The Aussie Mag for Amstrad owners

THE AMSTRAD USER

Issue No. 24 $3.75 January [illegible]

- *Follow-up of the major Software Guide for PCW owners + MasterMind program + a look at GEM on the PC*
- *Reviews on Rainbird's Art Studio and Advanced Music System + four more pages of Cheats*
- *Three type-ins for CPCs + User Groups + heaps more*

FOR THE NOVICE & EXPERIENCED USER

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THE AMSTRAD USER

Serious Side

Issue No. 24
January 1987

For Tape subscribers, the programs can be found at the following approximate positions:
Side 1: **MENU464** - 10, **MENU6128** - 23, **LOCO2** - 35, **ADENCODE** - 50 Side 2: **PERSONAL** - `10 (8 blocks)

All enquiries and contacts concerning this Publication should be made in the first instance by writing to The Amstrad User, Suite 1, 245 Springvale Road, Glen Waverley, Victoria 3150, Australia. Urgent matters can be phoned through on (03) 233 9661.
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Please note that whilst every effort is made to ensure the accuracy of all features and listings herein, we cannot accept any liability whatsoever for any mistakes or misprints.
Contributions are welcome from readers or other interested parties. In most circumstances the following payments will apply to published material: Letters $5.00, Cartoon $5.00 and a rate of $10.00 per page for programs, articles etc. Contributions will not be returned unless specifically requested coupled with a suitable stamped and return addressed padded bag (for tapes or discs).

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THE AMSTRAD USER

G'day,

As you read this issue of The Amstrad User, my family and I will be basking in the sunshine (I hope!) somewhere in the northern region of Victoria, making up for the lost weekends and late nights which these days always seem to be a necessary part of magazine publishing.

We will be entering our third year next month and looking back over the first two, your magazine has gone from strength to strength. That's not just my own assessment, but is echoed in the many letters regularly received in the office. Not many of them get published, but the words of encouragement and advice are always welcomed and appreciated.

Unlike the early days, there is now a steady stream of CPC program contributions arriving, yet as I have said before, it's never enough! More general articles hints wouldn't go amiss either. PCW owners on the other hand are too quiet (perhaps shy?) and I have yet to discover the means to unlock that source. Any suggestions?

The few people who still think that Amstrad computers were a "flash in the pan" can surely be left in no doubt that, with profits increasing by 273% to $165 million (£75 million), Alan Sugar knows which side of his bread is buttered. 350,000 PCWs and 650,000 CPCs were sold world wide to the end of June 1986 - 57% of these were exported by his UK company. The new PC1512 has already attracted well over 100,000 orders within the first two months of release!

The popularity of your magazine has followed a similar path, monthly sales having nearly tripled compared with January 1986. The Amstrad User has unquestionably the largest circulation of any other Amstrad magazine, imported or otherwise, even though it lacks the colourful, showy, multi-ad style of it's "competitors" - strange, but true.

1987 promises to be an even better year !

See you next month,

Ed

Don't forget: we are back in the office on 12th January 1987.

Letters

All correspondence published in this section earns a payment of five dollars.
Letters should be addressed to The Editor, The Amstrad User, Suite 1, 245 Springvale Road, Glen Waverley, Victoria 3150.
We regret that we cannot enter into any personal correspondence.

Congratulations! Congratulations! At last an Amstrad Magazine with articles and programs I can understand. I "use" an 8512. By the time the two handbooks were studied my poor brain was saturated with names and jargon, with a disappointing amount of practical knowhow.

The November edition of the Amstrad User is EXCELLENT. The "Wordcounter" is not only useful, but demonstrates the uses of some commands and notations. It was a very useful exercise to deduce that the omission of a single 's' made the program inoperative.

Thank you Mr. Goldman for your "Super" program, especially the section, "How it Works". You have helped me a great deal to understand what is generated by program instructions, and why.

Would it be possible to have a series of articles similar to "CP/M Revisited", but, written for 8256 and 8512 users?

H. Ball, Herons Creek, N.S.W

Thank you for your kind words, and congratulate yourself for finding our 'deliberate mistake' in the Wordcounter program. OK, perhaps it wasn't deliberate, but for those who are still scratching their heads, the missing 's' occurred in line 110. More clues? It's after the THEN command. You want it exactly? The line should read IF c$=" " AND inwd% THEN wds%=wds%+1: inwd%=0.

In reply to R. Baxter's letter in the November issue, in which he was having difficulty in finishing the game Fu Kung in Las Vegas.

In the first level, as in all the others, you will see an arrow pointing in a direction, all you need to do is safely walk through it to progress.

I have also had trouble at finishing level no. 9. It seems impossible, any clues?

A. Craddock, Narrabri, N.S.W

I have recently purchased an Amstrad PCW 8512. I would like to ask if any reader or user group has configured 'modem 7' to run on this machine with the Amstrad interface unit. Alternatively, where can I obtain details of the 'calls' which control the interface parameters from within a program so that I can configure it myself.

I am Treasurer of the 1st Acondobolin Scout Group and am currently writing a program to manage the books on the PCW. If anyone has already done it, or is interested in the results, I would like to hear from them.

A.G. Palmer, 17 McGregor Street, Acondobolin, N.S.W

I would appreciate some advice from any of our readers about solving "The Never-ending Story" adventure - unfortunately for me it ends all to quickly!

It's a promising game but a little frustrating to find I can't progress past "The Swamps of Sadness" without becoming permanently "Bogged-down"!

Also, could you please tell me what kind of articles you are seeking for submission to this magazine, and if general users and readers such as I would be eligible to contribute?

K. Rigby, Para-Hills, S.A

MAILBAG

A majority of the articles and programs published in The Amstrad User are from "general users and readers" and are always welcome. We don't stipulate what should be submitted, but as a guide it should be something you feel would be of interest to other users (and that goes for PCW owners as well) and which has not been covered recently, say, over the last twelve months. Reviews, specialist articles and programs are the norm, but we are open to any other ideas.

The only thing we do stipulate is that, in respect of program submissions, the software is fully documented and tested and sent to us on a tape or disc with accompanying description and running instructions. If you need the tape or disc back, also enclose a stamped and addressed padded bag. You should also note that shorter programs are treated more favourably. Be warned though, it may be quite a few months before you see your work in print (if it managed to pass the two or three checking processes). There are various Editorial reasons for this, but mainly because your magazine is normally produced nearly two months before the publication date.

For the benefit of those who have already submitted programs, at the present time the following are sitting in the "possibles" file:

Adventure.Bas	*D. Liebke*
Menu Maker	*A. Trost*
SA Jubilee	*R. Walker*
Alien Invaders	*Messrs Broad/Wise*
Battleship	*Steven Hall*
Reserved RAM	*I. Wallace*
Flash Cards	*P. Doutch*
464 Lotto	*B. Shultz*
Cross Word	*L. Heron*
Pedigree Program	*L. Cherry*
Trigonometry	*P. Muscat*
Math Help	*T. Barberi*
Clock.Bas	*I. Abbott*
Telad Database	*G. Smith*
Home Inventory	*J. Murphy*
Mini W/P	*M. Ogden*
Therapy Adventure	*D. Rich*
Mini W/P	*W. Pynt*
Key Expander	*S. Miles*
Tape/Disc reader	*R. Rayner*
Pengo/Battleships	*R. Kippenberger*
Storybook	*C. Greaves*
Wolfpack etc	*R. Lundquest*
Horoscope etc.	*D. Rich*

I have a rather unusual request for information. I need to know how to wreck the formatting on a formatted disc so as it won't hold any program saved to it or give a catalogue.

I have a beginners' computer class during the week at my school and some are interested in how to work with discs rather than tapes. Obviously I start with how discs are set out and how formatting aids the orderly position of data onto the discs.

As part of the lecture I try to save and ask for a catalogue on an unformatted disc, then I demonstrate the formatting procedure and save and catalogue the disc with success.

Now that all my discs are formatted I cannot show the consequences of using a disc straight out of the plastic which I think is important.

If a beginner can't see what can go wrong then he can't fix a problem when it occurs. Any unformatting advice you can give which doesn't include the corruption of the disc medium would be greatly appreciated.

A. Trost, Gracemere, QLD

When I get the Amstrad User one of the first things I look at is "THE AMSTRAD USER HALL OF FAME.'

I like reading this to see how high people can score on games and then trying to beat them if I have the game. But because of this new column you have put in THE AMSTRAD USER called "CHEAT MODE", this is going to wreck the HALL OF FAME. I don't mind things shown in CHEAT MODE that tell you how to get past a certain place in a game or a map of a game, but things like small programs that allow you to have never-ending lives will wreck the HALL OF FAME. As I am very concerned about this fact I would like to know if you are going to do something about printing those programs that give you never-ending lives.

As I said I don't mind maps of games so if anyone has the map of JET SET WILLY I would like it if it could be printed in one of the next AMSTRAD USERS.

J.McNeill, Sale, VIC

This is a valid point, and to be honest, we think that some of the 'achievements' we were getting even before Cheat Mode were not! Lack of space has prevented us from printing the latest list, and unless everyone plays fair there is a danger of it being removed completely.

I became the happy owner of an Amstrad PCW 8256 about three months ago. I have now progressed in its use to a point where I can write letters to you such as this.

However, I must admit that I have sinned against the first commandment insofar as I have not really mastered all the sections of the manual even now.

I have read it and re-read it but, of course, that is not mastering it. The manual has been laid out in a way that makes it practically impossible, for the newcomer, to grasp the interaction of the fundamentals even after a number of readings.

It seems to me that the erudite writer of the manual set out, playfully, to make the basic logic of the machine and the LocoScript program as inaccessible as the clues in one of those adventure games you write about. The fact is, of course, the logic of neither is clearly stated anywhere in the manual.

It should be stated that I boggle over details that to anybody else are probably crystal clear.

The following are a few of the basic things I do not understand - there are more. The 8256 is possessed of 256K of what? Is that what can be stored in the machine or is that what a disc holds? If it's the machine why do I get funny messages when there are only 179K of memory used? How is it that if Drive A is 'full' as it says it is, Drive M has any capacity at all at that point? Or does it?

I think this type of information could have been given as the first section of the manual. I guess what I need to know is the basic logic of the machine, disc storage, LocoScript and their inter-relationship with one another.

As I see it, using the program when

you get the hang of it is easy, provided you take care, even though you do not understand the basic mysteries. The fact that it is not easy to start with is due solely to the way the manual has been written.

The manual does not, for instance, set out to give a general overview of LocoScript functions and having given you the framework then tell you where to get the relevant detailed data to improve your education.

Instead, with a minor concession about the first twenty minutes you are launched on a seemingly endless string of step by step by step instructions describing individual facilities in such detail, that at the end of the reading your mind is full and you do not remember what you have read or where you read it. A bit like the previous sentence you can't see the wood for the trees. Some of this is turned up-side-down and chewed over again in the CP/M Plus section.

I suppose, truth to tell, that the manual was written with a view to its use as a text book in conjunction with a training course. For some reason the Australian supplier seems to believe that the manual alone will be sufficient. If that is so, then I would have expected that a locally written supplement setting out explanations such as those I have suggested would have been provided with the machine. In the absence of a training course or the supplement proposed above and with the manual so very badly organised for the beginner you can take an inordinate, and I suggest unnecessary, length of time learning to use with modest competence what is obviously a marvellous package.

D.S. Kay, Malvern, VIC

You may well find that a copy of "Mastering the Amstrad PCW 8256/8512" by John Hughes will answer most of your questions. We carried a review on the book last month (Page 44) and, surprise, surprise, you can purchase it through this magazine for $29.50 if you are a subscriber, or $32.25 if not (plus , of course, the postage).

For those who are new to computing and confused by all the strange jargon, the list below should be very helpful:-

Byte	What the Vyper does
Debug	De ting killed wid de Mortein
Array	Unit measurement of sunshine
Binary tree	for binary dogs
Emulate	a flightless non-punctual Australian bird
VDU	Socially diseased female sheep
Remote VDU	West Australian socially diseased sheep
RAM	the U's friend
Data source	Flavours microfiche and microchips
Supasort	Racquel Welch
External sort	Mistress
Exchange sort	End of an affair
Operating system	What you get after eating 1 kg of prunes
Kilobaud	1000 risque stories
Memory	...er,..um...
Program	In favour of metric weights
Macro	Scottish oarsman.
sauce	I. Wallace

(Reproduced from the September issue of the Townsville Amstrad User Group News Letter.)

Bulletin Board at Burwood

Max Elliott has been in the office equipment industry for over 25 years, starting at Olivetti prior to decimalisation selling and programming mechanical accounting machines and ending up the accounting machine manager. He has personally programmed square hole punch paper tape equipment as well as selling the early electronic calculators when they were bigger than the current computers.

Max now runs Viatel Computers in Burwood, Vic., where there is currently in stock over 250 x 8" double sided double density diskettes of public domain software. It would be about 160 megabytes give or take 10 or so. This is not the only Public domain software that they carry, but all of the abovementioned is suitable for the Amstrad 6128. They also carry PC software and can supply many programs including educational. The volumes of software originated from the "C", "CPM", and "SIG/M" User groups in America. A printed catalogue of all volumes is available to look at from their premises in Burwood. Max also stocks Amstrad products as well as offering repairs on all types of personal computers.

The company runs an RBBS and is interested in organising a separate section of their remote Bulletin Board specifically for the Amstrad users should there be enough interest. It is capable of running up to 9 users at the same time, but as each phone line requires an automatic Modem as well as a separate phone line, the costs are quite high, not to mention the back-up support provided by: monitoring uploaded new files for downloading, checking files that have been uploaded in the chance they are copywrite, checking messages for any dirty words, backing up the complete system once a week and the list goes on.

The RBBS is online 24 hours per day and operates at 300/300 bps as well as 1200/1200 bps. The 1200/75 is not supported but this speed is being worked on and will be operational.

The current RBBS is a PC compatible running at 10 Megs and has fitted a 30 Meg voice coil hard disc drive, twin 5" drives. From the 30 megs available 16 megabytes is taken up by the Bulletin Boards operating system. This leaves about 10 megabytes free for downloadable public domain software. An Amstrad BBS would give all Amstrad users with modems the means to communicate to one-another via a comprehensive messaging service. Also provided by the system is a "bulletin" section for any comments when evaluating a specific product. This enables all users of the system the benefit of an opinion or knowledge from an actual user.

The log on phone number is 288-3599 (visitors are welcome), but they do require a registration fee to cover some expenses, as well as a registration form duly signed. This can can be printed from the screen.Apart from being known as Viatel Computers, they also trade under the name ABE Computers . The RBBS comes up as ABE (as opposed to Viatel) as this would be quite confusing if they ran it in competition with Telecom.

The company is situated at 24 Burwood Highway, (near Warrigal Road), Burwood, Victoria 3125 and is open normal times, but usually much later. For further information, you can write to the above address or ring during normal hours (03) 288 2144 or 288 9067.

NEWS RELEASE

LED SIGNS GET LARGER, SMARTER AND TALK!

LED signs have the capability of providing public messages to large Audiences. They have traditionally been used in Financial Institutions, Retail Stores, Process Control, Special Functions, Exhibitions and in various other applications to advertise products and services or alert people to some other event of interest.

Setting up the display has been made very simple, the operator needing only to type the display characters required together with the display special features (scroll, roll etc) into an ASCII keyboard and the display will then proceed to advertise or inform automatically until a change is required.

A new range of signs has been released in Australia capable of displaying 16 to 60 characters plus graphics. Sizes vary from 50 by 11.5cm to 152 by 23cm. Local memory varies from 2-16K. Not only is local set-up available from the conventional keyboard, modem and RS232C models allow remote control of the display from a central control point. This will allow an organization to have as many signs as required at various locations and control them from their central facility. PC users can drive the display from their serial port.

Ex-tax prices range from $483 for a 10 character display sign to $2600 for a 16/60 character double height display sign with serial interface.

A locally manufactured intelligent controller capable of natural human voice reproduction is available to back-up the visual display.

Further information is available from the Agents; Zenology Pty Ltd on (03) 233 5764.

Cheat Mode

Some more Tips, Pokes and Game busting ploys to improve your scores. Don't be shy - send yours in to share with all of us.

POKE METHODS

This is the section where we explain how to input the majority of *Cheat Mode* pokes. There are two different methods - the instructions for each poke tell you which one to use. If you have a 664 or 6128, you'll have to type | tape before using either.

Method 1: Make sure that you've rewound the game tape to the beginning. Now type in the poke listing then type RUN and press the 'Enter' key. (Don't use the key marked 'CTRL' or 'CONTROL', that will stop the poke from working.) Press the PLAY key on the cassette deck, and hit any key on the main keyboard - the space bar will do nicely. The tape should now start to play through in the normal way.

Method 2: For this method, you have to skip the first bit of the game program. To do that, start by rewinding the game tape to the beginning. Now type in the listing. Then type CAT, and press the 'Enter' key. Start the tape by pressing PLAY and hitting a key, and then watch the screen.

After a little while you'll get the message "Found SOMETHING block 1". It doesn't matter what the SOMETHING actually is - this will vary from one game to another. If the instructions with the poke just tell you to skip the first block you should stop the tape here. If the instructions tell you to skip several things, stop the tape when the "Found' message comes up for the last thing you're trying to skip.

Once you've stopped the tape press the ESC key, type RUN, and press the 'Enter' key. Now press PLAY on the tape deck, and hit a key on the keyboard to start the tape running.

