

COMPUTING

WITH THE

AMSTRAD PCW

Vol. 1 No. 6 October 1987 £1.25

S-t-r-e-t-c-h

your disc
directories
to the limit

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Devpac80

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PLUS

all the latest games

***Pioneering PCW
makes zoo history***

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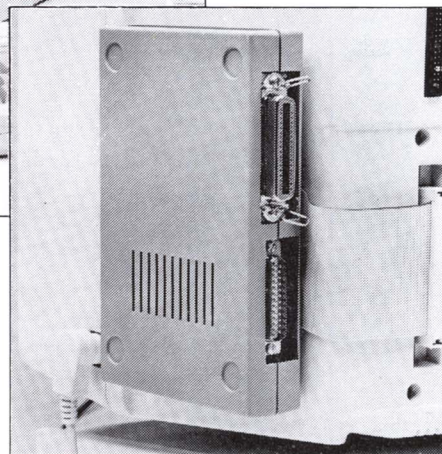
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The photograph shows Peartree's RS232 interface as well as our disc drive.

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AMP004



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A disc drive that uses cheap available media 5 1/4" discs), is pleasant to look at, easy to install and a pleasure to use. An extra advantage of our disc drive is that with the 40/80tk switch fitted you can have a 720k disc drive using it normally, and with a flick of the switch load the PC/MS DOS Transfer utility and transfer all your IBM/MS DOS Compatible files.

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| | | |
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| AMH004 | OPTION 2 Option 1 + box of discs | £158.00 |
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PC1512

- 512K of main memory expandable to 640K
- Standard 5 1/4" disc drive(s)
- 10 and 20 Mb hard disc versions available
- Mono or colour monitor with compatible graphics standards
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- Complete with Microsoft 3.2 and MSDOS Digital Research DOS PLUS GEM Graphics Environment Manager, Desktop, and GEM Paint (all mouse driven), GEM BASIC2

| | | |
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PCW SOFTWARE

| | | |
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| AMS003 | POCKET WORDSTAR Built in Mailmerge The industry standard ASCII text editing | £32.00 |
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| AMS050 | LOCOSPELL | £33.95 |
| AMS051 | LOCOMAIL | £33.95 |
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| AMS011 | SUPERCALC 2 TUTORIAL 2 audio cassettes | £9.00 |
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| AMS008 | DBASE II The industry standard database Complete with comprehensive manual | £89.00 |
| AMS036 | BRAINSTORM Project and time management Input thoughts and let the software help you arrange them, link ideas etc | £39.00 |
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PCW SOFTWARE

| | | |
|--------|---|----------------|
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| AMS029 | HISOFT THE KNIFE Powerful disc sector editor CP/M file handling utilities Comprehensive disc hackers manual | £10.00 |
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A must for any serious Amstrad user.

| | | |
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PCW HARDWARE

| | | |
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| AMH002 | PCW 8512 | £489.00 |
| AMH007 | AMX MOUSE | £69.52 |
| AMP002 | THREE INCH DISC BOX Holds 20 discs Will take 3" or 3.5" discs | £11.00 |
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All prices are exclusive of VAT.

PLEASE USE OUR CODES WHEN ORDERING

PC SOFTWARE

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| IBS0625 | CYRUS 2 CHESS | £17.38 |
| IBS0626 | ALEX HIGGINS SNOOKER | £17.38 |

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You might just crack the secret code - we've published last month's missing listing!

MASTERFILE 8000

FOR ALL AMSTRAD PCW COMPUTERS

MASTERFILE 8000, the subject of so many enquiries, is now available.

MASTERFILE 8000 is a totally new database product. While drawing on the best features of the CPC versions, it has been designed specifically for the PCW range. The resulting combination of control and power is a delight to use.

Other products offer a choice between fast but limited-capacity RAM files, and large-capacity but cumbersome fixed-length, direct-access disc files. MASTERFILE 8000 and the PCW RAM disc combine to offer high capacity with fast access to variable-length data. File capacity is limited only by the size of your RAM disc.

A MASTERFILE hallmark is the provision of multiple, user-designed display formats. This flexibility remains, but now it's even easier. With MASTERFILE 8000 you design your formats "live"; no more questionnaires, just move your format effects around the screen using the cursor keys!

Record updating is even easier than before — just steer your cursor to any field on the screen and then insert/erase/alter as required.

Special options are provided for handling dates and surnames, and column totals can be generated.

All screen work is done graphically — and hence we offer unique panel, box, and ruled line options. Choose the line spacing at pixel resolution — you will be amazed how much clearer 9-pixel lines are than the usual 8-pixels. (Study the picture.) And all this faster than CP/M normally lets you paint the screen! PCW printer functions, under menu control, are provided.

Any file can make RELATIONAL references to up to EIGHT read-only keyed files, the linkage being effected purely by the use of matching file and data names.

You can import/merge ASCII files (e.g. from MASTERFILE III), or export any data (e.g. to a word-processor), and merge files. For keyed files this is a true merge, not just an append operation. By virtue of export and re-import you can make a copy of a file in another key sequence. New data fields can be added at any time.

File searches combine flexibility with speed. (MASTERFILE 8000 usually waits for you, not the other way around.) You can even assign subsets of a file into one or more of seven pigeon-holes for subsequent reference or further manipulation.

Megaglomerate Ltd

Sales Contact : Martin McManic
 Telephone : 0245 654321
 Reference : MGL
 Date of last order : 14 Aug 86
 Value to date : £31,455.00

Mega House
 143-145 London Road
 Chelmsford
 Essex CM12 5DC

| Ref | Maker | Model | Specification | Price ex VAT |
|-------|---------|--------|---------------------------|--------------|
| C5001 | Epson | FX105 | 100cps 40x10 00col | £310 |
| C5002 | Epson | FX105 | 100cps 40x10 132col | £410 |
| C5003 | Epson | FX100 | 100cps 132col | £195 |
| C5004 | Epson | LX300 | 100cps 20x10 00col | £435 |
| C5005 | Epson | LX300 | 100cps 40x10 00col | £375 |
| C5006 | Epson | LX300 | 100cps 40x10 132col | £395 |
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| C5008 | Epson | LX300 | 100cps 40x10 00col | £335 |
| C5009 | Epson | LX300 | 100cps 40x10 132col | £225 |
| C5010 | Canon | AS5 | 100cps 40x10 00col | £370 |
| C5011 | Canon | AS5 | 100cps 40x10 00col | £240 |
| C5012 | Canon | SS10 | 100cps 40x10 00col Colour | £410 |
| C5013 | Juki | SS20 | 15cps daisywheel | £50 |
| C5014 | Juki | SS20 | 30cps daisywheel | £50 |
| C5015 | Juki | SS20 | 35cps daisywheel | £1,795 |
| C5016 | Juki | SS20 | 200cps 40x10 00col | £2,700 |
| C5017 | Juki | SS20 | 200cps 40x10 132col | £1,900 |
| C5018 | Fujitsu | DX | 8 page min 04 graphics | £2,650 |
| C5019 | Fujitsu | DX | 8 page min 04 graphics | £285 |
| C5020 | Canon | LBP042 | 8 page min 04 graphics | |
| C5021 | Canon | LBP042 | 8 page min 04 graphics | |
| C5022 | HP | Laser+ | 100cps 30x10 00col | |
| C5023 | HP | Laser+ | | |
| C5024 | Taxan | XP-810 | | |

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British United Freight
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 Gloucester
 GL3 5JN

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 Contact: Mike N
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| Invoice | Tax point | Amount | Date paid | Co |
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| 12004 | 20 Aug 87 | £235.00 | 02 Oct 87 | |
| 12399 | 29 Aug 87 | £98.00 | 02 Oct 87 | |
| 12450 | 01 Oct 87 | £305.00 | | re |
| 12453 | 21 Oct 87 | £133.00 | | |
| 12533 | 03 Nov 87 | £1,004.50 | | |
| 12538 | 10 Nov 87 | £355.65 | | |
| 12703 | 11 Nov 87 | £200.00 | | |
| 12782 | 11 Nov 87 | £39.20 | | |
| 12839 | 04 Dec 87 | £883.55 | 04 Dec 87 | Cash with order |
| Totals: | | £3,253.90 | | |

Date of invoice

Drive: R File: INVOICES Records: 00017 Selected: 00003 Key: Format: 1

FIELD-TO-FIELD CALCULATION is available, using any mixture of terms and arithmetic operators + - * / ().

MASTERFILE 8000 is totally menu-driven, fully machine-coded, and comes with example files and a detailed manual. We claim (modestly) that you will not find another filing system with such power, flexibility, and friendliness.

MASTERFILE 8000 costs £49.95 including VAT and P&P to anywhere in Europe. Elsewhere please add 20% for air-mail service, ACCESS/VISA/MASTERCARD orders are welcome, written or telephoned, quoting card expiry date. Make cheques payable to "Campbell Systems".

Our normal response is return of post, 1st class.
CAMPBELL SYSTEMS (Dept CWA)
 7 Station Road, EPPING, Essex CM16 4HA,
 England. Tel: (0378) 77762/3

Keyed files are maintained automatically in key sequence, with never any need to sort. You can have unkeyed files too, where records can be inserted at any point in the file.

DTP in awards race

A BUDGET-priced desktop publishing package for the Amstrad PCW has been named as a finalist in the prestigious British Microcomputing Awards 1987.

The Desktop Publisher is from Database Software (061-480 0171), the company best known for its Mini Office package, which itself reached two BMA finals in the same year.

With this package, Database now finds itself in a shortlist of three in the Home/Small Business Software of the Year category.

The Desktop Publisher exploits the full graphics potential of the PCW to produce newsletters, flyers, adverts, letterheads and company reports – all for £29.95.

Database Software is also offering a complete desktop publishing system which includes The Desktop Publisher software, an AMX mouse and serial interface for £79.95.

Templates package

A LOCOSCRIPT 2 version of TempDisc has been released by Thurston Brown (0395 277496).

TempDisc L2 is a collection of templates for menus, letterheads, invitations, invoices and any other formal printed material.

Essentially it is a set of macro commands with all the printer control codes already embedded into the page format. TempDisc does away with the need for the user to remember the LocoScript printer commands.

Hotel menus with borders can be printed out along with 14 instant letterhead options. Price £11.95.

8256 going down well in the USA

AMSTRAD has gained a foothold in the important United States market with the PCW8256.

It is estimated that 70,000 of the machines have been sold to date.

And with current discounting by American dealers this figure is soon expected to reach 100,000.

The relative success of the machine has even resulted in the formation of an American user club.

Run by Al Warsh, an engineer based in Southern California, the organisation has members all across the USA – from Maryland over to Hawaii.

"Just as in Britain, our people have bought the

machines because they are good word processors – at the right price", he told *Computing with the Amstrad PCW*.

Originally priced at \$600 in the States, the PCW8256 can now be bought for \$400.

"This offers exceptional value as there is nothing else like it over here", says the user group boss.

Al Warsh uses his 8256 to produce the club's bi-monthly publication – the Amstrad SIG Newsletter – which provides up to date information about the machine.

The group even has a member who lives in Wales.

"We use the paper to exchange ideas and answer queries – and generally get

the most out of our Amstrads," he says.

"In fact, one of the most sought after publications after our own as far as we are concerned is *Computing with the Amstrad PCW*."

But what does the future have in store for the PCW in the USA?

"We feel the 8256 will carry on selling well over here for the time being at least", says Al Warsh, "but when the PCW9512 goes on sale later this year it may not have much impact.

"We have heard that the price will be around \$800 – and that is far too expensive for a machine of this nature.

"Don't forget you can buy PC clones for less".

BIG SHOW MOVES NORTH

THE new PCW9512 will take centre stage when the three day Amstrad Computer Show opens its doors in Manchester on October 23. The venue for what will be the biggest computer specific show ever held outside of London is the 100,000 sq ft G-Mex Centre, which took three years to develop from the shell of a listed former railway station in the city.

However, the new model won't force

its predecessors – the PCW8256 and PCW8512 – to take a back seat when the Amstrad exhibition moves North.

A survey of exhibitors has revealed that at least 50 new packages are currently being developed – though details are being kept secret – for the established PCW models.

Money-saving advance ticket details are on Page 27.

Amsoft learning centres expand

INCREASED demand from PCW owners for expert help has prompted a new drive by the Official Amstrad User Clubs to extend its nationwide network of Amsoft learning centres.

As PCW sales boomed, the group became aware that many users were in need of professional training.

The User Clubs (091-510 9595) devised a learning strategy and began to build up a network of centres.

Each time an Amstrad machine is sold, details of the courses are sent to the new

owner. Leaflets are going out at the rate of 2,000 a week.

Five specific areas of training have been identified: Introduction to the machine and computer literacy, word processing, spreadsheets, databases, and accounts.

Each area can have its own four-hour course based on specific software. There is a computer for each student with experienced help always on hand.

At the end, users take away an audio and disc-based summary and revision

materials. Learning Centres director Charles Joyce said there had been an enormous response to the training programme and some excellent feedback.

"We are now looking at extending the range of our courses to respond to users' needs", he said.

"We need more centres to add to the network so we can make it even more convenient for people to take advantage of our training".

Each course costs £49.95 for club members and £55 for others.

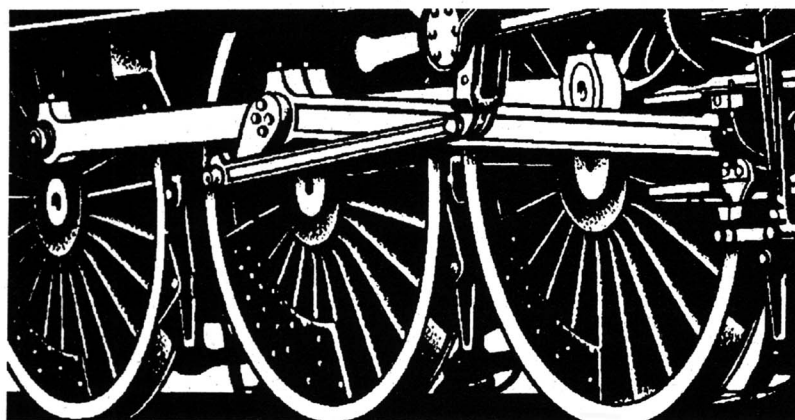
When Amstrad wanted to make a better PCW, they bought LocoScript 2

When you want to make your PCW better, you too can buy LocoScript 2[†]

Locomotive Software's LocoScript 2 will be supplied with the new PCW9512, but is available now for your PCW8256 or PCW8512.

LocoScript 2 costs just £19.95, including VAT and UK postage ([†]but of course, it won't turn your 8256/8512 into a 9512).

For full details of LocoScript 2 contact Locomotive Systems or your local dealer.



LocoScript 2 gives you

Quicker use

- Fast movement around documents
- Jump direct to a page
- Save and continue from last position

Better Results

- Choice of printers
- Improved characters on the built-in printer
- New characters (including modern Greek /Cyrillic)
- Special scientific characters
- Use accents with any character

Easier Operation

- Multiple printed copies
- Disc copying direct from LocoScript
- New user guide with glossary and quick reference
- Improved FIND and EXCHANGE

Compatibility

- Familiar feel of LocoScript menus
- Use existing LocoScript documents
- Free upgrade of LocoMail and LocoSpell at the time of purchase

LocoScript 2 from LOCOMOTIVE SYSTEMS

Allen Court, Dorking, Surrey, RH4 1YL
(0306) 887902

Authors indexer

AN indexer designed for use by authors has been released for the PCW by Dogsbod Software (051-608 8175).

All entries are typed in along with their respective page numbers. If an entry recurs on the same page only the first three letters have to be typed in to add its new page numbers to the index.

Up to 2,000 entries can be handled by the PCW8256 and 6,000 entries on the PCW8512. Simple one key commands put entries into the style required.

Dogsbod Indexer features an on-screen procedure which tells the user which paragraph of the manual should be referred to at each stage in the program.

Price £45.

Protex price cut

THE word processing program Protex for the PCW has been reduced in price from £79.95 to £59.95 by Arnor (0733 239011).

Arnor stresses that it is the same version of Protex reviewed in the April edition of *Computing with the Amstrad* and not a cut down copy.

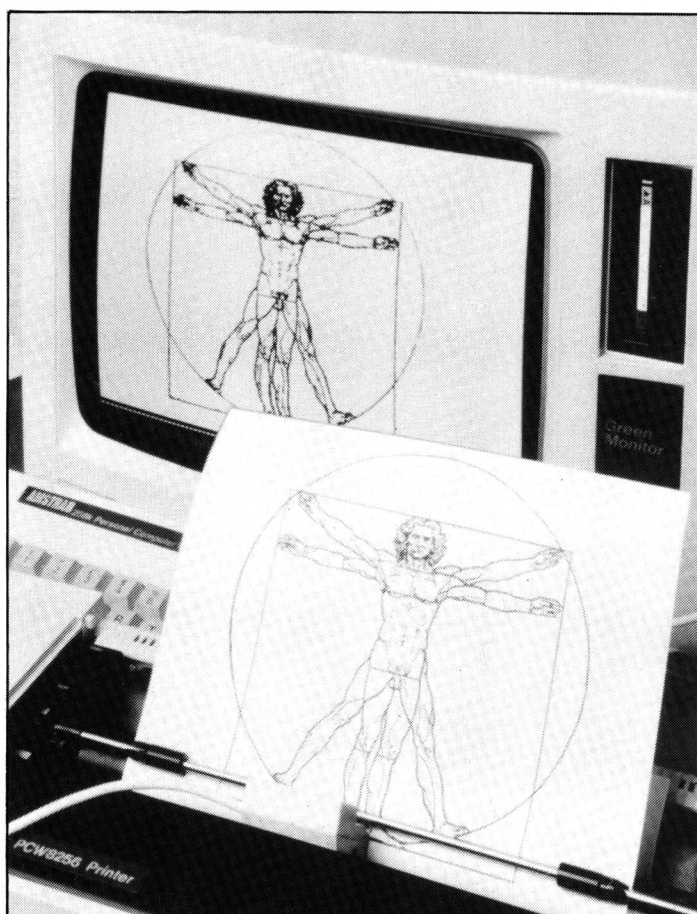
According to Arnor the new low price reflects the increasing demand for the program and also keeps it in line with the Amstrad PC version just released.

Statistics cruncher

A PACKAGE aimed at taking the hard work out of statistical analysis has been launched by Goode Software.

Quasar II is aimed at the student and professional market for both experienced statisticians and novices.

Goode (0222 42448) says the package is a breakthrough in terms of convenience and price at £22.95.



MasterScan in action

Fax from a PCW printer

A SCANNER which effectively converts the Amstrad PCW into what industry experts are claiming to be the world's cheapest fax machine has been launched by Database Software.

Within a week of its launch it was chosen as a finalist in the British Microcomputing Awards.

Known as MasterScan, it clips on to the PCW printer, enabling text or illustrations - when fed into the printer - to be automatically transferred on to the computer screen.

Using a suitable modem and software, scanned images can then be transmitted to another PCW anywhere in the world.

MasterScan also offers a real alternative to spending hundreds of pounds on a video digitiser.

The optical scanner attached to the print head captures the image line by line. The result can then be combined with text or other graphics to create newsletters, leaflets, posters and so on.

The product can also be used with do-it-yourself publishing packages.

MasterScan comes with its own easy-to-use software for £69.95.

New edge for Knife

A PROGRAM which provides an answer to defective discs - Knife from Hi-soft - has been "resharpened". The upgrade, Knife Plus, includes a sector copier that allows discs to be copied, ignoring the damaged sectors.

A build-file option allows

the user to copy sectors or blocks one-by-one to a new file on any drive.

The menu provides the options of copying discs, formatted or not, from either drive A or B, or entering Knife Plus for sector editing. Price £19.95.

Desktop Publishing Yearbook

THE world's first yearbook dedicated to the rapidly growing Desktop Publishing industry is to be published in October.

The Desktop Publishing Yearbook is timed to coincide with the most important exhibition event in the DTP calendar - The Desktop Publishing Show 1987 - to be held at the Business Design Centre, London, from October 15 to 17.

Published with the co-operation of PIRA, the UK

Technology Centre for the Printing and Publishing industry, the yearbook will become the "bible" of desktop publishing.

As well as comprehensive price-performance details on all the most important hardware and software in the field, the yearbook will also carry detailed practical articles aimed at both the newcomer to DTP and the experienced user.

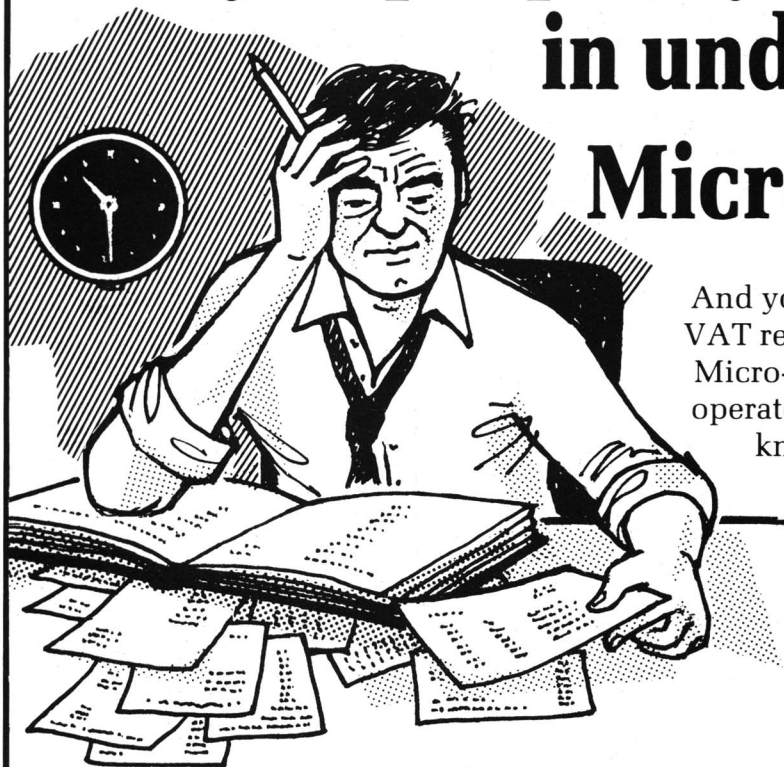
Topics covered will include single-user and

multi-user systems, publishing software, laser and other printers, dot matrix printers, computer typesetting, magazine and newspaper composition, documents and forms creation, bureau services, and many other key topics.

The yearbook will be on sale, price £5, at bookstalls throughout the country.

But visitors to the Desktop Publishing Show on October 15 to 17 will receive a free copy.

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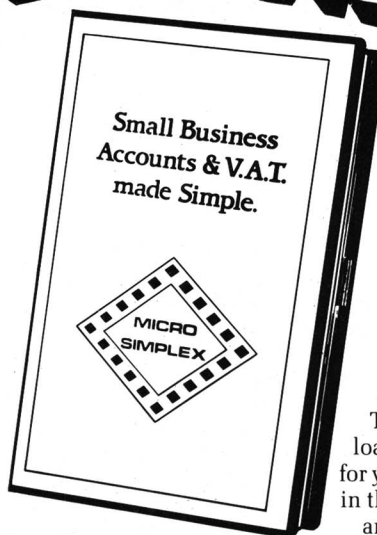
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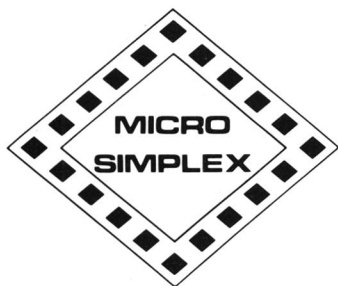


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NUMERIC SUMS IT ALL UP

The fifth part of Michael Noels' helpful guide through the micro programming jungle takes variables a step further

LAST month we talked about string variables and how to get the best from them in your programs. However there is another kind of variable – the numeric variety.

These are labels just as much as string variables are, only they label numbers in such a fashion that we can do sums with them. Try running Program I.

Line 20 uses the numeric variable *A* to label the number 10. Notice that for a numeric variable we can simply use a letter of the alphabet without following it with the \$ sign necessary for a string.

Also since it isn't a string, the value we are giving the variable doesn't have to be in quotes. Hence line 20 is simply:

```
20 A = 10
```

Line 30 prints out, not *A*, of course, but the value that *A* labels, which is 10.

The most interesting part is line 40. Here we multiply the number that *A* labels by two, so that the line prints out 20.

That's the useful thing about numeric variables – you can do sums with them.

Notice that the micro did the calculation, then printed out the result. It didn't do anything wild such as printing out $2 * 10$ or whatever.

A sum such as $2 * A$ or $A + 8$ is known as a numeric expression. When it encounters a numeric expression, the micro works it out and prints the answer, rather than printing the expression itself.

Try running Program I with the following versions of line 40:

```
40 PRINT A + 8
40 PRINT A / 4
40 PRINT A * A
```

If you've been following what I've said so far you could be forgiven for

```
10 REM PROGRAM I
20 A = 10
30 PRINT A
40 PRINT 2 * A
```

Program I

thinking that string variables are for labelling words, and numeric variables for numbers.

Life is never that simple. You can, and often do, use string variables for labelling numbers – the point is that you can't do sums with them. Try Program II, which is based on Program I, using the string *A\$* instead of the numeric *A*.

```
10 REM PROGRAM II
20 A$ = "10"
30 PRINT A$
40 PRINT 2 * A$
```

Program II

The "Type mismatch in 40" that you receive shows that you are attempting to do a sum with the wrong type of variable – string instead of numeric.

As with string variables, we do not have to (and should not) restrict ourselves to single-letter labels for numeric variables.

We can use words in a manner strictly analogous to string variables, save that we omit the final \$ sign. And, of course, we don't put what we are labelling in quotes, since it isn't a string.

Again, capitals and lower case are considered to be identical so *A* is the same as *a*.

Have a look at Program III. This is meant to be a cheery greeting for someone when they run the program – the sort of thing I often use in my classes.

```
10 REM PROGRAM III
20 name$ = "Mike"
30 PRINT "Good to see you, "name$"
```

Program III

However as it stands it's a bit restricted – after all, only a small percentage of my students are called MIKE. What's really needed is some way for the Amstrad to find out the name of the person so that it can tailor the message to suit.

Program IV fits the bill. The trick here is the use of INPUT in line 30. In Program III, line 20 put the value MIKE into *name\$*. In Program IV the variable

```
10 REM PROGRAM IV
20 PRINT "What is your name";
30 INPUT name$
40 PRINT "Good to see you, " name$"
```

Program IV

isn't actually attached to a specific value – if you like, you give the program a label, but neglect to tell it what it's labelling. Instead you use:

```
INPUT name$
```

When the PCW reaches this line it waits until you PUT IN, or INPUT, the value you want *name\$* to have, and it actually puts a question mark on the screen.

You then type in the answer followed by Return, which, as always, sends it to the computer, which then carries on with the rest of the program.

So when you run the above program line 20 asks: "What is your name?". The micro then waits for you to type your reply and whatever you type in then becomes the value of *name\$* – even if you have lied.

Line 40 then prints out the message.

The point of all this is that in Program IV, as opposed to Program III, the value of *name\$* is not fixed initially, but is decided during the program by the response to INPUT.

This means that each student in the class can run the program and have the message tailored to himself.

Incidentally, line 20 is not strictly necessary, but it is only polite to tell people what kind of response you expect them to make. Otherwise they will be met with just a question mark, followed by a cursor – not too "user-friendly" as the jargon has it.

The semi-colon at the end of line 20

```
10 REM PROGRAM V
20 PRINT "How old are you";
30 INPUT age
40 PRINT "I don't believe you are "; age
```

Program V

Turn to Page 12 ►

PROGRAMMING

◀ From Page 11

"glues" the question mark, or prompt, as it is known, to the preceding "message". Running the program with it omitted should make this clear.

