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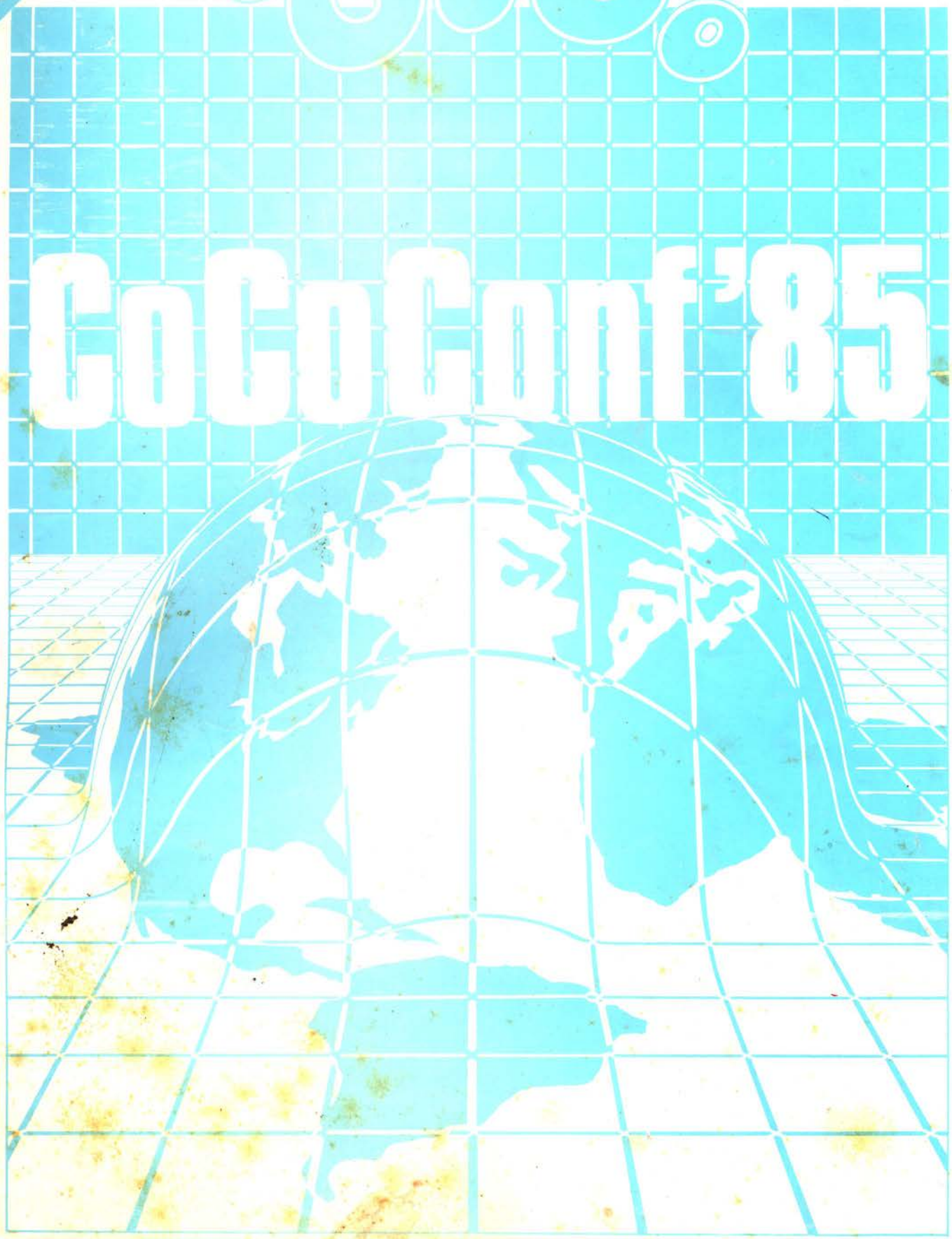

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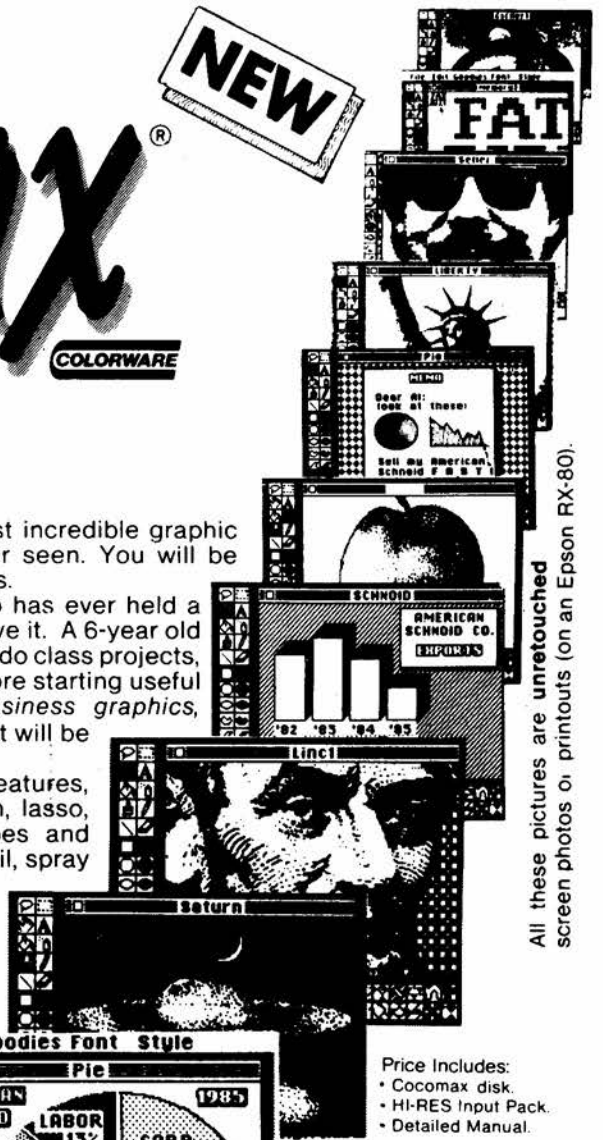

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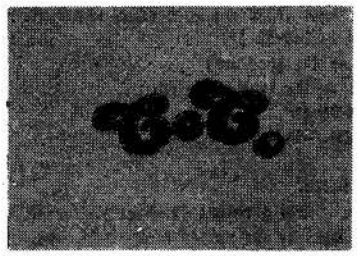

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OS-9
Kevin Holmes is the contact for OS-9 information. He also has access to OS-9 Software from the U.S. His address is:—
39 PEARSON ST.,
NARARA, N S W 2250

All Programs in this issue of Australian CoCo and MiCo are available on CoCoOz andMiCoOz
SEE CENTRE PAGE FOR DETAILS

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SCREEN DUMP

The routines used last month in eight programs to test your skills were supplied by the devious Barry Cawley. If you haven't found one yet, look at lines 320, 330 and 340 on page 11 of April's edition.

Some people are also having trouble with the Loof Lirpa reversal routine. If you are still experiencing difficulties, then discuss them with your meet contact, or call me.

We probably wont be doing such a big magazine as last month's again for a while. In our eternal search to provide value for money, we thought that we might be able to get a big magazine like that out most months, but it is hard physically - there's not enough staff! And I feel guilty because we didn't do justice to several of the programs, due to cramming. There were some real gems there. I hope you appreciate the work the authors put into them!

Tandy ask that you take your magazine with you when you go shopping for the items advertised in the magazine. Even the store managers couldn't believe the prices!

CoCoMax is here and I just want to add my 5 cents worth to Jim's review. I don't believe that a more important software package has been released for the Color Computer. Most of you will find 160 odd dollars a difficult sum to get together, but I doubt that, once purchased, CoCoMax will ever dissappoint.

The thing is that this need only be the start. There are a heap of further programs the system cries out for, and no doubt will get in time.

A new dimension has been added to our CoCo world.

Of course the other aspect of the CoCoMax thing is that it adjusts forever, the way we approach a software project. Don't be surprised to see real music generators for CoCo, and in the longer term, speech recognition devices. Such devices will need simular hardware assistance.

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UPPER CASE ..... PROGRAMS
lower case ..... articles

LETTERS

Letters to Grahan stand a good chance of being ignored; if they don't get ignored, they often end up here.

We welcome your reaction to the magazine and your assistance with problems discussed in it, as long as they are printable.

Dear Graham,

Brilliant! That is the only way I can describe your efforts to get Tandy to change policy. Our machine (unlike the belated Vic-20, and I predict C-64) has a powerful future with only good on the horizon, and these moves by yourself and Tandy can only secure this position. It could be asking a bit much, but it would be brilliant if you could arrange for Tandy / Aust CoCo to display CoCo's with programs in colour with systems such as OS-9, CoCoMax, games, etc. and some Aust CoCo and Rainbow Magazines at the upcoming Brisbane Computer Expo (November is upcoming?)

It impresses the family who are looking for a cheap educational tool for the computer, the businessman who is looking for something like DynaCalc, and the artist who would LOVE CoCoMax.

Anyway, must go now as I still haven't fully read the CoCo magazine (gee, I'm exited about CoCoConf!).

Yours faithfully,
Andrew White.

PS Please don't publish this letter.

PPS Dean Hodgenson for the Greg Wilson award! (Although if you would accept the #### thing you and Kevin would have all of my votes).

PPPS A happy easter to you and all the crew.

Dear Andrew,

As a member of the staff of this magazine, you should know better than to ask me not to print your letter ...

Graham.

****

Dear Graham,

I'm not doing much with my CoCo at the moment, but will be doing a lot more including disk drives and upgrading in a few months time.

As soon as my Australian Rainbow arrives, I grab achair, make a coffee and sit and read from cover tocover.

Seeing that Greg set such standards of sincerity and devotion with his magazines and would be a hard act to follow, you and your staff deserve congratulations on the fine job you are doing.

Please keep up the good work.

Al Robbins
Hobart. TAS.

****

Dear Graham,

Congratulations to you and your crew for a great magazine. Even during the difficult transition period you managed to satisfy most people's needs.

I have two questions that you may be able to help me with:-

(1) My old grey 64K COCO'S keyboard is slowly gumming up due to regular bathings in coca-cola, fruit juice etc, but I have managed to keep the keys relatively free by using powdered graphite and Tandy's colour TV tuner cleaner. In DEC'84 'HOT COCO' there was an article entitled "End Those Keyboard Blues" but after disassembling my COCO I have a sneaking suspicion that the American keyboard is different to ours. Am I right? If so, how can I pull my keyboard apart and physically clean it?

(2) I have purchased a Logitec FT-5002 Dot Matrix printer and would like a summary of all control codes used by the most common printers so that a program may be easily converted from one to another. I have enclosed a photocopy of the logitec's to help get the ball rolling.

Graeme Elliott
Leongatha.

Dear Graeme,

Alex came in here the other day, disassembled one of our keyboards, and cleaned out all the graphite that I had poured down there during the past three years. Then he applied a light coat of baby oil with a cotton bud to the sides each key as he replaced it.

So far its working like a bought one.

As for printers - its not that simple! Perhaps someone with the next year to spare might like to compile such a list - it certainly would be useful!

Grahan.

****

Dear Grahan,

I received the April issue of Rainbow and Australian CoCo this morning and opened Aust. CoCo in anticipation that the OS8 CHIPS were as promised in the Feb. issue, but ALAS and DISMAY I read in the OS8 column and I quote "By now those of you who subscribe will have your OS8 chips and wondering what to do with them". Well I am wondering because I don't have them yet. I searched all around the post box for them but no "chips".

Have I been missed out or could Aust. post have sent them some place else, (bearing in mind that it IS APRIL and a time for APRIL FOOLS, which could be that the OS8 CHIP is nothing more than a great hoax!!).

Seriously now, talking of OS8, in the December issue you printed a program called "OS8 64K RAM ENABLE MODULE". I typed it in and it checked out. When I ran it I got an UL in 420. In this line in the program there is a "PEEK &HFF2" and depending on the value peeked the program is sent to line 440, which doesn't exist.

I have added my own line 440 and modified lines 420 and 430 (refer to the included listing).

When the program is run now the screen will show you if your printer is on or off line.

My biggest problem when running this progran is I can't load or save anything from my disk (RS Drive 1). The drive turns on, but sounds funny, as if it is running faster than normal and then I get an IO ERROR. I would be obliged if you or someone could help me with this problem.

You may wish to know that I am the president of the Lithgow TRS80 and MC10 USERS GROUP. My phone number is 063-52-2282.

Keep up the good work!

Yours in the land of CoCoOz,
David Berger,
Lithgow. NSW.

Dear David,

The problems to which you refer will be brought to the notice of Dr CoCo, who may be able to explain why OS8 has failed you.

I might add that for OS8 to fail, some strange things have to be happening, because as you no doubt read in November's magazine, OS8 is just about fool proof; but then again, if folk didn't read PAGE 7 last month and the statement regarding the Loof Lirpa reversal routine, I don't know what else I can do for them!

Grahan.

****

Dear Graham,

Do you know of a program or a little trick to stop auto-exec programs from self executing. This is so I can change the program into PMODE 3 with a program I have.

Also , do you know of a "Decathalon" program for the CoCo.

Could you please mention what edition of the Australian Rainbow is "Baseball Fever II" in.

Shaun Wilson
Morley. WA.

Dear Shaun,

If I did know of a trick to stop auto-exec, I wouldn't be talking about it.

90% of the reason that we suffer from a lack of even better software than we have is because authors lose too much to people who steal their work through swapping and copying.

The auto-exec helps overcome some of the fears of such authors and ensures that you continue to get good quality software.

I do not know of a "Decathalon" program, but it would not surprise me to find that there are several. Have you asked your Meet Contact or your software agent?

"Baseball" occured about mid '83 from memory.

Grahan.

****

Dear Graham,

I am starting a new CoCo/Mico User Group. I have 5 names so far and the first meet will be on Tuesday the 7th of May. There will be a 16K CoCo and colour TV set at the meets , the first Tuesday of the month.

I think that Tandy here is starting to pick up as I have just got my EDTASM+ after the longest wait I have ever had on anything ordered. But I don't think it was their fault. They try to get all we CoCo owners want even if it's nil stock.

Keep up the good work, the last issue was a gem.

Willian Boardman
Port Lincoln. SA.

Dear William,

Let me know your phone number and I'll put you on the back of the mag.

Grahan

****

REVIEWS

WORLD RIVERS
A Geographers Delight!

"World Rivers" was made to inform anyone at any age of the biggest, the longest, the widest rivers in the world that we live in. The program itself, consists of only five rivers.

Very basically, it deals with the Darling / Murray river system which is typical of an Australian environment. But along with the Darling system, comes four other river systems usually heard about, but never actually described. These rivers include ...

* The Amazon flowing through the tropical forests of South America;
* The Ganges of India, which plays a vital part in the daily lives of the Indians in that area;
* The Mississippi of the U.S.A. which flows from the lakes region to the swampy delta in the south; and,
* The Nile, the longest river of all other rivers, which covers the fertile delta region and the arid areas throughout the desert areas of Africa.

Along with the actual river description, length, width, depth, etc, comes an accuratly-detailed map of that area. If you're going over the bare facts of the Amazons, it'll show you where the Amazon is (on a map of the world by flashing the river on and off), and then that part of South America blown up to get a better view, and then all the information about the Amazon would be given.

If you decide "I've seen enough - I wanna know how much I've learned", well then there's something for everyone. Following directly after, there is a river quiz, which will ask you how many rivers you want to be tested on. Then the map of the world is shown and the river flashing to signify which river you are going to be tested on, and then you must input the name to that river.
The river quiz covers some well-unknown rivers of the world, but variety has been catered for.

Or, if you're not into giving the rivers' name, then how about a multiple-choice? (A question is asked, and a choice of 5 answers are given. Your score is given at the end.)

This fine little educational tool can be purchased from:
David Mc Neill,
02-858-1414.

Reviewed by A.Hartmann

THE 3'' unFLOPPY DISK

First of all, this is a user's eye view of a new (to Australia) product, written by a non-expert, so that non-expert users can obtain a reasonable idea of what this new disk drive and disk is all about.

The reason that I want to make this review as easily understandable as possible (hopefully without losing the interest of the more experienced readers), is based on the experiences I had with my first home computer (A 'Tandy Model I / Level I 4K RAM' that I purchased in 1978).

Then, the only assistance available was way beyond my meagre understanding, and served to confuse me more than assist me. As a result, I nearly gave up on home computing due to a lack of communication. Let us hope that this situation will never occur with new CoCo users!!!! Even though this is not a hi-tech, "pull it apart - put it back together again", hex-ASCII-octal, "I think the manufacturer should have done that", type review, I feel there will be a few tid bits for the more sophisticated "hackers".

I originally saw a 3" drive advertised in American Rainbow and my initial reaction was "Not another 'stringy-floppy'" (a high-speed, intelligent tape system that never really caught on). And so, when the opportunity arose to do a "hands-on", "let's play with it" session at home, I (of course), jumped at it!
Let's have a quick look at what is being offered.
(1) THE DRIVE UNIT

It is compact, light, and some what different to your normal unit. The most outstanding feature is the method of loading. You merely slide the disk in the slot, and when it is fully inserted, the disk automatically locks in, and there is no "door" to close (unlike conventional drives). When you want to retrieve the disk, you merely press the eject button, and the disk pops out (similar to a front-loading car cassette). The noise level during input/out operations is equivalent to any good quality drive available (i.e it's quiet).

(2) THE CONTROLLER

Gold contacts on both the computer & drive end

connections of the controller, will of course, help the user noticeably reduce the probability of I/O errors, but you will still have to insert the connectors positively to ensure minimum Input/Output errors.

The other difference is an option to switch between Tandy DOS and JDOS (we'll talk about JDOS further on in this article).

N.B. Please remember to switch CoCo off before switching between the two different disk operating systems, else CoCo will "lock-out" and possible damage may occur to your computer.

(3) THE DISKETTE

Possibly the biggest, (and maybe the best) advantage of this new method of data storage, is that it will save you a lot of hassles. The actual disk package, is more like an enclosed "kid-proof" cartridge, designed to be virtually indestructable !!!

With your ordinary 5 or 8 inch disk, the merest touch of a finger, or virtually anything touching the internal magnetic surface, may irreversibly damage the contents of that disk!!!!! The 3" compact floppy disk has a metal shield protecting the normally exposed portions of the magnetic surface when it is out of the drive unit, therefore solving what is probably the most annoying & vunerable problems associated with disks and disk drives.

Another noteworthy advantage is the method of write-protection. Instead of the little sticky tab (that I invariably seem to jam up when inserting and retrieving my disks), the 3" disk has a little red sliding "door". When the disk is not write-protected, a red dot is visible on the face of the disk as a warning to the user. (4) DOCUMENTATION

The manual supplied, is fairly well written and laid out. It should be easily understood by most users. The only thing I feel could have been included was sample programs demonstrating the various commands for Jdos. (If a user is unsure of a command, running a sample program with that command in it, usually clarifies any problems.)

(5) GENERAL INFO

The system supplied by Software Spectrum is a double-sided, single head, 40 track drive, with 184k of data storage each side of the disk (i.e. 368k per disk). This gives you a huge 212k more (per disk) than your standard Tandy disk drive and disk.

Some of the extra commands included with JDos are as follows

1)Auto: This is an automatic line numbering command where the computer numbers each new line after "Enter" has been pressed.Unless otherwise specified, line numbers start at 10 and subsequently increase by 10's. Using the syntax "AUTO,100,20", line numbering begins at 100 and subsequently increases by 20's (or any other combination you require).

2)Error: In combination with ERL and ERR commands, error-trapping routines may be included in your programs, thus saving a possible "break" in your new program just when you don't want it. (The full benefit of this command can only be realised by actual use and a full description would take up too much space here)

3)Ram: This command transfers ROM to RAM. This allows modification of ROM codes and will be of obvious advantage to the more experienced programmer.

4)Runm: Loads and runs M/L programs with one command as opposed to Loadm and Exec.(a small advantange albeit, but every little helps.)

There are other differences with Jdos commands, but space doesn't allow for a more detailed report and these would be for the serious programmer.

Error messages are pretty much the same as Tandy DOS, but it should be noted that with I/O errors , the exact cause of the problem may be determined by using the command "PRINT PEEK (&H00F0). This command will return an error code number in the range 00-255. The manual gives a complete description to interpret these codes. This will be of benefit for "crashed disk" situations where no backup exists.

While we're on the subject of I/O errors, I, and another user who had use of the system before me, never once had an I/O error in all the time we used the 3" system. That is what I'd call a highly enviable record in comparison to most any disk and disk drive system we have encountered!!!

Software Availailability:

Software Spectrum assures me that all programs, that are currently available through their distributors, are also available on the 3" format.

This gives the 3" user a formidable amount of software covering the full spectrum of useful programs. Tandy, at this stage, are not marketing their software on 3" disk. (But this may change in the near future?) Generally speaking, I have found that anything Tandy has in the way of programs, Software Spectrum has the same or an equivalent program available right now. It should be noted that a list of Software Spectrum distributors is on CoCoLink (OUR OWN CoCo Bulletin Board System in Australia)

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Andrew M. Hallmann
07-208-1497.

REVIEW

CoCo MAX

by Darcy O'Toole

Ok, it's 2am and for the last 6hrs I've been running the new graphics manipulater CoCo Max.

I've got to say right up front, CoCo Max is going to set you on fire.

System requirements; you'll need 64k, one disk drive and controller, a multi-pak interface or Y cable, a CoCo Max input module, a joystick, mouse or koala pad and the CoCo Max diskette.

If a printer is to be used RUN "Config", which will automatically patch the program to your printer, Config only has to be run once, 22 printer are supported including all Tandy printers.

CoCo Max is controlled by four functions, point, click, double-click and drag.

'Point' places the cursor over the desired location.

'Click' registers the position or function.

'Double-click' obtains shortcuts and other functions.

'Drag', you drag the image across the screen by holding the button down.

With the exception of text entries these four functions are the only ones needed to operate CoCo Max.

ICONS

CoCo Max gives the user 20 icons from which to choose.

Running down the left hand side of the screen they are;

'Lasso' which isolates and extracts any picture element.

'Editing Box' which restricts editing functions to the editing box only.

'Hand' which allows the image to be moved, what you see is not what you get in this case. The actual screen image is only part of the drawing area. 'Hand' lets you move the image and allows the user access to the unseen part of the workspace.

'A' is the alpha-numeric function that places text anywhere in the picture. A variety of fonts are shown on the Fonts and Styles 'Pull Down Menu' (more about those later.)

'Fill' which allows the drawer to fill an outlined area with the desired pattern.

'Paint Brush' paints with a selected pattern using the selected paint shape.

'Rubberband lines' is fairly self explainitory.

'Pencil' can be used, as the name suggests, for free hand drawing as oppposed to the rubber band feature which only allows straight lines.

'Spray Can' is just that, press the fire button on the joystick and the selected pattern can be sprayed over the work area.

Next we have a series of Shapes; square, square with round corners, circle or elipse, free hand shape and polygon. These shapes can be used with or without the Fill option.

To acces the icons just point the arrow (cursor) at the appropriate icon, click the button and wham!

PATTERNS

At the bottom of the screen is the pattern selection called 'Palette'. Sixty pattern choices are offered or you can create your own. These can be used in conjunction with most of the above features eg. fill, paint, spray to create a multitude of effects.

To complete our description of the drawing tools available we have Line Width where 4 seen line thicknesses are offered plus one that is unseen.

PULL DOWN MENUES

On top of the screen five menus are shown, File, Edit, Goodies, Font and Style

File allows you to print save and recall images.

A variety of print options are available, these include double-strike, double size plus standard size print out.

Shift right arrow allows screen dumping at any time during drawing.

Edit, this one is used to cut and paste (editing features) also rubberstamping and is used to activate the special graphic effects such as invert, trace edges, flip etc.

Goodies, holds several nice features including Grid, Fat Bits, Show Page etc.

Font gives access to several type faces which Style, our next menu, is used to enhance.

And it goes on and on...

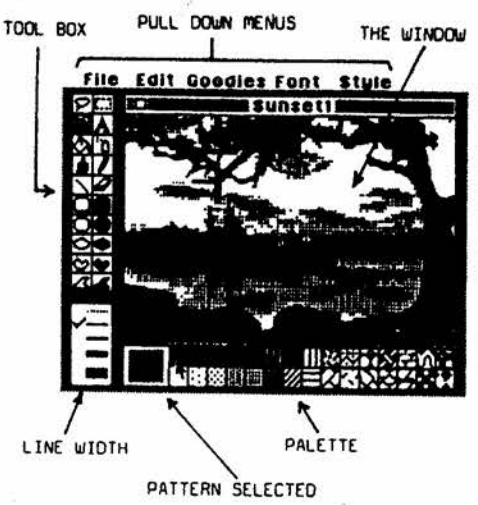
The depth Max has, must be used to be believed.

Max was supplied for review by Computerware for Micros, Peter has got himself a definite winner. The documentation is supberb, although I must admit, but for a quick skim through, isn't needed that much, Max is that simple to use.

Look it's late, let me finish off by saying, if you are into graphics Max is for you, the Color Computer has now one of the most powerful graphics tools, this end of the home computer field.

The price for Max is $149.95. This does not include Y cable or multi-pack interface.

I'm told on good authority that the tape version is not far off, it will retail at the same price.



Last month Annette wrote about accommodation on the Gold Coast. As you will have to finally decide about the Conference THIS MONTH, I thought I'd talk first about transport to the Gold Coast.

The coast is serviced by a variety of transport modes. The cheapest seems to be VIP coaches out of Sydney. You gets what you pays for!

A range of other coach companies also service the coast, including Skennars, Pioneer, Greyhound and McCaffertys.

If you are traveling any distance on the cheap, the comfortable way to go is by train. (Surprised?) Although these days, travel by train is considered slow, don't be surprised to find your friend on the coach arriving after you arrive on the train.

Trains are comfortable because they offer the possibility of stretching one's legs, getting a cup of

coffee when you want it, and providing a less worrying environment than the road in which to travel.

The train from Sydney, and all points south comes only as far as Murwillumbah. Here you get the Greyhound bus that meets the train. An hour later, you are in Surfers Paradise.

Trains from the north take you only as far as Brisbane, due to a ridiculous decision some years ago to do away with the railway to the Gold Coast. Now they are rebuilding it! So from the north, it is necessary to get a bus from the Greyhound terminal in South Brisbane.

The airlines offer some excellent package deals.

I was of the impression that East West was the cheapest, but Mike Turk managed to find a cheaper way with Ansett. The main principle it seems, is NOT to pay full fare!

****

Tutorials.

These take place on the Saturday, and include:

1.	BASIC TRICKS (Advanced Basic)	Tino Delbourgo
2.	128K & OS9	Bob Thompson
3.	Hardware modifications	Brian Dougan
4.	MS DOS	Paul Humphries
5.	Interfacing / Forth	John Poxon
6.	MC 10	Mike Turk, Martin Wells, Scott Howison
7.	Basic BASIC	Graham Morphett

(until I can get some other sucker to do it!)

Don't forget - with your ticket, you also gain entry to the Computer Expo, and you can chose to visit that on the Saturday, in place of one of the Tutorials.

Other Tutorials may be added or deleted by this time next month, but one thing is for sure, if you get involved on one or two of them, you'll get top instruction, available nowhere else!

Saturday Night.

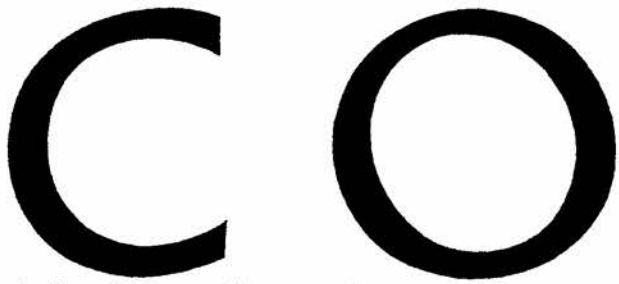
Saturday night will be a semi-formal meal, at which the Greg Wilson award will be presented, along with the prizes for the games competition.

The prizes are:

* a disk drive and dos, to be donated by Software Spectrum.
* a 128K upgrade, or an amber screen monitor from Blaxland Computer Services.
* a Tandy Speech / Sound pack, donated by Bayne and Trembath.

Sunday.

A relaxed day to spend with the merchants and their software. Operate CoCoMax, Graphicom, or hundreds of other software packages.



And then there are the games. How well can you score? Pit your skills against the other thrillseekers in an effort to become the highest scorer of the day!

We'll be picking a game, probably well known, and testing you against all comers. Who knows - you might even win a prize!

If we have some applications for CoCoConnection working by then, you'll get the opportunity to program the thing to do your task! (Gulp!)

And finally, I'm sure that some of you will want to follow up with your tutors of the previous day, matters which arise from his lecture.

****

Ticket sales cease strictly on 28th May, although you can continue to pay them off after that date. Many have indicated that they are coming. Most have not paid. Do it now, I must have evidence of your real intent to come. You will not be let in on the day, if you turn up casually.

