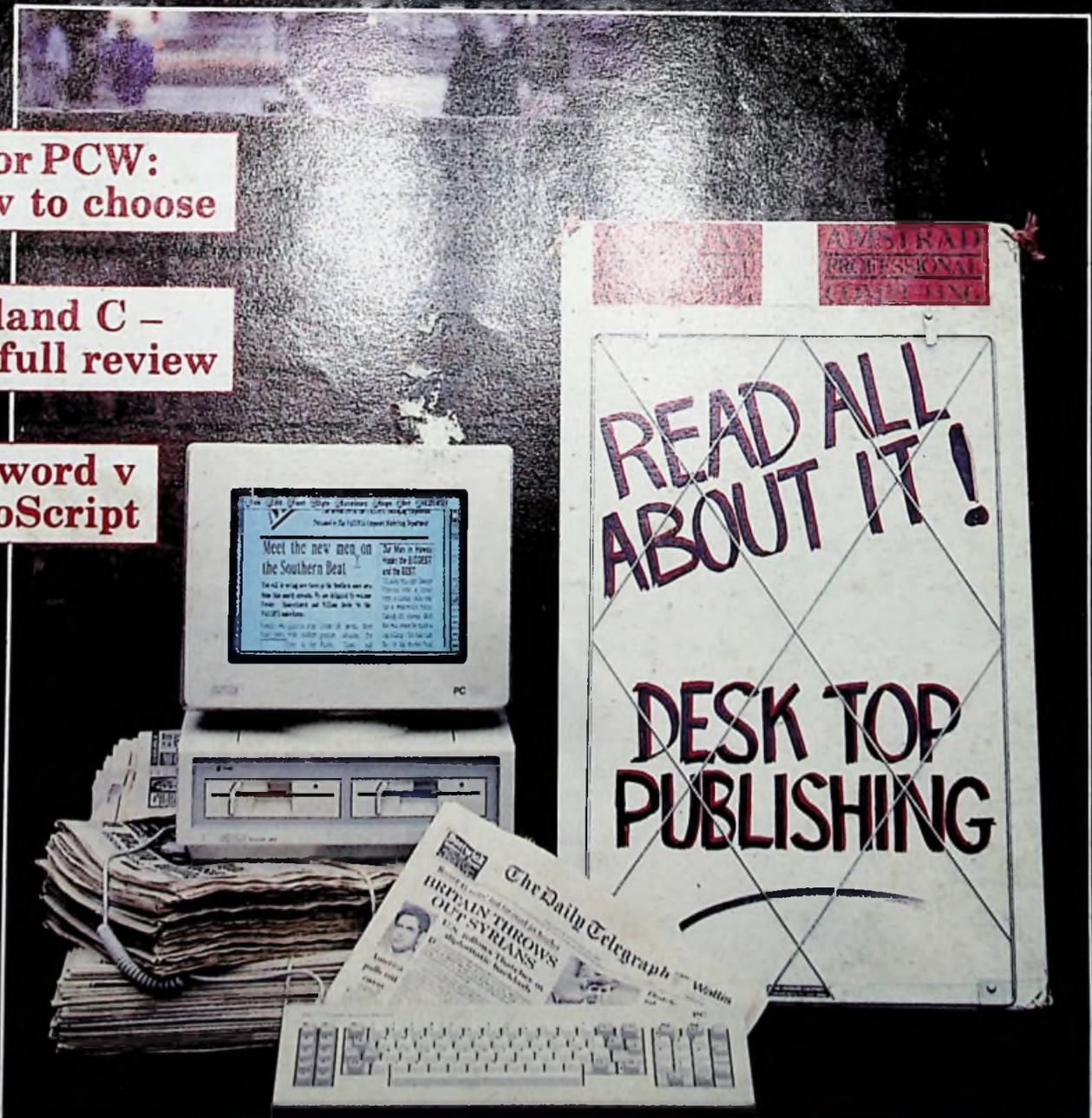


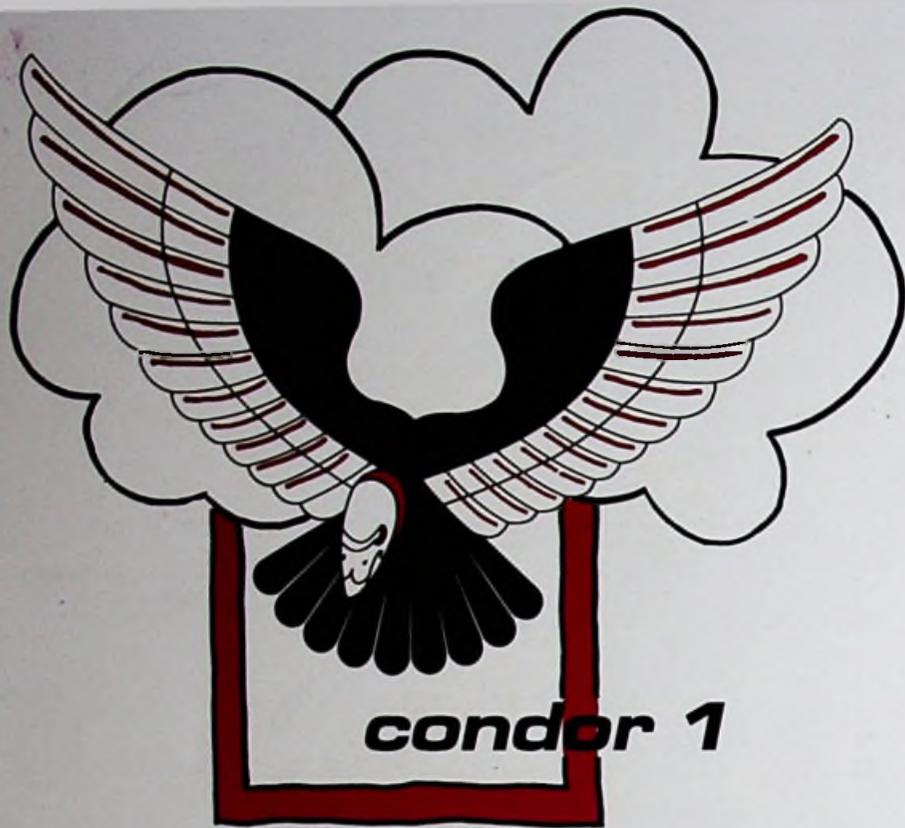
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APPEND Attach records of one database to another
EMPTY Eliminate all data in a database
ENTER Insert new data into a database
POST Update entries in one database with those from another
UPDATE Change entries in a database meeting specified conditions

Information Processing and Report Writing
COMPARE Compare entries in two databases (or not) meeting conditions and create a RESULT database
COMPUTE Calculate entries in a database
LIST Display database records in sequential order
PRINT Print database records in sequential order
PRINTER Printer output control and redirection
SELECT Select database records meeting specified conditions, creating a RESULT database
SORT Sort database records by entries
STAX View or print statistics of entries
TABULATE Summarize specified entries. Print or save the result
TITLE Print report headings

Operation Aids
HELP Assist operator in selecting procedures
INSTALL Saves SET and PRINTER options
RESTART Continue processing interrupted commands
RUN Process and execute a command procedure with options for command modification

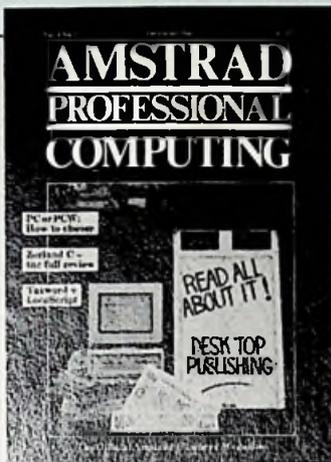
Interfaces
READ Transfer records from an ASCII file to an existing database
WRITE Transfer records from a database to an ASCII sequential file

Utilities
COPY Copy a database or file
DATE View or enter date
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DIR View the list of files in the disk directory
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© Avralite Ltd 1986.

Published by:

Avrolite Ltd, 36 St. Petersgate,
Stockport SK1 1HL.

News trade distribution:

Diamond Europress Sales & Distribu-
tion Ltd, Unit 1, Burgess Road,
Ivyhouse Lane, Hastings, East Sussex
TN35 4NR. Tel: 0424 430422.

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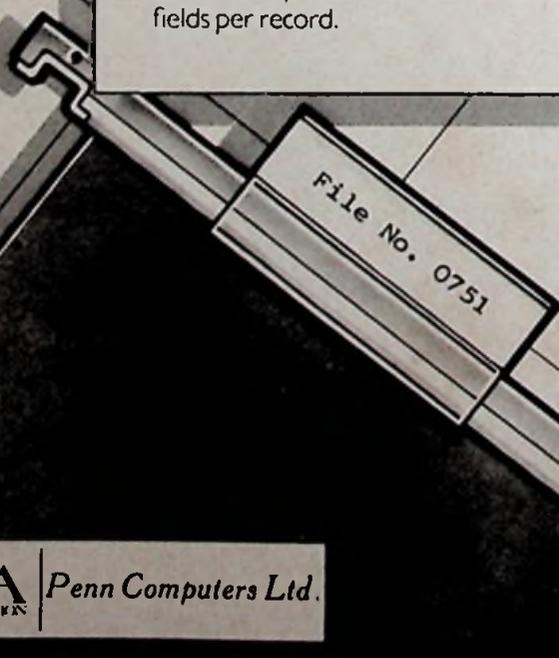
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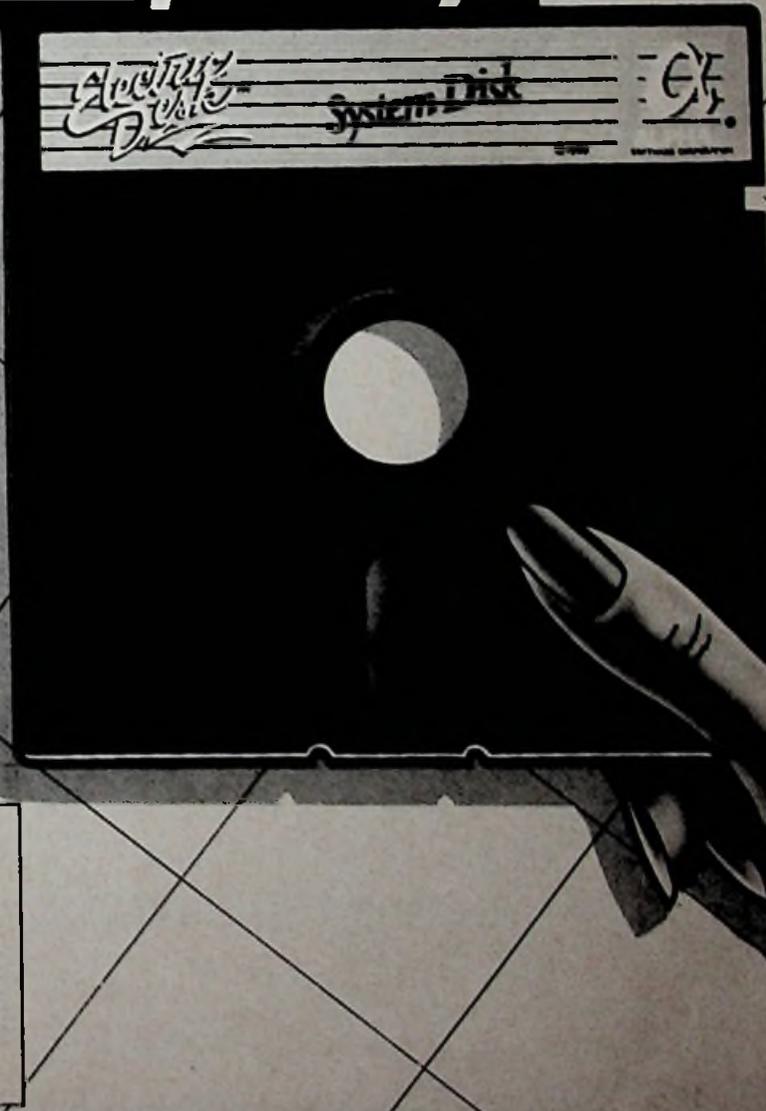
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Of IBM, clones, and the Amstrad PC1512

Ever since Amstrad announced the PC1512 – and no doubt long before that too – there must have been some sticky palms at board meetings of other clone manufacturers. They all now have to face hard decisions about fixing the price of their products for the coming year.

Many claim to work on the narrowest of profit margins. So if they haven't been kidding us price cuts will be out of the question and they'll be in for a tough time. Burying their heads in the sand is sure to prove disastrous but that may be all that's left open to some of them.

Some manufacturers of up-market clones may feel they should hold their prices at present levels for a different reason. There's a well-established marketing principle that the public believes it gets what it pays for and that under-pricing can be even more dangerous than the reverse.

All are in any case in a vulnerable position. Their sustained publicity campaigns have certainly shown results so far. But marketing techniques can't in themselves fend off new competition that has a price/performance ratio far superior to anything else available. Hard-won shares of the market are in danger of being lost to the sheer value for money of the Amstrad PC, even taking into account the recently announced price rises scheduled for the new year.

As for IBM, it has announced that despite a slight increase in turnover, profits for the months July, August and September are 27 per cent down, and 12 per cent down overall for the first nine months of the year. Heads are already rolling in the US.

IBM is primarily blaming not its American operation, however, but its interests outside the States, which now account for half the company's revenue and are slowing down considerably. The PC range represents only about

Gabriel Jacobs lectures in the University College of Swansea

10 per cent of IBM's total turnover, so any serious competition from the Amstrad PC could at most only dent the tank. But when combined with the fierce attack launched by other manufacturers in the lucrative mainframe market, any erosion of the PC's international standing will certainly not be dismissed as insignificant.

Cheap clones from the Far East can be countered relatively easily with IBM's solid brand name. Amstrad is a different kettle of fish and the 300,000 PC1512s already ordered (according to Amstrad) make it far more dangerous than the relatively small fry.

IBM has seen bad years before – notably 1974 and 1981 – and in the end has always come out on top by overwhelming the opposition with the kind of brute force only it has the means to apply. So we can fully expect retaliation rather than the reaction being whispered in some quarters that IBM is about to abandon the Personal Computer market altogether.

What form such retaliation will take is actually anybody's guess. But Project Renegade – an ear catching name for something amounting, as far as the lower end of the PC range is concerned, to little more than a price cut – is probably genuinely on the cards.

Perhaps IBM's hope in letting the idea of Renegade be known at about the time of the launch of the Amstrad PC was that prospective buyers would be tempted to wait and see. And some may indeed be deferring a decision until January or February when, we're obliquely informed, Renegade or something similar will come to pass.

Be all that as it may it's a fair bet that the PC1512 will shatter sales records, as did the PCW. In fact the market is about to be violently shaken.

And ostriches are going to find their heads exposed to the cold wind of change.