Remember, when you run Program IV and it asks for your name, you must type your reply then press Return.

If you make a typing mistake before you press Return, you can erase it with Delete. Once you've pressed Return, though, you're stuck with what you've typed.

You can use INPUT with numeric variables as well as strings. Program V demonstrates this. When you get the prompt, try typing in a word rather than a number and see what happens.

A slightly more serious application of INPUT allows you to calculate the product of two numbers, as Program

```
10 REM PROGRAM VI
20 PRINT "First number";
30 INPUT first
40 PRINT "Second number";
50 INPUT second
60 PRINT first " multiplied by
" second " gives " first*second
```

Program VI

VI demonstrates. Look carefully at line 60 and see if you can work out what's happening.

The variable *first* isn't in quotes, so the micro will print the number that *first* labels. "multiplied by" is printed literally since it is in quotes.

The numeric variable *second* is not in quotes – it may have them on either side, but the quotes on its left are already paired with the quotes on the far left, so they don't count.

The micro will, therefore, print out

the value of *second*. The word "gives" is printed literally, since it is in quotes. The expression *first*second* isn't in quotes, so the sum is done and the answer printed out. Figure 1 should help to make this clearer.

Finally, try altering Program VI so that it adds or subtracts pairs of numbers.

We've covered an enormous amount of ground here and I suggest that you spend a good while going over the programs. If you are having problems, re-reading the earlier chapters will probably help.

Above all, remember it's a "hands-on" course – you can't expect the examples to make sense until you've typed them in.

● Next month we'll move on to using loops and find out more about using INPUT.

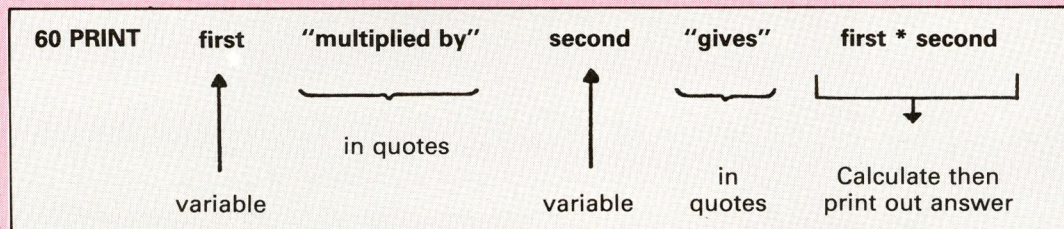


Figure 1: Mixing variables and strings in PRINT statements

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- There's a built-in calendar with days of the week, date, month and year – and it recognises leap years.
- There's also 50 bytes of battery-backed ram in the interface for you to use for other purposes.

The unit is powered by a rechargeable Ni-cad clock which should never need replacing, and there's a through connector so you can attach other interfaces.



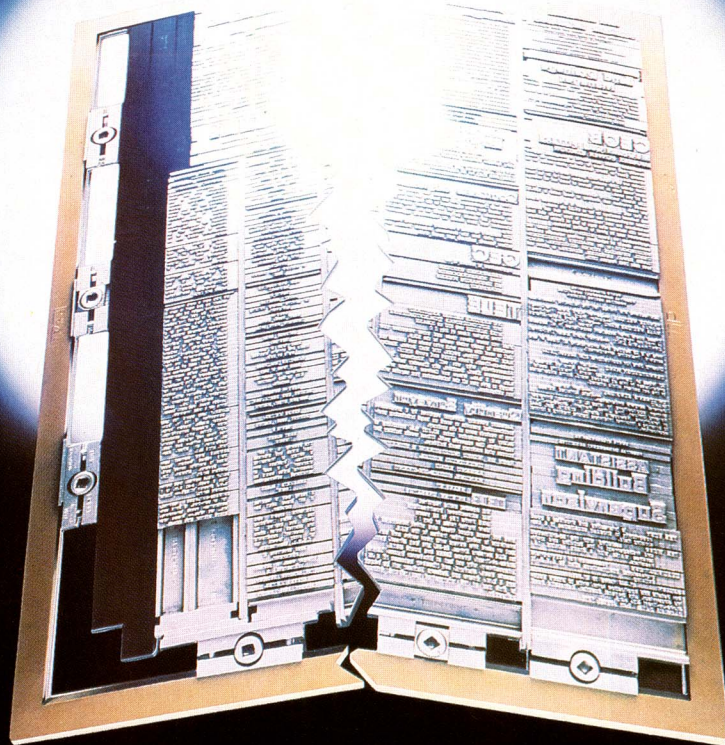
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A098

One for high flyers

Program: *Ace*
 Price: £19.95
 Supplier: Cascade Games,
 1-3 Haywra Crescent, Harrogate HG1 5BG.
 Tel: 0423 525325

YOUR AWAT (All Weather - All Terrain) jet fighter stands on the runway fully fuelled and armed, with a vast invasion fleet anchored just off shore.

Ground forces protected by massive air cover have landed and are advancing on your position. You are the last fighter pilot, but are you good enough to be called Ace?

Which weapons you have on board, and how many of each depends upon the selection you make at the start of the game. *Air Superiority* gives more Air to Air missiles, while *Naval Attack* supplies you with Air to Ship.

You will always start with 6000 Cannon rounds, used to bring down enemy aircraft.

Seated in the cockpit you examine the array of instruments. Velocity, altimeter and fuel gauges are situated on the left hand side, with the onboard computer screen, rear view and weapons console on the right.

The radar screen is placed in the middle of the panel with the compass immediately above and the pitch/

roll indicators below.

Open the throttle and slowly start moving down the runway, gently easing the nose up and increasing air speed, not forgetting to raise the undercarriage.

Climb higher and prepare to do battle with the foe, don't worry about finding them - they'll find you.

Armed with an assortment of weapons, your mission is to single-handedly eliminate the enemy and save your beloved country from invasion.

Two maps help you pinpoint the enemy bases. One gives an overview of the whole landscape showing the positions of you, the enemy, refuelling tankers and allied air bases. When studying it the game is paused to prevent you from crashing too often.

The other map only shows your immediate surroundings and allows you to keep control of the plane while homing in to obliterate your unsuspecting prey.

Running out of firepower is to be avoided, as you have to land and pick up more ammunition, at the same time replenishing your fuel supply.

If you do find yourself in a tight spot there's always the eject button, but this is only advisable in friendly airspace, when you'll be given another jet to con-

tinue fighting.

When fuel runs low you have two options. Either find an allied airbase to land at or try your best to refuel from the flying tanker, the altitude and speed of which are given by the onboard computer at regular intervals.

Matching speed and course with the tanker is no simple matter and crashing into it has been the cause of my untimely demise on several occasions. Landing can cause a few problems for inexperienced pilots, the main one being running out of runway before touch down.

The computer will tell you when you're flying over sea or land, and who owns the airspace you are currently in. There's not much point in going out to sea, as the ships aren't displayed on the maps until you've wiped out all the ground and air forces. Sadly I didn't manage this so I can't com-

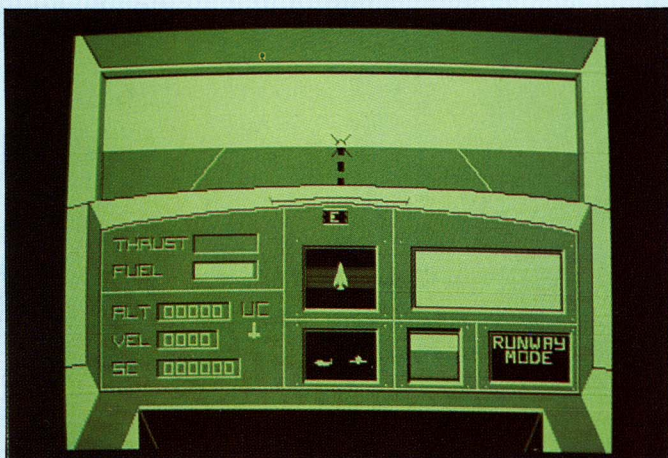
ment on the ships' fire power, but if the tanks and ground-to-air missiles are anything to go by, it should be pretty impressive.

The enemy graphics are quite spectacular and very smooth but the handling of the AWAT was rather jerky when using the keyboard.

Your short range radar will help you get behind them for a dog-fight style chase across the skies, but it does take some time getting used to. Select the weapon type, get the enemy in your sights and blast 'em out of the sky.

Unfortunately the game didn't work with my Kempston joystick interface, but is apparently fine with the one from Cascade.

Phil Lawson

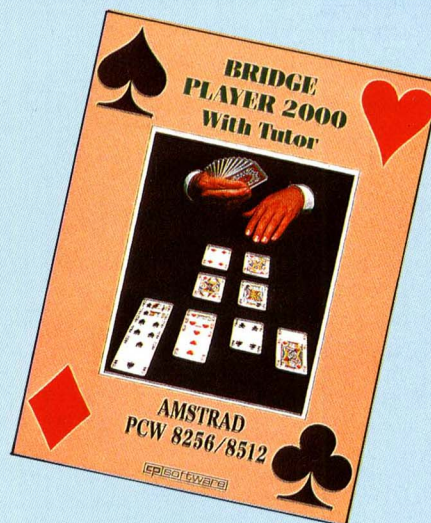


| | |
|-----------------------|---|
| Presentation | 8 |
| Graphics | 8 |
| Playability | 7 |
| Addictiveness | 7 |
| Value for money | 8 |
| Overall | 8 |

A Bridge too many?

Product: Bridge Player 2000
 Price: £19.95
 Supplier: CP Software,
 Stonefield, 198 The Hill,
 Burford, Oxfordshire OX8
 4HX.
 Tel: 099382 3463

Product: Colossus Bridge 4
 Price: £15.95
 Supplier: CDS Software,
 CDS House, Beckett Rd,
 Doncaster DN2 4AD.
 Tel: 0302 21134



HAVE you ever wanted to learn to play Bridge? If you decide to take the plunge, make sure you find a partner with the patience of Job and opponents with similar ability to your own or you could be put off the game for life!

On the other hand you could try using a computer simulation.

Although it's not the ideal way to learn, it does have a couple of advantages over the conventional method: You can't annoy your partner if you do something stupid – and even more important, your opponents can't gloat over the inevitable whitewashes in the early stages.

Currently there are two packages on the market, from CP Software and CDS Software, that offer you the choice between a tutorial session or a full rubber.

You bid each hand according to the Acol

system, and the experts among you will no doubt be pleased to learn that both support the Blackwood and Stayman conventions. In addition CDS caters for Baron, and the strong two club and take out doubles.

The difference between the two products becomes apparent as the title screens appear – CP is made up of simple block text, whereas CDS includes some very cleverly drawn graphics.

Once loaded CP offers you a lengthy series of prompts to set the game's options. Here you select between tutorial or game, and can choose to be dealt the best hands all the time, some of the time or at random.

You can opt to play without having to bid, to adopt a weak or strong no-trump convention, and to

set your response rate to fast, medium or slow. These can be changed at any time.

CDS has the tutorial and game as separate programs, so you must make your choice before loading the one you require. It has similar options to CP that make it equally user friendly and, if required, these can be changed between hands at the press of a key.

In both offerings, when using either the tutorial or the rubber, you play a hand in two distinct stages: The bidding and the play. Your hands during the bidding, and dummy's during play, are displayed graphically, sorted in suit order.

Here again the presentation of CDS is vastly superior.

Bidding in both is simply a matter of typing in a value

followed by a letter to indicate the suit – such as 2D for two diamonds.

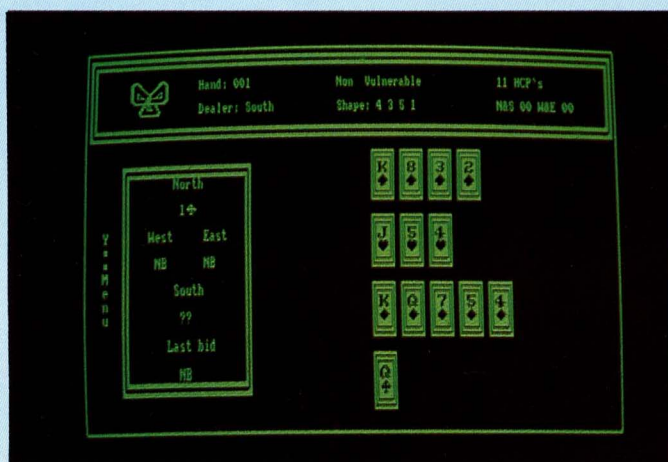
In CP the suit letter followed by a number – D2 – is used to indicate the discard during the game play, whereas CDS automatically recognises that 2D at this point must mean the play of a card and not a bid.

The tutorial programs use different preset hands – 20 in CP, 10 in CDS – specially chosen to illustrate the game's various aspects, its strategy and conventions.

At the bidding stage your bid is only accepted if you make the recommended one – make an error and you'll stare vacantly at the screen until you guess, sorry choose, correctly.

The same applies during

Turn to Page 16 ►



Colossus Bridge 4



Bridge Player 2000

◀ From Page 15

the play of the cards, when again you must get it right before the game continues.

At the end of each hand there's an explanation of the particular facet of bidding or play that it was designed to convey.

The packages have several other features to add to their appeal: In both you can recap the bidding, view the play to earlier tricks, peep at other hands, claim remaining tricks, or exit a hand at any time to rebid and replay it or move on to the next.

In addition CDS has a save/load game option, an

autoplay feature and a facility to have a card recommended – both extremely useful for the learner.

Each has a set of clear, concise instructions and CDS repeats these as screens of information that can be called up whenever required.

It also includes a guide to the recommended bidding for certain point counts and hand distribution, but no help regarding what card to play under what circumstances.

To compensate, it does include a free 125-page paperback book – *Begin Bridge* published by Elliot

Right Way. And very useful it was too when I found myself in trouble.

A quick glance often provided all the help I needed – and my silicon opposition never found out.

Whether the market will stand two products so similar in concept, will remain to be seen. Chess programs seem to survive when often the only criteria to judge them by is the quality of the opposition.

The same might apply here but I'm not really in a position yet to assess whether these play a good game or not. But my wins and losses have been suf-

ficiently evenly distributed to make me keep playing.

As Bridge tutors go, there's not much to choose between these – they both seem to do the job they set out to do. But if forced to make a choice I'd opt for CDS because of its more polished presentation, the extra facilities, the book, and of course, the price.

Watch out Omar Sharif – I'm learning fast!

| | CDS | CP |
|-----------------------|-----|-----|
| Sound | n/a | n/a |
| Graphics | 7 | 4 |
| Playability | 10 | 10 |
| Value for money | 7 | 4 |
| Overall | 8 | 6 |

Nice game, shame about . . .

Program: Linebacker
Price: £14.95
Supplier: Wadd Soft, PO Box 37, Lytham St Annes, Lancashire FY8 3QS.
Tel: 0353 712694

LINEBACKER is based on the rules of American football. It is not an arcade style of game where players on the pitch are individually controlled – you must select a particular offensive or defensive tactic, hoping to outwit your opponent while the PCW works out the consequences.

The result is then seen on the pitch, players being represented by small oval shapes.

There are 20 moves described and each carries its own risks and benefits. The two instruction pamphlets supplied have a distinctly home-made feel about them, but are nonetheless clearly written and informative.

The game is loaded through Basic and there are options for playing against the computer or an opponent, but no choice in levels of difficulty.

The aim is to carry the ball into the opposition's end zone for a touchdown. The team in possession has four

attempts to progress 10 yards towards the zone.

To do this you must outmanoeuvre the defensive ploy of the opposition. If successful, you have another four attempts to gain a further 10 and so on until the end zone is reached. Fail to gain the distance and the opposition gets possession and tries its luck.

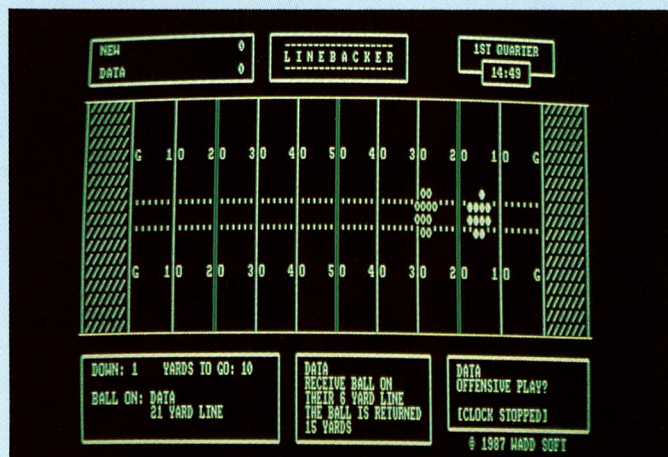
The match lasts for four 15-minute quarters. At the end of the second quarter and at full-time playing statistics are shown in detail – average yards gained, time in possession and so on. A nice touch.

While the game is easy to play and likeable, too much is dependent on chance, and I began to lose interest by my third game.

If you are an American football freak you may get more out of Linebacker than I did. I imagine its rather undemanding nature would make it a good children's game – but for one thing...

Unpublicised but included with Linebacker is an adventure game called *The Princess of Wadd*.

It is a ridiculously small text adventure in particularly bad taste. It's a wholly inappropriate partner to Linebacker although Wadd



Soft suggest that the brutality in it is tongue-in-cheek.

That is not the case. It contains scenes which could upset and disturb children and which must be especially offensive to women.

Any parent who unwittingly buys this game for their child is going to be rightly angry.

The warning that the game may offend is totally ineffectual, following as it does the "tongue-in-cheek" disclaimer – curiosity will surely always win out in such a case.

This is a cheap-thrill computer nasty. It may be argued that there is a market for such games and that

informed adults should have the right to buy what they want. I would argue that it is inexcusably irresponsible of Wadd Soft to foist this kind of product upon an audience of unsuspecting adults and, more importantly, children.

The grades are for Linebacker only, as *Princess* hardly qualifies either as entertainment or as a test of intellect.

Neils Reynolds

| | |
|-----------------------|---|
| Sound | 2 |
| Graphics | 6 |
| Playability | 7 |
| Value for money | 6 |
| Overall | 6 |

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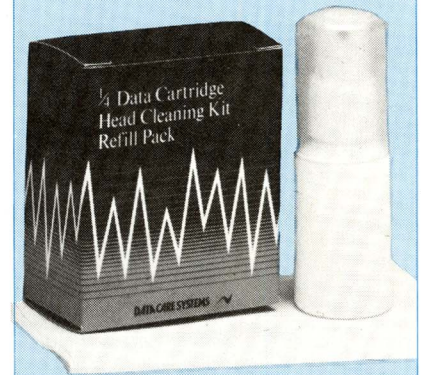
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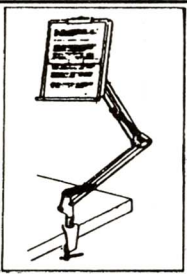
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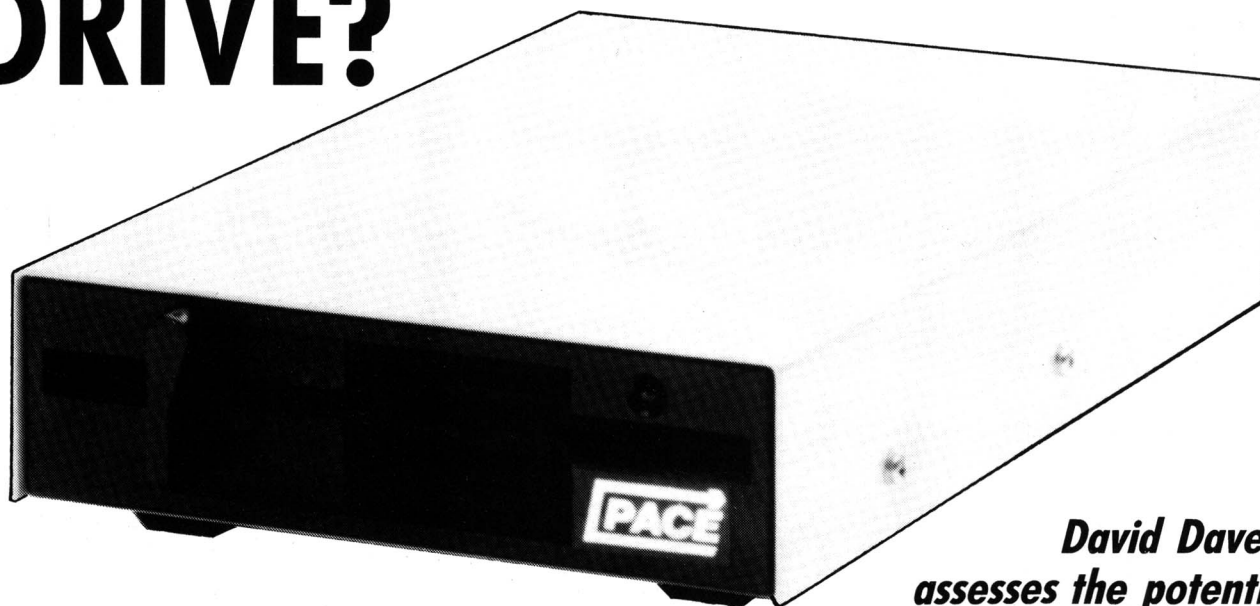
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FANCY AN ECONOMY DRIVE?



*David Davenport
assesses the potential of
the 5.25in disc drive from Pace*

ASK any seasoned 8256 user what he considers to be the machine's biggest practical drawbacks, and he'll almost certainly mention storage capacity and the fact that he's restricted to 3in discs, usually in that order.

Having only one single-headed drive makes it impossible to get maximum performance from the best software packages, especially databases. But the three inch dilemma is doubly frustrating: Not only does it stand between you and the much greater wealth of material available on the industry standard 5.25in floppies, but 3in discs are also notoriously expensive, even when bought in bulk.

One way round both these problems is to invest in a 5.25in disc drive, and if this is what you have in mind you would be well advised to consider the one produced by Pace with the PCW specifically in mind.

No fancy interfacing is required to make the drive compatible with the Amstrad, there's just a lead emerging from the back of the unit with a connector on the end, and a mains lead requiring a 3 amp fused plug, so it's a doddle to fit.

You just unscrew the back of the PCW, pass the connector lead through the slot in the casing where the flat printer lead is attached, and plug into the vacant connector behind the A drive inside. Once this is done you're ready to go, and on booting up with either CP/M or LocoScript the PCW

will automatically recognise the presence of the second drive as B if it's turned on.

Free with the drive is a disc containing a utility called TDOS.COM. With this you can read and copy files from MSdos and PCdos discs. The drive has a switch at the back allowing you to specify whether the current disc in use is 40 or 80 track format in these circumstances. In normal use though you would operate in 80 track mode, and this is the setting to use when formatting your own blank 5.25in discs with Diskit.

As far as performance goes I can't fault this drive. It's fast, quiet, and easy to use and since the unit is double-headed, it gives you a massive increase in storage space. Using a blank formatted disc you'll have an extra 706k at your fingertips.

But where you really gain with a 5.25in drive is on price and availability of the discs. Good quality branded discs can be obtained from mail order houses such as Disking for around £35 for 20, and you could pick up unbranded ones at around £13 for 25.

Compare this with an average price of £25 for 10 of the 3in variety, and you know you've got to be on a winner where long-term economy is concerned.

There are a couple of minor drawbacks though. Not being able to readily interchange discs between the A and B drives for instance, could be a

nuisance when running some software. The documentation supplied is scanty, but the unit is so easy to install and use that only a few brief instructions are needed anyway.

The Pace drive also apparently has an inherent hardware problem as it is currently sold, in that when first powered up it has an unpredictable habit of corrupting discs. The instructions warn you of this and the problem can be got round by always inserting a blank dummy disc when you first boot up.

It's a reassuringly sturdy piece of equipment by any standards – it's almost a foot long, 6in wide by 2in deep, and weighs a good 10lb. It's quite attractive too in its cream plastic coated metal case, with a sleek matt black finish at the front.

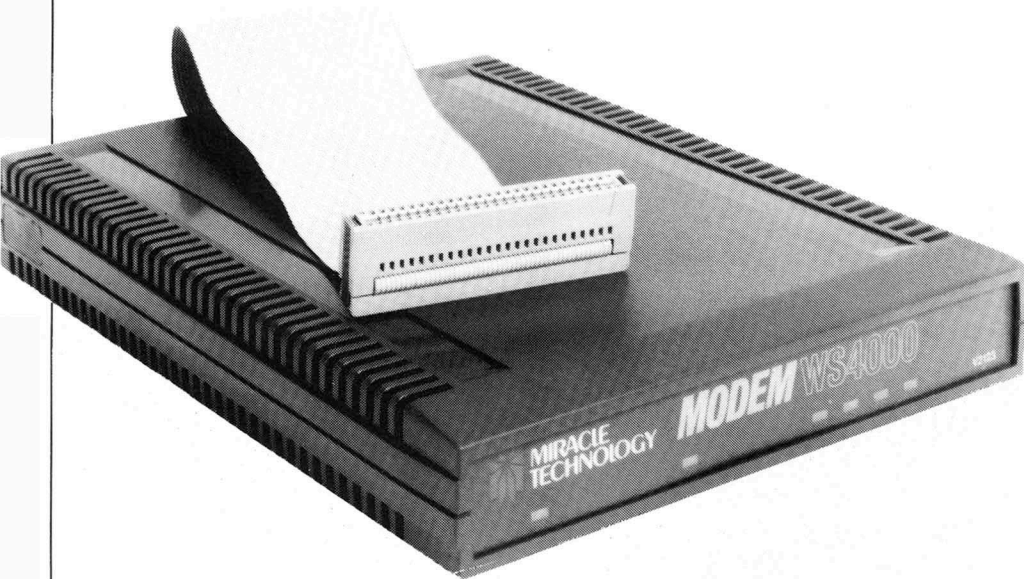
Although a bit pricey at £199, I think this is an excellent investment if you use a lot of discs and are likely to gain from the increased storage and lower disc costs. There's also the advantage that if you ever change machines, the 5.25in format will probably allow you to carry the drive across with you.

Product: 5.25in disc drive

Price: £199

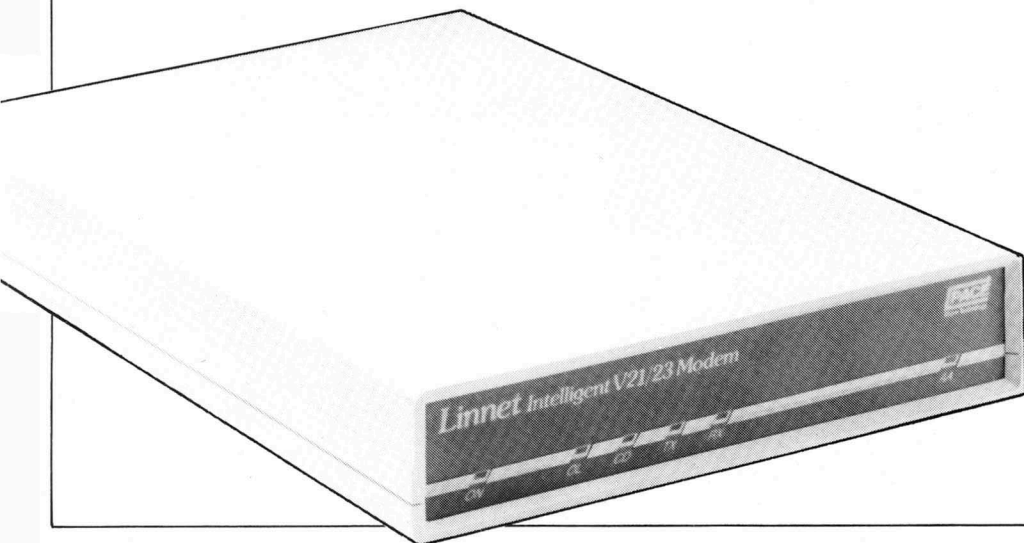
Supplier: Pace Micro Technology, Juniper View, Allerton Road, Bradford BD15 7AG.