In setting this conference up, we were a little vague about some of the things we would be doing, and how we would go about doing them. This was to leave us the greatest latitude possible. I'm sorry that this caused confusion, the next one will be better!

Two things that come under the above heading relate to families and to dealers. Most of the dealers should know by now that we are only charging the same rate for you as for delegates. If you need us to supply additional equipment to your own, we will have to hire it, and you will have to pay us for that.

Our intent for families is that they should all come if each will benefit from being here. To this end, we are going to be open minded to any proposal you want to put regarding payment for the extra people. The rule here is to talk to me NOW about this.

Some information just to hand suggests that we should have several different merchants coming to CoCoConf. One is a bookseller, who has every book available for CoCo, and the other is our new advertiser Centurion, who supplies hardware and software essentially for the MS Dos machines.

Finally, and I almost left him off the list of reasons for coming to CoCoConf, we understand that Lonnie Falk from American Rainbow is still intending to be here.

He sits at the crossroads of all that happens in the American Color Computer world, and therefore has a rare perspective to give. He will be talking on Saturday night, and you'll have an opportunity to talk with him afterwards.

(He is looking to learn from us too! A recent letter from American Rainbow asked about OS8, and whether Tandy Australia supported it! I'm hopeful that I may be able to interest him in a little deal I've got going in Sydney. You see there's this bridge ....)

Next month there will be a map to show delegates where to come. By then it will be too late to register. Register NOW!

Register NOW!
Register NOW!

COME TO CoCoConf. Come and meet the gang!

CONF

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PROGRAM

SAT:

9.00 AM Welcome!
9.30 AM Tutorials. Choice of 4, or head off to the Computer Expo.
11.00 AM Morning Tea.
11.30 AM Return to Tutorials.
12.30 PM Lunch.
9.00 AM Rotary Hall
Lawson St
Southport. Qld.
2.00 PM Tutorials: Choice of 4, or head off to the computer Expo.
3.30 PM Afternoon Tea.
4.00 PM Return to Tutorials.
5.00 PM Break to prepare for Dinner.

8.00 PM Dinner (Venue to be announced).

SUN:

10.00 AM Spend today with the Software Agents. Try out the new Programs, or join in the games contests.

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BASIC TUTORIAL

HOW TO EXTEND COLOR BASIC

PART I

by A. Hartmann

The Color Computer these days comes in three catagories regardless of memory:

Color Basic (CB),
Extended Color Basic (ECB),
and Disk Extended Color Basic (DECB).

In this section we are going to talk about Color Basic and how to extend it, (ie, getting some Extended Color Basic functions into the non-extended system). By the way, I have a 64K DECB, as a matter of interest.

If you're thinking of putting things like CIRCLE, PAINT, DRAW, etc, (I'm still working on DRAW at the moment) these aren't exactly what we're on about at present.

In the next 3 months, I'm going to show those with Color Basic how to get some of the most used ECB commands into your machine. Therefore, you need not have ECB when an ECB program pops up in the Rainbow or CoCo; instead, you get these handy little subroutines out and replace things like STRING$, LINEINPUT, etc with something your CB can understand.

The most common commands / functions used these days (and which I have subroutines for), in ECB are as follows:

* STRING$
* INSTR
* MID$
* HEX$
* &H
* VARPTR
* DEFUSR
* USR
* LINEINPUT
* SQR(X)
* EXP(X)
* LOG(X)
* TAN(X)
* COS(X)
* ARC COS(X)
* ARC SIN(X)
* ARC TAN(X)

I will give to you a Basic subroutine to access all of these functions / commands. This month we'll start on STRING$, INSTR, MID$, SQR(x), TAN(x), and COS(x). So, lets go!

1. STRING$: The book says that this returns a string of characters (of a specified length) which are identified by ASCII or the first character of a string.

Example: PRINT STRING$(5,"*") will print a "*" five times thus "*****".

Supposing you encountered this line:

```
500 X$=STRING$(32,"*")
```

... instead type this ...

```
500 ZL=32:ZC=ASC("*"):GOSUB3000
    0:X$=ZS$ "But what about the GOSUB" I hear you
```

say. Well there's an answer to everything ...

... which is thus ...

```
30000 REM STRING$
30010 ZS$="":FOR ZJ=1TO ZL:ZS$=
ZS$+CHR$(ZC):NEXT:RETURN
```

2. INSTR: INSTR searches for the first occurence of Y$ in X$ and returns the position at which the match is found.

There are two types of INSTR:

(1) PRINT INSTR("04/04/85","/") and
(2) PRINT INSTR(6,"04/04/85","/").

What does each do? Well see for yourself ...

(1) will print a 3 and ...
(2) will print a 6.

So what to do when you find the first?

(1) `500 I=INSTR(A$,B$)`

becomes ...

(1) `500 ZS$=A$:ZT$=B$:GOSUB30100:I=ZI`

and what to do when you find the second type ...

(2) `500 I=INSTR(S,"04/04/85","/")`

becomes ...

(2) `500 ZS=S:ZS$="04/04/85":ZT$="/":`
`GOSUB30120:I=ZI`

The following subroutine takes care of both:

```
30100 REM INSTR
30110 ZS=1
30120 ZI=0:FOR ZS<1THEN ZS=1
30130 FOR ZJ=ZS TO LEN(ZS$):IF MI
D$(ZS$,I,LEN(ZT$))=ZT$ THEN ZI=ZJ
:RETURN ELSE NEXT:RETURN
```

3. MID$: This is not just the MID$ that CB has, but is also a command in ECB. My trusty old book says this about MID$ ...

"MID$ replaces a portion of one string with another string."

There are two versions of this one as well. Let's start with the first type:

(1) MID$(A$,X,Y)=B$: Assuming A$="Oracle" and B$="k" and you wanted to make A$="Orakle"; in ECB it would go like this:

```
20 MID$(A$,4,1)=B$
```

Well, in CB language it would be something like this:

```
20 ZS$=A$:ZI=4:ZL=1:ZM$=B$:GOSUB
   30220:A$=ZS$
```

(2) MID$(A$,4)=B$: Lets take A$="abcdefg" and B$="xyz" and you wanted to get this: A$="abcxyzgh"; then you would go about it like this (in ECB):

```
20 MID$(A$,4)=B$
```

and in CB:

```
20 ZS$=A$:ZI=4:ZM$=B$:GOSUB30200
   :A$=ZS$
```

... and before your eyes is the subroutine that does all that:

```
30200 REM MID$
30210 ZL=LEN(ZM$):GOTO30230
30220 IF ZL>LEN(ZM$) OR ZL=0THEN
```

```
ZL=LEN(ZM$)
30230 IF ZI<1OR ZI>LEN(ZS$) THEN
PRINT"?FC ERROR":END ELSE ZT$=LE
FT$(ZM$,ZL):ZS$=LEFT$(ZS$,ZI-1)+
ZT$+RIGHT$(ZS$,LEN(ZS$)-ZI-ZL+1)
:ZM$="":RETURN
```

4. SQR(x): All this does is return the square root of a number (x). In this one, conditions have to be set to make x greater than or equal to 0 (X)=0).

So whenever you encounter this:

```
50 M=SQR(5) you would replace it like this:
50 YX=5:GOSUB40010:M=YY
```

The listing is:

```
40010 REM SQUARE ROOT
40020 REM
40030 IF YX=0 THEN YY=0:RETURN
40040 IF YX)0THEN40060
40050 PRINT"ROOT OF NEGATIVE NUM
BER??":END
40060 YY=YX*.5:YZ=0
40070 YW=(YX/YY-YY)*.5
40080 IF (YW=0)+(YW=YZ) THEN RETURN
40090 YY=YY+YW:YZ=YW:GOT040070
```

5. TAN(x): This function returns the tangent of x (in degrees). The formulae for converting radians to degrees is X*57.29577951 or 180/3.1415927 (to be more precise, if you wish).

Supposing you found this in one of the lines of the program you were typing in:

```
90 W=TAN(8)
```

it could be replaced by something like this:

```
90 YX=8:GOSUB40300:W=YY
```

and the listing is:

```
40300 REM TANGENT
40310 IF ABS(SIN((90-YX)/57.2957
7951))<1E-7 THEN PRINT"UNDEFINED
":END
40320 YY=SIN(X/57.29577951)/SIN(
(90-YX)/57.29577951)
40330 RETURN
```

6. COS(x): This returns the Cosine of x (which, incidentally, has to be defined in degrees as well).

So you're typing away when you stumble over this line:

```
120 R=COS(30)
```

then before your very eyes the following transformation will take place:

```
120 YX=30:GOSUB40350:R=YY
```

Here is the listing:

```
40350 REM COSINE
40360 YY=SIN((90-X)/57.29577951)
40470 RETURN
```

And that's it for this month. Next month I'll show to you how to get...

* HEX$
* &H
* VARPTR
* EXP(x) (or X to the Yth power)
* LOG(x) (natural and common (LOG base e and LOG base 10))
* EXP(x) (or e to the X power).

All these last three functions work as one, so be sure to type in all three even though EXP(x) and EXP(x) look the same (please excuse).

As you notice, the commands start at 30000 and continue up (while the functions start at 40000 and work up) so you can use everything as o n e b i g subroutine.

If you want all of these commands/functions on tape, just send to me the following...

* Your name,
* Your address,
* $2.00 (for postal charges) - oh, and please, no credit cards, COD, etc..
* An empty cassette (preferably C-30, if you can)

to:

A. Hartmann
3 Sundowner Ct,
Mermaid Waters, Qld. 4218.

If you have any problems / queries / complaints / questions, etc, write to me (I don't have a phone) and I will write back pronto, unlike Graham!

Catch ya later,

... Alex.

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OS8

I was pleasantly surprised when I opened my April CoCo and found that Graham had considered my program "Beanhead" worthy of publication. It looked somehow different with some odd looking extra lines. Being eternally inquisitive, I quickly added the lines to my copy and thoroughly enjoyed the ensuing joke.

On reflection, I realised what a salutory lesson it was for any too eager and hasty typists who may have left his warning remarks in 'Screen Dump' unheeded, also the clue in line 3 inviting a SAVE.

Of course, the listing is not irretrievably lost and can be easily rescued by telling CoCo where to look for it, using the following OS8 routine:

The Listing:

```
1 '**********RETRIEVE**********
  *****BY PETER KNOX**********
  *********11/4/85*************
2 GOTO10
3 SAVE"RETRIEVE":STOP
5 'RUN THIS PROGRAM TO POKE M/L
  INTO MEMORY AND SAVE A FEW
  COPIES OF THIS M/L PROGRAM FOR
  FUTURE USE.
6 'IF YOU LOSE A BASIC PROGRAM
  FROM AN ACCIDENTAL NEW, CLOADM
  "RETRIEVE" AND EXEC TO RESCUE
  PROGRAM
10 CLS:CLEAR
20 DATA10,9E,19,30,23,A6,80,26,F
C,AF
30 DATA A4,A6,80,26,FC,A6,80,26,
F8,A6
40 DATA 80,26,F4,9F,1B,9F,1D,9F,
1F,39
50 FORJ=3000 TO 3029:READK$:POKE
J,VAL("&H"+K$)
60 NEXTJ:PRINT
65 NM$=",&H600,&H61D,&H600"
70 PRINT"SAVE TO DISK OR TAPE? (
D/T)"
80 D$=INKEY$:IFD$="D"THEN110 ELS
E IFD$="T"THEN90 ELSE 80
90 FORA=1TO3:CSAVEM"RETRIEVE",30
00,3029,3000:MOTORON:FORT=1TO900
:NEXTT,A:MOTOROFF:GOTO200
110 SAVEM"RETRIEVE",3000,3029,30
00
200 END
```


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I will send you our FREE catalogue with over 150 titles and more, all for the Color Computer.

Herman Fredrickson really started something when he sent a program to us in November last year.

As mentioned last month, Barry Cawley got hold of it and used it to implement a lot of OS8 functions, and this month we reveal his latest creation!

The Listing:

```
1 '**********HERMAN & BARRY'S
  *******OS8 GET TOGETHER*****
2 GOTO10
3 SAVE"OS8START":STOP
4 'HERMAN FREDRICKSON ENGAGES
  BARRY CAWLEY'S FERTILE IMMAG-
  INATION     A G A I N !
10 '
70 FOR HER=3584 TO 3620
80 READ MAN$
90 POKE HER,VAL("&H"+MAN$)
100 NEXT HER
110 FOR HER=32382 TO 32407
120 READ MAN
130 POKE HER,MAN
140 NEXT HER
150 EXEC32382
160 DATA 1A,50,8E,80,00,10,8E
170 DATA 20,00,A6,80,A7,A0,10
180 DATA 8C,80,00,25,F6,B7,FF
190 DATA DF,8E,20,00,A6,80,A7
200 DATA A0,8C,80,00,25,F7,1C
210 DATA AF,39
220 DATA 26,80,142,128,0,166,132
,183,255,223,167,128,183,255,222
,140
230 DATA 255,0,38,241,183,255,22
3,28,175,57
240 CLS:POKE&HABEE,&H4F:POKE&HAB
EF,&H53:POKE&HABF0,&H38
250 POKE44002,83:POKE44003,84:PO
KE44004,85:POKE44005,80:POKE4400
6,73:POKE44007,68:POKE&HA1A5,&HF
F:POKE&HABE8,&H20:POKE&HABE9,&H2
0:POKE&HABEA,20
```

PROGRAMS

Programs submitted for inclusion in Australian CoCo, MiCo, softgold and Rainbow, remain the property of the author. We however, reserve the right to use all or part of them, as our needs dictate.

Magazine owners may maintain a copy plus two back ups of each program, but are not permitted to provide others with copies. These programs are provided in good faith by people who have worked very hard to demonstrate the capabilities of your computer to you. Please don't break their trust.

If you would like to submit a program, the prefered method is a triple save to tape, the last one in ASCII. On the reverse of the tape, you may like to place a Telewriter, Scriptsit, or VIP text or ASCII file (in that order of preference), detailing your work. We are still accepting programs and text on hard copy at this stage.

64

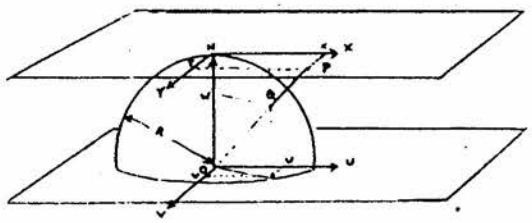
The famous Dutch painter M. C. Escher was a master at combining art with mathematics. Anyone who has the good fortune and pleasure to see his woodcuts and paintings cannot but marvel at the fine engenuity and exquisite care that have gone into every one of his pictures.

Each little detail is contrived to fit perfectly into the detail of an adjoining section, the whole merging into a delicate ornamental infinity. We were lately given a beautiful book on Escher's collected works and it has inspired us into mimicking his efforts on the computer.

We figured that there was a logical mathmatical thread running through many of his productions and that it ought to be possible to reproduce some of his concepts on CoCo. Not only that; we felt it should be possible to create a cinematographic effect by showing successive Escher pictures, each one slightly displaced from the next one, something Escher could never do.

The resulting program is a joint effort showing how to create "Eschereographics": Tino provided the machine language routine (as DATA statements POKEed into memory) to release 32 hi-res graphics pages within a 64K CoCo, Daniel constructed the graphic shapes for spectacular viewing and Bob supplied the mathematical formula for stereographic projection.

The listing is specifically for people with 64K. Those of you with only 16K need not despair; although you will have to forgo the cinematography, you can still savour an individual Escher Picture in leisurely fashion if you make the modifications to the listing described at the very end. Before you type anything, however, it may be worth your while understanding a bit about stereography. Look at the figure below.



Start with a picture drawn on the top plane (touching the hemisphere at the north pole). A point P on that picture plane has (X,Y) coordinates. Then join that point to the centre of the sphere. The intersection point Q with the surface of the sphere has coordinates (U,V,W) relative to the axes placed in the equatorial plane, where U=X*R/S, V=Y*R/S, W=R/S and S = SQR(X*X+Y*Y+1), R= radius of sphere.

The sterographic projection, namely what you see on the TV screen, is simply given by the coordinates (U,V). In this way, the whole infinite upper plane is mapped within the lower equatorial circle. That is how Escher manages to pack his traceries into a confined area.

In our program we have taken a "crystal pattern" on the upper plane (either of square or triangular type) and stereographically projected it into the equartorial plane. The title card shows a 4-sided star forming a lattice and mapped in this way.

The result is unmistakeably a la Escher. In the program we offer you the option of devising your own shapes with a basic cell (24x24 for square or 24 wide x 21 high for a triangular). In case you are uncertain what to choose at first, we make some suggestions presently to help you 'kick off'. The shapes are drawn by specifying the number of vertices and the number of painting points. Think of CoCo as a pencil drawing a line from one vertex to the next and not leaving the paper to get complicated diagrams). When you select your positions, ensure that the locations are well within your shapes or else you will muck up your production.

WARNING. The limited resolution in PMODE1 sometimes causes imperfect painting towards the edges of the picture - often this does not matter. Also we should advise you against altering the colouring scheme in Lines 270 onwards as you will be liable to cause colour flicker.

64Kers, you are now ready to type in the listing. BEFORE DOING SO enter

POKE 1536*13,0:POKE25,6*13:NEW if you have tape

POKE 3584+1536*12,0:POKE25,14+6*12:NEW if you have disk

in order to release 12 graphic pages (in addition to the 20 pages in the upper reaches of memory released by Lines 10-40). Each time you reload your program from a cold start such POKEs will be needed.

As already mentioned, Lines 10-40 inject an ML routine to provide pages 1-20 in upper 64K. Lines 50-90 give you a sample of what's to come. Lines 100-190 allow you to select your display, your shapes being input from Lines 200-220. Random rotation and height/width ratio are supplied by CoCo in Line 230, and the nitty gritty of the program takes place from then on. F=0 specifies the first 16 pages, F=1 the next 16. K gives the displacement from one still to the next and subroutines 270 or 280 and 300 carry out the stereography on each shape. In Line 250, the USR0 function copies the currently drawn page (actually the highest PMODE page) to the required page. The source page is the high order byte of the argument. Then in Line 260 the USR1 call picks each page in quick succession to exhibit a rotating Escher picture.

So what do you input to get a nice display? Here are some examples. Try them first to get a feel of the possibilities open to you.

(1) MODE4. SCREEN1. SQUARE GRID. 8 VERTICES. 0 PAINT POINTS.

Vertex Coordinates

(-16,-16),(0,-8),(16,-16),(8,0),(16,16),(0,8),(-16,16),(-8,0).

(2) MODE1. SCREEN0. SQUARE GRID. 12 VERTICES. 1 PAINT POINT.

Coordinates

(-8,-8),(0,-12),(8,-8),(12,0),(8,8),(0,12),(-8,8),(-12,0),(-8,-8),(8,-8),(8,8),(-8,8)

Paint Coordinate (0,0)

(3) MODE4. SCREEN1. SQUARE GRID. 20 VERTICES. 3 PAINT POINTS.

Coordinates

(0,-12),(7,-8),(5,-4),(12,0),(5,4),(7,8),(0,12),(-7,8),(-5,4),(-12,0),(-5,-4),(-7,-8),(0,-12),(12,-12),(12,0),(12,12),(0,12),(-12,12),(-12,0),(12,12)

Paint Points (-4,0),(0,0),(4,0)

(4) MODE4. SCREEN1. SQUARE GRID. 12 VERTICES. 1 PAINT POINT.

Vertex Coordinates

(-12,-12),(0,-6),(6,-6),(12,-12),(6,0),(6,6),(12,12),(0,6),(-6,6),(-12,12),(-6,0),(-6,-6).

Paint Point (0,0).

(5) MODE1. SCREEN1. TRIANGULAR GRID. 6 VERTICES. 1 PAINT POINT.

Vertex Coordinates

(0,-14),(12,-7),(12,7),(0,14),(-12,7),(-12,-7).

Paint Point (0,0).

(6) MODE4. SCREEN0. TRIANGULAR GRID. 8 VERTICES. 1 PAINT POINT.

Vertex Coordinates

(-8,0),(0,-14),(12,7),(-12,7),(-8,0),(-12,7),(12,-7),(0,14).

Paint Point (0,0).

(7) MODE1. SCREEN0. TRIANGULAR GRID. 10 VERTICES. 1 PAINT POINT.

Vertex Coordinates

(0,14),(0,7),(-6,7),(-12,-7),(-4,-9),(0,-14),(4,-9),(12,-7),(6,7),(0,7).

Paint Coordinate (0,-1).

(8) MODE1. SCREEN1. TRIANGULAR GRID. 12 VERTICES. 1 PAINT POINT.

Vertex Coordinates

(0,12),(-12,7),(-8,-1),(-12,-7),(-4,-9),(0,-14),(4,-9),(12,-7),(8,-1),(12,7),(0,12),(0,2).

Paint Coordinate (0,-6).

Go ahead now and design your own motifs. Why not try copying Escher exactly if you are lucky enough to get hold of a reproduction?

Finally some remarks to comfort the 16K'ers. You can at least see a single picture by deleting Lines 10-40 and Lines 230-260 and inserting in their place:-

```
230 F=0:K=0:R=0:S=0:T=(5+RND(3))/6
240 PMODE4,1:PCLS1:SCREEN1,SC:COLORINT(N/2)
250 IFK$="S"THENGOSUB270ELSEGOSUB280
260 IFINKEY$=""THEN260ELSERUN100
```

Since you will have to be content with just one still, you might indulge yourselves by devising really complicated basic motifs. Alternatively you could revert to PMODE0 and release 8 pages with a PCLEAR8. However the resolution is not brilliant in that mode and the number of pages is not quite adequate to produce smooth motion pictures.

The Listing:

```
10 CLEAR200,&H7FA0:DEFUSR0=&H7FA
1:DEFUSR1=&H7FC7
```

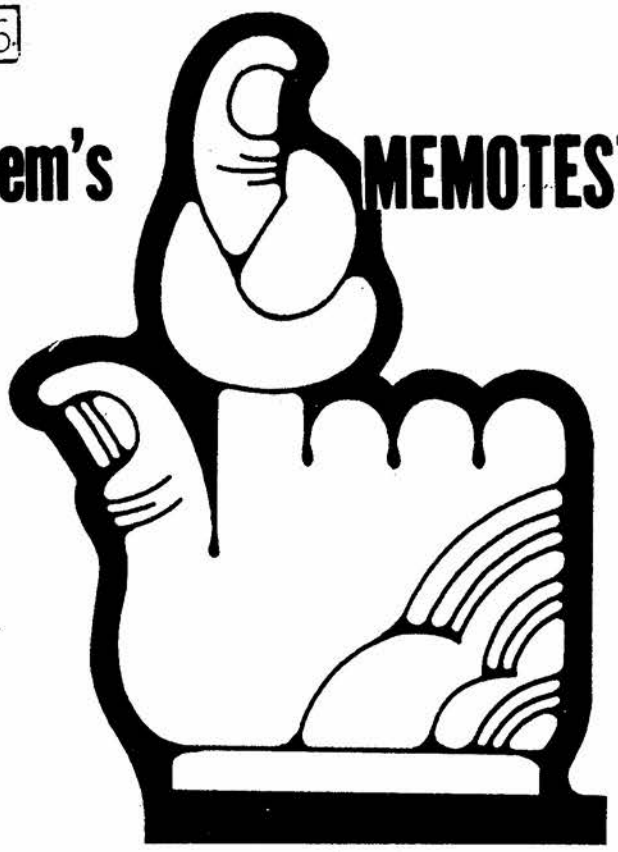
THE ADVENTURES OF CoCo

by A. White

```
20 FORI=&H7FA1 TO&H7FFF:READD:PO
KEI,D:NEXTI
30 DATA189,179,237,52,4,31,137,1
41,50,31,1,53,4,141,44,31,3,16,1
42,6,0,26,80,127,255,223,236,129
,237,193,49,62,38,248,127,255,22
2,57,189,179,237,77,38,48,141,13
,31,1
40 DATA220,183,147,186,159,186,4
8,139,159,183,57,90,193,35,34,28
,150,188,192,20,36,4,203,20,134,
128,52,2,134,6,61,235,224,79,30,
137,77,43,4,145,25,36,1,57,126,1
80,74
50 PMODE4,1:PCLS:SCREEN1,0:DRAW"
BM2,8;U6F2E2D6BR2;U6R4D6L4BE6BR4
;D4G2H2U4BR6;D6BR2;U6F4U4D6BE4;R
2D4L4U6R4BR10;L4D3R4L4D3R4BR2;R4
U3L4U3R4BR6;L4D6R4BR2;U6BR4D3L4R
4D3BR6;L4U3R4L4U3R4BF6;H4R4U2L4D
6"
60 DRAW"BM174,8;R4U3L4U3R4BR2;R2
D6U6R2BR6;L4D3R4L4D3R4BR2;U6R4D2
L4F4BR6;L4U3R4L4U3R4BR2;R4D6L4U6
BR10;L4D6R4U4L2BF4;U6R4D2L4F4BR2
;U4E2F2L4R4D4BR2;U6R4D3L4BF3BR3;
U6D3R4U3D6BR2;U6BR6;L4D6R4BR2;R4
U3L4U3R4"
70 DRAW"BM2,189;U6R4G3LRF3L4BR8;
U4H2F2E2BR6;R2D6U6R2BR2;D6U3R4U3
D6BR6;L4U3R4L4U3R4;BM196,189;U6R
2F2D2G2L2BR10;L4U3R4L4U3R4BR2;D6
R4BR2;U6R4G3LRF3L4BR6;U6R4D6L4BE
6;D6R4U6BF6;H4R4U2L4D6BE6BR4;L4D
6R4U4L2BF4;U6R4D6L4BR6;R4U3L4U3R
4"
80 T=1:P=8:G=24:H=24:ST=4:XX(1)=
0:YY(1)=-12:XX(2)=4:YY(2)=-4:XX(
3)=12:YY(3)=0:XX(4)=4:YY(4)=4:XX
(5)=0:YY(5)=12:XX(6)=-4:YY(6)=4:
XX(7)=-12:YY(7)=0:XX(8)=-4:YY(8)
=-4:GOSUB270
90 IFINKEY$=""THEN90ELSERUN100
100 R=RND(-TIMER):CLS8:PRINT@3,"
STEREOGRAPHICS A LA ESCHER";:PRI
NT@35,"FOR 64K, USING 32 GRAPHIC
S";:PRINT@67,"PAGES -- BY THE de
lbourgos";
110 PRINT@128,"FIRST CHOOSE YOUR
 PMODE (1 OR 4)";
120 K$=INKEY$:IFK$="1"ORK$="4"TH
ENM=VAL(K$)ELSE120
130 ST=(4+2*M)/3:G=24
140 PRINT@192,"NEXT CHOOSE SCREE
N TYPE (0 OR 1)";
150 K$=INKEY$:IFK$="0"OR K$="1"T
HENSC=VAL(K$)ELSE150
160 PRINT@256,"FINALLY CHOOSE TH
E LATTICE TYPE:EITHER <S>QUARE O
R <T>RIANGULAR":PRINT@352,"WHEN
DRAWING YOUR BASIC SHAPES, THE G
RID IS 24 WIDE BY ?? HIGH."
170 K$=INKEY$:IFK$="S"THENPRINT@
407,"24";:H=24:ELSEIFK$="T"THENP
RINT@407,"21";:H=21ELSE170
180 PRINT@448,"HOW MANY COORD. P
OINTS";:INPUTP:P=INT(P):IFP<2THE
NSOUND10,10:GOTO180
190 PRINT@448,"HOW MANY PAINTING
 POINTS";:INPUTPP:PP=INT(PP):IFP
P<0THENSOUND250,10:GOTO190
200 DIMXX(P+PP),YY(P+PP),X(P+PP)
,Y(P+PP),R(P+PP),U(P+PP),V(P+PP)
:FORI=128TO448STEP32:PRINT@I,STR
ING$(32,255);:NEXTI
210 PRINT@128,"";:FORI=1TOP:PRIN
T"POINT #"I"X-COORD.";:INPUTXX(I
):PRINT"POINT #"I"Y-COORD.";:INP
UTYY(I):PRINTSTRING$(32,255);:NE
XTI
220 IFPP=0THEN230ELSEPRINTSTRING
$(32,239);:FORI=P+1TO P+PP:PRINT
"PAINT PT."I-P"X-COORD.";:INPUTX
X(I):PRINT"PAINT PT."I-P"Y-COORD
.";:INPUTYY(I):PRINTSTRING$(32,2
39);:NEXTI
230 R=RND(3)-2:S=RND(3)-2:IFR=S
THEN230ELSET=(5+RND(3))/6
240 FORF=0TO1:FORK=-3TO4STEPST/2
:PMODEM,13-ST:PCLS1:SCREEN1,SC:C
OLORINT(M/2):IFK$="S"THENGOSUB27
0ELSEGOSUB280
250 FORL=1TO ST:A=USR0((32-ST+L)
*256+2*K+6+L+16*F):NEXTL,K,F
260 FORI=1TO33-M STEPST:A=USR1(I
):SCREEN1,SC:FORT=1TO20:NEXTT,I:
GOTO260
270 FORJ=-3TO3:FORI=-3TO3:C=2+I+
J+F*(R-S)-2*INT((I+J+F*(R-S))/2)
:GOSUB300:NEXTI,J:RETURN
280 FORJ=-3TO0:FORI=-3-J/2 TO3+J
/2:II=I+F*R-J/2:JJ=J+F*S:KK=II-2
*INT(II/2)-2*JJ-4*INT(JJ/2):C=1+
KK-4*INT(KK/4):GOSUB300:NEXTI,J:
FORJ=1TO3:FORI=-3+J/2 TO3-J/2:II
=I-J/2+F*R:JJ=J+F*S:KK=II-2*INT(
II/2)-2*JJ-4*INT(JJ/2):C=1+KK-4*
INT(KK/4):GOSUB300
290 NEXTI,J:RETURN
300 FORW=1TOP+PP:X(W)=XX(W)+G*I+
3*K*(R+S*(24-H)/6):Y(W)=H*J+3*S*
K+YY(W):R(W)=SQR(X(W)*X(W)+Y(W)*
Y(W)+24*24):U(W)=127+95*X(W)*T/R
(W):V(W)=95+95*Y(W)/R(W):NEXTW
310 FORW=1TO P-1:LINE(U(W),V(W))
-(U(W+1),V(W+1)),PSET:NEXTW:LINE
-(U(1),V(1)),PSET:IFPP=0THENRETU
RNELSEFORW=P+1TOP+PP:PAINT(U(W),
V(W)),C,4:NEXTW:RETURN
```

16.