Gabriel Jacobs

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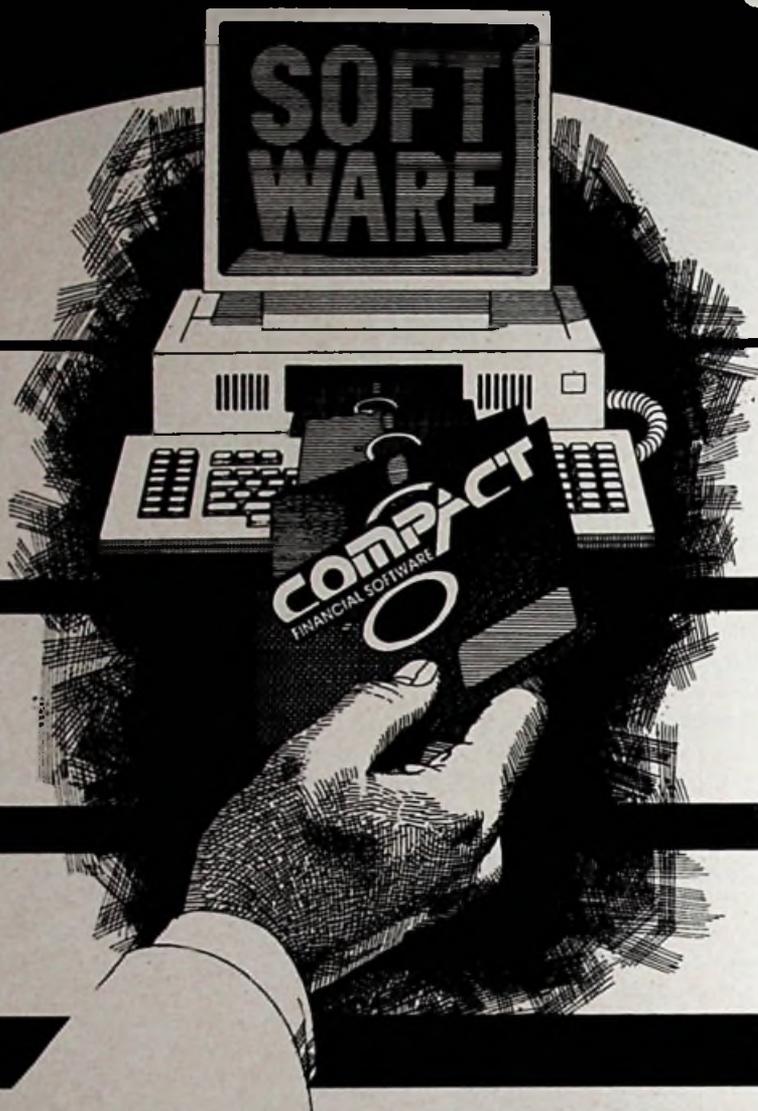
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Sugar fights back in the hot war

Alan Sugar has lately been "fuming", "blowing his top", "angrily reacting" and even "looking unhappy", according to whichever section of the computer press one happened to be reading at the time.

The reason for all this widely reported histrionic activity is what Computergram International felt moved to describe as: "The number of damaging rumours flying around City and computer industry parlours about the Amstrad IBM personallike...assuming the proportions of what looked like a concerted dirty tricks campaign".

Sugar agreed, telling one interviewer he was "absolutely convinced there was a smear campaign going on against the PC1512" - a campaign which, damagingly, found expression in several leading computer publications and even the Sunday Times.

Briefly, this boils down to slurs that the new machine overheats easily, won't run Token Ring and the IBM PC Network, and has received the thumbs down from ICI evaluators "because of its problems".

All this was comprehensively rebutted, point by point, by Amstrad in a detailed statement supported by ICI's director of information technology Derek Seddon and leading figures in the retail and distribution sectors of the micro market.

But mud sticks, and Alan Sugar recalls bitterly that: "Nineteen years ago when I started up I came across dirty tricks because people were trying to put me out of business".

Which probably explains why he got his mad up enough to tell one computer trade publication: "The biggest people in the market are doing this in a very clear way - very craftily and sarcastically. Calling us the computer that melts and all that sort of crap. It's a smear".

In case any nasty minds might think that Alan - "I can't name any names" - Sugar might be obliquely referring to its sales force, IBM swung into action.

A spokeswoman told *Amstrad Professional Computing*: "We are investigating reports that some of our sales staff have been telling dealers the Amstrad PC1512 melts when Token Ring network cards are inserted in it.

"I've no idea when our investigators will report on their findings but I can state categorically that disparaging the competition is a strict contravention of IBM business conduct guidelines".

Summarising the current climate "in which misinformation seems to thrive", Amstrad sales and marketing director Malcolm Miller said: "It seems that it is no longer enough for Amstrad to produce

high quality, competitive products.

"We must now take into account spoiling tactics in the marketplace. The response to the PC1512 has been extraordinary. This machine will change the PC market, no matter what misinformation finds its way into the media".

Latest news is that Amstrad is now fitting fans to all top-of-the-range PC1512 hard disc models. Floppy disc models can be supplied with a fan fitted as an optional extra at a cost of £19.95.

Alan Sugar told *Amstrad Professional Computing*: "This fan is a waste of money, but it will keep some people happy. I recommend that operators switch the fan off - it'll save on electricity and won't make any difference to the operation of the machine".

The Times tips PC1512

Will the PC1512 be the machine that achieves the big networking-in-offices breakthrough? No less a publication than The Times thinks it could.

As the paper's Analysis column points out: "There has always been a gap between what computers were capable of doing and what users were capable of understanding.

"Take networking for example. The benefits to business can be enormous, yet networking has simply failed to catch on as fast as its advantages merit".

The column says many businesses who should be networking have so far been deterred by the £2,000 plus cost of IBM PC compatibles - but "this is where Amstrad comes in with its new clone", according to The Times. "The amount of money needed in the past to buy a single machine will now buy up to four Amstrad IBM personal computer clones", Analysis says.

And this, the paper concludes, could emulate the PCW - "which blew all estimates of the size of the home computer market sky high" - and "transform the outlook for demand from the business market" in the networking sector.

Monkey business

A warning to PC1512 owners: If you don't want to find yourself being treated like a simian anthropoid, be careful about the software you buy.

It comes from Stewart Bell, managing director of the recently formed UK subsidiary of MicroProse - the very

We report on the latest news from Amstrad - and the ever-growing Amstrad world

upmarket American entertainment software developer.

"There are too many software houses around who are apparently working on the assumption that end users have IQs less than orang-utans", he says.

So much so, claims Bell, the businessman is less and less likely to turn to his machine as a form of relaxation at the end of the day.

Now MicroProse intends to rectify this situation. It has established a UK headquarters in Tetbury, Gloucestershire - the home of Prince Charles - from where Stewart Bell will inform British businessmen that his company's product is in the Rolls Royce category.

"You pay a little more for it but in



Stewart Bell... how to relax and unwind

return you get true value for money", says Bell.

The company's record does seem to speak for itself. Its award winning simulation software has taken it to the number three spot in the entertainment league in the USA.

Yet MicroProse produces only a handful of titles each year. But by spending up to \$1 million on the development of each, all have been blockbusters.

Accurate in every detail, the simulations allow users to perform a variety of challenging roles.

Such is the realism involved that one of the MicroProse packages - Solo Flight - is used as a teaching aid by some of America's top flying schools.

MicroProse software available to PC1512 users includes F-15 Strike Eagle, Solo Flight, Silent Service, Gunship, Hellcat Ace, Spitfire Ace and Crusade in Europe - all priced between £17.95 and £24.95. All of these, according to Stewart Bell, being ideal for the businessman who wants to "relax and unwind from the pressures at the end of the day".

Hard bargains

Demand for hard disc versions of the PC1512 has taken Amstrad by surprise. The company expected the twin floppy disc model to be the more popular by a mile. In the event, the hard disc PC is accounting for almost half current sales, thereby causing an embarrassing shortage of drives.

But a rapid search in the Far East by Amstrad has resulted in a deal with Tandon to supply "jointly developed

drives". According to Amstrad, the arrangement with Tandon will "ease the supply situation on hard disc machines from January onwards".

Students' PCs

Signs are that the PC1512 has a bright future in education as well as business. Aston University has placed a large order for the machines to run alongside its existing IBM PCs and Apple Macintosh's.

The machines will be installed during the next 12 months - the first batch has already been delivered to lecturers - and the university says it expects them to be widely used in student teaching, research and administration.

Aston's computer operations manager Tony Bell even sees students themselves purchasing PCs for use at home. "IBM and Apple are well outside a student's reach, but the lowest cost Amstrad could just about be within their budget", he said.

More on the desk

Just out is a package that transforms the Amstrad PCW from a word processor into a multi-function office tool.

It comes from Advanced Memory Systems and combines that company's acclaimed AMX Mouse with the latest desktop software.

The appeal of the package is that it boosts the performance of both the PCW8256 and PCW8512 by building in a range of accessories, most of which would usually have to be bought separately.

At one stroke AMX Desktop software turns the PCW into a desk diary, memo pad, telephone address book, alarm clock, calculator - and even an electronic puzzle.

But its main facility is a full graphic front end for the disc filing system similar to that on the Macintosh and CP/M-based products like the PC1512. To achieve this it provides a wimp environment with a wide range of disc operations.

Nick Pearson, boss of AMS, calls the £79.95 package - which includes the AMX Mouse - as "the most significant development for the PCW after word processing".



AMX desktop

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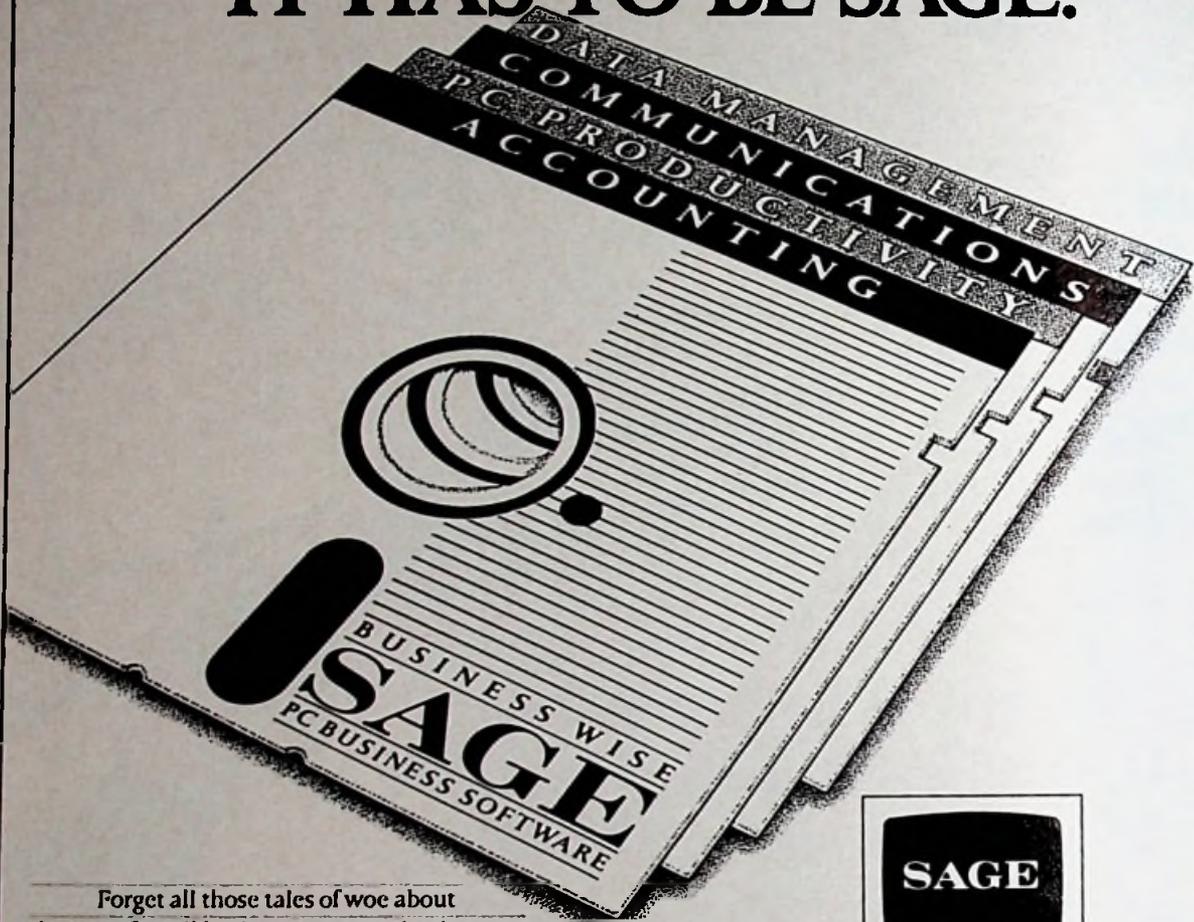
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**Mike James
compares two
drawing packages
from Digital
Research: DR
Draw for the
PCW/CPC range
and Gem Draw
for the PC1512.**



Drawing from PC to PCW

It is interesting the way that the same piece of applications software can appear for different machines at markedly different prices. The Amstrad PCW is a low cost machine and so the software intended for it also tends to be low cost.

On the other hand the Amstrad PC is a low cost machine entering a high cost market. The result is that even given the sterling efforts of a few notable software houses, the cost of the software component of a PC based system is often a lot higher than the cost of a PCW based system.

This cost difference is true of the two versions of Draw, DR Draw at £45 for the PCW/CPC machines and Gem Draw at £99 for the PC. Both programs are excellent for creating precise diagrams.

While a long way short of being complete draughting or CAD packages, they should serve the need for simple diagrams, maps, sketches and small posters. If you are a PC user and have tried Gem Paint then it is worth saying that Gem Paint and Gem Draw are quite different animals.

The difference between paint and draw

Doing graphics on a computer is as viable as text processing, the only real difference being that no-one has yet worked out the best approach to graphics. The result is that there are a variety of different types of graphics processors that are suitable for different jobs.

Ideally what we would like is a graphics processor that makes graphics as easy to work with as a text processor does text. That is, an ideal graphics processor would make data entry easy and provide extensive editing facilities.

The best known type of graphics processor is the paint program, mainly because it is easy to demonstrate and fun to use. Paint programs allow you to create graphics by freehand sketching and painting on the screen via a mouse or screen pen - they achieve simple data entry.

If you are even slightly artistic, you will find a paint program advantageous. If like me you are quite untalented when it

comes to drawing then paint programs can be frustrating. However, I can still produce better results with a paint program than I ever could with paper and brush or pencil.

The trouble with such programs is that they work by allowing you set the colour of pixels on the screen using the computer equivalent of brushes or pencils. But after you have completed a shape you cannot easily alter it without rubbing out and starting again.

If you enter some text using Gem Paint for example, the only way you can correct it is to erase it and type it again. In the same way if you draw a square and then notice that it is not quite square you have to draw it again!

On the other hand a graphics object as used in a draw program is essentially a list of instructions concerning how to draw something, at what position, in what colour and so on. The list of instructions constitutes a description of the object to be drawn and as such it can easily be changed.

For example, if you draw a square on the screen at a particular location it is stored as being an object made up of four lines. This description can be edited at a later date to alter the position of the square, its size, shape and colour.

Of course if you alter an object's description it has to be re-drawn to make its new appearance visible. It is this need to re-draw the display that takes the extra time.

Graphics programs based on graphics objects rather than painting, such as DR Draw or Gem Draw, have the potential to give you complete powers of correction and alteration. In this respect such programs are closer to the ideal graphics processor.

The only trouble is that the improvements in editing facilities take a lot of number crunching and without careful design this can slow things down to the point where the program becomes irritating, even unusable. Let's see how the two programs compare.