POWERPLAY

This poke allows you to examine the prepared question files on the Arcana game. Just type in the listing, rewind the tapes on side 2 and run the listing. Once the compiler has loaded, you can load one of the quiz files provided and examine it.

```
10 MEMORY &91FF 20 LOAD "compiler"
30 POKE &9289, &BF
40 CALL &9200
```

KILLAPEDE

This Method 1 poke gives you an awful lot of lives to blast away those insects.

```
10 MEMORY &2000:MODE 1:BORDER 26
20 INK 0,0:INK 1,26:INK 2,24:INK 3,6,
30 CLS:LOAD"!screen",&C000
40 LOAD"!killdisc.obj"
50 BORDER 1:INK 0,1:INK 1,1: INK 2,1:INK 3,1
60 LOAD"!kill.say",&C000
70 POKE &4A14,0
80 CALL &4963
```

THRUST

This nifty poke is entered using Method 1 and gives you an extra new control over your ship. When in flight you can hit the Ctrl key and it stops the ship dead. It doesn't stop the pod if you're carrying it, but controlling it is much easier once you've stopped.

```
10   DATA 32,46,32,3a,32,32,fe,56,28,02,14
20   DATA e9,e5,21,3a,01,36,c3,23,36,26,23
30   DATA 36,be,21,76,36,36,32,23,36,46,23
40   DATA 36,32,e1,14,e9,21,65,01,36,c3,23
50   DATA 36,37,23,36,be,3a,37,bd,c3,3D,01
60   DATA 21,bd,3c,36,c3,23,36,45,23,36,be
70   DATA c3,1e,32,cd,23,3d,e5,21,8c,4a,36
80   DATA c3,23,36,5c,23,36,be,21,5b,73,36
90   DATA 00,e1,fb,e9,c2,15,4c,3e,17,cd,91
100  DATA 41,c4,49,4a,c3,8f,4a,21,76,36,36
110  DATA c3,23,36,00,23,36,be,c3,00,36
120  y=B:MEMORY &2000
130  FOR x=&BE00 TO &BE77:READ a$
140  a=VAL("&"+a$):y=y+a
150  POKE x,a:NEXT
160  IF y()&29F2 THEN PRINT "Data error":END
170  LOAD "thrust!"
180  CALL &BE6A
```

ALIEN HIGHWAY

Another cracker which de-electrifies the road edge in the Vortex game to make manoeuvering a lot easier. It's entered using Method 1.

```
10   DATA 21,63,11,22,a1,11,c3,40,99,21,e2
20   DATA 39,36,c3,23,36,5f,23,36,be,21,40
30   DATA 00,e5,21,00,bb,e5,c3,b7,39,e5,21
40   DATA 75,02,36,85,e1,f1,f3,c9
50   FOR x=&BE40 TO &BE68
```

```
60   READ a$
70   POKE x,VL("&"+a$
80   NEXT
90   MEMORY &2000
100  LOAD"alien highway"
116  CALL &BE49
```

HEAVY ON THE MAGICK

Some tips for anyone stuck in Gargoyle's animated adventure on how to deal with all those doors.

Doors are opened using keys, gold or a password. If a door has a table near it a key is required; if a table and a double-O sign, gold is needed; if pillars with skulls or wolves' heads, a password has to be found.

Rooms requiring keys have names like room of Pride and room of Claws. These names match star signs found next to the keys. For example Leo the lion matches the room of Pride and Cancer the crab matches the room of Claws.

Elementals are a problem, as they block progress or guard useful objects. To obtain the objects a replacement has to be found. A pellet is replaced by a ball, an egg by a shell, and a nugget by a nougat.

To get past the fire you must carry the salamander clasp. To pass the hydra you must have the snake clasp. Most monsters can be dealt with by blasting but other larger ones require an object to kill them. Use the mirror on Medusa, the pellet on the slug, the slat on the cyclops, the garlic on the vampire and the nugget on the werewolf. If you run into them without the right objects the only way past is to transfuse till you have 99 stamina points and then continually freeze them.

JACK THE NIPPER

We've got both disc and tape pokes for the Gremlin game. Type in the disc poke and save it to a separate disc - not the game disc. Once saved you just need to run it and follow the on-screen instructions. The tape poke is entered using Method 1.

Please note that the disc poke actually writes to your game disc and alters it, so ensure the write-protect tab is off or the poke won't work. There is a check in the program that should stop any errors in the data getting through, but you should be very careful when typing it in.

DISC VERSION

```
10   '
20   '   The Write Protect Must Be Off
30   '   Otherwise The Pokes Cannot Be Entered
40   '
50   MODE 2:BORDER 0:INK 0,0:INK 1,24
60   FOR t=&1000 TO &10A2:READ a$:POKE
     t,VAL("&"+a$
70   b=b+VAL("&"+a$):NEXT t
80   IF b<>1249 THEN PRINT"ERROR IN DATA":STOP
90   PRINT"Insert JACK THE NIPPER disc into
     drive A and press a key. . ."
100  CALL &BB03:CLL &BB06
110  PRINT"Infinite lives (Y/N) ?"
120  z$=INKEY$:IF z$="" THEN 120
130  z$=UPPER$(z$
140  IF z$="Y" THEN POKE &1046,&C3:POKE
     &104C,0:GOTO 290
150  IF z$="N" THEN POKE &1046,&C2:POKE
     &104C,&CD:GOTO 300
160  LOCATE 1,1:PRINT CHR$(7)
170  GOTO 120
180  PRINT"Press A Key When Ready To Play Game
     . . "
190  CALL &BB03:CALL &BB06:|C PM
200  DATA 21,95,10,CD,D4,BC,22,96,10,21,99,10,C
     D4,BC,22,9A,10
210  DATA 06,02,21,9D,10,C5,06,08,3A,93,10,4F,C
     E5,1E,00,3A,8D
220  DATA 10,57,Df,96,10,E1,C1,11,0,2,19,C,79,3
     93,10,10,E4,3E
230  DATA 11,32,93,10,3A,8D,10,3C,32,8D,10,D2,3
     C3,21,4E
240  DATA 13,77,3E,00,21,3B,20,77,23,3E,0C,77,2
     3E,00,77,86,02
250  DATA 21,9D,10,C5,C6,08,3A,91,10,4F,C5,E5,1
     C0,3A,8F,10,57
260  DATA DF,9A,10,E1,C1,11,00,82,19,0C,79,32,9
     10,10,E4,3E,11
270  DATA 32,91,10,C1,10D2,C9,06;,00,06,C0
280  DATA 11,0C,11,00,84,00,00,87,85,00,C0,07,0
     00,00,0C,00,00
290  POKE &1053,0:POKE &1057,C:CALL &1000:GOTO
     180
300  POKE &1053,&EA:POKE &1057,&IF:CALL
     &1000:GOTO 180
```

TAPE VERSION

```
10   MODE 1
20   MEMORY 40959
30   DATA 175,50,16,32,62,6,50,19,32,195,1,16
40   FOR x=40640 TO 40651
50   READ z
60   POKE x,2
70   NEXT
80   LOAD"!nipper",40960
90   POKE 41049,190
100  CALL 40960
```

MONTY ON THE RUN

A method 1 poke for Gremlin's platform/exploration game. This one gives you a whole bunch of lives again - what more could you want?

```
10   DATA 21,b9,9c,36,b7,c3,e9,82,21,6b,42
20   DATA 36,c3,23,36,07,23,36,03,21,40,00
30   DATA e5,21,89,03,e5,c3,40,42,e5,21,36
40   DATA 02,36,05,e1,f1,f3,c9
50   FOR x=&2E9 TO &310
60   READ a$
70   POKE x,VAL("&"+a$)
80   NEXT
```

```
90  MEMORY &2000
100 LOAD"monty on the run"
110 CALL &2F1
```

THE APPRENTICE

This poke for the Mastertronic game gives you infinite lives. It's entered using Method 2 to skip the first five blocks named THE APPRENTICE

```
10 MODE 1:BORDER &:INK 0 0
20 LOCATE 14,12:PRINT "Please wait . . . "
30 FOR a=0 to 14
40 READ a$
50 POKE &1000+a,VAL("&"+a$)
60 NEXT
70 CALL &1000
80 POKE &9DDD,0
90 POKE &9DDE,0
100 CALL &9E7A
110 DATA 21,ba,12,11,46,92,3e,2c
120 DATA cd,a1,bc,d2,00,00,c9
```

SAI COMBAT

Dan Rodgers of London has some tips for the combat game that he says should allow you to carry on endlessly.

For white to black-belt opponents you should advance two paces forward and hold a chest kick. When the opponent is near enough, chest-kick repeatedly, never allowing your foot to touch the floor. That should do them all in.

For the black belt and all Dan belts you should somersault twice into the middle of the screen and then repeat the routine with the chest kick. When the throwing stars come along the ground, use a flying kick to avoid them, as you will often injure your opponent as well. When the stars come at head height, duck.

GET DEXTER

If you press the Delete key it will pause the game.

TOBRUK

Here's a method for winning on the PSS war game. It hardly tests your strategic and tactical skills but it works.

1. Move all units with a six-movement allowance and surround Bir Hacheim.
2. Move supplies to within six spaces of units.
3. Keep attacking Bir Hacheim with all units.
4. Every move, try to move supplies around a bit so they won't get hit by an enemy air strike.
5. On command phase use all 30 points on air attacks.
6. When it comes to the air attack always bomb Tobruk.
7. After bombing Tobruk three times it will surrender

NEXOR

A Method 1 poke that gives infinite lives on Design Design's 3D arcade adventure.

```
10 MODE 1:BORDER 2:INK 0,2:INK 1,26:INK 2,15:INK
   3,1820 a=&BF00
20 a=&BF00
30 READ b$:IF b$="end" THEN
40 ELSE b=VAL("&"+):POKE a,b:a=a+1:t=t+b:GOTO 30
40 IF t<>4708 THEN PRINT"Error in data":END
50 CALL &BF00
60 DATA 3e,ff,cd,6b,bc,11,00,01
70 DATA 06,00,cd,77,bc,21,00,01
80 DATA cd,83,bc,cd,7a,bc,f3,21
90 DATA 00,c0,11,00,40,cd,92,01
100 DATA 21,00,12,11,ff,a1,cd,92
110 DATA 01,af,32,24,39,c3,00,20
120 DATA end
```

FREEBIE

If you are thoroughly bemused by all the pokes that go on in Cheat Mode or are one of the few who hasn't got a game to cheat with, here is a poke for a non-existent game. Just type it in and run it - you won't need to rewind the non-existent game tape or skip any imaginary headerless files.

```
10 MODE 1
20 DATA cd,14,bc,3e,53,cd,5d,bb
30 DATA 3e,55,cd,5d,bb
40 DATA 3e,43,cd,5d,bb
50 DATA 3e,4b,cd,5d,bb
60 DATA 3e,45,cd,5d,bb
70 DATA 3e,52,cd,5d,bb
80 DATA 3e,21,cd,5d,bb
90 DATA cd,18,bb,c9
100 FOR a=&4000 TO &4000+41
110 READ a$:POKE a,VAL("&"+a$)
120 NEXT
130 CALL &4000
```

BATMAN

An answer to the the prayers of all caped crusaders with the disc version. Just type in the listing and save it onto the game disc. Now whenever you want infinite lives just run the listing and it will automatically load the game with infinite lives.

```
10 MODE 1:PAPER 0:INK 0,0:BORDER 0:INK 1,6:INK
   2,28:INK 3,26
20 lOAD"bat3.scn",&C000
30 FOR x=&BF00 TO &BF2D:READ 5$:POKE
   x,VAL("&"+5$):NEXT
40 CALL &BF00
50 DATA 0e,07,11,40,00,21,ff,b0
60 DATA cd,ce,bc,21,27,bf,11,00
70 DATA 01,06,06,cd,77,bc,21,00
80 DATA 01,cd,83,bc,cd,7a,bc,21
90 DATA 90,1c,36,00,c3,00,01,62
100 DATA 6d,2e,73,62,66,00,00,00
```

STARSTRIKE II

Tips for the Realtime game take you through it stage by stage.

When you start the game you are shown a chart of the systems. If you're a beginner then go for the Beta system, which is relatively easy. Once you've chosen a system, the map of its planets appears. These are split into three types:
Agricultural - These have poor defences and are the easiest of the three. The stages are space gates, fighters, planetary descent and control room.
Industrial - These are slightly harder, consisting of space gates fighters, ventilation duct and control room.
Military - These are the hardest of the three. They are made up of the space wheel, space gates, fighters, planetary descent, ventilation duct and control room.
Note that sometimes an alarm will sound and a load of coloured rectangles will head for you. They can't be shot so you have to dodge them, but fortunately they don't take much off your shield.
Space wheel: Appears on the screen and moves clockwise. Rotate the ship anti-clockwise and blast the pods off the wheel edge. A door opens; centre the cross-hairs on it and press D. Rotate the ship against the spin of the wheel until the door is horizontal and then keep it there. Once inside blast the fighter and two of the triangles on the far wall. The third triangle stops the iris from moving so shoot it when the iris is fully open and fly out.
Defence shields: There are several different gates you have to negotiate. Each one has a diamond-shaped gap containing squares and triangles. The triangles can be shot but the squares cannot. To pass through safely, head for the middle square firing at any missiles that come from the guns. The middle square is set back from the others; when the others disappear from view you can turn to the side very quickly to avoid the final square.
Orbital insertion: To be on the safe side transfer as much fuel to the shield as possible.
Fighters: It's best to turn your engines off to conserve fuel and keep on the windows (press H). Fighters have to be shot three times before they explode and reveal the fuel pod. To get the pod just keep it in sight and thrust hard towards it. Scavengers need only one shot to destroy them. The number of fighters depends on the strength of the planet.
Ground attack: This is the easy bit. All you have to do here is avoid the moving rectangles, missiles and vertical lasers and blast away at everything else. Go at full speed to save fuel.
Ventilation duct: Stay at half speed and just try to dodge everything. Be particularly careful with the irises.
Control rooms: Each planet has either a reactor or a battle computer. Just shoot it and fly out of the door that opens. Otherwise you return to the ground attack or ventilation duct of that planet.
The easiest system is Beta, then Alpha and Delta. Do epsilon last: this is the toughest. When refuelling in the module, fill up only your energy bar or you'll never be able to complete the game.

FOURTH PROTOCOL

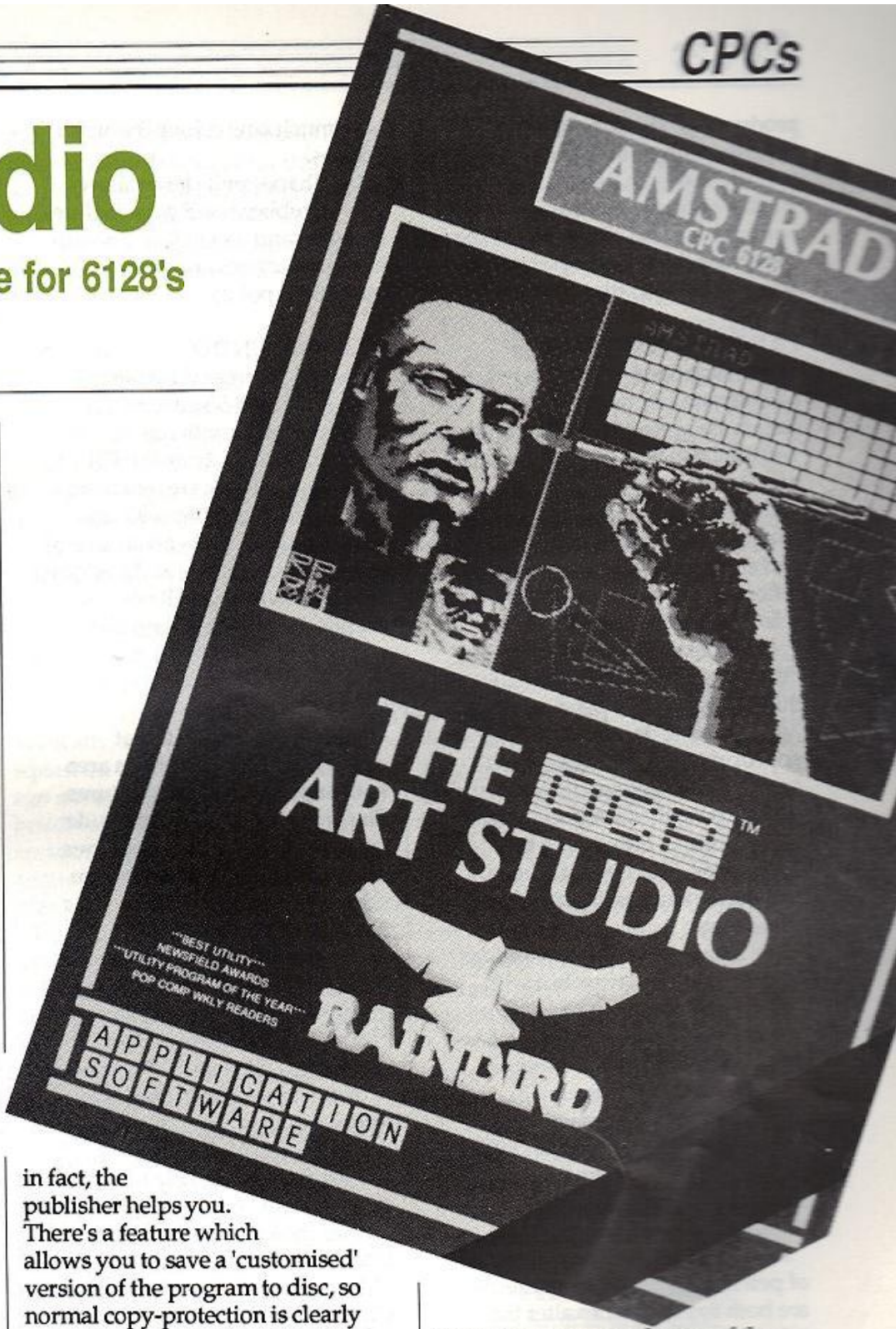
Some excellent tips for the first part of this game of intrigue and deception that should enable you to complete it.
On June 8 you receive a memo asking you to install security systems in the CO Data Analyst building, to which you must reply yes. The basement must be locked in the following way: both computer-room doors, the office and the data storage area. On the ground floor you need to lock the main entrance doors, the desk and key room, the office, the security door and the meeting room. If you carry that out correctly you'll get another memo later on which requires you to decide on the order of importance of the following:
1. Computer audits by system analysts.
2. Special password changed weekly.
3. Special keys to secure areas.
4. Phone call through human operators.