Tel: 0274 48821



A MODEM FOR ALL SEASONS

*Part 3 of Kate McGill's introduction
to the world of PCW communications*



The story so far...

This series will build up month by month into a comprehensive exploration of PCW communications, taking you from fundamental facts and ideas to some of the more technically complex areas of online activity, and keeping you up to date with developments as they occur in this rapidly changing field.

The first two parts (August and September issues of Computing with the Amstrad PCW) have covered some of the general concepts behind data communications, and in particular the way in which data can be transferred at different speeds.

This month, Kate McGill makes some specific recommendations about buying a modem to connect to your PCW.

THERE are well over 100 different modems on the market, ranging in price from less than £50 to over £700. But price is far from being an infallible indicator of performance. So this month I intend to grasp the nettle and recommend two specific models which fit the PCW bill, and which I consider excellent value for money.

Many will no doubt disagree with my choice. But selecting a modem is not like selecting a piece of furniture or a work of art. It's less a matter of taste than of hard facts, which should speak for themselves if the approach is unbiased.

Let's take a look at these facts, which I'll use as a backdrop to the final choice.

I ended last month by stressing that paying less for a modem which will handle only 300/300 baud may be false economy.

But there's much more to the subject than speed. There are myriad interlinked considerations, from the way a modem links up with the telephone line, to the question of so-called intelligence – all of which need to be taken into account in trying to determine the best buy for your needs, present and future.

For the sake of clarity, I'm going to suspend thoroughgoing accuracy and break the problem down into manageable chunks. Some of the factors depend on others, but for the moment I'm going to forget that interdependence and consider each one as a separate entity.

● Modem to telephone link

Most modems are connected directly to the telephone line with a standard BT plug. But there are some which are designed to send their high and low tones via a handset. They are called acoustic couplers, and have two rubber cups into which you place the part of the phone you normally hold up to your ear and mouth. They are not usually suitable for anything but the standard shape of BT handset.

Acoustic couplers are often run off batteries, and can be useful for people on the move who may, for instance, have to send data down the line from public call boxes. But they give less reliable results than the wired-in variety. So, given that the PCW is not the most portable of machines, you should avoid an acoustic coupler unless there are special reasons for choosing one.

● BABT approval

It is illegal to connect an unapproved modem to the public telephone network. In the past, the problem for modem manufacturers has been that the process of getting approval by the British Approvals Board for Telecommunications has been difficult and long-winded. The situation has improved recently, but there are still a number of models on the market waiting for approval – and even some for which approval has never been sought.

Approved models carry the British Telecom "green spot".

● RS232 interface

The vast majority of modems have an RS232 (serial) port, from which you can run a standard cable to the interface attached to the PCW. A few models don't have this interface, and (unless, as usual, there are special considerations) you should avoid them. The one exception to this rule is the WS4000 modem from Miracle Technology – about which more in a moment.

● Bell tone compatibility

As far as I know, all countries except the USA have adopted the standard Transmit and Receive frequencies laid down for modems by the International Telegraph and Telephone Consultative Committee (known by its French initials: the CCITT). The USA has its

own standards which have been defined by the Bell Telephone Company, and the frequencies it uses are known as Bell tones.

If you want to access American bulletin boards, you must have a modem which can switch between CCITT frequencies and Bell tones. About a third of the modems on the market in Britain will not handle Bell tones.

● Hayes compatibility

In contrast to the USA being out on a limb when it comes to frequencies, it has managed to set a world-wide standard (though in this case an unofficial one) in the commands sent from micro to modem. This command set was originally developed in the USA by the Hayes Modem Company for its own model, the Hayes Smartmodem.

A modem is said to be Hayes compatible if it responds to Hayes commands. These consist of the letters AT (Attention) followed by one or two further letters and an optional number. So, **ATD456789** means "Dial 456789".

The Hayes command set is complex – it contains instructions to control just about every aspect of modem communication, from setting the loudness of an internal speaker to obscure technical commands such as "Transmit carrier attenuation level".

For the most part, the PCW owner need not be bothered with the more esoteric Hayes commands, and in fact need not be bothered about Hayes compatibility at all. Its only advantage is the insurance that a Hayes compatible modem will work with any computer, running virtually any communications software. So if there's any chance of your changing your PCW for another machine, or of moving your modem from one machine to another, it's worth having.

● Intelligence

I think it was the Hayes Smartmodem which gave us the phrase "smart modem" (or maybe it comes from "smart" and "dumb" terminal emulation – that subject is for later in this series).

Whatever the origin of the terms, it's a fact that some modems are smarter than others (more intelligent, that is – not necessarily carrying Design Centre Award labels).

"Smart" in the context of a modem normally means it has its own little

processor which at the very least allows it to dial a telephone number automatically (auto-dial), and at best to do all kinds of automated things such as answering the phone when you're not around (auto-answer).

Auto-dial is something every PCW owner should regard as a major consideration. It makes life so much easier when you don't have to go through the process of dialling manually and pressing buttons on the modem to hook up to a carrier (a signal sent by a remote modem to indicate the phone has been answered).

Many auto-dial modems also come with an auto-detect system which senses the speed of a remote carrier and automatically adjusts its own speed to fit, as well as being able to detect an engaged tone and to re-dial after a given period of time.

On the other hand, the advantages of auto-answer modems are not so clear-cut.

If you intend, say, to run your own electronic bulletin board, or to set up a system at the head office of a company which enables employees to send in data when there's nobody there to receive it, the choice is obvious. If not, you could be wasting your money.

Having said that, future requirements must always be borne in mind. I'm a great believer in allowing plenty of room to expand, and the modems I'll be recommending are auto-answer.

A related facility, necessary for connecting two micros over the telephone line, is the ability for one of them to go into Answer mode (the opposite of Originate mode). Not all modems can do this – in fact the facility is lacking in the Hayes Smartmodem itself (which costs over £600).

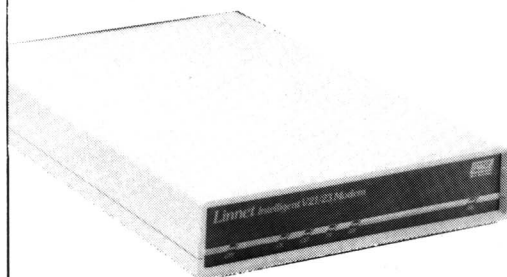
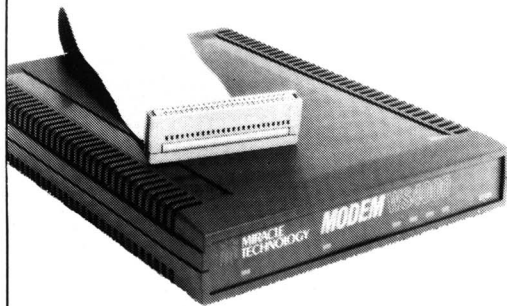
● More about speed.

Here I have to introduce a new concept, and a new term – duplex. There are two main duplex modes: Half and full. Half duplex means that data can only either be sent or received at any one time. Full duplex means that data can move in both directions simultaneously, therefore offering savings in time and money.

Nearly all modems use full duplex mode at 300/300 baud (the CCITT name for this protocol is V21) and 1200/75 baud (V23). But, for technical

Turn to Page 22 ►

◀ **From Page 21**



reasons, 1200/1200 full duplex (V22) sends the price of modems soaring.

If your communications requirements are weighted towards sending and receiving lots of files, I would advise against too many trial runs with 1200 full duplex on somebody else's modem – unless you're sure you can afford one of your own. You'll have been spoiled by the time you go back to 300/300 or 1200/75.

Decision time

Taking into account all the factors I have outlined, and adding in the question of price, there are two modems I would recommend as very good buys for the PCW owner.

Both are BABT approved; can handle Bell tones; are Hayes compatible; have auto-answer/auto-dial facilities; and offer a choice of 300/300 or 1200/75 baud. My first choice, however, can also be upgraded to 1200 and even 2400 baud full duplex, and it's that elasticity which for me has tipped the balance between the two.

Top of the ladder in my opinion, then, is the Miracle WS4000 V21/23. This model comes in two versions, both priced at £169.95 plus VAT. One

has a standard RS232 interface, and the other has a special ribbon cable which plugs straight into the PCW. The idea is quite new, and is the direct result of there being a best-selling machine out there with no built-in RS232 port.

The WS4000 can thus save you the cost of a serial interface, bringing the effective price for PCW owners down to just over the £100 mark – a genuine bargain. But set against that is the fact that the PCW-dedicated model can't be used with any other machine you might buy in the future.

My second choice is the Pace Linnet at £139 plus VAT. There's a saving to be made here of £30 over the WS4000 (not taking into account the advantage of a special cable), and basically all that is missing is the possibility of an upgrade to 1200 full duplex. If you're really not worried about that, you won't be disappointed with the Linnet.

I shall now sit back and wait for the inevitable barrage of criticism.

● *The next part of this series will be devoted to MAIL232, the PCW communications program you may not have realised you already possess.*

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Up to 300 separate transactions may be entered per month.

Each entry consists of:

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- Cheque or reference number, eg ABC123
- Class code, one of up to 50 defined by you to suit your circumstances eg o1 = Overheads, o1 = Rent, o2 = Heat/Lighting, o2 = Stationery etc. or m0 = Motoring, m1 = Petrol, m2 = Road Tax, m3 = Maintenance etc.
- Descriptive text eg, "Tax Rebate", "Refrigerator", etc.
- Optional single-character mark as an extra identifier, eg, b = business, p = private, etc.
- Account reconciliation marker.
- The amount of the transaction, debit or credit.
- Optional VAT indicator, eg exempt, zero, full or part rated. If VAT is not relevant it may be ignored.

You may select categories of entries according to account, class and mark (eg all bank account entries, or all motoring expenses, or all cash account business expenses etc.) and produce reports on the screen or printer as follows:

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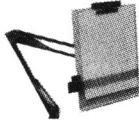
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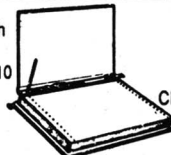
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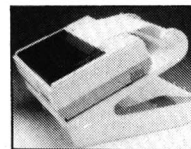
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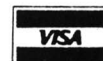
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DECISIONS DECISIONS

Paul Hendy winds up his series on mail-merging techniques



LAST month I explained the concept of mail merging, to show how often it was quicker to prepare a letter and a data file separately and then let the program combine the two, rather than laboriously edit each letter.

I'm using Protex to illustrate the principles involved, but most systems operate in a similar manner, even if the commands might be different.

A problem was highlighted in that if you use **AV** to ask for a variable at print time, this question will be asked for every letter – which ties you to the computer and defeats the purpose of mail merging. So Arnor have provided the special command **IU** (If Undefined), which checks to see if a variable exists. You could adapt the top of the document to include the following lines:

```
>IU DATE
>AV "Please enter the date" DATE
>EI
```

What these lines do is: On the first pass through, the variable *DATE* has not been defined, so the **IU** line has registered a TRUE answer to its question. So the loop is entered, the **AV** statement is displayed, and the program waits for you to type in the response. The block then ends with the **EI** (End IF) statement.

On the second pass, for the next letter, *DATE* has already been defined, so the **IU** line registers a FALSE answer, and the block and therefore the question, is skipped and continues

to be so for every letter thereafter. For those who missed last month's article, the complete letter so far looks like Figure 1.

The associated database for this friendly reminder letter could resemble the following, written in Protex and stored as *DATA1*.

```
Mr Cookit
Fiddle Accountants
"10, High St.,"
Watton
£140
```

```
Mr Scragend
Botchet Builders
"24, Slack End"
Anywhere
£258
```

```
Mrs Sproggs
Cowboy Electronics
"43, Diode Way"
Zener
£85
```

Such a letter may only be necessary if the customer owes more than £100,

Turn to Page 26 ►

```
>IU DATE
>AV "Please enter the date" DATE
>EI
>DF DATA1
>RV NAME ADD1 ADD2 ADD3 AMOUNT DUMMY
&NAME&
&ADD1&
&ADD2&
&ADD3&

&DATE& 1987

Dear &NAME&

It is now the &DATE& and you still owe us &AMOUNT&. Please pay up or
we will send the boys round to &ADD1&.

Yours faithfully
```

Figure 1: Our letter after inserting the date test

◀ **From Page 25**

so you may want to prevent a copy being printed for Mrs Sproggs. You could achieve this with an IF/EI loop, placed just before the text of the letter using the line:

```
>IF AMOUNT > 100
```

and then:

```
>EI
```

at the end of the letter.

Protex does offer a simpler route using >SK: In other words, skip what follows if a condition is TRUE. So just before the text of the letter enter the line:

```
>SK AMOUNT < 100
```

Don't be confused by the > and <. Each command line must start with the character > but once within a line > means 'greater than' and < means 'less than' as normal.

The difference between the use of IF/EI and SK is important in the following example. Say you wanted to write a friendly paragraph to Mrs Sproggs and a more threatening one to the other customers. Using SK will not work because on reading this command, Protex stops printing and moves on to the next letter. On the other hand if it reads IF, it simply

jumps to the EI line and carries on. The text of the letter could look like Figure II.

You may find on printing this to the screen, that each letter is being split between two pages if you have set your page length to 20, depending on your default top and bottom spaces. If this is happening try changing the page length to 30. The original setting was only so that each letter didn't scroll off the screen before you could see it.

Linked with IF/EI is EL which stands for ELSE. It acts, along the lines 'IF the condition is TRUE then print the following paragraph, ELSE print this instead. Consequently the above two paragraphs could be joined together as in Figure III.

IF/EI blocks, when checking on a condition involving an amount, are similar in some ways to RP/UN (REPEAT...UNTIL) loops which will cause a passage to be repeated until a condition is TRUE.

```
>SV Count = 0
>RP
This is line &count&
>SV COUNT = COUNT + 1
>UN COUNT = 10
```

If you try printing this to the screen, you will see that after 0, every number is followed by two decimal points.

This is because the value has been calculated and not assigned directly. To get a 'clean' printout you need to strip these two decimal points, using the [W1] parameter.

Protex treats the full stop or decimal point as dividing two 'words' so specifying [W] tells it to read only the first word, that is the whole number. The following file will print as expected. Note the last number printed will be 9, because the RP loop has detected 10 before printing the line:

```
>SV Count = 0
>RP
>SV Counter = Count[w1]
This is line &Counter&
>SV COUNT = COUNT + 1
>UN COUNT = 10
```

It is worth noting here that this example demonstrates Protex's ability to handle mathematical operations, and the manual does give details for instance as to how invoice generators can be designed, calculating totals and so on.

The ability illustrated earlier, to include or omit passages of text, can be expanded to incorporate whole documents. For example if you have written a book, storing each chapter as a separate file, a small master document simply containing the lines:

```
>IN CHAP1
>IN CHAP2
>IN CHAP3
```

will cause the files to be printed consecutively. The instruction >IN reads the contents of the named file from disc and sends it to the printer. This means that all the formatting commands need only be in the first file (or indeed in the small master document), and they will be passed on through each file, to keep the page numbering correct. If you have not put any >PA commands in your documents, you can include them in the master file to ensure that each chapter starts on a new page:

```
>IN CHAP1
>PA
>IN CHAP2
>PA
>IN CHAP3
```

The aim of these two articles has been to demonstrate just how useful mail-merging capabilities are, not just for junk mail generated by mail-order firms, but for the normal word-processing user who has several routine chores. Careful reading of any manual is highly recommended, not only to avoid wasting masses of paper, but to realise just how great the possibilities of a particular system might be.

Dear &NAME&

It is now the &DATE and you still owe us &AMOUNT&.

```
>IF AMOUNT > 100
```

Please pay up or we will send the boys round to &ADD1&.

```
>EI
```

```
>IF AMOUNT < 100
```

We would be grateful if you would give this matter your urgent consideration.

```
>EI
```

Yours faithfully

Figure II: Our letter after the two amount checks

```
>IF AMOUNT > 100
```

Please pay up or we will send the boys round to &ADD1&.

```
>EL
```

We would be grateful if you would give this matter your urgent consideration.

```
>EI
```

Figure III: The two amount checks using EL

MAKING THE MOST OF IT

In part two of his series, Brian Holley shows you how to get the very best out of your database

SOME business people have been known to become completely bogged down by their computers. Frustration increases to the point of exasperation and they decide to ditch the confounded thing and revert to a card index. This is a sad state of affairs, largely because it is unnecessary.

The poor micro isn't usually to blame, although the software that goes with it may not always be what it should be. No, the blame for ineffective computing must lie with the person who set the system up and managed its day-to-day running.

That person probably didn't do his homework, expecting the acquisition of a machine in itself to be the answer to all his needs.

So if you are thinking of setting up a database to help your business along, here are a few things to consider when planning your system.

Content

The main fault with most databases is that they try to be too comprehensive. Consequently the system gets clogged up with bits of information which are costly to collect and input, but rarely used in reports or calculations.

This problem often arises because the designer starts work at the wrong end of the system – that is, at the beginning. The correct place to start is – surprise, surprise – at the end. The primary design criterion should be what kind of reports need to be generated, not what data should be in the database. By specifying the output, the content will automatically be defined.

For instance, a report might consist of a list of names, addresses, tele-

phone numbers and names of contacts from a database of customers. Therefore these fields are required on each record.

Another report might require date of last contact, record of last order and the amount. These fields will need to be added to the list for inclusion in the system. Thus by deciding the form of the required output the shape of the database emerges.

It is essential at this planning stage that a disciplined attitude is maintained towards the desirability of fields of information. Some might be nice to have, but the cost of acquiring and maintaining the information may be too high in relation to the value of output it will generate.

A database requiring a high level of input will create a bottleneck in an office system, especially where there is only one terminal for input and output.

The whole office system, therefore, has to be organised in such a way that this bottleneck effect is minimised. I'll deal with this more fully in a subsequent article. Good database design will greatly help the efficient throughput of data, and here are some hints and suggestions to help you achieve this end.

Field formats

There are four modes in which fields can be set up for the storage of data. **Numeric fields** will accept numbers only and using them will provide a safety check for the operator, since if anything other than numbers is entered the machine will beep and a warning message appear.

In the same way, **alpha fields** will accept only letters, but this needs to be implemented with caution since as the system develops the need may

arise to input numbers or other characters as well.

So unless it is intended that only alphabetical codes or the like are to be keyed into a field, it may be safer to set it as an **alphanumeric field** which will accept any string you like to throw at it without protest.

Another mode commonly used is sometimes called **status**. This requires the input of just one character, such as 'x', to indicate which of two possible states a particular field is currently in – on or off.

Status fields, therefore, are simply markers which act in exactly the same way as colour dots or tags on a card index. The database can thus be searched to provide lists of all records with selected status fields in an on or off condition.

It is essential to work out how long each field should be from two angles. First, how much screen room there is after the field title – such as NAME – and then how the information will appear in reports, letters and labels.

For instance, if your labels are five inches wide and you are using a 10 pitch typeface, leaving half inch margins will allow 40 characters maximum width for printing names and addresses. This will determine the length of field that can be used for this piece of data and may dictate that some data is spread over two fields to accommodate subsequent uses.

Defaults

Some systems provide default settings which enable you to set up fields with a minimum of calculation and cunning. Such may be name and address blocks, and most commonly date blocks. Beware of American systems though, as some software from across the ocean provides a mm/dd/yy

stencil, rather than our English dd/mm/yy format.

The better systems will come already anglicised and others can be rejigged by setting up individual fields using the software's tag names. However, in the latter case it will be necessary to check that the program can still calculate on these dates, since sometimes reordering the format blows the system's poor little mind.

Some packages provide a useful 'today's date' default, enabling the current date to be added to a record automatically. A point worth noting is that when designing screen layout it is best to place this field last. It will never need to be altered, so by putting it last you avoid having to key through it every time other fields have to be accessed.

Coding

If your data falls easily into broad categories, you could save valuable input time by devising a coding system, provided the codes don't finish up so complicated that the operator has to be forever using look-up sheets to interpret their meaning. If coding already exists on a manual system it is better to use or adapt that rather than invent something new.

It may be that government or business organisations already have systems to suit your purpose. For instance the Standard Industrial Classification, which lists industries by type. Provided you are not likely to infringe copyright, it's better to use something tried and tested rather than go through the tedious and time-consuming process of developing your own (Vive la Japan).

On the other hand, a simple coding system you can recognise may be just the job. In this case it may be advantageous to use letters rather than numbers since they're generally easier to remember – unless perhaps you are an accountant or bank manager. It is helpful to make up mnemonics that not only the boss but all the other members of your organisation can understand.

To do this needs simple rules of abbreviation that can be applied to all future additions to the coding. An area code, for instance, might consist of the first and last character of the main town in that area. Thus NY becomes Newbury and MR Manchester.

Where duplication would occur a secondary rule overrides, and the first and second letter are used instead. So Norbury becomes NO. By using principles like these, coding systems can be established to handle many

aspects of data storage, while reducing input time, removing the need to look things up, and increasing the number of records that can be stored on a disc.

Enhancements

Occasionally it will be necessary to review the structure of your database, if only to ensure all data fields are being used effectively. Where they are not, the system should be changed to eliminate them.

Having said that, it will be useful to have two or three spare alphanumeric fields at the end of the record that can be used to meet needs that will almost certainly arise as the system develops.

Behind the scenes of day-to-day operations are the name tags which the software uses in the background to identify fields for searching, matching and report printing. These are defined by the user and are ideally abbreviated or full descriptions of fields. For example, **name**, **addressone**, **addresstwo**, and **phone** are common tags used when building databases.

It will be necessary to keep a printed list of these names and the lengths and types of the fields with which they are associated so they can be referred to when building new reports or changing the shape of the database by adding new fields. Once again, the fuller the descriptive names are, the easier they will be to understand and recall in the future.

Screen layout

A tidy layout is the key to accurate input and efficient reading back of records. This is another good reason for keeping the number of fields to a minimum, making it easier to find what you want on the screen. A number of simple rules will help with this.

The titles that appear at the beginning of each field need to be both concise and easy to understand. They don't have to be the same as the tag names used by the software for operational purposes. Indeed this may sometimes be quite inappropriate.

Remember, the longer the name on the screen, the less data you can get into the field and ultimately into the record – so keep it brief. Such titles should be neatly aligned on the screen insofar as space permits.

The eye can select one field from others far more naturally if there is a clear geometric pattern than if titles are simply strung on to the end of the previous field.

To help differentiate between titles and data, the former should be in a different colour (or shade if you have a mono monitor), in capitals (if data is to be in lower case), or in lower case (if data is to be in capitals). Some systems use inverse video (black letters on a light strip).

In my opinion this does not always make for a pleasant layout, since the strips often look untidy and their brightness distracts the eye from the data, but with some systems you may have no other option. Whichever approach is taken, consistency is essential, so don't mix styles.

You must also give consideration to the order in which fields appear on the screen. The most commonly used should be at the top so the operator doesn't have to key through less regularly used fields to get to the area for input.

This principle suggests that it may be necessary to have screen layout set up differently for initial input than for eventual day to day use. Let me explain.

In the early stages a lot of work has to be done inputting names and addresses, telephone numbers and the like. Once the groundwork has been done, changes to this core information should be minimal and only occasionally necessary, but the operator will still have to key through these fields every time a record needs amendment.

It would, therefore, save a considerable amount of input time if, once the main body of data had been established, the screen layout were changed to place the name and address block, or other 'non-volatile' data, at the bottom of the screen. This would allow quicker access to the fields most regularly updated.

Designing reports

If your computer is used only as an electronic filing cabinet it will probably be more hindrance than help. If on the other hand it's used to analyse and organise your data, it will provide invaluable insights into the state of the business and the market, thus generating a base for effective decision making in the form of reports.

The key word when designing reports is simplicity. You shouldn't have to spend hours poring over pages of raw facts and figures analysing what they mean – that's what the computer's supposed to do.

Reports may take several forms, the simplest of which is an ordered list.

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For example, a list of customers ordered by the date of last contact – enabling you to phone those that you haven't seen for some time.

In getting the machine to produce reports you'll have to design them in such a way that the last record on each page is not split. Most listing paper is 66 lines long. Ideally the heading should take up the same number of lines as each element of the report, so if each element is six lines long (including spaces before the next element), the main report heading should also be six lines long.

The number of lines in each element ought to be capable of being divided evenly into 66. In our example therefore, there would be 11 items per page.

Having produced simple lists, it is sometimes useful to analyse them manually using a highlight pen to identify interesting elements. This is a simple approach which can eliminate the need for programming or generating masses of printouts of the same data in different orders.

However, the really meaningful reports will require getting fairly

deeply into the system in order to generate statistics, and the like. But the value of such intelligence may be well worth the effort.

The frills

Some packages are equipped with graphics facilities. These often boil down to the ability to print a line of stars approximating to the values in the report. The more sophisticated graphs package will produce superb three-dimensional bar charts and pie charts on the screen, printing them out on dot matrix machines through a screen dump facility.

Unfortunately, programs of this type are more often associated with spreadsheets than databases, and whether it is worth considering this feature will depend on your system's ability to perform calculations.

Reports may also be output to files on the disc, so they can be printed as many times as needed later without having to rerun the report program. These files can often be imported into word processors and some spreadsheets, or incorporated into display packages for training. Such facilities

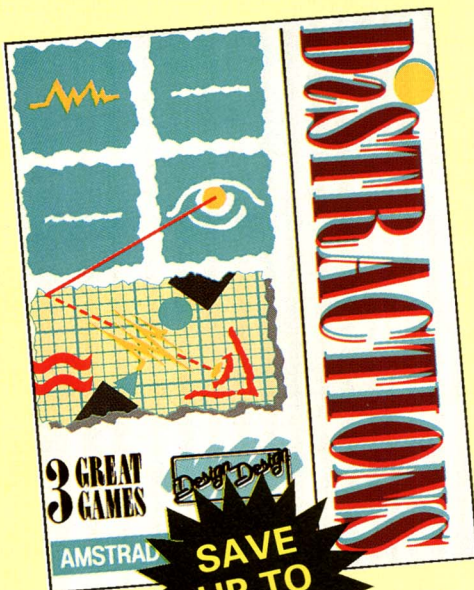
will depend again on the degree of integration your system will allow.

Conclusions

Setting up an effective database is by no means an easy task, even if the software is user-friendly. A considerable amount of thought and planning has to go into selecting fields, choosing field types and lengths, and designing layouts, to ensure optimum efficiency. The need for data in any individual field has always to be weighed carefully against the value of the output it can generate and the cost of collecting and maintaining the information.

But if you're just prepared to make the effort to set up a database that is not time consuming to run and will generate information providing faster and more effective control of your particular business environment, you could be well on the way to your first million.

● Next month I'll conclude with some tips on integrating your database with other office systems, and a look at some of the little known legal implications of keeping computer records.



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Niels Reynolds, Computing with the Amstrad PCW, July 1987

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TO ORDER PLEASE USE THE FORM ON PAGE 73

A PRESSING APPOINTMENT

Ian Sharpe moves on to Logo's conditional and keyboard input commands

I EXPLAINED last month how variables are used to store a value for later use in a program. I also left you with the tasks of writing two procedures: One that would take two parameters and use them to draw a regular polygon; the other to return the average of two numbers.

