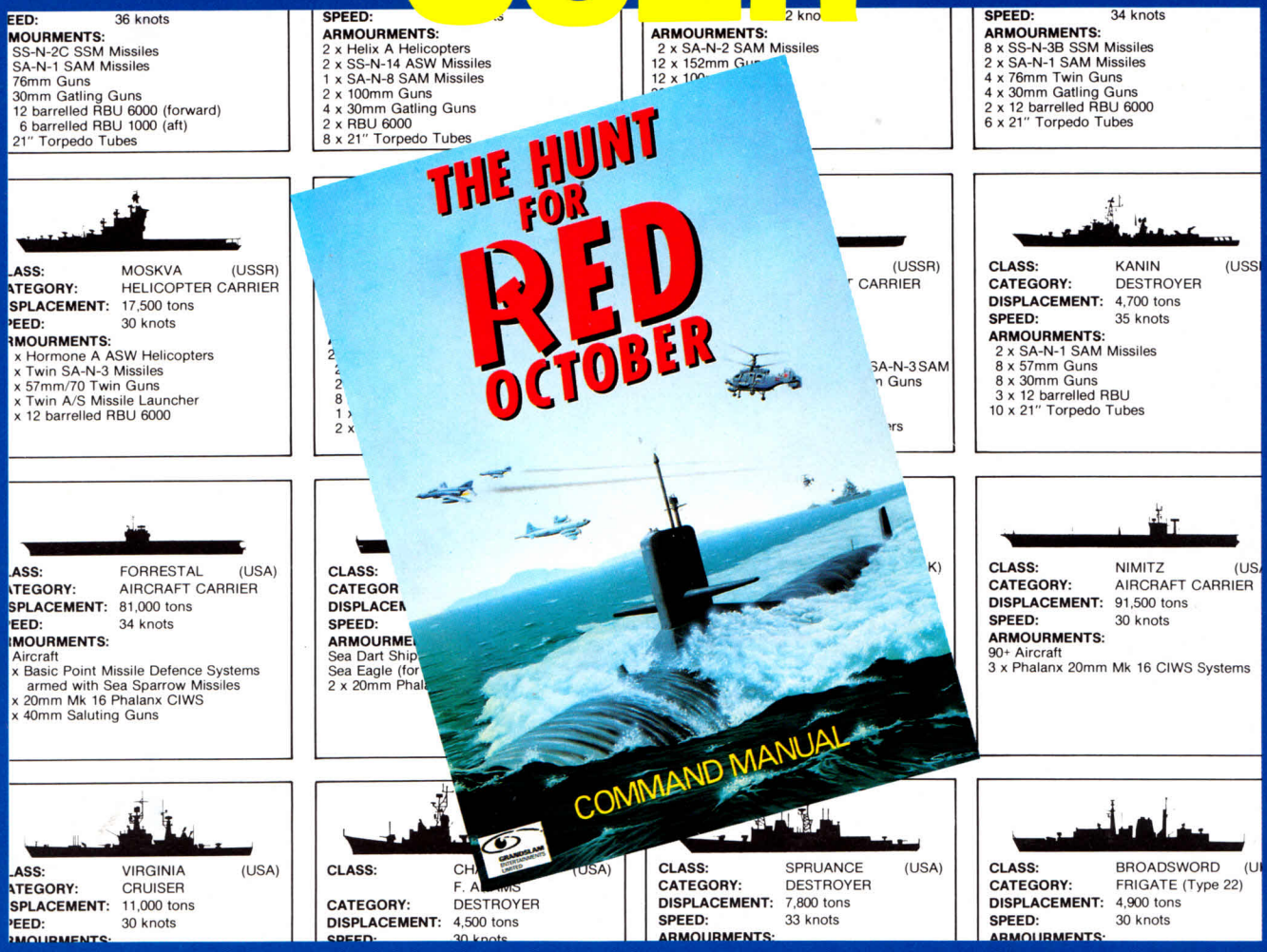
The Aussie Mag for Amstrad owners

THE AMSTRAD USER

Issue No. 42 $4.25 July 1988



- ***The advantages of fitting a 5.25" disc drive + even bigger mail order software + lots on mathematics***
- ***LocoScript 2 wall chart + Kempston Mouse, LocoScript 2 and Personal Excellence package under scrutiny***
- ***Looping in Basic2 + review of PC Desktop Accounting***

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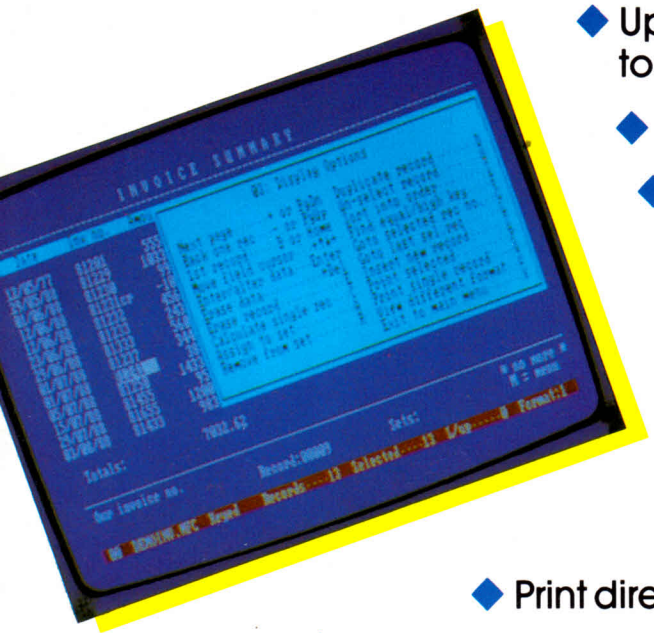

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Letters - your views, advice and comments 2

Classified Ads - and the official order form 5

News Break - news from home and abroad 6

Rules to keep programs clear - Paul Gerard's series on Structured Programming 10

Applesoft to Locomotive - the problems in converting to Amstrad by Angus Kidman 13

Words Work 5 - word processing series 15

CPC Software - mail order through The Amstrad User 17

Moving Sprites - Gary Koh's graphics series 18

Year Disc 8 - now available 21

Random Access filing system - an explanation and review of Disc Enhancer 22

Driving your floppy dollars further - the advantages of adding a 5.25" disc drive to your CPC or PCW 24

Personal Excellence Package - a new mental performance package for the entire Amstrad range from Iansyst reviewed by Doug Goldsmith 28

LocoScript 2 Wall Chart 32

Getting your teeth into a PCW - a case history on developing a UK dental package for PCWs 34

Kempston Mouse & LocoScript 2 - D.J. Higgins and Helen Bradley give their opinions 36

PCW Year Disc - everybody wants it 37

Looping the Loops in Basic2 - a tutorial discussing the three main loop structures in Basic2 42

Printing with GEM - some solutions 44

PC Desktop Accountant - a fully integrated PC accounting package comes under review 46

PCW & PC Software - mail order through this magazine 47

Screen Dumps and more Shareware - guidance from Chris Collins on PC matters 49

Mathematical Generators - a more serious Gallimaufry this month from Chris Wootton 52

More Maths - the first two of four high precision arithmetic modules in Z80 machine code from Petr Lukes 55

Adventurer's Attic - Sea Base Delta map plus your Questions and Answers and Contact list 59

Nationwide User Group Information 62

Books, Binders and Back Copies 64

THE AMSTRAD USER

Issue No. 42 - July 1988

For Tape Subscribers, CPC programs appearing in this month's magazine can be found at the following approximate positions:

Side 1:	SPRITE	- 6	SPRTEX1	- 20	SPRTEX2	- 34
	BCD1	- 57	BCD2	- 95		
Side 2:	PRIMENUM	- 4	PERFECT	- 13	FIBONUMB	- 20
	FACTOR	- 33	PASCAL	- 44	BTRANS	- 55
	POLAR	- 67				

ADVERTISER'S INDEX

All Stamps and Services 3
Amsnet International 7
Living Image 4
Pactronics 39/41
Pipeline Computer Accessories 11
Professional Computer Accounting Systems 9
Reckon Software 43

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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The subscription rate (for Australia) is $42.50 for 12 issues of the magazine only, or $80.00 for 12 issues of the magazine plus tape (for CPC range only) containing programs appearing in that issue. Postage is included in the above prices. For subscriptions to New Zealand, PNG, Solomon Islands or Vanuatu please add $21 airmail. Other overseas prices available upon application.
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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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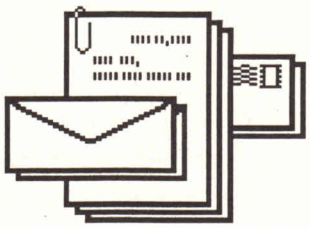
LETTERS TO THE EDITOR



A monthly selection of your comments, hints and tips, advice and news - all shared for the benefit of other Australian Amstrad users.

I have two qualms,
1. The type-in last month in Gallimaufry XI to make your 6128 talk, IT DOESN'T WORK!!!! I sat there for approximately two hours typing it in and trying to make it run so could somebody please tell me if it's a dud or not! If not how do you make it work. I read the instructions given but it doesn't seem to do anything either.
2. How do people like Tony Hoyle make cheat modes, I tried but I can't get anywhere. I read your article on memory maps and so on, but that still hasn't given me any insight on how to make them.
Please help!

Michael Kleef, Albany, W.A.

YES IT DOES!!!! If it didn't work we would have had swarms of users telling us so - but you are the only one. But if you think you are going to have a conversation with your 6128 read the article again. The program digitally records in memory a section of tape (music or voice) and will play back the recording. Check your listing again and take particular care with the data statements.

The art program SMART in the May issue on page 58 is very good once the errors are corrected. Robert Buckley has a neat art package. It reminds me of Max the disc utility. I will not list the errors in detail, rather give the corrected lines. I have a 6128, so corrections may not work on 464, (664).

```
1110 DRAW 518-f,386-f:DRAW 0+f,
     386-f; DRAW 10+f,56+f:NEXT
2240 GOTO 1640
2530 c1=(c-x)/8:d1=(d-y)/10:PLOT
     c1+x+c1*Sin(0),d1+y+d1*COS(0),1
2580 ON routine GOSUB 2600,2690,
     2760,2500
2770 add ; to end of line
2870 IF TEST(s-2,y)<>a THEN s=x+2:
     GOTO 2890
2510 REM this line or remove altogether
```

The circle option will give various shapes from elipse to round depending where they are placed on the screen. Something different.

The box option is unaltered but needs three entry points to complete.

Paul Kent, Howrah, Tas.

We take your point concerning line 1110 - without your amendment the program will produce a diagonal line across the screen, although it can be cleared easily by moving the pencil/cursor to the ERASE text at the top right of the screen and pressing the fire button.

I am writing in the hope that someone may be able to help me with a number of problems.
First of all, I own a CPC 464 with DDI-1 disc drive. Connected to my computer is a fairly old Scales and Systems Printer (this is where the problem starts). When writing school assignments and the like, I use Tasword 464-D. My printer code for emphasised font is "14 28". After selecting the "Customise program" option on the main menu, I set all the printer codes to my own requirements. When printing though, the effect of the control code "14 28" is only taken as "14" which produces enlarged.

When this happened, I set about solving the problem. When in Basic, the command

```
print#8,chr$(14)+chr$(28)+"hello"
```

will produce the word 'hello' printed in emphasised font.
But the command

```
print#8,chr$(14),chr$(28),"hello"
```

only produces the word 'hello' in enlarged font (chr$(14)).
Obviously, Tasword uses the control codes in the second way I have illustrated. Is there anything I can do about it or will I keep having to send the control codes to the printer first then load Tasword?

Secondly, as a subscriber of the Amstrad User, I look forward to running all the programs which are published. When I typed in and ran a message scrolling routine on p.59 of TAU (Feb '88) in the Gallimaufry section, I found that it had a bug in it. When run, I get the message "data error in line 75". I went to line 75 and found that everything was in perfect order. Could you please tell me what has gone wrong and possibly correct it.

On closing, I would like to know if you would be interested in a well equipped graphics package I am almost finished working on. It would let even the most novice computer user create excellent quality title screens and the like using the joystick and other keyboard controls.

Michael Oldfield, Chapel Hill, Qld.

We will have to leave your printer problem with more knowledgeable hackers to respond. The revolving message problem is probably of your own making. The message 'data error in line 75' means that a data error has

occurred in any of the data statements up to and including 75, so you will need to check more than just that one line. On your last point, we are always happy to look at software from readers. Please remember though it may be some time before we can get to look at it properly - production of the magazine always comes first.

I am in need of urgent help with regards to the DMP2000 and Tasword. Your help would be greatly appreciated, or could you suggest a source of answers. Cairns has no user group - others seem to be of no help!

1 - Is it possible to print characters from the Tasword 2nd character set (CNTR\), eg. β Δ ä etc, 'as is' directly from the screen to the printer in a single pass? Or do I need to buy Tasprint or other? Note, these (most of them) characters can't be built up as composites of other characters by overprinting, hence my query.

2 - Is there a way to download the Amstrad graphics (ACSII 128-255) into the redefinable memory of the DMP2000 for use by manually setting bit 8? The printer manual is very vague on this subject of downloading.

3 - Can a single non-ASCII graphics block from the Amstrad screen (8x8 character cell) be printed as a one-off dot matrix or bit image graphic without having to do a whole line? Eg. is it possible to print the "Σ" in the formula Σxy =..... for instance without setting up the "Σ" as a pre-defined character in the printers memory by redefining another character? In short, can bit image graphics be mixed with normal printing using Tasword? Presumably this would need the intercepting of the printer control jumpblock and comparing the character on the screen to see if it is ACSII or graphic and changing over to bit image mode if it is a graphic block. Has anyone submitted any programs (ettes) to you covering this? I have TAU going back to issue 6, but can't find anything on this specific topic. Have you covered it?

I am finding it increasingly difficult to mix text and non-ASCII or graphics characters in generating newsletters, assignments etc. without just doing a total screen dump each time. However, as this is very time consuming, to be able to print text normally, and to change to bit image for graphics would be an enormous help. So again, could you offer any suggestions?

S, Dyer, Earlville, Qld.

We are open to correction, but as far as we know the answers to your questions are:

1 - You will have to buy Tasprint or overprint as you suggest.

2 - Printer buffer size permitting, it is possible.

3 - a) Yes, but not using Tasword.
b) We can't remember having seen

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any programs in our mag. on the subject. You may find some of Petr Lukes' articles on using printers useful (after Issue 6).
4 - It seems to us that with the effort and time required to get what you want, it would be quicker in long run to get a Desktop Publishing package. Alternatively, speed up your screen dumps with the program which appeared in Issue 16, page 20.

I found your morse code proggy interesting. I had seen a similar one on a Commodore some years ago. However I didn't find the dots clear enough for me, or the speed suitable, so I altered the lines 10, 80, 150, 160 as shown above.

My main reason for writing is your comment that you couldn't think of a convincing practical purpose for this. Unless the Telecom people have modernised more than I think they have, this would be ideal for any person who possesses an Amstrad and has intentions of obtaining an amateur radio licence, because as far as I know, Morse is still an essential ingredient.

Extra speed would be a help too, but I find it beyond me to increase this much more.

I like your magazine and style, think it is excellent and caters for all machines. Keep it up.

```
10  dot$=".":dash$="-"
80  If index%=32 THEN PRINT "/";:
    count%=count%+1:FOR j=1 to 50:
    NEXT:GOTO 180
150 IF code%(index%) AND power%)
    THEN PRINT dash$;:SOUND 1,
    239,20:SOUND 1,0,4:ELSE PRINT
    dot$;:SOUND 1,239,7:SOUND 1,0,4
160 count%=count%+1:power%=power%
    *2
```

Philip J. Ohlson.

I always look forward to the delivery each month of your Magazine, as I find it quite interesting except "CHEAT MODE". Perhaps this is because I have always considered a computer to be in itself the greatest challenger of all to master and use efficiently.

I enjoy all your type ins, there are never enough for my 6128, however I have a problem and it's to do with Nick Herrick's "CRIBBAGE", it sometimes fails to score correctly. I'm sorry Nick and also to you Ed, this is not a complaint but I just wondered Nick if you could do anything about it; I've been playing Cribbage for over 65 years and every point scored counts towards winning! One feels a wee bit riled if robbed of some of ones points scored - especially if the computer then wins.

Below I have set out some examples of incorrect scoring and in closing, my very best respects and thanks for the service I derive from your Mag.

Hand/Box	Turn up	Score given	Should be
4.4.4.6	Ace	6	12
7.A.K.2	2	2	4
A.A.J/T.2	3	3	5
10.Q.2.A	2	2	6
J.3.A.A	7	2	4
3.6.2.4	7	5	7
2.4.6.6	3	7	11
A.2.4.8	7	2	4
2.5.2.6	J	4	6
6.3.A.10	A	2	4

P.S. Say Ed. what happened! Did you just lay down and die? Miss your monthly comments. How about even a half col.?

H.P. Wymer, Capalaba, Qld.

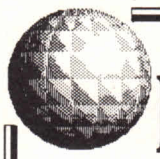
Isn't it nice to be wanted? I'm afraid that space forced me out, but I do leave my subtle marks dotted around each month's magazine. I have tried for at least an hour to get Nick's program to repeat your results but couldn't. Maybe Nick has some ideas.

To tell you the truth, I nearly fell off my chair when I read the letter from M.J. Harvey in the May issue of TAU. To quote the first line "On behalf of the many PCW users like myself", I wish to state that does not include me. I am very pleased with The Amstrad User and would like to clear up several points:
1 - The warning, referred to in M.J. Harvey's letter, was a very considerate action by TAU - other major computer magazines would not even consider such a warning, the section would be scrapped without a word.
2 - The rate of $15 per page of program is generous compared to other leading Australian computer magazines.
3 - I have not seen a magazine that didn't request a padded self addressed bag to be included for the return of discs.
4 - On the matter of the PCW Year Disc, I have to agree with Mr. Harvey, we should have a year disc by now. To conclude, M.J. Harvey was very unreasonable and should try to understand that TAU works to a budget like millions of other organisations around the world.

Thanks for a great magazine.

R. Grambower, Gympie, Qld.

Thank you for showing us the other side of the coin. The PCW Year Disc was first advertised in last month's magazine and the result has had our order processing ladies running for cover!



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CONTRIBUTIONS

We accept unsolicited articles or program contributions from readers with a view to possible publication, but in the case of programs we must insist that the coding is submitted on either tape or disc. We just do not have the time to key them all in. The tape or disc will be returned if originally accompanied with a stamped and return addressed padded bag.

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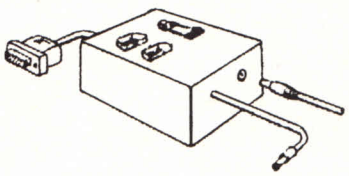

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NEWS BREAK

Our monthly update on the gossip, news, releases and the general Amstrad scene from both home and abroad

STOCKMARKET IMPROVEMENT

No, not a comment on how our local stocks and shares are fairing! Some PCW owners may be interested to know that an improved version of the software package Stockmarket has just been released here in the UK by Meridian Software. The program allows you to keep track of your investments and is claimed to run significantly faster than the old version.

The improvements include the ability to save data to drive B and to record tax credits for each of your dividends. You can now also list entries on any of your accounts between two specified dates rather than list all records. Obviously this makes it easier for you to extract information in one year for the tax man.

PROTEXT BOOSTERS

Arnor have released two programs to add power to their word-processor.

Protext Filer is a database system which allows you to sort alphabetically or numerically your address lists or datafiles. Arnor claim that you can sort any file by any field using fixed or variable length records and that it can sort tabulated columns, on any key or multiple keys and has an intelligent sort mode for names.

A check can be made for duplications. Also supplied are template files for standard letters or labels (up to three across).

Protext Office is the other release which is meant to handle small companies' invoicing needs, and has the same file management facilities as Filer. (Arnor use it themselves for their own invoicing system). All that is required is to set up your company's name, address and product details. When running, customer names and addresses can be referenced from a datafile or be entered as a one-off. All invoice details are saved to disc.

MIDI INNOVATION

At the forthcoming Personal Computer World exhibition to be held in London in the middle of September will be a special exhibition entitled "Midi Soundscape". It is sure to strike the right chord with CPC owners who have a musical bent. The organisers Montbuild Ltd. promise everything musical, from totally integrated Midi systems to individual products such as drum machines, keyboards and effect boxes. In addition they will be showing computer hardware and software to drive the various components.

ADVENTURE AWARDS

The Adventurers Club Ltd, based in London, has recently announced the result of their member's ballots for best adventure in 1987. The winner was Gnome Ranger by Level 9 Computing. Second place was won by Rigel's Revenge from Mastertronic and third was Knight Orc by Rainbird/Level 9. The Guild of Thieves by Rainbird got an honourable mention, which we assume means fourth place.

TAFE TAKES WORDCRAFT

The New South Wales Department of Technical and Further Education is now running Wordcraft on more than 3000 PCs contained in network installations throughout its 120 colleges in NSW.

It is estimated that during 1988 over 6000 students will be using Wordcraft to learn Wordprocessing skills which are now considered essential for use in the modern office.

Enquiries to PCS: (02) 923 2899.

ELITE OFFICE PUBLISHING

Personal Computer Software have announced the release of Wordcraft Elite which has been written to bring desktop publishing into the normal office environment.

It is designed for use by a word-processing secretary and does not require any knowledge of typesetting techniques or terminology. It therefore avoids the formidable learning curve associated with, and usually glossed over by, other desktop publishing systems.

Elite contains the powerful, best selling, Wordcraft Version 3 word-processor for text preparation and its own Imagemaster program for image processing and A4 page make-up.

Images may be captured and saved by a memory resident screen grabber utility which, when activated by two key presses, captures the whole or any selected part of a screen image, such as chart from Lotus 1-2-3.

Drawings, photographs or diagrams may be digitised using inexpensive desktop scanners. The resultant images are saved on disk and may be subject to a variety of editing functions.

The final page is made up of the word processed text, images, lines, boxes and shading and is printed on popular office laser printers.

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Most of the above items will be stocked for mail order by The Amstrad User for readers not close to a dealer. All dealer enquiries for the above or any other consumables should be made to Reckon Software on (02) 371 9222 or Fax (02) 371 0098.

CARDBOX AND CARDBOX PLUS

You would have undoubtedly read the article entitled "Boxing Clever" which appeared in the May issue of The Amstrad User. It explained the differences between the versions of this popular package.

What it didn't explain was that Cardbox and Cardbox Plus are registered trade marks of Business Simulations Ltd of Speldhurst in Kent, England. Business Simulations Ltd hold the copyright for the Cardbox products.

Not that this information alters the running or performance of the programs, but we have been asked to give credit where credit is due.

AMSTRAD UK CAUGHT SHORT

The new portable Amstrad PPC range which is due to be released in Australia some time this month is, amongst other machines, causing a few problems for the Head Office. The problems are not technical but relate to supply. Apparently there is a shortage of some models due, to some extent, the fluctuating price of D-RAM memory chips.

In the case of the PPC, there seems to have been an unprecedented demand which has caught Amstrad on the hop. Amstrad claim that to the end of April well over 20,000 PPC units have been sold.

VIRUS VACCINE

S & S Enterprises (Amersham) Ltd has developed Antivirus. It's a small routine which puts a write-protect tab on your hard disc to inhibit any unauthorised access and thereby fend off any nasty virus. The routine is written to expose the virus by letting it think it has written to the hard disc successfully. Naturally the software tab can be removed.

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PCW COMPILERS

Prospero Software (London) is responsible for producing two language compilers for the PCWs, both with extensions to ease programming. They are Pro Pascal - a full 7185 Standard Pascal, and Pro Fortran, a full ANSI-standard Fortran-66. These compilers are aimed at the serious programmer who require a high quality, reliable and professional environment within which to work. They also produce the Prospect Graphics Library which allows the use of the graphics driver (supplied with each PCW) from within both compilers.

MICROSOFT WINDOWS SOLUTION

Users, or potential users, of Microsoft Windows on the Amstrad PC1512 and 1640 will have a problem using the mouse supplied with their machine. The only solution to this problem was to buy the Microsoft Mouse Kit which involved a new board and mouse - a waste when the Amstrad already has one. But now, a utility sourced by Reckon Software from Mercantile and General Facility (UK) overcomes the problem for just $79.00.

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This title is one of Codemasters new 'Plus' range and comes packaged on two cassettes. On side 1 of the first cassette is a standard version of the game, on side two is an expert version for extra challenges, while sides 1 and 2 of the second cassette contain the data for additional courses.

There is a great deal of winding and weaving around islands and under bridges with aqua jumping thrown in for good measure. Has computer controlled drone bikes and a 2 player head-to-head game. Also features an action replay option.
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PACK OF ACES
A four game compilation from Prism Leisure containing Boulderdash, Who Dares Wins II, International Karate and Nexus. Imported by ISD on tape ($29.99) and disc ($34.99).

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RULES TO KEEP PROGRAMS CLEAR

Paul Gerard continues with his series on structured programming with advice on using GOTO and INPUT

You will remember from the last article in this series that the main point of clear, structured programming is that it is easy to follow when the time comes to debug &/or enhance the program at a later date. It follows that we don't want to obscure our well structured code with clumsy setting out. The following is a set of rules that should make even UN-structured code easier to read.

① As a general rule, keep lines short. Most lines should ideally consist of a single command (ie. have no colons ":" at all).
Exceptions -
(a) Short FOR-NEXT or WHILE-WEND loops can look quite good, and be easy enough to read, on the one line, thus:

```
20 FOR n=1 to 500:READ delay.factor(n):NEXT
   'delay factors
30 WHILE INKEY$="":WEND  ' press any key
```

(b) Where two or more commands really go to make a single operation, AND putting them on the same line does not produce an ugly monster, putting them together can actually be clearer:

```
110 LOCATE 5,10:PRINT heading$
```

(c) Where more than one operation is dependent on an IF, and again when the result is not too long winded:

```
4670 IF delay.factor(n)>25 the PRINT excess$:
     RETURN
```

Lines like the following, however, undo many of the benefits of structured code:

```
4670 IF delay.factor(n)>25 THEN PRINT
     excess$:FOR m=0 to 4567:user.input$(m)
     =0:NEXT:PRINT STRING $(80,"-"):PRINT
     "^ X":RETURN
```

And I fear the above is moderate compared with some monsters we have all seen (!) Much better is a line like:

```
4670 IF delay.factor(n)>25 THEN GOSUB
     12000 ' report delay
```

(of course with the commands that would otherwise be cluttering the line up set out nicely in a subroutine).
If you really can't get around a long IF line then the insertion of enough spaces to produce a new line can help:

```
270 If byte$<>CHR$(13) AND long<12 THEN
    long=long+1:MID$(user.input$,long,1)=byte
    $:PRINT byte$;
```

This has several drawbacks - it only works if the program is listed in the mode you are in when you were writing it (presumably mode 2) - it does add a few bytes to the length of the program - and if your program ever goes to a magazine they will have some bother with the typesetting!

The habit of writing programs consisting of one monstrous multistatement nightmare after another is again a product of the old generation of micro-computers with their low capacity memories. The idea was to pack as much operational code into the minimum of space. In practice very little memory is saved in this way anyway, and in any case a modern micro, even an 8-bit one, has enough memory to accommodate very large programs without recourse to "packing" of this kind.

② Indent loops. Any loop (especially a long one, or a series of nested ones) will be much easier to follow if it is set out like this (note that the indentation need not be too dramatic).

```
2500 FOR n=1 to 500
2510  FOR m=1 to 12
2520   READ test$(n,m)
2530   IF test$(n,m)<"M" THEN posit(n, m)=0
       ELSE posit(n,m)=1
2540  NEXT
2560 NEXT
```

This does NOT take up undue amounts of memory.

③ Insert the odd blank rem line to break up code into meaningful blocks. Provided this is not overdone it can make the program much easier to read and will not use much memory. Use the apostrophe form of REM, thus:

```
210 '
```

Don't use a colon, as this is a line that the computer must actually execute (although I must admit I don't know if it takes time to do so or not), also (please) don't use a line of asterisks (**********) as beloved by T*m H******l and others of his generation, they look awful, take up memory, and to a large extent defeat the object of the exercise, which is to visually break up large chunks of code into easily grasped blocks. O.K. I know that's a personal opinion, but I'm sticking to it!

GOTO

The good old GOTO command is well-beloved of amateur programmers - so much so that structured

programming has been at times virtually defined as "getting rid of all the GOTO's". Of course it is quite easy to write a very badly structured program with few or no GOTO's, and, conversely, a very well structured program with (at least) a few GOTO's. It cannot be denied however that this is a dangerous command, and that it should be used sparingly. The main Legitimate use of GOTO is in fact to form a loop. The way in which one should NOT use GOTO is to form complicated "trees" or "spaghetti", that jump all over the place.
In my own programming I try to follow these rules (although I must confess that I them on occasion).

① At the very least as a general rule, refer back, not forward. (Thus forming a loop - not a complicated branch structure). In situations where one might be tempted to use a "forward" GOTO to bypass sections of code, consider instead the use of conditional GOSUB's or conditional terminations of subroutines. For example;

```
2080 IF finished THEN GOSUB 4500 '  repeat
       game ? or
4560 IF complete THEN RETURN ' end routine
```

② NEVER use a GOTO referring to a line that is more than ten lines away - ie. keep the loop short. (This keeps the programming easy to read and debug.)

③ NEVER refer out of a subroutine, or out of a FOR-NEXT loop. (As well as making your programs hard to read this can actually produce running problems.) As a general rule, don't refer out of a WHILE-WEND loop - although this is less reprehensible it can still produce "murky code" (bad, hard to read programming).

④ NEVER use a GOTO when it would be just as easy to use another kind of loop (such as a WHILE-WEND or FOR-NEXT).

⑤ ALWAYS label any line referred to by a GOTO with a clear REM. This may be specific - (say, ' GOTO from line 2500) or simple - (eg. ' loop).

⑥ Be very careful indeed about the use of ON *n* GOTO - generally it will make much better sense to use ON *n* GOSUB instead.

⑦ Watch IF THEN (*line number*) and ELSE (*line number*). These "hidden" forms of GOTO must be treated with exactly the same caution as a plain GOTO, and for exactly the same reasons! One fairly standard use of IF THEN (*line number*) is to stimulate a REPEAT UNTIL loop. This is quite legitimate, as Locomotive BASIC lacks this useful facility. The following is NOT warranted bug-proof as it is only by-the-by - so don't type it in unless you can see what it is intended to do and want to use it for something you are writing yourself - it is included here solely to illustrate the use of the REPEAT loop with GOTO.

```
10510 'REPEAT loop
10520 GOSUB 100 'print heading
10530 LOCATE 5,10:PRINT "What shall I do? "
10540 GOSUB 200  'get input
10550 command=0:count=1
10560 WHILE command=0 and count<12
10570  IF INSTR(command$(count),user.input
       $) THEN command=count ELSE count
       =count+1
10580 WEND
10560 IF command=0 THEN 10520
       ' UNTIL valid command
```

Note the REMs, and carefully indented setting out - provided you stick to this you are unlikely to have much bother with GOTO.