Their correct order of importance is 2431, which should stop hackers getting into the system.
Cencom contains the file Telephone which lists three numbers: Blenheim computer 04382731, medical security 71288989, and Sir Anthony Plumb 12377563. The last number should be used when the player knows all the details about the traitor and his contact. Don't dial it if you aren't sure because you will lose valuable prestige points.
Medical security can be called only after Bracton has called you. Bracton seems obsessed with calling you so read his file along with Thorn's. Blenheim's computer can be called at any time; by giving the decoded password you're given at the start you can transfer files to Cencom, where they can be examined.
Among the files you can get from Blenheim are: Nato, paper 1, paper 2, paper 3, paper 4, paper 5, MoD, Cabinet, Foreign, Abbs, Stanistav, pizza, maras, Pastemak, Faulkner, Bracton, Thorn, Blodwyn, trad, names, delivery, Nilson, Omparde, Shoukir and Fox.
By analysis of the files papers 1-5, MoD, Cabinet and Foreign you can narrow the traitor down to one of five men who had access to all the documents and photocopier.
Generally the more watchers you have on a target the faster you get the results. Always answer the phone quickly because some of the calls are very important. Never have watchers on targets that have already been dealt with as it loses prestige points. Some targets such as Warburton and Banister require the full 25 watchers to get results.

**Send your "cheats" and tips to:
Cheat Mode,
The Amstrad User, Suite 1
245 Springvale Road, Glen
Waverley, Vic 3150**

Art Studio

A Review of the package for 6128's only from Rainbird



If you want to buy an art package for your Arnold, you'll find you're spoilt for choice. Under the circumstances any new system needs to be something really special if it's going to survive. Rainbird has just released *ART STUDIO* for the 6128 and special is certainly the word for it.

Two things struck me immediately about the package: first that it works only in Arnold's two-or four-colour modes (modes 1 and 2) rather than the more normal multi-colour mode O, and second that it is strongly inspired by the Apple Macintosh and similar WIMP (Window, Icon, Mouse, Pull-down menu) systems.

How you feel about the first of these is very much a matter of taste - I can't say I miss mode O myself, but it does seem an odd omission. As for Art Studio being WIMP-inspired, that's pretty common these days. The difference here is that where most packages aim to look like the Macintosh, Art Studio sets out to perform like it - and to a considerable extent it succeeds.

PROTECTION

The first thing you'll notice about the system is the Lenslok protection it uses. I've had my rant in the past about honest users being saddled with cumbersome protection systems, and I'd certainly call Lenslok cumbersome - but in this case there is a reason for it.

Rainbird doesn't try to stop you from making copies of Art Studio; in fact, the publisher helps you. There's a feature which allows you to save a 'customised' version of the program to disc, so normal copy-protection is clearly not going to work. Given that the program is easily usable without the manual, Lenslok is the only alternative to actually trusting people.

SELECTING PULL-DOWNS

Once you've got past the protection system to the program itself, you're presented with the usual blank screen. There's a series of options runs across the top of the screen, and a small 'arrow' pointer. You can move the pointer around using cursor keys, joystick, or even a mouse if you're lucky enough to have one.

To select one of the options just move the pointer to it and press 'select'. (That's the space bar on the keyboard or the fire button on the joystick.) Selecting an option

produces a *pull-down-menu* - a list of further options which overlays part of the screen like a roller window blind. Choosing one of the options on a pull-down works the same way: move the pointer to it, press 'select' and there you are.

PAINTING AND SHAPES

The first options you're likely to be interested in are *Paint* and *shapes*. Between them these offer you all the main features you'll need to create your pictures.

The Paint pull-down provides the three main tools - pen, brush and spraycan -in a variety of different shapes and sizes. On selecting pen, for example, you'll get another pull-down panel demonstrating the sixteen different shapes of pen available. Just move the pointer to the appropriate shape, press 'select' and you're in pen mode. Move the pointer onto the drawing area and it turns from a little arrow to a little pencil. Hold 'select' down, move this pencil pointer and you'll draw a line.

The brush and spraycan options work in the same way, but with brush - and spraycan-shaped pointers instead of the little pencil shape. These different-shaped pointers are meant to remind you which drawing or painting mode you're in. and like pull-downs they make the program very easy to learn without the use of the manual.

Although the available ranges of pen shapes and spray patterns are both fixed, you can alter the selection of brushes to suit your needs using the *edit brush* option on the Paint pull-down. Choosing this option gives you a brush-editing menu where you can alter the pattern of dots that forms each brush. This comes in two stages, the *data* and the *mask*. Put simply, the mask defines how much of the background the brush wipes out and the data defines how much new colour the brush applies.

The Shapes pull-down allows you to 'rubber-band' straight lines, triangles and rectangles. You can also draw circles and plot individual points.

FILL AND UNDO

Once you've created a drawing with *Paint* and *Shape* you can flesh it out a bit with the different options from the *Fill* pull-down. There are two main types of fill available: *solid* and *over*. Solid fill works on an area of one colour and stops at the edges of that area. With overfill you outline an area with (say) blue and any colour inside is changed to blue. For most purposes you'll want to use a solid fill.

As well as filling with flat colour, you can solid-fill an area with one of 32 different textures. The predefined textures include grid, fine checks and wavy-lines, but if you can't find the one you want you can define one of your own using *edit texture*.

Over is the riskier proposition, but either kind of fill can 'escape' through the tiniest of gaps. Fortunately there is a way of reversing a fill or any other kind of drawing operation that goes wrong. Of the various options across the top of the screen only one works immediately rather than offering you a pull-down of further choices. That option is *Undo*.

The extra memory on the 6128 allows for certain luxuries, and *Undo* is one of them. Instead of keeping just one copy of your picture in memory the way most art programs do - the copy you're working, that is - *Art STudio* keeps a spare one as well. Every time you switch drawing mode or perform some similar operation, *Art Studio* brings the spare copy up to date. This means that when you're halfway through performing a series of fills or whatever, *Art Studio* still knows what your picture looked like before you started filling. When you select *Undo*, the program restores your working copy to the same state as the spare.

This spare copy of your picture isn't used just for *Undo*. It also makes possible the wash *texture* option on the *fill* pull-down. This remarkable feature takes all the changes you've just made to the picture - all the things that *Undo* would undo - and fills them with texture. This effectively allows you to paint, spray and draw with textures rather than solid colours. While you can't actually see the effect until you've selected *wash texture*, it remains a very powerful technique.

MAGNIFY

Another benefit of the 6128's extra memory is the *Magnify* option. Rather than the small magnification window offered by most packages, Art Studio gives you a full-screen image. You can enlarge a given area of the screen by 2, 4 or 8 times.

Simply select the appropriate enlargement factor from the *Magnify* pull-down, move the cursor (now shaped like a magnifying glass) to the area of your drawing which you want enlarged and press 'select'. The screen now fills with an enormous blown-up section of your picture.

Though there's no normal-size image of the magnified area you're working on, you're unlikely to find this a problem. The large window means that on x2 magnification you can see almost a full quarter of your picture - easily enough to see what you're doing to the picture as a whole. You can switch between the different enlargements without returning to the main menu. On x8 there's an optional grid to make it clearer where one pixel - one individual

dot of colour - ends and the next one begins.

Your free to pan the *Magnify* window across the picture by pointing at and selecting the Macintosh-style 'scroll-bars' along the top and left edges of the window itself. You can make fine adjustments to the picture using any of the available colours, and undo them again it they don't look right. Every possible consideration is given to the keyboard-only user, with sensibly chosen keys to switch colours and pan the window.

TEXT

If there's a central theme to Art Studio it's thoroughness. Text entry, an afterthought in most packages, is given the fullest treatment you could ask for. You can use text in any of three widths and heights, combining them freely to get a wide range of shapes.

Your text can run left to right or top to bottom, and the letters can be upright or sideways. There are also bold and italic options which can produce very useful if rather crude results. If you want to do anything more complex with text, the *font editor* option takes you into a whole new league.

When you select *font editor* you're presented with a whole fresh screen dedicated to lettering styles. The full character set of the current font is displayed on the bottom half of the screen, while at the top there's a detailed view of the character currently being edited. You can scan through the character set, scroll an individual character or the whole font in any direction, make minute alterations to the current character, or clear it and start from scratch.

Several fonts are supplied on the Art Studio disc, and you can save modified versions of these or your own original fonts for later use. If you wanted to create foreign alphabets or scientific symbols for diagrams, you should find this way simple. Of course most people aren't going to bother with all this, but most packages wouldn't give you the option in the first place.

WINDOWS

Once you've created your picture you might well want to make large-scale alterations to it. The *Windows* pull-down offers a strong set of special effects based on the idea of a 'window' - a rectangular area of the screen defined by stretching a 'rubber box' round it.

Windows can be copied, moved or cleared. They can be rotated through 90, 180 or 270 degrees, mirrored horizontally or vertically, and stretched or squashed in either direction. You can use a window like a paint-brush with the 'smear' option, or merge it with the previous contents of the area you're copying it to.

Windowing needn't involve moving an area of the screen around. The *swap* inks and *change* ink options allow you to alter the colours of a windowed area, and are particularly powerful for creating special effects.

Everything possible is done to reduce the effort needed in defining windows. You can define the whole screen as a window simply by selecting *whole screen* from the pull-down, or redefine the previous window using *last window* . If you want to make several copies of the same thing you can set the copying mode to 'multiple'. This means that Art Studio automatically redefines the last window after each operation on it, cutting in half the amount of selection you have to do.

FINISHING TOUCHES

The file-handling and printer-dump options show the thoroughness and ease of use characteristic of the program as a whole. The printer option is particularly well thought out, with just about every feature you could ask for to cope with the quirks of different printers.

The manual is excellent, though you probably won't find you need to refer to it all that often. For most people its chief function will be to point out all the many excellent features which you could otherwise easily miss. The program is so natural and self-explanatory that you can work out most of the main features just by sitting down and using it.

VERDICT

Of all the many art packages available for the Arnold, this has to be the best. The only real shortcomings are the lack of a mode-0 facility and the need for a 128K system; Lenslok is an additional annoyance. These are far outweighed in my book by the enormous power, ease of use and attention to detail which are visible in every aspect of the system.

While Art Studio is easy to operate from the keyboard - you can even define your own keys if you like - or a joystick, plugging in an AMX or Kempston Mouse turns it into an absolute joy. An awful lot of packages use icons and pull-downs just to be fashionable but Art Studio makes them earn their keep.

If you're after an art package that feels natural, gives good results quickly and that you won't outgrow, Art Studio must be the one.

PLUSES - Extremely powerful, handles well with keys, joystick or mouse. First rate manual. UNDO makes for experimentation without tears. Can save customised versions to disc.

MINUSES - No mode 0. 664 owners will need 64k of add-on RAM, and 464 owners will need a disc drive too.

Intelligent Menu

by Chris Collins

This is a very simple and short program for the Amstrad CPC computers, which permits you to CAT a disc, select the program you want and LOAD, RUN or DELETE it with the minimum of typing.

One of the more commonly used methods of providing a menu of programs to select from, is to create a menu program and insert the programs' names into it. This is all very well for a disc on which the contents rarely change but it is a pain otherwise, as you must keep adding program names and resaving it.

This program is in effect 'an intelligent menu' in that it doesn't matter what programs are on the disc. In fact you can load the program and then change the disc if you wish.

There is not much that can be said about the operation of the program as it is all prompted. When presented with the menu in mode 2, use the cursor keys to move the arrow to the program that you wish and press <ENTER>. A message will tell you the program that you have selected and ask you to select from LOAD,RUN,DELETE or Cancel by selecting the appropriate letter.

If you select DELETE, you are warned and asked to confirm with 'Y'. Any other key resets the arrow, for you to select again. Cancel will return you to the same position. Having selected L or R the program will be loaded or run as appropriate.

The program should be typed in and then saved with the title 'DISC'. A copy should be kept on each disc, so that all that is required is to insert the disc and RUN"DISC

There are two versions of the program. One to run on the 664/6128 and a version with a small machine code routine for the 464/DDI because the 464 doesn't have a COPYCHR$ command.

There will be a problem with some basic loader programs in that they will require a 'MODE' command inserted so as to reset the window commands that are used in the program.

HOW IT WORKS

664/6128	464	
20	20	Sets up an error routine and then recommences the program at line 110.
40	40	Sets up windows.
50 - 80	50 - 80	Draws outline.
90	90	CATS then clears windows.
-	100	Jumps to routine.
100 - 230	110 - 240	Position cursor and move cursor around the screen.
240 - 260	250 - 270	Locate cursor and read program name to the screen.
270 - 280	280 - 290	Checks that 9th character is a full stop <.> and if not reports ERROR 200 and then to 330.
290 - 300	300 - 310	Prints program name and asks for selection.
310	320	Checks for DELETE and asks for confirmation.
320	330	Checks for LOAD or RUN and carries out instruction or reruns the program.
-	360 - 410	Machine code routine.

Tape subscribers please note that both versions of the program appear on this month's tape. They are named MENU464 and MENU6128. No prizes for guessing which is which!

CPC 464 Version

```
10 'disc auto loader for 464/DDI
20 ON ERROR GOTO 340
30 DEFINT a-z:INK 0,1:INK 1,24:BORDER 1:MODE 2
40 WINDOW#0,2,79,1,24:WINDOW#1,15,18,4,20:WINDOW#2,35,38,4,2
0:WINDOW#3,55,58,4,20:WINDOW#4,75,78,4,20
50 PLOT 1,1:DRAW 1,399:DRAW 639,399:DRAW 639,1:DRAW 1,1
60 PLOT 5,5:DRAW 5,395:DRAW 635,395:DRAW 635,5:DRAW 5,5
70 PLOT 5,74:DRAW 635,74:DRAW 5,74
80 PLOT 5,78:DRAW 635,78:DRAW 5,78
90 CAT:CLS#1:CLS#2:CLS#3:CLS#4
100 GOSUB 360
110 PRINT "Position cursor and press RETURN to select."
120 across=1:down=4
130 PRINT CHR$(22)CHR$(1)
140 WHILE INKEY(18)<>0
150 LOCATE across,down
160 PRINT SPC(14)CHR$(242);
170 WHILE INKEY$="":WEND
180 PEN 0:PRINT CHR$(8)CHR$(242):PEN 1
190 down=down+(INKEY(2))-(INKEY(0))
200 across=across+20*(INKEY(1))-20*(INKEY(8))
210 IF down<4 THEN down=4 ELSE IF down>19 THEN down=19
220 IF across<1 THEN across=1 ELSE IF across>61 THEN across=
61
230 WEND
240 PRINT CHR$(22)CHR$(0)
250 a$="":FOR offset=0 TO 11:LOCATE across+offset,down
260 CALL address,@char:a$=a$+CHR$(char)
270 NEXT
280 LOCATE 1,22
290 IF MID$(a$,9,1)<>CHR$(46) THEN ERROR 200
300 PRINT "You have selected     "a$
310 PRINT:PRINT "LOAD, RUN, DELETE, or Cancel L/R/D/C":WHILE
 INKEY$="":WEND
320 IF INKEY(61)=0 THEN LOCATE 50,23:PRINT"CONFIRM DELETE Y/
N";CHR$(7):WHILE INKEY$<>"":WEND:WHILE INKEY$="":WEND:IF INK
EY(43)=0 THEN |ERA,a$:RUN
330 IF INKEY(36)=0 THEN MODE 1:LOAD a$ ELSE IF INKEY(50)=0 T
HEN RUN a$ ELSE RUN
340 IF ERR=200 THEN LOCATE 50,23:PRINT "Invalid Selection";C
HR$(7):RESUME 120 ELSE RESUME
350 END
360 address=&900:char=0:FOR offset=0 TO 10
370 READ dat$
380 POKE address+offset,VAL("&"+dat$)
390 NEXT
400 DATA CD,60,BB,DD,6E,00,DD,66,01,77,C9
410 RETURN
```

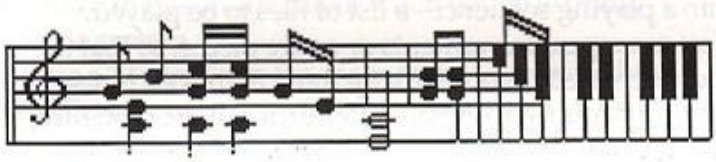
CPC 664/6128 Version

```
10 'disc auto loader for 664/6128
20 ON ERROR GOTO 300
30 DEFINT a-z:INK 0,1:INK 1,24:BORDER 1:MODE 2
40 WINDOW#0,2,79,1,24:WINDOW#1,15,18,4,20:WINDOW#2,65,68,4
,20:WINDOW#3,55,58,4,20:WINDOW#4,75,78,4,20
50 PLOT 1,1:DRAW 1,399:DRAW 639,399:DRAW 639,1:DRAW 1,1
60 PLOT 5,5:DRAW 5,395:DRAW 635,395:DRAW 635,5:DRAW 5,5
70 PLOT 5,74:DRAW 635,74:DRAW 5,74
80 PLOT 5,78:DRAW 635,78:DRAW 5,78
90 CAT:CLS#1:CLS#2:CLS#3:CLS#4
100 PRINT " Position cursor and press RETURN to select."
110 across=1:down=4
120 PRINT CHR$(22)CHR$(1)
130 WHILE INKEY(18)<>0
140 LOCATE across,down
150 PRINT SPC(14)CHR$(242);
160 WHILE INKEY$="":WEND
170 PEN 0:PRINT CHR$(8)CHR$(242):PEN 1
180 down=down+(INKEY(2)=0)-(INKEY(0)=0)
190 across=across+20*(INKEY(1)=0)-20*(INKEY(8)=0)
200 IF down<4 THEN down=4 ELSE IF down>19 THEN down=19
210 IF across<1 THEN across=1 ELSE IF across>61 THEN across
=61
220 WEND
230 PRINT CHR$(22)CHR$(0)
240 a$="":FOR offset=0 TO 11:LOCATE across+offset,down
250 a$=a$+COPYCHR$(#0)
260 NEXT
270 LOCATE 1,22
280 IF MID$(a$,9,1)<>CHR$(46) THEN ERROR 200
290 PRINT " You have selected      "a$
300 PRINT:PRINT " LOAD, RUN, DELETE, or Cancel L/R/D/C":WH
ILE INKEY$="":WEND
310 IF INKEY(61)=0 THEN LOCATE 50,23:PRINT"CONFIRM DELETE
Y/N":CHR$(7):WHILE INKEY$<>"":WEND:WHILE INKEY$="":WEND:IF
 INKEY(43)=0 THEN |ERA,a$:RUN
320 IF INKEY(36)=0 THEN MODE 1:LOAD a$ ELSE IF INKEY(50)=0
 THEN RUN a$ ELSE RUN
330 IF ERR=200 THEN LOCATE 50,23:PRINT "Invalid Selection"
:CHR$(7):RESUME 110 ELSE RESUME
340 END
```

Wired for Sound

Part Two of our Music Special

Last month, computer musician Mark Jenkins investigated the musical possibilities of Arnold with an explanation of the development and use of the MIDI. Reviews of Miditrack Performer (EMR), Maestro (Vanguard Leisure), Amdrum (Cheetah) and Music Master (Vanguard Leisure) were provided.
The best is yet to come in this final part.



