in memory, all that must be done is to set the start of BASIC pointers in memory locations 43, and 44, to the end of the current program, load the new program, and reset the start of BASIC to 1025 as usual. This can be done directly from the keyboard or as follows. Note that Line 14-15 sets pointers in 43,44 to the start of variables (in 45,46) LESS TWO. Enter this program and run it to append the first program. (If NOT using HELPOUT to enter program, DO NOT ENTER the apostrophe ' or anything that follows it!)*

```
10 REM APPEND PROGRAM GREG PERRY
   1984'BBKE
11 INPUT "PROGRAM TO APPEND";F$
   'BDKD
12 PRINT "[CLR,DOWN3]LOAD"CHR$(34)
   F$CHR$(34)",8" 'DKGF
13 PRINT "[DOWN4]POKE 43,1: POKE 44,8"
   'BAWF
14 S= PEEK(45)+ PEEK(46)*256-2'GNFH
15 POKE 43,S AND 255: POKE44, INT(S/256)
   'FRHI
16 POKE 198,2: POKE631,13: POKE632,13:
   PRINT"[HOME]": END'FVUK
```

NOTE: All programs are simply joined, no line numbers are changed. If using this program, ensure that the line numbers of the second program are greater than those of the first.

A delete routine can be done by getting the computer to print the offending lines on the screen and press return – all by itself! Add the following to the end of a program and type RUN 63500 when required.

```
63500 REM DELETE LINE SUB'BNIC
63510 REM GREG PERRY 1984'BNCD
63520 REM TEMP END STORAGE 253,254
      'BVSG
63530 REM TEMP START STORAGE 251,252
      'BXVH
63540 INPUT "[CLR]START LINE ";S'BCPG
63550 INPUT "END LINE";E'BCRG
63560 GOTO 63600'BFKF
63570 S= PEEK(252)*256+PEEK(251)'FODL
63580 E=PEEK(254)*256+PEEK(253)'FOSM
63590 IFS>ETHENPRINT"[DOWN2]DONE!":
      END 'FDPM
63600 PRINT "[CLR,DOWN2]"S'BBLA
63610 PRINT"[DOWN]GOTO63570[HOME]";
      'BBMD
63620 POKE 198,3: POKE 631,13:
      POKE 632,13: POKE 633,13'EBOI
63630 S=S+10: POKE 252,INT(S/256)'FPFI
63640 POKE 251,S-INT(S/256)*256'FOSJ
63650 POKE 254, INT(E/256)'DKRH
63660 POKE 253,E-INT(E/256)*256: END
      'GPDL
```

continued overleaf

COMMODORE DOCTOR
continued from previous page

Q. I have recently purchased a 1541 drive and I have a program (disk-monitor) which allows you to write and read blocks to and from the disk. I was wondering if there were any programs that let you write machine code programs to the disk controller and if so where I could obtain one.

Michael Bone, Strathalbyn, S.A.

A. *If you really want to do this, at least first obtain a good map of the 1541 DOS so that you can see what you are doing. An excellent book on the 1541 is Richard Immers' "Inside Commodore DOS" available from DATAMOST, 20660 Nordhoff St, Chatsworth, CA 91311-6152, USA for roughly A$20.00. This does explain how to write code to the disk buffers. Alternatively, some copy programs, DISECTOR and THE CLONE MACHINE, also give you a utility on the disk to read/write/assemble/disassemble machine code in the ROM/RAM of the 1541. Check a copy of COMPUTE for the address. Or, ask around an see if anyone has them locally.*

Q. I would like to know if there is a FORTRAN compiler available for the C64. If there is, where and what is the cost for the mentioned item.

Othman Mohamed, St Lucia, Qld

A. *Unlike PASCAL, there is not a stand-alone FORTRAN compiler for the C64 that I am aware of but various languages such as FORTRAN, COBOL and TURBO-PASCAL are available for the C64 to run under CP/M using the Commodore CP/M cartridge ($70). You must buy the CP/M cartridge before you can use the languages. The first two languages are available a Commodore products (written by NEVADA Software). Should be available from you local Commodore Dealer and prices are quite reasonable, less than $100. TURBO-PASCAL I am not sure about, but am chasing it up for my own benefit. Contact CW Electronics or Commodore themselves in Brisbane.*

Competitions

Interesting One Liners

K.Y. Boey from Wantirna, Vic takes out this month's prize by sending in the following programs.

Colour Attack

```
0 R=INT(RND(0)*43+48): POKE 646,R:
  PRINT "[RVS,SPACE]";:T=S↑313:GET A$:
  PRINT A$;:S=S+1: IF ASC(A$+CHR$(0))
  <>R THEN 0
```

(Note: You must use the abbreviations rN,pO,?,aS,cH,and tH to enter the whole line correctly.)