INPUT

The INPUT command in Locomotive Basic has a whole series of negative aspects - to the degree that I practically never use it anymore, especially in longer programs. Fortunately it is fairly easy to get around this, as we shall see.

For starters there is that awful "Redo from start" error message. Obviously not the sort of thing you want to have popping up for people using your program - especially as these folk will not necessarily be used to computer error messages.

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This means that you can't use:

```
250 INPUT a
```

it must be:

```
250 INPUT a$:a=VAL(a$)
```

In fact even INPUT a$ will not do - we do not want to have to warn our users about not putting in commas, so that we are left with something like:

```
250 LINE INPUT a$:A=VAL(a$)
```

Now for short programs this is usually quite satisfactory, however, if our program is not very short, and especially if it has string arrays that can get long then we are going to use up memory and end up with a "garbage collection". This is because Locomotive Basic has a peculiar habit of using a new memory location every time the value of a string variable is changed.

The way round this is based on the use of the "MID$(a$,n)=" command (a peculiar but useful feature) which actually changes specific values within an existing string within its own memory location. There are a number of complications connected with the use of this command, but it does provide the answer for user input that does not mess about with our precious memory.

The first complication is that we Must (as in BBC Basic or Pascal) first "declare" any string variables that are going to be subject to user input, or be changed during the course of the program. This is no real hardship, as it is good practice in any case to give all our variables an initial value as part of our initialisation sub-routine. The declaration of a string variable of this kind will take the form:

```
13100 user.input$=STRING$(n,"#")
```

The number n will obviously be the maximum size of the string concerned - if our input will never be more than, say, 12 characters long then it is silly to set aside more memory than this. On the other hand if we want to use user.input$ in a fairly general way we may well want n to equal the maximum possible (255). The character can be any "garbage" character that is unlikely to be needed for input - if our input is to include spaces (likely in an adventure game, for example) then this should not be the space character.

Since we now have a string called user.input$ we can change any of the characters in it with the "left hand MID$" statement:

```
1000 MID$(user.input$,1,12)="HAPPY DAYS!"
```

Of course what we actually want to do is to be able to insert user input into user.input$ character by character - for this we need to have set up another variable just one character long:

```
10100 byte$="#"
```

By using byte$ and user.input$ together we can set up a simple user input routine that does not fill up any memory with garbage, or cause garbage collections, no matter how many string arrays we are using. The following sub-routine assumes that you have already initialised the variables byte$ and user.input$. The new user.input$ must be evaluated or printed in the form LEFT$(user.input$,long), because there may well be unwanted characters past that point which will confuse the issue.

```
20  ' User input Routine
210 long=Ø:MID$(byte$,1)="#" 'reset key variables
220 WHILE byte$<>CHR$(13) and long<12 'CR or max length
230  MID$(byte$,1)="#"' loop reset
240  WHILE byte$="#"
250    MID$(byte$,1)=INKEY$
260  WEND
270  IF byte$<>CHR$(13) AND long<12 THEN long=long+1:MID$(user.input$,long,1)=byte$:PRINT byte$;
280 WEND
290 RETURN
```

The above little routine should be clear enough, and is the basis of the routine we will be using in our finished program. The only refinements we will be adding are:

① A cursor.
② The ability to use the delete key.
③ The ability to echo input at a specified location and in a specified window.
④ The ability to limit the characters acceptable to the routine (eg. just numbers, just uppercase letters etc.)
⑤ A built-in controllable upper case converter.
⑥ A built in "space controller" that will limit spaces (where these are permitted at all) to one in a row.
Just as a little afterthought, here is a little test rig to try out our routine.

```
1 ' Just a little test rig !
2 ' for the input routine (GOSUB 200)
10 user.input$=STRING$(12,"#")
20 byte$="#"
30 ' loop
40 PRINT "Input your string here (up to 12 cha
   r)> ";
50 GOSUB 200 ' user input routine
60 PRINT:PRINT "Your string is >";LEFT$(use
   r.input$,long)
70 GOTO 30
```

Type this in with the routine and see if you can get it working. Then, just for homework, have a go at writing those enhancements! We will be having them all, except for ③ and ④ next month.

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APPLESOFT TO LOCOMOTIVE

Angus Kidman discusses the problems of converting AppleSoft Basic programs into Locomotive Basic programs

I was inspired by Petr Lukes' article on converting Microbee programs to the Amstrad (TAU, January 1987) to write about my experiences in a similar conversion process, this time with the Apple II series of computers. This may be of use to readers, since the Apple II computers are some of the most widely used in Australia, particularly in schools and other educational institutions.

I have been programming an Apple IIe for the past five years, and have owned a 6128 for one and a half years. I found it necessary to translate my school programs onto the Amstrad, and now pass the information on for the benefit of, if no one else, fellow sufferers at the hand of the IIe keyboard. (I have also carried out the even more difficult task of going from Locomotive to Applesoft, but that's an article in itself, and an experience horrible enough to put the Editor off computing... *(Try me, Ed!)*)

Converting into Locomotive Basic from Microsoft is a relatively easy task: if you are a reasonably proficient programmer you will probably be able to improve on these programs using Locomotive Basic, which as a language has many features normally only accessible through machine code. By contrast, converting from Applesoft Basic can at times be a difficult task. It should not be attempted if you are not a practised programmer. However, you will find things much easier if you have already learned to program on a different computer, as you will appreciate the differences that are common between various machines. But if you find Locomotive confusing, you will have to stick to computer specific programs: translation is not for you.

If you are willing to put in a little effort, however, you will be able to get Apple programs up and running on the Amstrad. Bear in mind that Applesoft, being an extremely limited programming language, will commonly resort to PEEKs, POKEs and CALLs. If you encounter a program featuring any of these other than those mentioned in this article, don't even attempt the translation: try and work out what the program does, and you'll probably find it ten times easier in Locomotive.

Before translating, you will need a good knowledge of Locomotive BASIC, so that as you encounter 'foreign' commands you can refer to the appropriate section below. Alternatively, you can type the whole thing in sight unseen in lower case, and then locate the offending commands, which will remain in lower case. Most Apple II programs will largely be in upper case - if you want to impersonate them by switching CAPS LOCK on, you'll have to use the first method.

THE TEXT SCREEN

HOME for the Apple is the equivalent of the standard CLS. TEXT switches off any graphics screen, and is generally unnecessary for the Amstrad, since text and graphics can be mixed. The standard Apple has only a 40 column text screen, simulated using MODE 1. The dimensions of this screen are 40 x 24, but this is so close to the Amstrad's 40 x 25 that no windows etc are needed.

The Apple command HTAB X:VTAB Y places the cursor at location x,y: the Amstrad equivalent is LOCATE x,y. Occasionally, however, the command HTAB x or VTAB y will be encountered on its own: the respective equivalents are LOCATE x,VPOS(#0) and LOCATE POS(#0),y.

Many Apple programs contain the commands INVERSE, FLASH and NORMAL. INVERSE inverts the colours of the text, and is simulated with PRINT CHR$(24). FLASH makes the text flash from black/white to white/black continuously: the same effect could be garnered by INK text pen, pen colour, paper colour on the Amstrad. Now for the tricky bit. The NORMAL command on the Apple switches off either effect, but on the Amstrad you need a different command for each. Thus, each time you encounter the NORMAL command you need to determine whether it applies to INVERSE or FLASH by seeing which one was last used in the same or a pre-ceding line number. Amstrad INVERSE is de-activated using PRINT CHR$(24); FLASH by INK text pen, pen colour.

Finally, a couple of quirks: the Apple's print zones (the column setting activated by a comma within a print statement) are set to 16, 16 and 8 instead of a single figure such as 13. This shouldn't alter the output too much on most programs. Also, when a semi-colon is used to prevent the cursor feeding to a new line, the Apple always treats the cursor as the Amstrad does when told to PRINT USING "&". Only experience will tell you when this may become a problem. If you can't fix the problem, you shouldn't try translating programs!

GRAPHICS

The Apple has two types of graphics screen: low-resolution and high-resolution. The former has dimensions of 40 x 40 pixels (they look just like filled in blocks, or the CPC's CHR$(143)) and is impractical to adapt to the Amstrad. You can identify programs using this by searching for the command GR in the Apple programs. If you find it, forget it.

Some simple high-resolution graphics programs can be adapted to the Amstrad, as the dimensions of 279 x 191 (and you thought 640 x 400 was bad!) fit easily into an Amstrad screen. You have to bear in mind, however, that the Apple screen has 0,0 in the top right hand corner, as opposed to the Amstrad's in the bottom right. Thus the only readily converted programs are those dealing with circles, Lissajous figures and the like. If you're brave enough to attempt it, here's a brief guide:

HGR or HGR2 - replace with the MODE of your choice.
HCOLOUR = x - replace with the GRAPHICS PEN of your choice.
HPLOT x,y TO z,a TO b,c - this would have to be changed to PLOT x,y:DRAW z,a:DRAW b,c
CALL 62454 - replace with CLG pen colour.

Remember also that because of the differences in resolution between the two languages, you may need to increase the size of the graphics to attain an identical effect to the original Apple program.

DISC COMMANDS

It's really not worth exploring disc programming conversions between the two machines: the systems differ so vastly that I could write ten pages on the subject and the rewards would be somewhat academic. When you need disc programs, write one or buy one specifically for the Amstrad.

OTHER BITS AND PIECES

Variables - should cause no problems. The Apple also uses the % sign for integers, although it needs the % every time. You can save some typing time by the careful use of DEFINT or DEFSTR. Finally note that the Apple only refers to the first two characters of a variable name - APPLE and APRICOT mean the same to it.

Random numbers - the Apple uses RND with a subscript (ie RND(x)) where the Amstrad merely uses RND. If the subscript is negative, the Apple is RANDOMISEing - ensure you add the command RANDOMISE TIME in your translation. Also do this if the subscript is positive. If the subscript is 0, the Apple will recall the last random number generated. The Amstrad can only simulate this as far as I know if you've already stored the number in a variable - perhaps some hacker knows otherwise.

Slots - the command PR#x may occasionally occur in an Apple program - it's the Apple's way of accessing external devices such as the printer. Because this is not even standard on the Apple, the program's instructions should inform you as to its purpose:

Activating 80-column mode - use MODE 2. Often activated with PR#3.

Activating printer - all screen text will be dumped to the printer. You can simulate this by altering all screen PRINTS to direct the printing to #8 or use the |ECHO or |TIE commands published in this magazine.

Any other slot commands are beyond translation, since they refer to devices not accessible to the Amstrad.

INPUT - largely the same as on the Amstrad, but there may need to be minor alterations. The Apple does not generate a question mark prompt if you supply a message with the input (it reasonably assumes that if you want a ?, you'll type it) so you'll need to change the semi-colon into a comma ie. INPUT"A NUMBER";X becomes INPUT"A NUMBER",X

KEYBOARD - the Apple command GET serves a similar purpose to INKEY$, but is implemented differently. GET A$ functions in the same way as 10 A$=INKEY$:IF A$="" THEN 10 and as WHILE INKEY$="":WEND. Commonsense should indicate the logical translation. If the variable appears to be used elsewhere in the program use the first translation; if it is merely being used in a 'Press any key to continue' context, the second translation is correct. If you're unsure, however, use the first translation.
Occasionally the horrific looking line:

```
10 A$="":IF PEEK(-16384)>127 THEN GET A$
```

may appear. Don't panic. Simply substitute:

```
10 IF INKEY$<>"" THEN A$=INKEY$
```

and vow never to write an APPLESOFT program!

This summary covers most of the important differences between the two languages, although I would be glad to be informed of any command or syntax I have omitted.

For practice, you might wish to attempt a translation of the following programs;

```
10  REM APPLE TRANSLATION PROG 1
20  REM 1988 ANGUS KIDMAN
30  TEST:HOME
40  INVERSE
45  PRINT"APPLETHINGY - MAN
    MENU":PRINT
50  NORMAL
60  VTAB 5:PRINT"1. BOILED APPLES";
70  VTAB 7:HTAB 1:PRINT"2.","APPLE
    CRUMBLE";PRINT
80  VTAB 20:FLASH:PRINT"MAKE A
    SELECTION":NORMAL
90  GET MENU$
100 IF MENU$<"1" OR MENU$>"2" THEN 90
110 ON VAL(MENU$) GOTO 1000,2000
```

```
10  REM APPLE TRANSLATION PROG 2
20  REM 1988 ANGUS KIDMAN
30  HGR2:HCOLOR=7
40  X=100:Y=100
45  R=30:F=1
50  GOSUB 1000
60  GET ANY$
70  HGR2
80  X=100:Y=70
90  R=15:F=4
100 GOSUB 1000
110 GOTO 110
1000 REM SUBROUTINE
1010 HPLOT X+R,Y
1020 FOR I=0 TO 6.3 STEP 0.1
1030 HPLOT R*COS(I)+X,R*SIN(I*F)+Y
1040 NEXT I
1050 RETURN
```

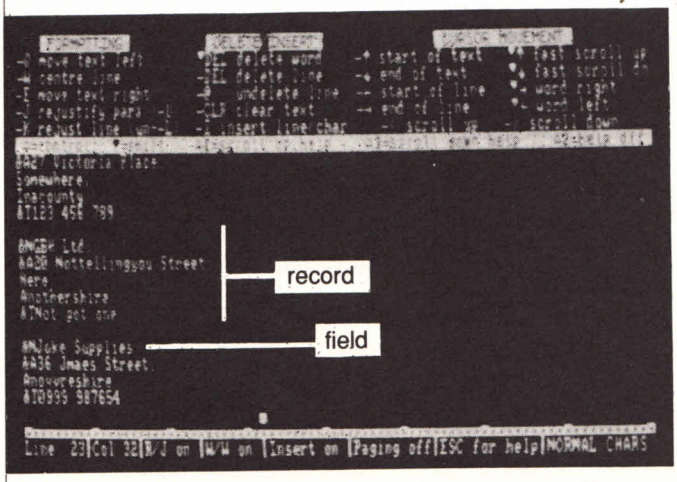
WORDS WORK

A series of articles on how to get the most from your wordprocessor and printer

Tasword 6128 includes a handy data merge facility. Basically, this lets you produce multiple copies of a letter each addressed to a different person, or even a press release addressed to various businesses. The addresses being held in a data merge file.

It is possible to create your own specific data merge file using Tasword. Or, if you have Masterfile, use its data export facility. Conditional printing is acceptable which means you could print letters addressed only to Smith or, say, to customers that have done business with you in the past month - a powerful feature which allows printing to be turned on or off depending on certain pre-defined conditions.

The most important character is &, the data merge control character. It tells Tasword where merged data is to be printed. A basic knowledge of files, fields and records is needed to get the best out of the data merge facility.



▲ A sample data merge file

File - comparable to an indexed telephone and address book.
Record - a complete set of data. Telephone number, address and name for example.
Field - an individual item of data such as a telephone number.

FIELD IDENTIFIER

Each field in a data merge file is prefixed with the & control character plus a letter identifying the field. For example, each name could be preceded by &N and addresses with &A. Of course, you could use any identifier between A and Z, and a and z. This indicates that each record could consist of over 50 fields, but in practice eight or less is usually sufficient. There is no reason why you shouldn't keep track of files on a disc, record collections or even football results rather than addresses.

Imagine you have a mail merge letter similar to that above top right; the first letter printed will have the name and address of the person at the top of your data merge file. Each subsequent letter printed will have the particulars of a person lower down in the file.

```
&N
&A

Dear &N,

This letter shows what happens when you use data
merge control characters within text.

Yours,

AN Other
```

You can insert prompt commands within a data merge file. Simply use &"prompt" anywhere in the file and, during printing, the message between the quotes will appear. Printing will cease until you enter a character, word or sentence. Its use may not be immediately obvious, but it could be handy for entering the

MULTIPLE FILE PRINTING

Due to the relatively limited memory of the CPC machines, it is impossible to create very large text files. Tasword 6128, which uses the second bank of memory, can store a reasonable 65K (roughly equivalent to five and a half solid A4 pages). But even that isn't enough to store, say, a chapter of a book or a thesis.

If you need extremely large documents then it is best to store the lot in several medium sized files; later these can be loaded and printed in turn. To make things simpler, however, there is a special file that can be created which automates this process: a file must be produced that consists of all the names of the files you wish to print - and in the correct order you wish them printed. For example:

```
$
file1.txt
file2.txt
file3.txt
b:file4.txt
```

The dollar sign tells Tasword that the file shouldn't be printed but interpreted instead. The filenames must start at the beginning of a new line and may, optionally, be prefixed by a drive letter. Before printing starts, Tasword will check to see that all the files exist.

odd date or phone number - in fact, anything.

CONDITIONAL PRINTING

Tasword recognises two data merge control characters as a powerful printing command (&&T=23). Conditional printing is a very powerful option to have as it lets you turn the printer on or off when a particular condition is met. Using this function with the allowed logic:

= equal to
> greater than
< less than
<> not equal to

gives you extraordinary printing options. You could decide to print all entries except Smith, or print entries aged above 34, or even those with over $1,000 in their current account. It's your choice. Experiment with data merge: a little tricky at first, but once you discover what can be done you'll wish you had used it sooner.

Way with Words

ERRATUM

One little correction to Easi-Amsword modification (TAU 40). Line 3 should read:

```
3 LOAD "EASIAMS3", h-&D1
```

providing the binary file has been transferred using the filename EASIAMS3.BIN.

The original three file names are AMSWORD-LOADER, EASIAMSWORD and CASROUTINE; the latter being the binary file. If readers are having problems with transferring the binary file, the following listing should do the trick.

```
10 H=HIMEM
20 |TAPE
30 MEMORY &2000, &D2
40 LOAD "CASROUTINE.BIN"
50 |DISC
60 SAVE "EASIAMS3.BIN",b,&2000,&D2
```

I hope this will help.
Tony Turner

DUAL DISC-DRIVING

Below is a description, including a short listing, of a tip for Tasword 6128 when using two disc drives. It allows automatic definition of the function keys according to the specific word processing job being undertaken, without requiring several differently customised versions of Tasword.

Automatic function-key definitions for Tasword 6128 won't run from drive B, so if you have two disc drives and you want several different versions of Tasword customised for different purposes - such as one for letters - another for reports and another for articles, you will need each to run from drive A while your text discs go in drive B.

This is rather wasteful of disc space, but you can improve matters by having a profiling program on the text disc in drive B - similar in operation to PROFILE.SUB used in CP/M Plus. You will then need only one version of Tasword, customised as follows.

After running Tasword, press Control and Enter to get the menu and choose the B option to enter Basic. List the program and enter these lines:

```
1   ON ERROR GOTO 180
2   CHAIN MERGE "B:TASFK.BAS", 10
3   CLOSEIN ON ERROR GOTO 0
180 IF ERR=32 AND ERL=2 THEN IF DERR=146 THEN RESUME 3
190 ON ERROR GOTO 0
```

Type run and when Tasword has loaded, press Control and Enter to get the menu again, but this time choose the T option to save your new version of Tasword. You will need to swap discs in drive A when prompted.

When you run the new version it will automatically look on drive B for a file called TASFK.BAS. If there is no such file this fact will be ignored. If, however, the file is found it will be merged into the basic part of Tasword.

The file TASFK.BAS should consist of Basic lines 20 to 110 containing function-key definitions, such as:

```
20 KEY 0, CH$(13)+"Yours sincerely,"+STRING$(6,13)+"Paul S
   Jenkins"+CHR$(13)
30 KEY 1,"1":KEY 2,"2":KEY 3,"3":KEY 4,"4"
40 KEY 5,"5":KEY 6,"6":KEY 7,"7":KEY 8,"8":KEY 9,"9"
```

This short Basic program is then saved on to the text disc used for correspondence. A different set of function-key definitions could be saved on to the disc used for reports and yet another set for articles. The programs must be saved with the name "TASFK.BAS".

You can set the function keys to produce any sequence of characters, even printer control codes and 2nd character-set codes. The codes needed can be found in the README file on the Tasword master disc.
Paul S. Jenkins

PRINTING WITH A4 & A5 PAPER

It appears that Graham Bennet does not understand the function setting of dip switches regarding skip perforations, (TAU Issue 40, pge. 52). The dip switch in question is in the first bank (8 switches) numbered 6. When the switch is in the UP position, the setting is for A5 size sheets. In the DOWN position, the setting is for A4 size sheets. Using A5 paper there will be a perforation skip every 66 lines regardless of how the printing is done, either List#8, Print#8 or from a wordprocessor. A un-altered Tasword with the dip switch set for A5 size paper should pose no problems.
Paul Kent, Howrah, Tasmania

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MOVING SPRITES

Gary Koh explains how to move your newly created sprites around the screen

This month we continue our trip into the world of sprites and animation. Hopefully you would have created a few sprites and now you can have the chance to see your sprites bouncing all over the place.

Listing 1 is a machine code sprite routine. It adds two more commands to your standard machine's vocabulary. The two commands are |SPRITE and |SPRITETAB. |SPRITE,*x,y,s* will print sprite number *s* at byte location (x,y). Although it will print sprites beyond *x* co-ordinate 78 and *y* co-ordinate 184, I do not suggest it as they end up being placed in odd positions on the screen.

|SPRITETAB,*t* will change the sprite table to address *t*. The sprite table is held with sprite number 1 at the highest address and the lowest sprite number at the lowest memory address. If you have a sprite table 256 bytes long and load it into location 40000 the sprite table address should be 40256. The default sprite table address is 40660.

The sprite routine will exist quite happily beside Grafex. If you want to use 2 or more of the machine code routines presented in this series you must always load the one which goes into the highest memory first. You can tell which location it is supposed to be loaded into by looking at the Memory command in the program.

Before you print the sprite onto the screen you need to find out what the screen address is of where to print it. Now it so happens that the screen map isn't very regular which makes things harder for us.

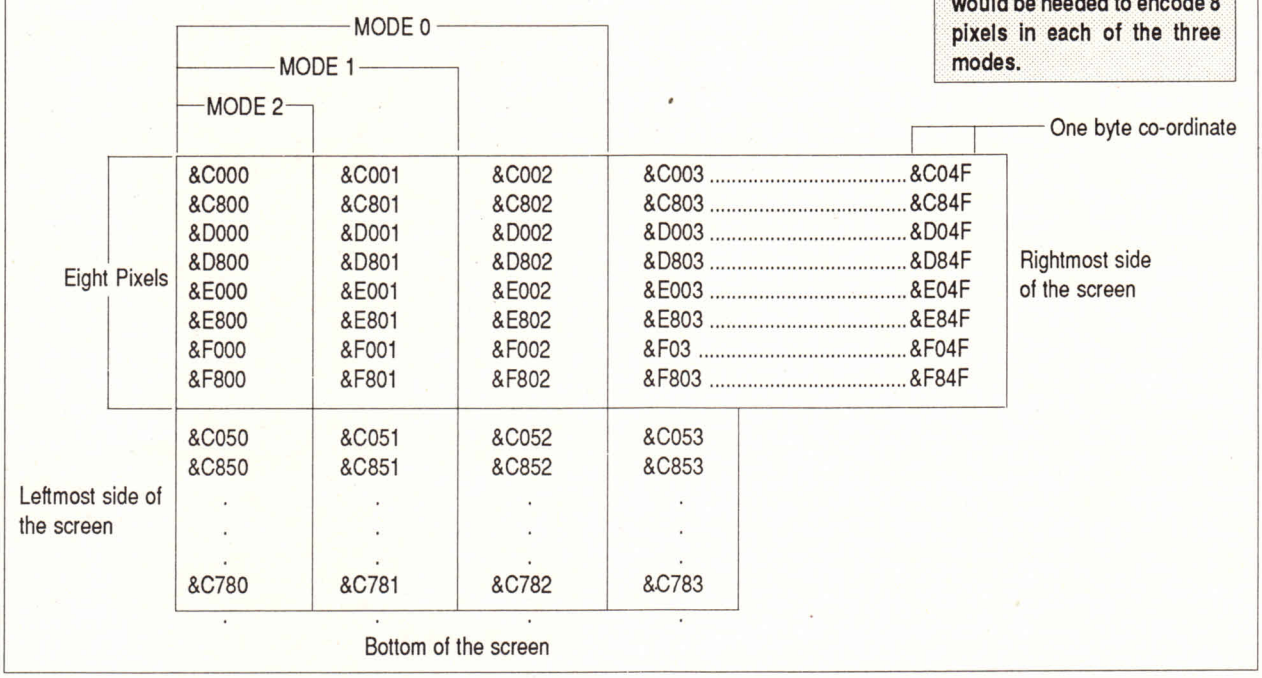
Figure 1 shows you a small section of the screen map so you can see how the addresses are and how it is mapped. Unfortunately things don't stay the same. When you scroll the entire screen up or down it has the side-effect of scambling the screen addresses a bit. This is because a hard scroll is used. With a soft scroll which is used when only a small portion (a window) needs to be scrolled the entire window is shifted up painstakingly byte by byte. However, a hard scroll takes an easy way out by changing the offset of the screen.

The bit that prints the actual sprite is made up of two nested loops. What the routine basically does is to directly transfer the sprite data onto the screen. The only other thing it does is to XOR the sprite onto the screen. This means that printing it twice onto the screen will erase it.

To use a program which uses the Sprite routine you need to load in the Sprite routine first. Then you can run any other program which uses it. Listing 2 is an example sprite animation program. It sets up two sprites in memory and then gives you a demo with them. As you can see, the objects on the screen aren't

Figure 1

Shows how many bytes would be needed to encode 8 pixels in each of the three modes.



Listing 1

```
100 ' Listing 1
110 ' Sprite routine
120 ' by Gary Koh
130 ' The Amstrad User July(88)
140 '
150 SYMBOL AFTER 256:MEMORY 40659:MODE 1:add=0
160 FOR a=1 TO 17:lnck=0:FOR b=1 TO 8
170 READ byte$:byte=VAL("&"+byte$)
180 POKE 40660+add,byte:lnck=lnck+byte:chek=chek+byte:a
dd=add+1
190 NEXT:PRINT".";:READ lncq
200 IF lncq<>lnck THEN PRINT:PRINT"Data error in line..
.";a*10+210:END
210 NEXT:IF chek=12543 THEN CLS:CALL 40660:PRINT"Sprite
 routine installed" ELSE PRINT:PRINT"There's an error s
omewhere in the data..":END
220 DATA 01,E2,9E,21,DE,9E,CD,D1, 1212
230 DATA BC,C9,00,00,00,00,EA,9E, 781
240 DATA C3,FA,9E,C3,49,9F,53,50, 1193
250 DATA 52,49,54,C5,53,50,52,49, 754
260 DATA 54,45,54,41,C2,00,11,00, 513
270 DATA 08,21,00,C0,DD,46,02,05, 531
280 DATA 28,0B,19,30,06,C5,01,50, 408
290 DATA C0,09,C1,10,F5,DD,7E,04, 1006
300 DATA 3D,5F,16,00,19,E5,21,D4, 677
310 DATA 9E,DD,5E,00,16,00,06,40, 565
320 DATA 37,3F,ED,52,10,FA,EB,E1, 1163
330 DATA 06,04,0E,10,C5,E5,1A,AE, 666
340 DATA 77,13,23,10,F9,E1,01,00, 664
350 DATA 08,09,30,04,01,50,C0,09, 351
360 DATA C1,0D,20,E8,C9,21,1B,9F, 890
370 DATA DD,7E,00,77,23,DD,7E,01, 849
380 DATA 77,C9,00,00,00,00,00,00, 320
```

wiped out when the ship passes over them. All that happens is a technicolour look whenever the ship passes over something else.

Now for some interesting information on characters and sprites. Characters are stored in a compressed form where each bit represents one pixel. This means that you only print in one colour. To get it onto the screen takes quite a lot of fiddling and therefore quite a lot of processing.

Each bit of the character is extracted and plotted onto the screen. With sprites though, the data is held in an un-compressed form. This means that mode 0 graphics take up four times as much room and mode 1 graphics twice as much. But because it is un-compressed all the sprite routine has to do is to transfer it wholesale **Directly** into screen memory. The only thing that is done in this particular sprite routine is that it is XORed onto whatever is on the bit of screen the sprite is going to occupy.

Listing 2

```
100 ' Listing 2
110 ' Sprite example 1
120 ' by Gary Koh
130 ' The Amstrad User July(1988)
140 '
150 |SPRITETAB,40128:GOSUB 290:DEFINT a-z
160 MODE 1:BORDER 0:INK 0,0:INK 1,26:INK 2,6:INK 3,2:l=
170
170 FOR a=1 TO 80 STEP 4:|SPRITE,a,20,2:NEXT
180 FOR a=1 TO 80 STEP 4:|SPRITE,a,50,2:NEXT
190 FOR a=1 TO 80 STEP 4:|SPRITE,a,100,2:NEXT
200 |SPRITE,10,1,2:|SPRITE,30,1,2:|SPRITE,50,1,2:|SPRIT
E,70,1,2
210 FOR A=1 TO 1 STEP -1:|SPRITE,38,A,1:FOR D=1 TO 20:N
EXT:|SPRITE,38,A,1:NEXT
220 FOR A=1 TO 1:|SPRITE,38,A,1:FOR D=1 TO 10:NEXT:|SPR
ITE,38,A,1:NEXT
230 FOR a=38 TO 77:|SPRITE,a,170,1:FOR D=1 TO 21:NEXT:|
SPRITE,a,170,1:NEXT
240 c=21:FOR b=1 TO 4
250 FOR a=77 TO 1 STEP -1:|SPRITE,a,1,1:FOR d=1 TO c:NE
XT:|SPRITE,a,1,1:NEXT
260 FOR a=1 TO 77:|SPRITE,a,1,1:FOR d=1 TO c:NEXT:|SPRI
TE,a,1,1:NEXT
270 c=c-5:NEXT:END
280 ' Load in sprite data
290 SYMBOL AFTER 256:MEMORY 39999:add=0
300 FOR a=1 TO 16:lnck=0:FOR b=1 TO 8
310 READ byte$:byte=VAL("&"+byte$)
320 POKE 40000+add,byte:lnck=lnck+byte:chek=chek+byte:a
dd=add+1
330 NEXT:READ lncq
340 IF lncq<>lnck THEN PRINT:PRINT"Data error in line..
.";a*10+350:END
350 NEXT:IF chek=12452 THEN RETURN ELSE PRINT:PRINT"The
re's an error somewhere in the data..":END
360 DATA 06,D1,8B,60,8B,60,CD,38, 946
370 DATA CD,38,66,1C,66,1C,B3,06, 706
380 DATA B3,06,D1,8B,D1,8B,60,CD, 1182
390 DATA 60,CD,38,66,38,66,1C,B3, 824
400 DATA 1C,B3,06,D1,06,D1,8B,60, 872
410 DATA 8B,60,CD,38,CD,38,66,1C, 887
420 DATA 66,1C,B3,06,B3,06,D1,8B, 848
430 DATA D1,8B,60,CD,60,CD,38,66, 1108
440 DATA 00,10,80,00,00,10,80,00, 288
450 DATA 00,10,80,00,00,11,88,00, 297
460 DATA 00,31,C8,00,00,31,C8,00, 498
470 DATA 01,30,C0,08,01,65,6A,08, 465
480 DATA 10,F8,F1,80,76,F2,F4,E6, 1467
490 DATA F0,F2,F4,F0,F0,3E,C7,F0, 1707
500 DATA 00,1E,87,00,00,1E,87,00, 330
510 DATA 00,0E,07,00,00,04,02,00, 27
```

This makes it very fast. Also, there is the advantage of having multi-coloured instead of single colour graphics. Even under Basic you can fill a whole screen with sprites within a couple of seconds. Although it's a sprite routine you don't have to just use it for sprites. You can use it to print the individual graphics to create a room or a maze for example.