THE ADVANCED MUSIC SYSTEM
Rainbird: all CPCs (disc only)

The Music System from Rainbird was certainly way ahead of the competition when it was first released some six months ago, and none of the music packages since have really done anything to change this. Not content with merely having the best music product on the market, Rainbird have brought out a new improved version for disk users. They call it *The Advanced Music System*, and I'd say that 'advanced' is the word for it.

Rainbird have added two new modules to the original system: as well as the music editing and playback section, the advanced package has printout and file-linking modules. These beef the system up a great deal, and that's no mean feat considering how thorough it was to start with.

USING THE SYSTEM

You'll notice the extra features as soon as you start using the package. After the loading screen you face a new control screen, with icons meaning link, edit/playback and printout. To start with, the linker is highlighted. You can move the highlight to either of the other modules by hitting the space bar, or select the highlighted module by hitting enter/return. This is the system used throughout the package for selecting icons, so owners of the original system will immediately feel at home.

The first thing you'll want to do is create your piece of music. For this you'll need to select the edit/playback module.

EDITING AND PLAYBACK

The edit/playback screen is dominated by the Voice Monitor Window, or VMW. There are three voices - three separate parts to your harmony - but you can edit only one at a time. You can scroll through the score for each voice, adding and deleting notes as you see fit. The use of a scrolling window makes editing very easy indeed; it is one of the system's strengths that its competitors would do well to emulate.

Editing options include just about every feature a piece of music can have: dynamics, accents, accidentals or whatever. These are all easily accessible from pull-down menus, and there are quicker key combinations you can use once you're more experienced. You can set the system to insert barlines automatically, or you can put them in by hand if you have a taste for irregular time signatures. The only serious omission is triplets, but that's not exactly crippling.

Recording was a unique feature of the original system, and is still something quite unusual these days. In recording mode, part of Arnold's keyboard behaves like a piano. By hitting different keys you can play tunes, either recording them or just practising. Recording a piece of music doesn't just store it for playback - it actually writes your tune onto the stave for subsequent editing or printout.

Once you've written or recorded your tune, you'll want to play it back. Here there is a really nice option: you can set your score to scroll through the VMW, a note at a time, as the system plays it. Unlike in edit mode, all three voices are displayed at once. It's an impressive and entertaining feature, and a great way to track down that elusive wrong note.

What's really nice about the playback system is the way it behaves like normal music. Accidentals affect subsequent notes in the bar, for example, and the first note of each bar is accented. This sort of thing adds to

my impression that the package really can offer something to serious musicians, as well as the enthusiastic amateurs most packages cater for.

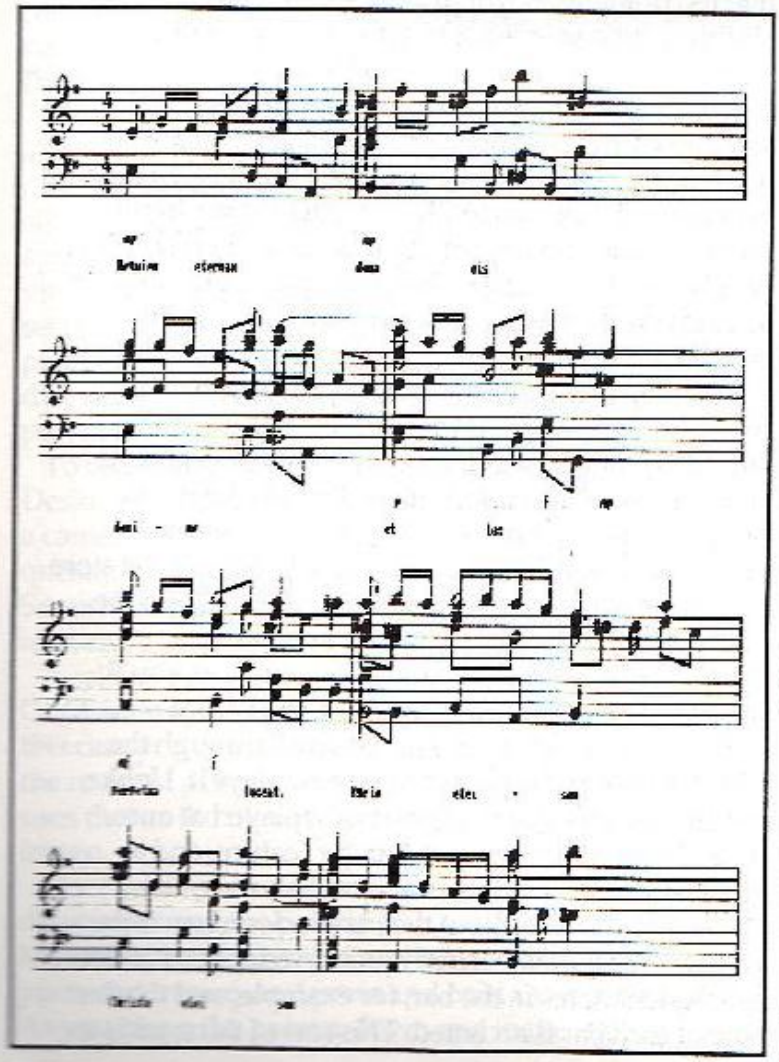
HARD COPY

The separate printout module is well thought out, and will prove invaluable to musicians everywhere. It can print up to six voices on one stave, displaying dynamics and even allowing you to add a line of lyrics or additional directions.

The ability to handle six different voices is very impressive, but it does cause the odd complication. After all, the editor can only handle three voices and music files only contain three voices.

To get a six-voice tune then, you have to edit and play it as two three-voice tunes. You can then switch to the printout module, load the two separate music files you've created and then print all six voices out.

Adding lyrics is very straightforward - just type them in underneath each bar. You can use only one line, though, and some users may find they need to save this for additional, non-*Music System* directions like *legato* or *andante*. The lyrics come out in a small, rather poorly defined typeface but are perfectly readable. It's a shame they couldn't be slightly more legible though - of a quality to match the notes - since the system has obvious uses in music teaching.



The module can drive a wide range of dot-matrix printers, and can cope with continuous or single-shee paper over 80 or 132 columns.

It can split bars at the edge of the page or wrap them onto the next line, cut out individual voices or even clefs, and string separate files together for printing lengthy works.

LINKING

The need for that last printout option stems from the main shortcoming of the original system: the small amount of memory available for your tune. There's room for a maximum of 1000 notes in memory, and th has to be shared between the three separate voices.

To write longer works than this limit would otherwise allow, you have to use the advanced system's new linker module. This allows you to load i up to 13 music files at a time, with an upper limit of over 6000 notes total.

Having loaded the files you can then build them up into a playing sequence - a list of files to be played. You can repeat movements or entire pieces, so that th sequence itself involves many more than 6000 notes. You can have up to 99 separate entries in the sequence and that will be more than enough for most purposes. The whole sequence can be saved to disk, loaded in later and played as a concert or simply as one enormous composition.

VERDICT

The main section of the system looks every bit as good now as it did six months ago. The linker goes some considerable way toward solving its space problems and as such is a welcome feature of the advanced system.

But it's the hard-copy facility that really earns that extra money. The addition of the printer module gives the system a whole range of uses it didn't have open to it before. You can now record a piece on the keyboard, edit it in the VMW and dump it to your printer as a finished score without once having to pick up a pencil.

If you want to arrange a piece for an ensemble and then print each instrument's part separately, the system can do this quite easily.

Choral arrangements would need a little more work to cope with differences in the lyrics of separate parts, but the system would still be an enormous advantage.

The printout module makes the *Advanced Music System* a useful musical tool, as well as the entertaining and easy-to-use program the original system was.

E.M.U. (ELECTRONIC MUSIC UTILITY)
Discovery: all CPCs (cassette or disc)

This Discovery package could be the first to give *The Music System* a run for its money. It isn't just a simple music program by any means - it could come in very handy as a utility for anyone wanting to add music to their own programs. But let's take a look at the editing and playback side of things first.

MAKING MUSIC

EMU is a menu-driven program: to choose an option, you have to move a highlight up and down or from side to side in a list of choices, hitting the enter or return key when you've found the one you want. This is a deliberate departure from the more fashionable icon system, and does avoid those annoying 'guess what this symbol means' problems. I don't think it really makes much difference in the long run, but it does make things a little easier when you're learning to use the system.

Selecting 'Music' from the main menu gives you the main editing screen, with a new sub-menu running across the top of it. Sub-menu options include edit, record and play. 'Edit' gives you direct access to the scores for the different voices. All three of these are visible at once, so it's easy to create decent harmonies without too much voice switching.

This is probably just as well, because there is a slight problem with voice-switching on the EMU: infuriatingly, it returns you to the start of the piece every time you move from one voice to another. This is a shame, because the editing is otherwise very nice indeed. Using the numeric keypad as an extended cursor pad you can rapidly select the pitch and length of note or rest you want, and facilities for deleting and inserting are the best I've yet seen on a music package.

If all that musical notation seems a little daunting, there's a very effective *Music System* -style 'Record' option using the top two rows of the micro's keyboard as your piano. Once you've recorded your music onto the stave, you can bring all that lovely editing power to bear on it - and that's a strong combination.

USING THE MUSIC

When it comes to doing things with the music you've created, EMU may not be able to print the stuff out but it does have another trick up its sleeve. By selecting the option 'Save-RSX' from the tape/disk sub-menu, you can create a 'stand-alone' file. This is a machine-code routine which you can use with your own Basic programs, quite independently of EMU itself.

All you need to do to use such a file is write a simple piece of Basic into your program - about five lines, all told. Run these to set the system up, and you can then use the bar command PLAY to play a particular piece of music. The music will keep going while you do other things , so you could use it quite easily for adding music to Basic games. The only thing it won't play through is a tape load or save, and that's hardly likely to spoil the package for you. It's an easy system to use, and vastly less effort than writing your own music routines. As for space, the demo file of the *Radetsky March* took up 6K - not bad for a substantial piece of music plus the system to play it.

VERDICT

As a straight music-composing program, EMU would come second only to *The Music System* for performance and value for money. It lacks the scrolling display and overall simplicity of Rainbird's offering, but you can see all three voices at once and there's that slick insertion and deletion too.

Of course, EMU isn't just a composing program. It's also a great way to add music to your own Basic programs, and that's something *The Music System* can't do for you. If you're a musician you might well prefer TMS, but if you're a bit of a programmer then EMU's got to be well worth a look.

THE LIGHTHOUSE

A Text Adventure Game - Part One

by Philip Riley

For longer than anyone can remember the old lighthouse has stood on the Island of Lost Souls just off the coast of Southern England. But everyone knows its grim history.

Five keepers of the lighthouse have committed suicide, four have gone mad, four have disappeared without a trace, and two have never reached the lighthouse at all. They vanished forever in the labyrinth of caves which provide the only route into the lighthouse.

You are offered the job as the new keeper of the lighthouse. With some second thoughts you accept and the villagers organise a boat to take you across to the island. It is a cold autumn morning when two of the men from the village row you out through the thick mist that envelopes everything. Suddenly sheer cliffs, hundreds of feet high loom above you. The oarsmen guide the boat towards a small sandy beach which is completely surrounded by the cliffs. As you step ashore one of the men hands you a lantern. The light it gives off is pretty feeble but it is better than nothing.

As the men row away from the island one of them shouts - "Be careful, they say the island is haunted".

You look around at the bleak surrounding and wonder just what you have got yourself into. You contemplate your task before you set off. It won't be easy to reach the summit of the island and light the lamp that is on the top floor of the lighthouse. But someone must do it and you are now the only person on the island, the only person alive that is! It is now that your adventure begins.