The most obvious way of writing **poly** is like this:

```
to poly :sides :size
  repeat :sides
  [
    fd :size
    rt 360 / :sides
  ]
end
```

and typing:

```
cs
poly 4 100
```

will draw a square with sides 100 units long. A circle is a polygon with an infinite number of sides but a computer screen has a limited resolution so you can approximate circles by specifying a large number of sides:

```
cs
poly 50 10
```

You've probably noticed how slow Logo is so it's worth trying to speed things up. In **poly** the angle is calculated each time round the loop in the fifth line of the procedure. For a given value of *sides* the result of the calculation is always the same. So by calculating the angle every loop cycle the program is doing unnecessary work. This is time consuming so if we do the calculation once before the loop starts, it should run faster.

```
to poly :sides :size
  make "a 360 / :sides
  repeat :sides
  [
    fd :size
    rt :a
  ]
end
```

Try timing how long it takes to draw a circle with the two methods, you'll find the second **poly** is about 10 per cent quicker.

When writing a procedure there's usually more than one way to accomplish a given task. It's often possible to

improve what you've written so that it either runs faster or uses less memory, sometimes both.

Things that stand out about procedures or programs which can be improved are that they tend to look untidy, cluttered and use lots of instructions for a simple task.

Moving on to the average number problem, the following will serve as an example. I suspect those who haven't programmed before will have spent some time coming up with the first of these **average** procedures, or something like it.

```
ts

to average :num1 :num2
  make "var :num1 + :num2
  make "var :var / 2
  op :var
end

average 1 2
to average :num1 :num2
  op (:num1 + :num2) / 2
end
```

The second version, however, gives the same result using less memory and is quicker because there are fewer instructions. It also looks neater and is more easily understood. Small savings like this mount up in longer programs and can make the difference between having a program that fits into the limited space available and one that doesn't.

Don't worry if you're writing procedures longer than mine – the important thing is to get something that works, the rest comes with practice.

If you haven't already guessed, the round brackets (or parentheses) change the order in which an expression is evaluated. If you miss them out here, Logo will work out $:num2 / 2$ first and add the result to $:num1$.

One thing that makes a computer more than just a sophisticated calculator is its ability to make decisions. We can write a program where a particular set of instructions is only executed if a given condition is true, otherwise it skips over them or perhaps executes an alternative sequence.

In this way we can give programs rules so that different courses of action are taken according to the circumstances. Logo has a powerful

command to cater for this – **if** – which can be used in two ways, as the following procedures will illustrate.

```
to test1 :num
  if (:num=6) [ pr [that's six] ]
  pr "finished
end

to test2 :num
  if (:num=6) [ pr [that's six] ]
  [ pr [not six] ]
  pr "finished
end
```

Type those in and enter:

```
test1 6
test1 7
test2 6
test2 7
```

The rule for **if** is: If the condition in round brackets is true, Logo executes the list of instructions in the square brackets that follow. So in either of the procedures, if you type its name followed by 6 you'll see *that's six* printed on the screen, followed by *finished*.

If the condition isn't true – the number isn't six – there are two possibilities. In **test2** there's an alternative set of instructions – also in square brackets – executed when the condition is false. So with **test2**, passing a parameter other than 6 will print the second message.

When you do press 6, the first message is printed and execution skips the alternative instructions and starts again at the finishing message.

In **test1** when the condition is false there isn't an alternative set of instructions, so Logo jumps over the list in square brackets and carries on.

Having demonstrated the principle let's look at some more examples and use the opportunity to read input from the keyboard. Before we do, however, you'll be wondering about the square brackets after **pr** in the last two procedures.

Up to now we've been feeding **pr** with the output from a variable, a word preceded by a single quote, a number or the output from another procedure. If you want to print a message consisting of several words you supply **pr** with several words in a form that constitute one object. I said in a

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previous article that putting square brackets round a group of objects makes them into a list. A list is a single object that may contain several items, so putting the message in square brackets:

```
pr [helLo there fred]
```

will cause **pr** to print out the list with a carriage return at the end – just what we want.

Right, back to the keyboard. Programs often need to get information from whoever is using the computer and of course Logo has commands to handle keyboard input. The simplest is **rc** which is short for read character. This waits for you to press a key and when you do it outputs the character typed.

```
to test
  make "char rc
  pr :char
end
```

In the second line **rc** waits for you to press a key and the typed character is put into the variable *char*. The third line simply prints *char* on the screen. Let's develop that a bit further.

```
to test
  pr[Gimme an "a"]
  make "char rc
  if (:char="a")
    [ pr[Thanks very much] ]
    [ pr[Can't you read?] test ]
end
```

The first three lines are self explanatory. The **if** statement is the type that has alternative sets of instructions. If you press the A key (unshifted), the condition in parentheses is true, so the first set of square brackets is executed.

If you didn't press the right key, the second set of instructions are taken instead. In this case, when the rude message has been delivered the procedure is run again until you get it right.

Here's another example, this time using graphics. It waits for you to press L, R or F (for left, right and forward) and moves the turtle accordingly. The only new features here are **label** and **loop**.

These provide a means of jumping to another part of a procedure, so when the three **if** statements have been dealt with, Logo jumps back to the point identified by **label**.

Instead of the procedure running just once, the instructions between **label** and **go** are executed endlessly

because **end** is never reached. If you want to halt the procedure, press Stop.

```
to doodle
  cs
  pr[press l,r or f]
  label "loop
  make "char rc
  if (:char="l") [ lt 6 ]
  if (:char="r") [ rt 6 ]
  if (:char="f") [ fd 8 ]
  go "loop
end
```

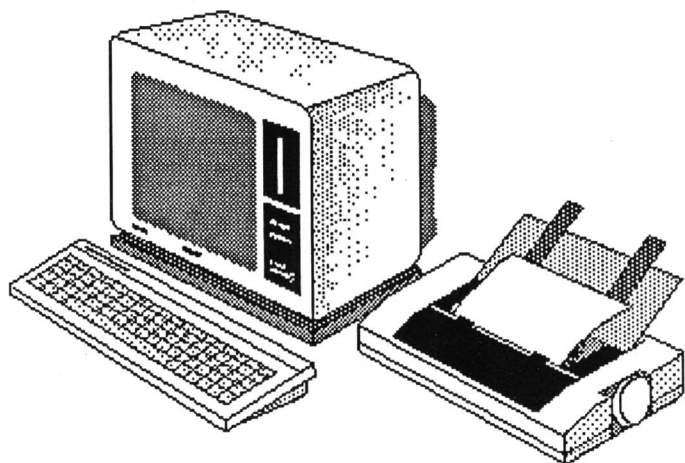
You can't jump to another procedure – when it finds a **go** command Logo only looks inside the current procedure for a corresponding **label**. It's possible to have several **gos** and **labels** but the fewer there are the better.

Perhaps you can add to **doodle**? How about a means of lifting and lowering the pen, backing up the turtle, clearing the screen and so on? Experiment with a **go "loop** after **lt 6** and **rt 6** and see how it speeds things up. How about commands which use **poly** to draw triangles, squares and circles?

● *Well, that about wraps it up for another month. Next time we'll meet other ways of reading the keyboard and have a preliminary look at lists.*

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A BIT ON THE SIDE

Stephen Wells assesses a package to print your spreadsheet down the page

THE trouble with spreadsheets is they tend to spread out sideways a lot. On a regular A4 page, with reasonable margins, you can only print about 80 characters in a line on the PCW printer... whether outputting text from LocoScript or a table of figures on a financial statement. That's not very many columns of a typical spreadsheet.

You can print your spreadsheet in 17 pitch and reduce the margins but the result is not very legible, and even then, you're going to hit a limit of about 130 characters per line on the PCW printer.

In accountancy, numerous columns are often difficult to avoid, which is why many standard ledgers are bound in a horizontal format, meaning the width is greater than its height. Also, there'll often be columns across the spread (both pages) when the book is laid flat.

Thus it's not surprising that there's often a necessity for printing sideways on the PCW printer and that necessity has mothered a handy little utility called Bit On The Side!

When you come to make the advisable back-up copy of the disc, you'll find Diskit won't work. Try it and you'll get the error message, "The disc is old system format. Cannot use." Not to worry. You can copy all the programs on the disc using Pip, and you'll still have 55k of free space for files.

The documentation is minimal but it tells all you need to know because all

the choices you can make are selected via inverse bars on drop-down menus.

First, you have to prepare the file to be printed.

Before starting on spreadsheets, you can see how it works by typing a couple of lines in LocoScript. Select f7 Modes and make a page image Ascii file. Then transfer this to your copy of the Bit On The Side! disc.

Fire up the program by typing **SIDE** and you'll get to the main menu shown in Figure 1.

You can pick any of the different typefaces or fonts, change the printer settings, view your text file, print it, go to a thrown-in-free utility called Tidbit!, or exit the program.

If you select option 3, you can first view a directory of files on the disc via a sub-menu. Just move the bar over the name of the file you want to read.

Having decided everything's hunky dory, you can decide whether you're ready for sideways printing or the traditional direction; select the size of the characters you want to use; pick a font; and choose whether to print on continuous or single-sheet paper.

Then using the down arrow key select Print a Text File and the printer slowly does the job.

Preparing a spreadsheet is just as easy. With SuperCalc2 you just type:

```
/Output,Display,A1:H20,D,M:FILE
```

The range A1:H20 will, of course, be whatever is the size of your spreadsheet. You can also transfer the file to

drive B instead of M and slip in the Bit On The Side! disc. With ScratchPad Plus you'd use the /P command. The documentation also tells you how to prepare files from Multiplan and dBasell.

You'd better make sure you have a well-inked ribbon in your printer for this operation because Bit On The Side! ignores the quality choices available in the printer control state set by the Ptr key. This program always prints in draft quality and the print head only works in the left-to-right pass. It prints very s-l-o-w-l-y too, taking about five minutes for an A4 page.

It's also more effective with continuous paper. Although there are four different type sizes offered, there's a limit of about 90 characters in width on a spreadsheet which it will print sideways down an A4 single sheet.

In other words, if you set column A of your spreadsheet to a width of 18 characters, columns B through G to a width of 11 and column H to 6, that would be all you'd get if you printed it sideways on a single sheet.

Bit On The Side! is not the only product on the market which prints sideways - Rotate and Landscape work in a similar fashion - but it does the job and is easy to use.

Product: Bit On The Side!

Price: £24.95

Supplier: Aware Software 157 Lonsdale Rd. Formby, Merseyside L37 3HF
Tel: 07048 31312

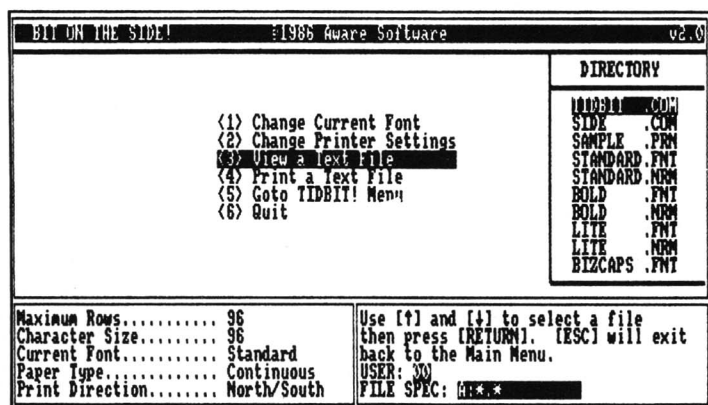


Figure 1: The main menu, with the sub-menu giving a directory of files on the disc

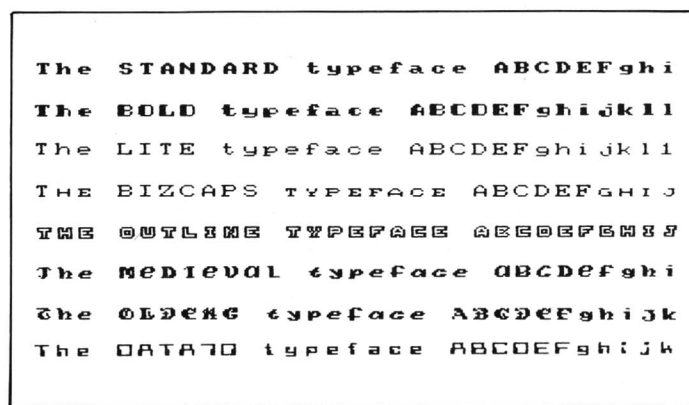


Figure 2: Samples of the available typefaces

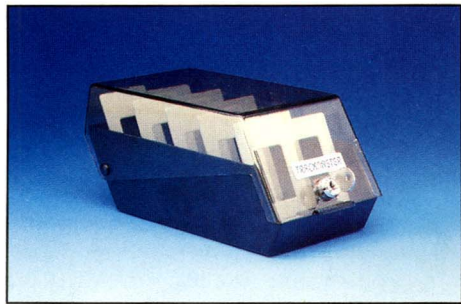
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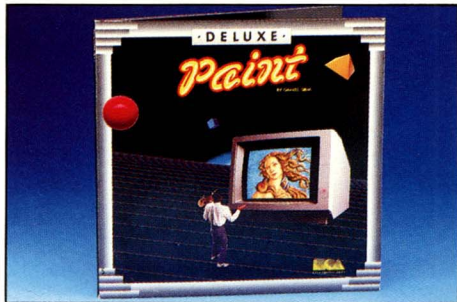
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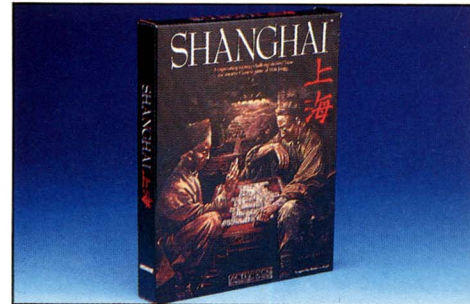


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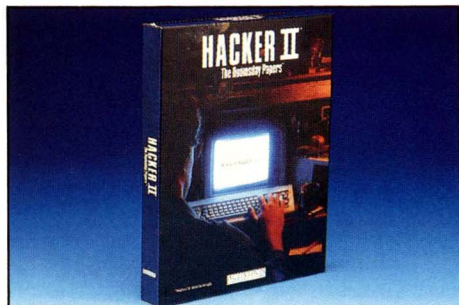
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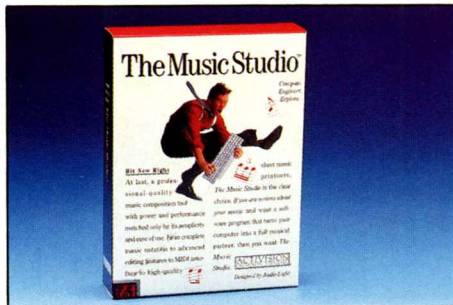
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A BEGINNER'S SPREADSHEET

Stephen Wells reviews the latest in Minerva's learner-friendly series of business products for the PCW

WHEN I initially read through the manual for First Calc – which wasn't easy, as I'll explain later – and came across the philosophy behind the program, I thought what a load of old cobblers.

The writer rabbits on about the difficulties PCW owners have with popular spreadsheets. According to this chap, they are "over-expensive, over-documented and overwhelming". Later he notes that "many spreadsheets... come with manuals spanning hundreds of pages and they tend to be updated regularly due to problems which often occur in complex programs."

I don't know what spreadsheets he's got in mind. I was weaned on VisiCalc and have happily used SuperCalc2 since getting my PCW. I haven't had any difficulty using either program and nobody's ever sent me an update yet.

My first reaction was that the beginner doesn't have to start with Lotus 1-2-3 (the successor to Visicalc), Framework or Symphony. He can get Pocket CalcStar, Cracker 2, ScratchPad

A couple of bright chaps called Dan Bricklin and Bob Frankston wrote the first spreadsheet program, Visicalc, about a decade ago. It was only a computerised accountant's worksheet, but, to the businessman it was like the light seen by St. Paul on the road to Damascus. Suddenly the awesome power of a desktop computer was revealed.

A spreadsheet is a grid of cells, lined up in rows and columns with each cell identified by a letter (the column) and a number (the row). In these you can type text (a name or a label, like SALES), or a number or value (say, £1,000), or a formula. The formula can refer to other cells.

For example, in cell A10 you might have SUM(A1:A9), which

simply means that cell A10 will always contain the total of all the values in all the cells which are in rows one through nine of column A.

The beauty of it is that as soon as you put a different number in any of the cells A1 through A9, immediately cell A10 will show a new total.

It's this instant updating that makes spreadsheets perfect for modelling – trying out various plans (and not just financial ones) to see the outcome.

If you were to make yourself a personal budget like that shown in Figure 11 you could see how much of your disposable income you could afford to spend in different upcoming months before going into the red.

Plus or SuperCalc2 and he can just use the features he wants.

But then I started using First Calc and saw how this program simplified everything.

Writing software is, of course, a matter of weighing alternatives. Flexibility versus simplicity, convenience versus choice, decisions left to the user versus speed and efficiency. The writer of First Calc has done his job well.

It's hard for me to get into the shoes of someone who has no inkling of what makes a spreadsheet. Maybe I should have rounded up a grandmother to try out this program but I can't imagine anyone having any difficulty.

Once you have CP/M in your machine, loading is as easy as typing FC.

One touch of the spacebar and you're presented with a blank spreadsheet. Type a question mark and you get the Help screen shown in Figure 1, on which are listed just about all the program's keyboard-accessible features.

Each is activated with WordStar-like

control letters, referred to (correctly for the PCW) as Alt in the manual, but as <CTRL> on the screen.

You can move around either with the arrow keys or by typing Alt+G and the cell number. Alt+W will set the column width (between 0 and 87 characters) not just for one column, but for a range. This is a great time saver.

To help you become familiar with the program, there's a demonstration spreadsheet on the disc called HOME BUDGET which basically looks like Figure 11 though I've fiddled about with it a little.

Examining the formulae on it is easy. You just type Alt+X and all the values in the cells change to the formulae which created them. This is a toggle: Type it again and the values reappear.

Recalculating after changing a value or formula is easy, too. Either set the spreadsheet to automatically recalculate after each entry (type Alt+K), or recalculate after making a number of entries or changes by typing Alt+U.

If you've used a spreadsheet before,



you'll probably be pleasantly surprised at the speed with which First Calc recalculates, inserts rows and columns, or replicates formulae. The secret is that this is a ram-based program, cutting out the time-consuming disc accessing necessary with many spreadsheets.

First Calc only starts up drive A when you call for the Help screen. Otherwise it can do everything else by referring to the program which, once loaded, is resident in the PCW's memory.

Whether First Calc goes to drive A for files which you wish to load or save is up to you. You can keep them in drive M if you want and not hear the whirr of the disc drive all evening... if you trust your local electricity board to keep the voltage steady.

In other words, the speed of First Calc is only duplicated by most other spreadsheets when you have personally loaded their programs into drive M. Left to their own devices, others normally have to turn on drive A to access many features.

First Calc is able to load everything at once because its designer has conscientiously decided to keep the spreadsheet down to an adequate size. There is a limit of "only" 5,148 cells: That's two alphabets' worth of columns and 99 rows - a bigger spreadsheet than any this keyboarder has ever used.

A lot of features of other spreadsheets have been omitted. You can't make IF statements, for example, which is a key requirement in modelling of any kind, financial or otherwise. It severely limits the possibilities that can be considered.

For formulae, First Calc offers only the simplest operators (+ - * /), and five special functions for dealing with a range of cells:

MAX the biggest or maximum value in the range

| COMMANDS | |
|-----------|---|
| (CTRL)(B) | Blank range of cells. |
| (CTRL)(D) | Delete a range of columns/rows. |
| (CTRL)(E) | Edit formula. |
| (CTRL)(G) | Go to a cell. |
| (CTRL)(J) | Set display format. |
| (CTRL)(K) | Toggle automatic re-calculation of sheet ON/OFF. |
| (CTRL)(L) | Load sheet. |
| (CTRL)(O) | Insert a number of columns/rows. |
| (CTRL)(P) | Print a range of cells. |
| (CTRL)(R) | Replicate a range of cells into another. |
| (CTRL)(S) | Save sheet. |
| (CTRL)(U) | Re-calculate sheet. |
| (CTRL)(V) | Toggle calculation direction VERTICALLY/HORIZONTALLY. |
| (CTRL)(W) | Set width of a range of columns. |
| (CTRL)(X) | Toggle cell contents between FORMULAE/VALUES. |
| (TAB) | Select automatic cursor movement direction. |
| (ESC) | Exit from First Calc. |

PRESS ANY KEY

Figure 1: First Calc's Help screen

- MIN** the smallest or minimum value
- SUM** the total of the values
- CNT** a count of the number of numeric values
- AVE** the average of all the values

However, the hard-copy facilities are tailor-made for the PCW's printer. Once you've typed Alt+P, you can still choose between draft and high-quality output using the choices offered by the Ptr key. Another neat thing First Calc does is to automatically shift gears and drop down into 17 pitch size if the spreadsheet is more than 80 characters wide, as shown in Figure 2. Then, if it still can't print all your spreadsheet across the page, First Calc will break it up into logical pages.

Personally, I would have preferred the basic type size printed to be 12 pitch (Elite) rather than 10 (Pica), but you can't please all the people all the time.

If you buy First Calc as your first spreadsheet program, be warned: Although you can send its output to disc in Ascii format, so that word processors and programs like Bit On The Side! can read it, it's unlikely you'll be able to transfer your First

Calc results to a more sophisticated spreadsheet program.

To sum up: Excepting the missing IF statement, I loved the program but hated the manual. What is it with software producers? They wouldn't dream of assuming someone innumerate could write a program, but they happily let blind people design their documentation.

Bound in a cover that says First Calc is "the spreadsheet that brings the full number crunching facilities of your Amstrad to you simply and efficiently" (sic), the text pages are reproduced from a dot-matrix printer that's setting 8pt type to a 5 inch measure. To make it worse, the typeface is some weird extended design.

The columns are justified left and right but the text is not micro justified, so there are huge word spaces you could drive a bus through. The result is virtually illegible and certainly irritating.

Fortunately, because of the comprehensive Help screen you won't need the manual to take advantage of First Calc's virtues.

It recalculates, updates and rearranges at lightning speed; it always prints out your spreadsheet in a size that fits the paper; it will change the width of all columns at a keystroke; and it's very reasonably priced. What more could you ask of your first spreadsheet program?

First Calc is published under the colophon of Minerva, the Roman goddess of wisdom and war. I think her wisdom influenced the design of the program and she got belligerent when someone suggested the manual needed a copywriter, an art director and a jobbing printer.

| > | A | B | C | D | E | F | G | H | I | J | K | L | M | < |
|-----|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---|
| 01) | | | | | | | | | | | | | | |
| 02) | | | | | | | | | | | | | | |
| 03) | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| 04) | | ----- | | | | | | | | | | | | |
| 05) | BROUGHT FORWARD | 500.00 | 329.38 | 278.75 | 9.13 | 28.50 | 137.88 | 12.26 | 67.63 | 116.01 | 131.38 | 227.76 | 296.14 | |
| 06) | | ----- | | | | | | | | | | | | |
| 07) | INCOME | | | | | | | | | | | | | |
| 08) | Gross | 514.56 | 514.56 | 514.56 | 814.56 | 814.56 | 814.56 | 814.56 | 814.56 | 814.56 | 814.56 | 814.56 | 814.56 | |
| 09) | Deductions | 77.18 | 77.18 | 77.18 | 122.18 | 122.18 | 122.18 | 122.18 | 122.18 | 122.18 | 122.18 | 122.18 | 122.18 | |
| 10) | | ----- | | | | | | | | | | | | |
| 11) | NET INCOME | 437.38 | 437.38 | 437.38 | 692.38 | 692.38 | 692.38 | 692.38 | 692.38 | 692.38 | 692.38 | 692.38 | 692.38 | |
| 12) | | ----- | | | | | | | | | | | | |
| 13) | EXPENSES | | | | | | | | | | | | | |
| 14) | Rent | 250.00 | 250.00 | 250.00 | 250.00 | 300.00 | 300.00 | 300.00 | 300.00 | 300.00 | 300.00 | 300.00 | 300.00 | |
| 15) | Food | 143.00 | 143.00 | 143.00 | 143.00 | 164.00 | 164.00 | 164.00 | 164.00 | 164.00 | 164.00 | 164.00 | 164.00 | |
| 16) | Gas/electric | | | 180.00 | | | 80.00 | | 100.00 | | | | 220.00 | |
| 17) | Telephone | 70.00 | | | 60.00 | | | 60.00 | | | 50.00 | | | |
| 18) | Clothes | 25.00 | | 45.00 | 120.00 | | 200.00 | 15.00 | 90.00 | 35.00 | | 85.00 | | |
| 19) | Other | 120.00 | 95.00 | 89.00 | 100.00 | 119.00 | 74.00 | 98.00 | 90.00 | 78.00 | 82.00 | 75.00 | 112.00 | |
| 20) | | ----- | | | | | | | | | | | | |
| 21) | TOTAL EXPENSES | 608.00 | 488.00 | 707.00 | 673.00 | 583.00 | 818.00 | 637.00 | 644.00 | 677.00 | 596.00 | 624.00 | 796.00 | |
| 22) | | ----- | | | | | | | | | | | | |
| 23) | CARRY FORWARD | 329.38 | 278.75 | 9.13 | 28.50 | 137.88 | 12.26 | 67.63 | 116.01 | 131.38 | 227.76 | 296.14 | 192.51 | |
| 24) | | ----- | | | | | | | | | | | | |
| 25) | | ----- | | | | | | | | | | | | |

Figure 2: First Calc adjusts the pitch to fit the width of the spreadsheet

Product: First Calc
 Price: £29.95
 Supplier: Minerva Systems, 69 Sidwell Street, Exeter, Devon EX4 6PH
 Tel: (0392) 37756

DOWN AT THE ZOO



*Kevin Roberts finds an innovative use
for the PCW among the animals*

STANDING by the penguin pool, downwind from the herd of yawning yaks, visitors to Chester Zoo can sometimes hear a faint tapping sound emanating from the latest species.

Instead of being housed in an enclosure like the animals, a warm office to the left of the icecream parlour is the home of . . . the PCW man.

Derrick Thompson, who recently retired from working for a computer company, is the first of his breed at the zoo.

And the barely discernible noises he makes on the keyboard of his PCW are all aimed at bringing the world famous venue – it attracts more than 700,000 people each year – into the 20th century.

Along with modern techniques of animal care – it was one of the first zoos to embrace large enclosures instead of cages – Chester has also opted for Amstrad PCWs to help with its day-to-day running.

Chester Zoo was founded in 1932 by the late George Saul Mottershead. At that time it covered nine acres, but today it has grown to cover 110 acres, including large areas of gardens.

Running a zoo this size is quite a daunting task, with each of the 5,141 animals requiring individual attention.

At present the zoo has two PCWs in constant use, but it is hoping to buy more as funds become available. Recently it was decided to buy the Cambase package from Cambrian Software to complement the PCW.

With its maximum of 39 fields and 2k per record it has proved to be extremely useful and versatile. Depending on disc space, up to 15,999 records can be handled, a feature which is proving invaluable to the zoo because of the large amounts of data that it has to handle.

Everything from the zoological members' records to animals' food stocks have been stored using the package.

Because data stored on Cambase can be retrieved in a variety of ways and output to word processor files, it is in constant use producing reports for the zoo's various departments.

And the huge volume of data being handled is even helping the keepers to better understand their animal stock, particularly their behaviour patterns.

By keeping track of a creature's pedigree, medical, diet and enclosure details, should it start to behave strangely or become ill, it becomes possible to analyse its history and find

out what may be causing the problem.

In the wild, animals rely a great deal on instinct and their sense of smell – something as simple as the scent of another animal in an enclosure may cause a new species to become ill or tense.

"Keeping details of this kind without the use of a computer would have been very time consuming", says Derrick Thompson.