Gem Draw

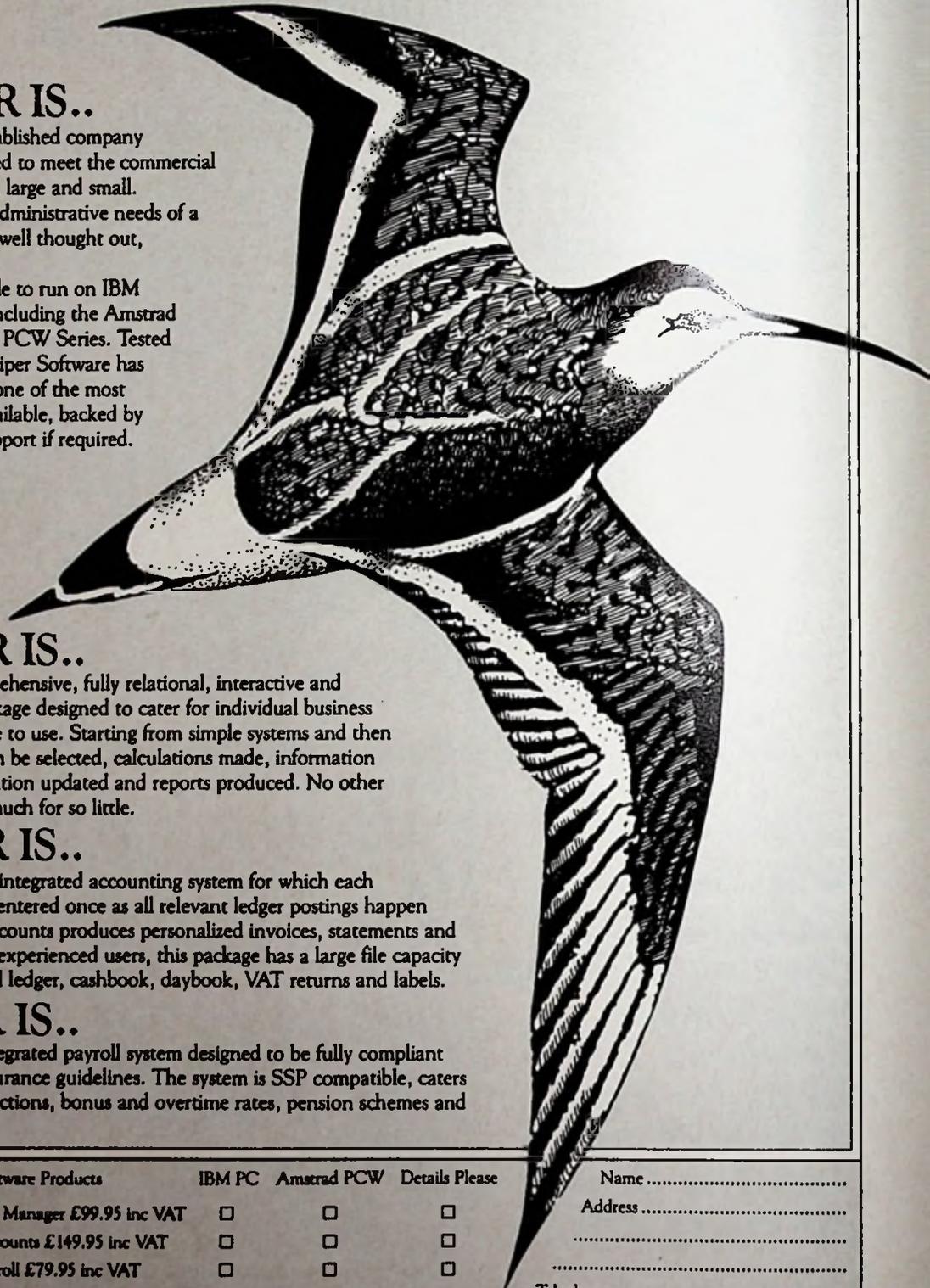
The Gem Draw program, as its name indicates, is a member of the Gem

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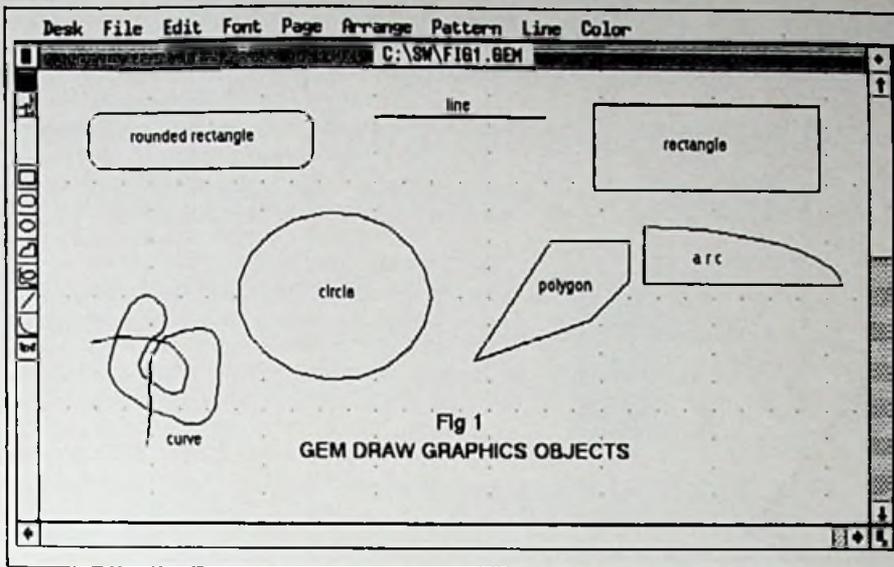


Figure 1: The standard graphics objects available from Gem Draw

software family. As such it runs under Gem and uses all its associated pull down menus and icons. (See Figure I.) The main method of using it is via the mouse. While you can use the cursor keys for positioning you will find them most unsatisfactory.

You can draw on any of six sizes of paper - 8.5x11 inches (letter), 8x13 inches (legal), 11x17 inches (double), 14.8x21 cm (A5), 21x29.7 cm (A4) and 29.7x42cm (A3). However, most printers can only print the larger sizes (double and A3) in four sections which have to be stuck together to produce the final result.

The screen displays a small section of the drawing paper - a window which you can move around and zoom into in order to view fine detail. Each zoom in magnifies the view by two - you can zoom in a total of three times from the normal. You can also choose a full view which will show you the layout of the complete page but is really too small for drawing.

As Figure 1 shows, the graphics objects available are: Rectangle, rounded box, circle, polygon, irregular curved line, line, arc and text. Any object can be drawn by selecting its icon at the lefthand edge of the screen and then positioning and sizing as desired.

For example, if you want to draw a rectangle, select the rectangle icon and move the cursor to the position that you want one of the corners at, then click and hold down the mouse button.

As the mouse is moved a "rubber" rectangle previews what the finished shape will look like. Letting go of the mouse button sets the rubber rectangle into its current shape. Entering other graphics objects follows along similar lines. You can also fill any shape with one of the standard patterns in any of the available colours.

If this was all there was to Gem Draw it would be no better than a paint program. However, there is very little that is permanent about any of the graphics objects once you have entered them.

The topmost icon on the lefthand side is the item selector - a finger pointing at a

rectangle. By selecting this icon you can point at an object or group of objects and by pressing the mouse button surround it with an extent box. Figure II shows the idea.

An extent box is simply the smallest rectangle that contains the graphics objects selected. Once you have an object surrounded by an extent box you can do almost anything with it!

You can use the mouse to drag the extent box and its object anywhere on the screen. By dragging the small blobs on the sides and corners of the extent rectangle using the scale of elements shown in Figure II, you can alter the scale and shape of the object.

It is rather as if the extent box were made of rubber: You can drag it into

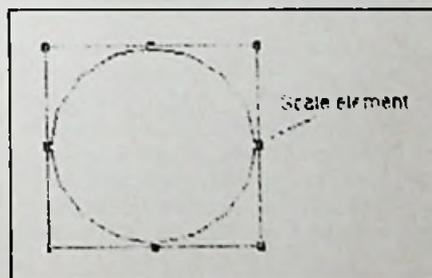


Figure II: The circle is the graphics object being changed - the extent box allows it to be moved around and stretched.

shape and the graphics object inside it is then stretched to fit. Using this general scaling you can change circles into ellipses, squares into rectangles and vice versa. You can also stretch lines to fit.

The only graphics object that you cannot re-scale in this way is text. To change the size of a text object you have to select the required font from the Font menu. But you can alter the text's style to italic, bold or underlined and then drag it into position anywhere on the screen. A selected object can also be deleted - with one level of undelete if you change your mind, filled with any

Hints on using Gem Draw

If you are a PC user and you do decide to invest in Gem Draw a few hints on how to use it might help you get the best from it.

When I first started using Gem Draw I spent a great deal of time lining things up and trying to draw accurately - all a waste of effort. Now that I have been using the program for some time I have developed a rather different method of drawing, more like the way I use a word processor.

Instead of trying to make an accurate drawing straight off, I produce the elements of the drawing at convenient places on the screen and then select each one and move it and scale it until it is in the right place at the right size. To make positioning easier I usually zoom in on the critical area. Using this method, drawing a diagram is more like an assembly job, and bringing together the different parts of the picture in this way makes overall alignment easier.

For example, if you are trying to label a diagram don't try to position each piece of text as you type it. Instead type each label at a convenient position, then select each label in turn and drag it to its final position - this is much easier and quicker.

To simplify things further I always look out for standard units or symbols that I can create and then duplicate to produce the final drawing. It is also important not to abandon the help of the "snap grid". This restricts the positioning of graphics objects to the intervals of the selected grid.

You can turn this feature off, and in principle this allows you to position things more accurately. This is true as long as you do not make copies of the object and move it to another location. If you do this errors of representation can cause gaps to open up between lines that met in the original.

Finally it is worth remembering that there is no point in trying to get the overall layout of a page correct from the start - when the drawing is complete just switch to full view and then drag the large objects into the correct position to give a good composition. Finally, be warned: Gem Draw can be addictive!

pattern in any colour, duplicated any number of times.

A very powerful feature is the ability to select a number of graphics objects and then define them as a single super object which can be dragged, scaled, deleted and duplicated just as if it were a single composite object.

There are a great many other features of Gem Draw that are worth mentioning

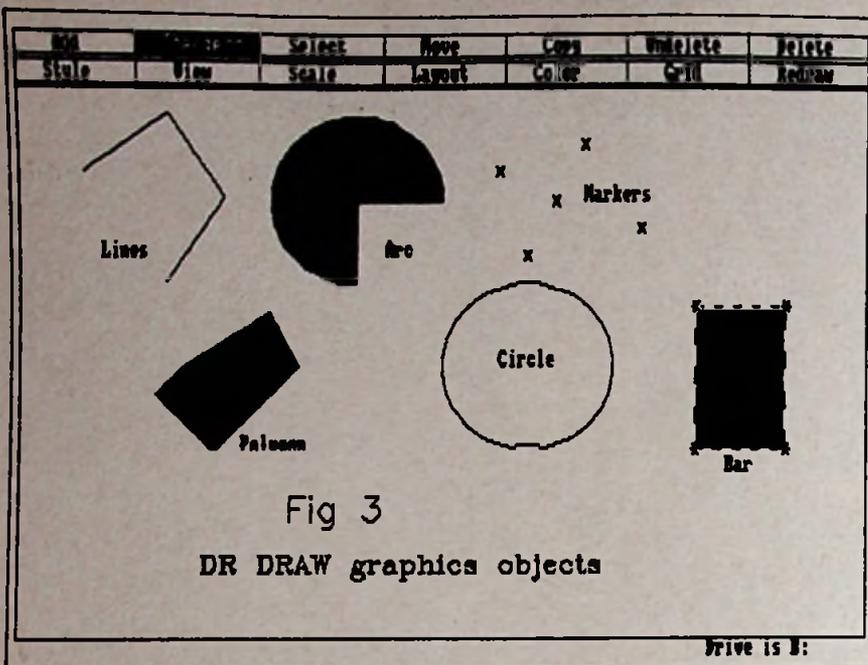


Fig 3
DR DRAW graphics objects

Figure III: DR Draw looks similar but lacks the sophistication of Gem. Note how the options are selected from words rather than icons.

but the resulting article would become a large book!

There is one point I must make, however: The program could be improved with a much increased library of text fonts – at the moment there are only two, swiss and system – and a library of standard symbols.

All in all, Gem Draw isn't quite up to desktop publishing but I have used it to prepare data sheets and the diagrams for a great many articles and a book – it's that good.

DR Draw

DR Draw is a version of Gem Draw for a general range of CP/M+ computers – the PCW and CPC range in particular. The program is similar to Gem Draw but suffers due to limitations of the slower machine and the screen graphics driver – GSX.

For instance as you can see from Figure III the menus are less exciting being in the form of text strips which appear at

the top of the screen.

DR Draw is significantly slower than Gem Draw and has fewer features but it is recognisably the same program. In one respect it is even superior to the current version of Gem Draw – it has more text fonts in a wider range of sizes.

The biggest problem with using DR Draw is that neither the CPC nor the PCW range has a standard pointing device to take the role of the mouse. The DR Draw manual suggests using a joystick on CPC models but offers no advice for PCW owners. I haven't tried the CPC with a joystick but I have tried the PCW with Electric Studio's light pen and it's a considerable improvement over the cursor keys.

In fact, apart from one or two idiosyncrasies I think I even prefer it to a mouse. At least with a light pen you point to the actual place on the screen where the object should appear, although it is difficult to position the cursor accurately due to the inevitable wobble. The lack of any pick-and-done buttons on the pen

and the need for the area of the screen you are pointing at to be bright make the mouse just that little more functional.

The range of graphics objects is limited to: Text, line, polygon, box, circle, arc and points – all shown in Figure III. As the top menu box shows, you can fill shapes with solid colours – eight real colours on the CPC but only a variety of black and green patterns on the PCW.

As with Gem Draw, DR Draw lets you change a graphics object by selecting it, thereby surrounding it with an extent box, and then by repositioning the upper lefthand and righthand corners of the box. But to move an object you cannot just drag its extent box: You have to select the Move function from the menu, pick a reference point on the object and then point at the reference point's new location. None of these changes is significantly worse than, say, the Gem way of doing things, they are just different. What is worse is the response time. Each time that you select a function from the menu it reprints it.

This simple operation takes a few, very boring, seconds. If DR are planning any improvements to Draw then either speeding up or avoiding this menu reprinting would give 100 per cent improvement for very little effort.

There are two further factors which slow DR Draw down. The first is the number of times it has to access disc for overlay, font and picture files although this can be minimised by storing as much as you can in the ram disc. The second problem is the time it takes to draw text in all fonts other than machine font.

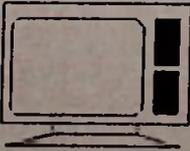
In conclusion

There is no avoiding the fact that DR Draw is not as powerful or as much fun to use as Gem Draw – not surprising really since GEM Draw runs on a more powerful machine. But given the restrictions imposed by the PCW it is gratifying that DR Draw is as functional as it is.

While it would be feasible to use DR Draw for applications such as data sheets and technical diagrams, you would need patience. It is much more suited to the production of wordy diagrams than it is to producing diagrams composed of a few simple shapes, boxes and circles and perhaps a company logo.

The PCW 8256

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using CP/M+

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Product: Gem Draw
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APC

Figure IV: An example of DR Draw's capabilities

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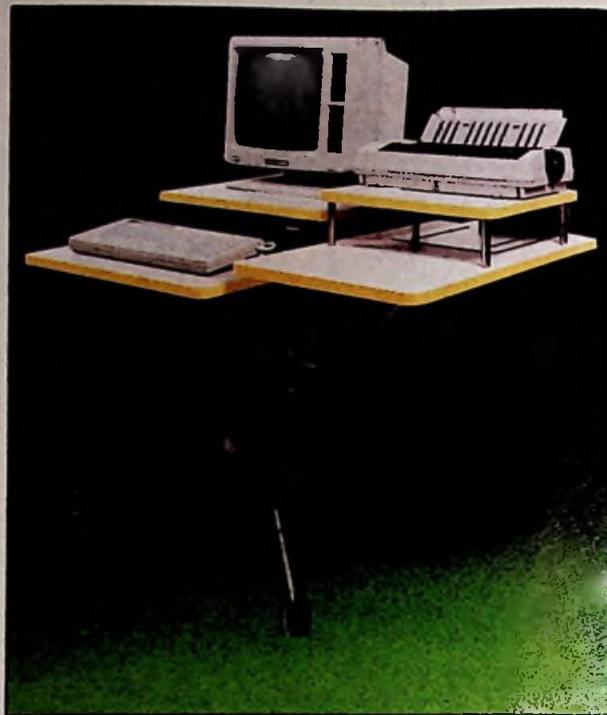
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2. Which 18th century furniture designer was also famous for his fireplaces?
3. The shield back chair was first designed by which of the following?
 - Sheraton
 - Mackintosh
 - Hepplewhite
4. Which wood was mainly used for furniture making in Victorian times?
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 - Walnut
 - Mahogany
5. Which name was given to kitchen chairs in Victorian times?
 - Deck
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 - Spine back

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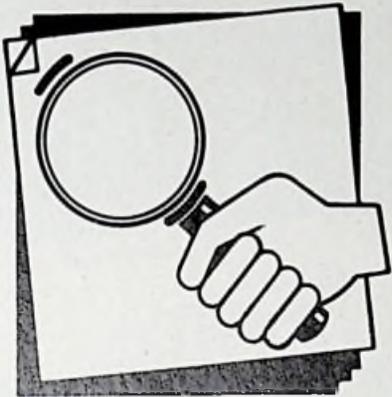
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REVIEW



Eric Fenster reviews a new data management system, and suggests some general precautions to take when choosing software.