The game understands the standard two word commands e.g. 'GET LANTERN', 'FILL LANTERN' etc. Use the cursor keys to move North, South, East or West. To move up or down type in 'UP' or 'DOWN'. You can shorten the two word commands to the first three letters e.g. 'GET LAN', "FIL LAN'. For a list of items that you are carrying type 'IN'. For a description of your present location type in 'LO'. If you think you are stuck with no means of escape, you can quit by typing in 'QU'. Good luck and don't worry if you don't make it first time.

```
10 CLS
20 PRINT"


              THE LIGHTHOUSE"
30 PRINT"




          WRITTEN BY PHILIP RILEY"
40 PRINT"


   PRESS ANY KEY IF YOU DARE CONTINUE"
50 a$=INKEY$:IF a$=""THEN 50
60 CLS:n=4:a1$="gettakleadrouseexashabre
kilthrcutchopoufildriempligstropegivunls
macliredmovforentexi"
70 a2$="keyteabualannetbotchecrooilbarma
tboscomsexchalogleglad carrazstrhamwalcra
seadoohollongualamwebgristoliglocrumwee"
80 a3$="loinheupdoqu"
90 DIM yp(313),it(21),it$(21)
100 FOR t=1 TO 313:READ yp(t):NEXT:FOR t
=0 TO 21:READ it(t),it$(t):NEXT
110 DATA 0,0,0,13,6,14,0,0,0,0,0,0,0,0,0
,0,0,0,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,4
,18,6,7,0,0,15,0,0,0,0,0,3,6,16,9,7,1,4,
7,0,15,0,0,0,0,0,1,10,7,0,1,12,12,1,0,15
,0,0,0,0,0,1,0,1,3,5,7,3,11,0,15,0,0,0,0
,0,12,3,11,12,1,12,12,0,0,0,0,0,0,0,3,16
,16,7,0,1,0,13
120 DATA 16,16,0,0,0,0,0,1,0,0,4,7,12,3,
16,16,16,11,0,0,0,0,12,3,16,8,4,16,5,7,0
,0,0,0,0,0,0,1,10,7,1,10,7,1,10,7,0,0,3,
16,14,0,1,0,12,1,13,11,12,2,12,0,0,10,7,
0,0,12,0,13,9,16,7,2,1,13,6,7,3,9,6,7,3,
6,6,6,7,10,9,11,2,12,1,1,0,12,1,4,5,5,5,
8,0,0,0,4,16
130 DATA 5,12,0,0,1,4,5,5,5,8,0,0,0,4,14
,4,14,13,7,1,4,5,5,5,8,0,0,0,12,0,12,0,3
,5,11,4,5,5,5,8,0,0,0,0,0,0,0,12,12,2,10
,9,9,9,11,0,0,0,13,16,16,16,9,6,11,0,0,0
,0,0,0,0,0,0,0,0,0,3,11,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,12,0,Key,86,Teacaddy,95,Boatho
ok,500,Lantern
140 DATA 6,Fishing net,4,bottle,128,Trea
```

```
sure chest,92,Crowbar,204,Oil,114,Barrel
,0,Matches,67,Bosuns chair,68,Compass,18
3,Sextant,97,Chart,251,Logbook,181,Woode
n leg,229,Ladder,187,Deck of cards,235,R
usty razor,168,Leather strap,279,Large h
ammer
150 GOTO 440
160 a=FRE(""):PRINT:PRINT"What next brav
e sir":b$=""
170 a$=INKEY$:IF a$=""THEN 170
180 a=ASC(a$):IF a>239 AND a<244 THEN 36
0
190 IF a=16 THEN 170
200 IF a=127 AND LEN(b$)>0 THEN b$=LEFT$
(b$,LEN(b$)-1):PRINT";:GOTO 170
210 IF a=13 THEN 230
220 b$=b$+a$:PRINT a$;:GOTO 170
230 m=0:FOR t=1 TO LEN(b$):IF MID$(b$,t,
1)=" " THEN m=t:t=LEN(b$)
240 NEXT:IF m=0 THEN 310
250 x$=LEFT$(b$,3):z$=MID$(b$,m+1,3):b=0
:c=-1
260 x=0:FOR xx=1 TO LEN(a1$) STEP 3:b=b+
1:IF x$=MID$(a1$,xx,3) THEN x=xx:xx=LEN(
a1$)
270 NEXT:IF x>0 THEN 290
280 PRINT:PRINT"I DON'T UNDERSTAND":GOTO
 160
290 z=0:FOR zz=1 TO LEN(a2$) STEP 3:c=c+
1:IF z$=MID$(a2$,zz,3) THEN z=zz:zz=LEN(
a2$)
300 NEXT:IF z>0 THEN 350 ELSE 280
310 y$=LEFT$(b$,2)
320 y=0:FOR yy=1 TO LEN(a3$) STEP 2:IF y
$=MID$(a3$,yy,2) THEN y=yy:yy=LEN(a3$)
330 NEXT:IF y>0 THEN 340 ELSE 280
340 ON y GOTO 440,1,2610,1,2640,1,2650,1
,2700,1,2750
350 PRINT:PRINT:ON b GOTO 2440,2440,2500
,2500,2560,1940,2210,2150,2550,2380,2260
,2260,2410,1680,2350,1880,1780,1750,2590
,2310,1630,2150,1840,2570,2120,2150,2080
,2100
360 IF n=54 AND s2=0 THEN PRINT"You try
to run away but the crab catchesyou and
cuts you in half with one of itsgiant pi
ncers.":GOTO 1590
370 IF n=5 AND s3=0 THEN PRINT"You try t
o avoid the seaweed but it      senses yo
ur movement and wraps itself   around yo
ur body and squeezes the life  out of yo
u.":GOTO 1590
380 IF it(3)<>500 THEN PRINT"You try to
move but because you have      left your "
;it$(3);" behind you cannot see where yo
u are going. You soon trip over in the d
ark and crack your skull open.":GOTO 159
0
390 IF a=241 AND (yp(n)=1 OR yp(n)=4 OR
yp(n)=5 OR (yp(n)>7 AND yp(n)<13)) THEN
n=n-15:GOTO 440
400 IF a=240 AND (yp(n)>0 AND yp(n)<9) T
HEN n=n+15:GOTO 440
410 IF a=243 AND ((yp(n)>2 AND yp(n)<7)
OR yp(n)=9 OR yp(n)=10 OR yp(n)=13 OR yp
(n)=16) THEN n=n+1:GOTO 440
420 IF a=242 AND (yp(n)>4 AND yp(n)<10)
OR yp(n)=11 OR yp(n)=14 OR yp(n)=16 THEN
 n=n-1:GOTO 440
430 PRINT:PRINT"YOU CAN'T MOVE IN THAT D
IRECTION.":GOTO 160
440 CLS
450 PRINT:ON n GOTO 1,1,1,530,540,570,1,
1,1,1,1,1,1,1,1,1,1,1,1,580,1,1,1,1,1,1,
1,1,1,1,1,1,1,1,1,590,600,620,650
460 ON n-40 GOTO 1540,1,1,1,1,1,850,840,
600,790,650,630,660,680,1,1530,1,1,1,1,1
,630,860,650,1,630,640,670,710,1,1520,1,
1,1,1,1,630,1,630,810
470 ON n-80 GOTO 800,650,730,720,1,1510,
1,1,1,1,1,640,880,870,820,630,830,740,1,
1,1,1,1,1,1,910,600,890,650,1,630,1,750,
600,600,770
480 ON n-120 GOTO 630,1,1,940,650,640,11
00,600,600,600,1090,1,1,1,1,920,960,600,
950,1040,1080,800,650,1,1,1,1,1,1,1,1,630,
970,650,630,1080,650,630,1110,650
490 ON n-160 GOTO 1,1120,600,750,1,630,1
,980,630,640,1090,640,760,740,1,1,1130,1
140,1,1,640,1,980,990,600,650,1020,630,9
60,1190,650,1160,790,1250,650,1400,1410,
1410,1410,1420
500 ON n-200 GOTO 1000,1010,1030,1230,12
00,630,630,1,640,1260,1430,1440,1450,145
0,1460,1,1,1,1220,600,800,1170,1,1,1270,
1430,1450,1450,1450,1460,1,1,1,1240,640,
1210,980,980,1320,1290
510 ON n-240 GOTO 1430,1450,1450,1450,14
60,1,1,1,980,1,640,1,1330,800,1310,1430,
1450,1450,1450,1500,1,1,1,1,1,1,1,920,64
0,640,1470,1480,1480,1480,1490,1,1,1,640
,600
520 ON n-280 GOTO 1340,600,790,620,1310,
1,1,1,1,1,1,1,1,1,1,1,1,1,1370,1360,1,1,1,
1,1,1,1,1,1,1,1,1,1,1,1380
530 PRINT"YOU ARE ON THE WESTERN END OF
A SMALL   BEACH TOWERING CLIFFS BLOCK YO
UR WAY TO THE NORTH. THE CALM MIST SHROU
DED SEA ISTO THE SOUTH.":GOTO 1550
540 IF s3=1 THEN PRINT"YOU ARE ON A SMAL
L BEACH. YOU CAN SEE A CAVE ENTRANCE IN
THE CLIFFS TO THE NORTHCOVERING THE FLOO
R IS A LOT OF DEAD     SEAWEED.":GOTO 15
50
550 PRINT"YOU ARE ON A SMALL SANDY BEACH
 FROM THISPOINT YOU CAN SEE A SMALL CAVE
 ENTRANCE IN THE CLIFFS TO THE NORTH. SU
DDENLEY   YOU SEE SOMETHING MOVE BY YOUR
 FEET. IT IS ONLY THEN THAT YOU NOTICE Y
OU ARE    SURROUNDED BY SOME KIND OF DEA
DLY"
560 PRINT"SEAWEED. DON'T MOVE OR YOU ARE
 DEAD.":GOTO 1550
570 PRINT"YOU ARE ON THE EASTERN END OF
A SMALL   BEACH. TOWERING CLIFFS BLOCK O
FF FURTHERPASSAGE TO THE NORTH AND EAST.
":GOTO 1550
580 PRINT"YOU ARE IN A SMALL DARK TUNNEL
 THAT     SMELLS OF ROTTING SEAWEED. ITS
 A GOOD   THING YOU HAVE A LANTERN OR YO
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U WOULD   NEVER HAVE FOUND YOUR WAY THRO
UGH THESE CAVES.":GOTO 1550
590 PRINT"YOU ARE IN A SMALL CAVERN THAT
 HAS EXITSTO THE NORTH, SOUTH AND EAST.
THE FLOOR OF THIS CAVERN IS COVERED IN R
OTTING    SEAWEED.":GOTO 1550
600 IF n=280 AND t6<>2 THEN PRINT"YOU WA
LK INTO THE SPIDERS WEB. THE      SPIDER
S INSTANTLY ATTACK YOU. THE POISONFROM T
HESE SMALL SPIDERS IS DEADLY AND  YOU DI
E A SLOW AND PAINFUL DEATH.":GOTO 1590
610 PRINT"YOU WALK ALONG A SHORT PASSAGE
 THAT RUNSEAST AND WEST.":GOTO 1550
620 PRINT"YOU HAVE ENTERED A LARGE CAVER
N. THE    ROOF OF THIS CAVERN IS SO HIGH
 THAT THE DIM LIGHT FROM YOUR LANTERN CA
NNOT REACHIT. EXITS ARE TO THE NORTH, EA
ST AND    WEST.":GOTO 1550
630 PRINT"YOU ARE IN A NARROW TUNNEL THA
T RUNS    NORTH AND SOUTH.":GOTO 1550
640 PRINT"YOU ARE AT A DEAD END. YOU LOO
K ALL     AROUND BUT CAN FIND NO OTHER W
AY TO     CONTINUE.":GOTO 1550
650 PRINT"YOU WALK ALONG A SMALL PASSAGE
 UNTIL YOUREACH A SHARP CORNER. YOU CAN
MOVE WEST OR NORTH FROM THIS POINT.":GOT
O 1550
660 PRINT"YOU ARE IN A SMALL CAVERN. TO
THE NORTH IS A DARK AND RATHER CREEPY LO
OKING     PASSAGE. BUT TO THE EAST YOU C
AN SEE DIMAND MISTY DAYLIGHT POURING IN
THROUGH A CAVE ENTRANCE.":GOTO 1550
670 PRINT"YOU WALK ALONG A NARROW PASSAG
E UNTIL   YOU REACH A DEAD END. IT LOOKS
 AS THOUGHYOU WILL HAVE TO WALK BACK SOU
TH.":GOTO 1550
680 IF s2=1 THEN PRINT"YOU ARE ON THE BE
ACH IN A SMALL COVE.   LOOKING AROUND YO
U CAN SEE CAVES TO THE NORTH AND WEST.":
GOTO 1550
690 PRINT"YOU WALK OUT OF THE CAVE INTO
A SMALL   SANDY COVE. TO THE NORTH AND W
EST YOU   CAN SEE CAVE ENTRANCES. YOU DE
CIDE TO   INVESTIGATE THE COVE ALITTLE M
ORE. YOU  SET OFF BUT BEFORE YOU CAN GET
 TOO FAR  YOU ARE CONFRONTED BY A GIANT
CRAB."
700 PRINT"DON'T MOVE OR IT WILL ATTACK Y
OU.":GOTO 1550
710 PRINT"YOU ARE IN A SMALL CAVERN. TO
THE SOUTH YOU CAN SEE DAYLIGHT. TO THE N
ORTH IS A DARK FORBIDDING TUNNEL.":GOTO
1550
720 PRINT"YOU HAVE ENTERED A MASSIVE CAV
ERN. IT ISSO LARGE THAT WHEN YOU STAND I
N THE     MIDDLE OF THE FLOOR THE FEEBLE
 LIGHT    FROM YOUR OLD LANTERN CANNOT R
EACH ANY  OF THE WALLS.":GOTO 1550
730 PRINT"YOU WALK ALONG A NARROW TUNNEL
 UNTIL YOUCOME TO A SHARP TURN. YOU CAN
MOVE NORTHAND EAST FROM HERE.":GOTO 1550
740 PRINT"YOU ARE STANDING AT THE BOTTOM
 OF A LONGFLIGHT OF UNEVEN STONE STAIRS
THAT LEAD UPWARDS INTO THE GLOOM.":GOTO
1550
750 PRINT"YOU ARE AT THE TOP OF A LONG F
LIGHT OF  UNEVEN STEPS THAT LEAD DOWNWAR
DS INTO   THE DARK AND GLOOMY CAVERNS BE
LOW.":GOTO 1550
760 PRINT"YOU WALK INTO A SMALL CAVE THA
T HAS ONLYGOT ONE EXIT. LOOKING AROUND Y
OU SEE A  SMALL HOLE IN THE FLOOR.":GOTO
 1550
770 PRINT"YOU WALK ALONG A NARROW PASSAG
E UNTIL   SUDDENLY YOU STEP OVER THE EDG
E OF A    DEEP SHAFT. YOU FALL FASTER AN
D FASTER  UNTIL YOU FALL OUT OF THE SHAF
T INTO    OPEN AIR. LOOKING DOWN YOU SEE
 THE SEA  RUSHING TOWARDS YOU. YOU ARE K
ILLED THE"
780 PRINT"SECOND YOU HIT THE WATER.":GOT
O 1590
790 PRINT"YOU ARE IN A LARGE CAVERN. PAS
SAGES LEADOFF TO THE SOUTH, EAST AND WES
T.":GOTO 1550
800 PRINT"YOU ARE IN A LARGE CAVERN THAT
 HAS EXITSTO THE NORTH, SOUTH, EAST AND
WEST.":GOTO 1550
810 PRINT"YOU ARE IN A SMALL CAVERN THE
WALLS OF  WHICH ARE A STRANGE RED COLOUR
  YOU CAN MOVE NORTH OR EAST.":GOTO 1550

820 PRINT"YOU WALK ALONG A DARK NARROW P
ASSAGE    UNTIL IT ABRUPTLY ENDS AT A SO
LID ROCK  WALL. YOU HAVE NO CHOICE BUT T
O MOVE TO THE SOUTH.":GOTO 1550
830 PRINT"YOU ENTER A SMALL CAVERN THAT
HAS A     MASSIVE STALACTITE HANGING FRO
M THE     CENTER OF THE ROOF. THE ONLY E
XIT FROM  THIS CAVERN IS TO THE SOUTH.":
GOTO 1550
840 PRINT"YOU ARE IN A LARGE OVAL SHAPED
 CAVERN.  YOU CAN SEE EXITS TO THE NORTH
, EAST ANDWEST.":GOTO 1550
850 PRINT"YOU HAVE ENTERED A SMALL CAVER
N WITH A  LOW ROOF. IN SOME PLACES IT IS
 SO LOW   THAT YOU HAVE TO STOOP TO GET
UNDER IT.":GOTO 1550
860 PRINT"YOU WALK INTO A LARGE CAVERN T
HAT HAS A SOLID ROCK FLOOR. LOOKING AROU
ND YOU SEEA FEW BITS OF DRIED SEAWEED.":
GOTO 1550
870 PRINT"YOU ARE IN A SMALL CAVERN THAT
 HAS EXITSTO THE WEST AND SOUTH.":GOTO 1
550
880 PRINT"YOU HAVE ENTERED A LARGE CAVER
N. LOOKINGAROUND YOU SEE THAT TO THE NOR
TH THE    CAVERN ENDS AT THE EDGE OF A V
ERY STEEP CLIFF. YOU COULD KILL YOURSELF
 TRYING TOGET DOWN THERE. YOU CAN SEE A
TUNNEL OFFTO THE EAST.":GOTO 1550
890 IF t9=0 THEN PRINT"YOU CLIMB DOWN TH
E STEEP CLIFF. IT MUST BE A MIRACLE, YOU
 ARE STILL ALIVE. BUT IDON'T THINK YOU W
ILL BE ABLE TO CLIMB   BACK UP AGAIN.":T
9=1
900 PRINT"YOU ARE IN A MASSIVE CAVERN TH
AT APPEARSTO HAVE NO ROOF. THE NORTH WAL
L SLOPES  UP AT ABOUT SIXTY DEGREE'S.":G
OTO 1550
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910 PRINT"YOU WALK INTO A SMALL CAVERN T
HAT HAS A VERY HIGH ROOF. LOOKING AROUND
 YOU SEE  EXITS TO THE NORTH AND EAST.":
GOTO 1550
920 IF n=268 AND t8=1 THEN PRINT"YOU WAL
K ALONG A NORTH-SOUTH PASSAGE    UNTIL Y
OU SEE AN OPEN RUSTY DOOR.":GOTO 1550
930 PRINT"YOU WALK ALONG A NARROW PASSAG
E UNTIL   YOUR WAY IS BLOCKED BY A LARGE
 IRON DOOR":GOTO 1550
940 PRINT"YOU ARE IN A LARGE CIRCULAR CA
VERN THAT HAS EXITS TO THE NORTH, SOUTH
AND EAST.":GOTO 1550
950 PRINT"YOU HAVE ENTERED A SMALL CAVER
N WITH A  LOW ROOF. YOU SEE EXITS TO THE
 NORTH,   SOUTH AND WEST.":GOTO 1550
960 PRINT"YOU HAVE WALKED INTO A MASSIVE
 CAVERN.  THE DIM LIGHT FROM YOUR LANTER
N CANNOT  PENETRATE VERY FAR INTO THE GL
OOMY      DEPTHS OF THIS HUGH CAVERN.":G
OTO 1550
970 PRINT"YOU ARE IN A SMALL ROUND CAVE
THAT HAS AHIGH ROOF. LOOKING AROUND YOU
SPOT EXITSTO THE SOUTH AND EAST.":GOTO 1
550
980 PRINT"YOU WALK ALONG A WIDE PASSAGE
UNTIL IT  STOPS AT A DEAD END. BAD LUCK,
 YOU WILL HAVE TO GO BACK THE WAY YOU CA
ME.":GOTO 1550
990 PRINT"YOU WALK ALONG A PASSAGE UNTIL
 YOU REACHA JUNCTION. YOU CAN MOVE TO TH
E SOUTH,  EAST OR WEST FROM HERE.":GOTO
1550
1000 PRINT"YOU HAVE ENTERED A SMALL CAVE
RN THE    WALLS OF WHICH ARE VERY SMOOT
H AND     BRILLIANT WHITE IN COLOUR. YO
U SEE EXITSTO THE SOUTH AND EAST.":GOTO
1550
1010 PRINT"YOU WALK INTO A SMALL CAVERN
THAT HAS  BEEN CARVED OUT OF THE SOLID
ROCK. YOU CAN SEE EXITS TO THE SOUTH, E
AST AND   WEST FROM HERE.":GOTO 1550
1020 PRINT"YOU ARE IN A SMALL CAVERN THA
T HAS ONLY ONE EXIT.":GOTO 1550
1030 PRINT"YOU WALK ALONG A NARROW PASSA
GE UNTIL  YOU REACH A SHARP CORNER. YOU
 CAN MOVE SOUTH OR WEST FROM THIS POINT
 ":GOTO 1550
1040 PRINT"YOU WALK INTO A SMALL CAVERN
THAT HAS  EXITS TO THE NORTH, SOUTH AND
 EAST. TWO STRANGE GUARDS ARE GUARDING T
HE EXITS TOTHE NORTH AND EAST. A LARGE S
IGN READS AS FOLLOWS:-"
1050 PRINT"YOU MAY ASK ONE GUARD ONE QUE
STION TO  FIND OUT THE CORRECT TUNNEL T
O TAKE. BUTBE WARNED ONE GUARD TELLS THE
 TRUTH THE OTHER LIES."
1060 PRINT"YOU ASK ONE OF THE GUARDS THE
 FOLLOWING QUESTION. 'if i asked the oth
er guard   which was the correct tunnel
to take    which tunnel would he point t
o'. THE    GUARD POINTS TO THE NORTH TUN
NEL."
1070 PRINT"'now i know which tunnel to t
ake' YOU  SAY TO YOURSELF. THEN YOU SUD
DENLY HAVE A LAPSE OF MEMORY AND FORGET.
":GOTO 1550
1080 PRINT"YOU WALK INTO A DARK TUNNEL.
SUDDENLY A ROCK FALL BLOCKS THE PASSAGE
BEHIND YOU.I HOPE YOU HAVE TAKEN THE RIG
HT PASSAGE.":t8=0:yp(155)=13:yp(141)=13:
GOTO 1550
1090 PRINT YOU WALK ALONG A PASSAGE UNTI
L YOU REACHA SHARP TURN. YOU CAN MOVE WE
ST OR SOUTHFROM HERE.":GOTO 1550
1100 PRINT"YOU HAVE ENTERED A LARGE CAVE
RN WITH A  HIGH ROOF. LOOKING AROUND YOU
 SEE EXITS TO THE NORTH AND EAST.":GOTO
1550
1110 PRINT"YOU ARE IN A LARGE CAVERN THA
T HAS MANY STALAGTITES HANGING FROM THE
ROOF, YOU  SEE EXITS TO THE SOUTH AND EA
ST.":GOTO 1550
1120 PRINT"YOU WALK INTO A SMALL CAVERN
THAT HAS   WALLS THAT ARE ALL THE COLOUR
S OF THE   RAINBOW. EXITS ARE TO THE NOR
TH AND EAST":GOTO 1550
1130 PRINT"YOU WALK ALONG A LONG NARROW
PASSAGE    UNTIL YOU COME TO A SHARP COR
NER. YOU   CAN MOVE SOUTH OR EAST.":GOTO
 1550
1140 IF it(6)<>500 THEN PRINT"YOU ENTER
A SMALL CAVERN. A MEAN LOOKINGSMUGGLER L
OOKS AT YOU FROM A CORNER OF  THE CAVERN
.":GOTO 1550
1150 PRINT"YOU WALK INTO A SMALL CAVERN.
 LOOKING   AROUND YOU COME FACE TO FACE
WITH A MEANLOOKING SMUGGLER. HE LOOKS YO
U UP AND   DOWN AND SEE'S THE ";IT$(6);"
.";"HOW DARE YOU STEAL MY PROPERTY HE SH
OUTSAND INSTANTLY KILLS YOU.":GOTO 1590
1160 PRINT YOU HAVE ENTERED A MASSIVE CA
VERN. IT ISSO LARGE THAT THE DIM LIGHT F
ROM YOUR   LANTERN CANNOT REACH ANY OF T
HE WALLS ORROOF.":GOTO 1550
1170 IF yp(222)=12 THEN PRINT"YOU ENTER
A SMALL CAVE. LOOKING AROUND  YOU SEE TH
E GHOST OF LONG JOHN SILVER   THE FAMOUS
 PIRATE. I DON'T THINK HE IS  GOING TO L
ET YOU PAST.":GOTO 1550
1180 PRINT"YOU ENTER A SMALL CAVERN. LOO
KING AROUNDYOU SEE A VERY HAPPY PIRATE G
HOST. HE   SMILES AND WAVES TO YOU AS YO
U ENTER.":GOTO 1550
1190 PRINT"YOU ARE IN A SMALL CAVERN. TH
E FLOOR OF THIS CAVERN IS RATHER UNEVEN
AND YOU    HAVE TO WATCH WHERE YOU STEP.
 EXITS ARE TO THE NORTH, EAST AND WEST."
:GOTO 1550
1200 PRINT"YOU WALK INTO A CAVERN THE FL
OOR OF     WHICH IS COVERED IN SAND. SUD
DENLY YOU  FEEL YOURSELF SINKING. THIS M
UST BE     QUICKSAND. YOU TRY TO STRUGGL
E FREE BUT ONLY GET STUCK EVEN MORE UNTI
L YOU      FINALLY VANISH FOREVER.":GOTO
 1590
```