Listing 3 gives you a good indication of the speed of sprites. It gives a demo of bulk screen handling in Basic. It doesn't use the sprites to do animation. Instead it prints them on the screen as static objects. You can use them for anything you like. Taking listing 3 as an example it prints a whole screenfull of the sprites and then erases them by printing over them again.

Title screens could be printed using sprites; take the last screen display of Listing 3 as an example. You could use them to print whole screen displays or use them as large lettering. Only your creativity is the limit.

Many games these days employ the use of sprites. Equinox, Radzone and Trantor are a few that come to mind. In fact, part of Radzone (about 12Kb) is actually in Basic which goes to show that you can write games in Basic. Now that you know how to produce sprites why don't you go out there and write a game using them?

Listing 3

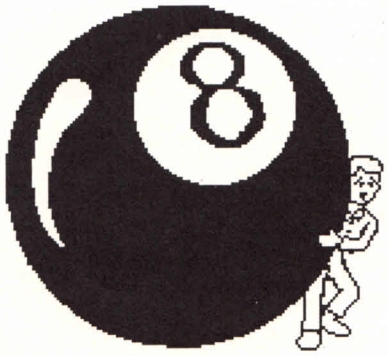
```
100 ' Listing 3
110 ' Sprite example 2
120 ' by Gary Koh
130 ' The Amstrad User July(1988)
140 '
150 |SPRITETAB,40128:GOSUB 390
160 MODE 1:BORDER 15:INK 0,15:INK 1,26:INK 2,13:INK 3,0
170 DEFINT a-z:PRINT TAB(12);"Fast ain't it?"
180 FOR c=1 TO 8:FOR a=1 TO 79 STEP 4:FOR b=9 TO 194 ST
EP 19:|SPRITE,a,b,1
190 NEXT:NEXT:NEXT:FOR c=1 TO 6
200 FOR a=1 TO 77 STEP 5:FOR b=9 TO 194 STEP 19:|SPRITE
,a,b,1:NEXT:NEXT
210 FOR a=1 TO 77 STEP 5:FOR b=9 TO 194 STEP 19:|SPRITE
,a,b,2:NEXT:NEXT
220 NEXT
230 FOR a=1 TO 500:|SPRITE,INT(RND*76)+1,INT(RND*178)+8
,INT(RND*2)+1:NEXT
240 FOR d=1 TO 3500:NEXT:CLS
250 RESTORE 320:FOR b=66 TO 132 STEP 16:FOR a=3 TO 17
260 READ v:IF v=1 THEN |SPRITE,a*4,b,2
270 NEXT:NEXT:LOCATE 1,1
280 PRINT TAB(7);"Ain't this a good ending?":LOCATE 19,
8:PRINT"T H E"
290 FOR a=1 TO 76:|SPRITE,a,35,1:|SPRITE,77-a,153,1:NEX
T
300 FOR a=1 TO 76:|SPRITE,77-a,35,1:|SPRITE,a,153,1:NEX
T
310 GOTO 290
320 DATA 1,1,1,1,0,1,0,0,0,1,0,1,1,1,0
330 DATA 1,0,0,0,0,1,1,0,0,1,0,1,0,0,1
340 DATA 1,1,1,0,0,1,0,1,0,1,0,1,0,0,1
350 DATA 1,0,0,0,0,1,0,0,1,1,0,1,0,0,1
360 DATA 1,1,1,1,0,1,0,0,0,1,0,1,1,1,0
370 END
380 ' Load in sprite data
390 SYMBOL AFTER 256:MEMORY 39999:add=0:RESTORE 460
400 FOR a=1 TO 16:lnck=0:FOR b=1 TO 8
410 READ byte$:byte=VAL("&"+byte$)
420 POKE 40000+add,byte:lnck=lnck+byte:chek=chek+byte:a
dd=add+1
430 NEXT:READ lncq
440 IF lncq<>lnck THEN PRINT:PRINT"Data error in line..
.";a*10+450:END
450 NEXT:IF chek=23786 THEN RETURN ELSE PRINT:PRINT"The
re's an error somewhere in the data..":END
460 DATA FF,FF,FF,FF,FF,FF,FF,FF, 2040
470 DATA FE,F0,F0,F7,FC,0F,87,F3, 1626
480 DATA FC,69,D2,F3,FC,0F,D2,F3, 1530
490 DATA FC,69,D2,F3,FC,69,87,F3, 1545
500 DATA FC,F0,F0,F3,ED,0F,0F,7B, 1365
510 DATA FC,F0,F0,F3,EF,0F,0F,7F, 1371
520 DATA FF,FF,FF,FF,8F,5F,7F,DB, 1604
530 DATA 77,DF,7F,EE,33,03,04,CC, 969
540 DATA 77,FF,FF,CC,75,CF,7F,C4, 1480
550 DATA 77,CF,7F,CC,77,CF,7F,CC, 1314
560 DATA 77,EF,FF,CC,77,FF,FF,CC, 1650
570 DATA 77,FE,FF,CC,77,FC,F7,CC, 1654
580 DATA 77,FE,FF,CC,77,FF,FF,CC, 1665
590 DATA 77,FF,FF,CC,76,F0,F0,CC, 1635
600 DATA 76,0F,1E,CC,76,F0,F0,CC, 1169
610 DATA 76,0F,1E,CC,76,F0,F0,CC, 1169
```

Gary's Graphics Glossary

OFFSET - *Normally the top right hand corner of the screen is held at location &C000. However, by changing the screen offset (you can do this by calling SCR set offset at BD1F) you can change the address at which the screen starts at. By increasing it by &50 you can make it appear that the screen rolls up by one line.*

Normally the 9th left hand pixel from the top is at location &C050. When you change the offset to &C050 what it actually does is instead of printing the top line at the top it prints the second line, which starts at &C050 at the top. The previous top line now appears at the bottom. The firmware does give you routines to allow you to scroll the whole screen left, right, up and down. These routines that scroll the screen up and down change the offset and clear the bit that is supposed to disappear. (I think. I haven't had time to try this.)

To scroll the entire screen left or right you need to use SCR set offset. All this one does is to change the offset which means the line that is scrolled off the screen will reappear on the other side. So if you want to scroll left or right you need to clear the bit that wraps around.



Getting behind?

Catch up with Year Disc Eight!

The Amstrad User - Year Disc 8
Issues 37 to 40

Side 1 (58k free)

464-6128	(40)	6K	FLOODCIT	(38)	2K	PEDIGREE	(37)	12K
BANKEX1	(40)	1K	FONTS	(38)	2K	PLOTTER	(37)	1K
BANKEX2	(40)	1K	FORMATS	(37)	7K	RELAB	(37)	2K
BANKEX3	(40)	1K	FREEZE	(38)	1K	RELOC1	(39)	2K
BANKEX4	(40)	1K	GWINDOW	(38)	1K	RELOC2	(40)	1K
BANKEX5	(40)	1K	LEAGUE	(38)	2K	SC-HOUSE	(37)	1K
BANKSCRN	(39)	1K	MANDBROT	(39)	3K	SCROLBIG	(37)	2K
BANKSWAP	(39)	1K	MANDPIC1.PIC	(33)	17K	SMART	(40)	8K
CASVERT	(38)	1K	MANLOAD	(39)	1K	TEXTEDIT	(38)	4K
DIASPIN	(37)	1K	MASKEX	(38)	2K	VORTAC	(37)	4K
DIGITISE	(40)	7K	MCGRA	(39)	5K	*Figures in brackets*		
DIGITISE.BIN	(40)	1K	MEMORY	(38)	3K	*denote Issue Number*		

Reference to original magazines may provide more information on the above programs

Side 2 (58k free)
FREE PUBLIC DOMAIN SOFTWARE

BANNER.COM	2K	GOLF.COM	26K	MAZE.COM	3K
CAL.COM	6K	INSTRU.BAS	1K	NEWPUZ.COM	25K
CHESS.COM	26K	INSTRU.TXT	9K	TICTACTO.COM	6K
CUBE.COM	3K	MASTMIND.COM	3K		

RUN "INSTRU" in Basic for Public Domain details.

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Suite 1, 245 Springvale Road,
Glen Waverley, Vic 3150

Year Disc Eight contains all the major CPC programs published in Issues 37 to 40. It also contains some more Public Domain software (free of course) to run under CP/M. Here's a run-down on the freebies:

BANNER:	create large text for small messages	**CHESS:**	provides a challenging game	**MAZE:**	generates mazes
CAL:	calendar printer	**GOLF:**	for a tee break	**NEWPUZ:**	word puzzle
CUBE:	Rubik's cube	**MASTMIND:**	deduction game	**TICTACTO:**	noughts and crosses

All this for just $25
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RANDOM ACCESS FILING SYSTEM

What are random files? Why is there so much fuss about them?

There are two basic types of files used in computing; sequential and random

Sequential files store pieces of information one after the other, similar to a collection of songs on an audio cassette. To play the (say) third song, you have to wind through the tape past the first two songs. If you then wish to play the second song, then you have to rewind the tape to the start of the tape, and then fast forward to find the start of the second song. You have to rewind to the start because there is usually no indication on the tape as to where the songs start or end. All this takes time, as users of cassette machines have no doubt found.

A random file is one in which not only individual files can be directly accessed, but also individual records within a file. It is similar to playing a song on an LP record, where you can lift the arm and place it readily on the desired track, without having to play through the other songs. There are many advantages of random access files. Obviously, by going direct to the desired record, there are speed advantages, but there are also advantages in efficient memory usage for files in a special form of random files called relational files.

Relational files enable information to be stored once only. For example, assume that a program is used to record customers' details for sales of various items. A file could contain each customer's name, address, etc., and a unique key for each customer. Similarly, an inventory file could contain details of items with it's own unique key. Sales could be recorded in another file, by simply recording the customer key, the inventory item key and other relevant details about the sale. To display the full details of the sale, the random access method allows the program to quickly extract the details from the relevant file by using the unique key. Using a sequential file method, the same process could only be achieved by recording similar details (eg. customer's name etc.)'many times, or by waiting to read through the sequential file until the matching details were found.

Despite being supplied with a disc drive built in, the CPC computers and Locomotive BASIC can normally only support sequential processing of data files. The disc drive in this case only functions as a super fast cassette drive. Even the simplest data handling programs have to either load all the data from a file into memory, or must continually start at the beginning of a file and search for the relevant piece of data. When data is loaded into memory, there are limitations set on the amount of data which may be processed. Continually reading a sequential file will increase the data capacity, but can be quite slow.

To write professional disc data handling programs, or simply to make data handling easier, random accessing is essential. Packages written for CP/M support random files, but not all of them support some of the other wonderful features available from Locomotive BASIC, and most of us do not have CP/M programming languages.

Do not despair! Two utilities are now available to fill this gap. The first is INSTANT ACCESS, written by Minerva in England. It offers access to one random file, in addition to the normal sequential file available from Locomotive OPENIN and OPENOUT, and a range of other facilities including screen editing. Minerva produced their successful RANDOM ACCESS DATABASE using the INSTANT ACCESS utilities. The cost of each product is around $100.

Better still, an Australian product has just been released which adds even more random access facilities than currently available. Called the "DISC ENHANCER", it fills the random access file gap and enables you to write professional programs to manipulate data randomly for up to NINE different files at a time.

This program, written in machine code, adds 9 new commands to your AMSTRAD CPC 464/664, 6128 computer, allowing random access to disc files, from standard LOCOMOTIVE BASIC. Both A and B drives are supported with file sizes variable from 1k to the full capacity of the disc. Variable record lengths can be specified from 2 to 512 characters. Virtual record lengths can be extended past 512 characters by software manipulation explained in the manual.

Utilities are included in the package for creating suitable data files and installing the "DISC ENHANCER" at the most suitable location making it compatible with most software. It is relocatable, and can exist with other RSX software. I have loaded BANK MANAGER and the DISC ENHANCER together and

used multiple random access files with fast windowing features.

There are nine commands with the following features.

|OPEN, opens one of nine files, identified by a filename and a record length, while |CLOSE, closes the specified file and does the necessary housekeeping. In addition, the normal OPENIN/OPENOUT commands are available for normal sequential file processing should you need it.

The |STATUS command checks if the specified file is currently opened. Very handy when dealing with up to nine files.

Details about each file opened can be checked with the |LOF command, which among other things can calculate the maximum number of records that can be held in a file.

Information read from a file, or written to a file must first be stored in a string variable. The |FIELD command specifies which variable is to be used. The use of the |FIELD command is a convenient way of 'pointing' to data to be used in file updating, and avoids the sometimes slow process of moving data from string variables into and out of file buffers, as used by some random access languages.

To actually store data, and read data from a file the |PUT and |GET commands are used. Each |PUT and |GET specifies which file it reads from or writes to, and the actual record within that file.

A handy command is the |EXIST command. It will check if a specified file is on the disc before you attempt to operate on it. This avoids file errors, and enables a nice professional touch to be added to the program by ensuring that the correct disc is in the drive.

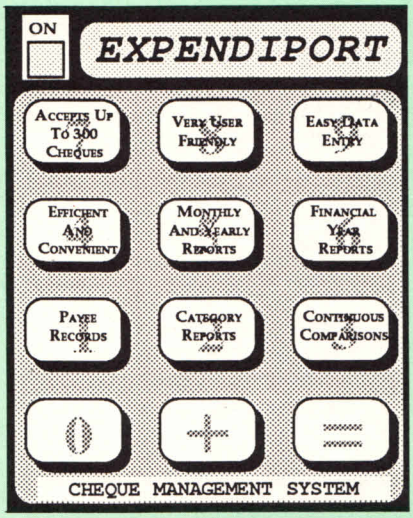
Finally, two somewhat strange commands, named |EOF.ON and |EOF.OFF are provided to tell the utilities how to check for an end of file. Without going into the technical details, these commands enable random accessing on both random files and normal ASCII text files, a handy feature if you wish to process a normal sequential file on a random basis! The on-screen help manual provided with the disc uses this method. Enquiries can be made directly (and randomly) to any page of information from a sequential file created from a word processor.

It does require a reasonable knowledge of BASIC programming and at least some knowledge of random file handling to use the DISC ENHANCER successfully. In operation, the utility is easy to use, once you have mastered the basics of random accessing. Error trapping is provided on all commands, to ensure complete program control, and in a multi-file environment, it certainly operated quickly and without any hitches.

The utilities disc comes with several programs, including a facility to incorporate the utilities into your own programs, two demonstration programs and a complete manual which can either be accessed via the screen, or printed out for later reference. A handy ready reference sheet is included for use if you don't want to read the manual, or just need a reminder on commands and error codes.

This Australian product is available for $49.99, which is exceptional value considering the power that it adds to the already powerful CPC range. Here is your chance to fill the gap which was left by AMSTRAD, and run professional business software available on other micros.

The "DISC ENHANCER" is available from SOLO SOFTWARE, P.O. Box 256, Mount Gambier, South Australia, 5290, or phone (087) 2580 68.



KEEP A CHECK ON YOUR CHEQUES

Expendiport is an Australian developed cheque management and reporting system which allows you to monitor your expenditure, and make comparisons with previous years.
It's full of features but easy to use. Expendiport is supplied with a comprehensive manual.

Available through The Amstrad User at $39.95 on disc only (incl. post)

See page 17 for ordering details.

DRIVING YOUR FLOPPY DOLLARS FURTHER

Using a 5.25" second drive can have financial advantages. Two user points of view are expounded.

If you are serious about computing, a second drive is a must for your system. You have a choice between adding another 3" drive or a 5.25", although the shortage of 3" drives at the moment may take the choice out of your hands. If you are lucky enough to find one, it could set you back anywhere between $300 to $400.

However for around the same price you can buy a 5.25" drive and save a lot of money. How can you spend a similar amount of money on buying one of two drives, and save lots of money? The answer lies in the type of disc which each drive uses. The cost of a box of 10 x 3" discs is around $80. The cost of a box of 10 x 5.25" discs ranges from $10 to $40 (depending of the brand).

In choosing a 5.25" drive, you must next decide the type you wish to use, either a 40 track or an 80 track drive. What is the difference? Firstly the price and secondly the amount of storage space per disc.

STORAGE SPACE

To understand the difference between 40 track and 80 track drives we must look at how information is recorded to the disc. The DDI-1, 664 and 6128 manuals explain the make up of a disc so it will not be covered here. These manuals also explain that the Amstrad disc drive is a 40 track single sided drive. "That's not true", you will say to yourself, "I can use both sides of the disc. " Correct, however to place information onto side B, you must eject the disc and flip it over. This is not how a double sided disc drive works.

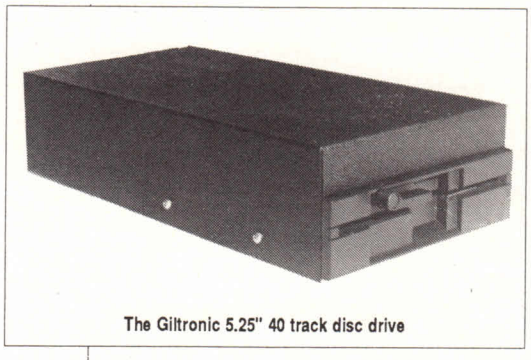
When writing information onto a double sided disc the first sector of information is written on the first side then the second sector onto the second side, the third sector back onto the first side and so on. For example, if you write a program 3K long (3072 bytes) the coding will be saved on the disc in the following way:

The first 512 bytes on side 1
The next 512 bytes onto side 2
The last block of 512 back on side 1

Now lets assume you write another program which is only 0.5K (512 bytes) in length. When saving to disc, this program will be saved onto side 2. If we were to give numbers to each section where data could be stored on a double sided disc we would have 720 separate areas. Each can hold 512 bytes. All odd numbers areas are found on side 1 and the even number areas are found on side two. After saving our first program areas 1,2 and 3 were used. Then when saving our second program we use up area 4. As number four is an even number it is found on side two of the disc.

The above describes how a 40 track double sided drive saves the information to the disc. The method used by a 80 track drive is the same however instead of having 720 areas to save to, you have 1440 areas.

In summary you can save 360K to a double sided 40 track formatted disc and 720K to a double sided 80 track formatted disc.

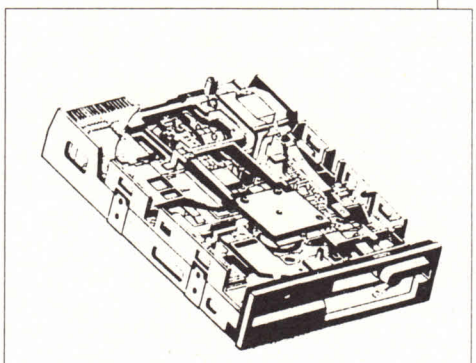


The Giltronic 5.25" 40 track disc drive

IT'S NOT OVER YET

Now you know all about that extra space you will probably want to rush out a buy a double sided disc drive to tack onto your Amstrad CPC. **WAIT!** As it is, your CPC cannot format double sided discs, even when using a double sided drive. However, there is a solution (isn't there always?). For CP/M+ (Version 3.x) users there is a program which when executed will allow you to use all 360K on a DS (double sided) 40 track disc or 720K on a DS 80 track disc.

This is fine for CP/M+ users but what about the Basic and CP/M 2.x users. The only solution I can offer to you people is to replace your disc controller ROM with an Australian designed unit. This will allow you to use an 80 track DS, 40 track DS (both 5.25") or even an 8" drive (not the most common). However these units are pretty rare and you may need to talk to someone more knowledgeable at a user group. You should also



A 5.25" NEC Slimline Disc Drive, costs around $280

remember that changing the ROM will invalidate your warranty.

If you cannot get hold of this ROM, do not despair, a 40 track DS drive can be used as a normal second drive. However you could only use one side of the disc at a time. If you wish to flip the disc over, you would need to punch an index hole in that side of the cover so the computer could write to the disc (very fiddly and not for the faint hearted).

WHERE TO GET YOUR DRIVE?

There are two options opened to you, you can either put one together yourself or buy one already complete. For any one who doesn't know how to solder or drill holes, I suggest you go out and buy an already assembled drive. If you wish to save money, are a little more experienced and have an hour or so to spare you could build your own. All the parts necessary and instructions can easily be obtained however the CP/M+ software or new ROM may take a little time to track down.

THE COST

Which ever drive you decide to buy, either the 80 or 40 track, there is a difference in the price. A fully assembled 40 track DS drive will set you back around $320 dollars, an 80 track DS around $399. This may seem quite expensive to some people but you notice the saving over a 3" drive when you buy the first box of discs. If you decide to make your own, you can save even more. A 40 track DS drive will cost you around $190, and the 80 track DS drive around $280, but that's not all. You will also need to buy a case and power supply. The case and power supply together (the power supply is already built into the case) will cost you around $110, and to hook up your new drive will require a cable. Half a metre of ribbon cable and a plug to suite your Amstrad will cost around another $10.

If you add up all the costs you will notice that making up your own drive will give you a saving of around $100. (The cost of 100 cheap 5.25" discs, or about 12 x 3" discs).

TECHNICAL HELP

I would not say I am an expert on adding a extras onto my Amstrad however I have been using an 80 track DS NEC Slimline drive for quite some time. The money I have saved in buying discs is enormous. If you wish to ask questions about adding 5.25" drives to your computer system, I suggest you give the people at Giltronic Australia a ring, after all they were the first to really provide Amstrad owners with the facility of adding a 5.25" drive. They can be contacted on (03) 773 1244.

SAVING TO BOTH SIDES OF THE DISC WITHOUT TURNING IT OVER

If you do not have the correct software or the new disc controller ROM you can still use a 5.25" DS drive nearly to its full potential. Keith Hamilton of Mill Park has found the solution.

If you have a double sided drive like I have, and you want to access both sides with out too much fuss (without the need to punch a new index hole on the other side of the disc), here is how to do it. Pin 32 of the drive is the side select pin, and normally this is at 5 volts (High). You run a piece of wire to this pin and a piece to the ground or negative 5 volts. Then connect the negative wire to the centre contact of a single pole double throw switch and the wire going to pin 32 you connect to one of the other pins on the switch. See figure 1. Flicking the switch will either select one side or the other. The Giltronic 5.25" DS drive has this switch already built on to the drive.

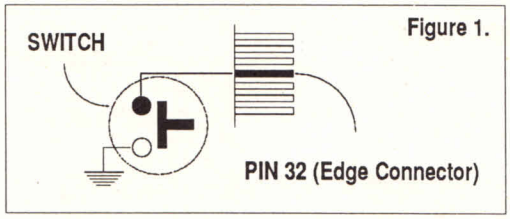


Figure 1.

I saved a null file on each side of the disk just to let me know which side I am using at the time. The files being:-

!!!!!A!!.!!! and !!!!!B!!.!!!

Another problem I had with my 5.25" drive was that I had no ready signal on pin 34. I cured this temporally by connecting pin 34 to ground. However, that meant when using Disckit3 which requires you to take out both discs, the "B" drive disc was always seen by the computer to be "IN". I cured this problem by using a TTL I.C.. If you are handy with a soldering iron and know a little about electronics, then this modification should not present a problem.

What you have to find first is an IC pin on your drive that is HIGH when the disc is in the drive properly. You then run a wire from this pin to pine 1 and 2 on the 7400 IC. See figure 2. Pin 3 of this IC is then connected to pin No. 34 of the edge connector. If all went well, your drive should behave just like your "A" drive. I have had these modifications on my drive for a few weeks now and all is working well. Don't forget that the 7400 needs to have a +5 and -5 volts supply connected.

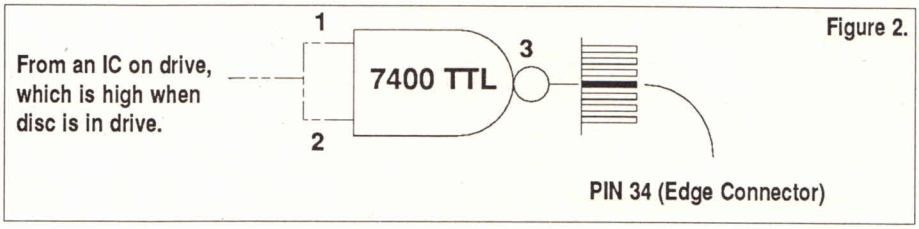


Figure 2.

For PCW buffs, Ron Hawthorne shares his experiences.

An 'install it yourself', external 5.25" second disc drive from Magnetic Data Storage, is a must for data storage starved single drive PCW owners.

I was faced with a dilemma...buy another box of 3" discs, at the usual exorbitant price, or lash out on a second disc drive.

As I had already purchased a total of 81 3" discs to date, I did a little calculation and discovered I could have purchased almost three disc drives for the same outlay. A very sobering thought.

Fit a second internal 3" disc drive? The beauty of this option was, the unit remained standard, was interchangeable with other 8512 units, plus I had enough discs to last a while, but sooner or later I would have to purchase more of the costly 3" discs, also, when the time came to finally upgrade, I would lose the disc drive with the unit.

With an external 5.25" Disc Drive, the disc cost is a decided advantage, being 20% of the 3". IBM data files can be transferred using Moonstone's M.F.U. There is no confusion with "A" and "B" drive discs as they are completely different, and the drive remains with me when I upgrade.

I deliberated about this for another couple of weeks, until I happened to see a M.D.S. 5.25" drive in action, at one of our "Eastern Amstrad User Group" (a little plug) Club Meetings. I was very impressed.

A short phone call to M.D.S. in Sydney, and I was soon the proud owner of a D.I.Y. 5.25" disc drive.

INSTALLATION

Is simplicity in itself. Place the Monitor face down on a flat surface, (ensuring the unit is disconnected) remove the 6 screws securing the back, then lift off the back.

The first thing that enters your head is, who pinched all the stuff out of the Monitor? Anyway, look for the grey flat ribbon, (you can't miss it), remove the tie around it, then replace the back, whilst poking the ribbon out through the Printer socket hole. Replace the screws. You now have a monitor with a ribbon cable hanging out the back. Simple wasn't it?

One more job to do...remove the two locating lugs from the monitor ribbon cable connector, with a pair of side cutters, otherwise it won't connect with the drive connector. I also had to touch it up with a small file, as the lugs didn't cut clean for me.

Now for the moment of truth, connect the drive ribbon connector into the connector hanging out of the monitor, ensuring the red edge of the drive ribbon is on the same side as the blue edge of the monitor ribbon.

Plug in drive 3 pin power plug, switch on drive, insert the 5.25" start up disc in drive. Then, and only then, switch on the computer. Boot up CP/M, and away you go. If you switch on the computer before the disc is in the drive, the computer doesn't recognise the drive.

If you use Xformat, you get a massive 788K of storage.

SUPPORT

I had trouble with the motor that drives the unit. Needless to say, I was soon on the phone to M.D.S., and a Mr. Bill Szczesny (no, I didn't spell it wrong) was very friendly and informative, a replacement drive was soon winging its way, priority paid, to my door.

TECHNICAL ASPECTS

The drive is a Shugart SA460FH 80 track 5.25", which is encased in a stout metal case. The 65 Watt power supply has two outputs. 8512 owners have not been forgotten, with a special ribbon cable the Drive can be connected to an 8512. A toggle switch on the front of the Drive switches between the internal and external Drives.

LIMITATIONS

The only short comings are that the unit doesn't like the $0.80 "el cheapo" discs, which is understandable considering the density of the 80 tracks.

ADVANTAGES

I copied forty-five "A" back up discs on to twenty 5.25" 788K "B" discs. The cost savings are obvious, over $400 compared to $36 for the 5.25" discs. Mine has paid for itself already. I also copied over some IBM Supercalc3 data files via M.F.U. loaded up Supercalc2 and ran them with no problems. (It will not of course, run IBM programs, that's asking a little too much.) But if you have the same program in CP/M, the data should be able to be loaded. For example, files from Supercalc, Wordstar, Masterfile, Multiplan can be moved over and run. If not, most programs can export in ASCII, which can be transferred and imported in to the program of your choice.

IN CONCLUSION

At $299, it has got to be good value, not forgetting the main reason for buying the unit in the first place - the convenience of a "B" drive for the larger programs and the data generated from them.

Invitation to all Amstrad owners

Anyone who feels they are qualified in contributing articles to The Amstrad User are invited to apply to join a new panel of writers.

Whilst we anticipate and will welcome applications from experienced writers, we will also consider requests from competent non-professionals. A revised payment structure will apply to panel member's published work. In that regard, applicants are asked to indicate their requirements.

In the first instance, we ask candidates to write directly to The Editor giving details of the areas or subjects in which they have expertise. This information should include the machine type (CPC, PCW or PC) and subject preferences. Examples of previously published work (if any) would help.

Please reply in writing to:

The Editor (Writers Panel), The Amstrad User

1/245 Springvale Road, Glen Waverley, Victoria 3150

MASTERFILE III

FOR THE AMSTRAD CPC6128 (ALSO CPC464/664 WITH DK'TRONICS 64K RAM)

FIRMLY ESTABLISHED...

MASTERFILE III is now firmly established as THE filing system for the CPC6128.

For the benefit of newcomers to the CPC machines: MASTERFILE III is a powerful and flexible data filing and retrieval system. All "database" systems require that your data is organised into fields and records. Unlike most, MASTERFILE does not commit you to field lengths or formats, since ALL data is variable-length and optional. Files are not pre-formatted, and only used bytes are saved to disc. Also, unlike the rest, MASTERFILE allows multiple user-defined ways of viewing/printing your data. And unique in its price range, MASTERFILE offers RELATIONAL FILE options, whereby common data can be entered just once and shared by many records. Maximum field size is 240, maximum fields per record is over 50, and maximum file size is 64K. Room for 1,000 full names and addresses, for example. Only one disc drive is required. It is menu driven throughout, and comes with detailed illustrated manual, and example files.

SO VERY VERSATILE...

Just about ANY kind of information can be handled by MASTERFILE. You can EXPORT the data to other systems (eg. PROTEXT/MERGE and TASWORD). You can even merge your own USER BASIC to MASTERFILE for customised file processing, or build new files from other computer sources. The speed of SEARCH of MASTERFILE is second to none. Records can be sorted ascending/descending, character or signed numeric, even embedded keys such as surnames. Other functions are field-to-field calculations, and several-across label printing. We simply don't have room to list all the features; give us a call if you are still in doubt of the power of MASTERFILE III.

ALL THIS POWER...

This is no toy thrown together in BASIC and half-tested, but real machine-coded computing power professionally constructed. We have had IBM and Apricot users beg us for a MASTERFILE for their machines - when they had seen the earlier CPC MASTERFILE. All this power is yours for.....