Hem's MEMOTEST



by Hubert Mulbock

This is a 'quickie' for those who may want to test their memory and can also be put to good use by those of us who are trying to fathom the vagaries of programming.
After the title screen a list of five numbers are displayed for you to memorise in the correct order. You are only given a limited amount of time to do so and are then asked to recall them one by one.
Goodluck!

The Listing:

```
5 POKE 359,57:SCREEN 0,1
10 CLS RND(8):Y=RND(255)
20 FOR X=0 TO 31
30 POKE 1024+X,Y:NEXT X
40 FOR X=63 TO 511 STEP 32
50 POKE 1024+X,Y:NEXT X
60 FOR X=510 TO 479 STEP-1
70 POKE 1024+X,Y:NEXT X
80 FOR X=448 TO 32 STEP -32
90 POKE 1024+X,Y:NEXT X
100 PRINT@168,"welcome to hem's"
;
110 PRINT@200,"................"
;
120 PRINT@234,"memory  test";
130 FOR Z=1 TO 3000:NEXT Z
140 CLS
150 FOR T =1 TO 16
160 READ F,D
170 SOUND F,D
180 NEXT T
190 DATA 176,2,193,2,204,2,218,2
,218,1,218,1,218,1,218,1,204,2,2
04,2,204,1,204,1,193,2,204,2,193
,2,176,5
200 'TEST YOUR MEMORY
210 POKE 359,57:SCREEN 0,1:CLS 0
220 X=RND(255)
230 FOR L=1024 TO 1535:POKE L,X:
NEXT L
240 PRINT"MEMORIZE THESE NUMBERS
"
250 PRINT
260 PRINT"YOU HAVE FOUR SECONDS"
270 PRINT
280 FOR X=1 TO 5
290 N(X)=RND(40)
300 PRINT TAB(12) N(X)
310 NEXT X
320 FOR Y=1 TO 3000:NEXT Y
330 CLS 0
340 FOR X=1 TO 5
350 PRINT"WHAT WAS NUMBER"X
360 INPUT R
370 PRINT
380 IF N(X)=R THEN PRINT"CORRECT
"ELSE PRINT"WRONG-IT WAS" N(X)
390 PRINT
400 NEXT X
410 PRINT"**********************
********"
420 FOR X=1 TO 1400:NEXT X
430 CLS 0
440 PRINT"GO AGAIN?(Y/N)?"
450 Z$=INKEY$:IF Z$=""GOTO 450
460 IF Z$="Y"THEN 240 ELSE 470
470 X=RND(255)
480 FOR L=1024 TO 1535:POKE L,X:
NEXT L
490 PRINT:PRINT:PRINT
500 PRINT"***THANK YOU"
510 PRINT"***AND HAVE A NICE DAY
"
520 PRINT:PRINT:PRINT
530 PRINT"***SEE YOU LATER"
540 PRINT:PRINT:PRINT
550 PRINT"***WITH COMPLIMENTS FR
OM"
560 PRINT"***HUBERT MUHLBOCK"
570 PRINT"***PUNCHBOWL NSW"
580 FOR T =1 TO 16
590 READ F,D
600 SOUND F,D
610 NEXT T
620 DATA 176,2,193,2,204,2,218,2
,218,1,218,1,218,1,218,1,204,2,2
04,2,204,1,204,1,193,2,204,2,193
,2,176,5
630 POKE359,126:SCREEN 0,0
```

CATALOG

by Gavin Unsworth

CATALOG is a security system for all your treasured programmes that you keep on tape.

It could come in vary handy against prying eyes and itchy fingers, if not, it's an interesting exercise.

On the first screen you have to enter the access code which is 31-12-70. Next you have to type in 1-for new file or 2-for CATALOG. As this is the first time you have used the program, type 1.

Find a blank spot on a tape and follow the instructions (the audio is automatically turned on). Now go through entering the files, type xx for the program to stop.

On the next screen, type 1 for the menu then hit 2 for the Catalog or 1 to make another file. If you entered 1 then rewind the tape to the start of the file (the audio is automatically turned on) and hit enter. After you have read the files, press any key.

To change the access code, convert all the numbers in line 58 after A=, B=, C=, D= etc., to the numbers and order you would like. For example, to change the code to 12-34-56 line 58 would read, 58 IF A=1 AND B=2 AND C=3 AND D=4 AND Z=5 AND F=6 THEN KL=9 ELSE KL=8. Don't change the line from here on.

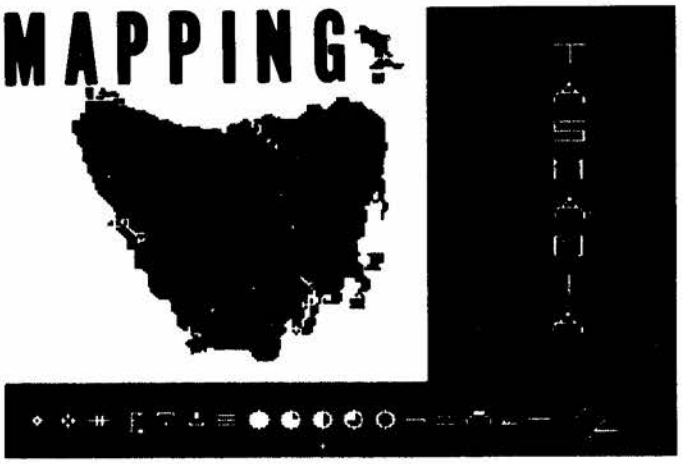
This program contains the no list poke and will self destruct if the wrong access code is entered or you end the program. To remedy the no list poke type - POKE&H17F,0

The Listing:

```
1 '*******************************
2 '*          catalog            *
3 '*                             *
4 '*            BY               *
5 '*                             *
6 '*       GAVIN UNSWORTH        *
7 '*21 EMERALD ST BRASSALL QLD*
8 '*          4305               *
9 *******************************
10 POKE &H17F,&H9E
11 POKE 6000,0
12 WF=0
13 SCREEN0,1
14 CLS0
15 '* draw border *
16 FORA=1024TO1055:POKEA,42:NEXT
A
17 FORB=1056TO1504STEP32:POKEB,4
2:NEXTB
18 FORC=1505TO1535:POKEC,42:NEXT
C
19 FORD=1503TO1087STEP-32:POKED,
42:NEXTD
20 '* reverse video *
21 CLEAR 200,16234
22 M=16234
23 FOR I=1 TO 3
24 READ SS,SE
25 FOR J=SS TO SE
26 POKEM,PEEK(J)
27 M=M+1
28 NEXTJ,I
29 DATA 33395,33413,38316,38350,
41738,41825
30 FORI=1TO25
31 READ M$,D$
32 M=VAL("&H3F"+M$)
33 D=VAL("&H"+D$)
34 POKEM,D:NEXT
35 DATA 6E,00,6F,0D,9A,0F,9F,16,
F4,16,F5,32,F6,62,F7,39
36 DATA AE,20,BA,20,AF,8D,B0,48
37 DATA CF,08,D2,22,D3,02,D4,88,
D5,40,D6,84,D7,DF
38 DATA EF,20,F9,A7,FA,84,FB,A7,
FC,82,FD,39
39 POKE &H168,&H3F:POKE&H169,&H6
A
40 '* draw key/lock *
41 PRINT@79,CHR$(131+16)+CHR$(13
1+16)+CHR$(131+16)+CHR$(135+16)+
CHR$(140+16)+CHR$(138+16)+CHR$(1
28+16);:PRINT@111,CHR$(136+16)+C
HR$(136+16)+CHR$(128+16)+CHR$(13
2+16)+CHR$(140+16)+CHR$(136+16)+
CHR$(128+16);
42 FOR FF=23 TO 27:SET(FF,4,3):N
EXTFF:FORFF=23 TO 27:SET(FF,7,3)
:NEXTFF:FORFF=5 TO 6:SET(23,FF,3
):SET(27,FF,3):NEXTFF:SET(24,6,3
):SET(26,6,3)
43 '* input code *
44 PRINT@167,"ENTER ACCESS CODE"
;
45 PRINT@235,")-- -- --";:IF PEE
K(6000)=9 THEN62
46 FORX=1260 TO1267
47 POKEX,32:FORW=1TO100:NEXTW
```

```
48 A$=INKEY$
49 IFX=1262 ORX=1265 THENPOKEX,4
5:NEXTX
50 IFA$<>""THEN54
51 POKEX,45
52 FORT=1TO100:NEXTT
53 GOTO47
54 IFA$="0"THENK=48ELSEIFA$="1"T
HENK=49ELSEIFA$="2"THENK=50ELSEI
FA$="3"THENK=51ELSEIFA$="4"THENK
=52ELSEIFA$="5"THENK=53ELSEIFA$=
"6"THENK=54ELSEIFA$="7"THENK=55E
LSEIFA$="8"THENK=56ELSEIFA$="9"T
HENK=57
55 POKEX,K:IFX=1260THENA=VAL(A$)
ELSEIFX=1261THENB=VAL(A$)ELSEIFX
=1263THENC=VAL(A$)ELSEIFX=1264TH
END=VAL(A$)ELSEIFX=1266THENZ=VAL
(A$)ELSEIFX=1267THENF=VAL(A$)
56 NEXT X
57 '* check right code *
58 IFA=3 AND B=1 AND C=1 AND D=2
 ANDZ=7 AND F=0 THEN KL=9 ELSE K
L=8
59 '* access denied-files open *
60 IF KL=9 THEN FOR DD=1 TO 5: P
RINT@299,"FILES OPEN";:FOR SS=1
TO 100:NEXTSS:PRINT@299,"files o
pen";:SOUND60,1:FOR SS=1 TO 100:
NEXTSS:NEXTDD:GOTO 62
61 IF KL=8 THEN PRINT@297,"acces
s denied";:FOR AA=1 TO 5:SOUND5,
4:SOUND1,4:PRINT@360,"NOT YOUR F
ILES";:NEXTAA:POKE113,0:EXEC4099
9
62 PRINT@362,"[1] NEW FILE";:PRI
NT@394,"[2]  CATALOG";
63 A$=INKEY$:IFA$=""THEN 63 ELSE
 IF A$="1" THEN 64 ELSE IF A$="2
" THEN 80 ELSE GOTO 63
64 '* input new file *
65 POKE 360,130:POKE361,115:AUDI
OON:CLS:PRINT:PRINT"POSITION TAP
E-PRESS PLAY/RECORD":PRINT"
[ENTER] WHEN FINISHED";
66 A$=INKEY$:IFA$=""THEN66 ELSE
IF A$=CHR$(13) THEN 67 ELSE 66
67 OPEN "O",#-1,"TAPEFILE"
68 PRINT:PRINT:PRINT"INPUT PROGR
AMS TYPE-XX-WHEN DONE":FOR UU=1
TO 800:NEXTUU
69 PRINT@128,STRING$(32,143+96);
70 FOR RR=1 TO 100:NEXTRR
71 FOR RT=96TO 0STEP-32:PRINT @R
T,STRING$(32,134+80);:NEXTRT
72 WF=WF+1:PRINT@256,STRING$(32,
143+96);:FOR TR=288 TO 448STEP32
:PRINT@TR,STRING$(32,138+64);:NE
XTTR:FOR 00=1525 TO 1535:POKE00,
60:NEXT00:FOR00=1504 TO 1513:POK
E00,62:NEXT00:PRINT@160,"PROGRAM
:      ";:LINEINPUTA$:IFA$="XX" T
HEN 77
73 PRINT@192,"TAPE:          ";:LI
NEINPUTB$
74 PRINT@224,"COUNTER NO.: ";:LI
NEINPUTC$
75 PRINT #-1,A$,B$,C$
76 PRINT@169,"
   ";:PRINT@198,"
     ";:PRINT@237,"
        ";:IF WF=12 THEN SOUND 6
0,3:GOTO 77 ELSE GOTO 72
77 PRINT@490,"SAVING FILES";
78 CLOSE #-1
79 AUDIOOFF:GOTO 92
80 '* catalog *
81 POKE360,130:POKE361,115:AUDIO
ON:CLS:PRINT:PRINT"   POSITION T
APE - PRESS PLAY";:PRINT"
   [ENTER] WHEN DONE"
82 A$=INKEY$:IFA$=""THEN 82 ELSE
 IF A$=CHR$(13) THEN 83 ELSE 82
83 AUDIOOFF:CLS:Z=96:X=108:P=120
:PRINT STRING$(32,143+32);:PRINT
@480,STRING$(31,143+32);:POKE153
5,175:PRINT@32,"PROGRAM  TAPE NO
.   COUNTER NO.":PRINTSTRING$(32
,"-");
84 OPEN "I",#-1,"TAPEFILE"
85 IF EOF(-1) THEN 89
86 INPUT #-1,A$,B$,C$
87 PRINT @Z,A$:PRINT @X,B$:PRINT
 @P,C$: Z=Z+32:X=X+32:P=P+32:IFZ
=480 THEN Z=480 AND X=X-32 AND P
=P-96
88 GOTO85
89 CLOSE #-1
90 AUDIOOFF:PRINT@490,"PRESS ANY
 KEY";
91 A$=INKEY$:IF A$=""THENGOTO 91
 ELSE 92
92 CLS2:PRINT@235,"<1> MENU";:PR
INT@267,"<2>  END";
93 A$=INKEY$:IFA$=""THEN93 ELSE
IFA$="1"THEN 99 ELSE IFA$="2"THE
N 95 ELSE 93
94 POKE6000,9:GOTO13
95 GOTO96
96 CLS6:PRINT@256,"PROGRAM ABOUT
 TO SELF DESTRUCT!!";
97 FOR CV=1 TO 700:NEXTCV
98 POKE113,0:EXEC40999
99 CLS8:PRINT@201,"[1] NEW FILE"
;
100 PRINT@233,"[2]  CATALOG";
101 A$=INKEY$:IFA$=""THEN101 ELS
E IF A$="1" THEN 64 ELSE IF A$="
2" THEN 80ELSE 101
```

MAPPING



Here is yet another programme from the prolific Delbourgos.

MAPPING displays a map of Tasmania and gives you the option of choosing its topographic, weather or road map layout.

1. Topography

Using the arrow keys move the cursor until you reach the required Latitude or Longitude. Press enter. Space bar to exit.

2. Roads

Main cities and roads are drawn. Move cursor to first town, press 1. Then to second town, press 2. Whence their separation.

3. Weather

Move cursor to motif, enter. Then to map location and enter.

We hope you enjoy this one and marvel how clever, with a 'little' help from his friends, CoCo can be.

The Listing:

```
1 CLS0:DIMD(6,6),C$(6):C$(1)="ho
bart":C$(2)="launceston":C$(3)="
burnie":C$(4)="devonport":C$(5)=
"queenstown":C$(6)="st.helens"
2 D(1,2)=200:D(2,1)=200:D(1,3)=3
06:D(3,1)=306:D(1,4)=252:D(4,1)=
252:D(1,5)=256:D(5,1)=256:D(1,6)
=265:D(6,1)=265:D(2,3)=143:D(3,2
)=143:D(2,4)=89:D(4,2)=89:D(2,5)
=262:D(5,2)=262
3 D(2,6)=168:D(6,2)=168:D(3,4)=5
4:D(4,3)=54:D(3,5)=207:D(5,3)=20
7:D(3,6)=211:D(6,3)=211:D(4,5)=2
61:D(5,4)=261:D(4,6)=257:D(6,4)=
257:D(5,6)=450:D(6,5)=450
4 FORI=1TO6:READD:POKE1024+D,191
:NEXT:DATA3,21,22,23,24,57
5 FORI=1TO12:READD:POKE1024+D,18
8:NEXT:DATA0,1,2,40,43,44,17,1,2
0,54,90,91
6 FORI=1TO7:READD:POKE1024+D,179
:NEXT:DATA6,7,9,12,13,58,4
7 POKE1077,180:POKE1079,180:POKE
1080,189
8 FORX=7TO25:FORY=192TO288STEP32
```

USER FRIENDLYer

by Darcy O'Toole

G'day!

The idea for this column has been tossed around production meetings here at Aussie CoCo for quite sometime. Because of time (or lack of it) and a whole heap of things, tossed was as far as it got.

From the feedback we keep getting, it has become apparent that we make the time and the effort.

USER FRIENDLYer, is for the absolute novice user.

It has to do with all the things the older users have had drummed into their heads since they were themselves of that 'rare' breed.

First bit of advice from this our first effort is - CONTACT YOUR NEAREST USER GROUP. (See back of magazine)

USER GROUPS

User groups are a network of people throughout Australia, made up of users just like you, whose basic premise is to LEARN. So use them, that's what they are there for.

BUT! Don't waste their time and yours by getting them to take you by the hand through the manuals. Stretch yourself. HAVE A GO! Then, when you're down to your last lock of hair, pick up the phone and call somebody in the USER GROUP.

Here I want to pause a moment to address the User Group Contacts (if they are doing their job they should be reading this)

USER FRIENDLYer is a series of articles filled with common sense info. These articles can eventually be collated by you, stapled and given to your new people as a guide and a base to start them on their merry way.

This is where you can help yourself. Remember all those wonderful little posers that have been thrown at you the last umpteen years? Write them down and send them to USER FRIENDLYer C/- PO Box 5730, Gold Coast Mail Centre. Qld. 4217.

Then, whenever you are asked the question 'What's a cold start mean?' etc, hand them the answers all in glorious black and white.

CoCo TENNANT #1

"WHERESOEVER TWO OR MORE USERS ARE GATHERED IN MY NAME THOU SHALL BE CALLED 'USER GROUP' - OR ELSE."

#2

DON'T TALK ABOUT IT - DO IT!

I've got some work for the newies too. If you have no access to a user group (see above edict) and you have questions that can't wait, drop me a line with a SAE (see address above) I'll try my best to answer them for you.

So, something for everyone.

I hate to repeat something that has been said time and time again in this and our sister publication. We are only as good as users let us be, it's your computer, it's your column, it's your magazine - GET INVOLVED!

```
:POKE1024+X+Y,255:NEXTY,X:FORX=2
1TO26:FORY=320TO384STEP32:POKE10
24+X+Y,255:NEXTY,X
9 FORI=0TO6:POKE1164+I,255:POKE1
195+I,255:POKE1202+I,255:POKE135
1+I,255:NEXT
10 FORI=1TO19:READD:POKE1024+D,2
55:NEXT:DATA112,113,118,150,151,
229,230,262,294,337,340,347,359,
250,282,283,314,315,316
11 FORI=1TO7::READD:POKE1024+D,2
52:NEXT:DATA334,335,336,361,362,
438,440
12 FORI=1TO8:READD:POKE1024+D,24
3:NEXT:DATA80,81,109,119,147,198
,218,306
13 POKE1372,254:POKE1384,254:POK
E1394,254:POKE1403,254:POKE1396,
253:POKE1302,253:POKE1362,253:PO
KE1275,251:POKE1308,251
14 POKE1110,250:POKE1176,250:FOR
I=1TO5:READX:POKEX,247:NEXT:DATA
1135,1194,1382,1258,1363
15 FORI=1TO6:READD:POKE1024+D,24
5:NEXT:DATA117,139,149,261,326,3
71
16 POKE1317,244:POKE1393,244:POK
E1428,244:POKE1461,244:POKE1138,
248:POKE1387,248:POKE1435,248:PO
KE1463,248:POKE1465,248
17 POKE1221,241:POKE1109,241:POK
E1172,242:POKE1272,253:POKE1106,
242
18 FORI=1TO10:GOSUB132:NEXT
19 PRINT@237,"MAPPING";:PRINT@42
4,"BOB DELBOURGO";:PRINT@456,"15
,WILLOWDENE AV";:PRINT@488,"HOBA
RT, TASMANIA";
20 PLAY"T403L8CDL4EGGDFFL8EDL1CL
4GEG04C03FA04C03L2..GL8ABL404C03
B04CDC03AL8GEL1CL8CDL4EGGDFEL2..
CT2"
21 CLS:PRINT" TOPOGRAPHIC, WEATH
ER AND ROAD ":PRINT"      MAPS O
F TASMANIA"
22 PRINT@64,"(1) topography. USI
NG THE ARROW KEYS, MOVE THE CURS
OR UNTIL YOU REACH THE REQUIRED
LATITUDE OR  LONGITUDE. THEN PRE
SS <ENTER>.  <SPACEBAR> TO EXIT.
"
23 PRINT"(2) roads. MAIN CITIES
AND ROADS ARE DRAWN. MOVE CURSOR
 TO 1ST  TOWN, PRESS <1>,  THEN
 TO 2ND  TOWN, PRESS <2>; WHENCE
 THEIR   SEPARATION."
24 PRINT"(3) weather. MOVE THE C
URSOR TO THE MOTIF, <ENTER>, THE
N TO MAP LOCATION & <ENTER>."
25 PRINT@480,"";:INPUT"CHOICE NU
MBER";N
26 IFN<00RN>3THEN25
27 IFN=1THENSC=0:MO=3
28 IFN=2THENSC=1:MO=3
29 IFN=3THENSC=0:MO=4
30 PMODEMO,1:PCLS:SCREEN1,SC
31 COLOR3,1:LINE(0,0)-(160,160),
PSET,B
32 DRAW"BM7,7;R3FD4FDFD4G3L3GH2U
8HREU4R2"
33 DRAW"BM135,11;R2F2R2F2R4D2GD4
F3L4HGL3U4H2L3U4L2HERU4G"
34 DRAW"BM143,27;EU3F4R3FG2L3UL3
GL5HRE4R4"
35 DRAW"BM142,31;R3D3G2L4U5R3"
36 DRAW"BM138,106;R5FD4L2DFGL5HE
2U3HER2"
37 DRAW"BM115,124;R2FD2FD3G2FD2G
D2G2L3U2GDL3U2HF2EU2E4RU4HEU2R"
38 DRAW"BM38,30;R4D4L5U4R"
39 DRAW"BM38,36;RD2R3F3L7HL2UEU5
F2":DRAW"BM32,33;R2D9L4U7E2"
40 DRAW"BM28,50;U3R2U6RFR9F2R3U2
RD3R2FR3F2R2F2R3FRFR2FR6FR7FDRU2
E2R3E2RF2D2F2DF3RF3U2H2LH3U3LH2U
R3E2R2F2EFR6E3U2ER4F2RE3U2R5FDR4
F3RF4"
41 DRAW"M145,52;D8FD2GD2GD2GFD2G
DF2D4GD2F2D2G2D3L2U4EU2H2U3GD2GD
R2DL4DFD4GD6L2G2FD3FGD2F2D3F3D4"
42 DRAW"M136,123;LF2D2GFGDHL4HUR
HUE2DR3H2UE2HL2U2L3D3G2DFD2G2L6U
3R2DRU2L2H5LH3DF5D6L3HD2FD4GD2GL
4U4GD2HDFDG3FD3GD2G2D3G
43 DRAW"M101,152;L6UH2UHL12HL2D2
LHDL3GHU2H2URUR2FE2UL2GHU3DGFL2U
H3U4H2U3HL3H4UHU5H2L3HRU7L2HU4H5
L2U2"
44 DRAW"M42,92;RF8D2ERUEHL3H3U3L
2D2GL2U6HUH6UHU2HU2HLU4H2U5H2U3H
2U5R2"
45 GOSUB167
46 PAINT(32,88),3,3:IFMO=4THEN11
3
47 DRAW"C2BM81,105;U3ED2F2D2FDGD
L4U3L2G2F6RER2D3FD2L4HLH7E2U2EU5
RD4E2":PAINT(83,107),3,2:PAINT(8
2,119),3,2
48 DRAW"BM96,78;FD2L3DFG2L2HU3EU
2R3":PAINT(94,79),3,2
49 DRAW"C2BM103,83;FD2G2L3U3HUER
3":PAINT(103,85),3,2
50 DRAW"BM112,90;F2GD2L2U2HUERD"
:PSET(112,93,3):DRAW"BM80,93;F2D
2FDLHLU4":PSET(81,96,3):PSET(81,
97,3):IFSC=1THEN91
51 COLOR3,1:LINE(0,0)-(191,191),
PSET,B:DRAW"C2BM138,15;FDGHUE":D
RAW"BM116,137;DGHUE":PSET(134,12
0,2):PSET(133,125,2)
```

```
52 DRAW"BM108,54;ER6FR4ER2ER6D2G
5D3R4D2G3DG2L6HL4H2E3UE2R2E2L5G2
H2L2E3L3GHU2":PAINT(120,58),2,2
53 DRAW"BM135,64;R2FD4G2D4FGD2G2
LG2D4GD4G2DG5DFD3F4D4L2U3H4U2H2F
2D5G2H2EU5E2U6R6U2H3U6E6L4GLH2U3
R4ER2EREU5E":PAINT(132,77),2,2:P
AINT(122,96),2,2:PAINT(120,105),
2,2
54 DRAW"C4BM114,55;FURFUR2F":DRA
W"BM116,63;RD3RU3RD3RU2F"
55 DRAW"C2BM42,50;FR5FE2RD2G2F2R
4F2R4URE3D3G2D5F2E2R2E3F3LG3R8F2
R6ER2E3R2F8RF3D2R6F4D10GD2G5D4F2
D2"
56 DRAW"M115,111;L2H4U6HG3L6GL2H
L2H3GD4RF2R2F2DF2DF2R8F4G3D6GU2H
3U3H2L2G5L5D2F6RU3EFD13G2L2H2U2L
2G3H3UH3U4L4HU4L4HL4H7UH2U"
57 DRAW"M58,108;R2D2F5R2U6L2H4U2
E2R4EU4L2G2U2EU2H4R8E2H2L8H4L3U5
R4FRD2R6ER2H2L2H2L12G4U6E3H3G2L5
G2L2H2U6R2E5R3F2EH4L3H2E2"
58 DRAW"BM43,60;F3D2L2H3U2R":DRA
W"BM56,64;R2F2D2FR2D2L6H2U4":DRA
W"BM76,72;R2D4G2L2H2U2E3"
59 DRAW"BM83,76;R6E3R3F2R6F4R3D4
G5U6H4L2G2D8L6G2L2H2L4D2L2H2U4E2
E6":DRAW"BM114,84;R2D6H3U3":DRAW
"BM104,93;F4D2L2H4U2R2":DRAW"BM7
5,93;F2D4L2H2U4R2"
60 DRAW"BM87,103;F2D2L2H2E2":DRA
W"BM92,108;R4F2D2G2L2D2L4H2E2R2E
2U4":DRAW"BM87,128;F4D2F4D2H8L2D
2L2U6E4"
61 PAINT(96,96),2,2:PAINT(112,10
8),2,2:FORI=104TO109:FORJ=117TO1
19:PSET(I,J,4):NEXTJ,I
62 PAINT(40,63),4,2:PAINT(43,61)
,4,2:PAINT(58,68),4,2:PAINT(76,7
5),4,2:PAINT(85,84),4,2:PAINT(10
0,80),4,2:PAINT(112,80),4,2:PSET
(104,94,4):PSET(106,96,4):PSET(1
14,86,4)
63 PAINT(74,96),4,2:PAINT(88,111
),4,2:PAINT(95,111),4,2:PAINT(88
,136),4,2
64 COLOR3,1:LINE(0,0)-(164,164),
PSET,B:X=162:Y=162
65 I$=INKEY$:PSET(X,Y,2)
66 IFI$=CHR$(94)THENPSET(X,Y,1):
Y=Y-2:IFY<2THENY=2
67 IFI$=CHR$(10)THENPSET(X,Y,1):
Y=Y+2:IFY>162THENY=162
68 IFI$=CHR$(9)THENPSET(X,Y,1):X
=X+2:IFX>162THENX=162
69 IFI$=CHR$(8)THENPSET(X,Y,1):X
=X-2:IFX<2THENX=2
70 IFY<>162THENX=162
71 IFX<>162THENY=162
72 PSET(X,Y,4)
73 IFI$=CHR$(13)THEN75
74 GOTO65
75 IFX<162THEN78
76 IFY<162THEN85
77 IFX=162ANDY=162THEN65
78 FORY=0TO160
79 IFPPOINT(X,Y)=3THENFORI=0TO1:
PSET(189+I,Y,3):NEXTI
80 IFPPOINT(X,Y)=1THENPSET(187,Y
,2)
81 IFPPOINT(X,Y)=2THENFORI=0TO2:
PSET(185+I,Y,2):NEXTI
82 IFPPOINT(X,Y)=4THENFORI=0TO2:
PSET(X,185+I,2):NEXTI:FORI=0TO1:
PSET(183+I,Y,4):NEXTI
83 NEXTY
84 IFINKEY$=CHR$(32)THEN21ELSE84
85 FORX=0TO160
86 IFPPOINT(X,Y)=3THENFORI=0TO1:
PSET(X,189+I,3):NEXTI
87 IFPPOINT(X,Y)=1THENPSET(X,187
,2)
88 IFPPOINT(X,Y)=2THENFORI=0TO2:
PSET(X,185+I,2):NEXTI
89 IFPPOINT(X,Y)=4THENFORI=0TO2:
PSET(X,185+I,2):NEXTI:FORI=0TO1:
PSET(X,183+I,4):NEXTI
90 NEXTX:GOTO84
91 CIRCLE(111,119),5,8:CIRCLE(10
7,65),5,8:CIRCLE(66,55),3,8:CIRC
LE(81,57),3,8:CIRCLE(57,93),3,8:
CIRCLE(143,57),4,8
92 DRAW"C8BM106,134;H2U4RE2RE3U1
5E4U2E2U5E2U4H2U6H3U2H5U2H3R3E4R
4E12F2R2F2R5D6G4F6D8G8D23L7G3D3L
6G2
93 DRAW"BM134,64;L2G3L4G3L2G6"
94 DRAW"BM110,118;U3L4H5U3H5U4H7
U3U12R2U4H4U5H6L3H2L9H2L3G5D3G4D
9F4L6D3F5D5R9F3E5R13F2
95 DRAW"BM66,56;L3H3L3H3L3H3L3H3
L5":DRAW"BM124,114;F3R8D12":DRAW
"BM56,92;D2G3L5
96 DRAW"BM80,56;R4F2R4E2F8R3D2L5
G2L3G3":DRAW"BM100,110;L4G2L4G2L
4H2":PSET(111,119,5):PSET(107,65
,5):PSET(67,55,5):PSET(81,57,5):
PSET(57,93,5):PSET(143,57,5)
97 X=100:Y=92:I=0:J=0
98 GOSUB176
99 GOSUB142
100 IFI$="1"THENGOSUB134:I=K:K=0
101 IFI=0THEN98ELSESOUND100,1:GO
TO103
102 GOTO98
103 GOSUB176
104 GOSUB142
105 IFI$="2"THENGOSUB134:J=K
106 IFJ=0THEN103ELSESOUND200,1:G
```

```
OTO108
107 GOTO103
108 CLS6:PRINT@34," ROAD DISTANC
ES - TASMANIA";
109 PRINT@128,C$(I)+" AND "+C$(J
)+" ARE "
110 PRINTD(I,J);"KILOMETRES APAR
T."
111 PRINT@454,"ANY KEY TO CONTIN
UE";
112 IFINKEY$=""THEN112ELSE21
113 FORI=1TO20:X=12*I:Y=176
114 GOSUB173
115 NEXTI
116 X=120:Y=187
117 CIRCLE(X,Y),1,1:PLAY"P20":CI
RCLE(X,Y),1,0
118 I$=INKEY$:IFI$=CHR$(9)THENX=
X+12
119 IFI$=CHR$(8)THENX=X-12
120 IFX<12THENX=12
121 IFX>240THENX=240
122 I=INT(X/12)
123 IFI$=CHR$(13)THEN126
124 IFI$=CHR$(32)THEN21
125 GOTO117
126 X=96:Y=96
127 L=PPOINT(X,Y):PSET(X,Y,0):PS
ET(X,Y,1):PLAY"P200":PSET(X,Y,L)
128 GOSUB142
129 IFI$=CHR$(13)THENGOSUB173:GO
TO116
130 IFI$=CHR$(32)THEN21
131 GOTO127
132 POKE1496,192:POKE1497,192:PO
KE1528,192:POKE1529,192:POKE1496
,147:POKE1497,147:POKE1528,148:P
OKE1529,232
133 PLAY"03L99CP99":RETURN
134 K=0:FORM=0TO2:FORN=0TO2
135 IFX+M=110ANDY+N=118THENK=1
136 IFX+M=106ANDY+N=64THENK=2
137 IFX+M=66ANDY+N=54THENK=3
138 IFX+M=80ANDY+N=56THENK=4
139 IFX+M=56ANDY+N=92THENK=5
140 IFX+M=142ANDY+N=56THENK=6
141 RETURN
142 I$=INKEY$:IFI$=CHR$(94)THENY
=Y-2:IFY<2THENY=2
143 IFI$=CHR$(10)THENY=Y+2:IFY>1
58THENY=158
144 IFI$=CHR$(9)THENX=X+2:IFX>15
8THENX=158
145 IFI$=CHR$(8)THENX=X-2:IFX<2T
HENX=2
146 RETURN
147 CIRCLE(X,Y),2:RETURN
148 CIRCLE(X-2,Y),1:CIRCLE(X+2,Y
),1:CIRCLE(X,Y-2),1:CIRCLE(X,Y+2
),1:RETURN
149 LINE(X-2,Y-3)-(X+2,Y+3),PSET
:LINE(X+2,Y-3)-(X-2,Y+3),PSET:LI
NE(X-4,Y)-(X+4,Y),PSET:RETURN
150 GOSUB175:DRAW";U3R4G4F4UDLBL
3U4":RETURN
151 GOSUB175:DRAW";BE3L5DF3DUE3U
":RETURN
152 GOSUB175:DRAW";BU3DF3DL5UE3U
":RETURN
153 FORJ=-2TO2STEP2:LINE(X-3,Y+J
)-(X+3,Y+J),PSET:NEXTJ:RETURN
154 CIRCLE(X,Y),4,1:PAINT(X-1,Y-
1),1,1:RETURN
155 CIRCLE(X,Y),4:LINE(X,Y-4)-(X
,Y),PSET:LINE-(X+4,Y),PSET:PAINT
(X-1,Y-1),1,1:RETURN
156 CIRCLE(X,Y),4:LINE(X,Y-4)-(X
,Y+4),PSET:PAINT(X-1,Y-1),1,1:RE
TURN
157 CIRCLE(X,Y),4:LINE(X,Y-4)-(X
,Y),PSET:LINE-(X-4,Y),PSET:PAINT
(X-1,Y-1),1,1:RETURN
158 CIRCLE(X,Y),4:RETURN
159 GOSUB175:DRAW";L4R7EHBD5EH":
RETURN
160 GOSUB175:DRAW";BL4BUR2EFR2BD
3L2GHL2":RETURN
161 GOSUB175:DRAW";BG2BL3U2ERER3
FRFD2BH5URD":RETURN
162 GOSUB175:DRAW";BG2BL3U2ERER3
FRFD2BH5BLR4":RETURN
163 GOSUB175:DRAW";G2E4BU2G6R6":
RETURN
164 GOSUB175:DRAW";BL6R2BRR2BRR2
":RETURN
165 GOSUB175:DRAW";E4HFG8F":RETU
RN
166 GOSUB175:DRAW";E4HFG9R9":RET
URN
167 DRAW"BM209,20;R12L6D8BD8G6D2
BR11U2H6F4L8BR4"
168 DRAW"BM220,52;L11D4R11D4L11B
D16U8F5E5D8"
169 DRAW"BM215,84;G6D2BR11U2H6F4
L8"
170 DRAW"BM209,108;U8RF8RU8BL5BD
16D8"
171 DRAW"BM214,132;G6D2BR11U2H6F
4L8
172 RETURN
173 ONI GOTO147,148,149,150,151,
152,153,154,155,156,157,158,159,
160,162,163,164,165,166
174 RETURN
175 DRAW"BM"+STR$(X)+","+STR$(Y)
:RETURN
176 L=PPOINT(X,Y):PLAY"P200":PSE
T(X,Y,6):PLAY"P200":PSET(X,Y,7):
PSET(X,Y,L):RETURN
```