A closer look at Cambase

ACQUIRING a piece of serious software is only the first step in a long relationship. You will spend many hours with it to get a job done with more ease and flexibility than before. But as in human relationships, intimacy discloses the imperfections disguised by the Sunday-best of adverts, technical specifications and first encounters.

Magazine reviews can help avoid disappointment, but they are intended for *potential* users. It can be unwieldy to go into details which may be meaningful only after hands-on experience, yet which make or break the value of the software. Let me attempt to do this, though, with Cambase.

Cambase is a data management system which allows for 39 fields: Character, numeric, date, yes/no and conditional. There may even be looped or repeating fields. Selection and sorting can be done on any field and a disc can hold up to nine different data files.

In addition there are processes which can define variables, accept input (field or variable values) and make derivations by arithmetic operations. Others determine output to screen, disc or printer in the report format desired, including mailing labels.

Up to twenty different processes can be written for the nine data files. Of course, individual records may be created, amended, deleted or output. So far, so good.

Cambase occupies 117k of the program disc, which limits the space available for data and makes the writing of nine substantive files somewhat hypothetical. The program can be transferred to the M drive so that a fresh data disc can be used in A. But with maximum record size being 2048 bytes, in an extreme case you could have nine files with only nine records each on a 173k disc.

More important, transferring the program to M poses a certain risk. Unlike most software, Cambase has program files (.DAT) which change as data is input. That is, the program and data discs are intimately linked and the altered .DAT files must be PIPped back to the program disc after each session.

In case of an accident or power failure while the .DAT files are in M – and changes have been made to the data content – the data and program discs no longer match. At the least, backups must be made simultaneously of both discs, which is costly in time and materials and increases the chances of disc management errors.

Owners of the PCW8512 can take

advantage of the space in drive B without having to move program .DAT files to M. The only problem is that printer codes cannot be changed from B. The solution is to change the codes on a program disc in A, then PIP B:=A:SYSTFILE.DAT.

There is still a space problem. When initialising a file you must state the maximum number of records you will have and Cambase reserves the entire amount of space on the disc. So writing fewer records or failing to fill character fields is wasteful and makes Cambase inefficient for files of unpredictable content, such as bibliographic notes.

After initialisation, the file size cannot be changed without erasing all data. Incidentally, Cambase fills trailing blanks in a field with spaces – which have to be deleted if records are moved to a word processing program such as LocoScript.

The real inconvenience begins when you start to create records. While many programs (such as Cardbox) allow you to do this in a partial fashion, Cambase requires that you key through all the fields. And there's no going back to correct a mistake in a previous field – the Amend procedure must be used. So that even for a record starting with, say, a client's name, you still have to hit Return up to 38 times to reach the next record.

Moreover, while you can key through certain fields leaving them empty, for others an entry is compulsory. This is so for yes/no or validated fields, where a minimum numeric value or a restricted set of characters has been specified. In these cases dummy values must be entered to create the record.

There is an alternative, which is to insert a yes/no field and make all subsequent fields conditional on it. But aside from wasting a field, you might have wanted to make subsequent fields conditional on something else.

Fields can be conditional only on previous character or yes/no fields and not, unfortunately, on numeric fields. To achieve this another field must be used up.

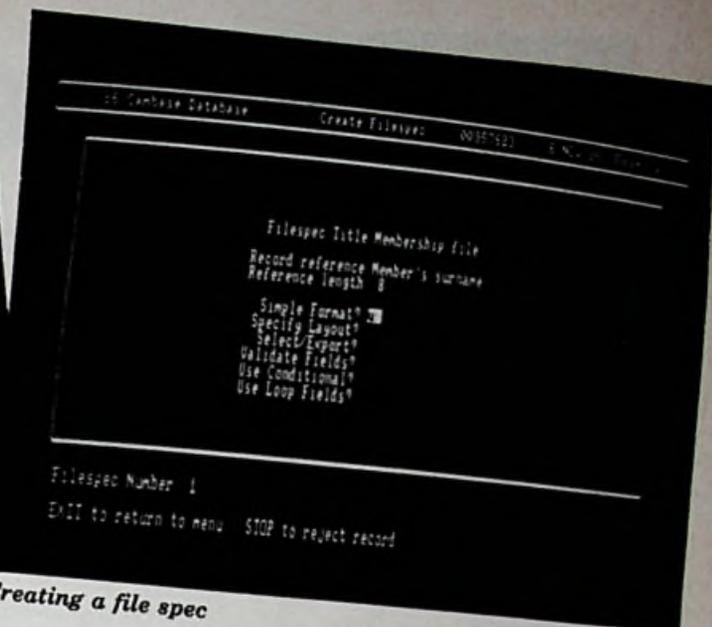
For example, to make Field 10 conditional on Field 8 being greater than 50, you'll need a Field 9 which answers yes/no to the question about Field 8. Besides wasting another field, this indirect approach must be done manually and is thus both time-consuming and detached from any computing.

If, for example, the age of people in your records is relevant to some further action, the ages could be adjusted annually by using a process such as derivation by

PCW



The main menu - updating file spec



Creating a file spec

subtraction from the current year. But you would still have to go manually through the database to change the yes/no field for people who crossed a pertinent age limit/range.

Although selection in Cambase is reasonably adequate, you will not know until you read the manual carefully that selection on "any" field is limited to any 16 of the 39 fields, and sorting can be done only on those same 16. By the time you've put in "throwaway" fields to deal with problems mentioned earlier, this constraint can restrict your margin of manoeuvre.

The real weakness of Cambase is its processes. Suppose you set up a process to input one or more fields of selected records. As each record is presented on the screen you will see only the fields scheduled for input, not the entire record.

If the purpose of your process is, say, to enter the prices which correspond to a series of already-entered part numbers, you can imagine the horror of having to work blind. You almost need all the information, on paper and correctly ordered, in front of you - which rather obviates the purpose of the computer and is not the way such information is usually received.

The second problem is that conditionality doesn't function during a process - which is where it would have its greatest value. If your process entails input on several fields which are conditional upon each other, all the designated fields for every selected record will be presented for input regardless of whether the conditionality is fulfilled.

Two other Cambase characteristics exacerbate this problem. First, any record selected for a process involving input has existing data in the relevant field(s) erased. There is no such thing as a protected field, nor is there an erase-verify function.

Any mistake in selecting records can

mean lost data. Even proceeding correctly may require running the process several times under different selection criteria since it isn't possible to create a process involving input of several fields without exposing all of them to input on every record selected.

Second, should you make a mistake and enter a value on a record which shouldn't have been presented in the first place because of conditionality, you will never know it. The very fact of conditionality means that the guilty field won't be displayed when you next look at the record!

I said earlier that processes can perform several functions, including output. But when these are combined in a process, output occurs record by record as each is changed by input/calculation.

You cannot run part of a process, so if either immediate output is not desired or, conversely, you want just output without other functions, separate processes must be written for each purpose.

This begins to eat away at the number of available processes. While these total twenty, each must be linked specifically to a data file. Therefore creating the maximum nine files would mean having about two processes available per file, reducing opportunity for manipulation and making advertised capacity misleading.

The Cambase manual is good at presenting topics several times at deeper levels of detail, and at warning of certain file-handling precautions. On the other hand, while some information is missing entirely, the main fault is that other topics are just mentioned in passing, or obscurely.

You will only learn about limits such as record size from the list of error messages, and may be surprised the first time your printer prints on an empty roller. The end of the manual's tutorial does suggest verifying that the printer is loaded with continuous paper before pressing P, but

that is the only clue to the printer's default setting. The codes themselves are in decimal and there is little guidance about changing them. Similarly, the fact that fields can be put in any order for output to screen or printer - but not to disc - is omitted.

Cambase performs many functions quite well and would be excellent value for money if its design flaws were corrected - I hope Camsoft will make the effort. As it stands, the committed computer user might take the pains to avoid the pitfalls, but the current risks of compromising valuable data may be unacceptable to users in the typical office.

This review concentrates on one piece of software, but its larger purpose is to suggest general precautions to be taken when acquiring any new program.

Ideally, dealers should give meaningful demonstrations, although it is becoming more difficult to find those who will make this effort to sell inexpensive software.

At the very least, a dealer should provide a place where you can sit down and read through the manual. That is your true introduction to the reality of a program, and it doesn't encroach on the dealer's time.

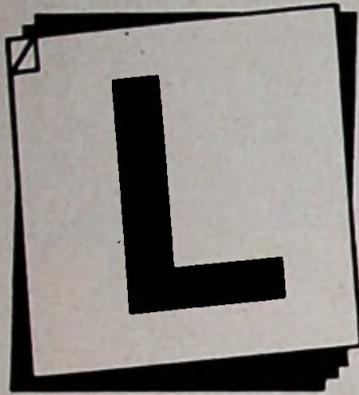
If the manual is unintelligible, beware. Who knows, we might even get better manuals if manufacturers knew their products were going to be judged by them.

Finally, keep your ultimate user in mind. There is excellent, powerful software which may require programming talent for application design, yet the result might then be simplicity itself to implement.

The trouble begins when the application is so complex or error-prone as to exceed the skill (or interest) of the final user. The computer can then become an unwelcome liability instead of an asset.

APC

SPECIAL



In her final article on SuperCalc Sue Gee looks at some of its more obscure but vitally important areas and reveals some interesting ways of drawing graphs.



Adding the finishing touches

In principle printing a spreadsheet is easy. For example, to print a spreadsheet using the printer's standard typeface - which usually means 80 column printout - all you have to do is enter:

/Output,Display,ALL,Printer

If the spreadsheet is too big to print in one go SuperCalc will print it in a number of sections that you can stick together with tape. You have a better chance of printing it in one part if your printer supports a condensed mode, giving 132 columns.

The PCW printer certainly does and so do all the Epson models. To enter condensed mode on these printers simply enter the command:

/Output Display,ALL,Setup

At this point you have a range of options. First set the line length to 132 then select the Setup codes option and type:

Control+O

for a CPC computer or PC, or:

Alt+O

if you are using a PCW.

(To type a Control+O or an Alt+O simply press O while holding down the Control or Alt key.)

As long as your printer is switched on and connected when you type the setup code, it will be set to condensed mode and you can go straight to printout.

Alternatively you can buy a utility which allows you to print a spreadsheet sideways.

Another useful tip is to turn off the printing of the spreadsheet borders using the Global command:

/Global,Border

The border can be brought back with the same command a second time.

Merging spreadsheets

Sometimes you might need to combine the information in a number of spreadsheets to produce a single summary. For instance if you maintain a monthly summary of profit and loss it is useful to be able to amalgamate

spreadsheets to produce a statement for the entire year.

You can combine a spreadsheet stored on disc with the one already in memory by using the options +, -, * and / via the Load command, so enabling you to add, subtract, multiply or divide corresponding spreadsheet entries.

Each cell in the spreadsheet stored on disc is compared to the corresponding cell in the spreadsheet in memory and if they both contain numeric data or valid formulae their contents are added, subtracted, multiplied or divided. The resulting spreadsheet contains only numeric data in cells that have been affected - any formulae they contained are overwritten by the results of the merge.

It is obviously important to design or modify spreadsheets to be used in a merge operation so that they are laid out in exactly the same way but, apart from this restriction, merging is a very useful and easy-to-use function.

You can choose to load or merge part of a spreadsheet into a specific position - with reference to the top lefthand corner - of an existing one. For instance if you wanted to load only the part of a spreadsheet contained in the block C4:F10 so that the top lefthand corner of this block is at B3 you would type:

/Load,"SPREAD1",Part,C4:F10,B3

To merge the same block with an existing spreadsheet by adding corresponding cells you would type:

/Load,"SPREAD1",Part,C4:F10,B3,+

Your own formats

The most important element in making a spreadsheet look good is selecting the correct format for each cell. But what if there isn't a standard format that suits? The solution is to use one of the eight user-defined formats that SuperCalc provides. To set up a user-defined format type:

/Format,Define

and the format table will appear. Using the cursor keys to alter the options

displayed - Floating \$, Embedded commas, Minus shown as (), Zeros as blanks, Show as percent, Number of decimal places and Scaling factor. You can define up to eight different formats. To use these formats simply enter the command:

`/Format,range,Un`

where n is the number of the user-defined format.

Submit files

The usual method of getting SuperCalc started is just to type SC2 and wait for the program to load but there is much which can be done to improve your working conditions.

If you are a PCW user there is a lot to be said for copying all your SuperCalc work files to the ram disc.

On both the CPC and the PCW it is a good idea always to set the date each time you start using SuperCalc.

CP/M Plus provides the submit file facility to help with exactly these problems. You can create a file of CP/M commands and have them executed automatically by typing:

`SUBMIT filename`

For instance, to copy SuperCalc automatically to the ram disc - drive M - you would need a file containing:

```
era m:*. *
pig m:=sc2.*[row]
m:
sc2
```

The first line erases the current contents of the ram disc, the second copies all the SuperCalc files to it, the third makes M the current drive and the final line loads SuperCalc.

Using the ram disc in this way significantly increases the speed of some operations. If the file was called SC.SUB you would then type:

`SUBMIT SC`

to make all these separate operations happen automatically.

Date functions

The simple .SUB file listed above is just the start of the sort thing you can achieve. For example, the command DATTIM - supplied on the SuperCalc disc - will ask you to supply the current date and time so that SuperCalc date functions will work properly. You can make sure that you always set the date every time you start SuperCalc by including the line:

`DATTIM`

in your SC.SUB file.

As long as you have set the current date and time using the DATTIM function before you start SuperCalc, you can make use of the date functions. (If you have an idle moment then you might like to try entering the date 12/25/86 in

DATTIM and see what happens!)

The simplest of SuperCalc's date functions is TODAY() which supplies the current date in the form mm/dd/yy. A number of SuperCalc functions will accept a date in this form as produced by the DATE(mm,dd,yy) function and this is known as a date value:

`DAY(mm/dd/yy)` gives dd
`MONTH(mm/dd/yy)` gives mm
`YEAR(mm/dd/yy)` gives yy
`WDAY(mm/dd/yy)` gives a number in the range 1 to 7 indicating the day of the week.

Notice that you cannot type DAY(12/29/86) but must use DAY DATE(12,29,86)).

These functions are generally used with the TODAY() function to give today's day, weekday, month or year number - for example MONTH(TODAY()) gives the month number.

The function JDATE(mm/dd/yy) returns the number of days since the Julian calendar was introduced (day 1 was 3/1/00 according to SuperCalc). Similarly the function DVAL will convert the number of days since the Julian calendar was introduced to a normal date value. That is JDATE(DATE(03,01,00)) is 1 and DVAL(1) is 3/1/00.

You might find it difficult to see why anyone would want to know the number of days since the Julian calendar started. What relevance has that in the modern world?

The answer is that you can add one to it and get tomorrow! For instance, if TODAY() is 12/29/86 then DVAL(JDATE(TODAY()+1)) is 9/30/86. That is, convert TODAY to the number of days since the Julian calendar began JDATE(TODAY()) then add one

to it and convert back to a standard date value using DVAL.

You can use the same trick to generate dates for any period of time. For example, 14 days from today is DVAL(JDATE(TODAY()+14)) and so on. This can prove very handy if you want a spreadsheet showing dates of every payday or a similar regular accounting date.

A slightly more difficult problem is generating the names of days. That is, given that it is day 2, make a cell value "MON". There is no single function that can do this but you can use a lookup table and the LOOKUP function to produce this effect. For instance, enter:

A	B
1:1	("SUN")
2:2	("MON")
3:3	("TUE")
4:4	("WED")
5:5	("THU")
6:6	("FRI")
7:7	("SAT")

You have 1 to 7 in column A and the days of the week in column B. Notice that the days of the week have to be entered as text values, with surrounding brackets. Once you have entered this lookup table you can use functions such as:

`LOOKUP(WDAY(TODAY()),A1:A7)`

to convert a day number to its name. You can use a similar technique to convert month numbers to names.