MASTERFILE III costs $109.00 including postage and packing, and if you request air-mail within Australia, we'll do that at no extra charge too! (If you live outside Australia please add $4.00 for air-mail cost. Bankcard, Mastercard or Visa accepted).

Send your order now to:
THE AMSTRAD USER
Suite 1/245 Springvale Road,
Glen Waverley,
Victoria 3150. **Tel: (03) 233 9661.**

MASTERCALC 128

THE MODERN CPC6128 SPREADSHEET SYSTEM

This is the sister program to the famous MASTERFILE III, and is a fast and friendly spread-sheet program with high capacity (over 7 000 cells) and impressive speed. Like MASTERFILE, it is entirely machine coded. Like MASTERFILE, it needs just one disc drive and does not use CP/M and it uses the same optimised RAM bank-switch code. "Another exceptional utility from Campbell" said Popular Computing Weekly of the original MASTERCALC. The "128" edition is more powerful.

All spread-sheet systems allow manipulation of any array of numeric data. What sets MASTERCALC 128 apart from the rest are these features:

Full-screen or split screen windows; variable column display width; variable column formats, 0-7 decimal places; columns can be formatted individually; ultra high-precision floating point arithmetic; direct totals and sub-totals; up to 99 relocatable formulae (usually 10 is ample!); formulae up to 75 characters, and arithmetic expressions, plus conditions, relative cell references; instant highlight of computed data; store text anywhere; pop-up help menu; 40/80 column mode; auto cursor-advance; text output to printer or to disc for word processing; fast hi-res histogram of any 3 rows; Epson screen dump; detailed manual with illustrated tutorial.

For the enthusiast, there is even USER BASIC access to the cell data, so that special operations can be performed for example, it is possible to ship data to/from MASTERFILE III.

MASTERCALC 128 costs $99.00 including postage and packing, and if you request air-mail within Australia, we'll do that at no extra charge too! (If you live outside Australia please add $4.00 for air-mail cost. Bankcard, Mastercard or Visa accepted).

Send your order now to:
THE AMSTRAD USER
Suite 1/245 Springvale Road,
Glen Waverley,
Victoria 3150. **Tel: (03) 233 9661.**

PERSONAL EXCELLENCE PACKAGE

Doug Goldsmith reviews IANSYST's latest marvel PEP, a package for measuring mental performance via a 6128, PCW or PC

When I first became involved in serious word processing, it was obvious that my two finger, hunt and peck typing technique was not going to do much for my output, or my fortune. I therefore invested in 'Two Fingers to Touch' by IANSYST, and proceeded to make use of the potential of my other 8 fingers. I found the methods and presentation to be as good as the reviews had claimed, although my performance improvement was eclipsed by that of my 16 year old son, who now pecks away at about 50 words per minute, largely as a result of IANSYST techniques. I was particularly impressed by Ian's style and application of user-friendliness, which makes entertainment out of an otherwise boring task. The packaging and documentation were first class, and I felt that IANSYST was well and truly in the business of self improvement through computers.

Now from IANSYST comes an innovative piece of computer software, guaranteed to release more than just the power of 8 unused digits. It is, in fact, aimed at measuring, expanding, and providing self awareness of the potential of the most powerful computer in the universe - the human brain.

When I first became aware of PEP, I thought - 'Who needs an automated IQ test anyway'. After I had worked through some of the tests and exercises I had changed my hasty opinion. The author, Colin Jack, has excellent credentials, having a B.Sc in mathematical physics, and a long association with scientific, commercial and educational computing. He has written intellectual adventure games, and is working on a series of personnel evaluation programs, of which PEP is the first step.

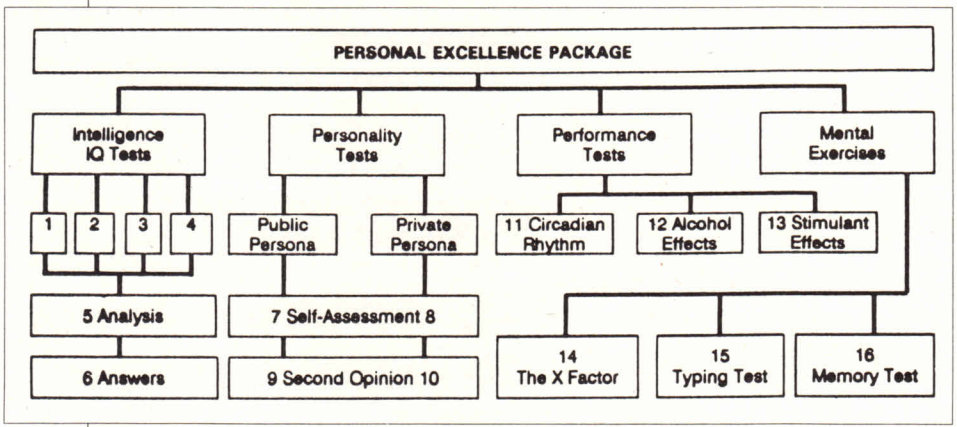
There is much more to it than an electronic IQ test. PEP is definitely not a pseudo scientific gimmick; it has nothing to do with biorhythms, astrology, or psychic powers, but is based on the premise that mental performance can be measured, and what's more improved by having an understanding of some of the relevant factors. PEP gives us some insights into these factors, then allows us to use the computer to measure, record and to exercise areas of mental process.

Total mental performance is the result of a number of factors, some of which can be developed by exercises, in much the same way as cardio vascular performance in athletes can be improved by carefully planned training exercises. The intent of this package is to allow you to measure yourself, friends, and prospective employees in various aspects of mental capacity and functioning, such as IQ, thinking skills and mental performance. It can identify the times of the day when you are most alert, and least error prone. It can test the computer aptitude of potential employees and measure the effect of stimulants and drugs upon your performance. Add to all this a personality assessment and you have the Personal Excellence Package (PEP).

In these days where self improvement courses are a burgeoning part of the education scene and so much importance is placed on personal performance and effectiveness, PEP will find a niche as a serious but entertaining, demanding but non-threatening personal development system.

At $109.00, PEP is good value for money. Some computer games cost more and require mental alertness and creativity, but this package will stimulate those mental functions, as well as suggesting many different ways in which to use it in an educational, recreational and serious mode.

You may have missed the earlier announcement of PEP, buried as it was in the April '88 TAU, under CPC software releases, as a CPC6128 product only. Not true, as the documentation now tells us that



PEP is available for AMSTRAD PCW and CPCs, also IBM PC, XT, AT, PS/2 compatibles. I tested the PCW 8256 version.

WHAT'S IN IT FOR ME?

The Personal Excellence Package contains 16 activities, in four major groups.

- Intelligence and IQ tests.
- Personality Tests.
- Performance Tests.
- Mental Exercises.

PEP keeps records of your activities for most tests, so that you can build up a picture of your responses over a period of time. There is no temptation to alter these records, as they are encrypted. The only way to change a result is to do the test again. Graphs are used to present a visual record of the results for some tests.

INTELLIGENCE TESTING

Many companies have used IQ testing in the past as a way of assessing candidates for employment, but this process has fallen into disrepute for a number of reasons. First there is the difficulty in calibrating the tests, then the difficulty which scientists have, of not being able to agree on an objective measurement technique. Some say that IQ is related to cultural forces, others say that more basic factors such as age, heredity or social circumstances are determining factors.

There is also a school of thought which holds the view that IQ tests simply indicate whether or not the subject knows how to do the test, and that you can study for an IQ test. For all that, these days performance is the key. To achieve promotion, to write better programs, to solve difficult business problems requires a level of performance which, thanks to a couple of generations of industrial psychologists, can be observed and measured rationally and objectively.

PEP uses a test, said to be scientifically calibrated, to generate a score on a scale with an average value of 100, and which can be compared with other similarly calibrated tests. For example, it is certainly possible to make valid comparisons of candidates for employment, using the PEP test. What PEP provides, and where it is superior to a written test, administered by a supervisor, is a rigorously controlled environment. There are 4 graded tests which can, if taken over four separate days, give a fairly good idea of the likely performance of people employed in various clerical and complex technical tasks.

The IQ test is actually 4 graded tests which should be taken over a period of four different days, or an initial assessment can be made using only the first test. The tests are performance oriented and do not claim to measure capacity for lateral and divergent thinking, rather the ability to focus on a specific problem, in a convergent thinking mode. There are some conditions recommended for taking the test, for example, you should allow for no interruptions, 20 minutes for each session, in a quiet environment.

The tests cannot be stopped and restarted. An analysis section averages your score over completed tests, and analyses your results for each of four thinking skills;

Logical - clear thinking,
Numerical - numbers and arithmetic,
Verbal - word usage,
Visuo-spatial - shape manipulation.

Some suggestions are offered as to the types of mental activities which may be suitable for you. An unusual feature is that after taking the four tests and analysis, you can check your answers to understand those you got wrong. Of course this means that you cannot validly take the tests a second time.

YOUR PERSONALITY

Have you ever taken one of those tests, popular in womens' magazines and weekend newspapers, where you answer a set of questions and analyse your scores in the hope that you will then be able to improve your assertiveness/financial management/love life/health. These are not to be taken seriously, but may sometimes give useful insights. PEP personality tests are also provided for fun and interest, and are not calibrated using any scientific procedure. The program provides an analyse which, in my case, and with members of my family, appeared surprisingly close to the mark.

There are two areas tested:

- 'Public Persona', which examines your interactions at work: your leadership and management ability.
- 'Private Persona', which looks at the quality of your personal life and relationships: social skills and interactions.

For each of these tests, it is suggested that you get a second opinion by allowing a friend who knows you well to answer the same questions about you. You should then be able to match your internal perception of yourself with the way others see you.

MENTAL PERFORMANCE TESTING

This group of tests measures variations in mental performance as affected by various external factors. These tests can and should be repeated a number of times, to identify when your level of mental effectiveness peaks and troughs. It is said to allow you to plan your time and life style accordingly.

External factors tested are - effects of alcohol and stimulants, such as tea and coffee; the biological clock or circadian rhythm.

CIRCADIAN RHYTHMS

The circadian rhythm (nothing to do with entomology) reflects the fact that each of us has a biological rhythm which scientists can measure by attaching probes all over the body, taking samples of body tissue to determine chemical and hormone levels and plotting the variations in these levels through a period of

time. It turns out that the average human cycle is about 24 hours, but that there is an external cue influence to take into account. This has been demonstrated in experiments with astronauts and cave sitters, where the subject has been deprived of the external sensory cues such as clocks, sunrise and sunset, even a knowledge of night and day. An interesting by-product of these bizarre experiments is that, in some cases, the human biological clock cycle settles down to around 24 hours, give or take a few. The implication is that we train ourselves to adapt to the external cues such as sunrise and sunset, and adjust our routine accordingly. But have you ever been jet-lagged, or worked shift work? If you have, you are well aware of the stressful effects where the body objects, sometimes violently, to the forced changes in its natural rhythms. What all of this means is that there are times in the cycle when performance is better or worse, and that a knowledge of these rhythms will help the individual to recognise peak performance times of the day, and those times when complex or important tasks might be postponed.

UNDER THE INFLUENCE

The alcohol effect test involves keeping a circle close to, or ideally overlapping a square which moves in random directions and at random speeds around the screen. IANSYST suggests a mouse for this test, and I thoroughly agree. This means of course an IBM compatible. For the AMSTRAD version, they don't use the arrow keys to move the circle: instead they have redefined the Z,X,K, and M keys. I found this very confusing and try as I might, drunk or sober, I had to give up.

If you do succeed in doing this test, the guide is quite em phatic that whatever the result, (you may even find an apparent im provement witl evels of alcohol), there is ample evi dence to indicate that driving performance is adversely affected by any amount of alcohol.

ANYONE FOR COFFEE?

The stimulant test is a pure response time test. You simply press the space bar when the message appears on the screen. The program asks for the amount of stimulant

taken. Response time is measured in milliseconds, and a report relates this run to your best time so far.

With all of these performance tests, the author points out that there are other factors which can detract from the uniformity of the results. If you are overtired, or suffering after a heavy night, you would be well advised to try something less demanding, perhaps settle for just the coffee.

MENTAL PUSHUPS

There are some areas of mental activity where skills can be developed and these are covered by the mental exercises group. The typing test and the memory test can also be used to assess current abilities, for example, in an employment process, it would be good to have a standard typing test to rate the clerical ability of applicants.

The most interesting test I found to be the 'X factor' test, which is similar to the IQ test, but has a much simpler results presentation. It is intended to be used as recreation and can be repeated as often as required. This is because the combinations of problem elements are infinitely variable, hence the answers change as the game goes on.

Typing skills are measured by presenting 12 short sentences to be typed, and recording the speed and accuracy attained. Errors cause the PCW to beep, and must be corrected before continuing. If you fail to reach a standard deemed satisfactory by IANSYST, you are presented with a commercial for IANSYST typing tutorial programs!

The memory test checks your short term memory by having you memories strings of numbers, from 3 to 10 digits long, then typing them back in. The second part of the test calls for the strings to be entered in reverse order. The results are presented in much the same manner as the X factor tests. Once again you can stop the test at any time. I found this test to be a lot of fun, particularly in competition with friends and family. There is a learning effect with all of the tests in the mental exercise group; if you repeat the test regularly, the improvement may surprise you.

OPERATION

On entry to PEP, the date and time are setup to allow for recording and graphing of the output of some tests. You are then prompted to supply your name, which is used to set up your results file. PEP will then recognise you next time you log in. A main menu selects one of the test selections, resets the calendar, or exits from PEP.

PEP is structured in such a way that the user can play games or take a serious test at will. Each section has a simple three or four line menu, with logical exit to a previous menu. Each menu has an introduction option (0), which gives the intent of the section and suggests a method of performing the exercises. I found that the manual and the on screen menus were adequate to use PEP. There were no apparent errors, although a minor point was that the PCW version had a reference to different colours to be used in one test, and the screen was in 24X80 mode. Both points derive from the CPC heritage; there was no problem with PEP operation however, only the PCW purists would be irritated, I suspect.

PACKAGING

Packaging is as important to software as it is to any other piece of merchandise, and the IANSYST people have put a lot of effort into their products to ensure that the documentation is readable, logically arranged, accurate and complete. PEP comes in a hard plastic A5 size folder which protects the single CF2 disc and the operations guide. They have also kept the commercial possibilities in mind, including advertising brochures for some other IANSYST products in the package. I liked the 'Getting started with PEP' leaflet, which, in addition to copyright, warranty and disclaimer notices, provides the user with all the information necessary to install, backup and run PEP. The inexperienced user is given a comprehensive set of instructions which appear to have covered any possibility. When all else fails IANSYST have a support hot line (for UK users only, unless your international phone bill doesn't worry you).

The operations guide establishes the credentials of the author in a back cover note. The slim (16 page) manual starts with an introduction which establishes the credentials of PEP itself, and while emphasising that the intent is to provide amusement and self knowledge, there is a very strong suggestion that PEP may find a place in the serious business of staff selection and evaluation.

Each PEP component is described with essential background for understanding the rationale for each set of tests and a note on limitations, uses and 'taking the test' considerations. The current scientific thinking on IQ testing is brought into focus with a discussion of calibration and repeatability of the tests. The uses to which PEP can be put are said to range from games where the computer is used to measure performance of various mental functions, to serious self improvement exercises where facets of the mental process may be trained to improve the performance of various tasks, such as typing speed and accuracy, spatial pattern recognition and manipulation, and short term memory. There is an index, which some may consider to be superfluous, given the size of the manual, but which does help to complete the user-friendly picture. Altogether a complete, impressive document.

FINALLY

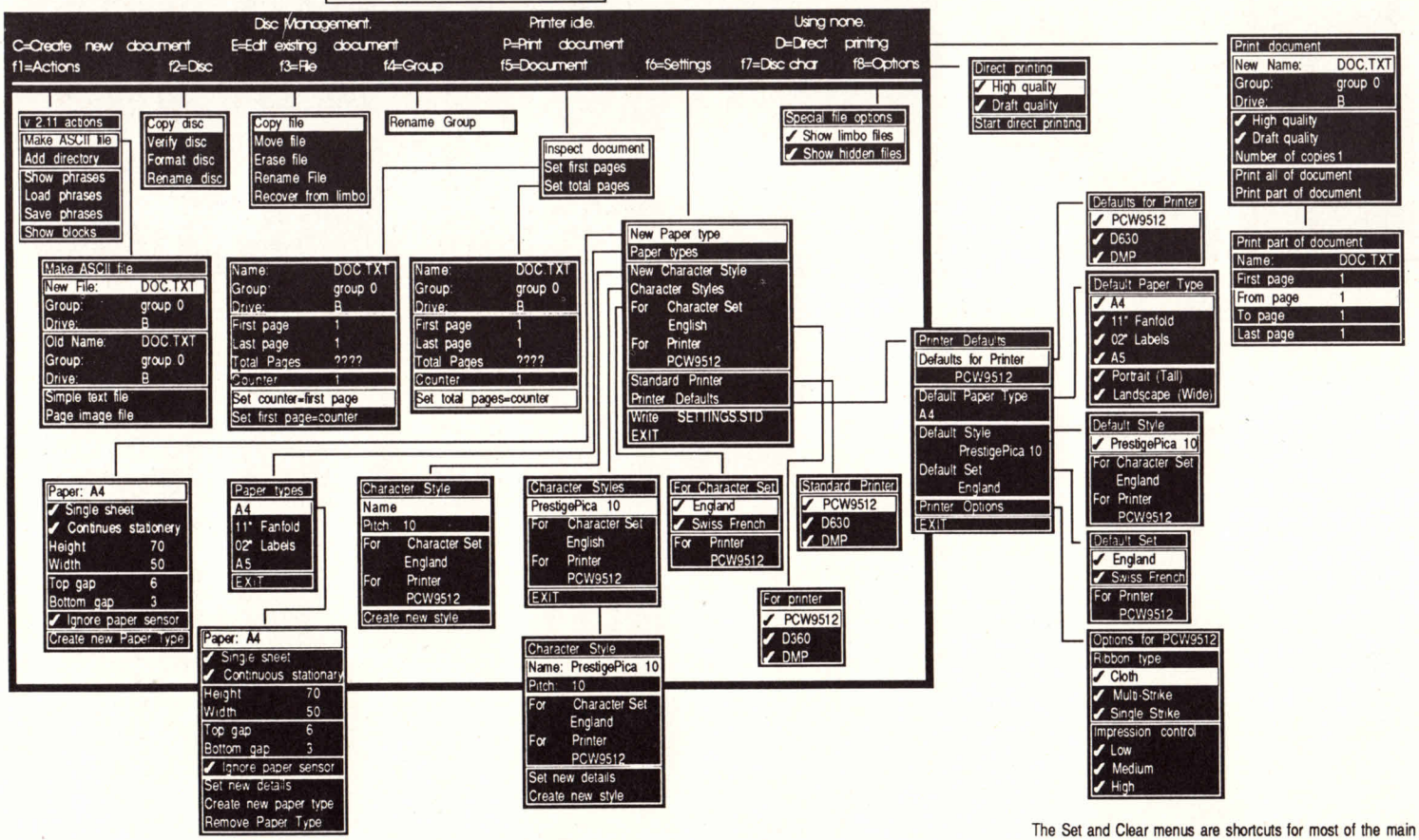
PEP is easy to use; I found the tests and exercises challenging. I would recommend it to anyone interested in assessing his own, or other people's performance and potential. The recreational value is a plus. Program design, packaging and value for money make it another winner for the IANSYST stable. ESC

THE AMSTRAD USER

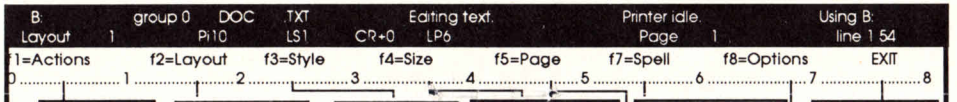
LOCOSCRIPT2

THE GUIDE AT YOUR SIDE

DISC MANAGEMENT SCREEN



EDITING TEXT SCREEN



How to use this chart

This chart details all the menus available in LocoScript 2. The normal procedure is to press the f-key ([f1], [f2], etc.) linked with the menu, use the cursor keys to move the highlighted bar over the choice you want, then press [ENTER].

Options marked with a tick (✔) need to be specially "selected". Press [+] or [-] to select of deselect, then press [ENTER] to perform the chosen action.

Some choices you require you enter a number, for instance the Header and Footer size menu. After highlighting the option, type the number you want, then [ENTER]. After altering any other choices you want on the menu, press [ENTER] again to act on the entire menu.

In most places, then [CAN] key (for "Cancel") aborts the current operation and returns to normal editing.

The chart is based on version 2.11 of LocoScript 2, ass shipped with the PCW9512. Other versions may differ slightly, depending what paper and printer types you have set up.

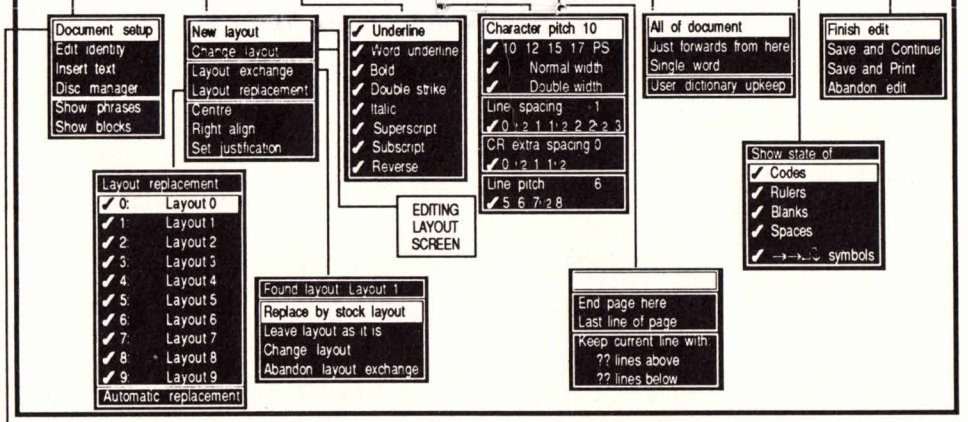
The Set and Clear menus are shortcuts for most of the main editing menus. For example, typing [+]B turns on Bold, and [-]B turns it off again. To use these menus, type [+] or [-] followed by the capitalised letters in the choice you want. The menu itself won't appear unless you deliberately wait for a few seconds. If a number is needed, you will be prompted to type it in and press [ENTER].

+ SET MENU

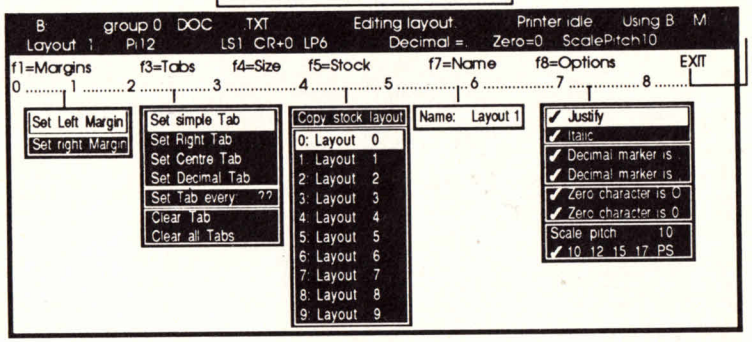
- Bold
- CEntre
- CR extra ??
- Double
- Italic
- Justify
- Keep ??
- LayouT ?
- Line Pitch ?
- Line Spacing ??
- Last Page Number
- Mail
- Pitch ??
- Page Number
- ReVerse
- Right Align
- SiC
- SuBscript
- SupeRscript
- UnderLine
- Word Underline
- UniT
- hard space
- - hard hyphen

- CLEAR MENU

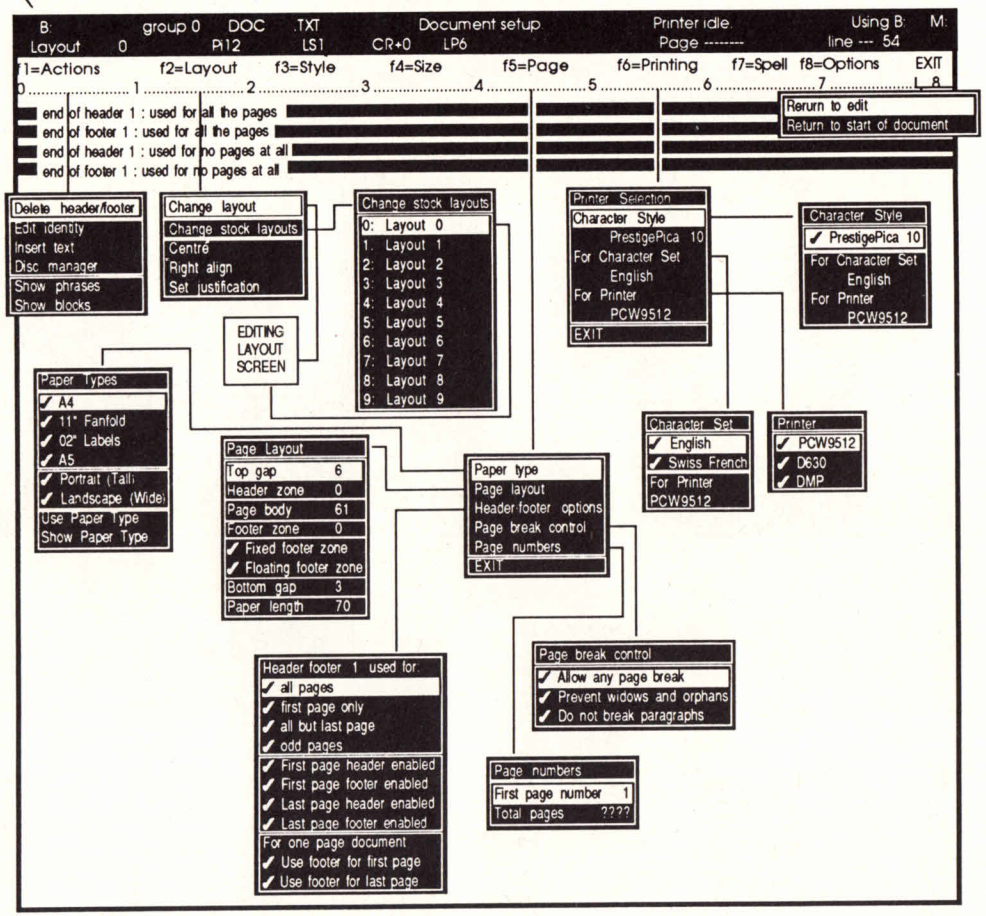
- Bold
- CR extra
- Double
- Italic
- Justify
- Keep ??
- Line Pitch
- Line Spacing
- Mail
- Pitch
- ReVerse
- SuBscript
- SupeRscript
- UnderLine
- Word Underline
- UniT
- ~ soft space
- - soft hyphen



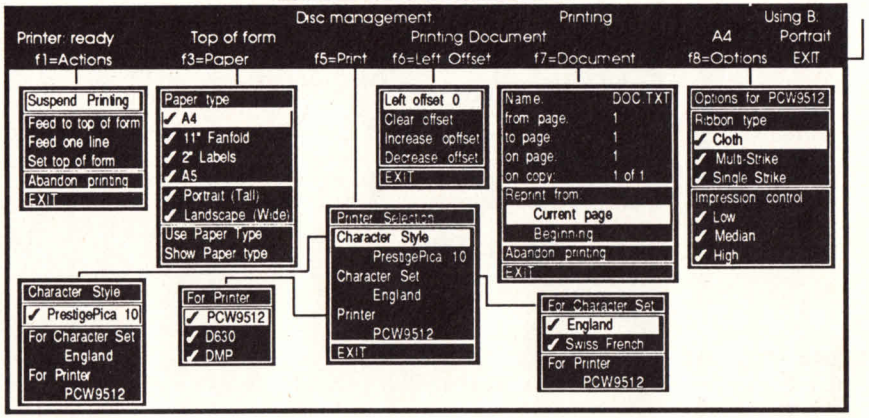
EDITING LAYOUT SCREEN



DOCUMENT SETUP SCREEN



PRINTER CONTROL SCREEN



GET YOUR TEETH INTO A PCW

Where UK dentist Andrew Shelley embarks on the long haul to marketing his brainwave

The first encounter with my new PCW was traumatic. I had experimented with various home computers with the aim of easing the burden of repetitive tasks in my dental practice. I quickly realised that a proper 'grown up' computer was required. Unlike many people I bought a PCW because I wanted a business machine rather than a word processor.

Experiments with unsophisticated computers had not prepared me for what was to follow. I launched into the CP/M manual with all the enthusiasm of a man facing his first vindaloo and expecting to enjoy it. My first taste of CP/M came as a blow. I understood that to move a file you have to use PIP, but what is a file, why would I want to move it, and who's PIP anyway? I had to call for the cavalry. I am in the fortunate position of having several friends who are either enthusiastic amateurs or professionals in the computer world and they nursed me through my technological adolescence. "You need programs to run other programs", one explained. This was a new concept to me, but the fog began to clear and I soon found myself becoming another enthusiastic amateur discovering the delights and frustrations of 'real' computers.

When I was about to enter dental school my own dentist warned me "most of your time in dental practice is spent writing letters and filling in forms. Any work you do on people's teeth is purely incidental!" There is truth in this. We write letters, account letters and reminder letters; we send referral letters to consultants; we give out leaflets with instructions for patients or messages about dental health. Having broken the LocoScript pain barrier I soon found that the prospect of LWWP (life without word processing) was intolerable.

THE HUMAN FACTOR

Clearly the PCW would be a valuable tool in all this administration. The dental practice project was under way, and I enlisted the help of a friend who is a computer systems project manager. With a professional at work we began to discuss not how to program a computer but the concept of a system in dental practice.

Dental practice management systems have been around for some time now and so we had the advantage of a critical appraisal of their achievements. Comprehensive and expensive systems have not provided the panacea that many expected. Dentists found their systems complex and cumbersome to use, and some abandoned their newly acquired computers to return to the tried, tested and reliable manual methods.

I know of a dental practice that uses a dental management system so complex that only the receptionist, who has responsibility for it, is capable of using it. If she is on holiday, disaster strikes. Not even the Dentist knows the ins and outs of the system. One of the goals therefore, was to develop a system that was quick to use by all staff, including the Dentist.

A major feature of existing systems is dental record keeping. At first sight this seems eminently sensible. Immediate access to records and the opportunity to prepare instant statistics are convincing charms to woo the unwary. However, I had experience of computerised records from working at another practice and had several objections. The most notable incident was the morning when we arrived to find that the hard disc no longer held the records which a secretary had spent weeks typing in. Also there were four terminals to the system which made it very expensive indeed. It could never have been cost effective.

Typing records into a computer system when you have four patients in the waiting room, all with toothache requiring immediate attention, is a frustrating experience. Handwritten dental records have become refined with many shorthand symbols over the years and many find that manual records are much faster than their computerised counterparts. X-rays and referral letters often form part of a dental record, so it would therefore be necessary to keep a manual file in any case. Far better, in my view, to keep them all in one place.