One of his duties was to train the clerical workers to use the PCW. "At first some of the secretaries were a little sceptical about using computers, but now they've got the hang of WordStar and Cambase they think the PCW is the best thing since sliced bread", he says.

Finding new applications for the machines is another one of his tasks. Recently he tailored Cambase to cope with the huge amounts of information required by the animal food department.

Dealing with the diets of creatures from anything as small as a spider to the size of an elephant needs tremendous attention to detail – just the sort of job that is more easily done by computer.

In the past, keepers had the laborious task of keeping records of the yearly supply of 53 tonnes of meat, 4,380 loaves, 37,440 eggs, 24,600 locusts, 204,000 bananas and 25,000 lettuces, not to mention the mountain of other fruit, vegetables and meal worms.

And just like humans, animals prefer variety in their diets, with the odd grape or avocado pear thrown in for good measure.

Where spiders may be happy with a nice juicy fly – all home grown at the zoo – elephants require a bigger variety in their diet.

"According to our PCW each day a single adult eats 30lbs of apples, 25lbs of pony nuts, 4 large brown loaves, 15lbs of carrots, 30lbs of potatoes and 100lbs of hay. In return they give us some great rose fertilizer", said Ray Packwood, the elephant keeper.

Once the zoo has multiplied the daily intake by 365 for the yearly supply, then by five for each elephant, it not only ends up with a massive food bill but also an administrative headache.

Preparation à la PCW doesn't make the food taste any better, but it does relieve the headaches in the administrator's office.

The educational department at the zoo also uses an Amstrad PCW and

Cambase to help prepare information packs for visiting schools and colleges.

Each pack contains detailed information about the specific animals the schools may be interested in, along with maps to help find their respective enclosures.

As well as leaflets about the animals that can be seen in the zoo, the education department also produces information sheets about the world's tropical rain forests which are being threatened by commercial organisations. Appropriately, leaflets with ideas for conservation are also available.

The packs have to be tailored to meet the needs of individual schools and colleges which – before the

Chester Zoo's information to a national database and this in turn is linked to an international system to provide information which has already led to a number of endangered species being protected.

The transfer of information between the zoo and NERIS is somewhat old fashioned. Data stored on the PCW is printed out and sent through the post only to be re-typed into the larger computer. However, a modem may be in the pipeline.

Eventually information provided to the NERIS computer by Chester Zoo will be accessible directly by schools and colleges throughout the country.

Despite modern technology helping to streamline its administrative oper-



"According to our PCW each day a single adult eats 30lbs of apples, 25lbs of pony nuts, 4 large brown loaves, 15lbs of carrots, 30lbs of potatoes and 100lbs of hay. In return they give us some great rose fertilizer".

introduction of the PCW – put a great strain on the education department.

Each year approximately 90,000 students visit the zoo and with an area of 70 acres to cover, visits have to be as productive as possible. The packs provided by the education department help teachers to make the best use of the student's time.

"The PCW with the Camssoft program has been a great help to the education department. Before using them the work was slower but now we can retrieve and update information much more quickly", said George Bellis, the zoo's education administrator.

The PCW is also helping out on a national basis as well. All the information the education department gathers about its animal stocks, including those that have died and rare species, is sent to an organisation known as NERIS (National Education Resources Information Service).

NERIS, which was set up by the Department of Education, then adds

ations and the animals welfare, it has also led to some scientists having egg on their faces.

In 1985, Chester Zoo used the international database to track down a rare Asiatic lion to breed with its own. Through the computer they found one had been transferred from California to Dublin Zoo.

Arrangements were duly made to breed the pair. The outcome of the mating was a healthy Asiatic lion cub. Shortly after the scientists had finished patting themselves on the back, having proved the computer dating service worked, it was discovered that the lions were not of the pure Asiatic variety after all, but a cross breed.

It only goes to prove that computers are only as good as the information they contain. Happily that embarrassing episode has not dampened the staff's enthusiasm for using their PCWs.

"They will never become an endangered species", says Derrick.

DIAL UP ANYWHERE, ANY WAY . . . OR ALMOST

Kate McGill gets online with a wide-ranging communications package from PMS

WHEN the PCW first appeared, those of us interested in data communications were intrigued to discover a hidden file on the LocoScript disc called MAIL232.COM. It indicated clearly that Amstrad expected to see the PCW being used as more than a word processor, despite the company's later advertising slogan. All we needed was a serial interface, and that was forthcoming within weeks of the PCW's launch.

MAIL232 turned out to be satisfactory for straight Ascii (text) file transfers. But third-party suppliers quickly realised there was a market for more sophisticated communications software. If my memory serves me well, Sagesoft's Chit-Chat was the first proper commercial comms program to appear on the scene, and many others have followed in its wake.

However, most of them (including Chit-Chat) have merely provided dumb terminal emulation for accessing bulletin boards and such like, together with friendly front-ends for Ascii transfers and Prestel frame capture. Fine, if that's the limit of your communications aspirations. But for sending or receiving executable .COM files, or files containing special print control codes, or for guaranteed error-free transfers, in the past you have had to get hold of Kermit, Xmodem or whatever, and use them separately.

Now, a fairly well-known package from PMS Communications – Dialup Personal – is available in PCW format. It offers a range of built-in protocols (Kermit, Xmodem, Epad, and its own proprietary Dialup), as well as the usual Ascii facilities, and Prestel frame capture and emulation.

In other words, here you have a communications package which should be flexible enough for many PCW comms experts, and which will allow beginners plenty of room to expand their horizons.

Dialup won't do everything. There's

no VT100 emulation, Windowed Xmodem, Ymodem, Ymodem Batch or Seadog, nor any other of the more esoteric protocols. But these are really specialist requirements, and real specialists won't mind carrying on in their own really specialist way.

Simplified complexity

The best software – comms or otherwise – manages to combine flexibility with ease of use. In fact, the highest praise any piece of software can receive is that it does everything expected of it while putting the minimum nervous strain on the user.

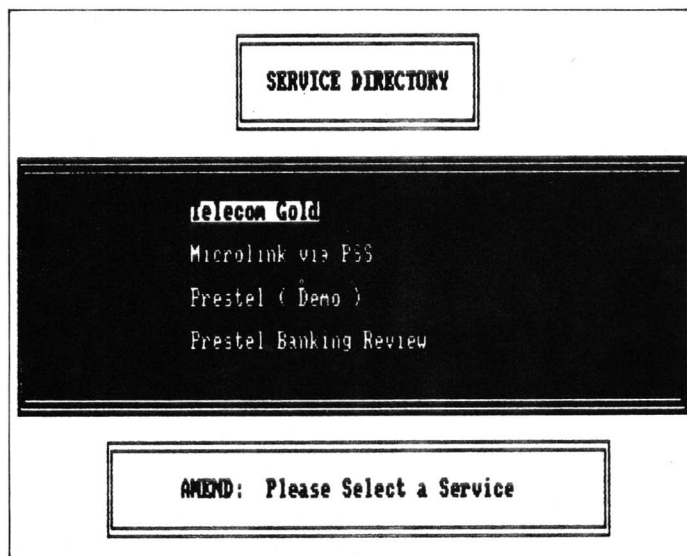
Now, I've said it before, but it can't be repeated often enough (the industry may eventually take notice): There is an abominable lack of standardisation in data communications. The result is that you have to understand an unnecessary amount about what is going on inside your equipment, and set an unnecessary number of parameters when using comms software.

At present, therefore, comms packages simply can't be made genuinely easy for the user. But PMS has managed to produce a program which is about as friendly as it can be without the all too common trade-off against flexibility. With Dialup you get complexity if you want it, but also relative ease of use from beginning to end. In the current communications situation, you can't ask for more than that.

Dialup online and off

The basic Dialup screen is the Service Directory. From this screen you can create or amend service details (MicroLink, Prestel or whatever), or connect to the one you require simply by highlighting it with a cursor-bar and pressing Enter.

As with all the screens, the Service Directory has been kept as simple as possible by showing only a limited number of choices at a time and allowing you to scroll through the



The Service Directory screen – choosing an entry to amend

| SERVICE DEFINITION | |
|--------------------|--|
| Service Name: | Microlink via PSS |
| Telephone Number: | 295581 |
| Speed: | = 1200/75 |
| Format: | = 7 Even |
| Emulation: | = TTY |
| Protocol: | = NONE |
| Logon Sequence: | ***1M1M61MNTLGOLD901TYM1M~A21920100 4871M |

Please Edit service details

Editing the MicroLink logon sequence

| MODEM SELECTION |
|--------------------------------|
| Tandata Im512 |
| Dacom DSL2123AD |
| FACE Linnet |
| Miracle Technology WS3000/4000 |
| Manual Dial Modem |

Please choose a modem type

Selecting a basic manual-dial modem from the many types available

options. Up to 50 services are allowed in the directory, which should be enough even for the most fanatical communicator.

The distribution disc comes with several common services already defined, making the definition of any further services all the more easy. It's simply a matter of amending a pre-defined one, or using it as a template for a new one.

All parameters are set by highlighting the appropriate service and making the necessary entries or amendments which include the various protocols required. So you can, say, set up a service entry which automatically loads Kermit or Xmodem ready for an error-checked 8-bit file transfer when you go online.

You can also define logon strings which will be sent automatically once the connection is made with the remote computer. These can include carriage returns to wake up a pad, timed delays, user identities, and even passwords (if you're foolish enough to leave your password in an automated system for anybody to use).

The choice of baud rates is 300, 1200, 1200/75, 75/1200, 2400, 4800 and 9600. The last two will normally be used only for micro to micro transfer, or direct connection to a mainframe via a line driver or a local area network pad. I tested these fast speeds out while connected to a DEC MicroVax, and found no problems with 4800 baud. At 9600 baud there was some corruption, but my line driver may well have been the cause.

The Service Directory has a tree-structured menu system at the top, and below it (accessed via a Utilities menu) are sub-menus for file operations, printing and viewing captured viewdata frames, setting up printer parameters, and choosing a pre-set modem definition. The modems

supported include all the common ones, and there are also definitions for plain manual-dial modems and standard Hayes-compatible models.

Choosing a modem is simply a case of highlighting the relevant menu item and saving the definition to disc. This then becomes the default modem selection, so the operation will normally only be carried out once.

When you first access the modem menu, the default modem is the PCW-dedicated Miracle WS4000. There's a reason for this: PMS offers a complete comms package consisting of the WS4000 modem and Dialup Personal at £265.45 including VAT, postage and packing. It makes a good buy if you're starting from scratch.

Once online, commands are executed by pressing Exit plus a number – the equivalent of using the function keys. A reversible strip (one side for terminal mode, the other for viewdata) fits above the top line of the PCW keys to remind you of the commands.

These include all the functions you would expect (Echo to printer, Transfer file, Save frame, and so on), plus one often missing from comms packages: Transmit break (send a line-break disconnection code). Generally, this will be of use only when connecting up to a mainframe via a pad, but it will be a welcome addition for those who have suffered the anguish of being unable to log off, with the keyboard seemingly having gone to sleep.

Dialup and the PCW

On the whole, Dialup has been quite well configured for the PCW, though there are still tell-tale signs that it was originally written for other machines – for instance, the message "Press Escape to exit".

Early PCW versions did have some

bugs, and there were some omissions. For example, there was no real-time clock on the status line as in versions for other machines; when linked to Prestel, logon sequences tended to cause frame corruption; and there was a serious bug in the Kermit implementation. All the bugs have now been removed, and the clock has been implemented. In addition, the latest release includes an improved viewdata telesoftware downloader.

The documentation includes specific instructions for a number of machines which will be of no interest to PCW owners, but those for the PCW are detailed and comprehensive. On the whole the manual is well written and well organised, beginning with the fundamentals of data communications, and eventually covering most topics in depth. There is a glossary of terms, and a good explanation of error messages, but no index.

The one major weakness in the program is its lack of a simple built-in text editor, which would have been particularly useful for those PCW owners who only use LocoScript. For them, preparing messages offline will involve not only re-booting the system, but also the extra inconvenience of converting files to Ascii format.

On the other hand, what you do get is really very good, and in all this is a highly recommendable package. It's not the cheapest you'll find, but its wide range of features and excellent user-interface make it superb value for money.

Product: Dialup Personal
Price: £89.95
Supplier: PMS Communications, Norfolk House, Smallbrook Queensway, Birmingham B5 4LJ
Tel: 021-643-7688

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Send to: Database Software, Europa House,
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Master PAINT

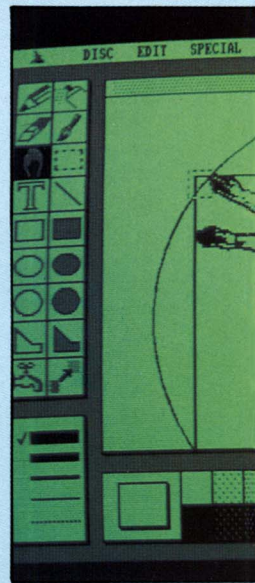
With MasterPaint you have everything you need to produce quality artwork. Move the pointer using the cursor keys or a mouse, and choose the option you require from the icons or pull-down menus. You can even scroll the picture, enabling you to create larger images.

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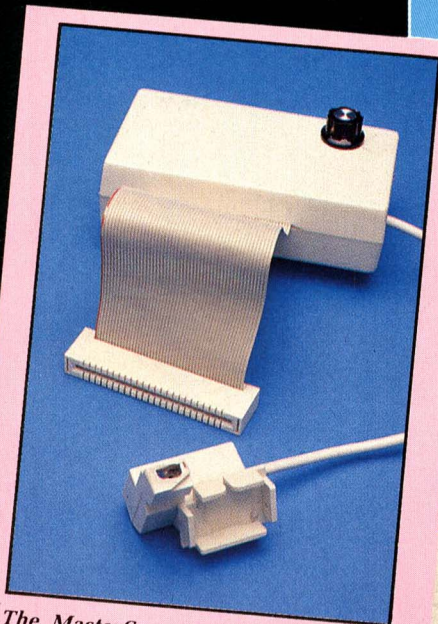
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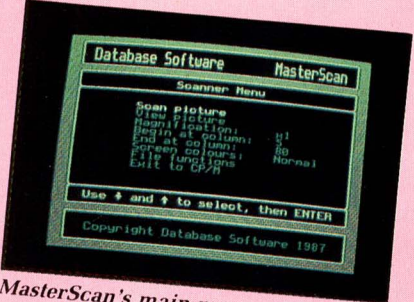
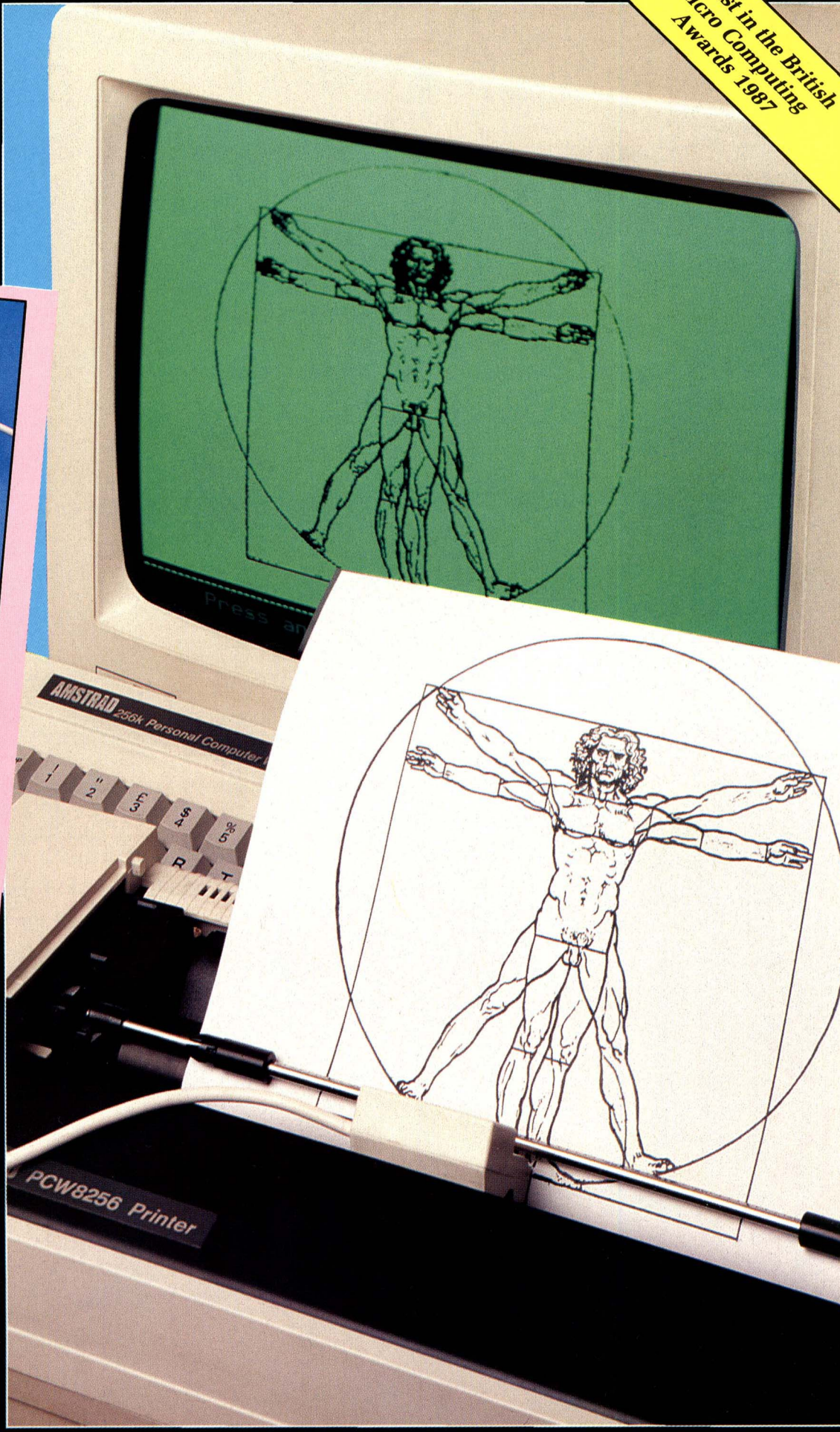


any

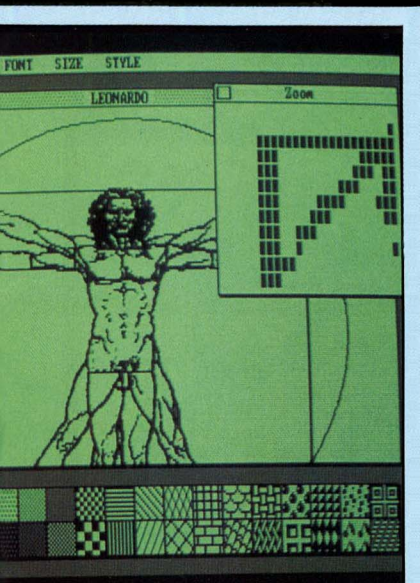
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The MasterScan hardware, showing the interface box with contrast control and through connector



MasterScan's main menu



The zoom function in action

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| Integrated Sys PSIS CAMSOFT | 99.95 | 81.00 |
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| Nominal Ledger (CAMSOFT) | 49.95 | 41.00 |
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| Pascal MT+ (DR) | 49.95 | 41.00 |

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| Cardbox | 59.95 | 50.00 |
| Condor I | 99.99 | 72.00 |
| D. Base II | 119.00 | 99.00 |
| Database Manager | 29.95 | 23.00 |
| File Manager (Sandpiper) | 99.95 | 77.00 |
| First Base (Minerva) | 29.95 | 23.00 |
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| Masterfile 8000 (Campbell) | 49.95 | 41.00 |

| DESKTOP PUBLISHER | Ret Price | Our Price |
|------------------------|-----------|-----------|
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| Newsdesk International | 49.95 | 41.00 |

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|-------------------|-----------|-----------|
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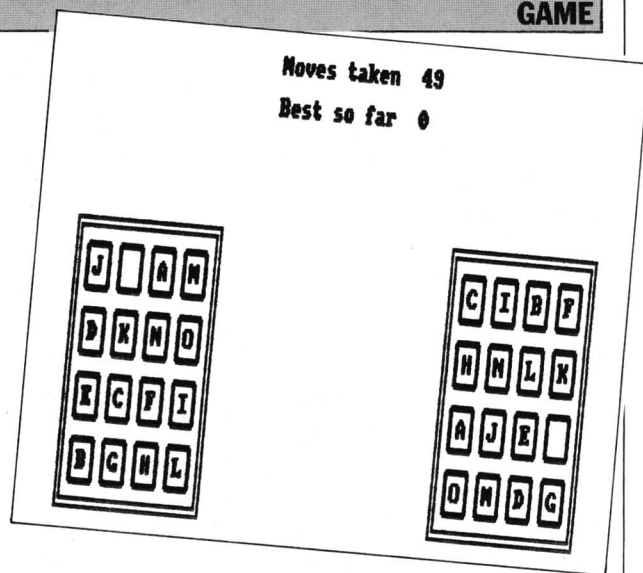
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Red, Blue, Green, Brown,
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PATIENCE PAYS OFF

Henry Douglas presents a sliding block puzzle to test your powers of deduction



Moves taken 49
Best so far 0

THIS program simulates and expands on the favourite children's toy with which you attempt to rearrange a series of tiles in a tray to achieve a predefined pattern.

The rules for this game are the same and there are 10 different puzzles.

The screen displays two sets of tiles. The left one is your start position (which is always the same) and the one you use for rearranging. The left one is the position you have to aim for.

What makes this version different is the two levels of play. On level one the

solution is displayed all the time, but on level two a tile is only shown when the corresponding one in the top set is placed correctly. However impossible some of the positions may seem, they can all be solved.

You use the arrow keys to select the tile you wish to move into the space. In other words, if you want the tile above the space to move, use the up arrow - key 5. If you want the tile to the right, use key 3. A running total displays how many moves you have taken and your best score.

If you wish to create your own fin-

ishing sequences just alter lines 130 to 150. For instance, to have the sequence ONMLKJ IHGFEDCBA, simply alter one of the three items of data in line 130 to these characters. But take care as not all combinations of letters are possible to solve.

MAIN VARIABLES

- level Game level - 1 or 2
- a\$(4,4) Top set of tiles
- t\$(4,4) Bottom set of tiles
- f\$ Target position
- move Moves taken so far
- best Lowest moves taken
- key Input from keyboard
- xp Space's horizontal position
- yp Space's vertical position

PROGRAM STRUCTURE

- 50-70 Input level
- 80-160 Create bottom tile sequences
- 170-190 Draw top set of tiles
- 200-230 Draw bottom set of tiles
- 260-300 Input from keyboard
- 310-340 Move tile to new position
- 350-390 Check if tiles correctly placed
- 400-440 Win routine
- 450-480 Draw border of tile box
- 490-520 Draw tiles
- 530-570 Shuffle tiles after win

```

490 PRINT FNat$(tt+(a*3-2),b*3+8,CHR$(15
0)+CHR$(154)+CHR$(156))
500 PRINT FNat$(tt+(a*3-2),b*3+9,CHR$(14
9)+CHR$(149))
510 PRINT FNat$(tt+(a*3-2),b*3+10,CHR$(1
47)+CHR$(154)+CHR$(153))
520 RETURN
530 RESTORE 160:x$="":FOR a=1 TO 4:FOR b
=1 TO 4:x$=x$a$(a,b):NEXT:NEXT
540 FOR a=1 TO 10:FOR b=1 TO 4:FOR c=6 T
O 9
550 PRINT FNat$(tt+(b*3-1),c*3+9,MID$(x$
,((b-1)*4)+c-5,1)):NEXT
560 NEXT:x$=MID$(x$,2)+LEFT$(x$,1)
570 NEXT:RETURN
**** END ****
    
```

```

10 REM Sliding Puzzle
20 REM by Henry Douglas
30 REM (c) Computing With The Amstrad
40 REM -----PCW-----
50 e$=CHR$(27):RANDOMIZE PEEK(64504!):PR
INT e$+f$
60 level=0:WHILE level<1 OR level>2:PRIN
T e$+E'+e$+H'
70 INPUT "Enter level 1 - Easy 2 -
Difficult ";level:WEND
80 PRINT e$+E'+e$+H':DEF FNat$(x,y,a$)
=e$+Y'+CHR$(32+y)+CHR$(32+x)+a$
90 tt=20:GOSUB 450
100 WHILE x$=f$:RESTORE 130:x=INT(RND*10
)+1:FOR a=1 TO x:READ x$:NEXT:WEND
110 RESTORE 160:f$=x$:FOR a=1 TO 4:FOR b
=1 TO 4
120 READ a$(a,b):t$(a,b)=LEFT$(x$,1):x$=
MID$(x$,2):NEXT:NEXT
130 DATA BFLMANIGD HCKE0J,FJDHLKB NEACIG
MO,CHA0INJMBLEDFK G
140 DATA IAFJKB KEHMOLGND,DMDHAJEKCNGL O
FI,NEAJM HKBDGLFOCI
150 DATA CMBO NEIHAKLFGDJ,NIDJ GMKHCOFEL
BA,MBLKCOFJDGHIE NA,FHILCBNGMAD0E JK
160 DATA A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,"
"
170 move=0:FOR a=1 TO 4:FOR b=1 TO 4:GOS
UB 490
180 PRINT FNat$(tt+(a*3-1),b*3+9,a$(a,b)
)
190 NEXT:NEXT
200 tt=55:IF best=0 THEN GOSUB 450 ELSE
GOSUB 530
210 FOR a=1 TO 4:FOR b=1 TO 4:GOSUB 490
220 IF level=1 THEN PRINT FNat$(tt+a*3-
1,9+b*3,t$(a,b))
230 NEXT:NEXT
240 PRINT FNat$(38,4,"Best so far "+STR$
(best));"
250 xp=4:yp=4
260 xx=0:yy=0:WHILE xx=0 AND yy=0
270 x$="":WHILE x$="":x$=INKEYS:WEND:key
=ASC(x$)
280 IF key=31 THEN xx=-1 ELSE IF key=30
THEN xx=1
290 IF key=1 THEN yy=-1 ELSE IF key=6 TH
EN yy=1
300 WEND:IF xp+xx>4 OR xp+xx<1 OR yp+yy>
4 OR yp+yy<1 THEN 260
310 a$(yp,yp)=a$(yp+yy,xp+xx):a$(yp+yy,x
p+xx)=" "
320 PRINT FNat$((yp+yy)*3+19,9+(xp+xx)*3
,a$(yp+yy,xp+xx))
330 PRINT FNat$(yp*3+19,9+xp*3,a$(yp,xp)
)
340 xp=xp+xx:yp=yp+yy
350 temp=0:FOR a=1 TO 4:FOR b=1 TO 4:tem
p$=" "
360 IF a$(a,b)=t$(a,b) THEN temp=temp+1:
temp$=t$(a,b)
370 IF level=2 THEN PRINT FNat$(a*3+54,9
+(b*3),temp$)
380 NEXT:NEXT:move=move+1
390 PRINT FNat$(38,2,"Moves taken "+STR$
(move)+" ":IF temp<>16 THEN 260
400 PRINT FNat$(25,26,"Well done. Pres
s Return to play again.")
410 IF move<best OR best=0 THEN best=mov
e
420 WHILE a$<>CHR$(13):a$=INKEYS:WEND
430 PRINT FNat$(25,26,STRING$(40," "))
440 x$=f$:GOTO 100
450 PRINT FNat$(tt,10,CHR$(134)+STRING$(
12,CHR$(138))+CHR$(140))
460 FOR a=1 TO 12:PRINT FNat$(tt,10+a,CH
R$(133)+STRING$(12,"")+CHR$(133)):NEXT
470 PRINT FNat$(tt,23,CHR$(131)+STRING$(
12,CHR$(138))+CHR$(137))
480 RETURN
    
```

SIGNS OF THE TIMES

Mike Crowe compares two sign-writing packages for the PCW

PERSONAL computers are entering all our daily lives at a dramatic rate as hundreds of small businesses and shops readily adopt them to assist with correspondence and book keeping. It is hardly surprising therefore, that software companies are sensitive to the opportunities presented by the large installed PCW base in the High Street, and many new packages are on offer to this sector. However, it is something of a rarity for a totally new application to come along. Computer sign-writing, aimed at offering the shopkeeper or businessman a means of producing display signs, is one of these innovations.