BANKTRACK

by Jarrod Grimmond

While we get plenty of programmes for games etc from our younger users we are always on the scrounge for more practical programmes, be it in education or utilities etc. So we pounced on this home banking utility from Jarrod Grimmond of South Australia, it's sure to come in handy.

As always this and the rest of the programmes in the magazine will make up CoCoOz #26, included on that tape will be a demo with data input to give you a quick run through of the programme.

A small point, when inputting dates place a comma between day and month.

Enough of the chat here's Jarrod.

I am 14 y.o. and this is my first programme to be sent to a magazine, so it may be sloppy.

BANKTRACK is a programme for those people who like to keep their bank accounts on computer. It is in effect a computerized bank book. It has all the functions eg. deposit, withdrawal, create, save etc. and it even tells you if you're overdrawn and when and how much interest you get, you may have to adjust the date for interest according to your bank.

BANKTRACK is menu driven and user friendly. One thing I need help with is the interest, when interest is calculated it could give you 9 or 10 decimal places. If anybody can improve it please and let me know.

The Listing:

```
10 '****************************
20 '*                          *
30 '*        BANKTRACK         *
40 '*    BY JARROD GRIMMOND    *
50 '*        24/2/85           *
60 '*                          *
70 '****************************
80 CLS
90 PRINT"ARE YOU "
100 PRINT"1. CREATING A NEW ACCO
UNT"
110 PRINT"2. LOADING AND OLD ONE
"
120 B=0
130 INPUT"(1 OR 2)";A
140 IF A<1 OR A>2 THEN 130
150 IF A=1 THEN GOTO 240
160 CLS:PRINT"POSITION TAPE"
170 PRINT"PRESS PLAY"
180 INPUT " PRESS (ENTER) WHEN R
EADY";ZZ$
190 OPEN"I",#-1,"BANK"
200 IF EOF (-1) THEN 230
210 INPUT #-1,D,M,Y,B,A$,N$
220 GOTO 200
230 CLOSE #-1
240 CLS:PRINT"MENU"
```

COCOOZ #25

EPHEM

Last month's 'full to the brim' Australian CoCo, didn't allow us the luxury of giving readers the listing for David Martin's 'EPHEM' (it was a little long for the mag.) and although it is included in CoCoOz #25 it is such a great programme we thought it merited a full explanation, here's David to tell you about it.

EPHEM locates the position of the sun and listed planets and stars for the time (U.T.) and date entered.

The results are the co-ordinates (right, ascend. and dec. and Greenwich Hour Angle for navigators).

Star positions in data are EPOCH 1980 as listed in 1980 Astronomical Ephemeris. The programme provides for annual proper motion of the stars, but because I couldn't obtain this information and as the resulting error is so small, I replaced this in data with zeros. It can be added later.

Other stars than those in the index can be pinpointed by entering 28 in index and putting in appropriate information as prompted.

Planet routines are run twice. First run calculates light time from earth, second run is with corrected time to give apparent position of the planet as seen from earth. Because of the many calculations involved it takes several minutes to get results. However, if you check these results with an emphemeris, I am sure you will be impressed with the accuracy.

A spherical triangle routine to show the position in the sky from the latitude and longitude of the observer is also included.

So there it is, a great piece of programming,

We'd like to give David a pat on the back and a big thank you, as we do to all those marvellous people who submit their work. Well done.

```
250 PRINT"1. CHECK ACCOUNT(IF IN
 MEMORY)"
260 PRINT"2. DEPOSIT"
270 PRINT"3. WITHDRAWAL"
280 PRINT"4. CREATE ACCOUNT"
290 PRINT"5. SAVE ACCOUNT"
300 PRINT"6. LOAD ACCOUNT"
310 PRINT"7. END"
320 PRINT:PRINT:PRINT
330 INPUT "(1 TO 7)";MN
340 IF MN<0 OR MN>7 THEN 330
350 ON MN GOSUB 410,500,610,710,
810
360 IF MN=6 THEN GOTO 160
370 IF MN=7 THEN 910
380 IF B<0 THEN GOSUB 920
390 IF D=30 THEN GOSUB 1020
400 GOTO 240
410 CLS:PRINT"ACCOUNT NAME ";A$
420 PRINT:PRINT"BALANCE ";B
430 PRINT:PRINT"HOLDER NAME ";N$
440 PRINT:PRINT"DATE OF BALANCE
";D;",";M;",","Y
450 IF D>31 THEN GOSUB 1120:GOTO
 440
460 IF M>12 THEN GOSUB 1120:GOTO
 440
470 PRINT:INPUT"PRESS ENTER TO R
ETURN";Z$
480 RETURN
490 IF EOF (-1) THEN 230
500 ' **DEPOSIT**
510 CLS:PRINT"DEPOSIT"
520 PRINT:PRINT"ACCOUNT NAME ";A
$
530 PRINT:PRINT"HOLDER NAME ";N$
540 PRINT:INPUT"DATE TODAY ";DD,
MM,YY
550 IF DD>31 OR MM>12THEN GOSUB
1120
560 PRINT:INPUT"DEPOSIT AMOUNT";
BB
570 B=B+BB:D=DD:M=MM:Y=YY
580 PRINT"PRESS ENTER TO RETURN"
;
590 INPUT Z$
600 RETURN
610 '**WITHDRAWAL**
620 CLS:PRINT"WITHDRAWAL"
630 PRINT:PRINT"ACCOUNT NAME ";A
$
640 PRINT:PRINT"HOLDER NAME ";N$
650 PRINT:INPUT"DATE OF WITHDRAW
AL";DD,MM,YY
660 IF DD>31 OR MM>12 THEN GOSUB
 1120:GOTO 650
670 PRINT:INPUT"AMOUNT WITHDRAWN
";BB
680 D=DD:M=MM:Y=YY:B=B-BB
690 INPUT"PRESS ENTER TO RETURN"
;Z$
700 RETURN
710 'CREATE ACCOUNT
720 CLS:PRINT"CREATE ACCOUNT"
730 PRINT:INPUT"ACCOUNT NAME ";A
$
740 PRINT:INPUT"HOLDER NAME ";N$
750 PRINT:INPUT"DATE ";D,M,Y
760 IF D>31 OR M>12 THEN GOSUB 1
120:GOTO 750
770 PRINT:INPUT"BALANCE ";B
780 IF B<=0 THEN PRINT"NO ACCOUN
T NEEDED":RETURN
790 INPUT"PRESS ENTER TO RETURN"
;Z$
800 RETURN
810 'SAVE ACCOUNT
820 CLS:PRINT"SAVE ACCOUNT"
830 PRINT"POSITION TAPE"
840 PRINT"PRESS PLAY AND RECORD"
850 INPUT"PRESS ENTER TO SAVE";A
$
860 OPEN "O",#-1,"BANK"
870 PRINT #-1,D,M,Y,B,A$,N$
880 CLOSE #-1
890 INPUT "PRESS ENTER TO RETURN
";Z$
900 RETURN
910 CLS:END
920 CLS(4)
930 FOR X=1 TO 3
940 SOUND 100,3:SOUND150,3
950 NEXT
960 PRINT@7,"YOU ARE OVER DRAWN"
;
970 PRINT@104,"YOU ARE IN THE RE
D";
980 PRINT@199,"YOUR ACCOUNT IS "
;B;
990 PRINT@480,"PRESS ENTER TO RE
TURN";
1000 INPUT Z$
1010 RETURN
1020 'INTEREST
1030 IF D<>30 THEN RETURN
1040 IF M<>6 THEN RETURN
1050 CLS:PRINT"YOU ARE DUE INTER
EST"
1060 I=(B*3.33)/100
1070 PRINT"YOU HAVE "I" AMOUNT O
F INTEREST"
1080 PRINT"YOUR BALANCE IS NOW "
;B+I
1090 INPUT "PRESS ENTER TO RETUR
N";Z$
1100 B=B+I:D=31
1110 RETURN
1120 PRINT"INCORRECT DATE REENTE
R"
1130 RETURN
```

LOTTO

by
Steve
Youngberry

Here is a short programme for a BX-80 printer (just change the codes to suit your particular printer).
LOTTO prints out a bar graph showing in percentages the number of times each number has been drawn
You will need the last draw number and how many times each number has appeared, you can get that information from a newspaper.
After RUNning, a menu is displayed giving a choice of Mid-week or Saturday night draws.
It then asks how many times each number has come up
Just what all you Lotto buffs needed.

The Listing:

```
 10 CLS
 20 POKE150,1:E$=CHR$(27):PRINT#-
 2,E$;"@";
 30 PRINT#-2,"% FOR GOLD LOTTO NU
 MBERS":PRINT#-2
 40 PRINT#-2,"% FOR GOLD LOTTO NU
 MBERS":PRINT#-2
 50 PRINT:PRINT"    MIDWEEK DRAW
 (M)                SATURDAY NIGHT
  DRAW  (S)"
 60 A$=INKEY$:IFA$="M"THENA$="MID
 WEEK":AR=36:GOTO80
 70 IFA$="S"THENA$="SATURDAY NIGH
 T":AR=40ELSE60
 80 PRINT#-2,"For "A$" Gold Lotto
 "
 90 PRINT:PRINT:PRINT:INPUT"    DR
 AW NUMBER:-";D
 100 PRINT#-2,"Up to draw No:-"D
 110 DIM C(AR)
 120 PRINT#-2,CHR$(15);E$;"5";
 130 FORN=1TO AR
 140 PRINTN"HAS COME UP";:INPUTT
 150 SOUND150,1:C(N)=T:NEXT
 160 FORN=1TO AR
 170 IF N<10THENPRINT#-2," ";
 180 PRINT#-2,N;
 190 FORP=1TO INT((C(N)/D)*100)
 200 PRINT#-2,CHR$(17);
 210 NEXT
 220 PRINT#-2,P"%";"  ";C(N);"TIM
 ES";:PRINT#-2
 230 NEXT:END
```

32

Five Card Stud

by Ian Clarke

This programme is for one player, pitting his wits against the computer in a standard game of five card stud. The player starts with a bank and with a little skilful play (and heaps of luck) will build up the size of his bank. The programme presumes a knowledge of the game and if you don't know the rules they may be found in most books of card games. Colours have been used to replace suits, so it is still possible to achieve flushes and routines.
Cards are initially displayed face down. You will note that as cards are dealt yours are all face up, whereas CoCo's first card is face down. In fact, as far as CoCo is concerned, your first card is also face down. It is displayed only for your information.
I have not provided a variable listing, as much of my programming knowledge has come from sweating over the programmes of others. I would like you, dear reader, to enjoy the same 'benefits'.
I hope you enjoy the introduction and a word of warning, CoCo bluffs - but not all the time!

COCOOZ # 26

Well, once again there are extra programs on the tape that we just didn't have the room for in the magazine - they are Similes and Antonyms by Errol Mattingely which are excellent educational programs, and 5 Card Stud by Ian Clarke. This also is an excellent game and very close to the real thing, although CoCo doesn't have a face to go red when fibbing about his hand, so watch out!
CoCoOZ on tape are available for only $8 each or $42 for 6mnths and the annual subscription only $75. Great value for those who don't have a lot of time to spend on typing (like me!).

16

COMMONS

by Errol Mattingley

When the programme begins, a frame with the words WELCOME TO COLOR COMPUTER LEARNING will appear. Press ENTER to continue. A frame with the words USING COMMON WORDS CORRECTLY will appear. Press ENTER to continue. Now follow the instructions on the screen. After each student response the programme indicates whether the answer is right or wrong and sounds an ascending or descending series of notes. Use the back-space if you wish to alter your response. At the end of each lesson, a report is given showing the score. The program automatically returns to the start to allow other lessons to be attempted.

The words and sentences used in the programme are contained in PRINT statements. These lines can be changed to incorporate your own words and sentences.

To alter the words and sentences, it is necessary to load the programme, EDIT the appropriate lines (lines 350 to 2780 contain the sentences, while lines 8000 to 8024 contain the words), and record this programme with the new words.

Eight lessons each of six sentences have been included. This means that 16K ECB is needed.

Since I first produced COMMONS I have realized that many separate program lines could have been compacted together using the colon.

We have included on May's CoCoOz Errol's programmes SIMILES and ANTONYMS. They were derived from the original PLURALS programme by Stuart Dawson but we feel they are very worthy additions to our educational content this month.

Errol Mattingley is a primary school teacher from Gladstone.

The Listing:

```
10 REM USING
11 REM COMMON WORDS
12 REM CORRECTLY
20 REM (C 1984)
30 REM ERROL MATTINGLEY
31 REM 26 WALTERS AVE.,
32 REM GLADSTONE,Q.4680.
33 CLEAR 1000
40 GOTO 8500:REM "READ THE LETTE
RS"
50 PMODE 3,1:PCLS4:SCREEN 1,1
60 DRAW"C1S4BM 8,64"+W$+E$+L$+C$
+O$+M$+E$
70 DRAW SP$+T$+O$:DRAW"C1S4BM100
,80"+SP$+C$+O$+L$+O$+U$+R$
80 DRAW"C1S4BM124,96"+C$+O$+M$+P
$+U$+T$+E$+R$:DRAW"C1S4BM132,112
"+L$+E$+A$+R$+N$+I$+N$+G$
90 DRAW"C1S4BM  8,172"+P$+R$+E$+
S$+S$:DRAW SP$+E$+N$+T$+E$+R$
100 K1$=INKEY$
110 IF K1$=CHR$(13) THEN 120
115 IF K1$<>CHR$(13) THEN100
120 PCLS4:PMODE 3,1:SCREEN 1,1
230 PCLS4:PMODE 3,1:SCREEN 1,1
240 DRAW "C1S4BM8,40"+U$+S$+I$+N
$+G$
250 DRAW"C1S8BM 48,68"+C$+O$+M$+
M$+O$+N$:DRAW"C1S8BM 60,100"+W$+
O$+R$+D$+S$
260 DRAW"C1S4BM128,124"+C$+O$+R$
+R$+E$+C$+T$+L$+Y$
261 DRAW"C1S4BM8,172"+P$+R$+E$+S
$+S$+SP$+E$+N$+T$+E$+R$
262 K3$=INKEY$
263 IF K3$=CHR$(13) THEN270
264 IF K3$<>CHR$(13) THEN 262
270 CLS 1 :PRINT:PRINT:INPUT"TYP
E YOUR FIRST NAME AND THEN   PRE
SS <ENTER>";N1$
271 PRINT:PRINT:PRINT"WHAT LESSO
N ARE YOU TO DO TODAY,";N1$;"?"
272 PRINT:PRINT "TYPE A NUMBER B
ETWEEN 1  AND 8  AND THEN PRESS
<ENTER>"
290 INPUT LE: IF LE<1 OR LE> 8 T
HEN PRINT @416,"between 1 and 8
 please":SOUND 50,45:CLS:GOTO 27
1
300 CLS 1:PRINT@38,"HERE IS YOUR
 LESSON."
310 FOR I=1 TO LE:PRINT@106,"LES
SON  ";I:NEXT
315 PRINT
320 IF LE=1 GOTO 350
321 IF LE=2 GOTO 660
322 IF LE=3 GOTO 970
323 IF LE=4 GOTO 1290
324 IF LE=5 GOTO 1600
325 IF LE=6 GOTO 1910
326 IF LE=7 GOTO 2220
327 IF LE=8 GOTO 2530
340 PRINT
350 PRINT"MY TEACHER ---- VERY K
IND TO ME."
360 GOSUB 8000
370 A=1
380 GOSUB 9000
390 PRINT
400 PRINT" THERE ---- MANY APPLE
S ON THE   TREE.":PRINT
```

```
410 GOSUB 8000
420 A=2
430 GOSUB 9000
440 PRINT
450 PRINT"      ---- THE PENCIL S
HARP?":PRINT
460 GOSUB 8000
470 A=1
480 GOSUB 9000
490 PRINT
500 PRINT" THERE ---- A STRANGE
HORSE IN   THE PADDOCK.":PRINT
510 GOSUB 8000
520 A=1
530 GOSUB 9000
540 PRINT
550 PRINT"   ---- THERE ANY WATE
R IN THE    TANK?":PRINT
560 GOSUB 8000
570 A=1
580 GOSUB 9000
590 PRINT
600 PRINT"  MY FATHER AND MOTHER
 ---- AT    HOME.":PRINT
610 GOSUB 8000
620 A=2
630 GOSUB 9000
640 GOSUB 7000
650 RUN
660 PRINT" THE BIRDS ---- SINGIN
G IN THE   TREES.":PRINT
670 GOSUB 8003
680 A=2
690 GOSUB 9000
700 PRINT
710 PRINT" ---- YOU AT SCHOOL YE
STERDAY?":PRINT
720 GOSUB 8003
730 A=2
740 GOSUB 9000
745 PRINT
750 PRINT"  ---- THERE ANY CLOUD
S IN THE   SKY?":PRINT
760 GOSUB 8003
770 A=2
780 GOSUB 9000
785 PRINT
790 PRINT" LAST NIGHT THERE ----
 A HEAVY   SHOWER.":PRINT
800 GOSUB 8003
810 A=1
820 GOSUB 9000
825 PRINT
830 PRINT"   TOM AND JACK ---- P
LAYING      MARBLES.":PRINT
840 GOSUB 8003
850 A=2
860 GOSUB 9000
865 PRINT
870 PRINT"   ---- THE RIVER IN F
LOOD?":PRINT
880 GOSUB 8003
890 A=1
900 GOSUB 9000
910 PRINT
920 GOSUB 7000
930 RUN
970 PRINT"   MARY ---- LOST HER
BOOK.":PRINT
980 GOSUB 8006
990 A=1
1000 GOSUB 9000
1010 PRINT
1020 PRINT" ---- THE POSTMAN ARR
IVED YET?":PRINT
1030 GOSUB 8006
1040 A=1
1050 GOSUB 9000
1060 PRINT
1070 PRINT"  THE CHILDREN ---- G
ONE HOME.":PRINT
1080 GOSUB 8006
1090 A=2
1100 GOSUB 9000
1110 PRINT
1120 PRINT" ---- TOM AND BILL DO
NE THEIR    WORK?":PRINT
1130 GOSUB 8006
1140 A=2
1150 GOSUB 9000
1160 PRINT
1170 PRINT"THE SOLDIERS ---- COM
E BACK FROM OVERSEAS.":PRINT
1180 GOSUB 8006
1190 A=2
1200 GOSUB 9000
1210 PRINT
1220 PRINT" ---- YOUR FATHER SOL
D HIS CAR?":PRINT
1230 GOSUB 8006
1240 A=1
1250 GOSUB 9000
1260 PRINT
1270 GOSUB 7000
1280 RUN
1290 PRINT"WHEN THE DOG BARKED,T
HE RABBITS ---- TO THEIR BURROWS
.":PRINT
1300 GOSUB 8009
1310 A=1
1320 GOSUB 9000
1330 PRINT
1340 PRINT"THE CHILDREN HAVE JUS
T ---- OFF TO SCHOOL.":PRINT
1350 GOSUB 8009
1360 A=2
```