Those who expected that their computer would ensure they would never lose a record again have been disappointed. We all have our tales about computer cock-ups; mine concerns a well known domestic appliance manufacturer who denied our existence. What had happened was that our name had been spelt wrongly on the database and so could not be found.

Dental appointment systems have been tried. The difficulty with

this is that it is only possible to see a few hours of appointments at a time on a monitor. Compare this with the handwritten version where it is possible to see a whole week at once - you can assess at a glance how busy the forthcoming week is and where the free appointments are.

MONEY IS THE ROOT

If the practical considerations of bookings and records systems in a dental practice make computerisation tricky, Dentists' fees and patients' charges are a different matter. Dentists are paid according to the items of treatment that are carried out and there are some two hundred different items of treatment carrying different fees. However, it is not simply a matter of totting up the fees. For example, the fees for a combination of items can be different from their simple sum.

Some fees vary according to the teeth which are involved, or maximums may apply to groups of items. Having worked that out the patient may have to pay the first £17 of their treatment and 40% of the remainder. However, some items are free of charge and others have their own fee which has to be added separately. In short the NHS dental system is full of idiosyncrasies, in addition to which the fees and charges can change twice a year. In my view this is an area where a computer can really prove invaluable. It would no longer be necessary to look up fees or perform complex arithmetic, it would simply be a matter of telling the computer what treatment had been carried out and leave the rest to the system.

The National Health Service documentation is another area where a computer system could show its worth. There is a form called an FP17, the bete noire of dental practice. Mention FP17 to a dentist and you may observe a far away look come over him as he recalls hours of frustrating wasted time filling in and checking the dreaded 'form'. It is, in fact the form that your dental practice asks you to sign whenever you have treatment under the NHS. On the reverse of this form the dentist enters all the treatment which has been carried out for the patient and submits it to the powers that be for payment. This can be a mammoth task in some cases. Whilst a computer holds the patient's details it is quite possible to feed one of these forms into the printer of a PCW and watch in astonishment as it completes in seconds what was previously achieved in up to an hour.

It need not stop there, however, the same details can be used to print out a range of useful documentation. For example, estimates of costs for patients, explanatory breakdowns of charges, statements, and with little extra input, recall letters and enquiries to the NHS about underpayment of fees.

All this can be achieved with a single PCW computer. We reached the conclusion, therefore, that a system running in a complementary role to conventional record keeping and appointment systems would provide a truly effective and economical solution. We set about developing such a system.

Writing the system in our spare time took us about 12 months. During that time we began to realise that we were creating a high standard professional package that would be useful to other dental practitioners and thus have commercial possibilities.

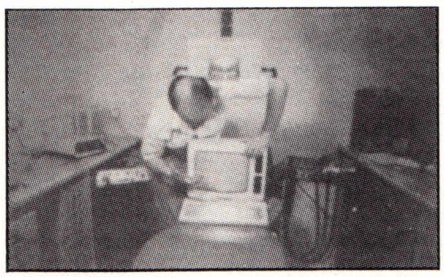
The practical problems of producing the manual and packaging then came to bear. There were many screens included in the guide which added to the problems. We considered options such as renting an Apple Macintosh and a laser printer, but ultimately we used a combination of PCW, LocoScript, photo-reduction and ordinary litho printing. The whole thing was bound in a screen printed ring binder to produce a really professional result.

PARTING SHOT

My staff and I have now been using our system for some months with great success. Our newly formed company, 'Practice Systems Limited', has started to market the software as 'Fee Manager' and the first users seem to be delighted with their new systems. We took a great deal of trouble to try to ensure that the system is easily used by all members of staff by using conventional notation and abbreviations to enter treatment details.

Despite the combined computer and dental expertise of our partnership, marketing people tell us that simply building a better mousetrap does not guarantee cleaning up the mousetrap market. Just because our software is the greatest thing since painless extractions it doesn't automatically lead to success. Sales and marketing are vital, and this is one of the most challenging aspects of a new business.

We believe that it is no longer good enough to indiscriminately throw botched databases at dental practices and hope that they will change to accommodate them. We believe in pragmatic computingand if it doesn't save you time, money or trouble then it's not worth having! ESC



KEMPSTON MOUSE AND LOCOSCRIPT2

Two opinions from D. J. Higgins and Helen Bradley

The Amstrad PCW has come a long way since its introduction as a Wordprocessor. As with most other computers, the extent of applications and the ease of use of such applications have also improved. Probably the most talked about improvement is the introduction of the 'mouse' and its associated software environment - the WIMP environment.

WIMPs and mice have now become the standard in regards to the user friendliness of a computer system and so as expected, WIMPs and mice are now available for the PCW. In this article I will review one such contender, the KEMPSTON PCW Mouse.

The Kempston PCW mouse, manufactured by the Swiss, is a LOGITECH two button mouse (not the same mouse that appears in some English Magazine Reviews) connected to a small interface that plugs into the expansion port at the rear of the PCW. The mouse itself is quite light (too light for my liking) and connected to the interface by a 1.8 metre long cable. This cable is terminated by a 9 pin 'D' shaped plug that connects to the back of the interface. The interface connection to the expansion port leaves a little to be desired. It was a much larger connector that was cut down to size. There is no surrounding moulding to aid in lining up the connector, only a small bar located between the pins to match the slot in the expansion port. As a consequence you need to turn the monitor around to sight up the connection or take some time manipulating it until you have it lined up. The connector is located on the far right hand side of the interface so it can only be plugged in the right way round.

Another disadvantage is the lack of a piggy back connector. This means that if you wish to connect another peripheral device to the computer by the expansion port, the interface for that peripheral must have a piggy back or you can't use the mouse, ie. you can't use the mouse and the CPS8256 interface at the same time.

The mouse is packaged with the hardware, manual and some utilities on disc. No WIMP environment provided. The RSX (Resident System eXtension) utility allows the mouse to be used with almost any piece of software. The mouse movements can be programmed to represent any six key presses (or combinations ie. control codes etc.). That is, you can program each directional movement - left, right, up and down, and button press - left and right buttons, to represent the pressing of a key or control code. In the case of directional movement, the extent of movement required can also be programmed. The default settings for this utility are the cursor keys, CTRL 'C' and CTRL 'R'.

The GSX (Graphics System eXtension) utility provides a device independent software interface for application programs. A good example is Dr Draw. In this package there exists an ASSIGN.SYS file which is used by the applications program to find out what device drivers are available for use, ie. printer and screen drivers. To use the mouse with this software simply add the Mouse .PRL file to the application softwares working disc and modify the ASSIGN.SYS file to read the mouse .PRL file instead of the screen .PRL file (the screen .PRL file is kept on disc as it is used by the mouse .PRL file).

The only other utility provided with the software is the mouse tester. Loading this software with the mouse connected allows you to check whether the mouse functions are working satisfactorily.

Although the Kempston mouse is provided with the RSX and GSX utilities, there are software packages that allow the use of this mouse without installation. Such packages as Fleet Street Editor Plus and MasterPaint. No doubt other software will become available with this facility. Be aware however, that there are competitive Mice (such as the AMX mouse) that are also striving to have software written for them. Neither mouse is compatible with the other so check compatibility of software before purchasing your mouse.

Using the mouse is an experience. I have used mice on other systems including the Apple MAC. and various IBM clones. I can only find two faults with the mouse. I have what could be considered as average size hands and to use the Kempston mouse comfortably one needs to hold it on a 45 degree angle. If you try to hold on to it from the rear, you need to bend your fingers to be able to press the buttons. This in turn transfers the weight on the mouse to the rear allowing the front of the mouse to rise and subsequently takes the 'ball' from the surface. The mouse is not 'moulded'. That is, it does not fit snuggly into the palm. It is a ramp shaped rectangular box. I would recommend that KEMPSTON Data

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BANNER	**Prints huge signs and messages.**
CHESS	**A multi-level version of this challenging and classic game played against your PCW.**
CPM2	**Switches CP/M Plus to CP/M 2.2.**
CPM2DEL	**Switches back to CP/M Plus.**
CRUNCH	**Squeezes files**
D	**A disc directory program.**
NULU151	**A library unpacking utility.**
PCWUKM7	**Communications software.**
UNCR	**The opposite of CRUNCH.**

Our thanks to the PCW Australia Group for supplying most of the above PD software and please remember, when it comes to PD software, you're on your own!

THE AMSTRAD USER

PCW Year Disc Number 1

Side 1

AUTOMENU	(27)	1K	FINANCE	(37)	15K	MOVING	(30)	1K
BANKSTAT	(40)	1K	FINDEXCH	(40)	1K	PAGEDISP	(36)	1K
BASICPIP	(35)	1K	GRAPHS	(30)	3K	PHONE	(34)	12K
BASKIT	(27)	2K	GSXPREP	(25)	1K	RAFFLE	(33)	1K
BIGTIME	(36)	3K	HANDTYPE	(40)	2K	SORTER1	(39)	1K
BIOS	(29)	2K	INDEX	(32)	1K	SORTER2	(39)	1K
CONNECT4	(31)	8K	INIT	(39)	3K	SQUASH	(37)	1K
DISLABEL	(35)	1K	INVADERS	(37)	2K	STYLER	(35)	2K
DIYDBASE	(35)	3K	KEYFIND	(36)	1K	SUPER1	(25)	5K
DUCKSHOT	(36)	1K	LABELS	(28)	10K	SUPER2	(26)	14K
EASTER	(30)	1K	LCOUNT1	(33)	2K	TELETYPE	(37)	1K
ENIGMA	(32)	1K	LCOUNT2	(38)	2K	TWOCOLS	(30)	2K
ESCCODES	(38)	1K	MENUS	(29)	3K	VOCAB	(38)	1K
FILECODE	(35)	1K	MORSE	(39)	2K	*Issue Number in brackets*		

Reference to the original magazines will provide more information on using the above Basic programs

Side 2 - FREE PUBLIC DOMAIN SOFTWARE

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Ltd go out and buy a better mouse for their 'system'.

I tested the Kempston mouse with three packages - Fleet Street Editor, MasterPaint and Dr Draw. In each case, the movement of the mouse required to move the cursor from one side of the screen to the other is quite large (no wonder the cord is so long). If you only have a small area on which to operate the mouse then you will need to 'REV' the mouse like those spring powered dinky toys. Mind you, considering the alternative - use the cursor keys - this is only a minor drawback.

If you have ever used the above software without the use of a mouse then you will be aware how slow the cursor movement is. Well be advised that the use of a mouse improves movement around the screen to virtually real time, the cursor keeps up with the mouse. Curve drawing with cursor keys is also a nightmare but the mouse solves that problem too, although you will need a steady hand as the mouse is very sensitive.

The Kempston PCW mouse is currently available from Pactronics through any Amstrad retailer including Grace Brothers and Chandler stores. Recommended retail price is $239.00. Although quite expensive, the mouse is well worth the outlay especially if you use graphic design packages with any frequency. The only current competitor that I know of is the AMX mouse. This mouse has the advantage of being bundled with a WIMP environment which runs extremely well in CP/M. However, it is greedy on memory and the main functions do not run concurrently with other packages. In the last review which I read on the AMX mouse (in an English magazine) a GSX utility was being promised but not available, thus limiting the current usefulness of the mouse. I would therefore hazard a prediction and say that the more expensive Kempston mouse will gain favour with software houses over the AMX mouse.

As a final note, I would like to warn Fleet Street Editor Plus users of a BUG in that software. The FSE8512 M software drops out to CP/M at random and quite often. I have found that it will only occur on selecting a disc access menu or option and on one occasion did it as soon as I loaded FSE8512 M itself. This of course means that you lose everything and need to cold boot CP/M to reload FSE+. I have written to Mirrorsoft in an attempt to get the bug remedied. ESC

LOCOSCRIPT2
by Helen Bradley

Heralded with all the enthusiasm of the second coming, LocoScript 2 recently hit the Australian markets after a sell-out season in the UK. But what does LocoScript 2 offer the LocoScript user and is it worth the price ($75.00 or so) for the upgrade? Here is one reviewer's (personal) opinion.

I was one of the people for whom the original LocoScript was one of the main reasons for buying the Amstrad PCW8512. I was so impressed with the machine and the ease of using LocoScript that I bought a PCW without a backwards glance at the alternatives. Even now, having since upgraded to an XT clone, I still look forward to a session on the PCW and I still write a lot on it but LocoScript 2 has changed a little my feelings as to how easy the word processor is to use.

From the day I gleaned from the UK magazines that LocoScript 2 was to be released I hounded my dealer for a copy of it. LocoScript 2 had the promise of increases in speed to a level that LocoScript 1 users had previously only dreamed of. It promised to jump to a given page number, no longer were we to read letters and hints in magazines suggesting hitting the page key a number of times equal to the page number required minus one and then going off to make the, by now legendary, 'cup of coffee'. It promised disc utilities from the main menu - in fact it promised the world to LocoScript 1 users who had drunk just one too many coffees waiting for the wretched machine to save a document and then unceremoniously dump them back in the document as far away as it was possible from the point that they most wanted to be.

It was nearly Christmas Eve last year before the first few copies of LocoScript 2 filtered their way through to my dealer and I was able to take a first hand look at it. LocoScript 2 *is* faster than LocoScript 1 but it is still not *fast*. The reason for this chronic lack of speed is that LocoScript 1 and 2 both format the text as they go along and this, quite simply, takes time. For people used to instantaneously moving around documents in heavyweight packages like Multimate and Wang the speed of LocoScript is almost laughable but, for all but the more demanding of LocoScript users and those handling large documents on a regular basis the increase in speed will be a bonus of upgrading to LocoScript 2.

MINUSES

Probably the most disheartening aspect of using LocoScript 2 is the

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fact that the program has changed. It is not simply that new things have been added to it but that some of the old things have been changed to an almost unrecognizable extent. It is one thing to learn about the new things that LocoScript 2 does but it is quite another to have to relearn the old things because they no longer function the way they used to. Probably the most graphic example of this is in the use of Layouts. I'd like to be able to tell you all about them but I simply haven't got it worked out myself yet. Suffice to say that editing the Header has no immediate effect whatever on the layout of the document and that is confusing. LocoScript 2 also uses some ambiguous wording in its menus for example I have problems remembering whether 'Change Layout' means bring in a new layout all together or edit the existing one.

The other dislike I have is the use of hints that, instead of appearing in the top three lines of the screen as they used to, now burst into glory right in the middle of the text interrupting the view of my work. This is most frustrating when you are doing a manual of text exchange as the whole way through, every time the machine finds a match it overlays the text with instructions and waits for you to read it before going on to clear the screen and show the text underneath again and then it finally shows you where the match is so that you can decide what to do with it. I found this both an insult to my intelligence and an extreme waste of time, I now use EXCHANGE only when absolutely necessary because using it raises my blood pressure to unsafe levels.

PLUSSES

There are some plusses to LocoScript 2 though and the biggest to my mind is the capacity to format and copy discs from the main menu. One of the things I have found when teaching people who only use the wordprocessing facilities of the computer is that they don't know (and in most cases don't want to know) anything about CP/M but until now they have had to use CP/M because there simply is not any other way that they can format or copy discs. Now they can spend their lives not knowing that CP/M even exists and yet having a safe and easy way of creating new discs and backing up their data.

Another plus to LocoScript 2 is its capacity to support other printers. With the price of printers, including the higher quality 24 pin dot matrix printers, falling daily there will be a certain number of users who will opt to upgrade their printers and thus create a more professional output now that the program supports them. LocoScript 2 has also attempted to make page layout a topic that is comprehensible and not one that strikes fear in the hearts of all but the very brave. The page layout menu has been rewritten to make its concept more easily understood and to enable more accurate setting out of the headers and footers on each page.

Users of LocoScript 2 will find that the SHOW PHRASES command will show the contents of phrases taking some of the guess work out of using phrases. Furthermore the capacity to have more than one set of phrases in your system and to load a set to use for a particular document is a big bonus and allows for much greater flexibility.

There are many other changes and additional functions incorporated in LocoScript 2 and whether you will use them and find them of benefit to you really depends on how you use the machine and what functions you use in a session. My general opinion is that there is, most likely, going to be something there for everyone and if you use LocoScript regularly then you should have a look at LocoScript 2 and see if there is enough there for you to justify the expense of the upgrade both in terms of dollars that it costs and the time that it is going to take you to relearn some old habits and to learn new functions so you can make the best use of it.

MY WISH LIST

In anticipation of LocoScript 3, I will keep asking where the built-in spell checker and mail merge are. In the market today every major package comes with a spell checker and some form of data merge capacity and I no longer think that it is acceptable to have a wordprocessing package that don't have them. To say that they are available separately is to my mind no answer. As an aside for LocoScript 1 users who also use LocoSpell and/or LocoMail - your versions are not compatible with LocoScript 2 and you will have to purchase upgrades to use with LocoScript 2.

Where too is the facility to count words? If I were given a dollar for every time I have read or heard a complaint about the absence of a word count facility for LocoScript then my bank manager could stop worrying about the direction my overdraft is heading. I know of so many users, students, writers etc. for whom the Amstrad is a cheap answer to producing professional standard work but for whom the number of words in an article or document is very important. A quick, easy wordcount function that does not require the user to exit to CP/M is on my 'wish list' for LocoScript 3.

Also on my wish list is the option to toggle between overstrike and insert mode. I find it a nuisance to have to delete a three letter word before replacing it with another when an overstrike mode would allow this to be done in one step.

CONCLUSION

In conclusion I am happy to use LocoScript 2 in preference to the first version as for me the benefits outweigh the disadvantages.

But there will be a lot of users out there who spent long enough mastering LocoScript 1 and who I'm sure will not have the patience or desire to put themselves through the trauma again to learn LocoScript 2 and I, for one, will not blame them. ESC

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LOOPING THE LOOPS IN BASIC2

There are three main loop structures in Basic2, each one designed to improve the efficiency of your programs.

More experienced programmers may smile wryly when they look back at their first program. What took many hours to develop and many lines to process could well be produced in less than half the time and run much more efficiently. It generally boils down to careful programming.

A simple program to add '1' to a counter and stop when it reaches '10' may be written as:

```
counter=0                  [clears counter]
counter=counter+1          [adds 1 to
                           counter]
IF counter =10: STOP
counter=counter+1          [counter now 2]
IF counter =10: STOP
counter=counter+1          [counter now 3]
IF counter =10: STOP
```

and so on until 'counter' is eventually equal to 10 (another 14 lines further on!). Over-simplistic you may argue, but it illustrates how a program will blindly obey each instruction from the beginning to end in the sequence written - unless it is diverted somewhere else - and how long winded it could be without loops.

LOOP POOL

A loop is a group of statements which are repeated consecutively. Having said that, I should add that there are three main loop structures in Basic2, each of which is fairly rigid in its layout.

For a start, there is the "FOR ... NEXT" loop which can take the form

```
FOR n=1 TO 5 STEP 2
.....
.....
NEXT
```

This simply means set the variable n to equal 1 and then execute all instructions after this until a corresponding NEXT command is found. At this point move back to the FOR statement, increase the value of n by a step of two and repeat the whole thing again. Keep repeating the cycle until the value of n is greater than 5. If the STEP 2 command is omitted, then n will be incremented by just 1 each time. You can also use any integer variable instead of n.

Here is an example which totals all the integers up to a given value:

```
INPUT "Enter highest number";hnum
total=0
FOR count=1 TO hnum
  total=total+count
NEXT count
PRINT count
```

FOR ... NEXT loops can also be 'nested'. This means that one loop can contain another, which can contain another and so on to any reasonable depth but must not overlap like the following example which is supposed to plot a grid of points on the screen:

```
FOR out=1 TO 5000 STEP 200
  FOR in=1 to 5000 STEP 200
    PLOT in;out
  NEXT out
NEXT in
```

Can you see what is wrong and what to do to put it right? If you give up the answer is at the end of this article, but give it a decent try before you cheat.

It makes sense, and is normally helpful, to include the variable names. It makes the program structure clearer and stops the program running if there is a mistake. You may also have noted that the STEP 200 serves to adjust the spacing of dots on the screen.

Then there is the "REPEAT ... UNTIL" loop which doesn't use a loop counter like the "FOR ... NEXT" loop. Instead, any condition can be specified after the UNTIL command which is tested at the end of each loop. If the test returns a false result, the program will loop back to the relevant REPEAT statement. If it returns a true result, the program drops past the UNTIL command and continues from that point. Thus, this kind of loop is used when the number of repetitions of the loop is not known in advance, albeit the number could depend upon an input from the keyboard or a result generated within the loop.

The final loop, the "WHILE ... WEND" loop is similar to the "REPEAT ... UNTIL" loop. The differences are nevertheless important in that the condition is tested at the beginning of the loop and the loop executed if the test is true. If it is not, the program continues from the line after the WEND command. To show the difference between the latter two loops, study these two examples:

```
WHILE BUTTON=-1
  PRINT "pitter, patter"
WEND
PRINT CHR$(7),"snap!"

REPEAT
  PRINT "pitter, patter"
UNTIL BUTTON<>-1
PRINT CHR$(7),"snap"
```

The statements in the REPEAT ... UNTIL loop will always be executed at least once regardless of the speed with which you press the mouse button. The only way to stop the mouse pitter, pattering towards the trap before it snaps is to use the

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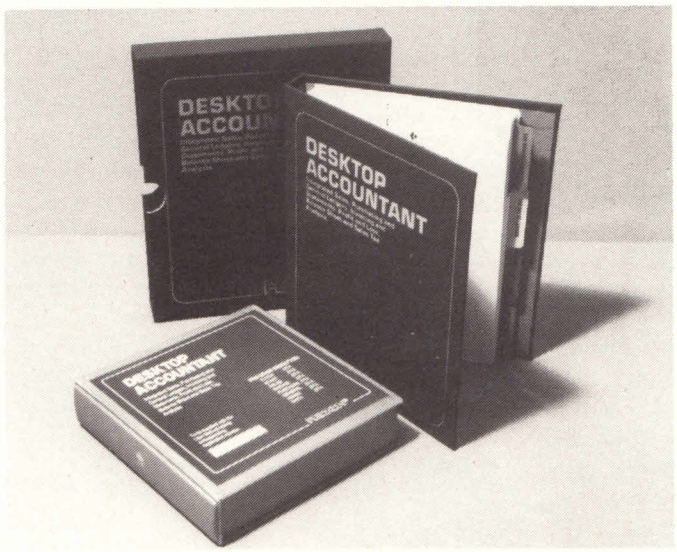

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WHILE ... WEND loop, which tests the button first.

The following example shows the use of two loops. The FOR ... NEXT loop is used merely to waste a bit of time. Once the program starts the WHILE ... WEND loop delays the program's progress until a key is pressed. Once that happens a reaction time is displayed on the screen using the TIME function.

```
slow=RND(3000):slow=slow+1000
FOR hold=1 TO slow: NEXT hold
PRINT "Press NOW!";CHR$(7);
hit_go=TIME
WHILE INKEY=-1:WEND
hit_stop=TIME
PRINT (hit_stop - hit_go)/100
```

(The reason for dividing the resulting time by 100 is that the TIME function will return a number in 100ths of a second).

CONDITIONS

Of course, you will find that conditions which follow WHILE or UNTIL statements need not be as simple as that shown in the above program. Both logical and relational operators can be used to determine when a loop should end. For example;

```
UNTIL (tom>dick AND LEN(a$) <=5);
```

uses these plus maths functions.

Caution should be exercised when using complicated expressions however, as the computer may well interpret them in a different way than you intended. Try to keep away from strings of ANDs and ORs otherwise you'll be certain to get some bugs unless you are really clever.

WHERE TO GOTO

In most versions of Basic, a GOTO is followed by an expression which indicates the line number to which the program should jump. In Basic2, line numbers are not normally used, so a GOTO will be followed by a 'label' to another part of the program. (You can use a number as a 'label' if you need to). With the trend towards more structured programming, GOTOs are frowned upon somewhat, and are argued as producing 'difficult to read and follow' or 'spaghetti' code.

Nevertheless, using GOTOs can be an advantage - it is possible, but not recommended, to jump out of loops or be used in conjunction with ON ERROR to trap possible errors. Generally, a good programmer will try to find another way round using GOTOs.

SUBROUTINES

A subroutine is, in effect, a section of a program which will be used more than once. It is always identified at the start by a number or label, and ended with RETURN. You have already seen some examples in previous issues. A subroutine is reached via a GOSUB command which is followed by the relevant number or label of the destination. This destination cannot be the result of a calculation but can be conditional using the ON ... GOSUB command structure. This could be used for selecting between a number of different subroutines and will depend upon the result of the expression following ON. Here is an example in which the expression following ON evaluates to either 1, 2 or 3 and each subroutine is picked up in turn:

```
FOR b=0 TO 10
  ON (b MOD 3)+1 GOSUB fred,john,sid
NEXT b
END
LABEL fred: PRINT "Winner": RETURN
LABEL john: PRINT "Second": RETURN
LABEL sid: PRINT "Last": RETURN
```

ANSWER TO PROBLEM

There are three ways of correcting the program.
1. Swap the NEXT statements over
2. Omit the variable names after the NEXTs
3. Include just one NEXT statement followed by a comma. (The comma acts as an abbreviation for the second NEXT).

PRINTING WITH GEM

GEM programs, and many other graphics programs, use purpose-built printer drivers which ensure that the correct control codes are sent to your printer when needed. Most programs include an Epson driver because Epson range of printers have become standard; and as with all standards, other manufacturers have produced 'Epson compatible' printers.

But unfortunately, particularly when it comes to printing graphics, one soon discovers that the only true Epson compatibles are made by Epson - the compatibility starts breaking down.

Printer control codes are known as 'Escape codes' because they tend to start with ASCII character number 27, the ESC character (1B in hexadecimal). The command that is at the root of the 'stripey tiger' syndrome is ESC'3'*n*, which sets the line spacing to *n*/180 of an inch for future line feeds. Sent to an Epson printer this sets the spacing to the required distance; but sent to a slightly incompatible printer it results in stripey tigers.

But couldn't you just send the correct code to the printer prior to loading GEM? Unfortunately the GEM printer driver simply comes along and sends the wrong code, resetting the printer. The only answer is to get yourself another printer driver from Digital Research - or to get into the Epson driver supplied and change it to suit your printer.

In hexadecimal the command ESC'3'*n* translates into 1B 33*nn*. For my printer n means *n*/216 of an inch, but for Epson the base is different. In the Epson drivers I have looked at nn has usually been about 15 or 17, but with the Shinwa printer 11 gives the correct spacing; so all we have to do is look for the hex string 1B 33 17 (or thereabouts) in the program code, change the 17 to 11 - or whatever suits your printer - and the job is done.

But how to find 1B 33 17 in a program which may be several kilobytes

long, and which of the many GEM files should we look in? The answer is to use DEBUG, on the MS-DOS boot disc, to find the necessary code; and the Amstrad Manual (page 499) tells us that the Printer Driver is in EPSONH6.SYS in the GEMSYS Folder of Disc 2. This is not strictly true because if you look at page 531 you will see that it is on disc 3, and that is indeed where you will find it.

WHAT TO DO

The following procedure is for a double drive, so if you have a single drive or hard disc you will have to change it accordingly.

But before we start, **Beware**: playing around with DEBUG can be dangerous. Always use a copy of whatever disc you are going to apply it to, and remember: DEBUG can quite literally screw up your hard disc without you knowing - **back it up first.**

Put the MS-DOS disc containing DEBUG in Drive A, and the disc containing EPSONH6.SYS in Drive B. (A copy of course) Now enter:

```
DEBUG B:\GEMSYS\EPSONH6.SYS
```

The drives will run for a few seconds and the A-prompt will change to the dash which is the DEBUG prompt. Enter D100 and the screen will show byte-by-byte the contents of the file in question. Down the left are shown the addresses of the left-most byte; the addresses at which DEBUG has placed the file in memory, starting with 100. The central area shows the actual hex contents of the first 128 bytes of the file. The right hand area is taken up with an ASCII representation of the contents.

You can also see that it is not going to be easy to find 1B 33 17 just by looking so enter;

```
S,100,FFFF,1B 33
```

This tells DEBUG to search the file for the code 1B 33, starting at address 100 and ending at FFFF (which is probably well past the end of the program file).

Almost immediately you will be shown two addresses, 9031 and 9037. Enter D9030 and there you are: on the top line starting at address 9031 is 1B 33 17; and at 9037 you see 1B 33 01. Do not change this second entry, because when printing GEM makes two passes on each line; the second pass advancing the paper by the smallest fraction - so if you increase the 01 the result will probably be worse than ever.

Now that you have found the offending number you can change it. The 17 is at location 9033, so enter E9033 and you will see the address followed by the contents - 17 - followed by a stop. Enter 11 (which will appear after the stop), and the 17 will be changed to 11. Prove it by entering D9030 again. All that is required now is to enter W (for Write), and the file will be written back to disc with the new value in place.

Enter the command Q to Quit DEBUG, boot up GEM and try printing the Tiger and you will see if 11 is the right value for your printer. If not, change it till it is.

Another possible problem is that the Tiger may not be as chubby as he appears on screen - he should be circular. The answer to this lies in the printer options for GEM Output. If you select Printer from the Options Menu you see the choice of 'Full Scale' or 'Best Fit'. It will probably default to 'Full Scale', so change this to 'Best Fit'; and while you're at it choose 'No' for the Final Form Feed, which saves winding paper back while you are experimenting.

Save the new option as OPTI.OPT or suchlike, then try printing Tiger again using this option and hopefully he will appear with a chubby face and all his stripes where they should be. You could now make the new option the Default option, which would then be ready whenever you use the program.

When you are satisfied with your changes in the EPSONH6.SYS file put that on to your working disc and hopefully you will not have to buy a new printer after all.

EXPERIMENTING

In the search above we looked for the two codes 1B 33 rather than the full 1B 33 17. This is because 1B alone could occur throughout a program as a Hex number for other functions, so searching for it alone could result in rather a long list of locations (try it). Adding the 17 could result in failure, as the program might use some other number to define the line spacing. 1B 33 is less likely to appear in a printer driver except for this purpose; although it is always possible that it might have been performing some other function altogether, and changing its value would change the whole working of the program. The most likely result would be to hang your machine up next time you tried to print - such are the perils of DEBUG!

Another useful code to search for when trying to find graphics dump instructions is ESC'L' (1B 4C) which prepares the printer for 1280 dots per line dump, or ESC'K' (1B 4B) which sets 640 dots per line. If you find one of these then you have almost certainly found the area to explore for other codes.

If this has aroused your interest, arm yourself with your printer manual open at the control codes page, go back into EPSONH6.SYS and explore around 9000 to 9090 to see if you can spot any other 1B ?? codes. D9000 dumps 128 bytes of code starting at address 9000, and subsequently entering D dumps the next 128 bytes. If you enter D8C50 you can see from the ASCII area that you are at the beginning of the printer setup section.

Finding the printer configuration areas in other application programs calls for a little detective work, but can be rewarding if your printer seems to be incompatible. Probably the best way to proceed is to find a printer driver that seems to be fairly compatible, and proceed from there.

It is best to just make one change to the code at a time, save it to disc and try it out. Resist the temptation to make major changes in one go, as you will never be able to tell what change effected what. And always work with a copy - never with your master discs.