This is a one line game where you have to match speed with the computer by hitting the keyboard to get the right key to match the colour of the cursor. The objective is to stop the computer as quickly as possible. When the computer stops a PRINT S will give the score. The variable R corresponds to the CHR$ values for the alphabet, number, and symbol keys. The '*43+48' can be changed to suit. The 'T=S↑313' is put in in place of a delay loop to slow the cursor speed. (It just gives the computer something to do for a while.)

Competition 2

I am beginning to wonder where all the problem solving talent has gone. I have only received one entry for this problem. The reader suggested that the answer was length = 17 and breadth = 17 with total area of 289. It was a fair try but unfortunately incorrect.

The Problem: Two computer experts, who live on country properties, are having a quiet drink in a country pub. Expert 'A' owns a rectangular property which is totally enclosed within a 23 by 23 kilometre square. Expert 'B' knows the area of the property and that the sides are whole numbers (integers), but does not know the dimensions. He ('B') asks if the breadth of the property is greater than half the length. Expert 'A' answers. (We are not privilege to rural conversation, but we know the answer was either yes or no.) On hearing the answer, expert 'B' can now calculate the dimensions of the property. A farmer has been quietly listening to the conversation, and, although he did not previously know the area of the property, on hearing both the question and answer, thinks for a while, and then, to their astonishment, tells the computer people what the area and dimensions of the property are. (What happens to him after that we won't discuss.)

That's the problem. Can you do it? What is the area and dimensions of the property?

I think its about time I gave a few hints.

Hint one: work out the dimensions and areas of all the rectangles (including squares) with integer sides within a 23 by 23 square, then find which one is uniquely related to the length verses breadth question L>2*B). If two rectangles have the same area, and both have l>2*B then obviously neither can be the unique solution.

Hint two: For a correct solution to emerge the fact that there may be one or more rectangles which lie along the diagonal and therefore have lengths which are greater than 23.

The correct solutions will receive NSW lottery tickets, software, or a book, or, if no correct solutions are received, then the closest or best effort will receive the prize.

Good luck!

Competition 3

Write a program in BASIC which will print the following pattern on the screen.

The catch is that the program may ONLY use ONE PRINT statement containing an '*'. That is PRINT "*" or similar.

The competition will run for two issues from now. The best entry will be judged on length, elegance and style. It can even be done with a one line program if you are clever.

This month's winner is Bill Sands of Lane Cove, Sydney with a nice one liner.

```
10 X=16:FOR R=0 TO 9: FOR N= - R TO R
   STEP 2: PRINT TAB(X+N);"*";:NEXT:
   PRINT: NEXT
```

I think that will be hard to beat.

HIGH SCORE

HIGH SCORE is for serious games players who thrive on competition. We are publishing the highest known scores of readers for any game on disk, cassette or cartridge on any Commodore machine.

If you have a score that beats the existing record photograph your screen or get a second person to initial your highscore and send it in. If a game is not listed send in your highest score – you might be the champion.

GALACTIC CROSSFIRE
27,010 Michael Bakes, Tas

MENAGERIE
6,100 J.H. Fry ACT

MONEY WARS
104,240 D.G. Fry ACT

RADAR RAT RACE
137,540 Tom Spencer, Qld

RAID ON FORT KNOX
13,783 D.G. Fry ACT

SPRITEMAN 64
92,290 Brendon Madden VIC

TRASHMAN
265,765 Maxine Brown, ?AUST.

VIC FROGGER
225,000 J.H. Fry A.C.T.

ATTACK OF THE MUTANT CAMELS
52,280 Brendan Madden Vic.

LOCO
100,400 Brendan Madden Vic.

Definitions

G$ – A piece of female underwear
CURSOR – It won't "**??¶##"WORK!!
SERIAL PORT – The drink you have in the morning when your not having breakfast.
LEN ("SMITH") – Son of Mr ("SMITH")
VAL ("SMITH") – sister of Len
DATASETTE – An ancient breed of beast related to the snail

Courtesy of Douglas Graham
Merrylands N.S.W.

Public Domain (We believe)

FRONT25: Good simple program, allows program and sequential file transfer. (also send directory!) Uses half duplex, 300 baud, 3 line connection. A popular one for C64 – C64 sessions. Uses CBM-ASCII. (Public Domain ??).

MODEM64: Good general terminal program written in G-PASCAL and donated to public domain by Nick Gammon (at least two versions available. Contact Gambit Games, for latest version). 300 baud, selectable half/full duplex, clock, capture buffer for session log (latest version), printer option, view saved files, program transfer using XMODEM protocol. Equally good for local BBS access or C64–C64.

PLUS/TERM: from COMPUTE! magazine Feb 1985. Many features. Punter up/download.(also from compute G/C term and G/C BBS for running small local BBS.)

64 – 64: simple BASIC program for upload/download between C64s.