Signwriting packages allow you to compose and produce hard copy of very high-quality large lettering using a standard dot-matrix printer. They usually support a wide range of print sizes and fonts, and offer various embellishments such as italic and underlining. Most allow printing either across the paper – to display signs up to approximately the size of this page, or along several sheets of continuous paper – to produce large banners.

Product: *Tas-Sign*
 Price: £29.95
 Supplier: *Tasman Software, Springfield House, Hyde Terrace, Leeds LS2 9LN.*
 Tel: 0532 438301

TAS-SIGN comes on a single-sided disc and includes a comprehensive, well-presented 32-page instruction booklet. It is apparent that the software was not specifically developed for the PCW but the instructions are adequate for users with no previous knowledge of CP/M Plus.

Signs are compiled on the screen shown in Figure 1. The lower part shows the lines of the sign and the height of the letters, while gaps between lines can be specified on a row by row basis. The upper part of the screen allows you to select from a number of options.

Amongst these is the chosen character style or font, which you can select from the four alternatives shown in Figure 2. The **Orientation** option (Portrait or Landscape) specifies whether the sign is to be printed across or down the paper. The **Strike**, **Density** and **Meshing** options are concerned with the printer over-typing modes. I obtained acceptable quality with a fairly old ribbon using double strike, no meshing and double density. You can produce drafts faster and with less wear and tear on the ribbon and printer using single strike and single density.

Options are also offered for underlining and italicising while **Reverse** prints white lettering on a black background and **Centering** middles each line on the page.

Characters may be spaced in three different ways by using the **Spacing** option. *Constant* spacing results in all characters occupying the same width. So a narrow character such as '1' is separated from its neighbour by more white space than a wide character like 'W'. *Proportional* spacing gives fairly constant gaps between all letters. The third option, *Kerning*, is similar except it allows some characters to overlap

slightly to give a more uniform appearance. The W and the A in BEWARE in Figure 2 are a typical example.

You can specify the height of letters and the gap between rows. Using the **Stretch** option, characters may be expanded or shrunk in width, by a factor of up to two either way, to fit a sign into a limited space. **Border** allows you to surround the whole sign by a rectangular box of specified width. The final option is **Hatching**, which causes letters and borders to be printed in stripes, squares or diamonds to give a pleasing and lighter effect than solid black. This has the added advantages of reducing printer and ribbon wear, and producing lettering which photocopies much better. Eight styles are provided but their pitch is quite coarse making them unsuitable for small lettering.

Although you would usually set most of these options for the whole sign, you can re-specify any for individual lines or even letters.

Product: *Signwriter*
 Price: £49.95
 Supplier: *Wight Scientific, 44, Road Street, London SE10 9JT.*
 Tel: 01-858 2699

SIGNWRITER extends over two sides of a disc because in addition to the main functions it has in common with Tas-Sign, it has a pair of programs called Design and Fontcalc, with which you can design new fonts. Together these give far more flexibility than Tas-Sign.

The Design program provides a painless, but rather slow way, of defining individual characters, or any other shapes or symbols. These are represented as sequences of lines and arcs which outline the character, and the program encodes this description into a fairly compact format.

Fontcalc translates an entire set of characters defined in this way and

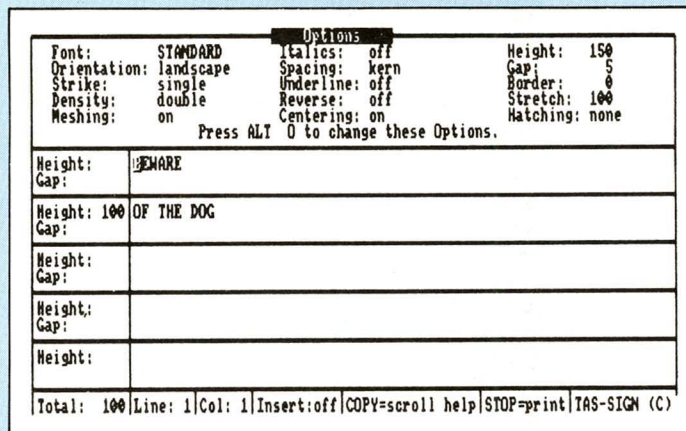


Figure 1: The Tas-Sign design screen with options at the top

GARAGE IN CONSTANT USE

Please do not obstruct

Figure III: Signs produced using Signwriter. There's only one font, but very high quality in both large and small letters.

SILENCE
Examination in progress

B & B

produces a file which represents the spacing and shape information in a form suitable for the sign writing process. Fortunately, Signwriter comes with one font already established along with a number of special characters, such as foreign accented letters, which can be added if disc space permits.

Having defined your font, designing your sign with a program called Signin follows a similar route to Tas-Sign. The characteristics – in terms of character size and line spacing – are set up for each line, then the text is keyed in. Options exist for left, right and centre justification of each line as well as those for underlining or enclosing the sign in a box. However, many of Tas-Sign's more exotic options – such as different fonts, italic, reverse printing, character stretch and hatching – are not available in here. Standard spacing is proportional and any other is achieved by inserting or removing spaces between characters.

Once you have defined your sign you use another program called Signout to print it. This offers a number of facilities missing from Tas-Sign. For example, the whole sign can be stretched or shrunk to fit a given size and shape. The printout can be repeated a number of times, but it is probably better to use a photocopier if you need more than a few copies in view of the speed involved. You can obtain a three-times faster printout using draft mode, and even produce mirror images – useful for ironing on to Tee-shirts!

The documentation is a lot less formal than Tas-Sign's. Not only is the format less professional (eight type-written sheets, corner stapled) but the style is a lot more chatty. A considerable proportion involves internal data structures which the general user does not need to know, but which a programmer would need to interface other programs to Signwriter. A warning saying "Take care with these options: They can do unexpected things" suggests the software is not

very mature – but no anomalies appeared in my copy.

Wight Scientific offer a service which gives one free update and further updates for a nominal fee. Several alternative fonts are offered at £5 each (plus VAT plus disc), and if you design one for them you might earn royalties.

The verdict

Both packages perform reliably and the instructions are clear. They do the basic job well with a consistently good quality of lettering and provide the means for saving the signs as disc files so that minor alterations can be made without the need to start afresh.

They are extremely slow, with print times often stretching well over 10 minutes. This is not limited by the speed of the printer but by the large amount of disc handling needed to read individual character shapes, and the calculation needed to preserve accurate shapes at different scales.

Unfortunately, neither package allows you to preview the sign in the way it will appear on paper. Such a facility would be a great benefit in saving time and ribbon ink.

For anyone wanting the minimum of hassle and a ready-to-use package with maximum built-in facilities, Tas-Sign is to be preferred because of its four embedded lettering styles and ability to vary the letter shading. This not only creates a pleasing effect on large lettering but is also somewhat kinder on the printer and ribbon.

However, for the programmer, or anyone interested in designing his own fonts, the power of the various design programs in Signwriter and the ability to output a file directly from a program, makes Signwriter the natural choice. Several specialist fonts are available for sale if you have a particular need.

If you remain undecided, I would recommend Tas-Sign, as it is offered at a more competitive price and is a better presented product.



Figure II: Examples produced using Tas-Sign. Note the variety of fonts available and the shade option

Liners

WIN upto £10! Send YOUR 10-liners to: Computing with the Amstrad PCW, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

TEN LINERS is a feature intended to contain short simple programs sent in by our readers. The routines can be anything you want – utilities, mathematical listings, even graphics demonstrations that can exploit Roland Waddilove's Plot and Draw originally published in the May 1987 issue of *Computing with the Amstrad PCW* but reproduced in part on the opposite page.

The only requirement is that they are no longer than ten lines, so it's quite a challenge.

Ten lines may not seem a lot, but it is surprising what you can do with them.

So get your thinking caps on. We'll pay £10 for the submission we consider the best, and £5 for any others we publish.

You'll stand a better chance of getting your masterpiece in print if you send it in on disc with a stamped addressed envelope for its return, but this is not essential.

£10 WINNER

Enhanced menus

Here's a handy routine from **Christian Penfold** that will help brighten up those boring old menu displays. Type it in, run it and press any of the cursor keys to change the menu selection.

The top and bottom borders are produced in line 20, while line 50

holds the data for each of the menu options. Don't be put off by the apparent length and complexity of this routine. The logic behind it is really quite simple, and you should be able to incorporate it into your own programs with very little alteration.

```
10 REM Menu by Christian Penfold.
20 c$=CHR$(27):cL=c$+"E"+c$+"H"+c$+"
p"+" Scrolling Menu "+c$+"q"+" by Ch
ristian Penfold.
10 Liners' Co
mputing With The Amstrad PCW."+c$+"Y"
+CHR$(61)+CHR$(32)+STRING$(90,143)+c$
+"Y"+CHR$(34)+CHR$(32)+c$+"f"
30 DEF FNli$(y,q$)=c$+"Y"+CHR$(32+y)+
CHR$(32)+SPACES$(45-LEN(q$)/2)+c$+"p"+
q$+c$+"q"+SPACES$(45-ROUND(LEN(q$)/2))
:DEF FNin=ASC((INKEY$)+CHR$(0)):DEF F
Nat$(x,y)=c$+"Y"+CHR$(32+y)+CHR$(32+x
)+CHR$(32+x)+c$+"p"+q$+c$+"q"
40 DATA " Name ", "Mr. J. Smith",
" Address 1 ", "5 High Street", " Adre
ss 2 ", "Bolton", " Post Code ", "BL99 9
XX", " Telephone ", "0999-87654", " THE
END ", "THAT'S ALL FOLKS!"
50 PRINT cL$:FNli$(3," - Demo Menu -
"):RESTORE 40:FOR x=1 TO 6:READ d$(x)
:READ a$(x):PRINT FNat$(20+(40 AND x>
3),(x-(3 AND x>3))*7)d$(x):NEXT:e=1:h
=3:PRINT FNli$(27," Cursor keys = Up
/ Down or Left / Right then (Return)
= select ")
60 t=FNin:o=(e-(3 AND e>3))*7:IF e<>h
THEN PRINT FNai$(20+(40 AND e>3),o,d
$(e)):FNat$(20+(40 AND h>3),(h-(3 AND
h>3))*7)d$(h)
70 h=e:e=e-(t=30 AND e<7)+(t=31 AND e
>0):e=e-(6 AND e=7)+(6 AND e=0):e=e-(
3 AND t=1 AND e>3)+(3 AND t=1 AND e<4
)+(3 AND t=6 AND e<4)-(3 AND t=6 AND
e>3):IF t<>13 THEN 60
80 IF h=6 THEN 100 ELSE PRINT cL$:FNl
i$(10," This is menu option"+STR$(h)+
"+d$(h)+="+a$(h)+" "):FNli$(27,"
Press spacebar to return to menu ")
90 t=FNin:IF t<>32 THEN 90:ELSE 40
100 PRINT cL$:FNli$(10," +a$(h)+" "
;c$+"e"
```

Bar charts

How many times have you tried to tabulate data in the form of bar charts, and found yourself restricted by the PCW's character set to using row upon row of asterisks?

Using this nifty little routine from **John Hawthornthwaite** you can show your figures off in style. To display your own data simply enter it in data statements from line 90 onwards and change the 31 in line 60 to the number of items you wish to display, PLUS ONE.

```
10 REM Bar Chart by J Hawthornthwaite
20 esc$=CHR$(27):x=1:cuo$=esc$+"e"
30 DEF FNp$(x,y)=esc$+"Y"+CHR$(x+31)+
CHR$(y+31)
40 PRINT esc$+"E"+esc$+"H"+esc$+"f"
50 RESTORE 90:FOR f=1 TO 30:PRINT FNp
$(f,1):CHR$(149):NEXT
60 PRINT FNp$(30,1):STRING$(88,"_"):F
OR f=2 TO 31:READ i
70 x=x+1: FOR p=29-i TO 29:PRINT FNp$(
p,x):CHR$(133):NEXT p
80 NEXT f
90 DATA 12,15,23,29,17,4,8,10,9,16,12
,27,24,26,19
100 DATA 27,15,4,18,13,28,15,3,0,0,23
,24,25,26,12
```

£5

Future font

This little gem from **Keith Lowe** provides the opportunity to produce impressive printouts from Basic. By combining *double width* and *italic* he's managed to come up with a very distinctive and professional-looking style to make your documents stand out from the rest.

If you fancy experimenting, lines 40 and 50 set the expanded text and print it; line 60 backspaces to the start; line 70 sets italic mode and prints it once more; line 80 resets the printer.

```
10 PRINT CHR$(27)"E"CHR$(27)"H":LINE
INPUT "Enter text (max 40 chars).":a$
20 IF LEN(a$)<40 THEN 40
30 PRINT"Truncating line after 40 cha
racters...":a$=LEFT$(a$,40)
40 LPRINT CHR$(27)"W1";
50 LPRINT a$:=LEN(a$)
60 FOR n=1 TO a:LPRINT CHR$(8):NEXT
70 LPRINT CHR$(4):a$
80 LPRINT CHR$(27)"@"
90 PRINT"Press spacebar to enter ano
ther line of text or any other key to
exit."
100 i$=INKEY$:IF i$="" THEN 100 ELSE
IF i$="" THEN RUN
```

£5

This future font is in draft quality
While this one is in high
AND THIS ONE IS IN UPPER CASE

POPULAR PLOT AND DRAW

DUE to great demand we are reproducing the Plot and Draw program first published in the May 1987 issue of *Business CWA*. If you need further information on the routine you will have to purchase that back issue (details on Page 72).

We've included a couple of short routines to show you how to use the program. In these the CALL to screen is imperative, as is the POKE and GOSUB to 200 - the Plot and Draw routine.

The main thing to watch for when you are using this routine in your own programs, is that you don't go off the edge of the screen, as this will crash the machine. And don't forget to save it before you continue.

Etch-A-Sketch

Add this short program and you'll have a very good simulation of the children's favourite toy.

Use Z, X, K and M to draw a short line left, right, up and down respectively, but if a shorter distance is required press D and a point will be plotted on the screen.

To move around without leaving a trail use the same direction keys with Shift held down, and to erase a line just draw over it again.

```

10 GOSUB 200:PRINT CHR$(27)+"E"+CHR$(27)+"f"
20 POKE &HE57A,&H3F:CALL screen:x%=36
0:y%=120
30 d$="":WHILE d$=""d$=INKEY$:WEND:a
$d=d$:d$=LOWERS$(d$)
40 IF d$<>"d" THEN t1=0:t2=0
50 IF d$="z" THEN t1=-5 ELSE IF d$="x"
THEN t1=5 ELSE IF d$="k" THEN t2=5
ELSE IF d$="m" THEN t2=-5
60 x1%=x%+t1:y1%=y%+t2:IF x1%>700 OR
x1%<10 OR y1%>240 OR y1%<10 THEN 30
70 IF d$="d" THEN CALL plot(x%,y%):x1
%=x%+(t1/5):y1%=y%+(t2/5):GOTO 100
80 IF x1%=x% AND y1%=y% THEN 30
90 CALL draw(x%,y%,x1%,y1%):IF ASC(a$)
>91 THEN a$=d$:FOR a=1 TO 20:NEXT:GOTO
TO 90
100 x%=x1%:y%=y1%:GOTO 30
    
```

```

200 REM PCW Draw and Plot
210 MEMORY &HFFFF
220 REM Store machine code
230 address=&HE400
240 FOR i=1 TO 47
250 sum=0:READ code$,check$
260 FOR j=1 TO 21 STEP 2
270 byte=VAL("&H"+MID$(code$,j,2))
280 POKE address,byte
290 sum=sum+byte:address=address+1
NEXT
300 IF sum<>VAL("&H"+check$) THEN PRINT
"Error in data":STOP
310 NEXT
320 screen=&HE400:plot=&HE403
330 draw=&HE406:RETURN
340 DATA C309E4C34FE5C32CE4CD81,6C8
350 DATA E511982C2100B60168013E,339
360 DATA 20F5D53E0873237223133D,3AB
370 DATA 20F8D1EB09EBF13D20ECC9,6CB
380 DATA 7E23666F22FDE5EB5E1600,4D9
390 DATA ED53FB5C5DDE1DD6E00DD,7CB
400 DATA 66015E2356ED53F9E5DD6E,5A7
410 DATA 02D066035E2356ED53F7E5,53B
420 DATA CD81E52AFDE522E7E5ED5B,775
430 DATA F9E501FFFA7ED52300A2A,627
440 DATA FDE5EB010100A7ED5222EB,5C2
450 DATA E52003010000ED43FE52A,437
460 DATA FBE522E9E5ED5BF7E501FF,7F4
470 DATA FFA7ED52300A2AFBE5EB01,615
480 DATA 0100A7ED5222EDE5200301,3FF
490 DATA 0000ED43F1E52AEBE5ED5B,648
500 DATA EDE5AFED52300C32AEBE5,632
510 DATA EB22EBE5ED53EDE532F5E5,7FB
520 DATA 2AEBE5EB29ED5222F3E52A,671
530 DATA EB522E5E5ED5BE9E52AE7,7E3
540 DATA E5CD5BE53AF4E5E6802030,6BB
550 DATA 3AF5E5A7280E2AE7E5ED5B,62F
560 DATA EFE51922E7E5C306E52AE9,69C
570 DATA E5E5BF1E51922E9E52AEB,721
580 DATA E529EB2AF3E5A7ED5222F3,6F6
590 DATA E5C3E0E43AF5E5A7280E2A,687
600 DATA E9E5ED5BF1E51922E9E5C3,7B8
610 DATA 36E52AE7E5ED5BEF5E1922,668
620 DATA E7E52AEDE529EB2AF3E519,6F7
630 DATA 22F3E52AE5E52B22E5E57C,681
640 DATA B5C2D6E4C94E2346EB5E16,610
650 DATA 006960CD81E5AF935F7DE6,600
660 DATA 07F5CB1CCB1DCB1CCB1DCB,565
670 DATA 1CCB1D535DCD88E5F13C47,562
680 DATA CB1610FC3F47CB1E10FCC9,531
690 DATA 1C05AFCE900C97AE6F80F,6FD
700 DATA 0F6F26007AE6075401A5E5,3EA
710 DATA 094E2346EB292929094F06,284
720 DATA 0009C93059005CD05EA061,3E6
730 DATA 70644067106AE06CB06F80,4E0
740 DATA 7250752078F07AC07D9080,586
750 DATA 608330860089D08BA08E70,51B
760 DATA 9140941097E099B09C809F,5F0
770 DATA 50A220A5F0A7C0AA90AD60,655
780 DATA B0000000000000000000,00B
790 DATA 00000000000000000000,000
800 DATA 00000000000000000000,000
    
```

Quick on the draw

Add these ten lines to the routine. Run the resultant program and after a few seconds the computer will start to produce a series of rectangles which combine to give a constantly changing display.

Each one is made up from the draw statements in lines 60 to 90. Line 50 ensures that the draw commands don't exceed the screen size, and line 20 generates the random step sizes.

```

10 PRINT CHR$(27)+"E"+CHR$(27)+"f":GO
SUB 200:POKE &HE57A,&H3F:CALL screen:
ox%=360:oy%=120
20 x=INT(4+15*RND):y=INT(3+10*RND):a=
x:b=y
30 WHILE (a<>0 OR b<>0) AND INKEY$=""
40 x=(2*(ABS(a)>300)+1)*x:y=(2*(ABS(b
)>100)+1)*y:a=a+x:b=b+y
50 IF a<1 OR a>600 OR b<1 OR b>200 TH
EN 100
60 x1%=ox%-a:y1%=oy%+b:x2%=ox%+a:y2%=
y1%:CALL draw(x1%,y1%,x2%,y2%)
70 x1%=ox%-a:y1%=oy%-b:x2%=ox%+a:y2%=
y1%:CALL draw(x1%,y1%,x2%,y2%)
80 x1%=ox%-a:y1%=oy%-b:x2%=x1%:y2%=oy
%+b:CALL draw(x1%,y1%,x2%,y2%)
90 x1%=ox%+a:y1%=oy%-b:x2%=x1%:y2%=oy
%+b:CALL draw(x1%,y1%,x2%,y2%)
100 WEND:GOTO 20
    
```

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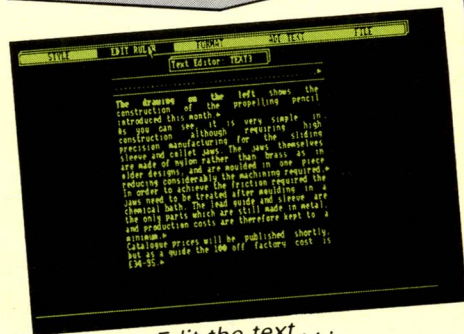
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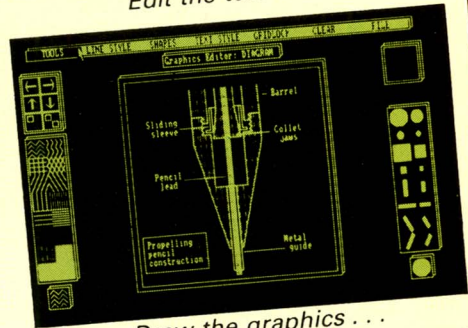


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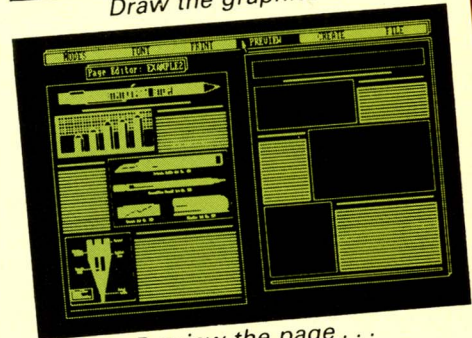
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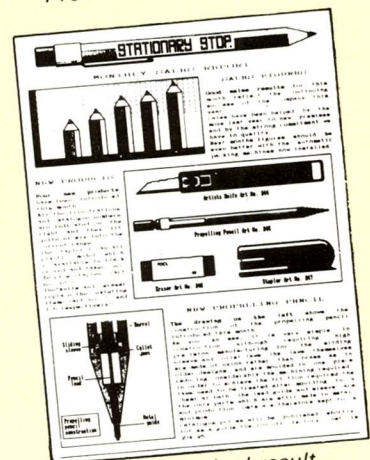
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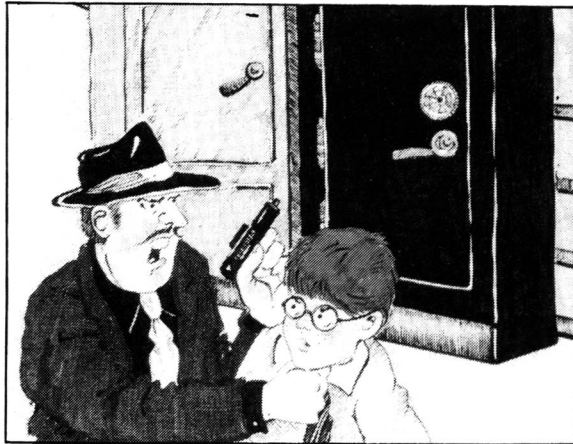
EVER-SO-SECRET CODE

PLAYING games on a micro is fun. It's particularly rewarding when you've typed one in from a magazine and after a session of correcting your typing errors you get it to run faultlessly.

However, it helps if, after announcing the rules, the magazine prints the listing.

Here's the one we missed out last month. Thanks for the many letters and phone calls pointing out this slip. We hope it didn't cause too much grief.