ESC

PC DESKTOP ACCOUNTANT

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The product was written in Britain by Paxton Software Ltd, a well known corporate accounting software specialist with names such as the British Ministry of Defence to their credit.

Desktop Accountant has now been built for Australian conditions and is published by Reckon Software Pty Ltd in Australia.

Reckon Software publishes a range of software including financial accounting tutorials such as Financial Accounting for Non-Accountants and Corporate Finance from Ivy Software in the UK. The whole range is packaged in smart generic packaging under the Reckon label with a feel of quality synonymous with the range.

This product targets a very specific audience in one way but not another. It is not designed for small businesses, Sole Traders, self-employed Tradesmen or Professionals. It is however, for those people who have no need for or already have a stock control system. Also those users who really have no need for a specific payroll package.

Module by module the product is as powerful as those you would pay up to $1000.00 per module for. However for Desktop Accountant you only pay $450.00 in total for the lot.

The first thing you notice about Desktop Accountant (DTA) is the way it is packaged. We have mentioned the smart binder and slip case but the discs, of which there are eight so we suggest a hard disc system, come in a separate but matching container. This is so that the user can install the product and then put the discs somewhere safe, away from the manual.

The installation instructions are very clear and easy to follow and they bring you to a point where you are given a configuration number. At this point you phone Reckon Software, give them your configuration number and they will give you your unique pass code number. This number is then used to get into the program itself and is linked to your Company name. You are asked by Reckon if you wish to take advantage of their support package. This is a package which offers telephone support during normal working hours for any of Reckon's products you have, for the grand sum of $50.00 a year. They do stress however that without a support agreement there will be no support.

You are now directed to the tutorial disc. This covers an overall product demonstration, a ledger by ledger tutorial and driving instructions on how to drive the package. You are immediately put at ease with the product as it avoids the need for expensive software support which comes with products of this capability.

The product is supplied with a comprehensive chart of accounts which is designed to suit most businesses but can easily be changed to suit your exact requirements. To get an idea of the power of this product you can run up to 99 cost centres off every General ledger code as well as split period accounting if you want to close down your Purchase and General Ledger at a different date to your Sales Ledger at the end of each period. You also get the option of ageing your ledgers as you like, monthly, weekly etc.

The opening screen or main menu is different from most that I have seen but you soon see why they have designed it that way. With most menu driven software packages you would choose a sub menu option where you are invariably given another menu to choose a sub option. Nothing wrong with that...until you want to go to another part of the package. Now you are forced to go back through those sub menus, and through a set of new sub menus to get to where you want to be.

With the Desktop Accountant the menu selection is made by typing in a four digit number. This number will take you to anywhere in the package you want to go. You can go through the sub-menus as normal if you forget the number you are after but the numbering system has a logic to it which is easy to grasp so movement about this large package is simple and quick.

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All of these defaults are pre-set by you, but you can override any of them if needs be at the time of invoicing. There is also a message option in case you want to alert the customer of something specific such as a change of phone number etc.

Enter up to 99 items per invoice with up to a 90 character product description while the module calculates each item and invoice total.

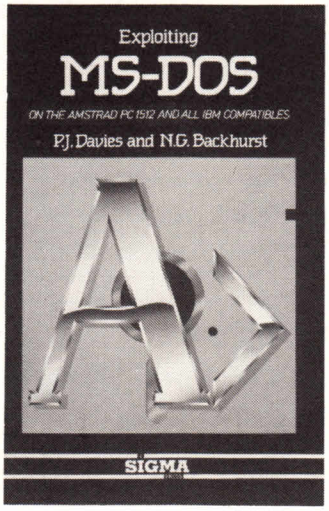
Discount given can be per invoice line, per invoice total or for prompt payment, ie. settlement terms.

General ledger accounts are updated with details of each invoice generated. Invoices and credit notes generated through this module will automatically update the Sales Ledger.

You can allocate credit notes against specific invoices or on account with full unallocated cash facilities per customer.

You have the choice of having your company name printed by the product onto invoices or statements, or switch this facility off where company logo is printed.

DTA is used by Reckon Software as their own accounting system and was chosen from 27 systems to be published by the Company. For $450.00 it represents extraordinary value for money.
Enquiries to Reckon Software Pty Ltd on (02) 371 9222 ESC



EXPLOITING MS-DOS

by P.J. Davies and N.G. Backhurst

Both experienced users and newcomers to the MS-DOS/PC-DOS operating systems will find that this book will enable them to get the best from their IBM PC (or any compatible including the Amstrad PC equipped with MS-DOS 3.2).
It deals with: Getting started; Fundamentals; Creating a working system; Batch user files; Advanced file usage; Communications and Networking and Improving your system.

Available from The Amstrad User at $46.65 ($44.50 to subscribers) plus postage.
See page 64 for ordering details.

SCREEN DUMPS AND MORE SHAREWARE

PC guidance and goodies from Chris Collins

Hello, and welcome once again to Compatible's Corner. This month we will be looking at two more utilities GRAPHICS.COM and GRAFTABL.COM. We will also take a look at another shareware programs for you to try.

The two utilities are used to produce a hard copy of your screen onto a printer. If you do not have either of these loaded, all the lines or graphics characters on your screen will end up as letters or numbers. This is simply because the graphics characters used by IBM are different to the graphics characters used by everyone else.

According to the DOS Reference Manual, GRAPHICS.COM is used to allow the contents of a graphics display to be printed on an IBM Personal Computer Printer when using a colour graphics adaptor and screen.

The correct syntax for the command is as follows:

GRAPHICS [*printer type*][*/R*][*/B*]

As always the switches in the square brackets are optional. The explanation for the above command line is as follows:

[*printer type*] can be one of 5 different types of printers. These types are COLOR1, COLOR4, COLOR8, COMPACT and GRAPHICS. In normal use, if you do not specify a printer, the normal IBM GRAPHICS printer is assumed.

[*/R*] is used to specify that black on the monitor will be printed as black on the printer. The reverse is actually the case if you do not specify. This means that anything white on the screen will come out black on the printer. So always specify the */R* switch.

[*/B*] can be invoked to print the background colour. However, this will only work with printer types COLOR4 and COLOR8. If you do not specify */B*, the default is not to print the background colour.

The following example is the best way that I know to invoke the GRAPHICS command:

GRAPHICS /R

This can be included in your AUTOEXEC.BAT file, but because it increases the effective size of DOS, I wouldn't load it unless I thought that I was likely to use it.

Another utility that works well with GRAPHICS.COM is GRAFTABL.COM.
GRAFTABL.COM is used to load a table of additional character data into memory. The correct command syntax for GRAFTABL.COM is very simple, and is as follows:

GRAFTABL

GRAFTABL.COM should only be loaded into memory once each time DOS is started. When it loads, it will display the following report:

GRAPHICS CHARACTERS
LOADED

To get the best use out of these two programs, the best way that I know is to load them in the following order in your AUTOEXEC.BAT file:

GRAPHICS */R*
GRAFTABL

This should fix any problems that any of you are having getting screen dumps onto your printers. Have fun with these two utilities.

The diskette for this month is:

RIGHT HAND MAN

Right Hand Man is another one of those TSR programs that we have talked about at odd times. Right Hand Man is similar to DeskTeam, in that it purports to contain all of the accessories that you have on your desk, and continually use during the day.

Right Hand Man can be loaded into memory simply by putting the command RHM into your AUTOEXEC.BAT file. This will then load Right Hand Man into memory to await your commands. Although it is easy to load, Right Hand Man also has some other command line options for you to use.
They are as follows:

RHM*/I*: to use Right Hand Man immediately, without loading it.

RHM*/C*: used to configure Right Hand Man the way that you require and

RHM*/RL*: to remove Right Hand Man from memory.

As you can see, this allows you a lot of choice in the way that you load Right Hand Man. Also available is the choice of which modules of Right Hand Man you wish to load. This allows even further fine tuning of the program to suit your uses.

When you call up Right Hand Man (using CTRL-R twice), you are presented with a main copyright

notice. Press any key, and you will be shown the main menu. If you have seen Sidekick on another machine, the menu will look very familiar. It is almost an exact duplicate. If you have not deleted any files from your directory, you will see thirteen options available. However, two of these options are duplicated. More about this later.

I will run through the options one at a time, and give you a quick rundown on each.

APPOINTMENT CALANDER

Appointment Calendar is normally the first option available. Selecting this from the menu will show you a calendar of the current month, with holidays and the current day highlighted in a different colour. Pressing ENTER a second time will present you with another window containing an appointment page. This is initially set up as a slot every hour, but this can be changed.

ASCII CHART

Next option on the list is the ASCII chart. This simply opens a window which contains a list of ASCII characters and also their decimal and hexadecimal equivalents. Very useful for programmers.

BLACK BOOK

Black Book is the next on the list and is basically a protected version of the Card Index. When you call up this option, you are asked for a filename and a password. When you go to save your cards, your password will be used to encrypt the contents of the file, therefore making it almost impossible for one person to look at another's Black Book.

CALCULATOR

Calculator is another option available. This is very comprehensive and would be a boon to programmers as well. It can be used very simply, but has the capabilities to help almost anyone.

USING DOS COMMANDS

DOS commands are also available. A window simply pops up allowing you access to all your DOS commands from inside the program.

TEXT EDITOR

Editor is the name of another option. This can be used to edit any text file on your disc. Can be useful if, like me, you are constantly changing your system to cope with the testing of new programs.

TWO NOTEPADS

Guarded Notepad and Notepad are two other options. Both are the same except for one major point. Like Black Book, Guarded Notepad asks for a password and then uses it to encrypt the files created with it.

ANOTHER BLACK BOOK

Card Index is the unguarded version of Black Book. It is a simple card index system for keeping track of names, addresses and phone numbers. Can also be used to dial the numbers if you have a Hayes compatible modem attached.

KEYKAPS

Define Macros had me stumped for a little while. This option is used to create key sequences that can contain a whole long line of text. For example, you could use it to set CTRL-T to give "The Amstrad User" whenever it was pressed. Can save an awful lot of typing.

Notepad is the same as Guarded Notepad, except for the lack of password protection. Used to create small notes and memos.

TRANSFER

Transfer Window is a weird one. Had a bit of trouble getting into this one as it requires a modem to work correctly. At the moment I am awaiting on my new 2400 baud modem, and I didn't get a chance to check this option out.

TYPEWRITER

Typewriter is simply a small window that allows you to type directly to your printer. Type out a line of text, press ENTER and if your printer is on-line, you will get a line of text. Useful for envelopes.

That is basically all of the options available to you. However, you can use the capabilities of the program to help you even more. Help screens are never far away from you inside the program. A help screen can be called up at any time, in any module. This can be useful whilst you are learning the program, but it can be disposed of after you learn Right Hand Man. This will save you memory.

Also if you don't require a module to be loaded, simply delete or rename it's files. When Right Hand Man is loaded into memory next, the module will not be loaded and again memory will be saved. For example, I cannot see any reason to have both Guarded Notepad and Notepad in memory. The same goes for Black Book and Card Index. I mean, both these programs are identical, except for the password. Why not load only one of them?

As you can see, Right Hand Man allows you to have all of it's functions at your command. However, if you only require two of the options, you may also have that. Right Hand Man is one very powerful and one very configurable program. I never thought I'd find a better TSR than Deskteam. However, I have been wrong. Right Hand Man now has a place on my hard disc.

Right Hand Man asks for a donation of US$25 up to US$60, depending on the level of updates that you require. Right Hand Man is written by Red 8 products and is available on one diskette, which contains an archived and an unarchived version of the program.

CATALOGUE OF PUBLIC DOMAIN SOFTWARE

Also this month, I've decided to give you all a quick rundown on the diskettes that we've looked at so far. This will also include the updates to those original programs.

First month: July 1987. That was the first month of Compatible's Corner.

It was fitting at the time that I looked at PC File III. This is one of the all time great database managers. Since then, the upgrade to PC File+ has been announced and as I write this, having just received version 2.0 of PC File +, I am pleased to offer yet another upgrade. For PC File III owners, the upgrade to the new 2 diskette version of PC File+ is available to you for $15 with the return of your original diskette. For PC File+ version 1.0 owners, send in both original diskettes and $6, and you can have the new version. Version 2.0 of PC File+ now includes graphs and report writing, so it is becoming even more powerful.

August 1987: Deskmate and Fastype were the programs of the month. Deskmate has since been upgraded to Deskteam and just recently I announced an upgrade to Fastype. This brought the version up to 3.0 and also allowed for the enhanced keyboard. Unfortunately for Amstrad PC users, this keyboard is not available except in England. Both programs occupied one diskette each, and both are still available.

September 1987: along came PC Write. This is one of the world's most popular word processing programs. Including a 50,000 word spelling checker, PC Write occupies two diskettes and is still available. Very powerful, but it takes a while to learn. Good for WordStar users.

October 1987: the first of the five diskette set that I have managed to get together. This was the month for PC Utilities. Still available and some of the files on the diskettes have been upgraded as I have received newer versions. Unfortunately, there are so many utility programs on these diskettes, that it has been impossible to offer upgrades.

November 1987: Christmas will soon roll around and for all you games experts, another five diskette set. This month it was games. Unfortunately, we found a couple of errors in diskette four, but this was soon corrected. Still available and full of fun times for all concerned.

December 1987: the last month of the year is here and nobody wants to know. This month we looked at PC Tutor. PC Tutor occupies one diskette and surprisingly, there have been no upgrades to this excellent product. Perhaps that has to do with the quality of the original products. One of the shareware world's better ambassadors.

January 1988: the new year arrives and nobody really wants to know. That month we came across HelpDOS, a teaching program to help everyone learn about DOS. This program occupies only one diskette and along with PC Tutor, is probably the best teaching program for the PC.

February 1988: this month we came up with a trivia game and a version of Hangman. Hangman for the computer is an excellent implementation of the game with some odd twists. Trivia Machine is a trivia game that is rather good. Trivia Machine is another two diskette program. One of the diskettes has the game, the second is a lot more questions. Still available and a must for trivia buffs.

March 1988: this month was a bonanza for diskette collectors. To start of with we had the Directory Assistant. A one diskette program, DA is an assistant for those of you that must keep name and address lists. Allows for a great amount of searching and makes life much easier. Also this month was a new version of a word processor. Galaxy is now my word processor of choice. Another single diskette program, Galaxy works with Turbo Lightning, to provide an excellent word processing environment. Writer's Heaven was added this month to help you PC Write users. Allows a lot more ease of use to be added to the very powerful PC Write. A must have for PC Write users.

April 1988: only three months ago we looked at LQ, a program to help you get the best out of your printer. Also this month was PC Accounting, a four part accounting system for personal or small business use. The last program diskette of the month was PD Menu programs. This diskette contained 5 separate menu programs for those of you that don't particularly like DOS.

May 1988: Masterfile PC was the program of the month and is one of the few commercial programs that we have looked at.

June 1988: last month we looked at Baker's Dozen and XDOS. This single diskette has some of the most useful programs to make life easier for all users. Disk utilities was a set of simple programs to help you manipulate your diskettes and files directly. Very powerful, but also very dangerous. EZ Forms was the last diskette of the month and is simply a very easy to use form generator.

Well, that has been a quick rundown of the diskettes that we have reviewed over the past nine or ten months. All of these diskettes are still available and can be obtained directly from me by simply writing to the following address:

C.J. Collins
1 Woods Street, Newport, Vic 3015

If you require any diskettes, simply forward a list of the required diskettes and a cheque for the complete amount ($10 for the first diskette, $6 for any other diskette in the same order) with your name and address printed clearly, and I will forward them to you within 14 days.

Well, I think that's all for this month. I hope that this will make life easier for those of you that weren't here in the beginning. Until next month, have fun with your PC!!

ESC

MATHEMATICAL GENERATORS

Chris Wootton gets serious with this month's Gallimaufry, supplying seven math programs

Believe it or not, your CPC is a powerful electronic calculator. It can carry out far more complicated calculations than most pocket calculators. For example, could a pocket calculator solve a quadratic equation or generate Pascal's Triangle? The mathematical capabilities of the CPC combine with the programming capabilities of BASIC to make your CPC capable of doing complicated equations, plotting graphs, computing the mean/median/standard deviation of a set of numbers.

All the functions such as sine, cosine, arc tangent, arc sine etc. can be performed on the Amstrad in one way or another (SINe, COSine, TANgent & ARC TANgent are already built-in but user DEFined FuNctions could be written to calculate Arc sines and/or Arc cosines).

Other just as useful functions can be carried out by the Amstrad such as converting digits in a particular base into another base (eg. decimal to binary), generating Pascal's Triangle, solving quadratic equations and generating sequences of numbers such as perfect numbers, prime numbers and Fibonacci numbers.

PRIME NUMBER GENERATOR

The first program here is one which generates prime numbers, those positive integers that do not have any factors other than 1 and themselves.

The program accepts the number of prime numbers to be found from the user and then DIMensions an array (p) to hold the prime numbers.

It then sets the variables n1 to 1 and the prime number counter c to 0. The program then searches through all the numbers that could be factors of n1 (n1 is the number being checked to see whether or not it is a prime). If it finds a factor then the program jumps out of the loop (which is not good programming but it doubles the speed of the program), sets n1 to equal the next odd number (even numbers cannot be prime) and jumps to the factor search part of the program again.

If the program has not found a factor then n1 must be prime so the value of n1 is placed in the array p and the prime counter c is incremented. If the program still has not found enough prime numbers then it will jump back to the factor search routine after setting n1 to the next odd number.

The statement in line 100 which reads 100 n1=n1+2+(n1=1)+(n1=2) this is the part of the program that sets n1 to the next odd number. The (n1=1)+(n1=2) part is there to ensure that the program checks 2 as a possible prime. After the program has found enough prime numbers it PRINTs out the p array which holds the prime numbers. The statement IF n1 MOD n2=0 THEN 100 then checks for factors. If there is no remainder after dividing n1 by n2 then n2 is a factor of n1 and so the program jumps to line 100.

```
1 ' Prime Number Generator
2 ' by Chris Wooton
3 ' The Amstrad User, July 1988
10 MODE 2:PEN 1:PAPER 0
20 INPUT"Enter number of prime numbers to generate : ",
ps
30 PRINT
40 DIM p(ps)
50 n1=1:c=0
60 FOR n2=3 TO n1\2 STEP 2
70 IF n1 MOD n2=0 THEN 100
80 NEXT
90 p(c+1)=n1:c=c+1:IF c=ps THEN 110
100 n1=n1+2+(n1=1)+(n1=2):GOTO 60
110 FOR a=1 TO ps
120 PRINT p(a),
130 NEXT
```

The program will stop with an error if n1 ever gets larger than 32767 because the BASIC command MOD and the operator \ are designed to work with integers which are defined by the Amstrad manual as being between -32768 and +32767. This could be bypassed by changing line 70 to IF INT(n1/n2)=n1/n2 THEN 100 and by changing line 60 to FOR n2=3 to INT(n1/n2) STEP 2 so that the relevant statements will work with numbers outside the 32767 range. It will become apparent that the time taken to find 10 prime numbers increases as the numbers become larger which is caused by the fact that the program has to search through many more possible factors.

PERFECT NUMBER GENERATOR

The next program generates perfect numbers which are any positive integers where all of the particular integer's factors add up to the number in question eg. 6's factors are 1,2,3 & 6 and as 1+2+3 add up to 6, 6 is a perfect number.

Every perfect number is obtainable by using the formula ((2^p)-1)*(2^(p-1)) where p is a prime number (see previous program) and it is that formula that this program employs. The number of perfect numbers to be

generated (1-19) is accepted from the user and the array pno is DIMensioned to hold the prime numbers. Lines 40-90 generate the prime numbers in the same way as does the prime number generator program. The program then jumps into a loop which calculates the perfect number by multiplying them together and PRINTs the number on the screen for each perfect number requested.

```
1 ' Perfect Number Generator
2 ' by Chris Wootton
3 ' The Amstrad User, July 1988
10 MODE 2:PEN 1:PAPER 0
20 INPUT "Enter the number of perfect numbers that you
want generated : ",ps
30 PRINT:c=0:DIM pno(ps):n1=1
40 FOR n2=3 TO n1\2
50 IF n1/n2=INT(n1/n2) THEN 80
60 NEXT
70 pno(c+1)=n1:c=c+1:IF c=ps THEN 100
80 n1=n1+2+(n1=1)+(n1=2)
90 GOTO 40
100 FOR pnum=1 TO ps
110 num1=2^pno(pnum)-1
120 num2=2^(pno(pnum)-1)
130 PRINT num1*num2
140 NEXT
```

FIBONACCI NUMBER GENERATOR

The first 5 Fibonacci numbers are 1,1,2,3,5 where the next number in the sequence (in this case 8) is obtained by adding the two previous numbers (in this case 3 and 5).

The following program generates up to 44 Fibonacci numbers. After that stage the numbers are too large for the computer to handle and they are converted into exponential notation (ie. 4.67E+17). Line 20 looks after the INPUT of the number of Fibonacci numbers to be generated. Line 30 sets the variables n1 and n2 to 1 and 0 respectively, DIMensions the fi array to hold the Fibonacci numbers, PRINTs a blank line and sets the PRINT ZONEs to be 13 characters wide (the default). Lines 40-70 are the loop which generates each Fibonacci number. The Fibonacci number is created by adding n1 and n2 and then n1 and n2 are updated to hold the (new) last 2 numbers in the sequence (n2 and fb respectively). After the loop has terminated the program PRINTs out the array. Line 110 is merely there to PRINT a blank line after the last number PRINTed.

```
1 ' Fibonnaci Number Generator
2 ' by Chris Wootton
3 ' The Amstrad User, July 1988
10 MODE 2:PEN 1:PAPER 0
20 INPUT"How many Fibonnaci numbers do you want (1-44)
? : ",f
30 n1=1:n2=0:DIM fi(f):PRINT:ZONE 13
40 FOR fi=1 TO f
50 fb=n1+n2:fi(fi)=fb
60 n1=n2:n2=fb
70 NEXT
80 FOR fi=1 TO f
90 PRINT fi(fi),
100 NEXT
110 IF f MOD 3=0 THEN PRINT ELSE PRINT:PRINT
```

FACTOR FINDER

All the factors of a particular number entered by the user are printed out by the following program.

The number entered must be an integer since, as previously mentioned, the \ in line 40 and the MOD in line 50 are for use with integers. The computer scans through all the numbers that could possibly be factors of n (1 to n\2). The factors that are found are PRINTed and the loop continues until it has searched through all the possible factors. After the loop has been exited the program PRINTs n itself rather than printing it as part of the main factor search loop. This speeds up the program because all numbers greater than n\2 and less than n cannot be factors of n. It would be a waste of time for the computer to scan through them.

```
1 ' Factor Finder
2 ' by Chris Wooton
3 ' The Amstrad User, July 1988
10 MODE 2:PEN 1:PAPER 0
20 PRINT"Enter a number that you would like to know the
 factors of (1-32767) ";
30 INPUT ": ",n:PRINT
40 FOR a=1 TO n\2
50 IF n MOD a=0 THEN PRINT a,
60 NEXT:PRINT n:PRINT
```

PASCAL'S TRIANGLE GENERATOR

Pascal's Triangle is a numerical triangle where every number in the triangle is obtained by adding the 2 numbers above it. It is a rapid method of determining the co-efficients of each term in expansions such as (ax+by) to the power of n. The next program generates Pascal's Triangle. The numbers of levels to be computed is stored in line 10. The program DIMensions the array to hold the triangle, sets MODE 2 and begins a loop to process each level. The computer then enters another loop to process each element in the current level. Lines 40-50 compute the element's value and line 60 stores it in the array pascal. This continues until the computer has computed a maximum of 12 levels. The program then waits for you to press [P] (Printer) or [S] (Screen) and then sends the triangles to the appropriate device.

```
1 ' Pascal's Triangle Generator
2 ' Chris Wooton
3 ' The Amstrad User, July 1988
```

```
10 levels=12:DIM pascal(levels,levels):MODE 2
20 FOR level=1 TO levels
30  FOR element=1 TO level
40   IF element=1 OR element=level THEN elem=1:GOTO 60
50   elem=pascal(element-1,level-1)+pascal(element,leve
l-1)
60   pascal(element,level)=elem
70 NEXT element,level
80 i$=UPPER$(INKEY$)
90 IF i$<>"P" AND i$<>"S" THEN 80
100 device=-8*(i$="P")
110 FOR level=1 TO levels
120  PRINT#device,TAB(41-3*level);
130  FOR element=1 TO level
140   PRINT#device,USING"####";pascal(element,level);:P
RINT#device,SPC(2);
150  NEXT element
160  PRINT#device:PRINT#device
170 NEXT level:LOCATE 1,1
```

NUMERICAL BASE TRANSLATOR

Another useful program converts digits in a particular base into the equivalent digits in another base. The source base (in the range 2-16) is the base of the digits that you are trying to convert, the source digits are the digits that you are trying to convert and the destination base is the base into which you are converting them. Lines 80-110 translates the source digits into decimal (stored in the variable decv) and lines 120-150 convert the decimal produced by lines 80-110 into the source base. The converted digits are then output and the program jumps back to line 40 for another entry.

This program would make a good subroutine in a base converter program with the user selecting from a menu (ie. 1: Decimal to Binary 2: Binary to Decimal 3: Decimal to Hex), the computer passing the bases to the routine in the variables sb and db and passing the source digits. The subroutine could compute the destinations digits and RETURN. To accomplish this the program would have to have lines 40-70 and lines 160-170 deleted and an appropriate RETURN statement at line 160. A GOSUB statement would have to be placed somewhere so the main program could access the routine.

```
1 ' Numerical Base Translator
2 ' by Chris Wootton
3 ' The Amstrad User, July 1988
10 MODE 2:PEN 1:PAPER 0
20 DEF FN md(dc)=dc-(INT(dc/db)*db)
30 index$="0123456789abcdef"
40 INPUT"Enter the source base (2-16) : ",sb
50 INPUT"Enter the source digits      : ",sd$
60 INPUT"Enter the destination base   : ",db
70 sd$=LOWER$(sd$):decv=0:sds=LEN(sd$):db$=""
80 FOR d=1 TO sds
90 d$=MID$(sd$,d,1)
100 decv=decv+(INSTR(index$,d$)-1)*(sb^(sds-d))
110 NEXT
120 nds=INT(LOG10(decv)/LOG10(db))+1
130 FOR d=1 TO nds
140 db$=MID$(index$,FNmd(decv)+1,1)+db$
150 decv=INT(decv/db):NEXT
160 PRINT "Destinations digits          = ";db$
170 db$="":decv=0:PRINT:GOTO 40
```

CO-ORDINATE CONVERTER

My last program is a program to convert polar co-ordinates into conventional x,y co-ordinates and vice versa. Polar co-ordinates are expressed as the distance from the origin (0,0) and the angle from the origin. x,y co-ordinates are expressed as the horizontal (x) distance from the origin and the vertical (y) distance from the origin. When the program is RUN the user merely types 1,2 or 3 depending on the conversion (3 is to END). The user will then be asked to type in the co-ordinates to be converted and once this has been done the program will output the converted co-ordinates. The complicated expressions in lines 240-260 are there to calculate the correct angle and distance from the origin. Lines 250 and 260 provide for when y<0 or y>0 because the particular function in question cannot be dealt with in one line without going into complicated logic statements which are shorter than using IF statements but are harder to write and decipher.

```
1 ' Co-ordinate Converter
2 ' by Chris Wootton
3 ' The Amstrad User, July 1988
100 MODE 2:DEG:PRINT "[1] : Polar to Rectangular"
110 PRINT:PRINT"[2] : Rectangular to Polar"
120 PRINT:PRINT"[3] : End"
130 o$=INKEY$:IF o$<"1" OR o$>"3" THEN 130
140 o=VAL(o$):ON o GOTO 150,220:END
150 PRINT:INPUT"Enter the radius from the origin : ",r
160 PRINT:INPUT"Enter the angle from the origin in degr
ees : ",a
170 x=r*COS(a):y=r*SIN(a)
180 PRINT:PRINT"The equivalent rectangular co-ordinates
 are :"
190 PRINT:PRINT"X co-ordinate =";x
200 PRINT:PRINT"Y co-ordinate =";y
210 WHILE INKEY$="":WEND:GOTO 100
220 PRINT:INPUT"Enter the x co-ordinate : ",x
230 PRINT:INPUT"Enter the y co-ordinate : ",y
240 a=0-180*(y=0 AND x<0):r=SQR(ABS(x*x+y*y))
250 IF y<0 THEN a=-360*(x>0)-180*(x<0)+ATN(y/x)
260 IF y>0 THEN a=-180*(x<0)+ATN(y/x)
270 PRINT:PRINT"The equivalent polar co-ordinates are :
"
280 PRINT:PRINT"Radius from origin =";r
290 PRINT:PRINT"Angle from origin  =";a;"degrees"
300 GOTO 210
```

MORE MATHS

Two modules of high precision arithmetic in Z80 Machine Code from Petr Lukes

Module 1: Number conversion to and from internal form (written in CPC BASIC, but could be adapted for the PCW).

The precision of computed results is fixed by the software supplied with the computer. The CPC BASIC has an accuracy of some eight significant digits, while Mallard BASIC has the double-precision option of some sixteen digits.

The number of significant digits must not be confused with decimal places: so '12' and '0.12' both have two significant digits. The CPC accuracy is quite sufficient for most purposes, but can cause problems when the range of numbers is large. If we try to add ten cents to ten million dollars, the cents will simply disappear. It is possible to program higher precision in BASIC, but there is a high overhead of processing time and storage requirements.

This set of routines uses the Binary Coded Decimal (BCD) method of handling floating point numbers, with a selectable accuracy of up to 62 digits. While a binary byte (eight bits) can store numbers in the range of 0 to 255, a packed BCD byte can hold decimal numbers from 00 to 99. Each byte is divided into two nibbles of four bits each and each can represent the digits 0 to 9. This first routine handles the task of converting a string of decimal digits into the internal storage format. It is the most complicated part, and produces the least exciting results.

One byte of storage is needed for every two significant digits. Only the significant digits are stored (no leading zeros). One extra byte (the characteristic) is allocated to keep track of the sign of the number and the position of the decimal point. The characteristic byte is bit-significant, the leftmost bit (bit 7) indicating the sign of the number: zero for negative, one for positive. The remaining bits 6 to 0 (the exponent) indicate the position of the decimal point, as excess of 64d, from its implied position just left of the first significant digit (the decimal point is not stored).

Representing the characteristic as sign and the exponent in decimal, '+0.12' will be stored as '+64.12' (to two significant digits). Exponent excess 64 is zero, therefore the decimal point does not get shifted. '-1.2' will appear as '-65.12': the exponent excess is +1, the implied decimal point will be shifted one place to the right. Similarly, '-0.012' will produce '-63.12', the -1 excess indicating a decimal point shift one place to the left. The exponent range is 0 to 127, indicating a decimal point shift from 64 places to the left (0-64=-64) to 63 places to the right (127-64=+63), but since we need two digits per byte, the range is limited to -62 to +62, or 2 to 126. Any attempt to exceed this range indicates an overflow and is signalled by setting the characteristic byte to zero.