64 TERM: from Commodore good general dump terminal, selectable terminal parameters, word wrap, selectable CBM-ASCII (VIC version available)

TERM64: Comprehensive suite of 3 progs., selectable terminal parameters, 42K capture buffer, printer options, local editing, definable function keys, (autodial feature), file (program and sequential) upload/download using Punter protocol. One of Greg Perry's favourites.

DISK TERM64: Latest version of Commodore's terminal 64 by Punter et al. selectable terminal parameters, Logging to disk, up/download (Punter), disk access, autodial/answer,clock. (VIC version available under name TERMINAL VIC)

TELEPORT: Australian (?) good general purpose terminal, up/download of programs only using XMODEM protocol, clock, capture buffer, printer option.

VT52 40/80TERM.C: Emulates a DEC VT52 terminal of course!. 40/80 columns selectable. Can be used as stand alone of patched into other programs.

VIDTEX: Commodore Vidtex (?) for use on US Compserve network (great eh?). Works quite well as general purpose 'smart' terminal for 300 baud BBS access. 22K capture buffer, will print at same time as receiving data, screen dump, local editing, meta key functions, (autodial).

XMODEM.C: Simple basic program providing dumb terminal and up/download program or sequential files with XMODEM protocol. Good one to see how the process works.

PUBLIC DOMAIN DISK

A disk of all the public domain terminal programs should be available from your local user group or if not from CCUGQ Inc. PO BOX 274 Springwood Qld 4127 (non-members $7.50 + $2.50 p&p).

Compiled by Greg Perry.

Term 64

A smart terminal program for the Commodore 64

by Paul Higginbottom

Preliminary MANUAL

As printed in Commodore Magazine Volume 5 Number 1

Contents:

Getting started

To make sure no previous programs, or programming of your Commodore-64 will affect the running of this program, turn the computer OFF, if it is currently on. Now turn ON the computer and your disk unit, and with the program diskette in the drive, type:

LOAD'BOOT TERM64',8,1 and press RETURN.

The program will automatically run; the screen will go blank, and shortly, the menu will appear as follows:

```
SMART TERMINAL PROGRAM
BY                    PAUL                    HIGGINBOTTOM
(c)1983 COMMODORE BUSINESS MACHINES LTD.

1.   ENTER              TERMINAL              MODE
2.   DISK                                     DIRECTORY
3.   EXAMINE/ALTER                           PROTOCOLS
4.   PRINT      FILE/BUFFER      TO          SCREEN/PRINTER
5.   EXAMINE/ALTER             FUNCTION      KEYS
6.   LOAD            OR        SAVE          PARAMETERS
7.   SEND            FILE      TO            MODEM
8.   SAVE                 MEMORY             BUFFER
9.   EXIT                                    PROGRAM

PRESS '1' to '9' TO SELECT FUNCTION
```

NOTE

FROM ANY POINT IN THE PROGRAM (±1) WILL RETURN TO THE MENU, SIMPLY PRESS THE 'STOP' KEY.

(#1 – IN TERMINAL MODE, IT'S SHIFTED 'STOP' SO THAT IT CANNOT BE PRESSED ACCIDENTALLY).

The tools

This section is provided to outline what this program can do, and an overview of how it can be done.

When using this program, there are three forms of interaction you can have with it. They are:

1. Menu function selection, and supplying the information for a given option.
2. Command function from terminal mode, to change a 'mode' of operation.
3. Interaction with another computer.

The menu shows you the options available to you, but provided below is a wider explanation of each option:

1. Enter terminal mode This puts you in a communications environment,

TASMANIA:

Mike Scott's Launceston BBS (MS-BBS) .....(003) 34 0911
24 hours EST

SOUTH AUSTRALIA:

Adelaide Micro User Group BBS (AMUG-BBS).....(08) 271 2043
1000-2200 weekends CST
and holidays ONLY!

Computer Ventures BBS (CV-BBS).....(08) 255 9146
24 hours CST

NORTHERN TERRITORY:

Outback RCPM (OUTB-RCPM) – V.21 and V.23 standards – autoselect
(089) 27 7111
24 hours CST

Omen II RTRS (OM2-RTRS).....(089) 27 4454
24 hours CST

WESTERN AUSTRALIA:

Omen III RTRS (OM3-RTRS) .....(09) 279 8555
0800-2400 weekdays WST
24 hours weekends WST

NEW ZEALAND SYSTEMS

NORTH ISLAND:

Attache RBBS (ATT-RBBS)
ISD number.....64 9 78 9084+ 24 hours NZT
National number.....(09) 78 9084 24 hours NZT
(type "help" to login)

APPENDIX B

AVAILABLE TERMINAL PROGRAMS

A number of terminal programs available in Australia/New Zealand. Several quite good public domain programs to suit most of your need should be available from your local user group. (If not tell them to contact Greg Perry.) A few commercial 'ultra smart' programs are also available for those who are seriously into telecomputing. The following is a list of the more useful terminal programs.