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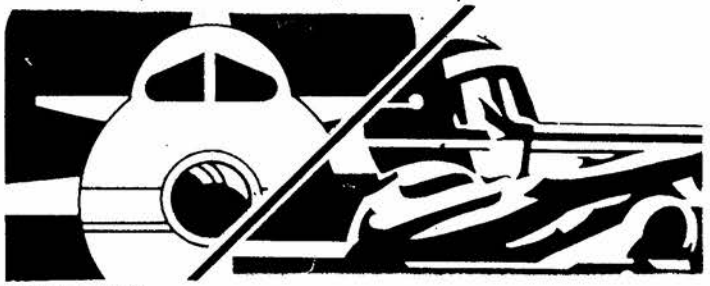
```
1370 GOSUB 9000
1380 PRINT
1390 PRINT"THE CAT ---- UP A TRE
E WHEN THE DOG CHASSED IT.":PRIN
T
1400 GOSUB 8009
1410 A=1
1420 GOSUB 9000
1430 PRINT
1440 PRINT"MANY PEOPLE ---- TO S
EE THE FIRE ":PRINT
1450 GOSUB 8009
1460 A=1
1470 GOSUB 9000
1480 PRINT
1490 PRINT"  OUR LITTLE DOG HAS
---- AWAY.":PRINT
1500 GOSUB 8009
1510 A=2
1520 GOSUB 9000
1530 PRINT
1540 PRINT"THE BOY ---- TO THE W
AITING BUS.":PRINT
1550 GOSUB 8009
1560 A=1
1570 GOSUB 9000
1580 GOSUB 7000
1590 RUN
1600 PRINT" ON MY WAY TO SCHOOL
I ---- TWO  MAGPIES.":PRINT
1610 GOSUB 8012
1620 A=1
1630 GOSUB 9000
1640 PRINT
1650 PRINT"I HAVE OFTEN ---- AN
AEROPLANE.":PRINT
1660 GOSUB 8012
1670 A=2
1680 GOSUB 9000
1690 PRINT
1700 PRINT"MATILDA SAID SHE HAD
NEVER ---- SUCH BAD WRITING.":PR
INT
1710 GOSUB 8012
1720 A=2
1730 GOSUB 9000
1740 PRINT
1750 PRINT"   HAVE YOU ---- TOM
TO-DAY?":PRINT
1760 GOSUB 8012
1770 A=2
1780 GOSUB 9000
1790 PRINT
1800 PRINT"   THE SOLDIERS ----
A PLANE       APPROACHING.":PRIN
T
1810 GOSUB 8012
1820 A=1
1830 GOSUB 9000
1840 PRINT
1850 PRINT" MOTHER ASKED ME WHAT
 I ---- AT  THE MUSEUM.":PRINT
1860 GOSUB 8012
1870 A=1
1880 GOSUB 9000
1890 GOSUB 7000
1900 RUN
1910 PRINT"THE BOYS ---- THEIR W
ORK WELL.":PRINT
1920 GOSUB 8015
1930 A=1
1940 GOSUB 9000
1950 PRINT
1960 PRINT"   HAVE YOU ---- YOUR
 WORK?":PRINT
1970 GOSUB 8015
1980 A=2
1990 GOSUB 9000
2000 PRINT
2010 PRINT" THE GIRL HAS ---- TH
E WASHING.":PRINT
2020 GOSUB 8015
2030 A=2
2040 GOSUB 9000
2050 PRINT
2060 PRINT"DID YOU SEE WHAT FRED
 ---- JUST NOW?":PRINT
2070 GOSUB 8015
2080 A=1
2090 GOSUB 9000
2100 PRINT
2110 PRINT" WHEN MY WORK WAS ---
- I WENT    HOME.":PRINT
2120 GOSUB 8015
2130 A=2
2140 GOSUB 9000
2150 PRINT
2160 PRINT" HOW ---- THE ACCIDEN
T HAPPEN?":PRINT
2170 GOSUB 8015
2180 A=1
2190 GOSUB 9000
2200 GOSUB 7000
2210 RUN
2220 PRINT"THE CHILDREN ---- SOM
E OF THEIR WORK ON THE VERANDA."
:PRINT
2230 GOSUB 8018
2240 A=1
2250 GOSUB 9000
2260 PRINT
2270 PRINT" ---- FRED WISH TO PL
AY CRICKET?":PRINT
2280 GOSUB 8018
2290 A=2
2300 GOSUB 9000
```

```
2310 PRINT
2320 PRINT"MARY ALWAYS ---- HER
SEWING WELL ":PRINT
2330 GOSUB 8018
2340 A=2
2350 GOSUB 9000
2360 PRINT
2370 PRINT" ---- YOU KNOW WHERE
THE HOE IS?":PRINT
2380 GOSUB 8018
2390 A=1
2400 GOSUB 9000
2410 PRINT
2420 PRINT"I ---- NOT KNOW WHERE
 HARRY DOES HIS GARDENING.":PRIN
T
2430 GOSUB 8018
2440 A=1
2450 GOSUB 9000
2460 PRINT
2470 PRINT" ---- MOTHER KNOW HOW
 TO DO THE PAINTING?":PRINT
2480 GOSUB 8018
2490 A=2
2500 GOSUB 9000
2510 GOSUB 7000
2520 RUN
2530 PRINT"I ---- TO SCHOOL EARL
Y YESTERDAY ":PRINT
2540 GOSUB 8021
2550 A=2
2560 GOSUB 9000
2570 PRINT
2580 PRINT"   HAS MOTHER ---- HO
ME YET?":PRINT
2590 GOSUB 8021
2600 A=1
2610 GOSUB 9000
2620 PRINT
2630 PRINT"  MY UNCLE HAS ---- W
ITH ME.":PRINT
2640 GOSUB 8021
2650 A=1
2660 GOSUB 9000
2670 PRINT
2680 PRINT" DID BILL JONES ----
TO SCHOOL   WITH YOU?":PRINT
2690 GOSUB 8021
2700 A=1
2710 GOSUB 9000
2720 PRINT
2730 PRINT"WHEN MY AUNT ---- TO
OUR PLACE, SHE TOLD MOTHER SHE H
AD COME BY RAIL.":PRINT
2740 GOSUB 8021
2750 A=2
2760 GOSUB 9000
2770 PRINT
2780 PRINT"WILL YOU ---- OVER TO
 MY PLACE?":PRINT
2790 GOSUB 8021
2800 A=1
2810 GOSUB 9000
2820 GOSUB 7000
2830 RUN
7000 PRINT"THAT'S THE END OF THI
S LESSON.  SEE YOU AGAIN SOON.":
FOR T=1 TO 1500:NEXT T
7001 RETURN
8000 PRINTTAB(3);"1.IS";TAB(12);
"2.ARE"
8001 PRINT
8002 RETURN
8003 PRINT TAB(3);"1.WAS";TAB(12
);"2.WERE"
8004 PRINT
8005 RETURN
8006 PRINT TAB(3);"1.HAS";TAB(12
);"2.HAVE"
8007 PRINT
8008 RETURN
8009 PRINT TAB(3);"1.RAN";TAB(12
);"2.RUN"
8010 PRINT
8011 RETURN
8012 PRINT TAB(3);"1.SAW";TAB(12
);"2.SEEN"
8013 PRINT
8014 RETURN
8015 PRINT TAB(3);"1.DID";TAB(12
);"2.DONE"
8016 PRINT
8017 RETURN
8018 PRINT TAB(3);"1.DO";TAB(12)
"2.DOES"
8019 PRINT
8020 RETURN
8021 PRINT TAB(3);"1.COME";TAB(1
2);"2.CAME"
8022 PRINT
8023 RETURN
8024 PRINT TAB(3);"1.WENT";TAB(1
2);"2.GONE"
8025 PRINT
8026 RETURN
8500 REM"THE DIRECTIONS TO DRAW
LETTERS NEEDED"
8510 A$="U8R8D4L8BR8D4BR4"
8530 C$="U8R8BD8L8BR12"
8540 D$="U8R6F2D4G2L6BR12"
8550 E$="U8R8BD4L8BD4R8BR4"
8570 G$="U8R8BD4L4BR4D4L8BR12"
8590 I$="BU8R8BL4D8BL4R8BR4"
8620 L$="U8BD8R8BR4"
8630 M$="U8F4E4D8BR4"
8640 N$="U8F8U8BD8BR4"
```

16 PLANE EPISODE / TRACK

Hey! we have two more entries for our games competition. Keep 'em coming! we're having a ball in the office, here's a couple of reasons why - first up....



PLANE EPISODE

Andrew and Clinton have come up with a Hi-rez Indiana Jones escapade. Indiana, alone in a plane and left to die by the pilots, has to pick the right moment to jump out of the plane and escape into the forest.
The dastardly pilots have positioned themselves on a hill overlooking the drama, if Indiana jumps wrong and impales himself on the trees they'll laugh and jump up and down in evil glee, if he makes it, and we all hope he does, they will commit suicide. Get your fire-buttons ready and Go Indy Go!!!

TRACK!

We've seen some 'TRACK' type games before but this one is a ripper. Low-rez and v-e-r-y fast, you really have to move that 'stick.
As the TRACK scrolls snake-like, up from the bottom of the screen a 3D type effect is thrown at you when you come to the 'hills', a neat touch. Nice one Ben.

Listing 1:

```
1 '*******************************
2 '**********PLANE EPISODE*******
3 '*******************************
4 '*********BY ANDREW HART******
5 '*******************************
6 '*********BRISBANE, QLD.******
7 '*******************************
8 '*******************************
10 P=PEEK(65280)
20 CLS:RESTORE
30 POKE65494,0:CLEAR100:PMODE1,1
:CLS3:PRINTSTRING$(33,150);:FORI
=63TO479STEP32:PRINT@I,STRING$(2
,150);:NEXT:PRINT@480,STRING$(31
,150);:POKE1535,150
40 PRINT@74,"PLANE EPISODE,";
50 PRINT @ 263,"PRESS FIRE BUTTO
N";:PRINT@393,"BY K.K.G. INC.";:
SCREEN 0,1
60 PLAY"O1T5L5V20GGGGGG"
70 P=PEEK(65280):IF P=255 OR P=1
27 THEN 70
80 PRINT@202,"PLEASE WAIT!";:PMO
DE0,1:SCREEN 0,1
90 PMODE 3,1:PCLS1:COLOR 2,1
100 LINE(255,24)-(240,24),PSET:L
INE-(80,168),PSET:LINE-(80,191),
PSET
110 F=0:PL=1
120 LINE(32,191)-(32,168),PSET:L
INE-(48,144),PSET:LINE-(48,132),
PSET:LINE-(40,132),PSET:LINE-(24
,156),PSET
130 LINE-(24,132),PSET:LINE-(32,
60),PSET:LINE-(8,36),PSET:LINE-(
8,24),PSET:LINE-(24,24),PSET
140 LINE-(24,36),PSET:LINE-(56,3
6),PSET:LINE-(56,12),PSET:LINE-(
32,12),PSET:LINE-(32,0),PSET:LIN
E(56,24)-(80,24),PSET:LINE-(80,4
8),PSET
```

```
8650 O$="U8R8D8L8BR12"
8660 P$="U8R8D4L8BD4BR12"
8680 R$="U8R8D4L8BR4F4BR4"
8690 S$="BU4U4R8BD4L8BR8D4L8BR12
"
8700 T$="BU8R8BL4D8BR8"
8710 U$="U8BR8D8L8BR12"
8730 W$="U8BR8D8H4G4BR12"
8750 Y$="BU8F4E4BG4D4BR8"
8770 SP$="BR12":REM "SPACER"
8780 AQ$="BENR3HER2U2":REM "?"
8785 QQ$="BR1H1U1E1R3E2U1H2L4
8790 GOTO 50
9000 PRINT" READ THE SENTENCE. "
:PRINT" TYPE THE NUMBER OF YOUR
ANSWER.";:PRINT" PRESS <ENTER>."
9010 INPUT R
9020 IF A=R THEN 9080
9030 PRINT
9040 PRINT"SORRY YOU'RE WRONG":F
OR T= 176 TO 89 STEP -10:SOUND T
,1:NEXT T
9050 PRINT"THE RIGHT ANSWER IS N
UMBER ";A;"."
9060 W=W+1
9070 GOTO 9100
9080 PRINT"THAT'S RIGHT":FOR T=8
9TO176 STEP 10:SOUND T,1:NEXT T:
CLS 1
9090 C=C+1
9100 PRINT
9110 PRINT" YOUR SCORE IS"C"CORR
ECT AND"W"  WRONG."
9120 PRINT
9130 IF C+W=6 GOTO 9140
9140 RETURN
```

```
150 PAINT(255,0),2,2
160 FOR A=1 TO 20:READ TH,TV:DRA
W"BM"+STR$(TH)+","+STR$(TV)+";C3
;U8":NEXT A
170 DATA 236,30,232,36,224,42,21
2,54,204,60,192,72,188,78,220,84
,176,90,172,96,152,102,148,102,1
44,108,136,114,128,126,116,132,1
08,138,100,144,88,156,80,168
180 COLOR 1,2:LINE(32,168)-(80,1
68),PSET:PAINT(36,191),3,1:LINE(
32,168)-(80,168),PRESET
190 SCREEN 1,0
200 AR$="S16C4L3G1L7G2R3BU1R4L4B
D1R8U1E2":ND$="S4R2D2L2U2D2R1D3E
2G2H2F2D2F3H3G3":X=255:Y=0
210 DRAW"BM"+STR$(X)+","+STR$(Y)
+"XAR$;":PAINT(X-2,Y+2),4,4
220 SOUND 200,1
230 P=PEEK(65280):IF P=126 OR P=
254 THEN 240 ELSE 230
240 FOR T=1 TO 5:PLAY"O1;T255;L2
55;V30;GCGAGBGFGEGDGGG":NEXT
250 COLOR 2,2:LINE(X,Y)-(X-52,Y+
12),PSET,BF
260 X=X-30:H=250:V=12:C=1:GOSUB
1000:H=242:V=12:C=1:GOSUB 1000
270 X=X-4:IF X<52 THEN X=52
280 IF F=0 THEN GOSUB 360
290 GOSUB 380
300 IF PL=0 THEN 350
310 SOUND X,1
320 IF PPOINT(X-50,Y+12)=1 THEN
GOSUB 630
330 DRAW"BM"+STR$(X)+","+STR$(Y)
+AR$:PAINT(X-2,Y+2),4,4
340 COLOR 2,2:LINE(X,Y)-(X-52,Y+
12),PSET,BF
350 GOTO 270
360 FOR T=1 TO 200:NEXT:RETURN
370 RETURN
380 ' JOYSTK CONTROLS
390 CC$="J"
400 IF V>50 THEN IF RND(10)<4 TH
EN Y=Y+4
410 IF F=1 THEN GOSUB 490:GOTO 4
30
420 P=PEEK(65280):IF P=126 OR P=
254 THEN GOSUB 450
430 RETURN
440 RETURN
450 F=1
460 XX=X-25:YY=Y+15
470 PLAY"O5;T255;L255;V25;BAGFED
C04BAGFEDC03BAGFEDC02BAGFEDC"
480 RETURN
490 YY=YY+4
500 DRAW"BM"+STR$(XX)+","+STR$(Y
Y)+";C4;"+ND$
510 DRAW"BM"+STR$(XX)+","+STR$(Y
Y)+";C2;"+ND$
520 GOSUB 560
530 PLAY"O4T255L255V15GG"
540 RETURN
550 IF XX 168 AND YY>60 THEN GOS
UB630
560 IF XX<80 AND YY>156 THEN PLA
Y"O5T255L255V30BFEDC04BAGF":GOTO
 690
570 FOR G=XX-2 TO XX+2:IF PPOINT
(G,YY+10)=3 THEN 640
580 NEXT
590 IF PPOINT(XX,YY+11)=1 THEN 7
70
600 FOR J=XX-2 TO XXX+2:FOR JJ=Y
Y TO YY+12 STEP 2:IF PPOINT(J,JJ
)=4 THEN 690
610 NEXT JJ,J
620 RETURN
630 IF F=1 THEN 650
640 GOTO 690
650 ' EXPLOSION EFFECTS (SOUND)
660 FOR A=31 TO 1 STEP -4:Y$=STR
$(A):PLAY"O1T255L255V"+Y$+";FCFC
":NEXT
670 PL=0
680 GOTO 270
690 PLAY"O3;T5;L5;V10;L10GGEAL5G
E"
700 H=250:V=12:C=1:GOSUB 1000:H=
242:V=12:C=1:GOSUB 1000
710 H=250:V=12:C=2:GOSUB 1000:H=
242:V=12:C=2:GOSUB 1000
720 H=250:V=0:C=1:GOSUB 1000:H=2
42:V=0:C=1:GOSUB 1000
730 H=250:V=0:C=2:GOSUB 1000:H=2
42:V=0:C=2:GOSUB 1000
740 PLAY"O5;T255;L255;V15;GF#FF#
G"
750 P=PEEK(65280):IF P=127 OR P=
255 THEN 700
760 GOTO 890
770 H=250:V=12:C=2:GOSUB 1000:H=
242:V=12:C=2:GOSUB 1000
780 PLAY"O3T2V5L8GGGL16CCL8C"
790 H=236:V=12:C=1:GOSUB 1000:H=
228:V=12:C=1:GOSUB 1000
800 H=236:V=12:C=2:GOSUB 1000:H=
228:V=12:C=2:GOSUB 1000
810 FOR T=1 TO 500:NEXT:PLAY"O1T
255L255V5GG"
820 H=236:V=12:C=1:GOSUB 1000:H=
228:V=12:C=1:GOSUB 1000
830 H=236:V=12:C=2:GOSUB 1000:H=
228:V=12:C=2:GOSUB 1000
840 FOR T=1 TO 500:NEXT:PLAY"O1T
255L255V5FEDCDCEC"
850 H=236:V=24:C=1:GOSUB 1000:H=
228:V=26:C=1:GOSUB 1000
860 PLAY"O2T255L255V30CCCCCDDDDD
```

```
CCCCCP1P1P104GGGGGFG"
870 PLAY"O3T255L255V5FFEFF"
880 P=PEEK(65280):IF P=127 OR P=
255 THEN 870
890 SCREEN 0,0:CLS:PRINT @ 0,"AN-
OTHER GAME?"
900 PRINT @ 128,"YES":PRINT @ 15
7,"NO"
910 PLAY"O1T5L5V10GGGGG"
920 PRINT @ 256,"MOVE THE ASTERI
SK TO YOUR ANSWER. THEN PRESS TH
E FIRE BUTTON"
930 H=JOYSTK(0)
940 IF H=0THEN V=160
950 IF H=63 THEN V=191
960 PRINT @ V,"*":PRINT @ V,CHR$
(143)
970 P=PEEK(65280):IF P=127 OR P=
255 THEN 930
980 IF H=0 THEN 20
990 FOR T=1 TO 200 STEP 10:SOUND
 T,1:NEXT:CLS:GOTO 1010
1000 DRAW"BM"+STR$(H)+","+STR$(V
)+";C"+STR$(C)+ND$:RETURN
1010 PLAY"O1T255;L255V5GGGGGP1GG
GGGP1GGGGGP1GGGGGP1"
1020 END
```

Listing 2: TRACK

```
10 POKE65494,0:CLEAR2000
20 GOSUB800
30 P$=CHR$(128):O$=CHR$(207)
40 R$(1)=O$+O$+O$+P$+O$+P$+O$+P$
+P$+O$+P$+O$+P$+O$+O$+O$+P$+O$+P
$+P$+O$
50 R$(2)=O$+P$+P$+P$+O$+P$+O$+CH
R$(203)+CHR$(194)+O$+P$+O$+P$+O$
+CHR$(195)+P$+P$+O$+CHR$(195)+CH
R$(195)+O$
60 R$(3)=O$+O$+P$+P$+O$+P$+O$+CH
R$(196)+CHR$(205)+O$+P$+O$+P$+P$
+CHR$(204)+O$+P$+O$+CHR$(204)+CH
R$(204)+O$
70 R$(4)=O$+P$+P$+P$+O$+P$+O$+P$
+P$+O$+P$+O$+P$+O$+O$+O$+P$+O$+P
$+P$+O$
80 R$(5)=O$+P$+P$+P$+O$+P$+O$+P$
+P$+O$+P$+O$+O$+O$+P$+CHR$(197)+
O$+CHR$(202)
90 R$(6)=O$+P$+P$+P$+O$+P$+O$+CH
R$(203)+CHR$(194)+O$+P$+O$+CHR$(
195)+P$+P$+CHR$(197)+O$+CHR$(202
)
100 R$(7)=O$+P$+P$+P$+O$+P$+O$+C
HR$(196)+CHR$(205)+O$+P$+O$+CHR$
(204)+P$+P$+CHR$(196)+CHR$(204)+
CHR$(200)
110 R$(8)=O$+O$+O$+P$+O$+P$+O$+P
$+P$+O$+P$+O$+O$+O$+P$+CHR$(197)
+O$+CHR$(202)
120 POKE65495,0
130 CLS4
140 X=175
150 Z=12
160 PRINT@480,STRING$(Z,191)+CHR
$(154)+STRING$(4,128)+CHR$(149)+
STRING$(26-Z,191);
170 C=C+1:IFC=17THEN180ELSE160
180 GOTO220
190 M=RND(7):IFM=1THEN200ELSERET
URN
200 M=RND(2):IFM=1THENP=-1ELSEIF
M=2THENP=1
210 RETURN
220 X=Z+2
230 J=JOYSTK(0):IFJ<5THENX=X-1EL
SEIFJ>55THENX=X+1
240 IFX<1THENX=1ELSEIFX>31THENX=
31
250 PRINT@X,CHR$(239);
260 GOSUB190
270 Z=Z+P
280 IFZ>26THENZ=26ELSEIFZ<1THENZ
=1
290 IFZ=26THENP=-1
300 IFZ=1THENP=1
310 PRINT@480,STRING$(Z,191)+CHR
$(154)+STRING$(4,128)+CHR$(149)+
STRING$(26-Z,191);
320 Q=Q+1
330 IF Q=14 AND W=2 THEN460
340 IF Q>500 THENGOSUB450
350 IFPEEK(1024+X+32)=191THEN400
360 GOTO230
370 POKE65494,0:PLAY"V31T63L401"
:PRINT@X,CHR$(143+D);:PLAY"C":PR
INT@X-1,CHR$(143+D);:PLAY"D-":PR
INT@X+1,CHR$(143+D);:PLAY"F":PRI
NT@X+32,CHR$(143+D);:PLAY"E-":PR
INT@X-2,CHR$(143+D);:PLAY"C#":PR
INT@X+2,CHR$(143+D);:PLAY"C":PRI
NT@X+31,CHR$(143+D);:PLAY"E#"
380 PRINT@X+33,CHR$(143+D);:PLAY
"E-"
390 POKE65495,0:RETURN
400 D=D+16:GOSUB370
410 IFD=112THEN420ELSE400
420 PRINT@448,"YOU WENT OFF THE
TRACK AFTER    TRAVELLING";Q/10;
"KILOMETRES!";
430 ' THIS LINE MUST BE IN!
440 IFINKEY$=" "THEN RUN30 ELSE4
30
450 PRINT@448+Z,CHR$(154);:PRINT
@416+Z,CHR$(158)+CHR$(156)+CHR$(
156)+CHR$(156)+CHR$(156)+CHR$(15
7);:PRINT@453+Z,CHR$(149);:Q=0:W
```

```
=2:RETURN
460 PLAY"05V5T255L255BV+AGV+FEDC
V+04BAV+GFV+EDCV+03BAV+GFV+EDCV+
02BAV+GFV+EDCV+01BAV+GFV+EDC"
470 CLS0:A$="you made it to the"
480 FORX=6TO23:Y=448+X:E=E+1:IFM
ID$(A$,E,1)=" " THEN NEXTX
490 PRINT@Y,MID$(A$,E,1);
500 Y=Y-32:IFY<0THEN510ELSE490
510 FORY=448+X TO 32+X STEP-32:P
RINT@Y,CHR$(128);:NEXTY
520 NEXTX
530 PLAY"T255L25504V5"
540 FORC=1TO4
550 PLAY"V5"
560 FORI=1TO LEN(R$(C))
570 PRINT@129+R+I,MID$(R$(C),I,1
);:PLAY"CEGV+":NEXTI
580 R=R+32
590 NEXTC
600 R=0
610 FORC=5TO8
620 PLAY"V5"
630 FORI=1TO LEN(R$(C))
640 PRINT@301+R+I,MID$(R$(C),I,1
);:PLAY"CEGV+":NEXTI
650 R=R+32
660 NEXTC
670 PLAY"T2P4;T3L804CDC03B-P255B
-04C03B-AP255AB-AGP255GAGP255L2F
GL4AB-L804C03B-AGFCFCECECF"
680 PRINT@480,"PLAY AGAIN (Y/N)"
;:I$=INKEY$
690 I$=INKEY$:IFI$=""THEN690ELSE
IFI$="Y"THENRUN ELSEIFI$="N"THEN
700ELSE690
700 CLS
710 PRINT@448,"PRESS BREAK";:PRI
NT@480,"TO ABORT...";
720 PRINT@171," BYE ";:GOSUB790
730 PRINT@171,"B Y E";:GOSUB790
740 PRINT@170,"B  Y  E";:GOSUB79
0
750 PRINT@169,"B   Y   E";:GOSUB
790
760 PRINT@169," B  Y  E ";:GOSUB
790
770 PRINT@170," B Y E ";:GOSUB79
0
780 GOTO720
790 FORU=1TO35:NEXT:RETURN
800 PLAY"V5T255L25505":CLS0:A$="
welcome"+CHR$(128)+"to"
810 FORA=1TO LEN(A$) STEP2
820 PLAY"V+ACECA"
830 PRINT@34+A,MID$(A$,A,1);
840 NEXTA
850 FORA=2TO LEN(A$) STEP2
860 PLAY"V+ACECA"
870 PRINT@34+A,MID$(A$,A,1);
880 NEXTA
890 A$="TRACK - A - THON"
900 FORX=1 TO LEN(A$)
910 PRINT@168+R,MID$(A$,X,1);
920 PLAY"N1N2N3N4N5"
930 R=R+1:NEXTX
940 C=-1
950 FORX=143TO136STEP-1:C=C+2
960 PRINT@X,CHR$(172);:PRINT@X+C
,CHR$(172);
970 PLAY"N6N7N8N9N10"
980 NEXTX
990 PRINT@135,CHR$(174);:PRINT@1
52,CHR$(173);:PLAY"N6N7N8N9N10"
1000 PRINT@167,CHR$(170);:PRINT@
184,CHR$(165);:PLAY"N6N7N8N9N10"
1010 PRINT@199,CHR$(171);:PRINT@
216,CHR$(167);:PLAY"N6N7N8N9N10"
1020 C=C+2
1030 FORX=200TO207:C=C-2
1040 PRINT@X,CHR$(163);:PRINT@X+
C,CHR$(163);
1050 PLAY"N6N7N8N9N10"
1060 NEXT
1070 PRINT@290,"THE WINNING PROG
RAM OF THE..";:PRINT@322,"AUSTRA
LIAN COLOR COMPUTER   ";:PRINT@3
54,"GAME COMPETITON !!!!!!!!!!!!
";:PRINT@458,"INSTRUCTIONS?";:I$
=INKEY$
1080 I$=INKEY$:IFI$=""THEN1080EL
SEIFI$="Y"THEN1090ELSEIFI$="N"TH
ENRETURNELSE1080
1090 CLS0:PRINT@8,"TRACK - A - T
HON";:PRINT@66,"THIS AWARD-WINNI
NG PROGRAM,";:PRINT@98,"WRITTEN
BY BEN CHENOWETH,  ";:PRINT@130,
"UTILIZES THE SPEED THAT CAN";:P
RINT@162,"BE REACHED IN BASIC !!
!!!!!";
1100 PRINT@226,"THE OBJECT OF TH
E GAME IS  ";:PRINT@258,"TO REAC
H THE FINISH LINE,  ";:PRINT@290
,"WHICH IS AN ARCH OVER THE  ";:
PRINT@322,"ROAD. NOTE THE SPEED
AND...";:PRINT@419," g  o  o  d
- l  u  c  k ";
1110 I$=INKEY$:IFI$=""THENPRINT@
492,"SPACEBAR";:GOTO1110ELSEIFI$
=" "THENRETURN
1120 '*************************
1130 '*** (C)OPYRIGHT 1985 ***
1140 '*** BEN CHENOWETH !! ***
1150 '***     MELBOURNE     ***
1160 '***      AGED-14      ***
1210 '***       ****        ***
1220 '*** I HOPE YOU LIKED ***
1230 '*** PLAYING THIS !!! ***
1240 '*************************
```

FORTH

This article should be read in conjunction with the use of the FORTH compiler John provided in August 1984's CoCoOz.

We invite your reaction to the Forth articles, and details of the discoveries you are making as you use them.

Part 4. STRINGS & USEFUL THINGS

John Redmond

(John has supplied a second version of his FORTH program, previously supplied in CoCoOz in August 1984. This second version fixes some of the original bugs and develops that program further.

Next month, John Poxon reviews the book mentioned in this text. It is a good book and well worth the investment. G.)

One of the recognized strengths of Basic over Pascal, C and (especially) Fortran is its range of string operators. Forth, for its part, has words for character input / output, string comparison and movement. With these, Basic-like words can easily be defined to meet whatever needs you have in a program. A little while back, I went through the exercise of defining versions of LEFT$, MID$, etc. Since then, I've realized that this, in general, is a mistake. I will develop the point in a later article; suffice it to say now that Forth's facility for manipulating pointers for, e.g., indexing into a string array, makes the formal definition of Basic-like words superfluous and inefficient.

I've spent three months giving you some very simple examples of Forth in operation. This month, a real bit of programming: cassette input / output (which normally needs some sort of machine-language driver). But, before we get to the nitty-gritty, we need to discuss the standard Forth words for character and string I/O and string manipulations. They are:

```
CHARACTERS:
  KEY (--CHAR): INPUT
  EMIT (CHAR--): OUTPUT
STRINGS:
  COUNT (ADDR--(ADDR+1),CHAR CNT)
  EXPECT (ADDR, CHAR CNT --)
  TYPE (ADDR, CHAR CNT --)
  <CMOVE (ADDR1, ADDR2, CNT --)
  CMOVE (ADDR1, ADDR2, CNT--)
  -TRAILING (ADDR,CNT-ADDR,CNT)
  -TEXT (ADDR1,CNT,ADDR2--FLAG)
```

The character words are simple enough but, before we consider the string words, we need to look at the ways in which strings might be stored. The two simplest ways are:

1. byte 1 = no of chars in string
   bytes 2..(n) = chars in string
   (as in Basic).
2. bytes 1..(n-1)= chars in string
   byte(n) = 0 (ASCII null)
   (as in C).