Just enter the code as a series of alternate letters (L or R) and numbers (0-9) in the form *L1R3L6L2R0*.



```

10 REM      Safecracker
20 REM      By Philip T Lawson
30 REM (c) Computing With The Amstrad
40 REM -----PCW-----
50 DEF FNat$(x,y,a$)=CHR$(27)+"Y"+CHR$(3
2+y)+CHR$(32+x)+a$
60 DEFINT a-z:c$=CHR$(27)+"E"+CHR$(27)+
"H"
70 WHILE lev<1 OR lev>3:PRINT c$
80 PRINT"Enter level.  1 - Easy"
90 PRINT,"2 - Difficult"
100 PRINT,"3 - Time limit";
110 INPUT lev
120 RANDOMIZE PEEK(64504!)
130 WEND:PRINT c$;CHR$(27)+"f"
140 DIM x(12),y(12),a$(12),at$(20),w(20)
,b(20)
150 RESTORE 170:FOR a=0 TO 12:READ x(a),
y(a),a$(a):NEXT
160 FOR a=0 TO 12:GOSUB 710:NEXT:GOSUB 7
40
170 DATA 75,20,0,71,17,1,75,17,2,79
180 DATA 17,3,71,14,4,75,14,5,79,14
190 DATA 6,71,11,7,75,11,8,79,11,9
200 DATA 71,20,L,79,20,R,79,23,C
210 PRINT CHR$(27)+"p"
220 PRINT FNat$(40,5,CHR$(134)+STRING$(2
0,CHR$(138))+CHR$(140))
230 PRINT FNat$(40,20,CHR$(131)+STRING$(
20,CHR$(138))+CHR$(137))
240 FOR a=6 TO 19:PRINT FNat$(40,a,CHR$(
133)):PRINT FNat$(61,a,CHR$(133)):NEXT
250 FOR a=6 TO 19:PRINT FNat$(41,a,STRIN
G$(20," ")):NEXT
260 PRINT FNat$(48,10,"T H E"):PRINT Fna
t$(47,13,"S A F E")
270 c$="":FOR a=1 TO 5:t=INT(RND*100):IF
t<50 THEN c$=c$+"R" ELSE c$=c$+"L"
280 c$=c$+RIGHT$(STR$(INT(RND*100)),1):IF
a=1 OR lev>1 THEN 310
290 temp=0:FOR b=1 TO a-1:IF MIDS$(c$,
(b*2)-1,2)=RIGHT$(c$,2) THEN temp=1
300 NEXT:IF temp=1 THEN a=a-1:c$=MIDS$(c$
,1,a*2)
310 NEXT:PRINT CHR$(27)+"q"
320 PRINT FNat$(1,1,"Try Code Whi
te Black")
330 try=1:POKE 64504!,0:POKE 64503!,0
340 REM *****
*****
350 win=0:lose=0:WHILE win=0 AND lose=0
360 i$="":WHILE i$="" AND i$<>CHR$(13):i
$=INKEY$:WEND:i$=UPPER$(i$)
370 IF i$="S" THEN IF sou=1 THEN sou=0 E
LSE sou=1
380 IF i$=CHR$(13) THEN GOSUB 840:GOTO 4
80
390 IF i$=" " OR ASC(i$)=7 OR i$<="0" THE
N 360
400 IF i$>"9" AND i$<="L" AND i$<="R" AN
D i$<="C" THEN 360
410 IF lev=3 AND PEEK(64503!)>4 THEN Los
e=1
420 a=VAL(i$):IF i$="L" THEN a=10 ELSE I
F i$="R" THEN a=11 ELSE IF i$="C" THEN a
=12
430 IF a<12 AND LEN(yc$)=10 THEN 480
440 PRINT CHR$(27)+"p":GOSUB 710
450 IF sou=0 THEN PRINT CHR$(7)
460 PRINT CHR$(27)+"q":GOSUB 710
470 IF i$="C" THEN GOSUB 680 ELSE GOSUB
660
480 WEND
490 IF lose THEN 560
500 GOSUB 630
510 PRINT FNat$(42,7,"The safe contains"
)
520 PRINT FNat$(43,10,"piles of lovely")
530 PRINT FNat$(47,13,"M O N E Y")
540 PRINT FNat$(20,24,"Press spacebar to
play again")
550 WHILE INKEY$<>" ":WEND:RUN
560 GOSUB 630
570 IF lose=2 THEN 600
580 PRINT FNat$(47,12,"T I M E")
590 PRINT FNat$(49,14,"U P"):GOTO 540
600 PRINT FNat$(47,7,"H A R D")
610 PRINT FNat$(47,10,"L U C K")
620 GOTO 540
630 FOR a=14 TO 1 STEP-1:FOR b=1 TO 100:
NEXT
640 PRINT FNat$(41,a+5,STRING$(20," ")):
NEXT
650 RETURN
660 IF LEN(yc$)=10 THEN RETURN
670 yc$=yc$+i$:PRINT FNat$(82-LEN(yc$),8
,yc$):RETURN
680 IF yc$="" THEN RETURN
690 PRINT FNat$(82-LEN(yc$),8,"");yc$=
LEFT$(yc$,LEN(yc$)-1)
700 PRINT FNat$(82-LEN(yc$),8,yc$):RETUR
N
710 PRINT FNat$(x(a),y(a),CHR$(134)+CHR$(
138)+CHR$(140))
720 PRINT FNat$(x(a),y(a)+1,CHR$(133)+a$(
a)+CHR$(133))
730 PRINT FNat$(x(a),y(a)+2,CHR$(131)+CH
R$(138)+CHR$(137)):RETURN
740 PRINT FNat$(71,23,CHR$(134)+STRING$(
5,CHR$(138))+CHR$(140))
750 PRINT FNat$(71,24,CHR$(133)+"ENTER"+
CHR$(133))
760 PRINT FNat$(71,25,CHR$(131)+STRING$(
5,CHR$(138))+CHR$(137))
770 PRINT FNat$(70,7,CHR$(134)+STRING$(1
1,CHR$(138))+CHR$(140))
780 PRINT FNat$(70,8,CHR$(133)+
"+CHR$(133))
790 PRINT FNat$(70,9,CHR$(131)+STRING$(1
1,CHR$(138))+CHR$(137))
800 PRINT FNat$(68,5,CHR$(150)+STRING$(1
5,CHR$(154))+CHR$(156))
810 PRINT FNat$(68,7,CHR$(147)+STRING$(
15,CHR$(154))+CHR$(153))
820 FOR a=6 TO 26:PRINT FNat$(68,a,CHR$(
149)):PRINT FNat$(84,a,CHR$(149)):NEXT
830 RETURN
840 IF LEN(yc$)=10 THEN 870
850 PRINT FNat$(72,8," ERROR  ") :yc$="
"
860 FOR i=1 TO 300:NEXT:PRINT FNat$(74,8
," "):RETURN
870 temp=0:FOR a=1 TO 5:t$=MIDS$(yc$,a*2-
1,2)
880 IF LEFT$(t$,1)<="L" AND LEFT$(t$,1)<
>="R" THEN temp=1
890 IF RIGHT$(t$,1)>"9" THEN temp=1
900 NEXT:IF temp=1 THEN 850
910 IF yc$=c$ THEN win=1
920 at$(try)=yc$
930 wh=0:FOR a=1 TO 5
940 IF MIDS$(c$,a*2-1,2)=MIDS$(yc$,a*2-1,2
) THEN wh=wh+1:MIDS$(yc$,a*2-1,2)=" "
950 NEXT:bl=0:FOR a=1 TO 5:FOR b=1 TO 5
960 IF MIDS$(c$,a*2-1,2)=MIDS$(yc$,b*2-1,2
) THEN bl=bl+1
970 NEXT:NEXT:w(try)=wh:b(try)=bl
980 PRINT FNat$(0,try+2,STR$(try)+" "
+at$(try)+" "):
990 PRINT wh;" ";bl
1000 try=try+1:IF try>20 THEN lose=2
1010 yc$="":PRINT FNat$(72,8,"
"):RETURN
1020 END
1030 FOR a=128 TO 160:PRINT CHR$(a),a:NE
XT
1040 a$="":WHILE a$="" :a$=INKEY$:WEND:PR
INT ASC(a$):GOTO 1040

```

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Moonstone rising



CLYDEBANK. The great liners which carried the proud name of Britain across the seven seas were built in this plucky little Scottish industrial town. It was a dirty, noisy place, but few cared about that – for dirt and noise, after all, equalled money.

Clydebank is still a dirty place, but the steamhammer has given way to an awful silence. The Clyde, once one of the greatest industrial rivers of the western world, no longer sends out scores of new ships to plough the oceans.

Heavy engineering the world over has declined, making the Goliath technology of places like this redundant. Jobs, like turbines, are in short supply here these days. The slipways rust, the berths that are left lie largely empty. The edge of the slumbering river is a very, very strange place to find a flourishing computer company.

To seek, however, is to find. Moonstone Computing, located in an old school a few hundred yards from the huge John Brown Engineering yard where the QE2 was built and launched, has been going for less than a year. Yet its two young founders are already starting to make a name for themselves as programmers of genius.

Clydebank is, so far, hardly a hotbed of new technology. But the government is attempting to do something about its decline and, in a battle to win

Andrew Collier looks at the birth of a new industry in the grave of an old one

new companies, has granted the town enterprise status. This adds up to a package of attractive benefits. Hence the arrival of new, vibrant companies like Moonstone.

The company, formed less than a year ago, has so far concentrated on a single marketable product – a package of immense benefit to PCW users, especially those who work the machines in conjunction with other computers.

Their system is proving a boon to anyone needing to transfer data between various machines. In simple terms, it allows material compiled on the PCW to be transferred to the 5.25in industry standard.

The package, which goes under the rather longwinded title of Multi-Format Utility, may not sound glitzy and glamorous. But it effectively removes the PCW, with its unusual and restricting 3in drives, from the electronic isolation of an office environment.

The PCW, quite rightly, has turned out to be an immensely popular business machine. But its ridiculously low price does bring disadvantages. Amstrad were able to obtain a stock of hundreds of thousands of 3in drives

from Japan, markedly reducing the unit cost. But in comparison to other machines, they hold little data – especially drive A in the 8512, the only drive in the 8256 – and they are expensive.

Moonstone has, to a point, solved this by creating a package which allows a 5.25in drive to be attached to the machine. It consists of a disc drive, software and a set of ram chips (easily fitted, they say, by anyone) to allow another 256k of memory and take an 8256 up to 8512 memory status. Existing 8512 users clearly won't need this, so they can buy the package minus the ram chips.

The idea came shortly after Moonstone was set up in September last year. Its founders, partners Colin Foster (27) and Stephen Devine (24), were young computer enthusiasts with plenty of programming experience obtained through university and as a hobby, and they decided to form a company to produce marketable, high-quality software.

The original aim was to invent and write sophisticated games. Colin explained: "There was an obvious

Turn to Page 54 ►

◀ From Page 53

market in this area. We saw the things other people had produced and felt we could do a lot better. That philosophy, in fact, has been the motivation for most of our business."

And so Moonstone was formed. The pair moved into a Strathclyde Regional Council start-up unit in the business centre. After six months, they moved to another much more suitable unit in the same building, which they still use.

Colin and Stephen were as astute, as they were enthusiastic. The development of games software is extremely challenging, but it is also monumentally time-consuming. Six months to a year is not an unusual timescale for writing this type of material.

The pair knew that, in the short term, they would have to make a living. "To keep us going", Colin explained, "we decided to tart up and sell the multi-format software we had developed, largely for our own use to let us work on Amstrad software on other machines. Programmers like to write all their software, if possible, on a single computer".

Their original package required a good deal of work before it was ready for the commercial market. "We'd done it very quickly," said Colin. "It had all the fundamental points, but didn't look very good, being a bit ragged round the edges. We knew its foibles and tolerated it, but had to spend about two months improving it."

They say competition for such a package was non-existent, and some companies had produced similar software for a 5.25in drive. But people were often finding that, when they tried to run it, there was a hitch.

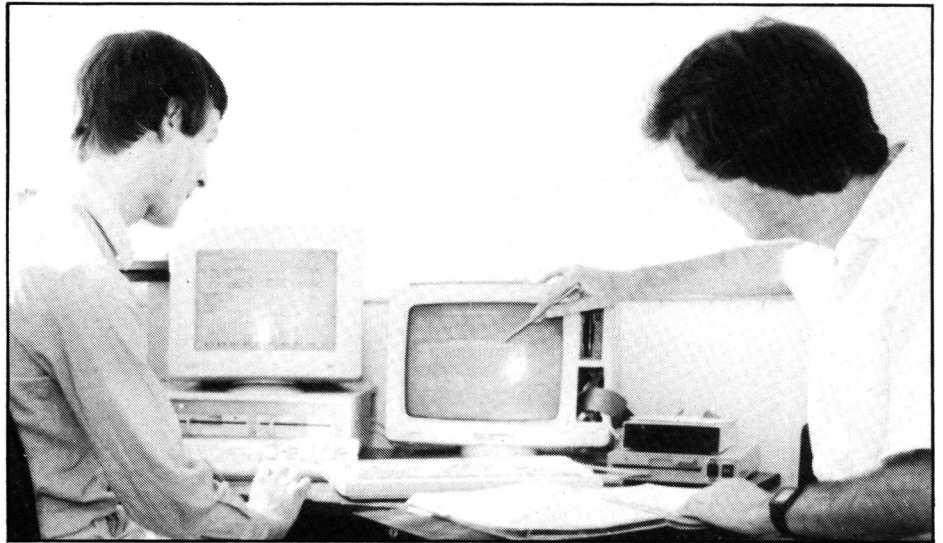
Stephen commented: "It's not easy to produce – you really have to know what you are doing. In some cases, other firms' software was so bad it could actually damage the drive."

The pair thought those buying their package, which allows the formatting of 5.25in discs to a variety of menu-chosen formats for use on other machines, would be 8256 users who wanted the industry standard drive to back up their single-drive Amstrad.

In fact, the bulk of the 100 buyers so far have been users who want to transfer files to and from PCs.

"It's selling", said Stephen, "to all sorts of businesses...anyone who uses PCWs and PCs in the same office."

It is, of course, well nigh impossible to run the same program on different machines, especially since the PCW and PC use completely different operating systems. But data files can be transferred without difficulty: Word



Stephen (left) and Colin: "Now the sky's the limit".

processors like WordStar, for example, are written for different machines, but the data produced can be moved across easily.

Colin, who is no great fan of the Amstrad printer supplied as standard with the PCW, also points to another possibility. The disc-switch capability provided by their new baby allows cross-printing on better hardware attached to other computers.

There's an interesting little extra supplied free with the package that can also be bought separately. Xformat can format discs for drive A to a high-capacity 200k, or enlarge drive B discs on the 8512 from 720k to 800k.

The discs are totally compatible with the older Amstrad CF2 type and both can be used interchangeably under CP/M and LocoScript. The computer automatically recognises the increased capacity.

Advertising has so far largely been confined to magazine ads and mailshots. In future, they plan to work harder at this side of the operation by bringing in more effective direct mailing, trying for reviews in magazines and working on direct contact with educational establishments.

Successful though Multi-Format has proved, it is not the only project on which Moonstone is working. There is an enhanced PCW-PC file conversion system which allows a special disc to be used to transfer 5.25in drive data very easily between the two machines.

In essence, of course, it's much like the MFU facility, but Colin and Stephen say this particular package is much easier to operate. (It still won't allow program transfer: CP/M and MSdos are too different for that).

They believe this facility has a very big market waiting for it. "No one else has worked to get PCWs and PCs to talk to each other" says Colin. The software is written, the manuals are in preparation and, by the time this ar-

ticle appears in print, it may even be available – at an undetermined price, at the time of writing, although it will be comparable to the MFU.

Moonstone hasn't forgotten its original plan to develop games. The idea was put on the shelf, Colin admits, because a lot of new machines were entering the market and they wanted to stand back and wait to see which ones became the big sellers. (Colin says it's still not clear).

They still want to work on games though, not least because adventures are extremely interesting and challenging to write. They have lots of ideas, and aim to produce software with much better interaction systems than currently exist.

Colin and Stephen are also working on a financial software package for big institutions in the City. They aren't saying too much, as negotiations are at a very delicate stage, but they are convinced that, if all goes as planned, they have landed a very big fish.

The seed of Moonstone is growing fast. They now employ a secretary and an organiser who looks after the consultancy side of the business. This is another area they have moved into giving advice, assessing company needs, and sorting out computer requirements. It's fairly standard stuff, but helps to pay the bills.

One year on, Colin and Stephen say they are very pleased with the way things have worked out. They have every right to be, since their business really does seem to be taking off. "We've done much better than expected", Colin admits. "We see the floodgates opening on all fronts, and by the same time next year we should be a lot better off."

Have they set themselves any financial or growth targets? Colin answers the question almost without thought: "Yes, to be viable. But we've done that. Now the sky is the limit." Or the moon, perhaps?



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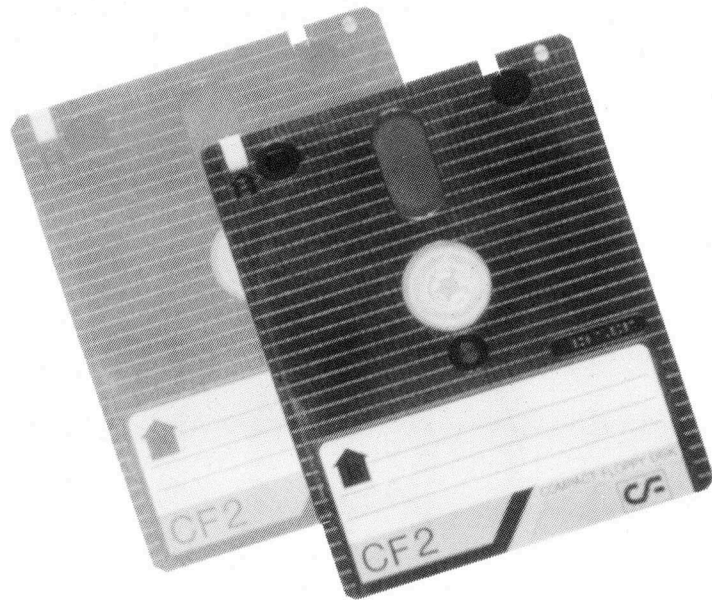
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CWPCW

DOUBLE YOUR DIRECTORY

Ernie Pickering provides a routine to extend your disc filename capacity



MOST of you, at some time or other, must have encountered the problem where the disc directory is full (64 filenames) and you still haven't saved your programming masterpiece. This routine will allow up to 128 individual directory items so you should never be stuck again.

You'll need two discs – one general purpose for data and one totally blank and formatted. If you're not going to use a brand new one for the latter, instead of using ERA to wipe it clean, which can cause problems later on, use Diskit to completely reformat it.

Boot up LocoScript, insert the data disc into drive A and enter the code shown in Listing 1 into a document called DIRINC.LOC. Be very careful and make sure that what you type corresponds exactly with the listing, especially the Tab markers and spaces, otherwise the code won't be assembled correctly. As a small help, the word **end** should appear on line 34 of page three.

When you're satisfied everything's as it should be, finish editing and create an Ascii file called DIRINC.ASM from this document. You do this by pressing f7 (Modes) and selecting the Create Ascii option. Press Enter twice and when requested for the filename enter:

```
DIRINC.ASM
```

This done, remove the disc, insert side two of your system disc and reset the machine with Shift+Extra+Exit to boot up CP/M. Type in the following lines, not forgetting Enter at the end of each. (From now on I'll assume you'll remember to do this).

```
PIP M:=A:PIP.COM
PIP M:=A:DIR.COM
M:
```

Now insert side three of your

system discs, marked Programming Utilities, enter:

```
PIP M:=A:LINK.COM
PIP M:=A:RMAC.COM
```

and when the M> prompt returns, remove the disc, insert your working disc and enter:

```
PIP A:=M:*. *
A:
```

To make sure everything you'll need is on the disc, type **DIR** and the filenames should match those in Figure 1. If for any reason any are missing you'll have to re-start by making the Ascii file.

Assuming all is correct, type:

```
RMAC DIRINC
```

```
PIP.COM
DIR.COM
LINK.COM
RMAC.COM
DIRINC.ASM
```

Figure 1: The required files

and after a short time your screen should display:

```
CP/M RMAC ASSEM 1.1

0088
002H USE FACTOR
END OF ASSEMBLY
A>
```

If anything else appears you'll have to go right back to the beginning and carefully check and correct the LocoScript document you used to originate the Ascii file. There is no point in trying to carry on if you have typing mistakes in the document.

If all is well, type:

```
LINK DIRINC
```

and this should produce:

```
LINK 1.31

ABSOLUTE 0000
CODE SIZE 0088 (0100-0187)
DATA SIZE 012E (0188-02B5)
COMMON SIZE 0000
USE FACTOR 00
A>
```



```

->>false equ 0h
->>true equ not false
->bdos equ 05h
->dbuf1 equ 80h
->dma equ 1000h
;
->sysreset equ false
->printf equ 09h
->input equ 10
->reset$disc equ 13
->seldsk equ 14
->setuser equ 32
->bioscall equ 50
->block$out equ 111

;
syscall macro funnum, dereg
;
->if not nul dereg
->lxi d,dereg
->endif
;
->mvi c,funnum
->call bdos
;
->endm
;
start:
->syscall reset$disc
->syscall seldsk,0
;
go:
;
dseg
clear db 27,'H',27,'J$'
cseg
->syscall printf,clear
;
dseg
startup:
->db 'EXTENDING DIRECTORY'
->db 13,10,10,10,10,'$'
cseg
->syscall printf,startup
;
dseg
text1:->dw block1$start
->dw block1$end-block1$start
;
block1$start:
->db 'Enter Directory Size Required'
->db 10,13
->db '1 = 32 Directory Entries',10,13
->db '2 = 64 Directory Entries'
->db '(normal)',10,13
->db '3 = 96 Directory Entries',10,13
->db '4 = 128 Directory Entries'
->db 10,10,10,13
->db 'Input Your Selection'
block1$end:
cseg
->syscall block$out,text1
->lxi d,dbuf1
->mvi a,1
->stax d
->syscall input,dbuf1
->lda dbuff1+1
->ora a
->jz go
->lda dbuff1+2
->cpi 31h
->jm go
->cpi 35h
->jp go
->sui 30h
->push a
;
dseg
pb2:
->db 10
->db 0
->dw 0000
->dw 0
->dw 0
cseg
->syscall bioscall,pb2
;
dseg
pb3:
->db 11
->db 0
->dw 0000
->dw 0
->dw 0
cseg
->syscall bioscall,pb3
;
dseg
pb4:
->db 12
->db 0
->dw dma
->dw 0000
->dw 0
->dw 0
cseg
->syscall bioscall,pb4
;
dseg
pb5:
->db 13
->db 0
->dw 0000
->dw 0
->dw 0
cseg
->syscall bioscall,pb5
->pop a
->sta dma+7
;
dseg
pb6:
->db 14
->db 0
->dw 0000
->dw 0
->dw 0
cseg
->syscall bioscall,pb6
;
dseg
done:
->db 10,10,13,'DONE... '
->db 'Disc must be logged in press'
->db ' STOP Key.',10,10,13,'$'
cseg
->syscall printf,done
->syscall reset$disc
->syscall sysreset
;
end

```

Listing 1

Again, if there is the slightest discrepancy in your display, don't attempt to carry on but start again by checking the LocoScript document.

The assembly operation is now complete and there should be a file called DIRINC.COM on your working disc. You may now erase all the other files, which are no longer required.

To use this new utility place the disc in drive A and copy DIRINC.COM across to drive M. Now place your newly formatted disc in drive A and enter:

```
M:
DIRINC
```

A small menu will be displayed and you will be asked to select the direc-

tory size you require. To check everything is okay, choose the 128k option and after a short while the program will stop and your disc in A will be able to hold the new maximum.

To make sure the routine has worked, load Basic then enter and run Program I. When the program has finished, entering DIR should reveal 128 files on drive A. If all the files are not present you'll have to start again by checking the LocoScript document against Listing 1.

Once you know the routine is working correctly, to alter another disc simply place it in drive A and enter **DIRINC** again, ensuring all discs you wish to extend are completely blank

and formatted.

Do remember that even though your disc's capable of handling up to 128 files, you are still restricted to a maximum of 173k per side. Actually, it's a little less than that as the increased directory takes up more room. However the difference is so small that the extra number of files more than compensates for it.

```
10 FOR a=1 to 128
20 f$="FILE."+STR$(a)
30 OPEN "R",1,f$
40 FIELD 1,1 AS a$
50 CLOSE
60 NEXT
```

Program I

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THE ECONOMICAL ALTERNATIVE

*Ian Sharpe reviews the latest version
of the popular Devpac assembler*

IF you're after a CP/M Z80 assembler you have a wide choice, ranging from free public domain software to commercial products costing over £200.

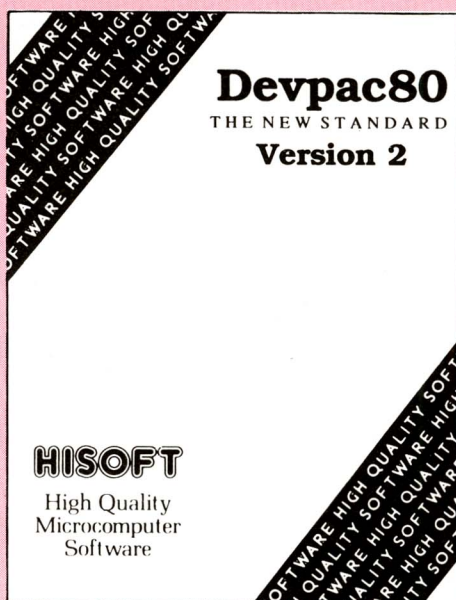
In the July 1987 issue of *Computing with the Amstrad PCW* we reviewed Arnor's Maxam II, an impressive assembler/editor/monitor package which is both fully-featured and easy to use. On paper, HiSoft's version 2 of Devpac80 boasts a similar specification – but how does it compare in practice?

Devpac80 comes in a ring-bound manual containing a 3in disc with a version for CP/M2.2 on one side and another for CP/M Plus on the reverse.

Two text editors are supplied, ED80 and HDE. If you're a WordStar-compatible person you'll feel at home with either: If not, there's an installation utility that lets you redefine the command sequences to something more comfortable. However, you may need to play about with *setkeys* to get what you want.

ED80 will be familiar if you have other HiSoft products, as it's included with the likes of C, Forth and Pascal. As far as editing goes ED80 and HDE are the same, but HDE has an additional menu to allow you to assemble and debug without having to return to CP/M.

All the features you'd expect – such as search, replace and block operations – are there but undelete is restricted to a line of text. And unlike Aped, ED80 will allow you to work on only one file at a time. Considering the price differential between Devpac80 and Maxam II this isn't really a criticism of ED80, but it's relevant to highlight the differences.



From HDE you can assemble a file by pressing A from the menu. If the assembler finds any errors you will be returned to the text file with the option to step the cursor through successive lines where the errors occurred. The appropriate error message is displayed at the top of the screen, and this is a facility I particularly liked.

If no errors are found you return to the menu, where pressing R will run the object file. On completion you again return to HDE.

This is similar to Arnor's system, though Maxam II doesn't have the ability to step through error lines. It makes for a fast edit/assemble/edit cycle and HiSoft beats Arnor on the time taken to swap between editor, assembler and monitor. This is due to

the individual programs being much smaller than those in Maxam II.

On the other hand, HDE and ED80 are not nearly as easy to use as Arnor's Aped. For instance, the screen update when scrolling is much slower and the newcomer will find it more difficult to acclimatise, even with the configuration facility.

What's difficult to convey is the general feel of the text editor – the way it's presented, how fast it is, and how easy the commands are to remember. After using both ED80 and Aped, Arnor is clearly in front here. Text editors are a very personal thing and there's no doubt that ED80 is powerful, competent and quite adequate – but I prefer Aped.

GEN80 is the assembler; it's fast, supports macros and has a range of directives to control both listing output and assembly, including conditional assembly. These are not as extensive as Maxam II's and there are more constraints on the format of your source file – no multi-statement lines and limited label length for example. In contrast Maxam II allows you more flexibility in setting out your code.

The debug option from HDE's menu will take you into the monitor. In fact there are two monitors, small (MON80) and large (ProMON). As with Maxam II the idea is that you use MON80 when working on a large program and space is tight.

The main display is of a selected area of memory in hex, Ascii and disassembled. The state of the registers and flags is also shown, with details of breakpoints and the current execution address of your program. Memory may be edited (but not in assembly mnemonics as with Maxam II), your program executed with slow or fast single stepping and a variety of breakpoint options.

When the monitor is invoked you are given the option of loading the

***Coming along hot on
Maxam II's heels***

Turn to Page 60 ►

REVIEW

◀ From Page 59

symbol table produced by the assembler so your labels appear in the disassembly – a useful feature and one not found in Maxam II.

The manual is, for the most part, logically laid out and informative, containing tutorial sessions backed up by

example files on disc.

If I were planning to spend a lot of time with my assembler and price wasn't the prime consideration I'd go for Maxam II. Devpac isn't far behind if you make a comparison based solely on specification, but Maxam II wins on general ease of use. Aped is much more pleasant than HDE/ED80 and

Arnor's assembler is more flexible on the format of your source code.

There's less to choose between the third part of the package – MON80/ProMON80 – and the Maxam II monitor. Both have their strong points but Arnor still has the edge in terms of friendliness and features.

This applies to the whole package – as you'd expect at the price – but there is room for improvement. I'd like to see ED80 with a faster screen update and made easier for the novice to get to grips with. GEN80 should be made more flexible in its source file format, even at the expense of a slight loss in speed.