The mantissa bytes, which follow the characteristic, store the actual digits in the packed BCD format, two digits per byte. These can be displayed from BASIC by converting each byte into the corresponding two-digit hexadecimal representation, but there is a short machine-language routine to do the conversion in the buffer. The final formatting of the number is done in BASIC.

The program is written as a demonstration. The machine language is stored in integer arrays, is relocatable, and controlled by BASIC. (Mallard BASIC would need VARPTR(var) instead of @var.) The buffers (larger than needed) are defined as strings, and the use of the MID$ assignment command allows moving values into them without altering their position in memory.

BCD arithmetic is particularly suitable for bookkeeping. The numbers remain in the decimal form, so avoiding any inaccuracies caused by conversion to and from binary representation. It is rarely used in high level languages because its processing is slower and storage requirements are greater.

As indicated in the listing, the program comes in four modules. The addition/subtraction is also presented this month, and multiplication will follow next. Division (the most difficult one - as W. Barden Jr noted in his book on Z80 programming, "experienced programmers have been known to wail and gnash their teeth while trying to implement an efficient divide routine on certain computers") will also appear later. All this has been done before, undoubtedly more efficiently, but I have been unable to find a complete BCD suite anywhere. Any assistance would be appreciated.

```
10 MODE 2:PRINT"BCD : High precision arithmetic"
20 PRINT"P. Lukes, 26 Noll St., Toowoomba, 4350"
30 PRINT"BCD1:Conversion installed LKS 880227"
40 PRINT"BCD2:Add/Subtract not installed"
50 PRINT"BCD3:Mutiply not installed"
60 PRINT"BCD4:Divide not installed
70 GOSUB 7000'initialise
80 PRINT:PRINT"Demonstration"
90 '
100 PRINT"Conversion demonstration"
110 PRINT"Example :":x$="*!#% $-1,234,567.89c":PRINT x$
120 GOSUB 3020:GOSUB 3100:PRINT ds$:PRINT ex$
130 PRINT"Enter number or press ENTER for next demonstr
ation:"
```

```
140 LINE INPUT x$
150 IF x$=""THEN 290
160 GOSUB 3020'convert a.b
170 PRINT"BCD format:":IF x$=""THEN PRINT"Over/Under fl
ow":GOTO 280
180 PRINT"Characteristic:"
190 c0=ASC(x$):PRINT BIN$(c0,8)" : ";
200 IF(c0 AND &80)=&80 THEN PRINT"+";ELSE PRINT"-";
210 c0=c0 AND &7F:PRINT c0;'exponent
220 d0=c0-&40:PRINT" shift implied decimal point"ABS(d0
)"place(s) to the ";
230 IF SGN(d0)=1 THEN PRINT"right"ELSE PRINT"left"
240 PRINT"Normalised mantissa:":PRINT".";
250 FOR a=2 TO sb%:PRINT HEX$(ASC(MID$(x$,a)),2);:NEXT
a:PRINT
260 GOSUB 3100'convert b.a
270 PRINT"ASCII format:":PRINT ds$:PRINT ex$
280 GOTO 130
290 '
3000 STOP
3010 '
3020 'Convert a.b: entry:ASCII string in x$, exit:BCD n
umber in x$
3030 MID$(buf1$,1)=zero$:MID$(buf2$,1)=zero$'zero both
buffers
3040 MID$(buf2$,1)=x$'move string into buffer
3050 CALL@a.b%(0)'convert number to BCD form
3060 x$=LEFT$(buf1$,sb%)'number in BCD format in x$
3070 IF ASC(x$)=0 THEN PRINT"BCD overflow in convert a.
b":x$=""
3080 RETURN
3090 '
3100 'Convert b.a: entry:BCD number in x$, exit:decimal
 number in ds$ and ex$
3110 d$="":IF x$=""THEN ex$="??":ds$="??":GOTO 3320
3120 MID$(buf1$,1)=x$:CALL@b.a%(0):y$=LEFT$(buf2$,sd%+1
)'characteristic and ASCII digits in y$
3130 c0=ASC(y$)'characteristic
3140 s0=c0 AND &80'sign
3150 ds$="+":IF s0=0 THEN ds$="-"
3160 d0=c0 AND &7F:d0=d0-&40'decimal point position, ex
cess 40h
3170 IF d0<1 THEN ds$=ds$+"0."+STRING$(-d0,"0")+MID$(y$
,2,sd%):GOTO 3280'no integer part
3180 ds$=ds$+MID$(y$,2,sd%)
3190 IF LEN(ds$)<=d0 THEN ds$=ds$+STRING$(d0-LEN(ds$)+1
,"0")
3200 ds$=LEFT$(ds$,d0+1)+"."+MID$(ds$,d0+2)':PRINT ds$
3210 d1=INSTR(ds$,"."):IF d1<5 THEN 3270
3220 'insert commas
3230 d$=MID$(ds$,d1):ds$=LEFT$(ds$,d1-1)'fraction in d$
, integer in ds$
3240 WHILE LEN(ds$)>4
3250 d$=","+RIGHT$(ds$,3)+d$:ds$=MID$(ds$,1,LEN(ds$)-3)
3260 WEND
3270 ds$=ds$+d$':PRINT ds$
3280 'exponentional format
3290 ex$=LEFT$(ds$,1)+"."'sign and implied decimal poin
t
3300 d$=STR$(d0):IF LEFT$(d$,1)=SPACE$(1)THEN MID$(d$,1
)="+"'replace space by "+"
3310 ex$=ex$+MID$(y$,2,sd%)+"e"+d$'exponential format
3320 RETURN
3330 '
3600 '
7000 PRINT"Initialisation"
7010 PRINT"Significant Digit setting : ";
7020 sd%=62:sd%=((sd%+1)\2)*2'must be even
7030 sd%=MIN(MAX(sd%,4),62)'range 4 to 62
7040 sb%=sd%\2+1'number of storage bytes needed
7050 PRINT"SD set to"sd%"BCD numbers stored in"sb%"byte
s"
7060 PRINT"Reserve string buffers :"
7070 PRINT"Must be done before using other strings"
7080 PRINT"but after any memory reservation to prevent
their movement."
7090 zero$=STRING$(255,0)'string of nulls
7100 buf1$=zero$:buf2$=zero$:a=FRE("")
7110 bf1%=UNT(PEEK(@buf1$+1)+PEEK(@buf1$+2)*256)
7120 bf2%=UNT(PEEK(@buf2$+1)+PEEK(@buf2$+2)*256)
7130 DIM wr$(1)'working strings
7140 PRINT:PRINT"Machine language routines"
7150 PRINT"a.b : ASCII string into BCD format"
7160 DATA 00,21,AA,AA,e5,11,BB,BB,1b,3a,CC,CC,47,0e,00,
13
7170 DATA 1a,fe,2d,38,fa,28,04,36,80,18,02,13,1a,fe,30,
28
7180 DATA fa,fe,3a,30,6f,fe,2c,28,24,fe,30,38,24,79,fe,
3e
7190 DATA 30,5d,3c,4f,78,b7,28,15,3d,47,1f,30,01,23,1a,
30
7200 DATA 08,e6,0f,17,17,17,17,18,03,e6,0f,b6,77,13,1a,
18
7210 DATA d0,fe,2e,20,3f,3a,CC,CC,b8,20,0f,13,1a,fe,30,
20
7220 DATA 0b,79,fe,c2,28,29,3d,4f,18,f1,13,1a,fe,3a,30,
24
7230 DATA fe,30,38,20,78,b7,28,1c,3d,47,1f,30,01,23,1a,
30
7240 DATA 08,e6,0f,17,17,17,17,18,03,e6,0f,b6,77,18,db,
e1
7250 DATA 36,00,18,12,e1,23,7e,2b,b7,20,04,36,c0,18,07,
79
7260 DATA c6,40,e6,7f,b6,77,c9,00
7270 b=83:DIM a.b%(b):RESTORE 7150:c=0
7280 FOR a=0 TO b:READ x$,y$':PRINT a,x$" "y$
```

```
7290 a.b%(a)=VAL("&"+y$+x$):c=c+a.b%(a)
7300 NEXT a:IF c<>520298 THEN PRINT"Data error":STOP
7310 a.b%(1)=bf1%:a.b%(3)=bf2%'pass addresses to routin
e
7320 a.b%(5)=@sd%:a.b%(43)=@sd%
7330 PRINT"b.a : BCD to ASCII"
7340 DATA 00,21,AA,AA,00,11,BB,BB,00,3a,CC,CC,47,7e,12,
23
7350 DATA 13,7e,07,07,07,07,e6,0f,c6,30,12,13,7e,e6,0f,
c6
7360 DATA 30,12,10,eb,c9,00
7370 b=18:DIM b.a%(b):RESTORE 7330:c=0
7380 FOR a=0 TO b:READ x$,y$':PRINT a,x$" "y$
7390 b.a%(a)=VAL("&"+y$+x$):c=c+b.a%(a)
7400 NEXT a:IF c<>51967 THEN PRINT"Data error":STOP
7410 b.a%(1)=bf1%:b.a%(3)=bf2%:b.a%(5)=@sb%
7420 '
7430 RETURN
```

MODULE 2: ADDITION/SUBTRACTION

This is the second module of the high precision arithmetic implemented in BCD format. It cannot stand alone, but must be merged into the first module. (The line numbering must be retained, and, if it is to be merged from disc, it must be saved with the "a" option.

A byte is the smallest unit of memory that can be manipulated. Packed BCD arithmetic is made possible by treating a byte (eight bits) as consisting of two nibbles of four bits each, and using a special instruction to manipulate the two nibbles. In the following examples, the comma is used to represent the division of the byte into the two nibbles.

'0000,1001' represents the value '9'. The high nibble is zero, the low nibble is nine in binary. If we add '1', the picture will be '0000,1010': high nibble is still zero, low nibble is now decimal ten, which is illegal in the BCD system. The instruction DAA (Decimal Adjust Accumulator, 8080/Z80 code 27h) adjusts the nibbles to '0001,0000': high nibble is one, low nibble zero, and the byte now represents decimal ten in the packed BCD notation. Any overflow from the high nibble would set the CARRY flag, to be utilised in processing the next byte.

The most complicated part of performing addition or subtraction with two floating point numbers is aligning them on the decimal point. I have taken the easy way out and done it in BASIC, with the help of the routine to shift the digits one place right if the nibbles do not line up. '1.2' and '0.12' will both be stored as '12' in the first mantissa byte. The '.1' of the augend must be lined up below the '.2' of the addend for addition, but memory can normally be moved only byte steps. The answer is to line up the two '12' under each other, then use the instruction RRD (Rotate Right Decimal) to shift the augend '1' to the position previously occupied by '2', replace the previous '1' by zero, shift the '2' to the high nibble of the next byte, and so on for multiple byte storage. The final picture is then '1.200' and '0.120' lined up on the implied decimal point.

Addition can produce a leading '1' (as in '9' + '1' ='10'), which requires a RRD adjustment in the result buffer and incrementing the exponent. Subtraction can produce a number of leading zeros (as in '99.2' - '99.1' = '00.1'). The result must be normalised by shifting the digits to the left and decrementing the exponent. Any underflow defaults to zero. This process uses the RLD (Rotate Left Decimal) instruction.

The demonstration example includes the calculation of large factorials (a factorial of x, written as x!, is a product of numbers from 1 to x, eg. 4!=1*2*3*4*=24) by repeated addition. It is very slow, but it can calculate a larger range than the binary floating point routines. The factorials are also computed using logs, as a check.

```
10 MODE 2:PRINT"BCD : High precision arithmetic"
20 PRINT"P. Lukes, 26 Noll St., Toowoomba, 4350"
30 PRINT"BCD1:Conversion installed LKS 880227"
40 PRINT"BCD2:Add/Subtract installed LKS 880227"
50 PRINT"BCD3:Mutiply not installed"
60 PRINT"BCD4:Divide not installed
70 GOSUB 7000'initialise
80 PRINT:PRINT"Demonstration"
90 '
290 '
300 PRINT"Add/subtract demonstration"
310 PRINT"Enter number or press ENTER for next demonstr
ation:"
320 LINE INPUT x$
330 IF x$=""THEN 450 ELSE GOSUB 3020
340 IF x$=""THEN 310 ELSE v1$=x$'first number
350 PRINT"Enter second number:"
360 LINE INPUT x$:GOSUB 3020:IF x$=""THEN 350
370 v2$=x$'second number
380 wr$(0)=v1$:wr$(1)=v2$'set up for addition/subtracti
on
390 f$="":WHILE NOT(f$="+"OR f$="-")
400 INPUT"Enter function (+ or -) : ";f$
410 WEND
420 GOSUB 3340'add/subtract
430 GOSUB 3100:PRINT ds$'display result in x$
440 GOTO 300
450 '
460 PRINT:PRINT"Factorials by repeated addition"
470 g=1:x$="1":GOSUB 3020:v1$=x$:v2$=v1$:f1=LOG10(1)'in
itialise to 1!
480 'loop
490 PRINT:PRINT"Factorial of"g
500 wr$(1)=v2$'augend
```

```
510 FOR f=2 TO g'multiply by repeated addition
520 wr$(0)=v1$'addend, partial sum
530 f$="+":GOSUB 3340'add
540 v1$=x$'result to partial sum
550 IF x$=""THEN f=g'overflow trap: BCD overflows on 49
!
560 NEXT f
570 v2$=v1$'current factorial, also in x$
580 PRINT"BCD :":GOSUB 3100:PRINT ds$:PRINT ex$'display
590 PRINT"Log : ";:f1=f1+LOG10(g)'compute by log
600 c0=INT(f1):d0=f1-c0:d0=d0*LOG(10):d0=EXP(d0)
610 PRINT d0"E+"MID$(STR$(c0),2)'result in exponential
form
620 IF x$=""THEN 640
630 g=g+1:GOTO 480
640 '
3000 STOP
3330 '
3340 'Add/subtract: entry:numbers in wr$(0) and wr$(1),
 exit:result in x$
3350 'The PRINT buf lines demonstrate alignment of buff
ers
3360 IF wr$(0)=""OR wr$(1)=""THEN x$="":GOTO 3590
3370 MID$(buf1$,1)=zero$:MID$(buf2$,1)=zero$'zero both
buffers
3380 i0=0:i1=1'indices
3390 c0=ASC(wr$(0)):c1=ASC(wr$(1))'characteristics. ASC
 takes first char
3400 IF f$="-"THEN c1=c1 XOR &80:MID$(wr$(1),1)=CHR$(c1
)'toggle sign
3410 s0=c0 AND &80:s1=c1 AND &80'signs
3420 IF s0=s1 THEN f$="+"ELSE f$="-"'add if signs equal
, else subtract
3430 d0=c0 AND &7F:d1=c1 AND &7F'decimal points, bits 6
-0
3440 df=ABS(d0-d1):dd=1+(df\2)
3450 IF d0<d1 THEN i0=1:i1=0'swap indices if first numb
er is smaller
3460 IF df=0 THEN IF MID$(wr$(0),2)<MID$(wr$(1),2)THEN
i0=1:i1=0
3470 MID$(buf1$,1)=wr$(i0)'move larger number into resu
lt buffer
3480 'PRINT"buf1":FOR a=0 TO MIN(sb%,20):PRINT HEX$(PEE
K(bf1%+a),2)" ";:NEXT a:PRINT
3490 MID$(buf2$,dd+1)=MID$(wr$(i1),2)
3500 'PRINT"buf2":FOR a=0 TO MIN(sb%+dd,20):PRINT HEX$(
PEEK(bf2%+a),2)" ";:NEXT a:PRINT
3510 IF df MOD 2=0 THEN 3540
3520 rrd%(1)=UNT(bf2%+dd):CALL@rrd%(0)'align one digit
right (on byte boundary) if necessary
3530 'PRINT"buf2 after rrd":FOR a=0 TO MIN(sb%+dd,20):P
RINT HEX$(PEEK(bf2%+a),2)" ";:NEXT a:PRINT
3540 'IF f$="+"THEN PRINT"Addition"ELSE IF f$="-"THEN P
RINT"Subtraction"
3550 IF f$="+"THEN CALL@sum%(0)ELSE IF f$="-"THEN CALL@
dif%(0)ELSE STOP
3560 x$=LEFT$(buf1$,sb%)
3570 'PRINT"buf1":FOR a=0 TO MIN(sb%,20):PRINT HEX$(PEE
K(bf1%+a),2)" ";:NEXT a:PRINT
3580 IF ASC(x$)=0 THEN PRINT"BCD overflow in add/subtra
ct":x$=""
3590 RETURN
3600 '
7000 PRINT"Initialisation"
7420 '
7430 PRINT"rrd : Rotate Right Decimal"
7440 DATA 00,21,AA,AA,00,3a,CC,CC,47,af,ed,67,23,10,fb,
c9,00
7450 b=8:DIM rrd%(b):RESTORE 7430:c=0
7460 FOR a=0 TO b:READ x$,y$':PRINT a,x$" "y$
7470 rrd%(a)=VAL("&"+y$+x$):c=c+rrd%(a)
7480 NEXT a:IF c<>-15416 THEN PRINT"Data error":STOP
7490 rrd%(1)=bf1%:rrd%(3)=@sb%
7500 PRINT"sum : BCD addition"
7510 DATA 00,21,BB,BB,00,11,AA,AA,d5,3a,CC,CC,4f,06,00,
09
7520 DATA eb,09,41,c5,05,1a,c6,50,27,1b,2b,1a,8e,27,77,
10
7530 DATA f8,c1,e1,30,22,7e,e6,7f,fe,7e,38,04,36,00,18,
17
7540 DATA 34,c5,af,3c,23,ed,67,10,fb,c1,05,3e,50,86,27,
2b
7550 DATA 3e,00,8e,27,77,10,f8,c9
7560 b=35:DIM sum%(b):RESTORE 7500:c=0
7570 FOR a=0 TO b:READ x$,y$':PRINT a,x$" "y$
7580 sum%(a)=VAL("&"+y$+x$):c=c+sum%(a)
7590 NEXT a:IF c<>103719 THEN PRINT"Data error":STOP
7600 sum%(1)=bf2%:sum%(3)=bf1%:sum%(5)=@sb%
7610 PRINT"dif : BCD subtraction"
7620 DATA 00,21,AA,AA,e5,11,BB,BB,00,3a,CC,CC,4f,06,00,
09
7630 DATA eb,09,41,c5,05,3e,49,96,27,2b,1b,1a,9e,27,12,
10
7640 DATA f8,c1,e1,23,7e,e6,f0,20,1b,2b,7e,e6,7f,fe,03,
30
7650 DATA 04,36,c0,18,0f,35,e5,c5,06,00,09,41,af,ed,6f,
2b
7660 DATA 10,fb,18,dd,c9,00
7670 b=34:DIM dif%(b):RESTORE 7610:c=0
7680 FOR a=0 TO b:READ x$,y$':PRINT a,x$" "y$
7690 dif%(a)=VAL("&"+y$+x$):c=c+dif%(a)
7700 NEXT a:IF c<>31241 THEN PRINT"Data error":STOP
7710 dif%(1)=bf1%:dif%(3)=bf2%:dif%(5)=@sb%
7720 '
7730 RETURN
```

ADVENTURER'S ATTIC

Philip Riley brings you a Seabase Delta map from Dean Stibbe, more questions and answers and an extended Contact list

Well due to technical problems Drac is not back this month, he rang up and mumbled something about withdrawals and bloodbanks or something like that so this month we have decided to publish another map. It's Seabase Delta over three levels and has been supplied by Dean Stibbe. I think it will be a big relief to a lot of lost souls who have been sending us lots of questions. With any luck we will re-enter Castle Dracula next month and help all those people who we left stranded in there.

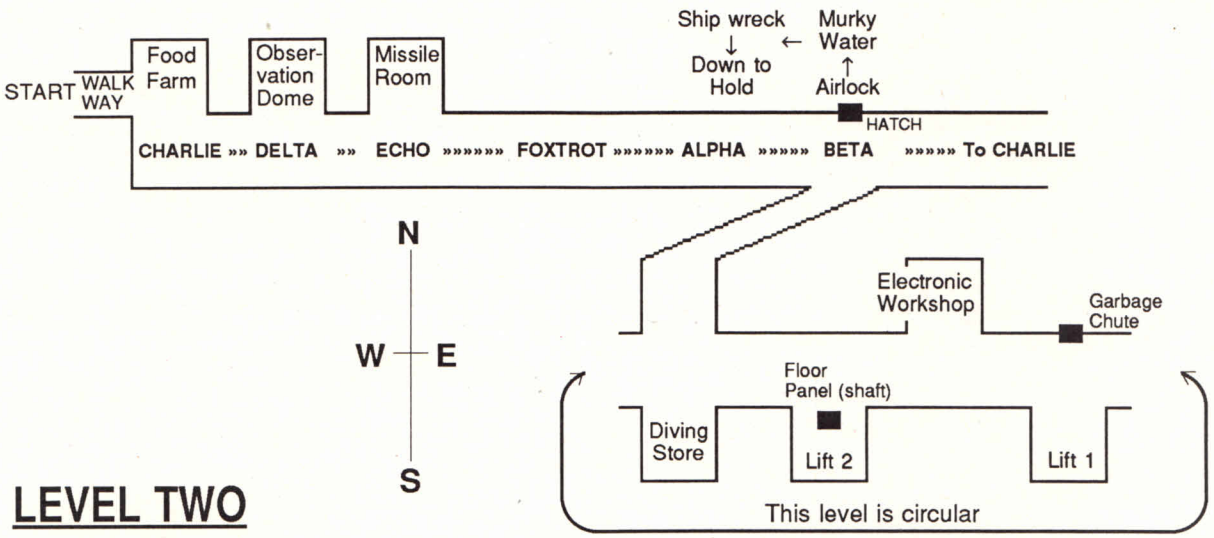
LEVEL ONE

Locations and object found there:

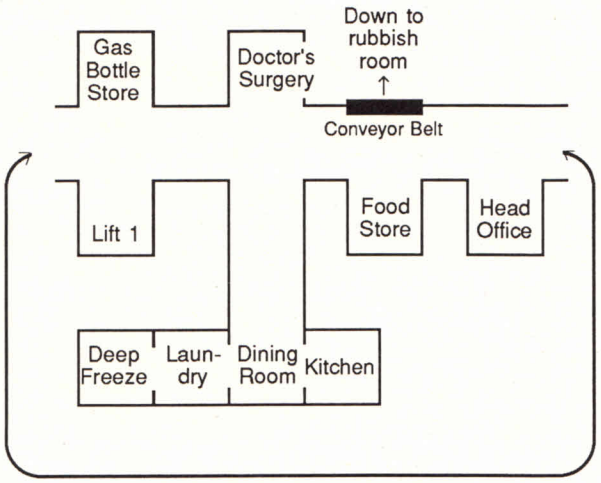
Food Farm	-	Key
Station Foxtrot	-	Screwdriver
Walkway	-	Body, Briefcase
Station Alpha	-	Torch
Diving Store room	-	Diving suit
Electronic Workshop	-	Tape player

Through Hatch:

Murky Water	-	Octopus, Hatch, Mini-sub
Ship Wreck	-	Planks, Nails, Mast
Hold	-	Cannon (Ball), Telescope



LEVEL TWO

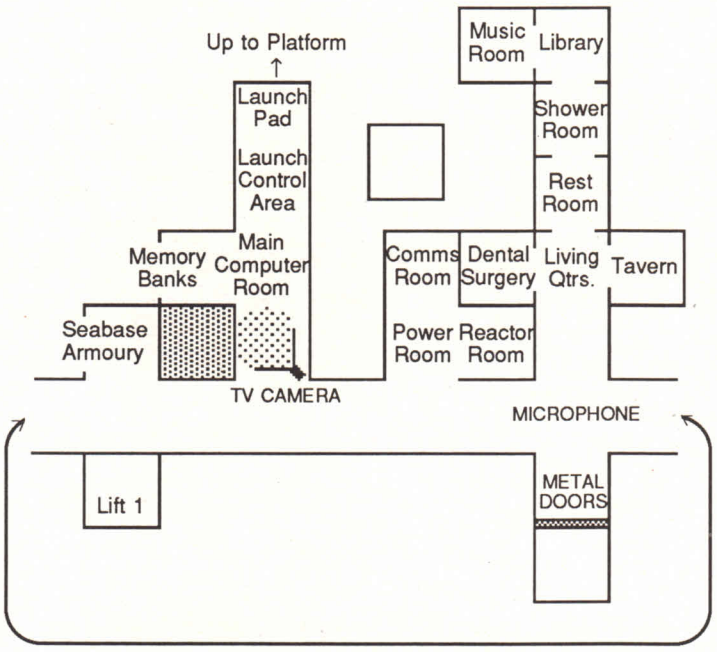


Locations and object found there:

Laundry	-	Washing line, Steam Iron
Kitchen	-	Milk, Flour, Hot plate
Deep Freeze	-	Bubble Gum
Doctor's Surgery	-	Thermometer
Dining Room	-	Fork, Flippers
Gas Bottle store	-	Air bottles
Food Store	-	Hen (egg)
Head Office	-	Auto clerk (new card)

This level is a continuous circle but to help stop confusion over directions, I have drawn it as a straight line.

LEVEL TWO



This level is also circular

Locations and object found there:

Music Room	-	Loudspeaker (magnet)
Seabase Armoury	-	Speargun
Memory Banks	-	Cassette
Launch Control Area	-	Envelope
Power Room	-	Switch
Reactor Room	-	Hammer
Comms Room	-	Message
Living Quarters	-	Writing bureau (pen)
Dental Surgery	-	Dental pincers
Tavern	-	Barrel
Rest Room	-	Video Games machine
Shower Room	-	Tap
Library	-	Cookbook

Now that you have finished looking at the map here is the big finish for this month. It comes from Karla Slack, - May you always enter mazes with a ball of string. Goodbye until next time.

QUESTIONS

Here we go for another month and the first three questions concern View to a Kill, Mark Gill would like to know how to find the correct combination to pick up the detonator and how can he get out of the mine. Also in the demo mode, screen 99 is shown, it has no apparent entry points and Mark would like to know how to get into it.

Mark Williams is stuck in several places in Morden's Quest, how does he get past the invisible barrier, the adamantine barrier, the iron door with the mist streaming out of the keyhole, the whale carcass under the ocean and the gladiator. (You will need to light the cigar to get past the gladiator.)

Anthony Ahern would like to know if anyone has Red Moon mapped out. If they do send it in to us and we will publish it in the column.

Two questions from James Green concerning Warlord, where is the slab with the blue light in it and what happens after the Roman sets up camp near Mount Badon. (This happens after you attack him while carrying the staff.)

While James is asking questions he would also like some help in Dracula. How do you leave the courtyard in part 2 and how do you catch Renshaw in part 3.

Holy impossible adventures Batman here's a game concerning you. Troy Cox is having trouble getting one of the parts of the Batcraft. It is one of the four seats, located in the room that has two spinning objects guarding it. You enter the room in a small box-like compartment. You jump down onto a weird object which slowly sinks. How does he get this part?

How do you get Elrand Halfelven from Spellbound to obey you when you summon him to the wall on level two asks Anthony Ahern.

Mark Gill has a couple of

questions concerning Everyones a Wally. How do you change the insulator and who does it? Mark can get Wally to repair the hook at the dock but how does he get the letter E and who does what in the laboratory?

Karla Slack has a new game, Forestland, and she would like to know a couple of things. She has gathered the treasures but does not know what to do next and cannot find any locations, and what do you do with the antique bottle?

FLGOFF R.F. Horwood is having trouble with Lord of the Rings on the 8256, it appears that he keeps on running out of memory when he gets to the barrow entrance. The only thing that I can suggest is that you disconnect any external devices that you have connected to the computer as these may be taking up some of the computer's memory. If anyone else can shed any light on the subject we would like to hear from you.

ANSWERS

Bary Hoole has a couple of answers to Jewels of Babylon, give the watch to the native and get a spear in return and kill the octopus with the spear.

Karla has a lot of answers for us this month and the first two concern The Hobbit, to kill Smaug carry the bard to Smaug and tell him to shoot Smaug. You can take the treasure back to the chest at home via the road near the spider. The golden key is only a treasure, The Key of Thrain unlocks the goblins gate (or at least Karla thinks so, she did not actually bother to try it).

To get the ink in Seabase Delta you must shoot the octopus says Dave Weatherhead.

For S.A. Mah who was having trouble with the aqualung in Morden's Quest, after you have got the aqualung go N,N,N,SE,U,SE, D,N,E and fill aqualung. That one came from James Green.

Next we have more answers from Karla, this time concerning Lord of the Rings. To open the gates to Moria just type "FRIEND". Just open the matchbox and take out a match anytime you need one. To get through the forest at the other side of the tunnels of Moria you must, once you are out of the mines, go SE,SE,SE, ask the Taciturn elf for help and go E,E,E, ask him for help again and he will throw a rope across the stream for you. Karla gave us more but we will leave it at this for the time being, if further help is needed let me know.

Dave Weatherhead says that the Archmandroid in Necris Dome is in the control chamber reached from Africa 10 and you don't reactivate the re-energiser pads.

Three answers from Bary Hoole concerning Warlord are next. Put the sword onto the slab with the blue light, wear the amulet to get past the demons and to get the amulet you must capture the Roman and give him to the Druid.

Mark Nelson was having trouble getting anywhere in Neverending Story so we will pass you over to Karla who has sent us the entire adventure. Here goes with the first bit. From the clearing get Auryn and the cape. Drop these at the tower, get the leather and food from the hut and get Artax. Ride him to the tower, drop the leather and food and eat food. Drop Artax, get the stone, horn and branch and go to the deserts edge. Drop the horn and stone but keep the branch. Light the branch in fire and go to tunnel blocked by thorn bushes and type down and we will leave it there for now.

Barry tells us that to finish Neverending Story you do not go into the ivory tower, you go through the door on the asteroid, find empress and give her Auryn.

James tells us that to milk the cow in Imagination you must feed it first and to get past the dogs you must drop the chips.

Barry also tells us that to find the pyramid in Infidel the clue is via the co-ordinates on map starting from fire pit go SE,E,E, then dig five times in sand and put cube into opening.