The standard Forth words are set up for the first way (length in first byte), but Forth can live with a null-terminated string. Or it can use a free string format, with no local specification of string length, i.e.,

3. bytes 1..(n) = chars in string.

The word COUNT takes an address from the top of the stack and replaces it with the next address and the contents of the byte at the original address. In other words, it is set up to handle the first type of string storage. The values that it returns are just perfect for some of the other string words in the list above, such as TYPE.

SURNAME COUNT TYPE will therefore print the surname stored in the first format. We might, on the other hand, have a free-format string with a fixed field of, say, 12 characters. If you have on the stack the address of the first character of the field, then

(addr on stack) 12 TYPE will give you the right result.

Maybe, though, the surname is less than 12 characters and the rest of the field is filled with spaces. Perhaps you don't want to print these? No problem.

(addr on stack) 12 -TRAILING TYPE will print just the name.

Null-terminated strings are not generally used in Forth but, if C can use them, so can Forth. There might be times when we need to access a data file, perhaps generated by a C program, that uses such strings. To allow us to use the standard Forth words on the strings, we need a way to dimension them. Consider this definition:

```
: LENGTH (ADDR--ADDR,CNT)
   DUP BEGIN DUP
     C@ WHILE 1+ REPEAT
   OVER - ;
```

This will provide the parameters which the other Forth words expect. So easy, isn't it?

There are two string move words, <CMOVE and CMOVE. The former can be used to move OVERLAPPING strings UPWARDS in memory, the latter for moving DOWNWARDS. Either can be used if the memory areas do not overlap.

Now, the string input word, EXPECT. Note that the parameters are the same as for TYPE and for -TRAILING. EXPECT waits for you to input the specified number of characters, or less if you terminate with a carriage return (enter). They are stored, in sequence, starting at the address given by the second stack entry. The version in Brodie's marvellous book 'Starting Forth' puts in a null byte at the end, but The recommended Forth-83 standard does not. I've included it in the soon-to-be-released-bells- and-whistles-don't-need-a-disk-drive-with-your-compiler-a*FORTH+ in the interests of uniformity. (Anyone who wants to do anything with Forth simply MUST get a copy of Brodie's book and read it ten times. It's published by Prentice-Hall and currently costs $29.50 but, if you're serious, tell yourself that it's

only the price of five IMPORTED computer magazines. I'ts brilliant and it's worth it - even if it doesn't have as many advertisements as Byte). (Alternatively, think of it as one Donkey Kong game! G.)

Back to business. The inclusion of the null by EXPECT is, quite frankly, a pain in the neck and necessitates the definition of a new word, INLINE, which will cleanly take a sting, left-justified, into a field. Any spare room is filled with spaces. Look at its definition and use in the program below.

The program, CASSETTE rather nicely illustrates some of the string words. For clarity, the program is NOT highly optimized and I've erred on the side of over-usage of symbols - like FULL, for instance.

Finally, the very important word -TEXT which is used to compare strings. The hyphen prefix, equivalent to logic NOT, means that a false flag is returned on the stack if the strings are the same, while -1 is returned if string 1 is alphabetically before string 2 and 1 is returned if the opposite is the case. Might sound a bit tricky, but the word is very fast and powerful. Notice its use in CASSETTE. Here you have the option if inputting a file name or just a carriage return. If no name is typed in, no characters are entered at FNAME, which is simply filled with spaces. In that event,

FNAME 8 -TRAILING will return a zero length, which can be used as a flag to decide whether -TEXT should be used to test for a match with the name in the file header (see FND.HEADER).

I know that I've thrown you in the deep end. I don't claim any special elegance for CASSETTE, but I think it's worth working through - AND it works! I've not had a hitch in over a year.

I will start to develop the point of view next month that Forth is THE language of choice for programmers who really want to DO things with the Color Computer. I hope that I will start to convince you that, partly because of that marvellous 6809 CPU under the lid, that the code that it produces is very fast, very small and very powerful. I will make comparisons with other languages and other machines and start to look at using high-fallutin' techniques like recursion. Stay with us. That computer in your back room is VERY powerful!

```
   : CASSETTE ;
\ CASSETTE I/O ROUTINES
\ FOR THE TANDY COLOR COMPUTER
\ BY JOHN REDMOND (1985)

  HEX
  VARIABLE TBUFFER
  VARIABLE CPTR
  VARIABLE #CHAR
  VARIABLE NEXTCHAR
  1D2 CONSTANT FNAME
  1DA CONSTANT CBUFFER
  7E CONSTANT BUFFER.PTR
  7C CONSTANT BUFFER.TYPE
  7D CONSTANT BYTE.COUNT
  0 CONSTANT HEADERBLOCK
  1 CONSTANT DATABLOCK
  0FF CONSTANT EOF
  0FF CONSTANT FULL
  1 CONSTANT FILETYPE

: INLINE (ADDR, CHAR COUNT -- )
  2DUP 32 FILL
  PAD 255 2DUP
  EXPECT 1- -TRAILING
  1- ROT MIN ROT SWAP ?DUP
  IF (CMOVE ELSE 2DROP THEN ;

\ THIS WORD USES TANDY-STATED
\ ROM ROUTINES AND IS OK
\ FOR ALL ROM REVISIONS.
\ NOTE THAT THE SPECIAL WORD
\ GOSUB IS USED TO ACCESS THE
\ MACHINE LANGUAGE ROUTINES.
\ GOSUB RETURNS THE A & B
\ REGISTERS ON THE STACK.
\ THE A REGISTER CONTAINS A
\ FLAG TO INDICATE THE SUCCESS
\ OF THE LOAD (SEE BASIC
\ MANUAL). THE FLAG IS THROWN
\ AWAY IN THIS VERSION, AS IT
\ WAS NOT FOUND NECESSARY, OR
\ DESIRABLE, TO USE IT.
\ IN FACT, THIS DECISION MAKES
\ IT POSSIBLE TO START LOADING
\ IN THE MIDDLE OF A BLOCK
\ WITHOUT A CRASH!
: GBLOCK CBUFFER BUFFER.PTR !
  A004 @ GOSUB DROP
  A006 @ GOSUB DROP
  34 FF21 C! ( MOTOROFF)
  0 #CHAR ! ;

\ THIS WORD KEEPS TRYING TO
\ FIND A HEADER BLOCK.
: GHEADER BEGIN GBLOCK
  BUFFER.TYPE C@
  HEADERBLOCK = UNTIL
  PAGE SPACE CBUFFER 8
  -TRAILING TYPE ;

\ NOTE THAT IT IS NOT
\ NECESSARY TO INPUT THE
\ FILE NAME.  THIS WORD IS
\ SMART ENOUGH TO CHECK WHETHER
\ YOU DID OR NOT.
: FND.HEADER PAGE SPACE
  ." FILE NAME: "
  FNAME 8 INLINE
  BEGIN GHEADER
   FNAME 8 -TRAILING
   IF 8 CBUFFER -TEXT
   ELSE DROP 0 THEN
  0= UNTIL ;

\ KEEPS TRYING TO READ A BLOCK
\ UNTIL IT GETS EITHER
\ A DATA BLOCK OR END-OF-FILE
\ IF IT IS A DATA BLOCK, IT
\ INITIALIZES CHAR COUNT &
\ POINTER & RETURNS A TRUE FLAG
\ IF IT IS EOF, FALSE IS
\ RETURNED ON THE STACK
: GDATA BEGIN GBLOCK
  BUFFER.TYPE C@
  DUP DATABLOCK = SWAP
  EOF = OR UNTIL
  BUFFER.TYPE C@ DATABLOCK =
  IF CBUFFER NEXTCHAR !
   BYTE.COUNT C@ #CHAR ! 1
  ELSE 0 THEN ;

\ CHECKS IF ANY CHARS IN BUFFER
\ IF NOT, IT TRIES TO LOAD
\ ANOTHER BLOCK.
\ CHAR COUNT & CHAR POINTER
\ ARE UPDATED.
\ A FLAG IS ALWAYS RETURNED.
\ TRUE MEANS A CHAR IS NEXT ON
\ THE STACK. FALSE MEANS NO
\ MORE DATA.
: GCHAR #CHAR @ ?DUP 0=
  IF GDATA THEN
  IF NEXTCHAR @ C@
  1 NEXTCHAR +! -1 #CHAR +! 1
  ELSE 0 THEN ;

\ KEEP LOADING DATA BLOCKS,
\ STARTING AT SPECIFIED
\ ADDRESS, UNTIL EOF REACHED.
\ HEADER BLOCKS ARE IGNORED.
: GFILE (LOAD ADDRESS -- )
  CPTR ! 0 #CHAR !
  BEGIN GCHAR
  WHILE CPTR @ C! 1 CPTR +!
  REPEAT 0 CPTR @ ! ;

: FLOAD FND.HEADER
  TBUFFER @ GFILE ;

\ THE LOWEST LEVEL PUT-BLOCK
\ ROUTINE. NOTE PARAMETERS.
: PBLOCK ( BYTES,TYPE--)
  BUFFER.TYPE C!
  BYTE.COUNT C!
  CBUFFER BUFFER.PTR !
  A00C @ GOSUB DROP
  A008 @ GOSUB DROP
  34 FF21 C! ;

: RESET.BUFFER
  CBUFFER NEXTCHAR !
  0 #CHAR ! ;

: PHEADER PAGE SPACE
  ." FILE NAME: "
  CBUFFER 8 INLINE
  FILETYPE [ CBUFFER 8 + ]
  LITERAL C!
  -1 [ CBUFFER 9 + ]
  LITERAL !
  0F HEADERBLOCK PBLOCK
  RESET.BUFFER ;

: PDATA #CHAR @ DATABLOCK
  PBLOCK
  RESET.BUFFER ;

\ PEND FLUSHES ANY REMAINING
\ DATA FROM THE BUFFER TO THE
\ TAPE AND WRITES THE EOF BLOCK
```

continued on page 39

SCOREBOARD

I've been helping out at Rainbow for a while now, and Graham has finally given me my own section - the Scoreboard.

If you have a high score, please send them in. Or if you write for other reasons, just add your high scores then at the bottom of the letter.

We are adding a hints and tips section, which we expect will be helpful for our game and adventure playing readers. We'd like to see your hint or tip. Or perhaps you have a question - we'll do our best to answer it as quickly as possible, and share that answer with everone else.

Dear Michael,

Would you have any recommendations for an adventure for the 16K ECB. I have seen some but they lack challenge. Also if anyone out there that knows some peeks and pokes which could help me with my programming could you please send them to:

Darren Willis
17 Devon St.,
Rochedale. QLD. 4123.

Darren,

Most of the best challenging graphics adventures are for 32K ECB machines. But there are some good text adventures for the 16K ECB that are challenging, and which I would recommend.

Tandy's Raaka-Tu, Bedlam and Pyramid, and Calixto Island by Mark Data come to mind as being excellent purchases.

For graphics, Dungeons of Daggorath is a good challenge which comes in a Rompak from Tandy. Aardvark have a number of good adventures for 16 K ECB, but really it depends on what you personally think makes an adventure challenging.

Mick.

Some hints for Sea Quest (Mark Data):

Typing "GO FALLS" when at the waterfalls, will lead to a hidden cave. In the cave you will stumble over something very useful - hope you can "dig" it!

When you find the beach house, and after you "BUST" in, you will find a credit card somewhere which will be helpful when you purchase the air tank later. Don't forget to fill it!

Not everything will show up when you press the button on the metal detector. It pays to have an enquiring mind, because not all the treasures are metalic. You'll just have to dig. But to dig up the metalic treasures, you'll have to "PRESS BUTTON" on the metal detector first.

Mythology has it that mermaids are vain creatures. So it might be wise to give her a little something. She might even give you something in return.

To get past the shark, opening a certain bottle will do wonders.

Michael.

K. Holzapfel of Stafford, QLD sent this picture of a recent high score in ZAXXON - 115800! Not bad!

ASTRO BLAST (Mark Data)
David Coleman Yeronga 52000

ASTRO LANDER (CoCo Software)
R Boxall 4250

ATOM (Tandy)
David Thurbon (round.1) xe

BEAM RIDER (Spectral)
David Thurbon Canberra 83530

BUST OUT (Tandy)
Richard Pankhurst Roseville
20 Balls 2490

BLOCKHEAD (Computerware)
Michael Horn Gold Cst 29825
Colleen James Gold Cst 4425

CALIXTO (Mark Data)
J Gans Bris 162

CANYON CLIMBER (Tandy)
Steve Lemke Bribie 7/101800
Chris Nagel 66680

CASHMAN (Comp Shack)
Richard Pankhurst Rsvll 6640

CAVERN COPTER (Rainbow)
Richard Pankhurst Rsvll 1509

CHOPPERSTRIKE (Mich Tron)
Ken Uzzell Roseville 25300

CLOWNS (Tandy)
Brendan Gay Gold Cst 16570
Michael Horn Gold Cst 6110

DEFENSE (Spectral)
Richard Pankhurst Rsvll 31730
Michael Horn Gold Cst 27575

DEMON ASSULT (Aardvack)
Richard PankHurst Rsvll 31250

DEMON SEED (Comp Shack)
Ken Uzzell Roseville 11350

DEVIOUS (Spectral)
R Boxall 28820

DONKEY KING (Tom Mix)
Daryn Wedd 187500
Damon Simpson 105400
R Boxall 59300
Michael Horn Gold Cst 15000

DOUBLE BACK (Tandy)
Ian Reynolds Prospect 351540
highest grab 140870

DRACONIAN (Tom Mix)
Richard PanKurst Rsvll 19140

FIRECOPTER (Adventure Intl.)
R Boxall 69152

FEMBOTS REVENGE
Richard PankHurst Rsvll 1050

FLYBY (Chromasette)
David Coleman Yeronga 32000

FROG TREK
Richard Pankherst Rsvll 8550

GALACTIC ATTACK (Tandy)
Ian Choat Woodridge 35070
Simone Sutherland 28230

GALAX ATTACK (Spectral)
David Coleman Yeronga 27950

GHOST GOBBLER (Spectral)
Stuart Sanders 118510
Steven Marks Yanco LB/68250
Chris Nagle Leeton 64510
Chris Nagle Leeton L10/58860
Michael Horn Gld Cst L8/28360

ICEBLOCK
Richard Pankherst Rsvll 58610
KATAPILLAR ATTACK (Tom Mix)
Steven Marks Yanco 9412
Todd Michell Robinvale 7779

KOMET KAZE (Color Quest)
Ken Uzzell Roseville 14000

LANCER (Spectral)
M. Bloomfield Sydney 148650

LASERWORM (Rainbow)
Nick Cooper 58745
Glynn Catherall Gld Cst 30366

LUNAR ROVER PATROL (Spectral)
C Boxall 64400

MEGABUG (Tandy)
Lori Lehane Penrith 19540
Brendan Gay Gold Cst 2969
Michael Horn Gold Cst 2499

MICROBES (Tandy)
R Boxall 63180
R Boxall & D Kemp 59680
Steven Marks Yanco L3/35410
Jack Rae Mt Isa 1/10700

MONSTER MAZE (Tandy)
Ian Reynolds Prospect 250840
Neil Prince Forbes 8410

MOON SHUTTLE (Data Soft)
David Thurbon Canberra 27700

MS GOBBLER (Spectral)
Ken Uzzell Roseville 8490
Michael Horn Gold Coast 6250

OUTHOUSE (Comp Shack)
Richard Pankhurst Rsvll 8126

from page 37

```
: PEND #CHAR @ IF PDATA THEN
  0 EOF PBLOCK ;

\ PCHAR IS THE MAIN POINT OF
\ ACCESS TO THE WRITE ROUTINES
\ AND NEEDS TO BE PRECEDED BY
\ PHEADER. AS THE BUFFER FILLS,
\ IT IS AUTOMATICALLY FLUSHED
\ TO THE TAPE.
: PCHAR NEXTCHAR @ C!
  1 NEXTCHAR +!
  1 #CHAR +! #CHAR @ FULL =
    IF PDATA THEN ;

\ FSAVE OPENS AN OUTPUT FILE,
\ WRITES CHARACTERS TO IT
\ UNTIL IT REACHES A ZERO
\ (NULL) BYTE, THEN CLOSES
\ THE FILE.
: FSAVE TBUFFER @ CPTR !
  PHEADER BEGIN CPTR @ C@
  1 CPTR +! ?DUP WHILE PCHAR
  REPEAT PEND ;
```

John will be at CoCoConf, and looks forward to discussing FORTH with you. G.

Scoreboard continued ...

PLANET INVASION (Spectral)
David Colman Yeronga 48500

POLARIS (Tandy)
Chris Nagel Leeton 31306
Chris Nagel Leeton 27563
Neil Prince Forbes 13840

POLTERGEIST (Tandy)
Steven Marks Yanco 4455

POOYAN (Datasoft)
R Boxall 100050
Michael Horn Gold Cst 80180

POPCORN (Tandy)
Chris Nagle Leeton 71640
Chris Nagle Leeton 1/58120
Allan Rae Mt Isa 56770
Michael Horn Gold Cst 38140
Colleen James Gold Cst 25970

PROJECT NEBULA (Tandy)
Michael Horn Gold Coast 410
Ken Uzzell Roseville 255

PROTECTOR
Steven Bullock Roseville 1589

PYRAMID (Tandy)
J Gans Bris 280

QUASER
Richard Pankhurst Rsvll 87

RAAKATU (Tandy)
Richard Pankhurst Rsvll 58
J Gans Bris 40

ROBOT BATTLE (Spectral)
Michael Horn Gold Cst 6940
R Boxall L0/4850

ROMAN CHEAKERS
Richard Pankhurst Rsvll 60

SCEPTER
Ken Uzzell Roseville
Won in 21min. 51 sec.

SEA QUEST (Mark Data)
J Dougan &J Gans Bris 165

SHENANIGANS (Mark Data)
J Gans Bris 112

SHOOTING GALLERY (Tandy)
Chris Lemke Bribiels 22420
Brendan Gay Gold Cst 13180
Michael Horn Gold Cst 9300

SKIING (Tandy)
Jack Rae Mtlsa 0:36.00

SPACE ASSULT (Tandy)
Nick Cooper 16949
Michael Horn Gold Cst L1/7370
Neil Prince Forbes L1/4980

SPACE RACE (Spectral)
Michael Horn Gold Cst 29180
Brendan Gay Gold Cst 28380

SPACE SHUTTLE (Tom Mix)
Richard Pankhurst Rsvill 344
C Boxall 192

SUB HUNT
Warren Macintosh Rsvll 5135

SANDS OF EGYPT (Tandy)
Richard Pankhurst Roseville
127 Turns

TIME BANDIT (Michtron)
Daryn Wedd 87280
J Dougan Bris 35000

TRAPFALL (Spectral)
David Thurbon Canberra 47918

TUT (Aardvark)
Keith Savage 99430

VIKING
Ken Uzzell Roseville
King in 16 years

WHIRLYBIRD RUN (Spectral)
R Boxall 42375

WILDCATTING (Image Producers)
Colleen James Gold Cst 39169
R Boxall 34692
Chris Nagle Leeton 22848

ZAKSUND (Elite)
Nick Cooper 136050
Michael Horn Gold Cst 18400

ZAXXON (Tandy)
K Holzapfel Brisbane 115800
Jason Cook St Clair 104600

KEYBEEP

by David Thurbon

It may be nothing more than immagination but having the keys produce an audible click as they are pressed helps my own feeble efforts at typing and in order to improve the typing of those at The Rainbow here is my KEYBEEP program.

The program has been written in Position Independent Code and may by assembled wherever in memory you desire. I have set the origin for a 32K CoCo at $7000 or for a 16K CoCo $3000 depending on which of lines 180 or 190 you use.

The Listing:

```
                    00001 *NAME: KEYBIP
                    00002 *WRITTEN BY DAVID THURBON, PIXEL SOFTWARE
                    00003 *WRITTEN: 7-3-85                SUBMITTED: 1-4-85
                    00004 *VERSION: 1.0
                    00005 *MODIFICATIONS: NONE
                    00030 *DETAILS OF OPERATION:
                    00031 *THE INIT SECTION INITIALIZES THE RAM HOOK
                    00032 *THEN RETURNS TO BASIC.
                    00033 *WHENEVER A KEY IS PRESSED THE PIA IS PREPARED
                    00034 *AND THE CONTROL REGISTER HAS A VALUE (VOLUME)
                    00035 *WRITTEN TO IT A CERTAIN NUMBER OF TIMES (PITCH)
                    00036 *IT THEN CONTINUES WITH BASICS OWN ROUTINE
                    00037 *
          00FF      00100 VOLUME  EQU   $FF     LOUD
                    00110 *VOLUME EQU   $80     QUIET
                    00120 *VOLUME EQU   $20     BEARLY HEARABLE
                    00130 *
          00FF      00140 PITCH   EQU   $FF     LOW
                    00150 *PITCH  EQU   $80     MID RANGE
                    00160 *PITCH  EQU   $0A     VERY HIGH
                    00170 *
7000                00180         ORG   $7000   FOR 32K
                    00190 *       ORG   $3000   FOR 16K
7000 86   7E       00200 INIT    LDA   #$7E    CODE FOR JMP
7002 30   8D 0007  00210         LEAX  START,PCR     X=OUR ROUTINE
7006 B7   016A     00220         STA   $16A    STORE IT
7009 BF   016B     00230         STX   $16B    IN THE 'READ INPUT' HOOK
700C 39            00240         RTS           RETURN
                   00250 *
700D 34   06       00260 START   PSHS  A,B      SAVE A & B
700F B6   FF01     00270         LDA   $FF01   SELECT SOUND OUT
7012 84   F7       00280         ANDA  #$F7    RESET MUX BIT
7014 B7   FF01     00290         STA   $FF01   STORE
7017 B6   FF03     00300         LDA   $FF03   SELECT SOUND OUT
701A 84   F7       00310         ANDA  #$F7    RESET MUX BIT
701C B7   FF03     00320         STA   $FF03   STORE
701F B6   FF23     00330         LDA   $FF23   GET PIA
7022 8A   08       00340         ORA   #8      GET 6 BIT SOUND ENABLE
7024 B7   FF23     00350         STA   $FF23   STORE
7027 86   FF       00360         LDA   #VOLUME A=VOLUME
7029 C6   FF       00370         LDB   #PITCH  B=PITCH
702B B7   FF20     00380 LOOP    STA   $FF20.  SET ON
702E 5A            00390         DECB          B=B-1
702F 26   FA       00400         BNE   LOOP    IF NOT ZERO THEN LOOP
7031 7F   FF20     00410         CLR   $FF20   SET OFF
7034 35   06       00420         PULS  A,B     RESTORE A & B
7036 7E   8CF1     00430         JMP   $8CF1   GO TO BASICS ROUTINE
          0000     00440         END
00000 TOTAL ERRORS

INIT    7000
LOOP    702B
PITCH   00FF
START   700D
VOLUME  00FF
```

MiCO

Welcome to the May edition of Mico. this month we have taken a slight break from our normal format and have included one rather large program and only a few shorter ones. There are two reasons for choosing this format. Firstly we are faced with a continuing shortage in the supply of programs but secondly because the program CATTLE BARON by John Day rates more than simply a description and inclusion on MiCoOz. I know it is a long program and consumes much of the space allocated to MiCo. What you see published here however is an article presented entirely in the form John sent to us (apart from minor format changes to page widths etc). As you can see in the preparation of his article he has covered all aspects of his program in a clear and logical manner. This makes it easier for the reader to understand the program and certainly makes our work easier. I don't have to sit down to try and write somthing that conveys your personality (next to impossible to do) through merely studying your program. More often than not this approach only produces a leader article that is nothing but a review of your work, not a description of your program. Does that do justice to the programming effort you made?

But there is a second reason for devoting so much attention to John's program, that being, it is blatantly Australian. How could we deny those of you who don't subscribe to MiCoOz such an oportunity for patriotism.

So please make the effort to type in this program. It is worth the effort, and as a bonus I assure you the game is FUN!

The pending arrival on Australian market of the Tandy Model 1000 has produced somthing of a flurry of activity among those planning to upgrade to MS-DOS. I am a little sad at this as I am sure we will lose a few devotees of the CoCo and MiCo machines. The Model 1000 is a superb machine but we still have in our machines one clear advantage. We have a colossal software base and the cost of that software is considerably less than that of comparable software written to run under MS-DOS. Further, my CoCo is able to carry out every task I have ever needed or wanted it to do. Admitedly without many of the 'gee-wizz' features of the EXPENSIVE machines but those features would be just that in my applications, 'gee-wizz' features. Our hobby can be an expensive one. Don't cut down your enjoyment by chewing up your limited finances too quickly.

Kevin

ROLLOVER

Adapted from the original program by Graham Pollock

by David Goodwin

Ten year old David shows us that active minds never rest! He has taken Graham's ROLLOVER program from the Dec 84/Jan 85 edition of Mico and "added some life" to it. Thank's David and I'm sure Graham won't mind the changes. The listing:

```
1 FORX=1TO50:CLS0:CLS1:CLS2:CLS3
:CLS4:CLS5:CLS6:CLS7:CLS8:NEXTX
2 FORX=50TO250:SOUNDX,1:NEXTX
3 CLS:PRINT:PRINT:PRINT:PRINT:PR
INTTAB(11)"ROLLOVER"
4 PRINTTAB(9)"BY G.POLLOCK":PRIN
T:PRINT "SHIFT & GRAPHICS KEYS R
AISE THE NOTE":PRINT"CONTROL & 0
 PUTS THE NOTE UP AN OCTAVE"
5 A$=INKEY$:IFA$=""THEN5
8 FORX=16945TO16952
10 IFPEEK(X)<>255THENPRINTA$;:SO
UNDASC(A$),1:POKEX,255:GOTO5
25 NEXT
30 GOTO 5
```

TINY TEXT PROCESSOR

by Mike Turk

INTRODUCTION

TTP is a minimal function letter writer for the unexpanded 4K MC-10. With TTP you can enter, replace and delete lines of text. TTP also allows you to print, list, load, save and renumber your text. If you use 'LITTLE-E' then you can also edit and move existing lines. To keep the program small of course there are no frills.

TTP uses only 9 lines of BASIC leaving more than 2500 bytes free for your text, enough for about one and one half double spaced A4 pages. TTP functions as a line oriented text editor rather than a true word processor as it uses only the built in BASIC editing commands, its two functions (renumber and print), and 'LITTLE E' (optionally). I consider the original 'LITTLE-E' (Aust. MiCo May 84) as the most useful piece of software developed for the MC-10.

INSTRUCTIONS

Optional initial setup: CLOAD"LITTLE-E" and RUN it.

continued on page 42

LETTERS

Letters to Graham stand a good chance of being ignored; if they don't get ignored, they often end up here.

We welcome your reaction to the magazine and your assistance with problems discussed in it, as long as they are printable.

Dear Graham,

I'm not a community type user, all I want is guidance and advice on developing computer skills in general and in the use of the MC10 in particular. I have found so far that this magazine is about the only one available at all for the MC10, to your credit.

However I find the content either full of jargon, or so advanced I am lost, or things are almost juvenille in their simplicity. It's great to see that the MC10 has exciting potential, but what I'm looking for is the first drops, and more importantly the middle drops for, without help through these stages the last drops are reserved for those much smarter or developed than me. I just can't use them or get any further.

I would love to give you programs but I cannot as yet. I'm sure I'm not alone. PLEASE look through the MC10 manual, such as it is, and give us some educational exercises in gaining practise with many of the capabilities to enable us 'dills' to work through a capability. Half the time an error of any type occurs I don't even know where to go to fix it - using programs from your magazine especially. Is the program wrong, a printing error, a blot, something I'm doing wrong or a fault in the computer.

Can you or some of your education orientated friends give us some middle of the expertise stage some improvised applied experience which your guidance might simplify to help me get to the cleverer and obviously more exciting bits.

You may be interested to know this computer kid is 47 and just starting.

If you can help me get over the middle learning hump I promise you I'll send you every one of my future programs.

Please tell me how big the memory requirement of every program is so I know it will fit at the start of the typing and not at the end.

Digby Watson
Warrandyte. VIC.

Dear Digby,

'All' you want is advice, but if I give you the correct advice, will you take it if it doesn't meet with your approval?

There are just some things we need each other for, and computing is one of them!

When I first met Graham, he had the same attitude as your's. He was the contact on the coast, and he resisted strongly Greg's urgings to start a meet. Graham tends to be a loner, and is happy to follow his own path, but as he got into computing, he discovered he needed more and more help. (Mind you, by this time he was also giving more and more help!)

When I finally talked him into holding a meet, he was convinced immediately, because he could see the kids being helped and the adults solving problems, but he also saw that our own knowledge blossomed too.

So I can only say what has been said before - the meet is a vital part of the learning process, and the magazine can only hope to provide subject matter for the meets.

As to your comments re subject matter, this is chosen by our readers - because they supply the articles! Perhaps one of the team can help you!

I hope this month's MiCo will underline what both Graham and myself have said on a number of occasions - if we don't get the programs and articles - (and by the way, the majority of articles come from the meets,) then there is no magazine. This month we have virtually nothing to present in MiCo - the articles just didn't come!