Commercial

VIP TERM : Commercial program ($100?). Almost everything but the kitchen sink but uses Punter protocols for file transfer. Does not support XMODEM file transfer. (The latest version apparently has an XMODEM program to download files but one must first exit VIP and load the new program to download anything.)

Dick Smith Electronics BBS (DSE-BBS)..... (02) 887 2276
24 hours EST

Sydney Osborne User Group (AUSBD-RCPM)..... (02) 95 5377
24 hours EST

Sydney Apple User Group (AUG-ABBS)..... (02) 451 6575
24 hours EST

ORACLE TRS-80 System (ORACLE-RTRS)..... (02) 960 3641
2400-1800 weekdays EST
2400-0800 weekends EST

Sydney Sorcerer User Group (SUG-BBS)..... (02) 387 4439
1800-0800 weekdays EST
24 hours weekends EST
"Ring back" required

Texas Instruments User Group (TISHUG-BBS)..... (02) 560 0926
Monday 1900-0800 EST
Tuesday 1900-0800 EST
Saturday 1900-2400 EST
Sunday 0900-2400 EST

Sydney Tomorrowland DIRECT (SYD-TLD)..... (02) 411 2053
24 hours EST

Newcastle Microcomputer Club RCPM (NCLE-RCPM)..... (049) 68 5385
1700-0830 weekdays EST
24 hours weekends EST

VICTORIA:

Melbourne Micro Computer Club CBBS (MICOM-CBBS)..... (03) 762 5088
24 hours EST

Sorcerer Computer Users Assoc CBBS (SCUA-CBBS)..... (03) 434 3529
24 hours EST

Tardis RCPM (TARDIS-RCPM)..... (03) 67 7760
1800-0800 weekdays EST
24 hours weekends EST

OMEN IV RTRS (OM4-RTRS)..... (03) 846 4034
24 hours EST

PC Connection IBBS (PCC-IBBS)..... (03) 528 3750
24 hours EST

East Ringwood RCPM (ERING-RCPM)..... (03) 870 4623
1600-2400 EST

HiSoft IBBS (HISOFT-IBBS)..... (03) 799 2001
24 hours EST

Computers Galore IBBS (CG-IBBS)..... (03) 561 8479
24 hours EST

Gippsland RCPM (GL-RCPM)..... (051) 34 1563
24 hours EST

Gippsland MAIL BUS (GL-MBUS)..... (051) 27 7245
24 hours EST

wherein, each character you type will be transmitted to another computer, and each character sent to you, by the other computer you are communicating with, will be displayed on your screen. In terminal mode, the screen displays a status line (the tope line of the screen) and the remaining 24 lines of the screen are the 'terminal's screen.' Certain key combinations will alter the various status 'indicators' on the status line. These key functions allow you to modify the terminal environment (for example, enabling 'word-wrap' which commands the program to automatically avoid words being split at the end of a line, by 'pushing' them onto the next line.)

2. Disk directory This will display the directory of the diskette in the drive which you would usually see by doing:

```
LOAD"$",8
LIST
```

3. Examine/alter protocols This option allows you to examine, and/or alter the communications protocols required for the particular modem, and/or remote computer. An example of a 'protocol' is 'baud rate', which is the speed at which data is transfered between the computers' modems. Most inexpensive modems are '300 baud' which is a transfer rate of roughly 30 characters per second.

4. Print a file/buffer to screen/printer This allows you to display on the screen or print on the printer, the text captured in the computers memory with this program, or a file on the disk.

5. Examine/alter function keys The Commodore 64 has 4 function keys. This package allows you to make them send to another computer, one or more character(s) by just one single keypress. For example, most data bases have a 'HELP' command. You might want to have one key press send 'HELP' and a <RETURN> to the remote computer. Or, similarly, any frequently used command/string of text can be assigned to a single keypress.

6. Load or save parameters The protocols, the function key definitions, and even the screen, text, and border colours, may be loaded or saved as a 'parameter file' on disk. This is useful for communicating with different systems, with differing protocols, and commonly used commands which you have defined in the function keys. An example of two parameter files might be 'Source' and 'Compuserve.'

7. Send file to modem This is a simple file transfer option. A file on the diskette in the drive can be transmitted to the remote computer. This for example, could be used to send electronic mail prepared on your computer when you weren't communicating with the remote computer.

8. Save memory buffer This option allows you to save the text stored in the computers memory in a file on the disk drive.

9. Exit program This option will reset the computer, as if it were turned off and on again.

Technical note:

This program is designed for communicating via the RS-232 port of the

Commodore-64 (an edge connector, which will require suitable cable, or a VIC1011A adaptor) to another computer, or modem, at speeds from 50 to 2400 baud. Since the Commodore-64 has only one RS-232 port, the program assumes the printer is connected to the CBM serial port as device 4, or some other interface cartridge which intercepts the KERNAL functions (for example, RTC's 64-LINK cartridge, which allows any IEEE printers to be connected to the Commodore-64. This program will work with that cartridge installed.)