ADVENTURER'S CONTACT LIST

(Please don't abuse the help being offered)

Jason Pavy 105 Lyall St. Kalgoorlie W.A. 6430	The Hobbit, Forest at Worlds End
Karla Slack P.O. Box 201, Springwood N.S.W. 2777	Adventure Quest , The Hobbit, Zork II ,The Neverending Story (1) Wishbringer
John McNeill 1 Hawkins St. Chatswood Hills, Qld 4127	Jewels of Babylon The Trials of Arnold Blackwood
Dean Stibbe 25 South Esplanade Bribie Island Qld 4507	Seabase Delta, The Trials of Arnold Blackwood, Subsunk, Colossal Adventure, Dracula (parts 1&2)
Michael Fitzgerald 54 View Road Burnie Tasmania 7320	The Hobbit, The Neverending Story
Dave Weatherhead 2 Searle Court Nth. Dandenong Vic 3175	Aftershock, Imagination Seabase Delta, Necris Dome
James Green Row Rathmines N.S.W. 2283	Adventure Quest,The Pawn,24 Rosemary Mordens Quest, Mind Shadow, Sorceror, Return to Oz, Enchanter, Aftershock, The Neverending Story, Imagination, Message from Andromeda, Red Moon, Mural.
Barry Hoole 4 Dobson Road Shepparton Vic 3630	Acheton, Adventure Quest, Arnold goes Somewhere else, Aftershock, Ashkeron, Black Crystal, Brawn Free, Castle Advent., Castle Blackstar, Circus, Classic Adventure, Colossal Adventure, Crystal Quest, Desert Island, Dun Darach, Dungeon, Adventure, Emerald Isle, Enchanter, Espionage Island, Eye of Bain, Feasibility Experiment, Golden Apple, Golden Baton, Ground Zero, Guild of Thieves, Heavy on the Magick, The Hobbit, Inca's Curse, Infidel, Invincible Island, Jewels of Babylon, Kentilla, Last Will and Testament, Leather goddesses of Phobos, London Adventure, Lords of Time, Mansion Quest, Marsport, Mission X, Mooonmist, Mordons Quest, Murder at the Manor, The Neverending Story, The Pawn, Pharoahs Tomb, Planet of Death, Return to Eden, Return to Ithaca, Rifts of Time, Sherlock, Ship of Doom, Smugglers Cove, Snowball, Starcross, Subsunk, Ten Little Indians, Terrormolinos,, Time Machine, Time Quest, Tir Na Nog, Traveller, Trials of Arnold Blackwood, Valhalla, Volcanic Dungeon, Warlord, Wise and Fool of Arnold Blackwood, Wishbringer, Worm in Paradise, Zork II.

NATIONWIDE USER GROUPS

WESTERN AUSTRALIA

ALBANY AMSTRAD USER GROUP
President: Gerry Barr (098 41 6884)
Secretary: Steven Hands (098 44 7807)
Treasurer: Gavin Grose
Venue: Priess Street Centre, 14 Priess Street, Albany on the first and third Mondays of each month at 7.00 pm.
Mail: 20 Anuaka Road, Albany, WA 6330

AMSWEST (Perth)
President: Thelma Ardron (09 361 8975)
Vice Pres: John Firth (09 364 1360)
Secretary: Neil Miller (09 272 3994)
Treasurer: Darryl Dunlop (09 448 3994)
Venue: 238 Bagot Road, Subiaco 6008 on the first and third Tuesdays of each month at 7.30.

AMSWEST (Blackwood) USERS GROUP
This small group is affiliated to AMSWEST (Perth). For more details contact George Muscat on (097) 61 1488.

ROCKINGHAM-KWINANA AMSTRAD USER GROUP
President: Ray Forsyth
Vice-Pres: Larry Spozetta
Treasurer: John Hille
Secretary: Ben Hille (095 27 5246)
Venue: Cooloongup Primary School, Westerly Way, Cooloongup (Rockingham), every second Wednesday at 7.30 pm. and every other second Tuesday at Medina Primary School, Medina Ave, Medina at 7.30pm.
Mail: The Secretary, R-KAUG, 104 Milina St, Hillman, 6168

SOUTHSIDE AMSTRAD USER CLUB
President: W. Van Der Kooi (09 271 1085)
Secretary: Steve King (09 354 2068)
Treasurer: Eric Tytherleigh (09 390 8865)
Venue: Huntigdale Primary Sch., Matilda Rd. Huntingdale every 2nd and 4th Wednesday of each month from 7.00 pm.
Mail: The Sec., Southside Amstrad Users Club, 61 Keslake Way, Parkwood, WA 6110.

AMSTRAD COMPUTER CLUB TOM PRICE
President: Colin Smith (091 89 2074)
Secretary: John Eliot (091 98 1735)
Treasurers: P. & C. Montgomery (091 89 2398)
Venue: Primary School every 2nd Wednesday night. Contact the above for more details.

SOUTH AUSTRALIA

AMSOUTH AMSTRAD USER'S GROUP
President: Drew Ames (085 371 0151)
Treasurer: Bob Bleachmore (085 56 2048)
Secretary: Ross Kennewell (08 386 2737)
Venue: Christies Beach High School, Western Section,Beach Road, Christies Downs (adjacent to Staff Car Park off Mander Road) every 2nd Wednesday at 7.30.
Mail: PO Box 612, Noarlunga Centre, SA 5168

AMSNORTH AMSTRAD USER'S GROUP
Organisers: J.T. Clarkin (08 262 6342)
R. Britton (08 258 7861)
Venue: Lacrosse Hall, Terama Street, Gepps Cross every Wednesday at 7.00 p.m.

AMSTRAD COMPUTER CLUB INC. (SA)
President: Frank Matzka (08 382 2101)
Vice Pres: Andrew McDade (08 79 5414)
Treasurer: Les Jamieson (08 356 9612)
Secretary: Ross Barker
Venue: Church Hall, 15 Clayton Ave, Plympton between 6.30 and 9.00 each Tuesday.
Mail: PO Box 210, Parkholme, SA 5043

NORTHERN COMPUTING SOCIETY INC.
President: Grant Wilson (08 250 2760)
Treasurer: Percy Cook (08 248 1065)
Secretary: Judith Thamm (085 20 2377)
Venue: Salisbury North Primary School, cnr. Bagster & Woodyates Rds every Wednesday from 7.00.
Mail: PO Box 269, Two Wells, SA 5501

PORT LINCOLN AMSTRAD USERS GROUP
Contact: Rita Bascombe (086 82 1633)
Venue: Third Tuesday of each month from 8.00pm. Ring above number for address.

PORT PIRIE AMSTRAD USER GROUP
President: Doug Gowers (086 36 5206)
Treasurer: Dave Green (086 32 6834)
Secretary: Tim Eckert
Youth Rep: Mark Fusco (086 36 2452)
Venue: Education Ctr, 370 The Terrace, Port Pirie every 2nd and 4th Monday from 7.30 pm.
Mail: The Pt. Pirie Amstrad User Group, c/o D.T. Green, 207 Senate Rd., Pt. Pirie, SA 5540.

SOUTH EAST AMSTRAD USER GROUP (SA)
Contact: Neil Taylor (087 25 8068)
Venue: Mount Gambier from 1.00p.m. to 4.00p.m. on the 3rd Sunday of each month. Ring above number for address.

NORTHERN TERRITORY

DARWIN AMSTRAD USER GROUP
President: Kevin Bateman (089 32 1463)
Treasurer: Jeff Powis (089 27 5557)
Secretary: Kiem Le (089 32 1828)
Venue: Meetings are held twice monthly. Contact any of the above for more details.
Mail: 45 Priest Circuit, Gray, Palmerston, NT 5787

VICTORIA

CENTRAL AMSTRAD USER SOCIETY
President: Fred Gillen (03 580 9839)
Vice-Pres: Dennis Whelan (03 367 6614)
Treasurer: Doug Jones (03 560 8663)
Secretary: Craig Tooke (03 359 3736)
Venue: Bogart's Restaurant on the corner of Victoria and Errol Streets, North Melbourne on the first Sunday of each month starting at 1.00 pm.

EASTERN AMSTRAD USER GROUP Inc.
President: J.L Elkhorne
Secretary: Bob MacDonald (03 878 7783)
Treasurer: Ron Dunn (03 277 7868)
Venue: St. Ninian's Church Hall, cnr. McCracken Avenue and Orchard Grove, South Blackburn on the1st Sunday of each month from 1.00pm.
Mail: R.D. MacDonald, 6 Ashwood Drive, Nunawading, Vic 3131

GEELONG AMSTRAD USER CLUB
President: Arthur Pounsett (052 78 2160)
Vice-Pres: Diethard Kuhlmann (052 81 9200)
Secretary: Mick Stone (052 91 505)
Venue: South Barwon Community Services Ctr, 33 Mount Pleasant Rd, Belmont on the first Wed. of each month, from 7.30p.m
Mail: 346 Autumn St., West Geelong, 3218.

GOULBURN VALLEY AMSTRAD USERS CLUB
President: Shad Aitken (058 52 1001)
Sec/Treas: Bill Brown (058 21 7569) or (058 22 1011)
Venue: 98 Nixon Street, Shepparton on the first floor every third Wednesday from 7.30 pm.

LATROBE VALLEY AMSTRAD USER GROUP
President: Stan Hughes
Secretary: M.G. Donaldson (051 345 711)
Venue: Morwell Neighbourhood House, 17 Symons Crs., Morwell on the first Thursday of each month at 7.30pm.
Mail: PO Box 947, Morwell, Vic 3840

MARYBOROUGH AMSTRAD USER CLUB
President: Chad Banfield (054 68 1351)
Treasurer: Brendan Severino (054 61 3191)
Secretary: J. Fothergill (054 75 2667)
Venue: Maryborough CCC each week on Tuesday from 12.10 p.m. to 12.45 p.m.

MOUNTAIN DISTRICT AMSTRAD USER GROUP
President: David Jamieson (03 870 1016)
Treasurer: Ian Pearson (059 965 019)
Secretary: Craig Bell (03 758 9921)
Venue: Country Womens Association Hall, 4 Sundew Avenue, Boronia from 7.00 pm. every second Monday of the month.
Mail: PO Box 132, The Basin, Vic 3154

NORTHERN AMSTRAD USER GROUP
Contact: Brian Ellis (03 469 4425 A/H)
Venue: Every three weeks in Brunswick West for CPC owners with a sincere interest beyond games.

SOUTHERN AMSTRAD USER GROUP INC.
President: Noel Sheard (03 786 5469)
Secretary: Bob Patterson (03 786 6976)
Treasurer: Christine Donaghey
Venue: Karingal Tennis Club, Gretana Crescent, Frankston every third Tuesday from 7.30p.m.
Mail: The Sec., PO Box 100, Seaford, Vic 3198.

SUNBURY MELTON AMSTRAD USER GROUP
Contacts: Wayne Urmston (03 744 2719)
Norma McEntee (03 743 7104)
Venue: Contact above for more details.

WENDOUREE AMSTRAD USER GROUP
Contact: Brad Maisey (053 44 8356)
Venue: Cnr. Charles and Appleby Drive, Cardigan Village on the first Sunday of the month at 3.00 pm.

WESTERN COMPUTER CLUB
Venue: Fairbairn Kindergarten, Fairbairn Road, Sunshine on alternate Tuesdays from 6.30 pm.
Mail: PO Box 161, Laverton 3028.

ACT

CANBERRA AMSTRAD USER'S GROUP
Convenor: Paul Kirby (062 86 5460)
Secretary: Michael Hickey (062 58 5719)
Treasurer: Rod MacKenzie (062 54 7551)
Venue: The Oliphant Building, ANU, Canberra on the first Wednesday of each month from 7.30 pm.
Mail: PO Box 1789, Canberra , ACT 2601.

NEW SOUTH WALES

AM-USER's (North Ryde)
Contact: Lawrence Walters (02 888 1898)
Venue: Meeting Room at 2 Leisure Close, North Ryde from 7.30 p.m. on the first Tuesday of each month.

BLUE MOUNTAINS AMSTRAD USERS
President: Bob Chapman (047 39 1093)
Vice Pres: Dennis Shanahan (047 39 4568)
Treasurer: Peter Traish (047 53 6203)
Secretary: Christine Preston (047 51 4391)
Venue: Springwood Neighbourhood Centre, Macquarie Road, Springwood on the 4th Wednesday of each month at 8.00pm.

CENTRAL COAST AMSTRAD USERS CLUB
President: Lloyd Mitchell (043 88 2950)
Secretary: Douglas Green (043 42 2568)
Treasurer: Pat Thompson (043 32 9095)
Venue: Mingara Recreation Club, Adelaide St, Tumbi Umbi every 2nd and 4th Monday at 7.30 p.m. sharp.

COFFS HARBOUR AMSTRAD COMPUTER CLUB
President: Bruce Jones (066 52 8334)
Secretary: Don Donovan (066 52 6909)
Treasurer: Brian Claydon (066 49 4510)
Venue: Orara High School, Joyce Street from 7.00 on the first Friday of each month.

FAIRFIELD MICRO USER GROUP
Contact: Ekrem *[after 6.30 pm]* (02 609 6581)
Venue: Room 65, Canley Vale High School, Prospect Road, Canley Vale every third Wednesday from 7.00.

HAWKESBURY AMSTRAD USER GROUP
President: Terry Webb (045 76 5291)
Secretary: Dave Keen (045 77 5536)
Venue: Richmond Swimming Club Rooms every third Tuesday of the month at 7.30 pm.

ILLAWARRA AMSTRAD USERS CLUB
President: Paul Simpson (042 27 1574)
Secretary: Ken Waegele (042 56 6105)
Publicity Off: Steve Parsons (042 96 3658)
Venue: AGA Gremania Club, Berkeley at 2.00 pm. evey third Saturday.

LISMORE DISTRICT AMSTRAD COMPUTER CLUB
President: Max Muller (066 337 113)
Vice Pres: Nick Van Kempen (066 874 579)
Sec/Treas: Laurie Lewis (066 62 4542)
Venue: Goonellabah Public School, Ballina St. on the last Tuesday of each month from 6.30.
Mail: 20 Johnston Street, Casino, NSW 2470

S & W MILLER AMSTRAD USER'S CLUB
President: Wal Sellers (049 33 5459)
Secretary: Nikki Lee (049 33 5459)
Treasurer: Georgina Todd (049 66 2788)
Venue: Maitland Park Bowling Club, Maitland on the second Tuesday of each month at 7.30pm

MURWILLUMBAH AMSTRAD USERS GROUP
President: Nick Bruin (066 79 3280)
Vice Pres: Kel Philip (066 77 1440)
Secretary: Laura Goode (066 72 2499)
Treasurer: Lorraine Montgomery (066 72 1823)
Venue: Murwillumbah High Sch. on the 2nd Wednesday of each month at 7.00p.m.
Mail: c/o Post Office, Burringbar, 2483

NEWCASTLE AMSTRAD USER GROUP
President: John Harwood
Treasurer: Erica Harwood
Secretary: Janet Bowen
Venue: Kotara Public School, Park Avenue, Kotara on the first Tuesday of each month. Contact the above for meeting times.
Mail: PO Box 18, Charlestown, NSW 2290

PCW AUSTRALIA GROUP
President: David Springett (02 660 4515)
Secretary: David Chamberlain (047 77 4396)
Venue: Burwood RSL Club, 96 Shaftsbury Road, Burwood every second Tuesday of the month at 7.30 pm.
Mail: PO Box 97, Annandale, NSW 2038.

PORT MACQUARIE AMSTRAD USERS GROUP
Mail: Craig Tollis, Box 584, Pt. Macquarie, 2444.

SYDNEY AMSTRAD COMPUTER CLUB
President: Tom Caldwell (02 661 7573)
Sec/Treas: Reed Walters (02 560 9487)
Venue: Camdenville Comm. Ctr., Newtown on the 1st Saturday of every month at 2.00 p.m. For more details contact the Secretary between 6.00 p.m. and 9 p.m.
Mail: PO Box 423, Matraville, 2036

SYDNEY PC1512 USER GROUP
Contact: Geoff Craine (02 76 6467) A/H (02 412 9213) B/H
Venue: To be arranged; meeting initially on the third Tuesday of each month at 7.00 pm.

QUEENSLAND

BRISBANE AMSTRAD COMPUTER CLUB
President: John O'Connor (07 271 3350)
Vice Pres: John Digby (07 351 2553)
Secretary: Bob Ashe (07 355 5699)
Treasurer: Ivan Dowling (07 269 8795)
Tech. Editor: Franz Hendrickx (07 356 0633)
Venue: Main meetings in Room 15a of Junction ParkState School, Waldheim St., Annerley starting at 7.30p.m on the 1st Tues. of the month.. Another is held at Wynnum Central State H.Sch, Florence St., Wynnum Central on the 3rd Saturday of each month at 1.00p.m. The coordinator is Warren Kennedy (07 351 4232). A third is held at Newmarket State Sch., Banks St., Newmarket on the second Saturday of each month at 1.30p.m. The co-ordinator is Cherry Shrier (07 351 6179).
Mail: PO Box 167, Alderley, Qld. 4051

BUNDABERG AMSTRAD USER'S GROUP
President: Ray Babbidge (071 72 1223)
Secretary: Clive Barrett (071 71 3668)
Treasurer: Sheila Coe (071 72 8884)
Venue: The third Tuesday of the month. For more details contact the above.
Mail: 11 Laack St., Bundaberg, QLD 4670.

CABOOLTURE AMSTRAD USER GROUP
President: John D'Archambaud (071 95 4860)
Secretary: Stephen Yench
Treasurer: Craig Deshon
Venue: Contact above number for more details.

CAPRICORN AMSTRAD USERS GROUP
President: Graeme Annabell (079 27 4915)
Sec/Treas: Anthony Trost (079 33 1951)
Venue: Waraburra State School, Johnson Road, Gracemere on the first Friday of each month at 7.00 pm.
Mail: 4 Sunrise Crescent, Gracemere, 4702

COMPUTER USER GROUPS OF AUSTRALIA Pittsworth Branch
President: David Siebuhr
Contact: Ron Langton (076 931 690)
Venue: Every first Tuesday of every month from 5 pm. at the St. Peter Lutheran Church Hall, Grand Street, Pittsworth.
Mail: CUGA, PO Box 166, Pittsworth, 4356

GOLD COAST AMSTRAD USER GROUP
President: Mark Abbott (075 31 2114)
Treasurer: Pam Scott
Secretary: Mary Maclaren
Venue: Benowa State High School, Mediteranean Drive, Benowa on the first Saturday of each month at 2.00 pm.
Mail: 17 Ewan Street, Southport, Qld 4215

HERVEY BAY - MARYBOROUGH AMSTRAD COMPUTER USER GROUP
President: Ian Jardine (071 28 3688)
Vice-Pres: Gerhard Schulze
Sec/Treas: Les Patford (071 28 9737)
Venue: The first Thursday of each month at 7.00 alternating between the Hervey Bay Senior College and Maryborough TAFE College. Contact the above for more details.
Mail: Les Patford, PO Box 24, Torquay, Q 4657

IPSWICH AMSTRAD USER GROUP
Contact: Peter Wighton (07 288 4571)
Venue: Every second Wednesday from 7.15 p.m. at Bremer High School, Blackstone Rd, Raceview

MACKAY AMSTRAD USER GROUP
Contact: Des Mulrealiey (551 409)
Ron Coates (547 222)
Venue: Meet every second Sunday morning. Contact the above for location and time.

PENINSULA AMSTRAD CLUB (amalgamated with BACC)
President Ivan Dowling (07 269 8795)
Treasurer Keith Johnston (07 203 2339)
Secretary Tracie Payne (07 267 6645)
Venue: Kippa-Ring State School Library, Elizabeth Avenue every third Tuesday of the month at 7.30 pm.

SOUTHSIDE AMSTRAD USER GROUP (QLD)
President: Michael Toussaint (07 200 5414)
Vice-Pres: Peter Incoll (07 208 2332)
Secretary: Mick Howe (07 209 1839)
Treasurer: Wayne Stephens (07 287 2459)
Librarian: Carol Watts (07 287 2882)
Venue: Loganlea State High School (in the Communications Room) every 3rd Sat. of the month starting at 2.00 p.m.A Basic programming course is held fortnightly.
Mail: 10 Carramar St, Loganlea, 4204

TOOWOOMBA AMSTRAD USERS GROUP
President: Stephen Gale (076 35 5001)
Vice-Pres: Priscilla Thompson (076 35 5092)
Secretary: Adrian Dunsmore (076 91 1561)
Treasurer: Edwin Gerlach (076 33 1054)
Venue: Toowoomba Education Centre, Baker Street, Toowoomba on the 4th Monday of each month starting at 7.30 pm.

TOWNSVILLE AMSTRAD USER GROUP
President: Ian Wallace (077 73 1798)
Vice Pres: Doug Selmes (077 79 6011 xt 252)
Treasurer: Chris Nisen (077 79 6299)
Secretary: Alister Buckingham (077 73 3955)
Venue: Science Block of the Kirwan High School in Thuringowa Drive on the first and third Tuesdays each month at 7.30pm.

THE WARWICK AMSTRAD USER GROUP
President: Mrs. D. Christensen
Secretary: John Wode (076 61 5176)
Treasurer: Neville Christensen

WEIPA AMSTRAD USERS CLUB
President: Andrew Seaborn
Vice-Pres: Dave Wootton
Treasurer: Frances Casey
Secretary: Gary Chippendale (070 69 7448)
Venue: Noola Court in Weipa. Contact above for more details.
Mail: 15 Noola Court, Weipa, QLD 4874.

WESTERN SUBURBS AMSTRAD USERS GROUP
President: Peter Wighton (07 288 4571)
Secretary: Jimmy James (07 376 1137)
Contact: Keith Jarrot (07 376 3385)
Venue: The Jamboree Heights State Primary School, 35 Beanland Street, Jamboree Heights at 1.30 p.m. on the first Saturday in each month.
Mail: Jimmy James, 36 Penong Street, Westlake, Brisbane 4074.

TASMANIA

SOUTHERN TASMANIAN AMSTRAD USER CLUB
President: Frank Self (002 49 5499)
Secretary: Peter Campbell
Treasurer: Cindy Campbell
Publ. Off: Danny Brittain (002 47 7070)
Venue: Elizabeth Matriculation College on the first Wednesday of each month from 7.30 pm.

NORTHERN TASMANIA AMSTRAD COMPUTER CLUB
President: Russell Lockett (003 44 8972)
Treasurer: Keith Chapple (003 26 4338)
Secretary: Shane Crack (003 97 3298)
Publicity: Michael Watts (003 31 1944)
Librarian: Patrick Salter (003 97 3379)
Junior Del: Bobby Lockett (003 44 8972)
Venue: Launceston Community College (opposite Park Street) in Room 11 on the first Saturday of the month at 5.00 p.m.

N.W. COAST AMSTRAD USER'S CLUB
President: Peter Gibson (004 24 7586)
Treasurer: Robert Simpson
Secretary: Karen Stevenson
Venue: Hellyer College, Mooreville Rd, Burnie on the third Friday of each month at 6.30.
Mail: Secretary, 112 Payne St., Burnie 7320

NEW ZEALAND

THE AMSTRAD COMPUTER CLUB OF CANTERBURY
Contact: Christine Linfoot 897 413
Ian Orchard 524 064
Venue: Four Avenues School, cnr. Madras Street and Edgeware Road, Christchurch 1 on the fourth Wednesday of each month.
Mail: Box 23.082 Bishopdale, Christchurch, NZ.

WELLINGTON AMSTRAD USER GROUP
Contact: Tony Tebbs 791 072 (evgs)
Venue: Cafeteria, NZ Fisheries Research Division, Greta Point, on the first Monday of each month from 7.30 pm.
Mail: PO Box 2575, Wellington, New Zealand.

User Group Contact List

Please note that the following names are listed as contacts for new user groups and should NOT be viewed as a problem solving service.

NSW

Nick Rogers	Bogan Gate	(068) 64 1170
Chris Craven	Canowindra	(063) 44 1150
Trevor Farrell	Coolah/Mudgee area	(063) 77 1374
David Higgins	Cooma/Monaro	(064) 52 1531
Paul Wilson	Moruya	(044) 74 3160
Frank Humphreys	Mummulgum	(066) 64 7290
Reuben Carlsen	North Sydney	(02) 957 2505
Stephen Gribben	Singleton	(065) 72 2732
Ken Needs	St. Ives	(02) 449 5416
Chas Fletcher	Toongabbie	(02) 631 5037
Nick Bruin Snr.	Tweed Valley	(066) 79 3280

VIC

Brian Russell	Ballarat	(053) 31 2058
C. van de Winckel	Ballarat	(053) 313 983
Rod Anderson	Camperdown	(055) 93 2262
Paul Walker	Heathmont	(03) 729 8657
Terry Dovey	Horsham	(053) 82 3353
Andrew Portbury	Leongatha	(056) 62 3694
R. Kernebone	Miildura	(050) 23 3708
Angela Evans	Mt. Evelyn	(03) 736 1852
Keith McFadden	Numurkah	(058) 62 2069
Maureen Morgan	Warnambool	(055) 67 1140

QLD

Beryl Schramm	Boyne Island	(079) 73 8035
Steven Doyle	Caloundra	(071) 91 3147
Ric Allberry	The Gap	(07) 300 1675
Neville Eriksen	Gladstone	(079) 78 2418
Kylie Telford	Goondiwindi	(076) 76 1746
D.F. Read	Ingham	(077) 77 8576

SA

Lindsay Allen	Murray Bridge	(085) 32 2340
Michael Spurrier	Murray Bridge	(085) 32 6984
Mrs. S. Engler	Penola	(087) 36 6029

WA

Graeme Worth	Scarborough	(09) 341 5211
P.M. Nuyens	Waroona	(095) 33 1179

TAS

Conal McClure	Scottsdale	(003) 52 2514

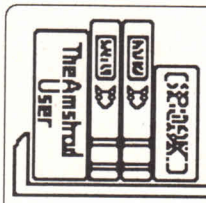
NT

G.P. Heron	Tiwi	(089) 27 8814

For new readers: if you want to start a group in your area just drop us a line with the relevant details and we will add you to the list.

The Amstrad User
MAIL ORDER SHOPPING

Send orders to The Amstrad User
1/ 245 Springvale Road,
Glen Waverley, Victoria 3150
Tel: (03) 233 9661



BOOKS

CPC TITLES

	Subscriber Price	Normal Price
Advanced Amstrad Programming Techniques	$23.95	$25.95
Advanced User Guide	$19.75	$21.95
Amstrad Compendium	$21.65	$23.95
Basic BASIC Temp O/S - Due Aug		
Childs' Guide to the Amstrad Micro	$12.65	$13.95
Disc System, The Amstrad CPC 464	$26.15	$28.95
Filing Systems and Data Bases for the CPC464	$28.95	$30.95
Graphics Programming Techniques	$23.45	$25.95
High Energy Programs for the Amstrad	$ 9.95	$ 9.95
Ins and Outs of the Amstrad	$21.65	$23.95
Machine Code for Beginners	$18.95	$21.95
Machine Lang. for the Absolute Beginner	$21.65	$23.95
Making Music on the 464/664 (OK for 6128 too)	$21.75	$23.95
Powerful Programming for Amstrad 464/664/6128	$23.55	$27.05
Practical "C"	$26.80	$29.65
Ready made Machine Language routines	$21.65	$23.95
Structured Programming on 464/664/6128	$27.95	$30.95
Whole Memory Guide - 464	$27.95	$30.95
Writing Adventure Games on 464/664	$21.65	$23.95

LOGO TITLES

LOGO Pocketbook	$16.95	$17.95
Practical Logo on the Amstrad (under CP/M+)	$25.95	$27.95
Using DR Logo on the Amstrad (under CP/M 2.2)	$35.95	$37.95

PCW TITLES

Advanced LocoScript on the Amstrad PCWs <<N E W>>	$37.50	$39.50
Desktop Publishing with the Amstrad PCW <<N E W>>	$33.95	$35.95
LocoScript Pocketbook	$16.95	$17.95
LocoScript2 and the Amstrad PCW Computers - a complete guide	$41.00	$43.00
Mallard Basic - Introduction and Reference by Locomotive	$37.50	$39.50
Mastering the Amstrad PCW 8256/8512	$29.50	$32.25
Program your PCW	$29.95	$32.95

CP/M TITLES

CP/M Plus Handbook - Operator's and Programmer's guide for the Amstrad CPC6128 and PCW 8256 and PCW 8512 (Soft 971) by Digital Research Inc. Over 500 pages of everything you need to know about CP/M Plus. This revised Edition now includes GSX supplement	$49.95	$52.95

PC TITLES

Basic2 User Guide by Locomotive Software	$37.50	$39.95
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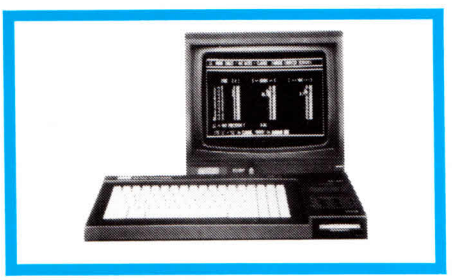

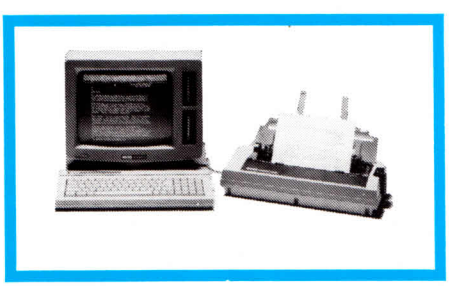

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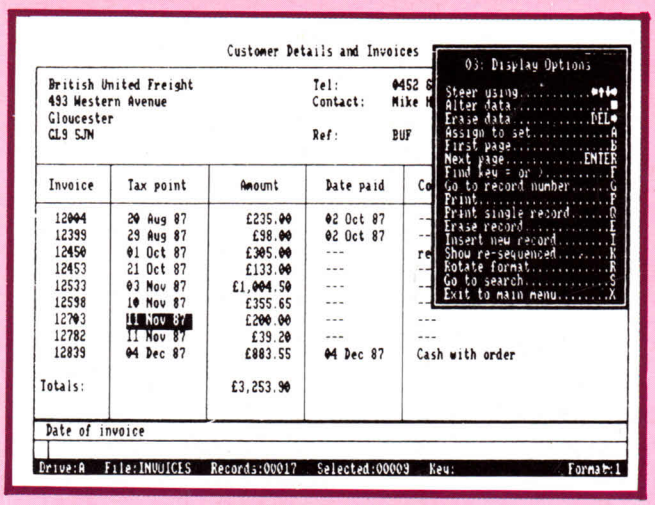

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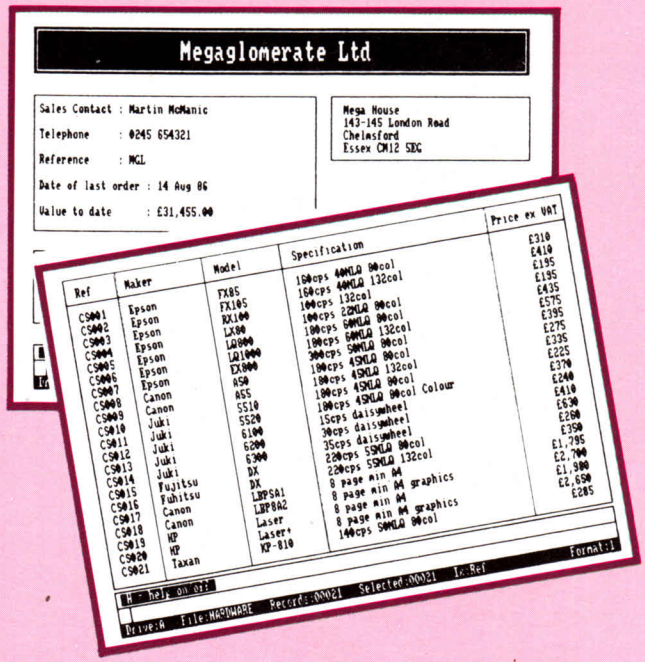

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