The main problem with SuperCalc's date functions is that there is usually more than one way to achieve the same result, so if you think of another way of doing something - and it's better - use it.

A time elapsed spreadsheet

As an example of using SuperCalc's date

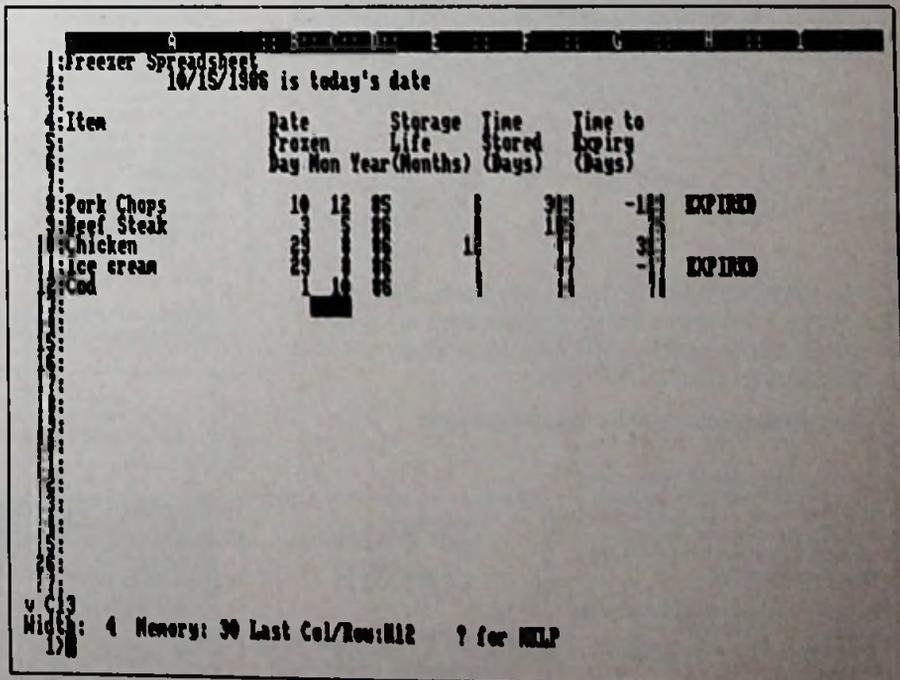


Figure 1: Keeping tabs on the freezer with SuperCalc

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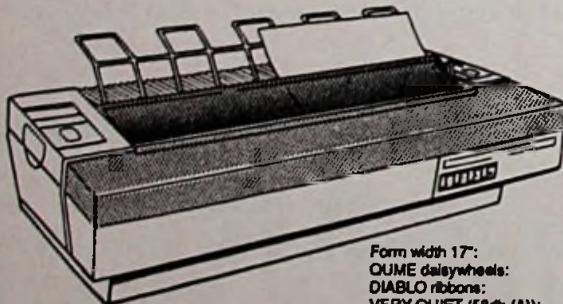
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functions, consider the problem of keeping track of various elapsed times or important dates. For instance keeping track of the contents of a freezer and automatically indicating when they have been kept too long.

This is achieved by using the TODAY() function which returns the current date, and the JDATE() function which can be used to calculate the number of days between two dates. The same methods can be used to keep track of any time-critical events. The layout of the spreadsheet is shown in Figure I.

The columns are set so that A is 20 wide, B, C and D are 4 wide, and the rest are 9 wide – the default value. The titles as shown are entered into A1, A4,B4:B5, E4:E6, F4:F6 and G4:G6 and B6:D6. Today's date is displayed in A2 using TODAY().

The number of days that something has been stored is worked out using a simple formula entered into F8:F12. F8 contains:

```
JDATE(TODAY())-JDATE
 (DATE(C8,B8,D8))
```

and the rest of the column is obtained by replicating this with adjustment. The formula to calculate the time to expire is entered into column G8:G12. The formula in G8 is:

E8*30-F8

and the remainder of the column is obtained by replicating this with adjustment. This assumes that one month's shelf life is 30 days.

The test that prints the word EXPIRED if the item has been stored too long is entered into column H8:H12. The formula in H8 is:

```
IF(G8<0,"EXPIRED",")
```

and the rest of the column is obtained by replicating this with adjustment. It is also worth entering 86 as a default year in column D. This leaves you to enter the description of the item, the day, month and possibly the year that it was frozen, and its storage life in months.

Plotting bar charts

If you want to see a high quality graph of your data then it is better to use a custom graphics package such as DR Graph. However, if you only want a rough indication of what your data looks like you can plot simple bar graphs within a spreadsheet.

The simplest method is to use the * format which will cause a cell to be displayed as a number of asterisks equal to its value. That is, if a cell contains the value 10 then setting its format to * will cause it to show as 10 asterisks.

It is not difficult to see how this can be used to produce a bar chart, but there is the small problem of scaling to be solved.

Suppose for instance the data ranged from 0 to 100 – the graph would go off the screen well before it reached a bar of 100 asterisks. The solution is to make sure that the largest bar just fits on the screen

and all the other bars are scaled in proportion.

To produce a scaled graph all that is required is the maximum and minimum of the data. If for instance you want a bar graph of the data in B1:B10 then MAX(B1:B10) in A1 and MIN(B1:B10) in A2 gives the maximum and minimum

format for C1:C10 and set this column width to 50.

A two-dimensional plot

This final example is quite complicated and you might like just to enter it and see

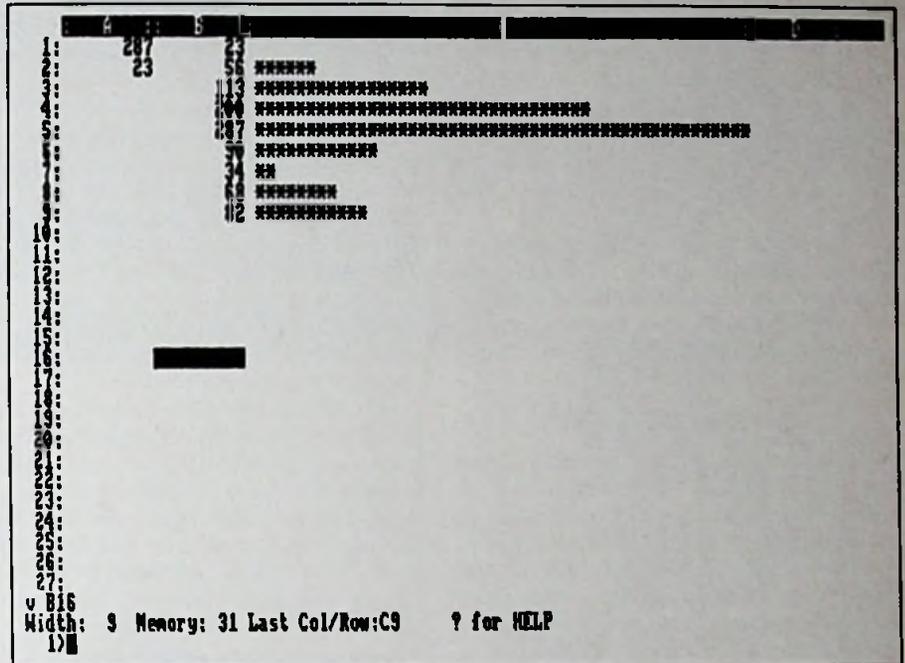


Figure II: Who said SuperCalc couldn't do graphics?

of the data. To plot a bar graph enter:

```
(B1-A2)*50/(A1-A2)
```

in C1, followed by:

```
(B2-A2)*50/(A1-A2)
```

in C2, and so on to C10.

Notice that to replicate the formulae in C1 into C2:C10 you have to select the Ask for adjust option and adjust B1 but not A1 or A2 as these are absolute cell references.

Finally all you have to do to see the graph (shown in Figure II) is select the *

the results rather than worry about how it works. The amazing thing about using SuperCalc, or any good spreadsheet for that matter, is the way that you can achieve surprising results with only a little ingenuity.

For instance, would you believe it was possible to use SuperCalc to draw a two-dimensional plot of a function like:

$$\exp(-(x^2+y^2))$$

Don't panic at the look of this function – it's SuperCalc's job to work it out, not yours. It is possible, and you can see the

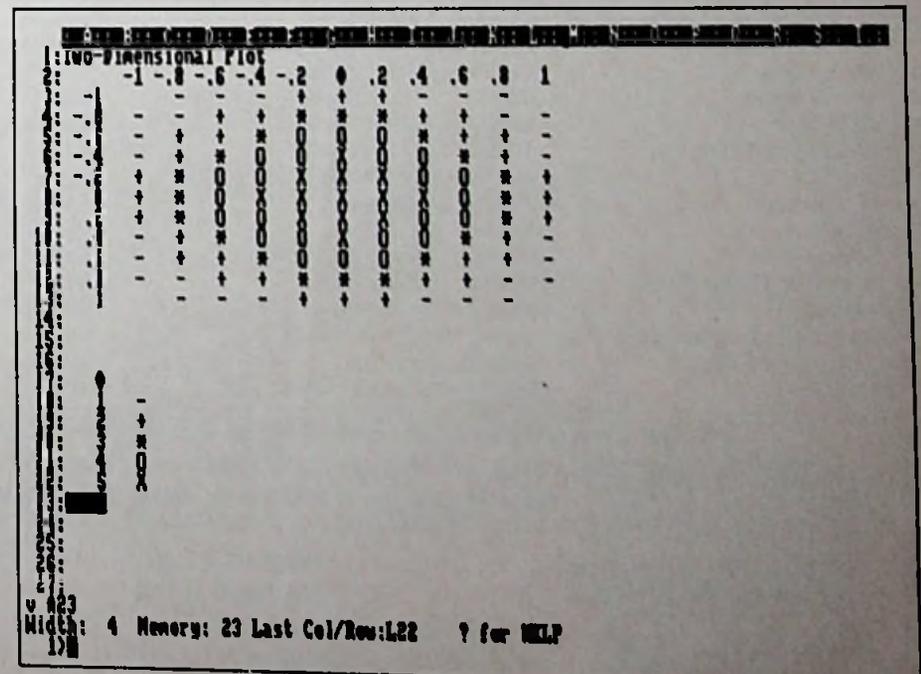


Figure III: The graph of $\exp(-(x^2+y^2))$

results of plotting it in Figure III. In fact once you have the basic principle, plotting any two-dimensional function is quite straightforward.

The first problem is how to generate suitable values for x and y that the function can use. This is based on a trick that is fairly easy once you have seen it done. To generate -1, -.8, -.6 . . . to 1 in row 2 all you have to do is enter -1 in B2, then B2+.2 in C2, and replicate this formula - with adjustment - into D2:L2.

You can generate the same series of numbers in column A by entering -1 in A3, A3+.2 in A4 and then replicating this formula - with adjustment - into A5:A13.

The formulae that we want to work out in cell column A, row N, - cell AN - can now get its x value from cell A2 and its y value from An. For instance, the formula in cell E5 should use the values in E2 and A5. That is:

EXP(-(E2*E2+A5*A5))

To see a table of the function's values over the range x = -1 to +1 and y = -1 to +1 all we have to do is enter formulae of this form into every cell in the block B3:L13.

This is difficult because of the strange way that the cell references have to be adjusted when they are moved. The easiest way to do this is to enter:

EXP(-(B2*B2+A3*A3))

into B3, and then replicate it, adjusting A3 but not B2, into B4:B13. Then

replicate the column B3:B13 into the block specified in the Replicate command by C3:L3, this time adjusting the cell references to B2 but not those to cells in column A - that is, don't adjust the first two references but do adjust the second two. If you examine the resulting table of values you will discover that the function lies between 0 and 1.

The next problem is to change this table into a graded plot of the function. This can be achieved by first converting its result to an integer in the range 0 to 5 and using this to select one of six plotting characters. As the function being plotted varies between 0 and just less than 1 multiplying it by 6 and taking the integer part results in a number between 0 and 5.

A lookup table to select one of six characters on the basis of the result in each cell can be used in the same way as selecting the day of the week based on the day number described earlier.

At this stage it is a good idea to switch off auto-calculation by selecting the Manual option of the /Global command. Simply set up a table of plotting characters of the correct density by entering 0 to 5 in column A17:A22 and Space, -, +, *, O, X, in column B17:B22.

Note that each character has to be entered as a text value. This gives:

LOOKUP(INT(EXP(-(B2*B2+A3*A3))*6),A17:A22)

as the final version of the formula that has to be entered into cell B3. Replicate

this into B4:B13, with no adjustment for B2, A17 and A22 but with adjustment for A3. Then replicate the entire column into the remainder of the partial block C3:L13 using:

/Replicate,B3:B13,C3:L3,Ask

and adjust cell references to B2 but don't adjust any of the other cell references. That is, adjust the first two cell references of each set but not the remainder.

With this change all that remains is to reduce the width of the columns used to display the function to that of a single character using the Format command. You can try plotting your own functions using the same technique, but be warned - if you use a very complicated function over a larger plotting area you might have to wait rather a long time for the results.

More SuperCalc

You must have guessed by now that I am a SuperCalc enthusiast. For me there is only one thing better than SuperCalc 2 and that's SuperCalc 3! It would be fair to say that I am a committed spreadsheet creator and user.

● I hope that this series has served both to introduce you to spreadsheets and to stimulate your imagination.