Terminal mode

(option from the menu)

Pressing '1' from the menu puts you in 'terminal mode' which is the environment where ALL communicating with another, remote computer is done.

A status line is shown on the top line of the screen. It should look like:

```
  :T:S:O:W:O:B:-12:00:00-42000:0:000:000:
   ! ! ! ! ! !       !       ! !   !   !--Character code
Status Indicators    !       ! !   !      received
                     !       ! !   !
    Clock------------!       ! !   !------Character code sent
                             ! !
    Free memory in buffer----! !----------No. nulls to be sent
                                          after a carriage return
```

T – (The 'timeout' indicator) When you transmit characters to a remote computer, usually by typing, the usual environment of communications is known as 'full duplex' which simply means that the [larger] remote computer will send back to the Commodore-64 each character you send to it. This indicator will 'light up' (go into inverse video) if, when in full duplex, a character you transmit is not sent back by the remote computer within a short time.

TIME ZONES

NZT	New Zealand Time	(GMT +12 hours)
EST	Australian Eastern Standard Time	(GMT +10 hours)
CST	Australian Central Standard Time	(GMT +9.5 hours)
WST	Australian Western Standard Time	(GMT +8 hours)

Some Australian States, but NOT Queensland, Northern Territory and Western Australia, use Daylight Saving time (-1 hour on above times) from approx the end of October to the beginning of March.

AUSTRALIAN SYSTEMS

QUEENSLAND:

Software Tools RCPM (ST-RCPM): ..... (07) 378 9530
24 hours EST

Brisbane Tomorrowland DIRECT (BRIS-TLD): ..... (07) 286 2438
24 hours EST

Brisbane Experimental RCPM (BEX-RCPM): ..... (07) 393 3151
24 hours EST

C.C.U.G. (Q) Inc. ..... (07)808 2125

NEW SOUTH WALES:

Commodore Systems

SYDCOM bulletin Board (RCOM): ..... (02) 667 1930
(Special terminal program apparently required. No further information available at present. No direct contact made. Contact SYDCOM for further details.)

C-64 BBS ..... (02) 665 8565
2100-0700 EST

(Only BBS specific for Commodore that we are aware of)

Mi Computer Club BBS (MiCC-BBS): ..... (02) 662 1686
24 hours EST

Micro Design Lab RCPM (MDL-RCPM) ..... (02) 663 0151
24 hours EST

Sydney Public Access RCPM (SPA-RCPM). ..... (02) 808 3536
24 hours EST

Omen RTRS (OM-RTRS) ..... (02) 498 2495
1630-0900 weekdays EST

24 hours weekends EST

Sydney TRS-80 User Group RTRS (STRUG-RTRS). ..... (02) 332 2494
24 hours EST

Prophet Remote Bulletin Board (PROPHET-RTRS). ..... (02) 628 7030
24 hours EST

Exit program

(option 9 from the menu)

Pressing '9' from the menu will reset your computer, as if it had been turned off and on again.

APENDIX A.

AUSTRALIAN & N.Z. PAMS SYSTEMS LIST

AUSTPAMS DOC – Last updated 10th Jan 85

The following is a list of bulletin boards obtained from Software Tools RCPM in Brisbane (Bill Bolton Sysop) with additions and notes by Greg Perry and David Brown. To the best of our knowledge this information is correct however no responsibility is accepted by the authors or this magazine if you cannot access a particular system or are abused by someone for waking them in the middle of the night! We will try to keep this listing up to date, but it must be realised that we cannot call all of the systems listed just to see if they are still on air. If you know of any systems not listed, or wish to offer information for the benefit of other hackers, please drop us a line.

We would also be interested to hear from persons or user groups who have or may be thinking of setting up a Commodore Bulletin Board System.

The normal data format for connecting to Public Access Message Systems (PAMS) in Australia and New Zealand is:

8 data bits, 1 stop bit.
No Parity, full duplex
CCITT V.21 modem standard
300 bps
Set your modem to ORIGINATE mode

All systems support V.21 standard, some systems may support V.22 or V.23 standard and will be specifically noted if they do.

SYSTEM TYPES

RCPM	Remote CP/M System
RMPM	Remote MP/M System
RTRS	Remote TRS-80 System
RBBS	Remote Bulletin Board System
CBBS	Community Bulletin Board System
IBBS	IBM PC Bulletin Board System
BBS	Bulletin Board System
MBUS	Mail Bus System
ABBS	Apple Bulletin Board System
TLD	Tomorrowland DIRECT system

S – (The ALLCAPS mode indicator) The shiftlock key on the Commodore-64's keyboard is not always useful for entering upper case text, because it will shift the numerics and all other keys also, so an 'ALLCAPS' mode is provided for simply ensuring all alpha characters ('a' to 'z') transmitted are sent in UPPER case regardless of whether the shift key is depressed. This mode can be turned on and off by holding down the Commodore key and pressing 's'.