Kevin.

****

Dear Kevin,

I still have some problems with the 'MICOWORD' - from Oct'84 I had a BS ERROR in 2050 and found that I needed to change line 10 to a higher number ie DIMT$(150). Maybe a clue for someone else. The other problem I am facing is that I can enter things on the keyboard faster than the MC10 can put them on the screen. Is there a high speed poke that could overcome this?

Rod Ellis
Everton Hills. QLD.

Dear Rod,

We will ask the author and report ASAP.
Kevin.

****

Dear Kevin,

Congratulations on an extremely successful magazine. It's nice to see that so many people treat the MC10 with the respect it deserves.

I would be very interested in any publication or person that could tell me the different POKE locations (ie. Location - Reaction). I am particularly interested in 'Slow List' and 'No List'.

I have also discovered a novel way of underlining my REM title headings:

1. ENTER REM HEADING
   (REM MAIN MENU)
2. ENTER UNDERLING CHR (ANY CHR)
   (REM :::::::::)
3. Using 'LITTLE E' , (Another brilliant program, thank you to author), SHIFT 'E' line number of underlining line, then using control key and 'R' replace the CHR used with new graphics CHR.

This replaces the the need to change the cursor colour when you want to underline a REM statement (on a printer it comes out the same as a normal line).

I hope that the 'MICO' continues to run successfully for a long time.

Steve Wholer
DUNCRAIG, W.A.

****

Dear Graham,

I am a brand new subscriber to CoCo / Mico and have found the first two issues as illuminating as every thing else combined, that I have read before on the subject.

The Spelling Competition is great, firstly it adds a bit of spice to an already top value for money purchase, but secondly, and most importantly it lured me into reading articles in CoCo and Soft Gold that I probably would not have got around to, and I have learnt things from these articles! Good on yer Graham!

David McGuinness
Eton. QLD.

****

(I received the following letter from one of our contributors who is currently in a prison in N.S.W. He has contributed a significant quantity of material to MiCoOz and MiCo, and is a name you would know if you have purchased more than two magazines or tapes.

I am going to preserve his privacy, although he has not asked me to do this. I will guarantee any loan anyone is prepared to make to him, so how about it - can one of you help him? G.)

Dear Graham,

The MC10 is trully a magnificent and powerful machine and has the ability with programming to accomplish some pretty heavy tasks. I have managed with a lot of study and many hard worked hours to program the MC10 to run my TTY, I built a very simple interface using a 4N28 Opto Coupler system.

The programming was made eas; with the help of my tutor Frank Rees who supplied me with all relevant information about telegraph signalling devices and codes. Now I have created a progran which combines a V.C.R and the MC10 and am looking forward to finding other fields of use, ie security systems with a modem and also heating systems etc. In order to propell myself even further into computers I would like to start with expanding to a TRS 80 ECB. The Mico shall continue to be my main interest and most of my programming will be done on it.

I am not however in a position where I can afford to purchase one whilst in custody as most of my money I send home to my family. I'd love to go and buy a colour monitor and the TRS 80 ECB, but family come first and my wants and needs come last.

Would there be any possibility at all of borrowing an ECB from Tandy or someone and if you think there would be, could you direct me towards the right people. I would even purchase the machine upon release. I am not allowed to enter into any contracts whilst in jail, but only wish to advance further in my study. Australia's future is in computers and I have a lot to give. (I agree. G.) I would be most appreciative of any help you may be able to give me, and grateful for direction.

When I first wrote to Greg he sent me the Mico Exposed explaining that a second edition would be available soon, is it available yet? Mico Exposed has been brilliant but I need more info.

Sorry to have to ask you for help, but there's nowhere else I can go and I thought perhaps you could. I do understand however if you are unable to.

(Name withheld.)

We have no plans to produce a second edition of MiCo Exposed at this stage.
Graham.

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from page 40

Enter NEW.
To set up TTP CLOAD the program and enter CLEAR 200 but do not run it.

SAVE: CSAVE the program containing your text. Use another name as your text lines are to be included as BASIC statements. Note the tape counter setting and name for future use. The name must be less than 9 characters long.

ADD/REPLACE: To add or replace a line of text simply use the BASIC editor. Type in a line number (which must be greater than 99). Then type in a quote mark (" ie. shift 2) as the first character after the line number. Then type in your text. When you have finished the line press ENTER. To abandon the input of a line use BREAK or CONTROL Q. To correct use CONTROL A to backspace. To shift between upper and lower case modes use SHIFT 0.

DELETE: To delete a line enter the line number with nothing following.

OPTIONAL EDIT/MOVE: to edit an existing line use 'LITTLE-E'. Type in lower case e and then the line number then press ENTER. LITTLE-E commands are:

Move cursor right	CTRL S,
Move cursor left	CTRL A,
Move cursor down	CTRL Z,
Delete character	CTRL Q,
Insert space	SHIFT 8,
Update line	ENTER
Abandon edit	BREAK

To move a line, just edit the line with LITTLE-E and change the line number. The original line will be left and the new line inserted.

LIST: To view your text use the BASIC command: LIST eg. LIST100- or LIST150 or LIST130-180.

PRINT: To print your text enter RUN2.
RENUMBER: To make space for insertions you can renumber your text lines by entering RUN.

END: To finish type in NEW. This leaves LITTLE-E in your computer. To get rid of LITTLE-E, turn the machine off and then on again.

HINTS ON USE:
1. TEXT LINE NUMBERS MUST BE GREATER THAN 99.
2. THE FIRST CHARACTER AFTER A LINE NUMBER MUST BE A QUOTE.
3. If you do not have LITTLE-E then simply modify your text in the same way that you edit a BASIC program.
4. To check how much memory you have left use ?MEM.
5. When you SAVE, note your filename and tape counter settings. Make at least two copies. Make sure you start your save with a blank portion of tape.
6. Line feeds can be inserted in your text using the CTRL W key combination. Line feeds are printed whenever the print routine sees an up arrow or at the end of your line. It is up to you to limit the length of your line. This does not however allow you to put multiple print lines into one BASIC text line. Remember that since your screen width is 32 and that two lines are 64 you can estimate your line length by sight.
7. Plan your line numbers ahead. I suggest you use 100, 110, 120 etc to allow for future changes. Renumber to make space if it is needed. DO NOT overwrite lines less than 100. Use the list command to check your text.
8. Create a version with your address etc in lines 100-150 and your end of letter sign off at a suitable high range of line numbers and save it for future use.
9. This version is cut to the bare bones. The left margin is set to 10, the first text line to 100 and the renumber increment to 10.
10 If your text prints out as garbage you have probably left out the quote as the first character in each new BASIC line.
11 If you encounter an OS error, you forgot to enter CLEAR 200.

HOW THE PROGRAM WORKS: Variables:

I	Renumber flag (1 renumber, 0 print)
C	Line number or loop counter,
A	Start of current BASIC line,
N	Start of next BASIC line,
L	Current line number,
P$	Print String.

Program Comments:
1 Set renumber flag, display RENUM, go and do it.
2 Display PRINT
3 Set the first text line and start of BASIC.
4 Get address of start of next line, get current line number, if less than first text line then loop.
5 If last dummy BASIC line then end.
6 If renumber then calculate and update new line number, increment line counter, loop.
7 Clear print string, loop along the text held within the BASIC line, get a character, if it is a line feed symbol (ie. CONTROL W, ASCII 94) or end of line marker (ASCII 0) then print what is there, clear the print string, if it is a line feed symbol then continue along the same line.
8 If the character is not an end of line marker then build the print string and loop.
9 Point to the next BASIC line and loop.

Improvements:
This is of course a mininmal program. The original used line numbers 10-90 and had variables set up for the left margin and renumber increment. to save space I hard coded them. If you have more space you could adapt the improved LITTLE-E (Aust Rainbow Xmas 1984) and add other features such as wrap-around when printing, double spacing, new paragraph and page feed markers or even justification.

THE LISTING:

```
1 CLS:I=1:PRINT"RENUM":GOTO3
2 CLS:PRINT"PRINT"
3 C=100:A=17222
4 N=256*PEEK(A)+PEEK(A+1):L=256*
PEEK(A+2)+PEEK(A+3):IFL<100THEN9
5 IFN=0THENEND
6 IFITHENPOKEA+2,INT(C/256):POKE
A+3,C-256*INT(C/256):C=C+10:GOTO
9
7 P$="":FORC=A+5TOA+128:P=PEEK(C
):IFP=94ORP=0THENLPRINTTAB(11);P
$:P$="":IFP=94THENNEXTC
8 IFP<>0THENP$=P$+CHR$(P):NEXT
9 A=N:GOTO4
```

EXAMPLE

```
1 CLS:I=1:PRINT"RENUM":GOTO3
2 CLS:PRINT"PRINT"
3 C=100:A=17222
4 N=256*PEEK(A)+PEEK(A+1):L=256*
PEEK(A+2)+PEEK(A+3):IFL<100THEN9
5 IFN=0THENEND
6 IFITHENPOKEA+2,INT(C/256):POKE
A+3,C-256*INT(C/256):C=C+10:GOTO
9
7 P$="":FORC=A+5TOA+128:P=PEEK(C
):IFP=94ORP=0THENLPRINTTAB(11);P
$:P$="":IFP=94THENNEXTC
8 IFP<>0THENP$=P$+CHR$(P):NEXT
9 A=N:GOTO4
100 "99 Your Street,^Suburb,^NSW
 2009^^30 February 1985^^Dear Ke
vin,^^    Here is a sample lette
r prepared using TTP.
110 "Here are 2 line feeds to ma
ke a new paragraph.^^    I hope
you like it!
120 "^^^Yours etc,^^^^Your name
```

99 Your Street,
Suburb,
NSW 2009

30 February 1985

Dear Kevin,

Here is a sample letter prepared using TTP.
Here are 2 line feeds to make a new paragraph.

I hope you like it!

Yours etc,

Your name

CATTLE BARON

by John Day

20K MC-10

Cattle Baron is an original board game which simulates the challengeing and stimulating life of a cattle raising Australian Pastoral Leaseholder.

Cattle raising is hard, uncomfortable and often seemingly pointless work, with long periods when little seems to happen, but the drudgery, (or most of it), has been deliberately ignored in this game, and the year has been condensed into a 32-square board, with 18 fixed occurences, (mostly disasters, as in real life), 8 Stock Sales, where you may buy and sell cattle at auction, and 6 Pot Luck squares which randomly select your fate from a 20 choice selection.

You suffer from drought, bushfire and diseases; and gain from rain, Stud Bulls and the Annual Yearling Sale.

From two to six players may take part (I have programmed in six "stations"), and the game can take as little as half an hour for two experienced players, up to a leisurely one and one half to two hours with six friends enjoying a quiet ale or two on the side.

As the tension can build **enormously** towards the end, it can become quite noisy if you let it.

THE PLAY:

Rules and instructions have not been programmed in for reasons of space - the program needs over 17K to run - but if you have more than 20K online memory, by all means add a subroutine to display them if you wish. Otherwise keep this handy!

Each player starts with $20,000 cash, and 3,000 head of cattle. Play begins ON the board at square 1, not off the board at square 0. Players are taken consecutively from the first one to be entered by name, minus any who may have been bankrupted out of the game, (you CAN do it if you try!), around the board in random throws of up to 10 squares. (12 is too fast, 6 too slow). Good or ill fortune awaits at each square, and the computer, naturally, does all the sums.

The first player to aquire 10,000 head of cattle either without having to resort to raising a mortgage, or having paid it out in full, wins the game.

STOCK SALE

Upon landing on Stock Sale, you may Buy, Sell, or Pass. If you are in drought, the program will let you know in no uncertain manner that you are passing. As in real life, the Stock Agent makes no enquiries into your financial status, and if, after the sale, you are in debt, you cannot proceed until you have raised a mortgage. On the other hand if you decide to sell more stock than you you have, the Stock Agent will stop you. (Stock Agents are good at counting!)

You must decide how many cattle you wish to buy before the auction, and rely on the vagaries of "market forces", (see line 1100), to set your prices. Fortunately the buying price fluctuates from $21 to $40, while the selling price can be from $31 to $50, so you have a better than average chance of making a bit from speculation. But it can also break you.

MORTGAGES

Mortgages of up to $50,000 are availiable, and the 10% interest is added to the amount, so you can be in debt to $55,000 but not a cent more, or you are thrown out of the game quite uncerimoniously!

Ten circuits of the board are required to pay out a mortgage, whatever the size, and 10% of your total debt is taken at each Yearling Sale. (After you have been paid, not before!)

There probably isn't a cocky alive who will pay out a mortgage before it is due. If he has cash in his hand, he will USE it. Therefore Cattle Baron assumes that its players are not silly, and there is NO MECHANISM for accepting advance payments of mortgages; you must do the ten circuits of the board, no matter how much wealth you may have accumulated. This is a point worth remembering, as a player with a mortgage cannot win the game. If you already have a mortgage, and find yourself in difficulties again, you may add to it, but to a maximum of $55,000 including the interest. Attempts to borrow more will set off the bankruptcy trigger.

DROUGHT:

There are two ways in which a drought may descend upon you:-

- *Local Drought, a fixed square which affects only you, and
- *General Drought, a Pot Luck draw, which affects all players. (This one could be dangerous if your companions are serious about their game!)

Whatever the means by which it gets you, drought is a real bummer. You lose HALF your stock, and end up selling them at deflated prices, (that's what actually happens in a drought - ask a cattle breeder!) and cannot restock until you:-

- *Complete the current circuit
- *Land on the LOCAL RAIN square, or
- *Pull GENERAL RAIN out of the Pot Luck hat

Local rain is the best, as it gives you 500 head of cattle as a bonus, wheras neither of the others does.

YEARLING SALE:

The aim of any enterprise is to make a profit, and Yearling Sale is the way to do it in Cattle Baron. The system of payment is thus:-

- *If you have aquired no Stud Bulls, or yours have died it is assumed **that you have increased** your herd by 20%, and have sold these yearlings at $25 a head.
- *For every Stud Bull you own, you have 10% more yearlings, so Stud **Bulls** are very definitely worth aquiring if you can.

Your mortgage payments are extracted at this point, and to keep you in touch, "audit" of your station is displayed here.

BUFFERS:

Any wise farmer will have an insurance policy for his Stud Bull, Fire Fighting Equipment in his shed, and will work towards ridding his herd of the devastaing disease Brucellosis.

All of these are availiable in Cattle Baron, but only by chance, through the pot luck draw. "Brucellosis Acreditation" and "Fire Fighting Equipment" stay with you for the whole of the game, but if you land on the "STUD BULL DIES" square, your insurance is paid out, and both the Policy and the Bull are cancelled. That bull is then removed from the game before the flies become a nuisance. There are four Stud Bulls availiable, but if you don't have one when landing on Stud Bull Dies then Murphy's Bull is substituted, and you lose the $2,000 in compensation. Either that or the insurance company pays Murphy.

HINTS FOR PLAYING:

Mostly the display is on the screen until you "PRESS ANY KEY TO CONTINUE", but watch for this prompt, as it does not appear after you have bought or sold stock, or have purchased a Stud Bull. In these cases let the program do the work.

Watch your input on raising a mortgage. The question is "How many THOUSAND dollars will you need?", not Dollars. See line 1340 for what happens to players who input more than 50!

The winning, bankrupt or just plain broke player will be identified at the beginning of his or her turn - there is nothing more boring than seeing another player overstretch the budget, then have to sit **around** whilst they sort it out before you continue. So the routines are split, to keep the game moving. If you know who's going to win, its nice for all the other players to be able to tidy up their affairs, so to speak, before the winning declaration, and the the display of the final figures. They are likely to be quite close.

The game can be quite devastating - I have been in a position where I had over $200,000 in cash, 15,000 head of cattle, and three more mortgage payments, and have

lost the game AFTER I had paid out the mortgage! The winning player didn't go through four droughts consecutively! Every player has a chance to win, even in the last circuit of thhe board.

THE PROGRAM

Really, Cattle Baron is not a complicated program - it is a series of GOSUBS triggered from two or three RND statemnets, and a few loops. The **arrays** are no longer than the maximum number of players, six, and the math is not difficult. Even I can work out what ten percent means!

It is strongly recommended that you load in "LITTLE-E" (MiCo May 1984) before you start, and type in lines 9998- before anything else. It might be well to add the following "scaffolding" lines while you are typing up too. They will enable you to RUN each individual section of the squares of the board and the Pot Luck routines as you finish each one.

```
8888 IF INKEY$=""THEN8888
8889 CLS:LIST-8887
```

Be careful with the spaces in the display lines - I have tried to be quite specific as to the number required in each line, and have used PRINT@ wherever this will save space. (memory, not line!)

Despite the fact that it takes more than 16K, it isn't hard to type in, and will probably give you as much fun as it did me! It took me several months to nut it out, but no more than 12 hours to compose and type in. It won't take you any more than 6. For heavens sake though, CSAVE it every screenful of lines, if you can. Finally, I would like some feedback on this game, if you would care to write to Kevin at Australian Rainbow, as I am currently working on a Sydney to Hobart Yacht race as a game of this ilk, and will no doubt, now that I have worked out how to do it, flog the routine to death with board games in the future if nobody stops me!

THE VARIABLES:

F$ Farm (property) Name
P$ Players name
S$ Stock Sale Menu Input

CA Cash held
FF Fire Fighting Equipment flag
BR Brucellosis Accreditation flag
HE Herd size
HH No. of Head of cattle required for Stock Sale
IS Stud Bull Insurance flag
LD Drought flag
MO Mortgage and Interest
MB Mortgage balance owing
MP No. of mortgage payments to be paid
MN Ammount of mortgage needed
SB Yer beaut Stud Bull marker
SL Sell marker for auction

THE LINES:

10- 100	Initial Graphics
110-295	Set variable, establish players
300-390	Roll the 10-spot and GOSUB
500-570	Change players,check winner, check cash for negative
700-790	Winner routine
800-840	Dispose of bankrupts
900-1260	Stock sale routine
1300-1370	Mortgage establishment
1900-1940	Drought clearance routine
2000-2080	Yearling sale routine
2055	Display cheque number
2100-2180	Audit Routine
2200-5200	Board squares
6000-7000	Pot Luck selection and GOSUB
7100-9050	Pot Luck selections - all 20 of them
9998-11020	Repetitive subroutines
12000	Cheeky remark!