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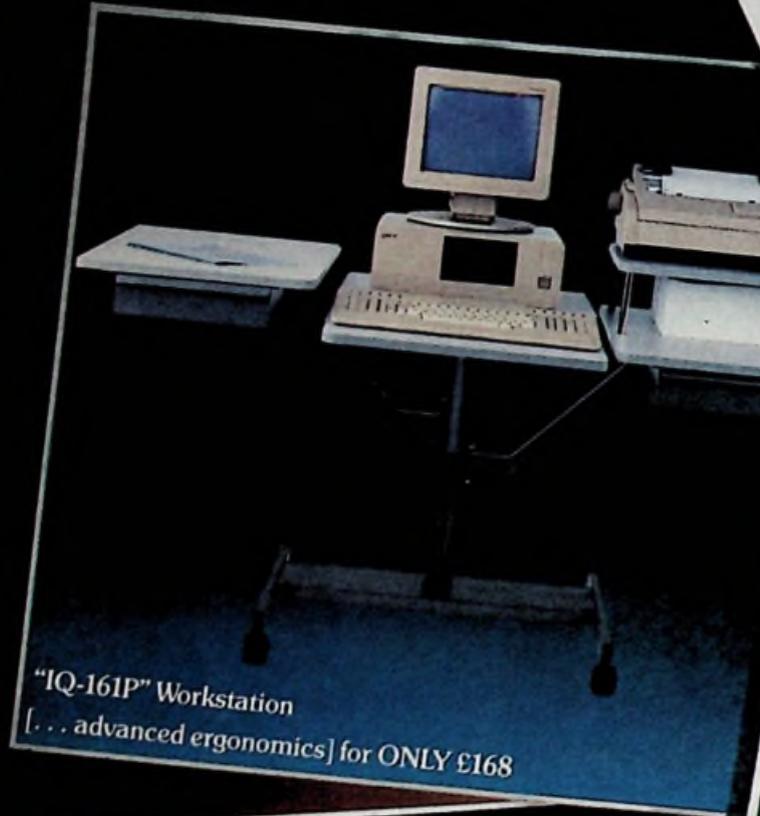
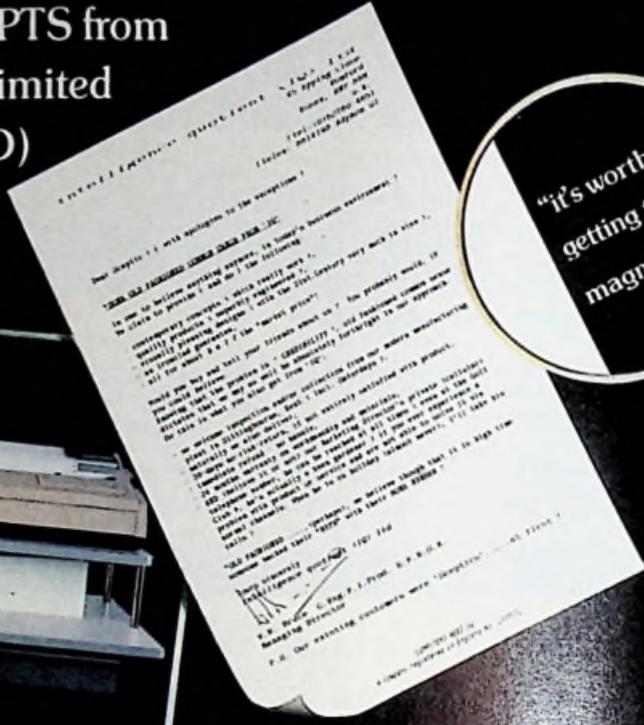
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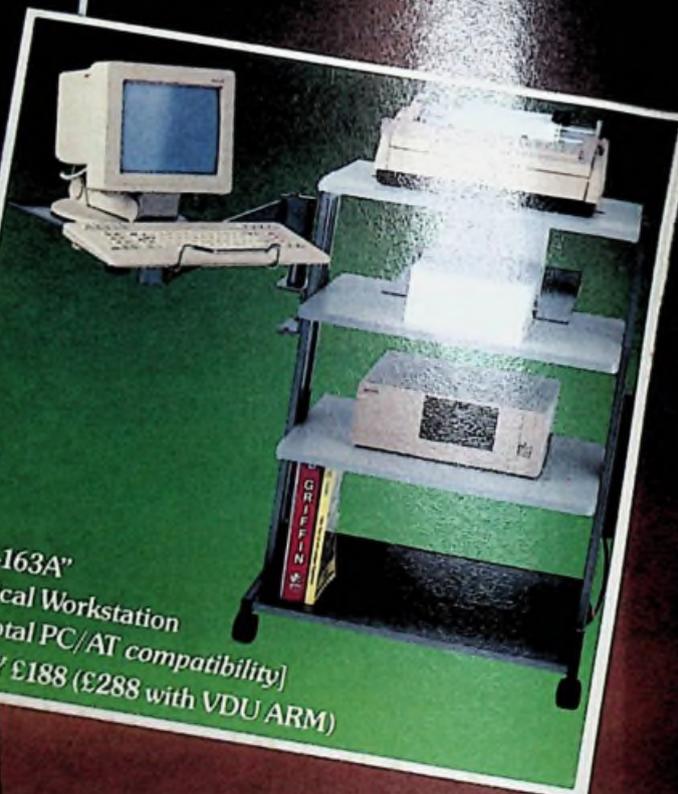


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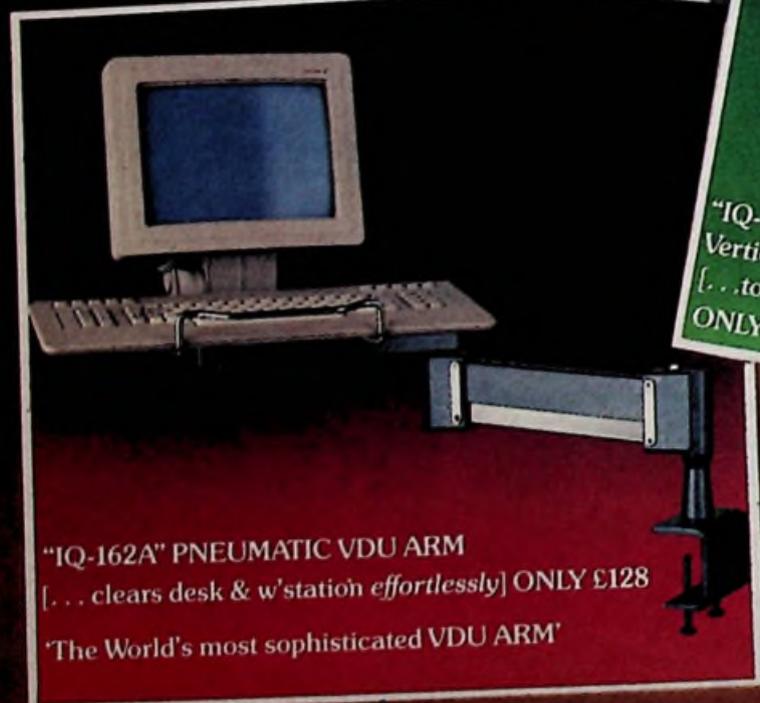
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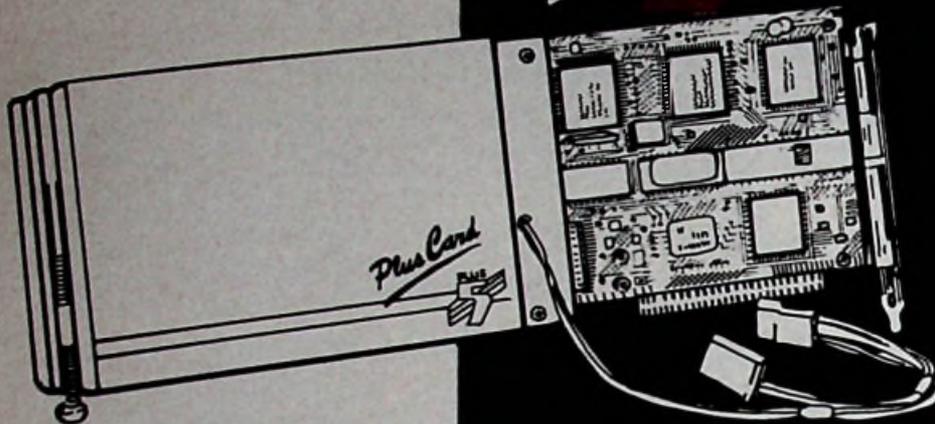
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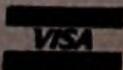
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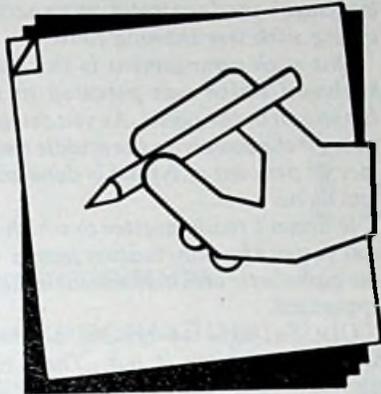


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APC

FORUM



**Keep writing in.
Our address is:
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Brentwood, Essex.**

I am thinking of buying the new Amstrad PC, but I am worried about having to discard my current equipment. This consists of a BBC Micro with 6502 second processor, an Epson FX80 printer, and a modem that I use to call up Prestel.

If I do buy the new Amstrad, will all this equipment be surplus to requirements? Will some of it be useful or would the best policy be to throw everything away and start again?

The same question applies to all the programs and software I've acquired, not just games but also spreadsheets and other more serious packages.

I would be pleased to hear your views on this because starting again could be quite costly.

G.D. Simmonds,
Bexley Heath

APC: You're quite right. Buying all new equipment to attach to a new machine could mean a hasty visit to your bank manager.

But we'd advise you not to let the financial questions rule your decisions totally. You ought to think first about whether you need the new machine or whether the BBC Micro will do the jobs you want.

If your application needs do outstrip the BBC Micro's abilities, then certainly you should consider buying the Amstrad PC as a good step upwards in power.

But you wouldn't have to replace all your equipment. The printer, for example, will work just as well with the Amstrad as it did with the BBC Micro.

And don't forget that Gem software was written with the Epson in mind. Your modem will also be usable to communicate with other machines, although it may be a little restricted in linking with Prestel.

This is because the Amstrad PC, at present, doesn't have a serial interface that will run as low as the 75 Baud required for the 1200/75 transmission speed used by Prestel.

However, as long as your modem will run at 300 Baud this should pose no problems for communication between two computers or accessing some bulletin boards.

Your final question concerns the transportability of the BBC software, and this is a difficult one. If the software is in Basic, you should be able to transfer the Ascii code from the BBC Micro to the Amstrad.

But machine-code programs are rather more of a problem because of the different processors involved.

However, there is a BBC/IBM emulator which allows some BBC Micro software to run on the Amstrad PC.

Upgrade route

I'm keen to buy one of the new Amstrad PCs, but face a common problem - too

The cost of a step forward

much month left at the end of the money!

That means I can only afford the basic machine, although the kind of project I want to work on really needs a hard disc.

How easy is it to upgrade through the models of the new range?

James McIlwraith,
Stirling

APC: At the time of writing the answer must be "incredibly difficult". There's a dearth of machines, let alone upgrades.

However, the Amstrad philosophy is for upgrades between the models to become available soon. But the cost of an upgrade is likely to be a little more than the built-in equivalent.

So adding a second drive to a single-drive machine will cost you £172 - it would only have cost £100 more had you originally bought a double-drive Amstrad.

A 10Mb hard disc will cost an additional £460, or a 20Mb hard disc an additional £575.

The only feature that's not upgradable is the monitor. There appear to be no plans afoot to sell the monitors separately. So unless you buy a colour monitor from someone who doesn't want his Amstrad PC, there's no way to move from monochrome to colour.

Finally while we're discussing upgrades for the Amstrad PC, don't forget that it's an IBM-compatible machine as well. This means that you may be able to make use of many of the IBM upgrades presently available - perhaps at lower cost.

For example, it's already possible to use an existing 20Mb hard disc drive card in one of your three expansion slots.

Gem of a mouse

I have seen the new Amstrad in my local store and it looks very good value for money. I'm particularly impressed by the Gem operating system and the mouse.

Will it be possible for me to make use of the mouse in my own programs and if so, how easy will it be?

Frances Mason,
Aberystwyth

APC: The mouse is certainly a very useful little tool for moving the cursor around the screen quickly.

And it comes into its own in drawing applications such as those in the Gem range. But it's also very easy to use in your own applications.

All you need to do is call up the

MOUSE.COM utility on the MSdos disc that arrived with your machine.

This will allow the mouse to mirror the up/down/right/left cursor keys, the Return key and in some instances the Escape key. Try it, for example, in a word processing application.

And don't forget that you can re-scale the mouse/cursor movements using the non-volatile ram utility (NVR.EXE) that can also be found on the MSdos disc.

Long-life ribbon

My friend tells me that it's possible to prolong the life of my PCW printer ribbon by spraying it with a penetrating oil like WD40. Is it OK to do this, or will it clog up the pins on the printer head?

E. D. Gill,
London W6

APC: Listen to your friend - he or she has got the right idea. When the printer head moves over the ribbon it constantly uses the ink from only a small part of it - the top and bottom remain more or less unused.

What the penetrating oil will do is redistribute some of this ink and it will have the effect of making your ribbon darker in the right places.

Don't worry about clogging up the print head - the oil is more likely to facilitate the pin movement than hinder it.

But it's important to "oil" the ribbon in the right way, otherwise you'll be likely to end up with a very messy piece of paper when you use it.

First, carefully prise off the ribbon-case top to expose the ribbon. You'll see it's very bunched up, so you'll have to spray it as carefully and evenly as possible.

When this is done, push the top back and leave the ribbon to marinate for a week or so while the penetrating oil does its work.

Now comes the hidden secret. Unless you were either incredibly lucky or extremely skilled, it's likely that you will have sprayed too much oil on to the ribbon and your copy will still be messy.

So, prise off the top of the ribbon case again and leave it off for a couple of days to let the excess oil evaporate.

You'll now find when you use the ribbon (after putting the top back on the case, of course) that you'll have perfect, black, non-messy copy.

Finally, don't do this too often to the same ribbon. You have redistributed the ink - not re-inked the ribbon.

If you pour oil on a troubled ribbon too frequently, you'll run out of ink and you'll be also be likely to run out of ribbon where the head strikes.

Cable problem

I've just managed to buy an Amstrad PC and an Epson printer. What I really want to do is word process, but I'd also like to use some of the Gem software - especially

Gem Paint that comes free with the Amstrad.

Now here's my problem: Although I can print out quite happily using WordStar, as soon as I use Gem Paint the program tells me that my printer isn't receiving data.

But it is, because I can print out my word processor files. Am I doing something wrong, or is my computer's printer port defective? I'd like to know before I take my Amstrad back to the shop.

Alan Dixon,
Loughborough

APC: We don't think the answer is as drastic as a defective port - and you shouldn't need to take your machine back.

Unfortunately, you don't say under what operating system you're running WordStar - Dos Plus or MSdos - but we suspect it's under MSdos. And you don't say what type of cable you've got connected between your Amstrad and the printer. We suspect it's a ribbon cable.

If both of our suspicions are right, then the trouble lies not in the printer port itself but in transmitting the information from the Amstrad to the printer. In other words, you've got cabling problems.

Most parallel port applications use only the first 16 lines of the Centronics connector.

So connecting all 25 lines out of the computer to the first 25 pins of the printer's 36-pin connector should suffice. And it does, when the Amstrad PC is used with MSdos.

The problem appears to arise, however, when Dos Plus applications are used.

If you look at the parallel port connections wiring diagram shown on page 498 of your User Manual, you'll see that the "true" connections are not all straight - some cross over.

Pin 16 on the computer, for example, should be connected to pin 31 on the printer; pin 15 to 32 and 17 to 36.

If you connect your PC to your printer exactly as suggested in the manual you shouldn't have any problems with printing Gem.

So get your dealer to give you a true IBM Centronics connector and your troubles should be over. You should soon have hundreds of Tiger pictures around the house!

Redefined keyboard

I've heard that it's possible to redefine the keyboard on the PCW to make it faster and more accurate for typing. Is this really so and, if it is, how do you do it?

Terry O'Keefe,
Manchester

APC: Many of the points arising from your query will have been answered by Jeremy Spencer's article in last month's magazine on the CP/M Setkeys utility.

If you follow his instructions you'll

soon be able to redefine the keyboard to whatever key arrangement you want.

But the main question you ask is "just what arrangement of the keys is best?"

As you probably know, the Qwerty arrangement you see on your keyboard was designed at the end of the last century to slow typists down so that they couldn't type too fast and jam the keys.

But paradoxically the arrangement has stuck. And this despite the evidence that other arrangements - often based on common groups of letters in the English language - produce faster, more accurate typing with less training time.

One such arrangement is the Dvorak keyboard which was patented in 1932. It's shown in the panel. As you can see, it puts all the vowels on the middle row - in fact 70 per cent of typing is done on this row alone.

It doesn't really matter to which keys you assign the punctuation marks - it's the alphabetic and numeric keys that are important.

Use Setkeys to create a Dvorak keyboard and try it out. There are a number of people who use it very effectively.