O – (The OUTPUT-SUPPRESSED mode indicator) When lit, the user's output will not be displayed (in either half or full duplex). This is useful for not allowing other people to see you entering passwords on remote computer systems, for example. The indicator can be turned on and off by holding down the Commodore key and pressing 's'.

W – (The WORD-WRAP mode indicator) Since the Commodore-64 can display 40 characters on a line, instead of 80 (or even 132) columns as most commercially used terminals can, words may get 'split' at the right hand side of your screen (for example, the word 'Commodore' beginning in the 35th column, and 'Commo' is on that line, and 'dore' ends up at the start of the next line). When the WORD-WRAP indicator is lit, the program will automatically ensure that no words are split at the end of a line. It does this by pushing the word onto the next line if it won't fit on the current line. Word-wrap mode can be turned on and off by holding down the Commodore key and pressing 'w'.

D – (The DISPLAY-CONTROL-CHARACTERS mode indicator) It is most often not necessary to see the incoming control characters (character codes 0 through 31 decimal, excluding certain ones, for example, 'Carriage Return', which is 13), but in case the user does wish to see them, the program allows for this. Control characters will be shown as highlighted characters on the screen, from '@' to 'Z'. To enable/disable this mode, hold down the Commodore key and press 'd'.

B – (The BUFFER-OPEN/CLOSED mode indicator) Any text which is displayed can be stored in the memory of the Commodore-64, for later viewing, or hardcopy on the printer, or even storing to the disk in a file. This ability is known as a 'memory buffer' because the text is 'buffered' for later usage. The five digit number on the status line indicates how much memory is left for text to be stored. The text is only put into the memory buffer if the indicator is lit, which allows you to selectively store information (for example, news stories or only certain stock information). To start or stop the program storing incoming text in the memory buffer, hold down the Commodore key, and press 'b'. If you wish to 'clear out' the memory buffer, i.e., instruct the computer to 'forget' all it has stored for you, thus makinng available all the memory again, hold down either shift key, and press '*'.

For quick temporary storage of, for example, an address, or other piece of information you quickly want to capture, but you didn't have your memory buffer open, hold down the Commodore key, and press 'x'. This swaps the screens contents with a SECOND screen. Pressing 'Commodore X' again, will bring back the 'first' screen again.

The clock functions like a normal clock; can be used to inform you of connect time on a system, or give you the actual time. Can be reset to 00:00:00 by holding down

the Commodore key and pressing 't', or set to a given time from the Examine/alter protocols option (3) from the menu.

Summary of keyboard 'functions' in terminal mode:

<SHIFT *> – Clear memory buffer
<Commodore S> – Enable/disable ALL CAPITALS mode
<Commodore O> – Enable/disable displaying of your typing for privacy
<Commodore W> – Enable/disable automatic formatting of the end of each line
<Commodore D> – Enable/disable display of control characters (ASCII 0-26)
<Commodore B> – Enable/disable memory capture of displayed text
<Commodore P> – Reset buffer pointer without clearing buffer
<Commodore C> – Close disk file when sending a file from disk
<Commodore +> – Change background colour of the screen
<Commodore –> – Change colour of text
<Commodore *> – Change border colour
<left arrow> is displayed as an underscore on the screen (consistent with 'most' terminals).
<CTRL L> If received, acts as a 'form feed' and clears the screen
<CTRL :> Generates an ESC (ASCII 27) character
<Commodore X> Swap screen with second stored, screen.
<CTRL +> Increase the number of nulls to be sent after a carriage return (maximum 9)
<CTRL –> Decrease the number of nulls to be sent after a carriage return (minimum 0)
<shifted DEL> – Generates ASCII DELETE character (value 127)
<Commodore T> – Resets clock to 0:00:00

The function keys send strings as designated:

Unshifted	<F01>/<F03>/<F05>/<F07>
Shifted	<F02>/<F04>/<F06>/<F08>
Commodore	<F09>/<F10>/<F11>/<F12>
CTRL	<F13>/<F14>/<F15>/<F16>

This terminal program gives you to do full screen editing (as you do when correcting mistakes, when entering a program), even when the computer you are communicating with, does not support such a function. If RETURN is pressed while either shift key is held down is entered when in terminal mode, the cursor will flash (instead of being 'solid'). Incoming text will still be output to the screen as normal, but further typing by the user is NOT transmitted to the remote computer. At this point, you can use the CURSOR MOVEMENT KEYS (up, down, left and right), the INSert key, the DELete key, the HOME and CLR keys, and in fact, EVERY key to edit and enter text onto the screen. When you want to send a line of text, you simply position the cursor on the first character to be sent, and enter another <SHIFTED RETURN>. The program will then enter all characters from that point on on the screen line, and also transmit a RETURN.