The Listing:

```
5 REM:-CATTLE BARON, A BOARD
6 REM  GAME WRITTEN BY JOHN DAY
7 REM  MAR,1985. COPYRIGHT(C)
8 REM    1985. JOHN S DAY.
9 REM  ************************
10 CLS0:CLEAR500
20 FORX=0TO32:PRINT@X,"$":NEXT
30 FORX=63TO447STEP32:PRINT@X,"$
$":NEXT
40 FORX=448TO479:PRINT@X,"$";:NE
XT
45 PRINT@106,"■■■■■■■■■■■■";:REM
<SHIFT> R
50 PRINT@138,"CATTLE BARON";
60 PRINT@170,"▬▬▬▬▬▬▬▬▬▬▬▬";:REM
<SHIFT> X
80 PRINT@257,"A GAME FOR TWO TO
SIX PLAYERS";
90 GOSUB9998
100 PRINT@96,"$":PRINT@127,"$$":
PRINT@159,"$$":PRINT@191,"$$";:P
RINT@256,"$":PRINT@287,"$$";
110 PRINT@197,"";:INPUT"HOW MANY
 PLAYERS";N
120 IFN<2ORN>6THENPRINT@97,"OOPS
! TRY THAT AGAIN!";:GOTO110
130 CLS2:PRINT"AND THE NAME OF -
"
140 FORP=1TON
150 PRINT"PLAYER NO."P;:INPUTP$(
P)
160 NEXT
165 CLS:PRINT:PRINT"   RIGHT, PA
STORALISTS, YOUR       PROPERTIE
S ARE AS FOLLOWS       *********
*****************"
```

```
170 PRINT:FORP=1TON
180 ONPGOTO190,200,210,220,230,2
40
190 F$(P)="NULLA BORE":GOTO250
200 F$(P)="MOULE HILL":GOTO250
210 F$(P)="FLAT PLAINS":GOTO250
220 F$(P)="UNDULA DOWNS":GOTO250
230 F$(P)="DRY CREEK":GOTO250
240 F$(P)="BUFFALO BOG"
250 PRINTTAB(4)P$(P),F$(P)
260 NEXT
270 FORP=1TON:CA(P)=20000:HE(P)=
3000:PP(P)=1:NEXT
280 PRINT@384,"  I'LL KEEP TABS
ON EVERYTHING,   SO LET'S PLAY!
<PRESS A KEY>"
290 IFINKEY$=""THEN290
295 GOTO500
300 SOUND240,1
310 PRINT@33,"PICK A NUMBER -";
320 R=RND(10)
330 PRINT@65,R;
340 IFINKEY$=""THEN320
350 SOUND200,1
360 PP(P)=PP(P)+R
365 IFPP(P)>32THENPP(P)=PP(P)-32
:GOSUB1900:GOTO500
370 IFPP(P)>21THEN390
380 ONPP(P)GOSUB2000,2200,2300,2
400,2500,2600,2700,2800,2900,300
0,3100,3200,3300,3400,3500,3600,
3700,3800,3900,4000,4100
385 GOTO500
390 ONPP(P)-21GOSUB4200,4300,440
0,4500,4600,4700,4800,4900,5000,
5100,5200
500 P=P+1:IFP>NTHENP=1
510 CLS2:PRINTP$(P)",  OF   "F$(
P)
530 IFCA(P)<1THENGOSUB1300:GOTO3
00
550 IFHE(P)>9999ANDCA(P)>1ANDMB(
P)<1THEN700
560 IFHE(P)<0THENHE(P)=0
570 GOTO300
700 FORS=1TO10:SOUND240,1:NEXT
710 CLS2:PRINT@32,"            EN
D OF GAME"
720 PRINT@96," HERE ARE THE FINA
L FIGURES:-"
725 PRINT@448,P$(P)" OF "F$(P)"
WON!!"
730 PRINT@128,"":FORP=1TON
740 PRINTP$(P)" OF "F$(P)
750 PRINT"CASH - $"CA(P)". HERD"
HE(P)"."
770 NEXT
780 IFINKEY$=""THEN780
790 END
800 CLS4:PRINT@32," "P$(P)", YOU
'RE BANKRUPT!!"
810 PRINT@96," YOU ARE NOW OUT O
F THE GAME!!"
820 P$(P)="":F$(P)=""
830 N=N-1
840 GOSUB11000:GOTO500
900 CLS:PRINTTAB(9)"STOCK SALE":
PRINT:PRINT:PRINTP$(P)" OF "F$(P
):PRINT"CASH $"CA(P)"HERD"HE(P):
PRINTSB(P)"STUD BULLS"
910 PRINT"ARE YOU:-",,"BUYING  <
B>",,"SELLING <S>",,"PASSING <P>
"
1000 IFLD(P)=1THENCLS4:PRINT@43,
"STOCK SALE";:PRINT@224,"
 YOU'RE PASSING!!":SOUND1,20:RET
URN
1010 S$=INKEY$:IFS$=""THEN1010
1020 IFS$<>"S"ANDS$<>"B"ANDS$<>"
P"THENPRINT"OOPS! TRY THAT AGAIN
!":GOTO1010
1025 IFS$="P"THENRETURN
1030 IFS$="S"THENSL=1
1035 INPUT"HOW MANY HEAD OF CATT
LE";HH
1040 IFSL=1ANDHH>HE(P)THENSOUND1
,2:PRINT" YOU DON'T HAVE THAT MA
NY!":GOTO1035
1045 CLS2:PRINT@8,"WHAT AM I BID
?";
1049 REM:-ALL GRAPHICS IN THIS G
ROUP ARE YELLOW:1050=SHIFT WRE
1050 PRINT@385,"◣◠";
1059 REM:-SHIFT TXBXDQRBBR - RBB
BQQWRE
1060 PRINT@416,"┘┣┤┣┘▟▄▖";:PRI
NT@431,"▟▄▄▟┘◣◠";
1069 REM:-SHIFT BBBBBQQYGQQQQQQR
RBRRQXXBXX
1070 PRINT@448,"▄▄▄▄▄▄┘▙┘┘┘┘┘┘▖
▟▖▗┘┣┳┣┤";
1079 REM:-SHIFT BBBBBQBBBBRBBRQB
BBBBQRRBRRQRBBR
1080 PRINT@480,"▄▄▄▄▄┘▄▄▄▄▟▄▟┘
▄▄▄▄┘▖▟▖▗┘▟▄▖";
1090 FORX=1TO15
1100 Y=32*RND(9)+32:SP=30+RND(20
):BP=20+RND(20)
1110 IFSL=1THENPRINT@Y+RND(20),"
$"SP;:GOTO1130
1120 PRINT@Y+RND(20),"$"BP;
1130 SOUNDRND(15)*10,1
1140 NEXT
1150 PRINT@192,"",,"":PRINT@236,
"SOLD!!","  TO THE MAN WITH THE
HAT, FOR"
1160 IFSL=0THENPRINTTAB(8)"$"BP"
PER HEAD!",,"":GOTO1180
1170 PRINTTAB(8)"$"SP"PER HEAD!"
,,""
```

```
1180 IFSL=0THEN1220
1190 CA(P)=CA(P)+(SP*HH)-50:HE(P
)=HE(P)-HH
1200 GOTO1250
1220 CA(P)=CA(P)-(BP*HH)-50:HE(P
)=HE(P)+HH
1250 PRINT@384," "P$(P)"'S CASH
NOW $"CA(P)," AND A HERD OF"HE(P
)
1255 SL=0
1260 GOSUB9998:RETURN
1300 IFCA(P)<-50000THEN800
1305 PRINT@96," YOUR ACCOUNT IS
OVERDRAWN, AND  YOU WILL NEED A
MORTGAGE OF AT  LEAST $"ABS(CA(P
))"TO CONTINUE."
1310 PRINT" INTEREST IS A MERE 1
0% SIMPLE,  AND PAYMENTS ARE WIT
HDRAWM AT   THE ANNUAL AUDIT IN
TEN EASY    INSTALMENTS."
1320 INPUT" HOW MANY THOUSAND DO
LLARS WILL  YOU NEED.";NN
1340 IFNN>50THENPRINT" "F$(P)" I
SN'T WORTH THAT MUCH.  TRY A LOW
ER AMOUNT!!":GOTO1320
1350 MO(P)=MB(P)+NN*1100:MB(P)=M
O(P):MP(P)=10:CA(P)=CA(P)+(NN*10
00)
1355 IFMO(P)>55000THENPRINT" YOU
 TRIED TO BORROW TOO MUCH!":FORX
=1TO10:SOUND240,1:NEXT:GOTO800
1360 PRINT" YOUR CASH IS NOW $"C
A(P)
1370 GOSUB11000:CLS2:RETURN
1900 IFLD(P)=0THEN2000
1910 LD(P)=0
1920 CLS5:PRINT@33,"   YOU ARE N
OW OUT OF DROUGHT";
1930 PRINT@129," YOU MAY NOW TRY
 AND MAKE UP ";:PRINT@161,"
   LOST GROUND           ";
1940 GOSUB11000
2000 POKE49151,64:CLS3:PRINT" YE
ARLING SALE CHEQUE - "P$(P)
2010 PRINT@128,"***RURAL BANK OF
 QUEENSMANIA***"
2020 PRINT:PRINT" PAY......."P$(
P):PRINT@213,"..OR BEARER THE SU
M OF..........$";
2025 S=SB(P)/10
2030 IFS>0THENPRINTHE(P)*(S+.2)*
25:GOTO2040
2035 PRINTHE(P)*5
2040 PRINT:PRINT"                ....
.THOMAS MORPH."
2050 PRINT"              FOR ELDER
,MORPH&CO."
2055 PRINTASC(P$(P))+1638400")>#
   359:57-49151:64"
2060 IFSB(P)=0THEN2075
2070 CA(P)=CA(P)+(HE(P)*(S+.2)*2
5):CA(P)=INT(CA(P)):GOTO2080
2075 CA(P)=INT(CA(P)+(HE(P)*5))
2080 GOSUB11000:POKE49151,0:CLS
2100 IFMB(P)>1THENCA(P)=CA(P)-(M
O(P)/10):MB(P)=MB(P)-(MO(P)/10):
MP(P)=MP(P)-1
2110 PRINT@32,"ANNUAL AUDIT FOR
"F$(P),"              STATION"
2120 PRINT:PRINT"CASH HOLDINGS -
","$"CA(P)
2130 PRINT"HERD SIZE -"," "HE(P)
2140 PRINT"STUD BULLS -"," "SB(P
)
2145 IFMP(P)<1THENMO(P)=0
2150 PRINT:PRINT"MORTGAGE -","$"
MO(P)
2160 PRINT"BALANCE -","$"MB(P)
2170 IFMB(P)-CA(P)-(HE(P)*40)>1T
HEN800
2180 GOSUB11000:RETURN
2200 CLS3:PRINT@101,"WINDMILL MA
INTENANCE";:PRINT@160,"";
2210 PRINT" DUE TO YOUR NEGLECT
OF THEM IN  THE PAST,  SOME OF
YOUR MILLS  ARE IN NEED OF MAINT
ENANCE."
2220 PRINT:PRINT" THIS HAS NOW C
OST YOU $1000!"
2230 CA(P)=CA(P)-1000
2240 GOSUB11000:RETURN
2299 REM STOCK SALE
2300 GOSUB900:RETURN
2400 CLS2:PRINT@39,"DOG FENCE RE
PAIRS";
2410 PRINT@96," AS PART OF YOUR
PASTORAL LEASE   YOU ARE OBLIGED
 TO MAINTAIN    YOUR PART OF THE
 LONGEST FENCE"
2420 PRINT" IN THE WORLD, (APART
 FROM THE   GREAT WALL OF CHINA)
, AND THAT  HAS JUST COST YOU $1
500."
2430 CA(P)=CA(P)-1500
2440 GOSUB11000:RETURN
2500 CLS2:PRINT@43,"STUD BULL";
2505 IFSS(1)=1THENPRINT@237,"SOL
D";:GOTO2590
2510 PRINT@96," DUE TO A STROKE
OF GOOD LUCK,   YOU HAVE THE UNI
QUE OPTION TO   BUY THE MAGNIFIC
ENT STUD BULL"
2520 PRINT@229,CHR$(34)"MUSCA DO
MESTICA III"CHR$(34)"!";
2530 PRINT@288,"FOR THE MISERABL
E SUM OF $2000"
2540 PRINT" ARE YOU INTERESTED?
<Y> OR <N>"
2550 S$=INKEY$:IFS$=""THEN2550
2560 IFS$<>"Y"THEN2590
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2570 CA(P)=CA(P)-2000:SB(P)=SB(P
)+1
2575 SS(1)=1
2580 PRINT:PRINT" OK. HE'S YOURS
.  BUT WATCH OUT  FOR HIS TERRIB
LE TEMPER!!!!"
2590 GOSUB9999:RETURN
2600 CLS7:PRINT@37,"CATTLE TICK
TREATMENT";
2610 PRINT@96," THAT SCRUB BULL
YOU MISSED OUT   LAST YEAR HAS I
NFESTED YOUR    WHOLE HERD WITH
TICK, WHICH IS"
2620 PRINT" GOING TO COST YOU FI
FTY CENTS A HEAD TO ERADICATE. B
ETTER GET    HIM NEXT TIME YOU'RE
 OUT THERE,  "P$(P)"!"
2630 CA(P)=CA(P)-INT(HE(P)/2)
2640 GOSUB11000:RETURN
2700 CLS7:PRINT@44,"SHOW DAY";
2710 PRINT@96," YOU HAVE DECIDED
 TO GIVE IT     ALL A REST AND F
LY OVER TO MT.  MISERY FOR THE A
NNUAL SHOW,"
2720 PRINT" AND IF THE BEER IS N
ICE AND      COLD, WE MAY NOT SEE
 YOU FOR     A WEEK OR MORE!"
2730 PRINT@320,"         HAVE A G
OOD TIME!"
2750 GOSUB11000:RETURN
2799 REM STOCK SALE
2800 GOSUB900:RETURN
2810 GOSUB1000:RETURN
2900 CLS8:PRINT@44,"BUSHFIRE!";
2905 IFFF(P)=1THENPRINT@96," BUT
 YOU PUT IT OUT BEFORE YOU   LOS
T ANYTHING!":GOSUB11000:RETURN
2910 PRINT@96," LIGHTNING WITHOU
T RAIN IS THE   THING MOST FEARE
D IN THE        OUTBACK. IT STAR
TED THE WORST"
2920 PRINT" FIRE IN YOUR HISTORY
.IT KILLED  15% OF YOUR STOCK,AN
D DESTROYED MORE THAN TWENTY MIL
ES OF THE"
2930 PRINT" DOG FENCE. THIS WILL
 HAVE TO     BE REPLACED IMMEDIAT
ELY, OR      DINGOS WILL GET WHAT
 IS LEFT     OF YOUR STOCK."
2940 PRINT@416,"     THAT LOT COS
T YOU $3000."
2950 HE(P)=INT(HE(P)*.85):CA(P)=
CA(P)-3000
2960 GOSUB11000:RETURN
2999 REM:-POT LUCK
3000 GOSUB6000:RETURN
3100 CLS3:PRINT@42,"FLOOD DAMAGE
";
3110 PRINT@96," HEAVY RAINS IN Q
UEENSLAND HAVE  FLOODED YOUR SEA
SONAL CREEKS    AND WASHED AWAY
A GREAT DEAL "
3120 PRINT" OF VITAL ROADWAYS. I
T HAS COST  YOU $3,000 TO REPLAC
E IT ALL."
3130 PRINT@416," YOU LOST NO STO
CK, HOWEVER."
3140 CA(P)=CA(P)-3000
3150 GOSUB11000:RETURN
3199 REM STOCK SALE
3200 GOSUB900:RETURN
3300 CLS2:PRINT@43,"STUD BULL";
3305 IFSS(2)=1THENPRINT@237,"SOL
D";:GOTO3390
3310 PRINT@96," AND NOW THE OPPO
RTUNITY OF A    LIFETIME LAYS IT
SELF BEFORE     YOU - THE OPPORT
UNITY TO BE"
3320 PRINT"       THE PROUD OWNER
 OF"
3330 PRINT@256,"       WILTSHIRE
TAURUS II"
3340 PRINT@320," FOR THE BARGAIN
 PRICE OF $2000"
3350 PRINT" ARE YOU INTERESTED?
(Y) OR (N)"
3360 S$=INKEY$:IFS$=""THEN3360
3370 IFS$<>"Y"THEN3390
3380 CA(P)=CA(P)-2000:SB(P)=SB(P
)+1:SS(2)=1
3385 PRINT"OK. HE'S YOURS, BUT W
ATCH OUT   FOR THOSE SELF SHARPE
NING HORNS!"
3390 GOSUB9999:RETURN
3399 REM:-POT LUCK
3400 GOSUB6000:RETURN
3500 CLS6:PRINT@39,"ERADICATE RA
BBITS";
3510 PRINT@96," THEY'VE DONE IT
AGAIN. OVER IN  THE TEN-MILE PAD
DOCK, THEY ARE  A REAL INFESTATI
ON. GET RID OF"
3520 PRINT" THE LITTLE ROTTERS R
IGHT AWAY!":PRINT@320," AND THAT
 ONLY COST YOU $500."
3530 CA(P)=CA(P)-500
3540 GOSUB11000:RETURN
3599 REM STOCK SALE
3600 GOSUB900:RETURN
3700 CLS4:PRINT@41,"LOCAL DROUGH
T";
3710 PRINT@96," THIS IS THE THIR
D YEAR WITHOUT  RAIN, AND YOU MU
ST NOW MAKE A   DEVASTATING DECI
SION. YOU NOW"
3720 PRINT" HAVE TO TRUCK half Y
OUR STOCK   SOUTH, AT A COST OF
$5 A HEAD   TO AN OVERSUPPLIED M
ARKET. YOU"
3730 PRINT" ONLY REALIZED $30 A
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HEAD FOR    THEM, AND CANNOT RES
TOCK UNTIL  OUT OF THE DROUGHT."
3750 CA(P)=CA(P)+(INT(HE(P)/2)*2
5):HE(P)=INT(HE(P)/2):LD(P)=1
3760 GOSUB11000:RETURN
3799 REM:-POT LUCK
3800 GOSUB6000:RETURN
3899 REM STOCK SALE
3900 GOSUB900:RETURN
4000 CLS8:PRINT@41,"DRENCH CATTL
E";
4010 PRINT@96," EVERY YEAR THE S
AME - DRENCH    THE FLAMING COWS
. AND IT COSTS  50 CENTS A HEAD,
 AS WELL AS"
4020 PRINT" HAVING TO ROUND THEM
 UP,FEED    THEM IN THE YARDS, C
HASE THEM   BACK OUT AGAIN. AND
THE DUST!!"
4030 PRINT" SOMETIMES I WISH I W
AS A CITY   BLOKE OR A FLAMING S
AILOR OR    SOMETHING....."
4040 CA(P)=CA(P)-INT(HE(P)/2)
4050 GOSUB11000:RETURN
4100 CLS2:PRINT@43,"STUD BULL";
4105 IFSS(3)=1THENPRINT@237,"SOL
D";:GOTO4190
4110 PRINT@96," 'E MIGHT LOOK LI
KE A BIT OF A   SCRUBBER, BUT YO
U ORTA SEE 'IM  WORK! GOT 110% C
ALVING OUT OF"
4120 PRINT" 'IM THE OTHER SEASON
, AND SOLD  THE LOT FOR A PRETTY
 PENNY, I   CAN TELL YER."
4130 PRINT" BUT I'M PREPARED TO
LET 'IM GO  FER $2000 TER YOU. I
NTERESTED?   <Y> OR <N>"
4140 S$=INKEY$:IFS$=""THEN4140
4150 IFS$<>"Y"THEN4190
4160 CA(P)=CA(P)-2000:SB(P)=SB(P
)+1:SS(3)=1
4170 PRINT:PRINT"ORRITE! HE'S YO
URS, BUT WATCH   'IM - 'E LIKES
DONKEYS, TOO!"
4190 GOSUB9998:RETURN
4199 REM:-POT LUCK
4200 GOSUB6000:RETURN
4299 REM STOCK SALE
4300 GOSUB900:RETURN
4400 CLS3:PRINT@43,"LOCAL RAIN";
4410 PRINT@96," IT'S ALWAYS WELC
OME, AND MORE   SO IN THE OUTBAC
K. THE GRASS    GROWS HIGH AND T
HE CATTLE GET   FAT, AND BREED."
4420 PRINT" YOUR RAIN HAS INCREA
SED YOUR    STOCK BY 500 HEAD, I
NCLUDING    THOSE WHO SURVIVED T
HE DROUGHT."
4430 PRINT@352,"IF YOU WERE IN D
ROUGHT, YOU ARE NOT ANY MORE, "P
$(P)" !"
4440 HE(P)=HE(P)+500:LD(P)=0
4450 GOSUB11000:RETURN
4500 CLS6:PRINT@44,"BULL DIES";
4510 PRINT@96," DUE TO OVERWORK,
 AND A LESS     THAN ADEQUATE DI
ET, YOUR BEST   STUD BULL HAS DI
ED."
4520 PRINT:PRINT" VET'S FEES WER
E $50, BUT YOU    GOT THAT FOR T
HE CARCASE FROM   THE KNACKER, S
O YOU'RE SQUARE"
4525 IFIS(P)=1THENPRINT" THERE,
AND YOUR INSURANCE IS    PAID OU
T ALSO.":IS(P)=0:CA(P)=CA(P)+200
0:GOTO4540
4530 PRINT" THERE, BUT IF YOU DI
DN'T OWN    A STUD BULL, THE OWN
ER OF THE   BULL YOU BORROWED WA
NTS $2000"
4540 IFSB(P)<1THEN CA(P)=CA(P)-2
000:GOTO4560
4550 SB(P)=SB(P)-1
4560 GOSUB11000:RETURN
4599 REM STOCK SALE
4600 GOSUB900:RETURN
4699 REM:-POT LUCK
4700 GOSUB6000:RETURN
4800 CLS8:PRINT@39,"APPLY FERTIL
IZER";
4810 PRINT@96," YOUR PASTURES, W
HAT THERE IS    OF THEM IN THIS
COUNTRY, WON'T  SURVIVE WITHOUT
SOME HELP, SO"
4820 PRINT" SUPER SPREADING IS T
HE ORDER OF THE DAY, TO THE TUNE
 OF $500."
4830 PRINT@288,"      SO COUGH U
P, MISER!!"
4840 CA(P)=CA(P)-500
4850 GOSUB11000:RETURN
4900 CLS2:PRINT@43,"STUD BULL";
4905 IFSS(4)=1THENPRINT@237,"SOL
D";:GOTO4990
4910 PRINT@96," A THOROUGHLY GOO
D ANIMAL, SIR,  WELL WORTHY OF Y
OUR CONSIDER-   ATION, IF I MIGH
T SAY SO. I DO"
4920 PRINT" RECCOMMEND THAT YOU
TAKE A GOOD LOOK AT THE RATHER L
OW PRICE    BEING ASKED FOR IT A
S WELL.I'M"
4930 PRINT" SURE WE CAN COME TO
SOME SORT   OF ARRANGMENT WITH T
HE VENDOR.  SHALL WE OFFER $2000
 ON YOUR    BEHALF?  <Y> OR <N>
4940 S$=INKEY$:IFS$=""THEN4940
4950 IFS$<>"Y"THEN4990
4960 CA(P)=CA(P)-2000:SB(P)=SB(P
)+1:SS(4)=1
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4970 PRINT:PRINT" THANK YOU, SIR
. WE'LL PUT THE   FEE ON YOUR AC
COUNT."
4990 GOSUB9998:RETURN
5000 CLS8:PRINT@43,"ROUND-UP!";
5010 PRINT@96," THE BUSIEST TIME
 OF YEAR, AND   THE MOST EXCITIN
G. FINDING THE"
5020 PRINT" CATTLE IN THE SCRUB
- BRANDING  AND MARKING. DUST, N
OISE AND    EXCITEMENT EVERYWHER
E!"
5030 PRINT@288," AND YOU HAVE TO
 PAY FOR IT; AT  THE RATE OF A D
OLLAR A HEAD!"
5040 CA(P)=CA(P)-(HE*3)
5050 GOSUB11000:RETURN
5099 REM STOCK SALE
5100 GOSUB900:RETURN
5199 REM:-POT LUCK
5200 GOSUB6000:RETURN
6000 CLS
6010 FORX=1TO10
6020 PRINT@RND(12)*32+RND(20),"P
OT LUCK":SOUNDRND(20)*10,1:NEXT
6030 CLS7:PRINT@32,"   $$$$$$$$
POT LUCK $$$$$$$$"
6040 R=RND(20)
6050 IFR>10THEN6070
6060 ONRGOSUB7100,7200,7300,7400
,7500,7600,7700,7800,7900,8000
6065 GOTO7000
6070 ONR-10GOSUB8100,8200,8300,8
400,8500,8600,8700,8800,8900,900
0
7000 RETURN
7100 PRINT@96,"        SPRING DRI
ES UP"
7110 PRINT:PRINT" ONE OF YOUR SP
RINGS HAS DRIED   UP, AND YOU HA
VE LOST 20 HEAD   IN THE MUD."
7120 HE(P)=HE(P)-20
7130 GOSUB11000:RETURN
7200 PRINT@96,"             STRAY
BULL"
7210 PRINT:PRINT" MURPHY'S STUD
BULL HAS BEEN IN  YOUR 50-MILE P
ADDOCK FOR MORE   THAN A YEAR, A
ND YOU HAVE 50"
7220 PRINT" MORE CATTLE THAN YOU
 THOUGHT!!"
7230 HE(P)=HE(P)+50
7240 GOSUB11000:RETURN
7300 PRINT@96,"     FIRE FIGHTIN
G EQUIPMENT"
7310 PRINT:PRINT" YOU HAVE PURCH
ASED SOME FIRE    FIGHTING EQUIP
MENT WHICH WILL   ENABLE YOU TO
STOP THE GREAT"
7320 PRINT" DEVASTATION OF A BUS
HFIRE."
7330 PRINT" THIS REMAINS WITH YO
U FOR THE   WHOLE OF THE GAME."
7340 FF(P)=1:CA(P)=CA(P)-500
7350 PRINT@384," IT COST YOU $50
0, THOUGH!"
7360 GOSUB11000:RETURN
7400 PRINT@96,"             INCOME
 TAX"
7410 PRINT:PRINT" THE TAXATION O
FFICE HAS CAUGHT  UP WITH YOU AT
 LAST.  YOU OWE   10% OF YOUR CA
SH HOLDINGS, AND"
7420 PRINT" $1 PER HEAD OF CATTL
E, WHICH    HAS BEEN PAINLESSLY(
?) REMOVED  FROM YOUR COFFERS AS
 YOU READ   THIS AWFUL NOTE!"
7425 CA(P)=INT(CA(P)*.9)-HE(P)
7430 GOSUB11000:RETURN
7500 PRINT@96,"           PLANE C
RASH"
7510 PRINT:PRINT" YOU HAVE PRANG
ED YOUR CESSNA,   AND THE REPAIR
 BILLS FOR YOU    AND THE PLANE
HAVE SET YOU A"
7520 PRINT" COOL $2,000 BACK. BE
 MORE CARE- FUL IN FUTURE!"
7530 CA(P)=CA(P)-2000
7540 GOSUB11000:RETURN
7600 PRINT@96," YOU HAVE WON THE
 COVETED SOIL   CONSERVATION TRO
PHY, AND WILL   BENEFIT BY YOUR
ACTIONS AS"
7610 PRINT" MUCH AS THE $1,000 P
RIZE."
7620 CA(P)=CA(P)+1000
7630 GOSUB11000:RETURN
7700 PRINT@96," FROM SALE OF HIG
H QUALITY STUD  COWS TO THAT NEW
 COCKY OVER     ON THE FAR SIDE
OF THE DESERT"
7710 PRINT" YOU RECEIVE $600."
7720 CA(P)=CA(P)+600
7730 GOSUB11000:RETURN
7800 PRINT@96," FOR AGISTING STO
CK FROM THE     TERRITORY DURING
 THEIR DROUGHT  YOU RECEIVE $600
."
7810 CA(P)=CA(P)+600
7820 GOSUB11000:RETURN
7900 PRINT@96," GOOD SPRING RAIN
S HAVE MADE THE YEAR FLY!":PRINT
"MOVE ON TO "CHR$(34)"YEARLING S
ALE"CHR$(34)"!"
7910 PP(P)=1
7920 GOSUB11000:GOSUB1900:RETURN
8000 PRINT@96," YOUR STOCKYARDS
ARE A DISGRACE  AND MUST BE REPL
ACED BEFORE     NEXT MUSTER - AN
D IF YOU HAVE"
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8010 PRINT" MORE THAN 3000 CATTL
E, THEY      WILL COST YOU $2000.
 IF NOT,     THEN YOU ONLY NEED T
O SPEND      $1000."
8030 IFHE(P)>3000THENCA(P)=CA(P)
-2000:GOTO8050
8040 CA(P)=CA(P)-1000
8050 GOSUB11000:RETURN
8100 PRINT@96," DUE TO GOOD MANA
GEMENT, YOUR     AVERAGE CARCASE
WEIGHT HAS       INCREASED, AND Y
OU HAVE JUST"
8110 PRINT" RECEIVED AN UNEXPECT
ED BONUS     CHEQUE FOR $1,000!"
8120 CA(P)=CA(P)+1000
8130 GOSUB11000:RETURN
8200 PRINT@96," THIS IS AN INSUR
ANCE POLICY      FOR ONE STUD BUL
L. IF YOUR BULL TURNS UP HIS TOE
S, YOU WILL"
8210 PRINT" RECEIVE $2000 COMPEN
SATION FROM THE BEAUT INSURANCE
COMPANY."
8220 IS(P)=1
8230 GOSUB11000:RETURN
8300 PRINT@96," THERE IS A SPECI
AL STOCK SALE    ON TODAY JUST DO
WN THE ROAD.     HOP ON DOWN AND
SEE WHAT YOU     CAN PICK UP."
8310 GOSUB11000
8320 PP(P)=31:GOSUB900:RETURN
8400 PRINT@96,"              INCOME
 TAX"
8410 PRINT:PRINT" THE TAXATION O
FFICE HAS CAUGHT  UP WITH YOU AT
 LAST.  YOU OWE   10% OF YOUR CA
SH HOLDINGS, AND"
8420 PRINT" $1 PER HEAD OF CATTL
E, WHICH     HAS BEEN PAINLESSLY(
?) REMOVED   FROM YOUR COFFERS AS
 YOU READ    THIS AWFUL NOTE!"
8430 GOSUB11000:RETURN
8500 PRINT@96," BRUCELLOSIS HAS
INFECTED YOUR    HERD, AND YOU HA
VE LOST MOST     OF LAST YEAR'S C
ALVES. YOUR"
8510 PRINT" HERD HAS BEEN QUITE
LITERALLY    DECIMATED, UNLESS YO
U HAVE A     BRUCELLOSIS ACCREDIT
ATION. IN"
8520 PRINT" THAT CASE,YOU ARE NO
T AFFECTED"
8530 IFBR(P)=1THEN8550
8540 HE(P)=INT(HE(P)*.9)
8550 GOSUB11000:RETURN
8600 PRINT@96," BRUCELLOSIS ACCR
EDITATION HAS    FINALLY BEEN GIV
EN TO YOUR       HERD, WHICH MAKE
S ALL THE WORK"
8610 PRINT" YOU HAVE DONE IN THE
 PAST TEN    YEARS WORTH WHILE."
8620 PRINT" YOU KEEP THIS PROTEC
TION FOR     THE WHOLE OF THE GAM
E."
8630 BR(P)=1
8640 GOSUB11000:RETURN
8700 PRINT@96," YOUR PASTORAL LE
ASE HAS JUST     HAD TO BE RENEWE
D, AND THE       STAMP DUTY ON TH
E DOCUMENT HAS"
8710 PRINT" COST YOU  $500.","  B
UT YOUR TENURE IS SECURE FOR   A
NOTHER 40  YEARS!"
8720 CA(P)=CA(P)-500
8730 GOSUB11000:RETURN
8800 PRINT@96," DUE TO DESTRUCTI
ON OF SOME OF    YOUR FENCING BY
THAT MINING      COMPANY, YOU REC
EIVE $800 IN     COMPENSATION."
8810 CA(P)=CA(P)+800
8820 GOSUB11000:RETURN
8900 PRINT@96,"              GENERAL
DROUGHT"
8910 PRINT" DESPITE MANY WARNING
S, YOU HAVE DESECRATED A SACRED
SITE WITH A DUNNY, WHICH HAS IND
UCED THE"
8920 PRINT" HARANGA TRIBE TO PLU
NGE  THE     WHOLE AREA INTO DROU
GHT. EVERY   PLAYER IS NOW IN DRO
UGHT."
8925 PRINT@352," AREN'T YOU THE
POPULAR ONE?!"
8930 FORX=1TON
8940 HE(X)=INT(HE(X)/2):CA(X)=CA
(X)+(HE(X)*25):LD(X)=1
8950 NEXT
8960 GOSUB11000:RETURN
9000 PRINT@96,"              GENERAL
 RAIN"
9010 PRINT" DUE TO YOUR INFLUENC
E WITH THE   HARANGA TRIBE, AND T
HE DECAY     OF CYCLONE "CHR$(34)
"HUEY"CHR$(34)", THERE HAS"
9020 PRINT" BEEN GOOD GENERAL RA
IN IN ALL    AREAS. NO PLAYER IS
NOW IN       DROUGHT.  GOOD WORK,
 "P$(P)"!"
9030 FORX=1TON
9040 LD(X)=0:NEXT
9050 GOSUB11000:RETURN
9998 FORD=1TO2000:NEXT
9999 FORD=1TO2000:NEXT:SOUND240,
1
10000 RETURN
11000 PRINT@448,"    PRESS A KEY
 TO CONTINUE"
11010 IFINKEY$=""THEN11010
11020 RETURN
12000 REM:-THAT'S ALL, FOLKS!
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soft gold

softgold is small this month because we had a content problem. The CoCo section could have been filled twice - that was partly fortunate because the MiCo people were not forth coming with their usual array of little programs! And of course until people have the T 1000, it is a bit hard to go too far with this section, otherwise we'll be too far ahead by the time people get around to buying their T 1000.

The T 1000 is due in your Tandy Computer Centre this month.

The question I am constantly asked is "who should consider buying the T 1000 and will it be a hobbist's computer?"

Whilst I can't answer that fully yet, (the computer that was promised for last month still isn't here!), it appears to me that the major reason to change lies with the T 1000's high K memory. If you have a use for 512K of memory, need to integrate your home computing with what is happening at work, or some aspect of your current computer is of sufficient annoyance to you that you can justify spending the relatively large sum of money to upgrade, then the T1000 is for you.

There are a number of good reasons not to buy a T 1000. They include:

1. Relative cost.
2. To get more memory just for the sake of having it - apart from anything else, a 512 K upgrade is mooted for CoCo, so you don't have to change computers just to get that!

Notice I didn't add relative cost of the Taiwanese copies, because you shouldn't be considering these unless you have the ability to repair them, should ANYTHING go wrong.

So it comes back to usage and your environment. In the coming months we expect to review some very nice games, some clever business software, and see the computer performing in a diverse set of circumstances. Overseas reports suggest that the T 1000 is an excellent investment, I have every belief that it is.

The T 200 was launched in the US recently, and it takes users of portable computers a little further too. John Pollard wrote an article for you on the innovation, and we recently received further information from our sources in the US. So the following article is a compilation of John's article and information received!

The TANDY 200.

by Dr John Pollard

The latest Tandy computer, the T 200, is about the same size as the older T 100 but, if you'll pardon the wordage, a little thicker!

The three most immediately noticable features of the computer are the screen which pops up when in use and lays flat when being transported; the additional memory - up to 72K (in three banks of 24K); and the cursor keys, which are now placed logically in a bank to the right of the computer's keyboard.

In addition to the ROM programs in the T 100, the T 200 has a modified version of Microsoft's Multiplan spreadsheet. This gives a 63 X 99 spreadsheet - quite enough for portable computing!

The other programs in ROM have been upgraded with additions to each to give you greater control over them. It appears that most use the T 100 for word processing for communication to another computer, so it will be of interest to those people to learn that the screen now has 16 lines of 40 characters, and you can select left and top margins, page size, and lines per page. You can also indicate whether you are dealing with continuous or cut pages, and the T 200 also supports string searching.

The bad news is that only Basic programs from the T 100 will run in the T 200 as all the ROM calls are different, and there is a new Bar Code reading proceedure. Tandy has not at this point, overcome the differences between the US system, and the Australian phone systems, so transmission of data will still present difficulties in Australia.

Pricing is another problem. The US price for this computer is very high. If you add the current exchange rate to the price, plus an allowance for the huge salaries Tandy pays its Australian employees, we can get to $1800 very quickly. It might depend on what tricks Ken Allen can come up with!

COCOCONNECTION

(I prepared the following article for "Australian Model Railway Magazine", but thought that you might also appreciate reading it! G.)

The CoCoConnection is an "IO" board, which connects to a Tandy Color Computer, (affectionately known by it's friends as a 'CoCo').

The board acts as an interface between the computer, and the outside world. It could be used to control burglar alarms, solar houses, and robots. It was designed however, with model railways in mind, as these probably represent applications of the greatest complexity.

The CoCoConnection will work in model railway environments where wiring has been carried out in the traditional form, or where the more modern systems, such as Zero One, are employed.

CoCoConnection consists of a box which is pluged into the side of the CoCo, a program is then LOADed into the computer from cassette (supplied), or disk. This program provides testing functions, and a 'skeleton' around which you build a program which meets your own needs.

To do this requires some knowledge of the BASIC computer language. I feel that one of the advantages in using the Tandy computer will come to light here, in that with the excellent documentation provided, and the back up available through us, this hurdle will be overcome with the least difficulty.

Do not be afraid of BASIC or of computers. These are new tools which are certainly going to be an increasing and very exciting part of our model railway scene. A computer can add an exciting dimension to the time you spend with your railway.

The CoCoConnection is a tool for individuals, it would never be possible to provide a program, except in the most general terms, which would meet the needs of all users.

The board has 16 inputs, and 16 outputs. As the programmer, you choose how the inputs will control what the outputs do.

Simply illustrated, input 1 could be a track indicator - say a reed switch, which Train 1 may have just tripped. The CoCoConnection registers the passing of Train 1, and if you ask the computer to do so, it will switch output 1 in response, which for the purpose of our demonstration, may be the brake control for Train 2.

The CoCo has no trouble checking for each input many times a second - it is very fast, and therefore, it is possible to control a big layout.

The CoCoConnection's greatest use with model railways, will be in taking the part of a second controller, when one wishes to run trains, but really needs a partner to "keep 'em rolling"!

It is envisaged that CoCo could maintain operation on at least one main line, probably two, if the basic requirements are not excessively complex, whilst the operator could interplay a train under his personal control. CoCo would control signals and points; the operator would indicate to CoCo his intended move, and CoCo would switch points, signals and track circuits accordingly.

If you happen to be a mad Gomez type, (heaven forbid), and you have a site where crashes are known to occur, you could even integrate the CoCoConnection's ability to operate a robot, and use an electro-mechanical arm to lift the train back onto the track!

In fact, if you think about it, the container cranes offered by a couple of manufacturers, are exactly that - electro-mechanical 'hands', and these lend themselves to automatic operation very nicely.

We plan to have our first demonstration layout operating as a shunting layout, with a container crane as the focal point.

Two Locos will normally be available to share the job of shunting at (computer generated) random.

The locos will have to weave between sidings of cars, the locations of which, the computer will record in it's memory. On the computer's screen, the computer will be describing the task it is currently undertaking.

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