Dvorak key.		
Qwerty key	Normal	Shifted
1	7	
2	5	
3	3	
4	1	
5	9	
6	0	
7	2	
8	4	
9	6	
0	8	
Q	I	(
W	U	<
E	.	>
R	P	P
T	Y	Y
Y	f	F
U	g	G
I	c	C
O	r	R
P	l	L
[/	/
]]]
A	a	A
S	o	O
D	e	E
F	u	U
G	i	I
H	d	D
J	h	H
K	t	T
L	n	N
;	s	S
<	,	,
Z	z	Z
X	q	Q
C	j	J
V	k	K
B	x	X
N	b	B
M	m	M
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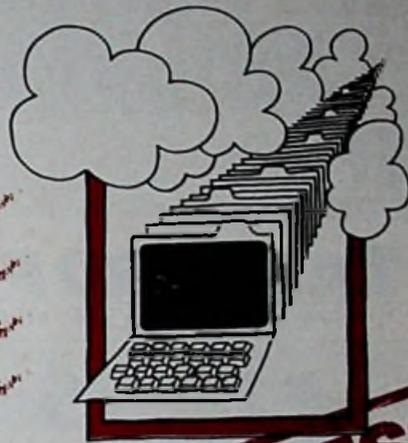
The Dvorak keyboard arrangement

InfoWorld

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Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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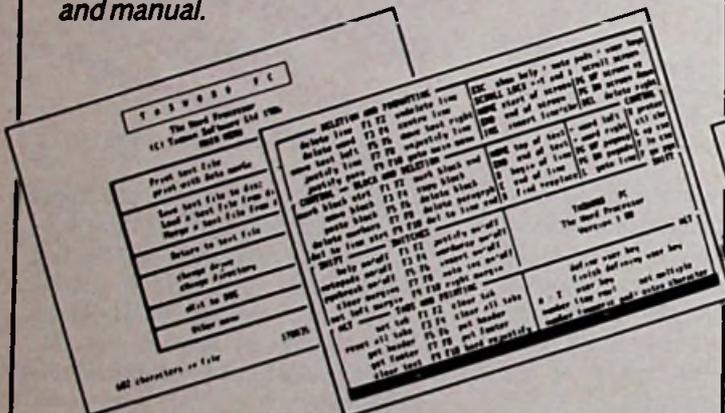


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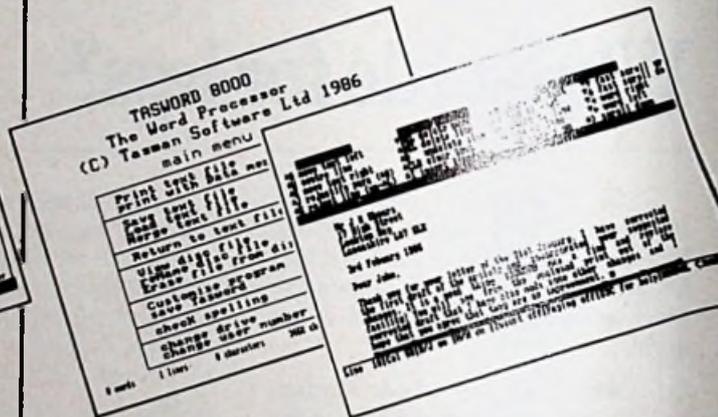


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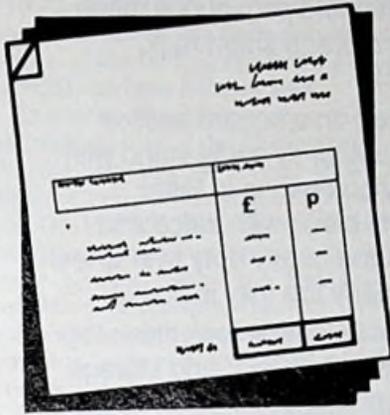
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APC

ACCOUNTS

Part 6



Concluding our introduction to accounts, Tim Woodward provides quick translations for those who still think accounting software reviews are written in a foreign language.

An ABC of accounting

ACCOUNTS (A/C): This is the term most commonly applied to the financial records of a business. It is also known as the Books since it actually refers to what used to be a book of accounts called The Ledger – because it sat on a ledge (honest!). Each page is a record of the transactions in and out of a particular account.

ACCRUALS: At the end of the year an account might have to be adjusted to contain an amount owed for that financial period, but which will not be paid until the following period. The usual term for this is an Accrual.

ADJUSTMENTS: Alterations made at the end of an accounting period to ensure an accurate representation in the accounts of the financial position of a business as at that precise time.

ASSETS: These are the possessions or advantages a business has on which a real monetary value can be placed.

Assets are divided into two kinds: *Fixed assets* can be described as those possessions having long-term value to the profit-making activities of a business. *Current assets* are held with a view to their conversion into cash.

BAD DEBTS: People! Trade debtors who, it has been decided after due consideration, are not going to pay up.

BALANCE SHEET: A financial statement showing the assets and liabilities of a business at a given moment.

BOOK-KEEPING: An overall term for recording the day-to-day transactions in the books of a business. Another left-over from the days of the ledger.

CAPITAL: This is the name given to the initial funding of a company provided by the owner and represents the net worth of his investment in the business.

CASH BOOK: One of the remaining divisions of the ledger still physically used, especially in businesses with high cash receipts. It often represents a simple single-entry method of recording details of the bank account and petty cash account.

COMPUTERISED ACCOUNTS: The method of keeping the financial records of a business on a computer rather than manually in books.

Surprisingly most computerised accounting packages work in a way that is closer to the original ledger method than today's more automated manual systems.

The reasons for dividing the original ledger into several separate books were ones of size and availability – when companies began to get larger, the sheer size of a single ledger needed to hold all the accounts made it unmanageable.

Computers have made this problem

redundant, and this combined with their ability to crunch numbers has made them ideal for accounting purposes.

COST OF SALES: A category of the trading account which shows the actual cost of the sales revenue earned: Items such as purchases, stock and so on.

CREDIT: The opposite of debit. See Double Entry.

CREDIT NOTE: A document sent by the seller to the buyer to record a return of goods. The buyer will use the credit note to show on his books how the invoice for those goods was met.

CREDITOR: An individual or organisation to whom the business owes money.

DAY BOOK: Used to record daily transactions before they are posted to the ledger. The Dickensian picture of clerks trooping at the end of the day into the Counting House to enter their day book transactions into the ledger is exactly what happens electronically inside the computer.

DEBIT: The opposite of credit. See Double Entry.

DEBTOR: An individual or organisation owing money to a business.

DEPRECIATION: The difference between the cost price of an asset and its actual value, due to wear and tear and so on. Usually the asset account reduces in value as the depreciation accumulates.

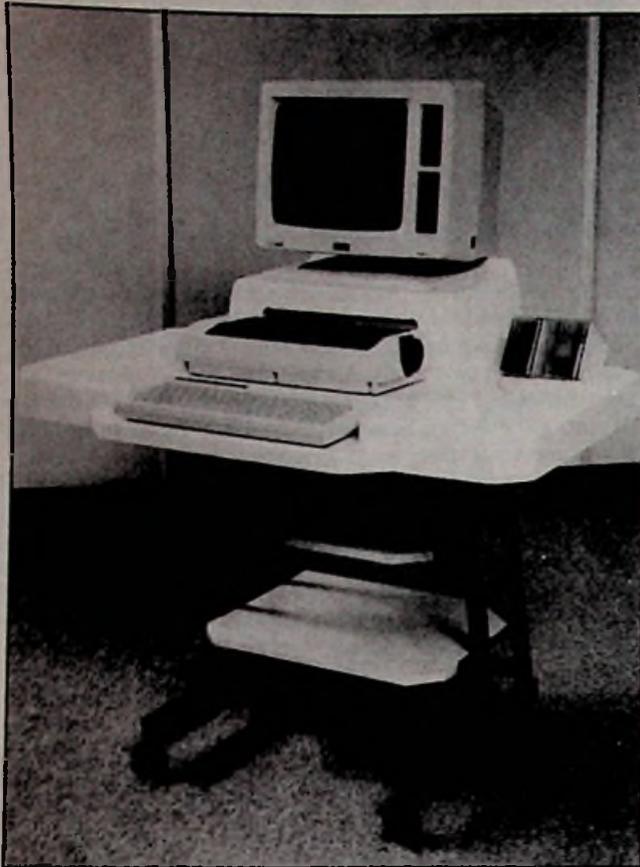
DIRECT EXPENSES: Those expenses which will fluctuate with the sales output. Labour costs for workers on piece work is a good example.

DISCOUNTS: There are two main kinds, settlement and trade discount. Trade discount is not recorded in the books, since it is deducted from the catalogue price of the goods and not shown on an invoice. Settlement discount given is recorded as an expense and settlement discount received is classed as an income.

DOUBLE ENTRY: The standard book-keeping technique of recording transactions with a debit entry in the account that receives value corresponding to a credit entry in the account that gives value. The best way of explaining this fundamental principle is by a simple example.

Suppose a business receives a cheque for £100 for the sale of a product. This would result in a debit entry in the bank account and a credit entry in the sales account. Both entries go to make up the one transaction and at the end of the year an accountant will use all the various credit and debit balances to prepare the final accounts.

If you don't use double entry in your book-keeping your accounts will only show half the picture and your accoun-



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tants' bill will consequently be larger, as he will have to provide the other half.

DRAWINGS: The removal of an asset from the business by its owner for his own use. Usually this will be from the bank account in the form of money but the same overall term applies to taking stock home as well.

EXPENSES: The payment made for benefits or services such as rent, heat and lighting. These are not involved in direct production but form the overheads of a business.

FINAL ACCOUNTS: These are drawn up at the end of the financial year and consist of the trading and profit and loss account, and the balance sheet.

The latter should provide a true and accurate picture of the financial state of the business and the former shows the profit or loss attributable to the owner.

INCOMPLETE RECORDS: The state many accountants and book-keepers find their clients books in! Basically a collection of receipts, invoices, cheque stubs and so on, typically presented in a shoebox - hence the term shoebox accounting.

INSOLVENCY: The unenivable position a business is in when its liabilities are greater than its assets.

LOSSES: Another term for expenses. In the singular, loss is the negative profit made at the end of the year.

NOMINAL LEDGER: The book containing the nominal accounts of a company. Strictly speaking nominal

means "in name only", being those accounts which record money spent on wages, say, or money received from rent but which do not contain a real amount such as fixed assets.

In practice, however, a computerised nominal ledger usually contains all the accounts in the system, even real accounts.

PETTY CASH BOOK: Used to record the withdrawal of cash taken from the bank for petty items and what that cash is spent on.

POSTING: Nothing to do with the Royal Mail. It describes the action of recording a transaction in the accounts.

When entering a receipt of money into the sales ledger, for instance, the amount will be posted to the bank account and the trade debtors account.

PREPAYMENTS: The adjustment made to an account at the end of a financial period to allow for an amount paid in advance which actually belongs to the following year.

PROFIT: The amount left over after all costs and expenses have been deducted from the total sales figure. The sales less the cost of sales provides the figure for gross profit. Nett profit is the gross profit less the remaining revenue expenses.

PROVISION FOR BAD DEBTS: An expense allowed in advance for those debtors likely to become bad debts during the following year.

PURCHASE LEDGER: The book containing all your creditors' details and

their balances.

REVENUE: Revenue expenditure can be simply thought of as expenditure on benefits other than fixed assets.

Revenue receipts, on the other hand, represent income earned from the normal profit-making activities of a business.

SALES LEDGER: The book containing all your debtors details and balances.

SOLE TRADER: The owner of a one-person business.

STATEMENT: Document sent to the debtors of a business reminding them of the purchases they have made and the money they owe.

SUSPENSE ACCOUNT: Account created specifically to hold an amount that corrects an error elsewhere in the accounts.

TRADING ACCOUNT: First section of the trading and profit and loss account dealing with sales and cost of sales, providing the figure for gross profit.

TRIAL BALANCE: At the end of a session of entering transactions into the system, whether manual or computerised, all the double entries should balance to zero. Extracting the trial balance in order to prove this can be a long job with manual accounts but a computerised system will do it at the touch of a key.

TURNOVER: Sometimes called the nett profit, this is the total sales minus any sales returns.

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AMSTAT

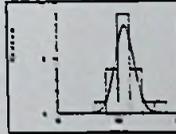
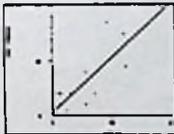
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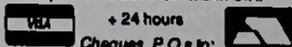
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together in some sort...
other? Have I already...
this when I mentio...
around scratchin...
haven't finish...

BrainSt...
Essential...
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ca...



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REVIEW



**Gabriel Jacobs
compares
Tasword 8000
with LocoScript,
and decides to
stick with the
sedate freebie.**

PCW

TASWORD 8000 The Word Processor (C) Tasman Software Ltd 1986

main menu

Print text file	P
print with Data merge	D
Save text file	S
Load text file	L
Merge text file	M
Return to text file.	R
View disc file	V
reName disc file	N
Erase file from disc	E
Customise program	C
save Tasword	T
check spelling	K
change drive	A/B
change user number	0-8

0 words 1 lines 64K characters 322K characters free Drive/User: A/0

Tasword main menu

The tortoise and the hare

LocoScript was designed to drive the PCW's dedicated printer, and despite some dark clouds surrounding the program it nevertheless shines through when it comes to such things as page layout and special printing effects.

Alternative packages which fail to meet LocoScript's standards in these areas can only be guaranteed limited success, whatever other virtues they may possess.

Now, as far as typestyles go Tasword 8000, even in its basic configuration, gives LocoScript a run for its money, and offers into the bargain an optional software add-on providing a range of additional fonts.

But it has a number of shortcomings, some of them as serious as LocoScript's principal handicap - its tortoise approach to moving through a file.

The basic Tasword program is supplied with two typefaces, Lectura and Median. Both can be printed in single or double height, and the optional Tasprint 8000 provides six further fonts. Fonts can be freely mixed in a document, as can emphasised, underlined and italicised print.

The program also comes bundled with two extra command files, Tasconv and Taswrite, and a mail-merge module.

Tasconv will convert a LocoScript or Tasword 6128 file into Tasword 8000 format for the PCW, taking into account the different codes generated for

accented and other non-Ascii characters.

Taswrite allows the printer to be used as a typewriter with any of the available fonts, though (unlike LocoScript) only one font can be loaded at a time when in direct typing mode.

Data Merge is a relatively sophisticated mail-merge program which will read several database file formats or a merge file created with Tasword.

It can print labels, and even handle conditional printing for mail shots - letters for people who meet certain conditions within a database field. Yet the module is not at all difficult to use, and in any case the documentation is very good, as it is for the complete suite of Tasword modules including the optional spelling checker, Tas-Spell 8000.

In use as a plain word processor, Tasword boasts some impressive features. Perhaps the most important is one which before the success of the PCW, with its limited disc space when compared to other serious business machines, would have been considered a disadvantage.

Though files can be read in from disc as blocks of text, and even merged with other files at print time, Tasword holds the file being edited entirely in memory.

LocoScript, in common with many other up-to-date word processors, calls only parts of a file into memory, then goes to disc for more as required, keeping a

Some of the things Tasword 8000 offers over LocoScript:

- Speed.
- Larger files.
- Notepads.
- Wider choice of fonts.
- Wider range of cursor movement controls and delete procedures.
- Numbered markers.
- Overtyping mode.
- Turn off page-break display.
- Case conversion.
- Line-drawing mode.
- Repeat last key pressed facility.
- Built-in mail merge.
- Multiple printed copies.
- Turn off word wrap.
- Transpose characters facility.

Some of the things Tasword 8000 offers over Tasword 8000:

- True automatic paragraph re-format.
- True paste buffers.
- Tree-structured pull-down menus.
- Automatic templates.
- Genuine insert mode.
- More flexible and easier page design.
- More control over headers and footers.
- Finer-grained and more flexible printer control.
- Conditional page breaks, prevention of widows and orphans, and so on.
- More flexible Search and Replace.
- Underline displayed on-screen.
- Numerous touches resulting from its dedication to the PCW.
- It's free!

temporary copy of any previous version as changes are made. Consequently the maximum length of a LocoScript file is just under half the disc capacity.

Tasword's more simplistic approach makes better use of the PCW's ram. Maximum file length is 100k on the 8256, and 300k - over 100 pages of text - on the 8512.

But it is not just that Tasword files can be larger than those of LocoScript. Because the complete file is held in memory, moving through it is extremely rapid. Going from the beginning to the end of even the longest Tasword file hardly gives you time to look away, whereas LocoScript gives you a chance to make the dinner and eat it. As a bonus, since a Tasword file is autonomous a disc-full error can be handled by simply inserting a new disc, though the program in any case warns you when you are approaching the limits of memory.

Tasword's user interface is more akin to WordStar than to LocoScript, in that most commands require combination keystrokes - one or more of Shift, Alt and Extra, plus another key. New users will therefore certainly find it harder to handle than word processors endowed with pull-down menus.

Tasword's answer to the problem of remembering the numerous control codes, apart from the excellent disc-based tutorial, is a Help page listing available commands, all or part of which can be called at any time. The Help page looks daunting - something like shopping in an unfamiliar supermarket - but only until you get used to it.

The range of editing procedures is very wide. Text can be scrolled up or down, a line or a screenful at a time. You can send the cursor to the beginning or end of a file, block of text, paragraph, line or indented margin, to the top or bottom of the screen, to a specified page or line number, or to a numbered or un-numbered marker.