Tape subscribers please note that the complete adventure will be provided with publication of the final part of the adventure.

CP/M Revisited

A Primer for Beginners - Part Three

from Fred Robertson-Mudie

Consider now the naming of files and programs. They can be called virtually any name desired, provided some basic rules are adhered to, i.e. the first part of the file name is no more than eight letters and numbers, and the second part, or extension, is no more than three letters or numbers. There are certain characters which cannot be used, though these are detailed in the manual. The standard way of referring to an example filename is to denote it as FILENAME.EXT though this is sometimes abbreviated to FN.FT. In addition, there are certain conventions, in regard to the extensions, used for naming files and programs, and following these conventions can be useful when looking at a file on disc to see exactly what type it is. The more common extension conventions are as follows:-

File Extension	Type of file or program
.COM	CPM command or executable file
.BIN	Binary File
.BAS	Basic File
.TXT	Text or document file
.DOC	Text or document file
.BAK	Back-up file (of any kind)
.ASM	Assembly listing file
.HEX	Intel hexadecimal file
.LBR	Library file
.BQS	Squeezed file

Further details of some of these file types will be dealt with later in this series.

In relation to the CPM programs to be covered in this series of articles, it is not intended to cover the standard ones which are supplied on the Amstrad disc, with a few exceptions, but will cover primarily the Public Domain programs which are available in many User Group Libraries.

Moving now to the various programs to be discussed, these are known as Transient Programs. These programs, like Basic programs are loaded into the Transit Program Area (TPA) of the machine and are dumped when another program is loaded in. There are CPM resident System Extension (RSX) programs, but they will be dealt with later in the series.

The first transient program to be dealt with is one called CAT.COM. This is more usually known as DR.COM, but I have renamed it for my own convenience as its function is so similar to the CAT command in Amstrad Basic and it can be force of habit to type CAT rather than DIR when using CPM. The program is useful in that it not only gives a full Basic style display of programs on a disc, including their size, but details the number directory entries used and left and the amount of disc space used and left. There is a slightly better, and clearer version on the latest Library** disc which I have called CAT3.COM. This version takes 1K less disc space and can be used for both CPM 2.2 and CPM Plus. It can, of course, be renamed CAT.COM (or whatever you like) when placed on your disc.

It should be noted that a running check on the number of directory entries used on a disc can be very useful if you have a disc with lots of fairly small programs on it, as CPM 2.2 and CPM Plus only allow a maximum of 64 directory entries per disc. What would happen if you tried to exceed that number of directory entries is open to speculation, but there is a good chance that something would disappear into the void.

The next program to consider is PIP.COM which is probably one of the more commonly used CPM programs. Whilst the use of PIP is often confined to transferring programs from one disc drive to another, it is not often appreciated that it has a number of other useful functions. It can, for example, transfer a program from one drive to another whilst, at the same time, changing the name of the program. This is done in the following way:

```
A>PIP B:NEWNAME.TXT=
A:OLDNAME.TXT
```

It can, of course, be used to duplicate a program on the same disc with a different name in the following manner:-

```
A>PIP NEWNAME.TXT=
OLDNAME.TXT
```

PIP can also be used to concatenate, i.e. merge, two or more files. This is done as follows:-

```
A>PIP BIGFILE.ONE=
SMALFILE.ONE,SMALFILE.TWO
```

PIP has a number of other uses including sending data to and receiving data from the RS232 port (used for transferring files between machines without having to use Modems and phone lines), as well as having approximately nineteen optional parameters, including verification, echoing to the console, translating to upper or lower case etc. etc. The full details of the uses of the program and its optional parameters are too numerous to mention here, but they can be found in various texts including the two mentioned in part 1 of this series.

** Fred is referring to the Canberra Amstrad User Group Library disc.

INFOCOM ADVENTURES

A Review

by Michael Shepherd

Infocom adventures, the cause of much heartache and pain to many Commodore 64 and other computer owners, are now available for the Amstrad - from the CPC464 to the PCWs. In fact a major point of discussion among computer owners are hints and clues to these adventures, now we can join in this debate.

Infocom are an American based company, originating in the late Seventies from the Massachusetts Institute of Technology.

They got started by seeing the original mainframe adventure game by Woods and Crowther 'Adventure' and deciding they could improve on that. This was the start of their most famous game ZORK; which was released for home computers as ZORKS 1, 2 and 3. They have written many more games since then, averaging one or two titles per year.

One of the outstanding features of all Infocom adventures is that they have a parser that is second to none. (The parser is that bit of the program that tries to make sense of your input and pulls the right data for the reply from the memory.) Slowly other software houses are catching up to this standard eg. Level 9, but not many adventures understand the input "Drop all except the purple handkerchief and give the hanky to the Grue with the head cold" Infocom's do!

One very nice thing about the conversion of the adventures to the Amstrad is that Infocom have released practically all their line in one hit rather than in a trickle. I have seen available on the Amstrad ZORK 1, WITNESS, SEA STALKER, SORCERER, THE HITCHHIKERS GUIDE TO THE GALAXY, ENCHANTER and others. They have four levels of adventure ranging from introductory to expert with standard being the main category. Their story-lines range from Fantasy, Science Fiction, Mystery and Action, so there is something to suit every taste.

However as their programs are so large, they are only available on disc as the replies are read from the disc all the time. (So you have to leave the disc in the machine while playing.) If your machine runs CPM+ you can run the program immediately. With CPM 2.2 you first have to follow the instructions enclosed so you can go into CPM and run the program with the ICPM command then 'filename' when CPM has been booted. I have a 464 and have had no problems with the adventures.

HITCH HIKERS GUIDE TO THE GALAXY

I own this adventure game so I'll finish with a review of it.

The game is based on the zany Sci-Fi book of the same name. In fact the author of the book, Douglas Adams, co-wrote this adventure. You play Arthur Dent, having just woken to one of the worst days of his life, and on his way to the legendary planet of Magrathea. (He doesn't know that just yet.) On his way there he encounters Vogon poetry, Babel fish and Tea. The puzzles are mindwrenching at times; the first being how to avoid being killed by a flying brick when his home is demolished.

The storyline is excellent and very funny, try to input a command when you've been killed by the brick; and watch for the "thing your Aunt gave you but you can't work out what it is" in your inventory. The adventure quickly diverges from the book's plot which can only offer some vague clues to the first few puzzles; especially when in the spaceship 'Heart of Gold' at last all the other characters go off to the sauna leaving you to your own devices.

This is an excellent and at times fiendishly difficult adventure. This or one other of the Infocom adventures is a "must buy" for your collection. It, like all of Infocom's products, is well presented and documented with a large manual and comes with a few extras like your very own fluff, a pre-packaged microscopic space fleet, and no tea. But the price of $50 to $60 could deter some people from buying more than one Infocom adventure.

PERSONALITY TESTER

A 'not too serious' check on how you fit in with others around you

from Edward Leach

The original version of this program first appeared in the October 1984 issue of the English 'Practical Computing' magazine. It was written on a Research Machines 380Z (what ever that is) and required 36K of RAM. This Amstrad version requires about 14k.

Many changes had to be made to enable it to run on the Amstrad (graphics etc.), but of course, the important score marking arrays have been retained with the same values.