'What can I use that for?' you say. Let's take a look at an example usage of this feature: Let us suppose the computer you are communicating with is awaiting

'configure' the program for communicating with a particular remote computer as a file on the disk, in a parameter file. An example of two parameter files might be 'source' and 'compuserve' for communicating with these large, popular database networks. When '6' is pressed to select this option, you will be asked:

LOAD OR SAVE PARAMETERS?
(PRESS 'L' OR 'S')

As implied, press 'l' if you wish to load in a parameter file you have previously stored, or 's' if you wish to save the current parameters in a disk file. Having selected 'l' or 's', you will be asked for the name of the file. If you enter a filename which causes a disk error, a bell will sound, and you will be returned to the main menu.

Load parameters: The colours will be set, the RS232 will be setup, the function keys will be re-assigned.

Save parameters: The colours will be saved, the RS232 parameters will be saved, and the function keys assignments will be saved.

After either function, the program will, once again, return to the menu.

Send a file to the modem

(option 7 from the menu)

You will be asked for the name of the file on disk to be transmitted. If you enter a filename and the file is not on the diskette in the drive, a bell will sound, and you will be returned to the main menu. If the file is present, the program will go into terminal mode, and each character from the file will be transmitted to the computer as if you were typing it. If 'Commodore c' is entered while the file is still being transmitted, or a disk error occurs, or the end of the file is reached, the process will stop, the disk file will be closed, and the user will remain in terminal mode.

Technical note:

Sometimes, the number of nulls to be sent after a carriage return will need to be set to more than zero to ensure the computer you are communicating with does not drop any characters after a carriage return.

Save memory buffer

(option 8 from the menu)

Text captured in the memory buffer in terminal mode, can be stored on disk, in a file, for later viewing/printing, or even usage with other software. You will be asked for the name of the file under which you wish to store the memory buffer contents. If you enter a filename which causes an error, a bell will sound, and you will be returned to the main menu. Otherwise, the storing will proceed, when completed, the program will return to the menu.

f09='
f10='
f11='
f12='
f13='
f14='
f15='
f16='

Enter key to change, press 'STOP'
for menu, or 'p' to change password.

To alter a string, enter the function keypress itself, for example, function key string 11 (f11) is entered by holding down the Commodore key, and pressing 'f5'. (For a full list of the key sequences, see 'Summary of keyboard functions' in section 2.) Having selected the string to change, you will be prompted to enter the text string to be assigned to that key. Enter this, for example:

Enter new text for function key f11

>

You type 'hello', and press RETURN.

The program then asks if you want a RETURN to be transmitted after the string when you press the function key, by prompting you with:

ADD A CARRIAGE RETURN?

Enter 'y', or 'n' (yes, or no) as desired. For frequently executed commands, for example, you will want to add a carriage return. Since your function key assignments are completely secure, you can even assign your log-in password to remote systems. You are then asked if you want the string to be displayed on the screen or not, with the prompt:

ECHO STRING TO SCREEN? (Y/N)

Enter 'y', or 'n' (yes, or no) as desired. If you do not wish 'viewers' watching what commands of text you are sending to the computer, such as log-in passwords, you would want to press 'n' for this option. The string is then displayed in its place in the definitions, and if you chose for the string not to be echoed to the screen, there are small 'blocks' around the assignment. If you press 'p' from the prompt, you will be asked for a new password (the one you enter when selecting this option from the menu). This password is the ONLY way you can get into the section, so if you change it, be sure not to forget it! When you're finished, press STOP to return to the menu.

Load or save parameters

(option 6 from the menu)

The 'parameters' include the protocols, the function key definitions, and the screen, text, and border colours. You may be save the details of the way you

your command. You want to send a letter to another user, and you enter the command:

MAIL SEND JOHN EXPRESS

The system responds with:

USER 'JOHN' NOT FOUND.
RE-ENTER:

And you realise that you entered the NAME of the user you wished to send mail to instead of their computer account 'ID', which this particular system requires. You no longer have to type this command in all over again, you simply enter 'local editing mode' by holding down the shift and pressing RETURN. The cursor should be flashing. You move the cursor up using the cursor movement keys and correct the mistake:

MAIL SEND XYZ999 EXPRESS

To send the whole line again, you simply position the cursor on the 'M' in 'MAIL' (often easiest by pressing return, and then cursor up, if you're on the same line as the line you wish to send), and then press return while holding down the shift again, and you'll see the line re-entered for you.

Disk directory

(option 2 from the menu)

As soon as you press '2' from the menu, the screen will clear, and the directory will be listed onto the screen. As it is listed, any key can be pressed to stop and resume the listing, and if the STOP key is pressed at any time, the listing will terminate.