If I was parting with my own hard-earned cash I'd be prepared to put up with a few rough edges and settle on Devpac80 as a cheaper and viable alternative to Maxam II which offers very good value for money.

```

)0100 JR #0123 PC 0100 00F0 ES ES ES ES ES ES ES ES eeeeeeee
0102 NOP SP D006 00E8 ES ES ES ES ES ES ES ES eeeeeeee
0103 LD C,L IY 0000 00F0 ES ES ES ES ES ES ES ES eeeeeeee
0104 LD C,A IX 0000 00F8 ES ES ES ES ES ES ES ES eeeeeeee
0105 LD C,(HL) 0000 HL 0000 0100>18<21 00 4D 4F 4E 38 30 .!MON80
0106 JR C,#0138 0000 DE 0000 0108 20 20 20 4D 4F 4E 00 04 MON..
0108 JR MZ,#012A 0000 BC 0000 0110 80 3C 78 79 7A 7B 7C 7D ,(xyz{i)
010A JR MZ,#0159 0000 AF 0000 0118 7E 7F 00 00 00 00 00 00 .{*....
010C LD C,A .NR 0100 0120 00 00 3C 2A 06 00 11 00 .{*....
010D LD C,(HL) IR 0035 0128 1E B7 ED 52 F9 E5 11 02 .7aRye..
010E NOP I MON80 1.06 (C) HiSoft 1985
010F INC B
0110 ADD A,B
0111 INC A
0112 LD A,B
0113 LD A,C
0114 LD A,D
0115 LD A,E
0116 LD A,H
0117 LD A,L
0118 LD A,(HL)
0119 LD A,A
    
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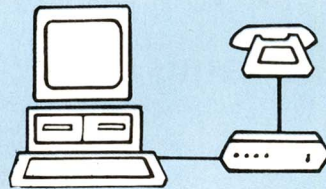


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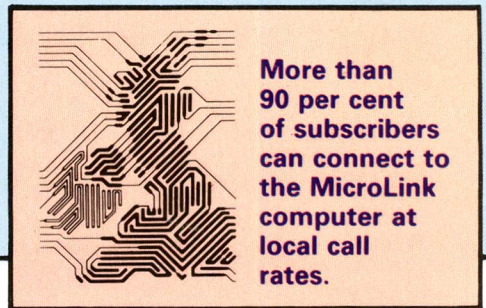


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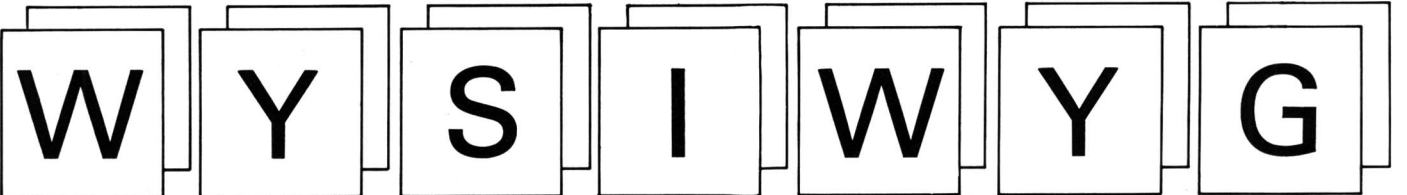
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Double trouble

BEFORE giving you my problems let me take the opportunity to say thanks for your excellent new magazine. Keep up the good work.

I am a PCW8512 owner. If I compile LocoScript material on drive B, what is the maximum length that can be read off the same disc from drive A of an 8256?

I understand that discs formatted in drive B can be read (only) on drive A but I am unclear as to whether this gives full access to the whole 720-odd kilobytes of storage space on B.

From the LocoScript disc management screen it seems drive A has only 173k per side, so even swapping sides you can only hold 346k of data on a workdisc. Could you advise me any further?

Secondly, I am very pleased with Database Software's Desktop Publisher, which I have just received and am still in the process of mastering. Judging from the recent review in Micro Computer Mart it seems they're knocking spots off the competition at half the price.

On reading Electric Studio's information about their system, I see that they claim their lightpen is compatible with "...any graphics utility which uses the mouse". As their mouse is compatible with DTP, can I be confident that their PCW lightpen will work it? — Peter Houchin, Somerset.

● As drive A is single-sided it can only read a maximum of 173k per side, so even though a disc formatted using drive B may be read on A, you will still be restricted to the 173k.

Depending on which side of the disc you attempt to read, you may also be unable to read such a disc in the drive A due to the way in which drive B formats discs.

Drive B is double-headed and stores data on either side of a disc without you having to turn it over, but



POSTBAG

the directory for both is held on ONE side only — so if this is not the side you are attempting to read on drive A, the PCW will think the disc is unformatted and give you the appropriate error message.

As for Electric Studio's PCW lightpen, we confirm that The Desktop Publisher was designed to work with their mouse (among others), so if their claim is correct as you quote it, we can see no reason why the lightpen shouldn't work as well.

Better buy

I HAVE just received the July issue of Computing with the Amstrad PCW and feel it will be a lot more use to PCW users than the previous format.

Under the news heading Video Taped on page 11 you mention a program for video shop owners at a price of £190. It is not clear whether this is for owners to run a rental or sales operation, but certainly if it is a rental operation there is already a much more reasonably priced product on offer from David Computer Software (DCS), 38 South Parade, Bramhall, Stockport SK7 3BJ.

This handles a smaller number of tapes but over 13

times more customers, and therefore at £35 is possibly a far more worthwhile investment.

My reason for commenting on this is that we have a number of DCS programs in use in this office and are more than pleased with them particularly since they are so reasonably priced. The invoicing and subscription programs are really excellent, and well worthy of a mention.

While we use the subscription program it is equally useful for the club secretary, and is more powerful than the club secretary program that DCS offer. We use it for all types of mailing, and by simple coding can print out a string of labels for any purpose whatsoever.

We have no connection with DCS other than as an extremely satisfied customer, but feel that the range of programs they produce at very reasonable cost will be of considerable interest to other PCW users. — C.L. Deith, TEE Publishing, Leics.

● Credit where it's due. It's great when a piece of software fulfils its promise and does more than a good job of the task for which it was purchased. We'll be getting our hands on some DCS software in the near future.

In good repair

MANY thanks for the excellent article on DIY repairs in your August issue. My printer had the same problem you described — it required a new print head. With the help of your article I was able to replace it in about ten minutes and it now works perfectly.

I wonder if, for the benefit of your readers, I could point out a mistake though. Combined Precision Components charge about £36 plus carriage and VAT for a new print head (not £65 as you stated), and £45 plus VAT for the PCB (not £15).

This makes it sensible to actually try out a new head first rather than a new PCB. CPC are at 194-200 North Road, Preston (Tel: 0772-555034) if anybody needs them. — Roger Barber, Warrington, Cheshire.

Routine matters

YOUR graphics series featured in March, April, and May this year has been a real treat to those of us trying to use the PCW for more than word processing.

The line drawing routine in particular will be very useful to many people.

There are, however, one or two aspects which could do with improvement, and I have a few suggestions.

First, is it impossible to erase lines? Second the drawing algorithm used is rather inefficient. As for the first shortcoming, if we change the Set Carry Flag for a Complement Carry Flag, any line drawn twice will disappear.

It's simple to do by poking &HE57A with &H3F (or edit line 670 to swap the 37 for a 3F).

Alternatively, we can draw invisible lines over existing ones, by using AND A to clear the carry flag (poke &HE57A with &HA7).

The line drawing routine

Letters are welcome. Write to:
Computing with the Amstrad PCW,
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Turn to Page 65 ►



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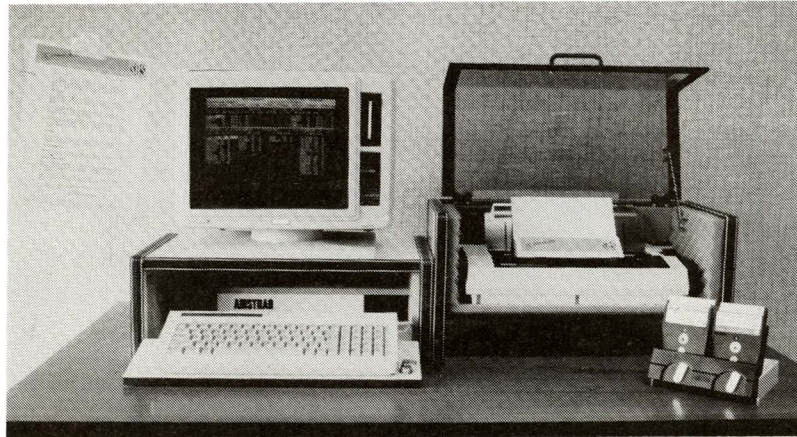


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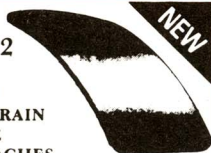
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◀ From Page 63

is a bit clumsy because shifting the relevant bit into the flag and then back is pretty slow.

The process can be speeded up by about 25 percent by extending the loop in line 210 to

```
i = 1 to 48
```

rather than 47, then adding

```
800 DATA 804020100804020100
0000,0FF
```

and amending lines 660 and 670 to

```
660 DATA 1ccb1d535dcd88e5f1
1105,4F5
670 DATA e6eb4F0600091AAE12
C9c9,49B
```

The AE in line 670 is Exclusive OR, which again will mean that a line drawn twice will disappear. This could be changed for a B6 (OR), which is simply a line on the screen. — **Chris Tyler, London.**

Larger print

I BOUGHT my PCW to prepare a book. It has been an amazing help, but I am now finding that when I have the pages reduced from A4 to A5 the print is too small for most people to read.

I thought the best way round this would be to buy a package with a larger size type than 10 pitch and at the same time gain a greater variety of fonts.

The only one available seems to be Supertype, which unfortunately limits me to one font throughout. I know that a desktop publishing package such as Database Software's can achieve the desired result, but life would become more difficult since I would have to design each page instead of letting the machine do this work as I'm used to.

Is what I'm looking for just too simple to be available? — **Father Francis of the Motherhood of Our Lady, Cheshire.**

I WOULD like to clarify a couple of matters with regard to The Database Manager (AtLast), as reviewed by Howard Anthony in your July issue.

Unfortunately the reviewer seems to have confused the requirement for scanning/searching through a data file, with that for generating a list, and the illustrations provided are not really indicative of the way in which the program would normally be used.

When a list — such as selected records — is required, there is normally a need to use this list. It is, therefore, best to have it on paper (even if only so that you can consult it when searching for individual records to display on the screen).

It is for this purpose that

the page formatting details are required. The facility to make this listing to the screen is mainly to check that the page formatting is as you want it, as there's not much else to do with a listing on the screen once you've looked at it.

For browsing through a file or searching an index for individual records on screen, the scan/edit option should be used. This is much faster and more flexible (enabling the user to switch between records, files, forms and indices at will) and does not require passing through the page formatting stage.

In comparing AtLast to Masterfile 8000 it should be mentioned that with the former, the database size is not limited by the available ram. In fact it is possible if

you have a hard disc to use the full 8 megabytes available to CP/M.

The reviewer also failed to mention what are, perhaps, two of the product's most powerful features.

These are the ability to specify predetermined values used repeatedly for special fields (constants) without having to type them in full each time and risk errors, and the ability to build multiple index files, which are automatically maintained, each ordered on a combination of up to three fields (such as department then surname then forename) without the user having to re-sort the entire file after editing an indexed field (as is the case with most database programs). — **Mike York, Rational Solutions. London**

● You don't say whether you have tried double-width printing in 10 pitch. Try this, as it may be the answer.

If it isn't suitable, you would probably be better off with a product like The Desktop Publisher. This will involve you in designing an initial page layout certainly, but if you save it to disc once you've designed it to your requirements you can use it as a template and load it for use ready prepared each time.

That way you'll be using the DTP package like a word processor with a template document.

The Desktop Publisher has most of the standard word processor facilities and will even let you load in text files you've created in LocoScript or any other word processor if you make them Ascii files first.

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It won't break the bank either, as changing to an alternative word processing

package is likely to do, even if you can find one offering what you need.

LocoScript phrases

CONGRATULATIONS on your new format. I had almost given up hope of ever getting sufficient out of the original magazine, but now there is the PC as well as the CPC. With your latest issue my enjoyment in the PCW magazine has been revitalised, and I feel it has regained pride of place, leading the field.

A quick query. Having saved a list of phrases to disc in LocoScript, what is the best way to go about adding new ones to the list without destroying those already stored? — **Murray Lovat, London.**

● There is only one way to add to a phrases file already saved to disc. Move the phrases into memory, then in the usual way assign your new phrases to the letters which have not been used,

and at that point resave the lot back to disc.

If you can't remember which letters contain phrases and which don't, use the f8 blocks menu from the editing screen. This will display the letters already in use.

SuperCalc solved

I WOULD like to sympathise with Messrs Anonymous of Exeter (August 1987 issue) regarding the self-booting Supercalc letter in the June issue.

The problem is that their PROFILE.SUB file is exiting from PIP before the command to copy the file across to drive M has been issued. If this were not the case the first command within PIP would immediately follow their * prompt and the A> would not be redisplayed until the copying had been completed.

They should recheck their

Turn to Page 66 ▶

◀ From Page 65

PROFILE.SUB for a spurious carriage return character on the first line after the PIP command. My own file looks like this:

```

pip
<m:= a:sc2.com[o]
<m:= a:sc2.hlp[o]
<m:= a:sc2.ovl[o]
<m:= a:dattim.com[o]
<
m:
sc2
    
```

As you rightly explain the files PIP.COM and SUBMIT.COM should be on the auto-start disc along with the PROFILE.SUB and suite of Supercalc files. SETDEF isn't essential as it only wastes time looking for .SUB files on drive A before searching drive M for .COM files.

Setting up a self-starting disc is not helped by the fact that Amsoft have issued different versions of the program. My PROFILE.SUB will not work with some ver-

sions without adjustment. If SC2.COM is on the start-up disc as a system file, each line would need an extra character, r, in the square brackets for the system files:

```
<m:= a:sc2.com[o r]
```

The o is for object code files and the r tells PIP to read system files as well. The two must be separated by a space. I hope these comments have cleared up this problem once and for all. — Richard Fletcher, Wallasey, Merseyside.

● Many thanks for attempting to finally clear this matter up. We've had a few queries about it and only recently noticed what had been going wrong ourselves. The confusion is in fact our fault, as in the process of preparing the original letter for the June issue, we lost the initial less than characters (<) from the start of each of the

PROFILE.SUB lines we published.

Your diagnosis is correct — without these a return to the A> prompt is inevitable and the copying to drive M does not take place. Apologies to any frustrated SuperCalc users for the mistake.

Memory clash

I WOULD like to say that I found your machine code graphics series fascinating. I typed in all the routines, and have since put them to very good use.

Could you tell me how to combine the Screen Fade and the Large Print programs, because every time I try to do this the program crashes? — John Warland (14), Crowborough, E. Sussex.

● The reason for the crash is that you are trying to hold

both the machine code routines in the same area of memory at the same time, which is impossible. To merge the programs concerned you will have to make a few minor changes to the Large Print program.

Amend line 350 to:

```
350 FOR i = 1 TO 34
```

and add the following line to allocate the screen fade routine a separate location of its own in memory:

```
445 P = &HE155
```

Then tack lines 270, 280 and 290 from the fade routine onto the end of the large print program, renumbered as lines 830, 840 and 850, respectively.

You should now find that the two routines will run together perfectly, using:

```
CALL P
```

to call the screen fade routine.



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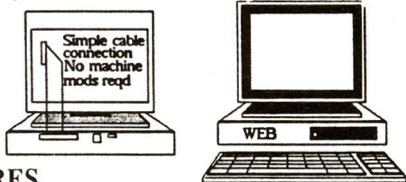


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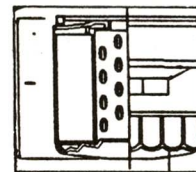
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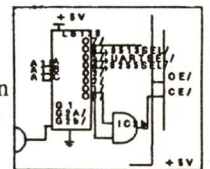
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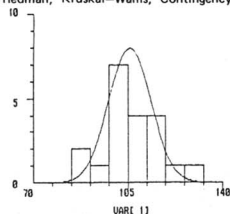
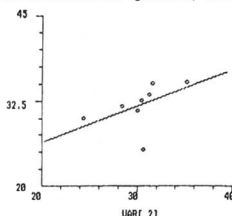
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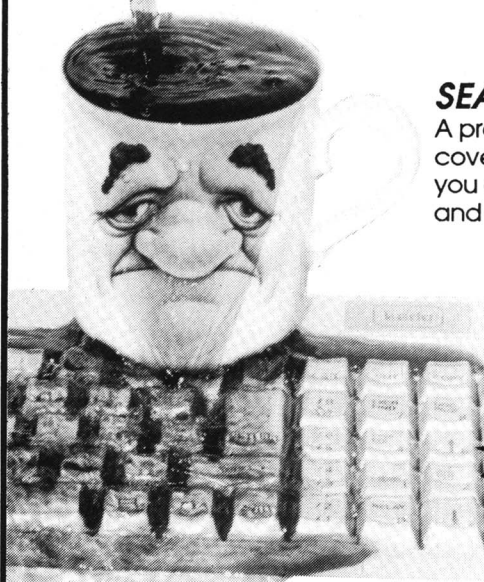
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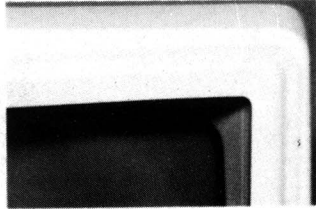
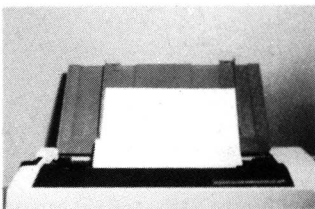
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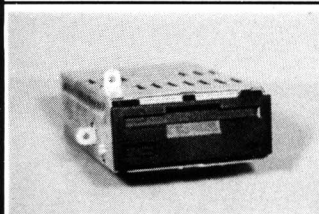
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Back Chat

THIS summer your intrepid correspondent ventured to north London and the grandness of the Alexandra Palace to bring you the truth about what really goes on behind the scenes at Amstrad computer shows.

Never mind the new hardware and software launches, you can read about those in any old rag. What readers really want to know is which was the best bar, who had the cheapest 3in discs, and which Database employee admits to standing on restaurant tables impersonating Elvis Presley?

Having only recently been to an Antique Show at the venerable Palace, or rather in the circus tent next door, I knew where the Amstrad Show was to be found. Not quite as accessible as Hammersmith, but easy enough to get to, somehow it seemed smaller in its new surrounds, which must have been an illusion as there were more exhibitors than ever before.

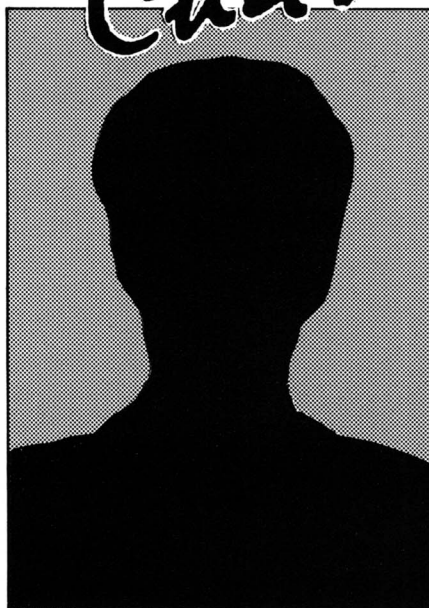
Maybe it was the fact that at the Novotel in Hammersmith you had to wander upstairs and through doors in order to see everyone, muttering to yourself: "Now have I been down this aisle before?"

I was also very impressed by the fact that at Ally Pally computer buffs, unlike antique seekers, seem to warrant rather nice fitted carpets on the floor. Well, the carpets were nice and fluffy on the Friday, though I believe by Sunday afternoon a path like the Rift Valley had been worn between the Database stand and the nearest bar.

The NewStar Software stand was fairly prominent near the entrance, and I was delighted to make my first public sighting of LocoScript 2, which NewStar were selling "At the special show price of only £19.95!" This of course compares favourably with the ordinary selling price of £19.95, so anyone who didn't take the trouble to go to the show missed out on a real bargain.

You also missed out on the chance of having the program demonstrated to you in person by Howard Fisher, resplendent in his Locomotive Software T-shirt, who coped admirably with the crowds flocking round to get a glimpse of LocoScript 2 and ask the questions software houses love: "Well if it's got a Greek and Russian character set, why doesn't it have a Mongolian one as well? I happen to be translating an epic love poem by the famed Mongolian poet..."

As I couldn't get near enough to Howard to beg a review copy, I'm



Mike Gerrard's own report on the 7th official Amstrad Computer Show

afraid I had to break my journalists' code of honour and queue up to actually buy a copy. Yes, I admit it, but don't tell too many people or you'll have me thrown out of the scroungers' union.

Talking of scroungers, my pal Arthur McBryan (Poynders Project, July issue) was apparently circulating at the Show, but we must have been circulating in opposite directions as all I got were messages from several different people all saying: "I've just seen Arthur McBryan, he was looking for you." I waited in the bar for several hours to give him chance to find me, but I'd have had more success waiting for Godot.

For some reason this reminds me that I did at last meet Derek Meakin, the big boss of Database and managing editor of this very magazine. What a nice man, and how fortunate I'd taken my forelock along to the show.

I was quite surprised when features editor Alan McLachlan recognised me when I called at the Database stand, as we'd never met before. But then I remembered he'd seen my digitised features in last month's feature on the Electric Studio. It just goes to show

how good their digitisers are. Either that or my face looks like a mass of pixels, I don't know. The question is, do I improve the image with Clearasil or a good graphics package?

But if you should see a digitised image of a suave, debonair, handsome cove somewhere in these pages, it could be Alan, who persuaded the Electric Studio to point their video camera in his direction. It's as well he did it on the Friday morning, as after a weekend dealing with the crowds that flocked to the show he was probably little more than a blob of sweat.

It was hot that weekend, and you have to admit it was pretty smart of the organisers to arrange the show for the middle of the British summer ...come on, you remember the summer, those two weeks at the beginning of July, nestled between the end of the spring monsoons and the start of the autumn rainy season.

In fact it was so hot on the Friday I had to keep having drinks to cool off. And very pleasant it was too, being able to take them outside and sit on the grass, chewing the fat with fellow scribe and comms expert David Janda, the only computer journalist who sounds like an anagram. He was hoping that no one would reveal his shameful secret, which is that while he was on his way to the show he was...but no, my lips are sealed, David is entitled to keep his shameful secret from the world, let's leave it at that.

But when it comes to Mike Cowley, yet another who toils in the mighty Database publishing empire, it's a question of which shameful secret to begin with. There are so many of them. I'll just mention the words "Heartbreak Hotel" and allow people to imagine the rest for themselves.

I tell you all these little tales as most of the Amstrad Show reports I read don't tell you what things are really like. Yes, they'll tell you what products were launched; how many exhibitors were there; what the attendance figures were; but those are the things the magazine journalists jot down between all the other stuff, which is basically socialising.

Oh and by the way - comparing notes on which stand has the cheapest 3in discs, I managed to get 10 for £20. But as to how I managed it, well, I'm afraid I refuse to name my sources on that one. See you at the next show? I'll be the digitised image waiting for you to buy me a drink in the bar.

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Go right to the top of the publishing tree

We had a tremendous response to the Desktop Publishing competition in the July issue of Computing with the Amstrad PCW. It shows just how much interest there is in producing reports, newsletters, and adverts on the PCW.

John Gaucher's winning entry

The first prize winner is John F Gaucher of Derby. He will receive The Complete Desktop Publishing System (including AMX Mouse), Plantl and a Crown Screen Filter.

Second prize of The Desktop Publisher, Plantl and Crown Screen Filter goes to Peter Barker of Walsall.

David Hunt of Woodford Green wins the third prize of The Desktop Publisher and Crown Screen Filter.

The variety of applications you suggested for this package was wide and creative – from community newspapers to allotment plans and T-shirt designs. The three winning entries are reproduced here.



The following will all receive a copy of The Desktop Publisher:
 B F Wright, Maldon; A V H Jarvis, High Wycombe; M Davis, Bangor; M Howard, Exeter; E Houlder, Pontefract; G M Jones, Bristol; C Goring, Loughborough.

Peter Barker's T-shirt design won second prize



A striking noticeboard from David Hunt won him the third prize

These back issues are available:

June issue:

Reviews – Grammatik, LocoScript 2, Graphics the Universe and Everything, Chibase, Simplan, AMX Desktop. Features – PCW in the House of Commons, BT's one-day tutorial. Game – Kingdom of Craal text adventure.

July issue:

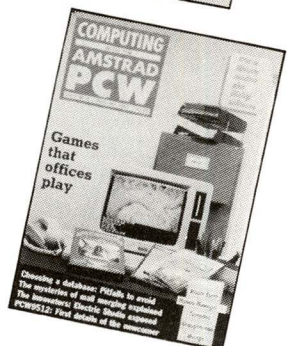
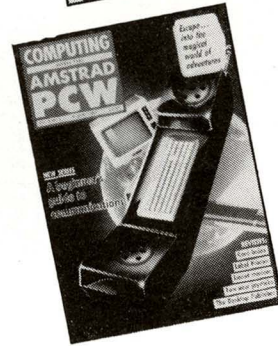
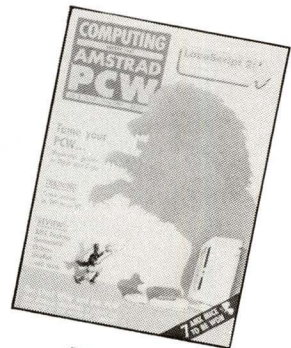
Reviews – Fleet Street Editor Plus, Newsdesk International, Superfile, AtLast, Masterfile 8000, Maxam II, ASD Hard disc. Features – To insure or not, PCW fighting crime, Souping up SuperCalc, PCW and MicroLink, Fun with LocoSpell. Game – Crazy Plumbing.

August issue:

Reviews – Card Index, Desktop Publisher, Linnet modem, Home Finance, Label Printer, Joysticks. Features – Communications (series), PCW and the journalist, Into adventures, DIY printer repair, Protext template. Utility – assembler. Game – Connect four.

September issue:

Reviews – Hisoft Forth, Mumps language, Money Manager Plus, Draughtsman, Tempdisc. Features – Getting the best from a database (series), TV series So you bought a computer, Protext mail merging, Profile on Electric Studio.



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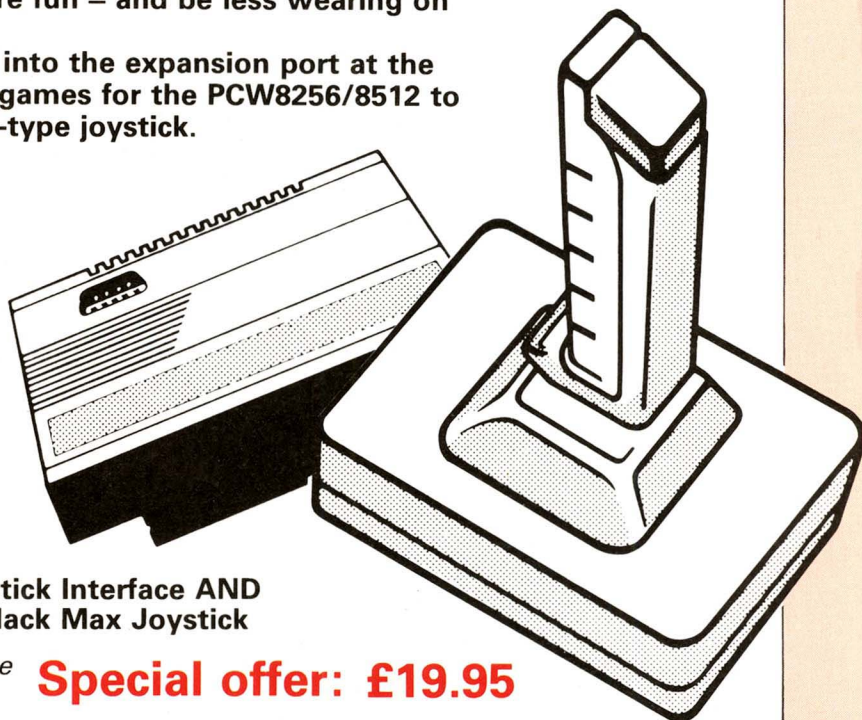
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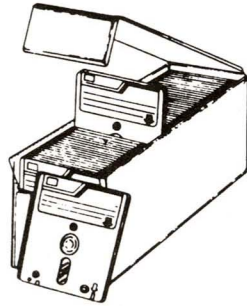
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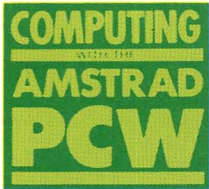
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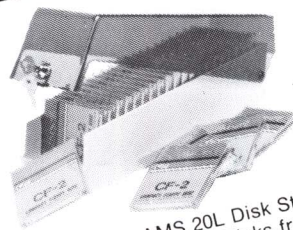
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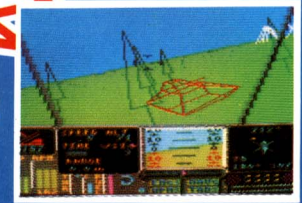
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