There are some 60 questions to answer with a simple Y or N. The answers fall into three categories - the first two being used for analysis purposes which produces both a textual and graph result - the third (L) determines the number of dishonest answers.

```
10 ON BREAK GOSUB 3810
20 REM * PERSONALITY TEST *
30 REM AMSTRAD CPC VERSION - SEPT '86
40 REM TED LEACH
50 DEFINT A-Z
60 DIM EXTROYES(15),NEUROYES(24),INTRODU
CTION$(23),INSTRUCTION$(15),QUESTION$(57
)
70 GOSUB 2370:GOSUB 150:GOSUB 390
80 GOSUB 290:OPTION$="ABCQ":GOSUB 1700
90 ON SELECT GOSUB 640,680,780,110
100 IF SELECT<>4 THEN GOTO 80
110 CALL 0
120 REM
130 REM * TITLE SCREEN *
140 REM
150 MODE 0:BORDER 6:INK 0,26:INK 1,6:INK
 2,0:INK 3,1:INK 4,9:INK 5,8:PAPER 0
160 FOR SCR1=2 TO 20 STEP 2:PEN 3:LOCATE
 SCR1-1,1:PRINT CHR$(224);:PEN 1:LOCATE
SCR1,1:PRINT CHR$(225);:NEXT SCR1
170 FOR SCR4=2 TO 24 STEP 2:PEN 3:LOCATE
 20,SCR4:PRINT CHR$(224);:PEN 1:LOCATE 2
0,SCR4+1:PRINT CHR$(225);: NEXT SCR4
180 FOR SCR6=19 TO 3 STEP -2:PEN 3:LOCAT
E SCR6,25:PRINT CHR$(224);:PEN 1:LOCATE
SCR6-1,25:PRINT CHR$(225);:NEXT SCR6
190 FOR SCR2=25 TO 3 STEP -2:PEN 3:LOCAT
E 1,SCR2:PRINT CHR$(225);:PEN 1:LOCATE 1
,SCR2-1:PRINT CHR$(224);: NEXT SCR2
200 LOCATE 3,12:PEN 2:PRINT "PERSONALITY
 TEST":LOCATE 4,14:PRINT "PRESS ANY KEY"

210 LOCATE 10,3:PEN 4:PRINT CHR$(199);CH
R$(200):LOCATE 10,4:PRINT CHR$(201);CHR$
(202):LOCATE 6,6:PRINT "INTROVERT?"
220 LOCATE 10,20:PEN 5:PRINT CHR$(203);C
HR$(204):LOCATE 10,21:PRINT CHR$(205);CH
R$(206):LOCATE 8,23:PRINT "EXTROVERT?"
230 I=1:I2=3
240 WHILE INKEY$="":INK I,1:INK I2,6:T=I
:I=I2:I2=T:FOR TI=1 TO 200:NEXT TI:GOTO
240:WEND
250 INK 1,6:INK 3,1:RETURN
260 REM
270 REM * MAIN MENU *
280 REM
290 MODE 1:PEN 3
300 LOCATE 13,10:PRINT "A. INTRODUCTION.
"
310 LOCATE 13,12:PRINT "B. INSTRUCTIONS.
"
320 LOCATE 13,14:PRINT "C. PERSONALITY T
EST."
330 LOCATE 13,16:PRINT "Q. QUIT PROGRAM.
"
340 LOCATE 13,18:PRINT "YOUR OPTION ?"
350 RETURN
360 REM
370 REM * SET UP SCORE ARRAYS ETC *
380 REM
390 RESTORE 2500
400 FOR EY=1 TO 15:READ EXTROYES(EY):NEX
T EY
410 FOR EN=1 TO 9:READ EXTRONO(EN):NEXT
EN
420 FOR NY=1 TO 24:READ NEUROYES(NY):NEX
T NY
430 FOR YL=1 TO 3:READ YESLIE(YL):NEXT Y
L
440 FOR NL=1 TO 6:READ NOLIE(NL):NEXT NL
450 REM
460 REM * SET UP INSTRUCTIONS & INRODUCT
ION *
470 REM
480 FOR INTROD=1 TO 22:READ INTRODUCTION
$(INTROD):NEXT INTROD
490 FOR INFORM=1 TO 15:READ INSTRUCTION$
(INFORM):NEXT INFORM
500 REM
510 REM * SET UP QUESTIONS & GROUPNAMES
*
520 REM
530 FOR QUESTNUM=1 TO 57:READ QUESTION$(
QUESTNUM):NEXT QUESTNUM
540 FOR P=1 TO 8:READ GROUP$(P):NEXT P
550 REM
560 REM * SET UP EXPLANATION OF SCORES *
570 REM
580 FOR EXE=1 TO 7:READ EXPLAIN$(EXE):NE
```

```
XT EXE
590 FOR EXN=1 TO 10:READ EXPLAN$(EXN):NE
XT EXN
600 RETURN
610 REM
620 REM * INTRODUCTION *
630 REM
640 CLS:LOCATE 10,1:PEN 1:PRINT "** PERS
ONALITY TEST **"
650 FOR INTROD=1 TO 21:LOCATE 1,INTROD+2
:PEN 2:PRINT INTRODUCTION$(INTROD):NEXT
660 PRINT:PEN 1:PRINT INTRODUCTION$(22)
670 CALL &BB18:RETURN
680 REM INSTRUCTIONS
690 CLS:PEN 3:LOCATE 15,2:PRINT "INSTRUC
TIONS"
700 FOR INFORM=1 TO 14:LOCATE 1,INFORM+3
:PEN 2:PRINT INSTRUCTION$(INFORM):NEXT
710 PRINT:PEN 3:PRINT INSTRUCTION$(15)
720 CALL &BB18:RETURN
730 REM
740 REM * QUESTIONS SCREEN *
750 REM
760 MODE 1:BORDER 1
770 WINDOW #1,1,40,5,7 'Question Window
780 PEN 2:LOCATE 1,2:PRINT"Question "
790 LOCATE 20,2:PRINT"Time:     Secs"
800 PEN 3:LOCATE 1,3:PRINT STRING$(40,95
)
810 LOCATE 1,8:PRINT STRING$(40,95)
820 LOCATE #1,7,1:PEN #1,3:PRINT #1,"Ple
ase type your answer."
830 LOCATE #1,7,2:PRINT #1,"Type 'Y' for
 YES, 'N' for NO."
840 LOCATE #1,7,3:PRINT #1,"Press  Any
Key  To  Start."
850 LOCATE 12,11:PRINT "YOUR ";:PEN 1:PR
INT "E ";:PEN 3:PRINT "SCORE IS :";
860 LOCATE 12,13:PRINT "YOUR ";:PEN 1:PR
INT "N ";:PEN 3:PRINT "SCORE IS :";
870 LOCATE 12,15:PRINT "YOUR ";:PEN 1:PR
INT "L ";:PEN 3:PRINT "SCORE IS :";
880 LOCATE 5,17:PEN 3:PRINT "QUESTIONS N
OT ANSWERED :";
890 CALL &BB18:E=0:N=0:L=0:MISSQUEST=0:C
LS#1
900 REM
910 REM * ASK QUESTIONS IN TURN *
920 REM
930 FOR QUESTNUM=1 TO 57
940 PEN 1:LOCATE 9,2:PRINT QUESTNUM
950 PEN #1,2:PRINT#1,QUESTION$(QUESTNUM)
:PRINT CHR$(7):T=0:DUR=TIME/300
960 ANSWER$=UPPER$(INKEY$):T=TIME/300-DU
R:LOCATE 25,2:PRINT T
970 IF T>=10 THEN CLS#1:PEN #1,1:LOCATE
#1,7,1:PRINT#1,CHR$(7);"Sorry, time's up
, let's go":LOCATE #1,7,2:PRINT#1,"on to
 the next question!":MISSQUEST=MISSQUEST
+1:FOR DURATION=1 TO 2100:NEXT DURATION:
GOTO 1130
980 IF ANSWER$="" THEN 960
990 IF ANSWER$<>"Y" AND ANSWER$<>"N" THE
N CLS#1:PEN #1,1:PRINT#1,CHR$(7);"     Y
for YES, N for NO, REMEMBER!!":FOR DURAT
ION=1 TO 2100:NEXT DURATION:CLS#1:PEN #1
,2:PRINT#1,QUESTION$(QUESTNUM):GOTO 960
1000 REM
1010 REM * MARK QUESTIONS/SET SCORE *
1020 REM
1030 FOR EY=1 TO 15:IF ANSWER$="Y" AND Q
UESTNUM=EXTROYES(EY) THEN E=E+1
1040 NEXT EY 'E SCORE
1050 FOR EN=1 TO 9:IF ANSWER$="N" AND QU
ESTNUM=EXTRONO(EN) THEN E=E+1
1060 NEXT EN 'E SCORE
1070 FOR NY=1 TO 24:IF ANSWER$="Y" AND Q
UESTNUM=NEUROYES(NY) THEN N=N+1
1080 NEXT NY 'N SCORE
1090 FOR YL=1 TO 3:IF ANSWER$="Y" AND QU
ESTNUM=YESLIE(YL) THEN L=L+1
1100 NEXT YL 'L SCORE
1110 FOR NL=1 TO 6:IF ANSWER$="N" AND QU
ESTNUM=NOLIE(NL) THEN L=L+1
1120 NEXT NL 'L SCORE
1130 LOCATE 29,11:PRINT USING"##";E:LOCA
TE 29,13:PRINT USING"##";N:LOCATE 29,15:
PRINT USING"##";L:LOCATE 29,17:PRINT USI
NG"##";MISSQUEST
1140 CLS#1:NEXT QUESTNUM
1150 IF E>20 THEN E=20
1160 IF N>20 THEN N=20
1170 IF MISSQUEST=57 THEN RETURN
1180 IF L<=5 THEN GOTO 1210
1190 LOCATE 2,19:PRINT "I don't think yo
u have been too honest"
1200 LOCATE 2,20:PRINT "have you?- The t
est relies on honesty!"
1210 LOCATE 7,25:PRINT "PRESS < RETURN >
 TO CONTINUE."
1220 IF INKEY$<>CHR$(13) THEN 1220
1230 REM
1240 REM * EXPLAIN SCORE *
1250 REM
1260 CLS:CLS#1
1270 LOCATE 4,2:PRINT "Your  E  score wa
s ";E
1280 PEN 2:FOR EXE=1 TO 7:LOCATE 1,EXE+2
:PRINT EXPLAIN$(EXE):NEXT EXE
1290 LOCATE 4,11:PEN 1:PRINT "Your  N  s
core was ";N:PEN 2
1300 FOR EXN=1 TO 10:LOCATE 1,EXN+11:PRI
NT EXPLAN$(EXN):NEXT EXN
1310 IF INKEY$<>CHR$(13) THEN 1310
1320 REM
1330 REM * GRAPH MENU *
1340 REM
1350 MODE 1
1360 LOCATE 10,10:PRINT "A. EXTROVERT/IN
TROVERT."
1370 LOCATE 10,12:PRINT "B. NEUROTICISM/
STABILITY."
1380 LOCATE 10,14:PRINT "Q. QUIT MENU."

1390 LOCATE 10,16:PRINT "YOUR OPTION ?"
1400 OPTION$="ABQ":GOSUB 1700:ON SELECT
GOSUB 1470,1560,1430
1410 IF SELECT<>3 THEN 1350
1420 RETURN
1430 RETURN
```

```
1440 REM
1450 REM * GROUPVALUES 'E' *
1460 REM
1470 RESTORE 1650
1480 FOR EXIN=1 TO 7:READ GROUPVAL(EXIN)
:NEXT EXIN:GROUPVAL(8)=E
1490 REM
1500 REM * DRAW EXTROVERSION GRAPH *
1510 REM
1520 TITLE=1:GOSUB 1780:ERASE GROUPVAL:R
ETURN
1530 REM
1540 REM * GROUPVALUES 'N' *
1550 REM
1560 RESTORE 1660
1570 FOR NEST=1 TO 7:READ GROUPVAL(NEST)
:NEXT NEST:GROUPVAL(8)=N
1580 REM
1590 REM * DRAW NEUROTICISM GRAPH *
1600 REM
1610 TITLE=2:GOSUB 1780:ERASE GROUPVAL:R
ETURN
1620 REM
1630 REM * GROUPVALUES 'E' & 'N' *
1640 REM
1650 DATA 12.1,11.1,12.7,13.6,10.2,8.7,1
3.8
1660 DATA 9.1,10.0,10.6,8.3,14.0,15.2,13
.7
1670 REM
1680 REM * SELECT MENU OPTION *
1690 REM
1700 SELECT=0:WHILE SELECT=0:K$=INKEY$
1710 IF K$>""THEN SELECT=INSTR(OPTION$,U
PPER$(K$))
1720 WEND:RETURN
1730 REM
1740 REM * DRAW GRAPHS *
1750 REM
1760 REM * BAR CHARTS *
1770 REM
1780 MODE 1:BORDER 26
1790 NUMOFBARS=8
1800 REM
1810 REM * LABELS AND VALUES *
1820 REM
1830 REM * TITLE *
1840 REM
1850 IF TITLE=1 THEN LOCATE 11,1:PEN 1:P
RINT "EXTROVERT";:PEN 2:PRINT "/";:PEN 3
:PRINT "INTROVERT"
1860 IF TITLE=2 THEN LOCATE 13,1:PEN 1:P
RINT "NEUROTIC";:PEN 2:PRINT "/";:PEN 3:
PRINT "STABLE"
1870 REM
1880 REM * SCALE AND DRAW *
1890 REM
1900 REM * HORIZONTAL AXIS *
1910 REM
1920 FOR X=1 TO NUMOFBARS
1930 MOVE 48,47:DRAW(NUMOFBARS*72+56),47
,2
1940 NEXT X
1950 REM
1960 REM * VERTICAL AXIS *
1970 REM
1980 MOVE 48,48:DRAW 48,368
1990 FOR Y=80 TO 368 STEP 32:PLOT 47,Y+1
:NEXT Y
2000 REM
2010 REM * LABEL VERTICAL AXIS *
2020 REM
2030 LABELSCALE=0:SCALE=2
2040 PEN 3:LOCATE 1,22:PRINT USING"##";L
ABELSCALE
2050 FOR Y=20 TO 2 STEP -2
2060 LABELSCALE=LABELSCALE+SCALE
2070 IF LABELSCALE>10 THEN PEN 1
2080 LOCATE 1,Y
2090 PRINT USING"##";LABELSCALE
2100 NEXT Y
2110 REM
2120 REM * DRAW BARS *
2130 REM
2140 FOR P=1 TO NUMOFBARS:PEN 3
2150 YRANKS=GROUPVAL(P)/(SCALE/2) 'SCALE
 PER RANK
2160 BARSIZE=(22-YRANKS)+1
2170 FOR HEIGHT=22 TO BARSIZE STEP -1
2180 IF HEIGHT<=12 THEN PEN 1
2190 IF HEIGHT=22 THEN CHARS=1 ELSE CHAR
S=0
2200 IF HEIGHT=BARSIZE THEN CHARS=2
2210 LOCATE (P*4+3),HEIGHT
2220 IF CHARS=2 THEN PRINT CHR$(143);CHR
$(143);CHR$(223):GOTO 2250
2230 IF CHARS=1 THEN PRINT CHR$(143);CHR
$(143);CHR$(220) ELSE PRINT CHR$(143);CH
R$(143);CHR$(207)
2240 NEXT HEIGHT
2250 REM
2260 REM * PRINT GROUPNAMES *
2270 REM
2280 FOR GROUPNAME=1 TO LEN(GROUP$(P))
2290 LOCATE (P*4+2),(22-((LEN(GROUP$(P))
+1)-GROUPNAME))
2300 PEN 2:PRINT MID$(GROUP$(P),GROUPNAM
E,1)
2310 NEXT GROUPNAME:NEXT P
2320 LOCATE 10,24:PEN 2:PRINT "Press Any
 Key For Menu"
2330 CALL &BB18:RETURN
2340 REM
2350 REM * REDEFINE CHARACTERS *
2360 REM
2370 SYMBOL AFTER 199
2380 SYMBOL 199,&A,&5F,&33,&7B,&BF,&1F,&
77,&AC
2390 SYMBOL 200,&50,&FA,&CC,&EE,&7D,&F8,
&EE,&35
2400 SYMBOL 201,&78,&3C,&5F,&F,&E,&5C,&3
C,&3C
2410 SYMBOL 202,&1E,&3C,&FA,&F0,&70,&3A,
&3C,&3C
2420 SYMBOL 203,&1F,&7F,&79,&FD,&EF,&DF,
&AF,&F7
2430 SYMBOL 204,&F8,&FE,&9E,&DF,&F7,&FB,
&F5,&EF
2440 SYMBOL 205,&FB,&7D,&7E,&1F,&F,&1F,&
7C,&FC
```

```
2450 SYMBOL 206,&DF,&BE,&7E,&F8,&F0,&F8,
&3E,&3F
2460 RETURN
2470 REM
2480 REM * SCORE ARRAY DATA *
2490 REM
2500 DATA 1,3,8,10,13,17,22,25,27,39,44,
46,49,53,56
2510 DATA 5,15,20,29,32,34,37,41,51
2520 DATA 2,4,7,9,11,14,16,19,21,23,26,2
8,31,33,35,38,40,43,45,47,50,52,55,57
2530 DATA 6,24,36
2540 DATA 12,18,30,42,48,54
2550 REM
2560 REM * INTRODUCTION DATA *
2570 REM
2580 DATA "The majority of people seem f
ascinated"
2590 DATA "by the concept of personality
 testing,"
2600 DATA "perhaps because we are all in
terested in"
2610 DATA "our own personality. A QUESTI
ON/ANSWER"
2620 DATA "test giving an indication
 of our"
2630 DATA "personality is not new, datin
g back to"
2640 DATA "the 1940's."
2650 DATA "A commonly used test, the
  EYSENCK"
2660 DATA "personality inventory has h
ere been"
2670 DATA "adapted for use with the
AMSTRAD"
2680 DATA "computer. Questions are autom
atically"
2690 DATA "marked and your score worked
out and"
2700 DATA "explained immediately."
2710 DATA "A graph comparing your sco
re with"
2720 DATA "known scores of other social
groups is"
2730 DATA "then shown. These are the
GENERAL"
2740 DATA "POPULATION, UNIVERSITY STUDEN
TS, NURSES,"
2750 DATA "SALESMEN, ALCOHOLICS, FANAT
ICS and
2760 DATA "FEMALE CONVICTS. Please do no
t take the"
2770 DATA "test too seriously as it is b
y no means"
2780 DATA "foolproof."," PRESS ANY KEY
  TO RETURN TO MENU"
2790 REM
2800 REM * INSTRUCTIONS DATA *
2810 REM
2820 DATA "Hello, I,m going to ask
you some"
2830 DATA "questions about yourself
."
2840 DATA "The answers will be used
  to work"
2850 DATA "out an index of your per
sonality."
2860 DATA "The questions are about
how you"
2870 DATA "think, feel and act - you sh
ould try"
2880 DATA "to decide whether 'YES' or 'N
O' would"
2890 DATA "be the way you usually think
 or feel"
2900 DATA "Please relax, and try t
o answer"
2910 DATA "with your first reaction
to each"
2920 DATA "question. Try to answer q
uickly,"
2930 DATA "just by typing Y for 'Y
ES', and"
2940 DATA "                  N for 'N
O'."
2950 DATA "You have TEN seconds for each
 question."
2960 DATA " PRESS ANY KEY TO RETURN
 TO MENU"
2970 REM
2980 REM * QUESTION DATA *
2990 REM
3000 DATA "Do you like a lot of exciteme
nt and bustle about you?"
3010 DATA "Do you often have a restless
feeling that you would like to do som
ething, but don't know what?"
3020 DATA "Do you nearly always have a r
eady answer when people talk to yo
u?"
3030 DATA "Do you sometimes feel happy,
sometimes sad, for no particular reason
?"
3040 DATA "Do you usually stay in the ba
ckground atparties and get-togethers?"
3050 DATA "As a child, did you always do
 as you were told immediately, wit
hout grumbling?"
3060 DATA "Do you sometimes sulk?"
3070 DATA "When you are drawn into a qua
rrel, do you prefer to have it out
to being silent?"
3080 DATA "Are you moody?"
3090 DATA "Do you like mixing with peopl
e?"
3100 DATA "Have you often lost sleep ove
r your worries?"
3110 DATA "Do you sometimes get cross?"
3120 DATA "Would you call yourself happy
-go-lucky?"
3130 DATA "Do you often make up your min
d too late?"
3140 DATA "Do you like working alone?"
3150 DATA "Have you often felt listless
and tired for no good reason?"
3160 DATA "Are you rather lively?"
3170 DATA "Do you sometimes laugh at a d
irty joke?"
3180 DATA "Do you often feel fed up?"
3190 DATA "Do you feel uncomfortable in
```

```
anything   but everyday clothes?"
3200 DATA "Does your mind often wander w
hen you    are   trying   to   attend   c
losely  to something?"
3210 DATA "Can you put your thoughts int
o words    quickly?"
3220 DATA "Are you often lost in thought
?"
3230 DATA "Are you completely free of pr
ejudices ofany kind?"
3240 DATA "Do you like practical jokes?"
3250 DATA "Do you often think of your pa
st?"
3260 DATA "Do you like good food very mu
ch?"
3270 DATA "When you get annoyed, do you
need       someone friendly to talk to a
bout it?"
3280 DATA "Do you mind selling things or
 asking    for money for some good cause
?"
3290 DATA "Do you sometimes boast a litt
le?"
3300 DATA "Are you touchy about some thi
ngs?"
3310 DATA "Would you rather be at home o
n your own than at a boring party?"
3320 DATA "Do you sometimes get so restl
ess that   you can't sit long in a chair
?"
3330 DATA "Do you like planning things c
arefully,  well ahead of time?"
3340 DATA "Do you have dizzy turns?"
3350 DATA "Do you always answer a person
al letter  as  soon  as  you  can  after
 you have  read it?"
3360 DATA "Can you usually do things bet
ter by     figuring them out alone than
by talking to others?"
3370 DATA "Do you ever get short of brea
th         without  having done heavy wo
rk?"
3380 DATA "Are you an easy going sort of
 person,   not bothered about having eve
rything    just so?"
3390 DATA "Do you suffer from nerves?"
3400 DATA "Would you rather plan things
than do    things?"
3410 DATA "Do you sometimes put off unti
l tomorrow what you ought to do today?"
3420 DATA "Do you get nervous in places
like       lifts, trains, or tunnels?"
3430 DATA "When you make new friends, is
 it        usually you who makes the fir
st move,   or does the inviting?"
3440 DATA "Do you get very bad headaches
?"
3450 DATA "Do you generally feel that th
ings will  sort themselves out and come
right in   the end somehow?"
3460 DATA "Do you find it hard to fall a
sleep at   bedtime?"
3470 DATA "Have you sometimes told lies
in your    life?"
3480 DATA "Do you sometimes say the firs
t thing    that comes into your head?"
3490 DATA "Do you worry too long after a
n          embarassing experience?"
3500 DATA "Do you usually keep yourself
to         yourself, except with very cl
ose        friends?"
3510 DATA "Do you often get into a jam b
ecause     you do things without thinkin
g?"
3520 DATA "Do you like cracking jokes an
d telling  funny stories to your friends
?"
3530 DATA "Would you rather win than los
e a game?"
3540 DATA "Do you often feel self-consci
ous when   with superiors?"
3550 DATA "When the odds are against you
, do you   usually think it worth taking
 a chance?"
3560 DATA "Do you often get butterflies
in your    tummy before an important occ
asion?"
3570 REM
3580 REM * GROUPNAMES *
3590 REM
3600 DATA GEN POPULATION,UNI STUDENTS,NU
RSES,SALESMEN,ALCOHOLICS,FANATICS,PEM CO
NVICTS,YOUR SCORE
3610 REM
3620 REM * EXPLAIN SCORE DATA *
3630 REM
3640 DATA "   The   E  score is a measur
e of your"
3650 DATA "extroversion / introversion.
If your"
3660 DATA "score is above 10 you are pro
bably an"
3670 DATA "extrovert (easy-going, lively
  and"
3680 DATA "gregarious, and  a  bit  rest
less !)"
3690 DATA "Below 10 and you are more of
a intro-"
3700 DATA "vert (quiet, relaxed, a bit o
f a loner)."
3710 DATA "   The   N  score is a measur
e of your"
3720 DATA "stability / neuroticism ! If
your  N"
3730 DATA "score is below 10, you are fa
irly stable"
3740 DATA "Above 10 and you are rather n
eurotic !"
3750 DATA "This DOES NOT mean anything s
inister,"
3760 DATA "however, as the test is by no
 means"
3770 DATA "failsafe!"
3780 DATA "  Press the <RETURN> key when
 you are"
3790 DATA "  ready to see a chart compar
ing your"
3800 DATA "  scores with those of other
people."
3810 MODE 2:PEN 1:LIST
```

What makes LOCOMOTIVE run?