Examine/alter protocols

(option 3 from the menu)

When the program is run, the RS232 and terminal parameters are set to defaults which are suitable for practically all terminal work at 300 baud, which includes the VICMODEM. When 3 is pressed from the menu, the current protocols are displayed. To alter them, simply press the numeric key alongisde the particular protocol. For example, to change duplex, press '1'. When you've set them to your particular requirements, pressing the STOP key will return you to the menu.

The protocols are:

'1' – Duplex – alternatives – Half, or Full. In half duplex, each character transmitted by your computer is displayed by the program on the screen. In full duplex, the program expects the remote computer to send each character back which your computer sends to it. Almost all commercial networks operate in full duplex. If, for example, you want to communicate with another Commodore-64 though, both you, and your remote telecomputing partner would need to operate in half duplex.

'2' – Line feed – alternatives – Yes, or No. After you transmit a carriage return, some networks require a linefeed also. This option allows you the alternative of having a line feed sent automatically after a return, or not. This is becoming less likely though, and in most operation, you would have the option set to 'No'.

'3' – Stop bits – alternatives – 1, or 2. The RS232 interface separates each character of information with 1 or 2 stop 'pauses' or bits. Sometimes, more often with 1200 baud, you might need to send 2, instead of the far more usual 1.

'4' – Parity – alternatives – None, Even, Odd, Space, or Mark. The RS232 interface can mark the end of each character, with an extra piece of information (known as a 'parity bit'), which gives either computer, a slightly more secure way of ensuring good data transmission. You would have to investigate which parity the computer you are communicating with requires. Most systems don't require any parity, or just ignore it.

'5' – Baud rate – alternatives – 110, 150, 300, 600, 1200, 1800, or 2400. The RS232 interface can transmit information at different speeds. This will need to be set according to your modem, and/or the computer you are communicating with. 300 baud is the most common, with 1200 being used for 'high speed' communication usually. '6' – Word length – alternatives – 5, 6, 7, or 8 bits. Some remote computers ignore, or don't use all of the 8 bits in a byte. If, for example, you set this parameter to 7 bits, the 8th bit will be ignored.

'7' – Set time – asks for the time you wish to set the clock to (which is displayed in terminal mode). The format of the time you enter is checked and if the program doesn't understand what you have entered, the bell will ring, and the time will not be altered. Do NOT enter in 24 hour format, it's a 12 hour clock. You can enter just the hours and minutes (the seconds will default to 0), or you can enter the full hours, minutes and seconds. 2 digits for each part must be entered, therefore, if the time is five minutes after two, you should enter: 0205 or 020500

'9' – Return to menu – if pressed, the program returns to the menu. This can also be achieved at any time by pressing the STOP key.

Print file/buffer to screen/printer

(option 4 from the menu)

This important option, allows you to print, to either the screen or your printer, the text you captured in the computer's memory buffer, or a disk file. When '4' is pressed to select this option, you will be asked:

BUFFER OR FILE?
(PRESS 'B' OR 'F')

As implied, press 'b' if you wish to print whatever text you may have stored in your

memory buffer, or 'f' for a disk file. Having selected 'b' or 'f', you will then be asked (the screen will clear) if you wish to print to the screen or printer in a similar 'one key' selection. Press 's' if you just wish to view the memory buffer or disk file on the screen, or 'p' if you want to print the text on your printer.

If you are printing a disk file (instead of the memory buffer), you will be asked for the name of the file. If you enter a filename and the file is not on the diskette in the drive, a bell will sound, and you will be returned to the main menu. If you opt to output either the contents of your memory buffer, or the disk file to your printer, you will then be asked to select your type of printer. Note, the program assumes the printer is connected to the CBM serial port as device 4, or some other interface cartridge which intercepts the KERNAL functions (for example, RTC's 64-LINK cartridge, which allows any IEEE printers to be connected to the Commodore-64. This program will work with that cartridge installed.)

The program's options include:

1) 1525 (or 1526)
2) Other CBM printer (IEEE printers, NOT 8300P)
3) True ASCII printer (other brand of printer or Commodore 8300P).

While the file/buffer is printing to screen/printer, any key can be pressed to stop and resume printing, and if the STOP key is pressed at any time, printing will terminate, and the program will prompt you to press any key to return to the menu.

Examine/alter function keys

(option 5 from the menu)

This option allows you to examine or change, the strings of characters which will be sent by the function keys, and function keys in conjunction with shift/Commodore/CTRL keys. For your own security, a password is requested when this option is selected from the menu. When no parameter file has been loaded, and the password has not been changed, it is defaulted to '64'.

Having entered the password, you will see a display like:

5. Examine/alter function keys

f01='
f02='
f03='
f04='
f05='
f06='
f07='
f08='

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