A second look by Petr Lukes

In the April 1986 issue we had a look at the way the editor stores BASIC statements, in a form suitable for execution by the interpreter. With the extension of the program we can now look at the storage of simple variables, both within the program lines and in a table immediately following the program area.

The operating system uses certain locations in the memory to store pointers to the start of the program and the start of the storage of variables. The addresses which initialise the variables prog, scalar, and array, apply to version 1.0. Later versions may use different locations, and while I expect that MALLARD will use a very similar form of storage, the pointers will be in a very different place. Perhaps an owner of a 6128 and a PCW will investigate and advise.

This time we will have a look at scalars, that is single-valued variables; arrays, which are a collection of values referenced by a single name, will be covered later.

Run the program at the end of this article and stop when line 30 is displayed.
Line 20 will appear as hex bytes 0d 00 00 6e 61 6d e5 ef . . . . . .
Line 30 as 0d 08 00 6e 61 6d e5 ef . .

Line 20 was not executed, and it shows how the editor stores the variable in the line; in line 30 the interpreter has established storage for the value, and saved its offset into the variable table.

To generalise, the reference to a variable in the BASIC line is stored in the format t1 o1 oh n a m e + 128 ef , where tl is the type of the variable, o1 and oh are the offset into the table in the lsb, msb format (i.e. offset=o1+oh*256), name is stored as entered except that the last character has bit 7 set (i.e. 128d added to it); ef is the token for the equal sign, which in this case means "store the following value in the memory referenced by name".

First the t1 byte: edit line 20 to name!=1, and the byte will appear as 04. Both 04 and 0d indicate that the variable is real, the only difference being the explicit declaration in 20 as opposed to the default declaration in line 30. Now add line 5 DEFINT n , and edit line 20 to name%=1 . The type bytes will now appear as 02 and 0b. If we change line 5 to DEFSTR n , change line 20 to name$="1" . and line 30 to name="1" the type bytes will be 03 and oc respectively.

In all these cases the offset into the table will remain the same, because the length of the variable name is the same.

We can now proceed to the dump of the scalars and see how the variable is stored in the table. With name still defined as string, the dump shows it stored as: N A M E+128 TT 11 al ah . Name is converted to upper case, with 128 added to the last character. For strings, the type byte tt is 02 (as opposed to 03/0c in the line). The length is given by 11 , 01 in our case. The address, given by al+ah*256(=019Fh), points to the first character of the string.

To show integers, change line 5 back to DEFINT n , and in line 30 enter name=&abcd . In the table, type will be 01 (as opposed to 02/0b in the line), and the value (&abcd) will be stored as CD AB, in the same order as in the line.

Now we go back to reals. Delete line 5, and change line 30 to name=.1 The table type byte will be 04, and the value both in the line and in the table will be stored in five bytes. Storage of real numbers is a subject too complicated to cover here.

So far we used unsigned numeric values, implicitly positive. Negative numbers will have the minus sign stored as f5 in the line (plus sign is indicated by f4). The real storage uses one bit to indicate a negative value, while a negative integer is stored as 65536+value: -1 will be stored as 65535=FFFFh.

The treatment of DEFined FUNctions can be discovered by a similar process.

This exercise can be used to deduce some rules for saving memory. Firstly, use integer variables rather than reals, where possible (i.e. if the values fit in the range -32768 to +32767): each one saves three bytes in the store.

Adventure programs generally have large amounts of text stored as DATA and read into one or more arrays. This means that each string uses up memory in the program area and again in the string store. A better solution would be to read the text into one array as needed, say room by room, although this can lead to delays due to "garbage collection", clearing out of abandoned strings. The delays can be minimized by deliberately invoking the garbage collection by PRINT FRE("")while waiting for a response.

An alternative would be to initialise each array element in the program lines, e.g. r$(0)="Introduction. . . . . ". The garbage collection problem would be avoided, but there is the overhead of extra typing and the extra bytes in each line to reference the array element and enclosing the string.

The next instalment will look at the storage of arrays and some odd bits and pieces.

```
10 GOTO 30
20 name=1
30 name=1
9000 id$="LOCO2 LKS 880609":MODE 1
9010 DEF FNadd(s)=PEEK(s)+PEEK(s+1)*256
9020 prog=FNadd(&AE81)'start of prog
9030 PRINT CHR$(24)"Locomotive BASIC 1.0
 on AMSTRAD CPC464":PRINT id$CHR$(24)
9040 s=prog+1:a=@id$:v=FNadd(a+1)
9050 WHILE s<v
9060 Le=FNadd(s):Ln=FNadd(s+2)
9070 PRINT:PRINT USING"Le#### Ln####  St
art &h";Le;Ln;HEX$(s,4)
9080 FOR b=s TO s+3:c=PEEK(b):PRINT HEX$
(c,2)CHR$(1)CHR$(c)" ";:NEXT b:PRINT
9090 FOR b=b TO s+Le-1:c=PEEK(b):PRINT H
EX$(c,2)CHR$(24)CHR$(1)CHR$(c)CHR$(24)"
";:NEXT b:PRINT
9100 s=b:WEND
9110 real=9E+37:r=@real-1
9120 type$=CHR$(1)+CHR$(2)+CHR$(4)+"ABD"
'valid variable types
9130 array=0:varend=0'define remainig va
riables
9140 scalar=FNadd(&AE85)'end of prog,sta
rt of scalars
9150 array=FNadd(&AE87)'end of scalars,s
tart of arrays
9160 varend=FNadd(&AE89)'end of arrays,s
tart of free memory
9170 PRINT:PRINT"Dump of scalar table"
9180 s=scalar+2:v=array-1
9190 FOR a=s TO v:c=PEEK(a):PRINT HEX$(c
,2)CHR$(24)CHR$(1)CHR$(c)CHR$(24)" ";:NE
XT a:PRINT
9200 WHILE INKEY$>"":WEND:PRINT"Press a
key":WHILE INKEY$="":WEND:MODE 2
9210 PRINT"List of scalars"
9220 WHILE s<v
9230 WHILE PEEK(s)<128:PRINT CHR$(1)CHR$
(PEEK(s));:s=s+1:WEND:PRINT CHR$(1)CHR$(
PEEK(s)XOR 128),:s=s+1:PRINT USING" :off
set &h: ";HEX$(s+2-scalar,4);
9240 c=PEEK(s):a=INSTR(type$,CHR$(c)):ON
 a GOTO 9250,9260,9280,9290,9300,9310:PR
INT"Invalid type":STOP
9250 PRINT USING"integer = &h";HEX$(FNad
d(s+1),4):s=s+5:GOTO 9330
9260 a=FNadd(s+2):PRINT USING"string, ##
# @ &h ";PEEK(s+1);HEX$(a,4);:s=s+6:IF a
<scalar THEN PRINT"in prog memory"ELSE P
RINT"in string store"
9270 GOTO 9330
9280 PRINT"real:";:FOR a=1 TO 5:b=PEEK(s
+a):PRINT" "HEX$(b,2);:POKE r+a,b:NEXT a
:PRINT" ="real:s=s+8:GOTO 9330
9290 PRINT"integer";:GOTO 9320
9300 PRINT"string ";:GOTO 9320
9310 PRINT"real   ";
9320 PRINT USING" FN @ &h";HEX$(FNadd(s+
1),4):s=s+5
9330 WEND
```

ADVENTURER'S ATTIC

by Philip Riley

As promised , I now provide the encode decode utility program. (You'll need to read the article on Page 61 of the December '86 issue to understand what is going on!). But before I start with a description of the program there is one point that you must remember - you must map out your adventure using the same style that I explained in the July '86 issue (and that's on Page 24).

Now onto the program, and first, the commands that are available to you when you run the program. The first thing you will be presented with is the question **"How many locations?"**. In the case of the map in the July edition the answer to this would be 9. You are also told to type 0 if you have already defined the locations. Ignore this for the time being. To get the feel of the program don't worry about mapping out a full adventure and typing it in, just type in any number and type in a few sentences.

When you have got past the first question you will be in the main loop. Here, you have several options to choose from. We will work our way through them one at a time.

You will notice the words **LOCATION NUMBER 1** at the top of the screen. Now press the 'down cursor' key and the words **LOCATION NUMBER 2** will replace the previous message. You can in fact move up and down the locations using the up and down cursor keys. You can also move up and down in groups of ten by pressing the left and right cursor keys. One point to note is that the program will not let you go below description 1 or above the maximum amount of descriptions that you defined at the beginning of the program.

Now that you can move up and down the (currently blank) location descriptions you will want to be able to type in your descriptions. Go back to LOCATION NUMBER 1 andtype **C** and you will be presented with the words **INPUT SENTENCE**. So away you go and type in your description. Make sure that the input is no longer than about 250 characters or you will get a string length error. We will look at inputting longer strings next. When you are happy with your description press ENTER and the program will do the rest. (Just what the program does do will be looked at later.) You will now be presented with the words **LOCATION NUMBER 2**, and if you go back to location 1 the program will print your description for you. If you are not happy with the description type **C** and start all over again. (If you hadn't already guessed it **'C'** stands for **change** and it clears the coded string before you type in your description.)

The next command that we will look at is the ADD command. Type **A** and you will be asked to **INPUT SENTENCE** as before but this time the coded string will not be cleared and it will add the input onto the end of the location description that you happen to be on at the time.

Now type in M. This is the memory check. It will give you two figures on the screen. The first is how much memory you have used. The program will then do a garbage collection and print another figure, this is the true amount of memory that you have remaining.

Typing in **S** will save the data to tape or disc and typing in L will load data in from tape or disc. The program does not allow you to choose your own name for the file to be saved or loaded, but you can put your own name into the save routines by editing lines 380 and 400.

One other point to note is that it is best to check the memory using the 'M' command at regular intervals. The program uses a lot of strings that can rapidly use up your free memory. If you run out of memory the computer will lock up on you and you will lose your data.

If at any time when in the main loop you hear a beep, do not worry, it is just the program telling you that you have typed in something wrong.

Now for a breakdown of the program itself:

Line 10	Initial set up of colours and DIMension array.
Lines 20-180	Secondary loop that checks through data and builds up dictionary.
Line 190	Input of required locations.
Lines 200-340	Main loop that checks for your command inputs.
Lines 350-370	Decoding routine
Lines 380-390	Save to tape or disc.
Lines 400-410	Load from tape or disc.
Line 420	Garbage collection and memory check

But what does it all do?

The main loop is pretty simple and won't really need any explanation. The Secondary loop is the most complex part of the program and is really the only part that needs explaining. It is to this part of the program that the computer jumps after you have typed in your location description.

The computer will make either one or two passes through the secondary loop depending on if the word is already in the dictionary or not. At this point I think it would be best if I explained how the dictionary works. First of all type in the following line:

FOR t=45 TO 55:PRINT lo$(t):NEXT <ENTER>

You should now be presented with a list of words all of which have been sorted into various strings depending on their length. At the beginning of each string is a number. This is the length of the individual words in the string. You may notice that the number is one higher than the length of the words, this is because the word also includes the space at the beginning. This group of words is the dictionary that the program has built up from your descriptions. Now type in the following.

FOR t=1 to 10:PRINT d$(t):NEXT <ENTER>

You will now have a lot of gobbledy gook printed on the screen. Believe it or not, the junk that is now on the screen is your location descriptions. This is what they look like in the encoded form. Each word in the description has been broken down into two ASCII characters. The first character is the string that the word is stored in and the second character is the position in that string that the word starts at.

Now for a close look at the secondary loop.

Line 20 asks for your input. After you have pressed <ENTER> lines 30 and 40 checks through your input for any

commas (,) and quotation marks ("). If any are found it changes them to other characters. The reason for this has already been explained in last month's column, so I will not explain it again. The program does not change these characters back again but it is a simple job to use the same routine in reverse to check through the dictionary and change them all back to normal.

Lines 50 to 60 check through your input until it has found one complete word (it finds words by looking for spaces). When a word has been found it moves onto lines 70 and 80 where it checks the numbers at the beginning of the dictionary strings (lo$(n)) until it finds one that matches the length of the string. It then checks through the string for a match to the word and if none is found continues on through the strings until it either finds a match, or runs out of used strings.

If a match is found the program will then jump to lines 160 to 180 where it starts to build up your encoded string. The program then returns to lines 50 and 60 where the next word is sorted. If no match is found for a particular word the computer will again search through the dictionary strings until it finds either a string containing words of the same length that still has room for more words, or until it finds an empty string, in which case it will start a new string for words of that length. It will then move onto lines 160 and 180 and add on the code for the word that it has just inserted.

The decoding routine is on lines 350 to 370 and it is this routine that you must put into your own program to decode your strings. This small routine merely moves along a coded string (d$(n)) two characters at a time and picks out the correct words and prints them onto the screen.

If you break out of the program do not rerun the program or you will lose all of your data. Type in GOTO 190 and ENTER and this will put you back into the main loop. This is one of the reasons that I put the zero into the first question, after running the program it allows you to skip a DIM statement and prevents an error from occurring. Type in 0 at the question on line 190 when jumping into the program.

Another point to remember is that the larger the dictionary becomes, the longer it takes to sort the words and insert them into the dictionary. Also if you wish to load your data into your own game use the loading routine on lines 400 and 410.

Using this system you should be able to write a 200 room adventure with fairly short descriptions or a 150 room adventure with fairly lengthy descriptions.

On closing, I would like to thank Geoff White, who provided me with the original listing that I have adapted into this utility.

```
10 co=1:INK 0,3:INK 1,24:BORDER 13:ca=1:
MODE 1:DIM lo$(255):GOTO 190
20 h=0:LINE INPUT"Input sentence ",py$:y
p$=" "+py$+" ":lw=FRE("")
30 ll=0:ll=INSTR(yp$,",",):IF ll=0 THEN 4
0 ELSE MID$(yp$,ll,1)="@":GOTO 30
40 ll=0:ll=INSTR(yp$,CHR$(34)):IF ll=0 T
HEN 50 ELSE MID$(yp$,ll,1)=CHR$(252):GOT
O 40
50 q$="":FOR t=1 TO LEN(yp$):IF MID$(yp$
,t,1)=" " AND t<>1 THEN GOSUB 70
60 q$=q$+MID$(yp$,t,1):NEXT:IF h=1 THEN
h=0:co=co+1:RETURN ELSE IF h=0 THEN h=1:
GOTO 50
70 FOR y=45 TO 255:IF VAL(LEFT$(lo$(y),2
))=LEN(q$) AND h=0 THEN GOSUB 90 ELSE IF
 lo$(y)="" THEN GOSUB 140 ELSE IF h=1 AN
D VAL(LEFT$(lo$(y),2))=LEN(q$) THEN GOSU
B 90
80 NEXT:RETURN
90 FOR z=3 TO LEN(lo$(y))STEP LEN(q$):IF
 MID$(lo$(y),z,LEN(q$))=q$ THEN GOSUB 16
0
100 NEXT:IF LEN(lo$(y))>200 THEN RETURN
110 IF g=0 THEN lo$(y)=lo$(y)+q$:y=255:q
$=""
120 IF h=1 AND y<255 THEN RETURN
130 q$="":g=0:RETURN
140 IF LEN(q$)<10 THEN lo$(y)="0"+CHR$(L
EN(q$)+48)+q$:q$="":y=255:g=0:RETURN
150 lo$(y)="1"+CHR$(LEN(q$)+38)+q$:q$=""
:y=255:g=0:RETURN
160 IF h=0 THEN z=LEN(lo$(y)):g=1:y=255:
RETURN
170 d$(co)=d$(co)+CHR$(y)+CHR$(z+42):GOT
O 180
180 z=LEN(lo$(y)):g=1:y=255:q$="":RETURN
190 INPUT"    Input locations required 1
to 998.              0 if already defined";
lo:IF lo=0 THEN 200 ELSE IF lo<1 OR lo>9
98 THEN CLS:GOTO 190 ELSE DIM d$(lo),yp(
lo):CLS:ol=lo
200 h=0:PRINT"LOCATION NUMBER ";co
210 IF a$<>""THEN a$=""
220 a$=LOWER$(INKEY$):IF a$=""THEN 220
230 IF a$=CHR$(240) AND co>1 THEN co=co-
1:GOTO 350
240 IF a$=CHR$(241) AND co<ol-1 THEN co=
co+1:GOTO 350
250 IF a$=CHR$(242) AND co>10 THEN co=co
-10:GOTO 350
260 IF a$=CHR$(243)AND co<ol-9 THEN co=c
o+10:GOTO 350
270 IF a$="a"THEN 340
280 IF a$="c"THEN d$(co)="":GOTO 340
290 IF a$="s"THEN 380
300 IF a$="l"THEN 400
310 IF a$="m"THEN 420
320 PRINT CHR$(7);"
"
330 GOTO 220
340 GOSUB 20:GOTO 200
350 CLS:PRINT"LOCATION NUMBER ";co:IF d$
(co)=""THEN 210
360 jk=0:p$="":FOR t=1 TO LEN(d$(co))STE
P 2:x=ASC(MID$(d$(co),t,1)):y=ASC(MID$(d
$(co),t+1,1))-42:lw=VAL(LEFT$(lo$(x),2))
:p$=MID$(lo$(x),y,lw):IF jk=0 THEN p$=RI
GHT$(p$,LEN(p$)-1):jk=1
370 PRINT p$;:NEXT:PRINT:GOTO 210
380 a=FRE(""):OPENOUT"addata.bin"
390 FOR t=45 TO 255:WRITE#9,lo$(t):NEXT:
FOR t=1 TO ol:WRITE#9,d$(t):NEXT:CLOSEOU
T:GOTO 200
400 OPENIN"addata.bin"
410 FOR t=45 TO 255:INPUT#9,lo$(t):NEXT:
FOR t=1 TO ol:INPUT#9,d$(t):NEXT:CLOSEIN
:GOTO 200
420 CLS:PRINT FRE(0);"    ";:a=FRE(""):PR
INT FRE(0):FOR t=1 TO 3000:NEXT:GOTO 350
```