You can delete a character or a word - backwards or forwards - a single paragraph or even the entire file. In addition, you can delete from the cursor position to the beginning or end of a line,

and even restore the most recently deleted line, all with combination keystrokes.

Other commands, some of which are generated with the dedicated PCW keys, include moving, copying and deleting blocks of text, converting from upper to lower case and vice versa. The commands are also there to access typeface fonts and foreign accents, turn on and off the numeric keypad, and even to correct transposed characters, the most common typing error.

There is an equally flexible system of formatting text. Word wrap can be turned off if necessary, and margins and tabs set individually or by recalling any of ten previously saved ruler lines. There is even a function to draw vertical and horizontal lines, and thus create diagrams and boxes more easily than with most word processing packages.

One final impressive feature is an area of memory reserved for four "notepads". These will hold text, typed in directly or copied from elsewhere, which can be

incorporated into the main file as required. Text contained in the notepads is saved to disc with the file and can be edited separately if needs be.

Despite all these goodies, however, Tasword falls down in certain areas which for some users will be crucial.

Take the question of inserting text. Tasword assumes that overtyping will be your normal means of correction. But many users prefer the delete/insert method, and Tasword will disappoint them since neither of the insert procedures offered is really acceptable for constant use.

One is a special command to insert a line or a character, a fiddly process which has to be implemented for each insertion and which involves manual re-formatting, as does the normal overtype mode.

The other is an auto-insert mode, in which re-formatting takes place as text is entered. But the program can't keep pace with anything but the slowest typing speed, and so relies on the keyboard buffer. This soon becomes full and

DELETION: DEL word CUT para CUT block INSERTION: COPY n/pad merge file	DEL to line end DEL to line start DEL line (un=CAN) DEL clear text DEL line/char insert on/off auto on/off	start of text end of text start of line end of line word left word right goto line	left margin right margin scroll up scroll down start of para end of para goto page	start of page next page fast scroll up fast scroll down start of screen end of screen right edge
move text left centre line move text right rejustify paragraph hard rejustify para rejustify line unjustify line	TAB tab TAB reverse tab TAB set tab TAB clear tab reset tabs clear tabs TAB numeric tab	set left margin clear margins set right margin get ruler save ruler	to to and and and	put marker goto marker put marker next marker prev. marker
STOP notepad mode on/off clear notepad show all notepads text to notepad text from notepad	mark start mark end move copy delete	get, put footer get, put header get, put user key lower to upper case upper to lower case transpose chars	right justify on/off word wrap on/off insert mode on/off auto insert on/off page display on/off numeric pad on/off	line
find and replace	find next	save, load, print	help on/off	line
emphasised backspace condensed double strike dite turn text	superscript subscript italic underline condense/enlarged enlarged	1/6 line spacing 1/8 line spacing 1/12 line spacing proportional high quality	red lan lectura compacta data rem palace outline	numbers breaker lasprint off high. double inv

Tasword Help screen

Desk Top Publishing

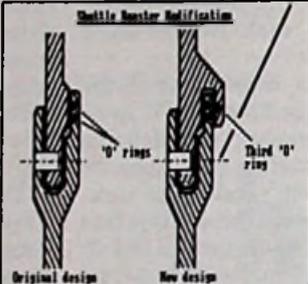
For The

Amstrad PCW 8256/8512

Line style from the Graphics Editor

Windows positioned using the Layout Organiser

Shuttle Compromise



TECHNOLOGY

The failure of the vital 'O' rings sealing the gap between the rocket booster joints on the Challenger space shuttle was the cause of its destruction and the deaths of the seven crew members. Twisting forces, larger than usual due to strong wind turbulence that day, are believed to have opened gaps between the tongue and groove of the boosters outer casing. In an attempt to get the shuttle flying again, modifications have been underway to improve the seal without having to redesign the boosters entirely, and this basically consists of adding a third 'O' ring to the joint which will effectively seat more firmly when the boosters components experience twisting forces while at full power.

New Launcher



Saturn rockets, used extensively in the '60s are set to make a comeback after the Hughes Aircraft Corporation announced plans to use the engines which boosted the Apollo missions to the Moon on a new satellite launcher for the 1990's. The launcher, which has been named the Gregory Jarvis after one of the astronauts killed in the Challenger accident, will be more capable of lifting greater loads than any other made today. The Jarvis will not, however, stand as high as the Saturn rockets at 63 metres compared with the 111 metres of the Saturn V which carried astronauts to the Moon. The cost is estimated to be around \$1 billion and because few new parts will need to be designed the launcher could be rolling off the production lines in just four years time.

A new disk distributor has recently joined the market place with the launch of a range of disks including 3" disks used by Amstrad computers. They believe they have the edge over other distributors as they have a fully computerised warehouse and stock management system with which they can process and ship orders more quickly.

Justification from the Word Processor

Drawn and Shaped Graphics from the Editor

Sideways text from the Graphics Editor

Complete page printed from the Layout Organiser

Shading & Fill from the Graphics Editor

Using DocuMentor, creating pages like the one shown above is easy. With a word-processor that shows *italics*, **bold**, underline etc on the screen, a graphics editor with over 70 options to choose from and a layout organiser to put the text and graphics where you want them anyone can become a Desk Top Publisher. And for £99.95 with a mouse or £49.95 for a keyboard version you don't need to be a newspaper tycoon to buy one.

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Italic script **Boldface** Lectura **Compacta** Median

Underline Condensed **SUPER** DATA RUN Palace **Ranchero**

Enlarged Outline **Boxed** **BREAKER**

Font examples from Tasword

characters are lost. For practical purposes the facility is worse than useless.

Another major weakness falls, indirectly, in the area of printer control. Conditional page breaks are not catered for, and if forced page-eject commands are included in a file the accuracy of subsequent on-screen page break indicators is not guaranteed. This can cause endless problems when printing a document divided into sections, each requiring a new page.

To add insult to injury, the page break display does not take into account different line spacings unless they are specified by changing the program source code. Altering the program with the assembler utility provided is not

beyond the wits of even a naive user, but it is unsatisfactory to have to load a separate version of the program for each document requiring a different line spacing.

Other weaknesses worth mentioning include a comparatively primitive Search facility – it will find whole words only – the inability to mix page numbers with headers and footers, and the fact that underline is not shown as such on screen.

Yet it need hardly be repeated that with word processing software individual taste and requirements are paramount – one man's cursor is another man's curse.

I have heard people swear by Tasword, which has been available on other

machines for some time. For PCW owners, however, there would seem to be little point in spending money – even at Tasword's affordable price of £24.95 – unless, of course, LocoScript is seriously damaging their health.

Product: Tasword 8000

Machine: PCW

Supplier: Tasman, Springfield House, Hyde Terrace, Leeds LS2 9LN

Tel: 0532 438301

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"If you go a stage further and add a second disc drive, you won't need to swap discs at all." There will be a significant increase in data storage capacity, for example text files when word processing and data files when running CPM data processing programs. Suites of programs for the 8512 can be loaded onto and accessed from both sides of a high density disc.

"Fitting the second drive is simple enough... Everything other than the drive is already there in your machine: the cables are ready wired and both LocoScript and CPM software will recognise it automatically once it's fitted... you'll have to try pretty hard to get it wrong."

Internal PCW 8256 DS/DD Second Disc Drive **£139**
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NEWSLETTER

Books and bookmen

BUYING and selling rare and out-of-print books isn't as dusty a business as it may sound - even for a firm founded when Robert Peel was prime minister.

Antiquarian bookseller Wheldon & Wesley has been trading since 1843, but is bang up-to-date when it comes to communications thanks to MicroLink.

Speed is important in locating rare publications, then buying and selling them at the right price.

And as 80 per cent of the firm's business involves dealing with people in countries all over the world, MicroLink's telex and other messaging services are proving invaluable.

"Although we specialise in natural history, we're very willing to search for any rare books other people are looking for", says director Tony Swann, a member of the family which has been running Wheldon & Wesley since the 1920s.

"And where great distances are involved, MicroLink is often the fastest and most economical means of doing the job.

"Our clients are universities, museums and libraries, private collectors and fellow dealers - and two-thirds of them are abroad.

"At present most of our business with the United States is done by telephone, but we should soon have an efficient transatlantic mailbox system via MicroLink - and perhaps even a special interest database as well".

Best foot forward

STOCK control procedures at a fast-expanding chain of footwear specialists in London used to be rather a marathon slog.

Now the system is more like a sprint - thanks to MicroLink.

Cobra Sports Shoe Shops has blossomed into an eight-store chain in as many years, selling to top international athletes as well as spare-time joggers.

It all adds up to a

mountain of shoe leather - or rather spikes and rubber.

Before MicroLink, daily stock reports were written by hand and the sheets sent by next available delivery van to the firm's head office, sometimes two or three days later.

Now the information from each shop goes directly every night onto Cobra's MicroLink mailbox for retrieval next morning and processing on the firm's IBM computer. Up-to-the-minute

stock control has been achieved without great expense - instead of a micro each store uses a Psion Organiser.

"This gives us simple one-button operations that are easy for the staff to pick up", says Cobra systems manager Daniel Brown.

"And I've successfully written an autodial file-sending procedure in OPL on my Psion which speeds up the process even more".

Link grows

MICROLINK subscribers can now communicate directly with two more countries through the world's biggest electronic mail and messaging network Dialcom.

Italy and Japan have joined the system, bringing to 14 the number of countries offering this global service.

More free software

MICROLINK'S telesoftware library is being reorganised and considerably extended.

The programs run on five types of computer - BBC Micro, Apple, Electron, Atari and Amstrad.

There are now nearly 150 free programs in the MicroLink telesoftware library and this number will be substantially increased during the next few months.

Going with a bang

HAVING survived his childhood hobby of making fireworks - "somewhat luckily", he says - Jon Culverhouse went on to other things.

But he never lost his fascination for colourful explosions and now, with a little help from MicroLink, he's creating them all over the country.

As boss of Fantastic Fireworks, Jon was responsible for something like 65,000 "bangs" around Britain this November 5th.

For the past two years Jon has been selling fireworks imported from places like Germany, Spain - and even China where pyrotechnics originated.

He keeps in touch with his suppliers via MicroLink's telex facilities and uses electronic mail to publicise his services.

These include packaged displays costing from £80 for a family bonfire party to £5,000 for, say, a town's Royal Wedding celebrations.

"I've found that sending

information via MicroLink is the most effective method of getting publicity for my company in the media", says Jon.

"My displays have already been featured on Saturday Superstore and Pebble Mill at One as a result".

Fly me...

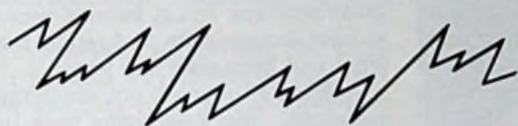
THE Official Airline Guide database available on MicroLink includes information about nearly 30,000 hotels as well as flight and fare details for more than 750 airlines.

The coverage spans 17,000 hotels and motels in North America, more than 9,000 in Europe and more than 2,500 in the Far East and Pacific area.

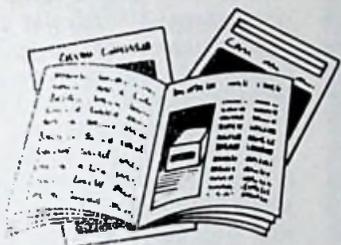
Details displayed include the full postal address, telephone and telex numbers, and the range of rates, plus an official classification in most cases.

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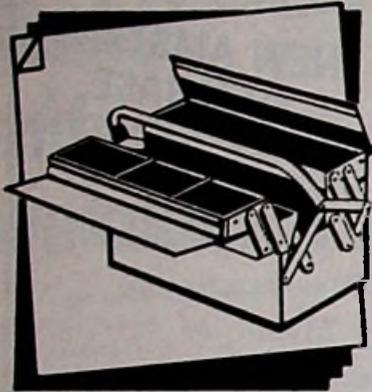
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APPLICATION



Walt Lees
*describes how the
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show on the road,
thanks to CP/M
and LocoScript.*

That's the way to do it!

IT goes without saying that the PCW is one of the most versatile micros around. But who'd have thought it would become involved with a sordid tale of theft, wife beating, cruelty to crocodiles and general mayhem? Yet that's just what happened when a PCW8256 got into show business in a small way and proved it packed a punch.

So why does a Punch and Judy man need a computer? Anybody who has seen Roy Hudd's portrayal of the Puppet Man on television, or remembers the drunken little character in *Hi De Hi*, could be forgiven for believing that we are all semi-primitive simpletons, left over from a bygone age.

The reality, as is so often the case, differs greatly from the popular image. A puppeteer is just as much in business as any other self-employed tradesman. He has a mortgage, income tax, correspondence and accounts, like everyone else.

However, this is not the aspect of the business I am going to talk about. Although I have now computerised all of these things, it is doubtful if I would have bought a machine just for that purpose.

To explain why I need one, specifically for my work as a children's entertainer, I will have to start by filling in a little background history. To begin with, my show does not consist only of Mr Punch and his colleagues. There is quite a lot of conjuring, also some ventriloquism and a bit of balloon modelling. In other words, all the good old standards, which each successive generation of four to eight-year-olds finds new and fresh.

Most of my work is for birthday and Christmas parties, with occasional performances at schools and trade promotions. In an average year, I will do around 450 shows, of which roughly 400 will be in private homes.

When I first began working at it full time, some five years ago, I had just one act and it was not long before I began to experience a problem. I would go to little Wayne Smith's party and be a great success. Little Damien Jones, who was there, would then ask his mum if he could have the Punch and Judy man, on his birthday too.

The arrangements would be made and I would turn up. Most of the children would be the same. So would my act. Well there is a limit to how many times a group of youngsters will sit, for an hour, and watch something that they have seen before. When there are no longer any

surprises, boredom sets in and with it naughtiness.

A complete change of program was needed for repeat bookings. That was no great problem, but it became necessary to have some system for keeping tabs on what had been seen and where.

Also the situation is one which rapidly snowballs. You keep going back to the same group of children, and in consequence develop a third show and a fourth and a fifth and a sixth. One year I encountered a particular mob 30 times.

With experience, I have found that six changes of program seems to be enough, provided they are taken in rotation.

By now, most of you will be beginning to appreciate the problem that was developing. I had six changes of program which was great provided that I could tell who was likely to have seen what and when. A system was required that would enable this to be done.

If Mrs Cohen from Game Hill booked me for little Rebecca's party and, in the process, mentioned that she had got my name from Daniel Weinburg's mother, it would be a fair bet that the same children would be at both celebrations. I would need to know what I had done at the first shindig and at any other parties associated with it.

For a year there was no real hassle. I simply recorded the details of every show in a loose-leaf file. Each one was numbered consecutively and cross referenced to the others on the same circuit.

When I took a booking which was a spin-off from another engagement I would simply flip through the binder until I found that one. I would then note down the act that I had done and check out on any others with which it was cross referenced.

As I said, this worked fine for twelve months. After that, the numbers involved started getting somewhat unwieldy. I was having to look through more than 500 records practically every time the phone rang.

Even I, not the brightest of blokes, could see that this was unsatisfactory. To make matters worse, every new show added yet another record, thereby compounding the problem.

The solution was very simple. What was needed was a card index of names, to use in conjunction with my show record file: A card for each customer, cross referenced with the numbers of all the

PCW

related shows. These could be kept in alphabetical order.

The system worked well enough for a couple of years. Then it, too, started to become unmanageable. Every time I did a show on a particular circuit, I would have to find all of the index cards associated with it, 50 or more in some cases.

The new number would need to be written on every single one, so that each held an up-to-date chain of references.

Last year I began to realise that this was just plain silly. The time had come to computerise the system. That is why I got an Amstrad PCW 8256. I saw it in a shop window and bought it on impulse.

The people in the shop, a well known High Street chain, did not have a clue how it worked. Nor did they have the sense to sell me any blank discs to go with it.

In retrospect I realise that this is the worst possible way to buy a computer, and I was very lucky not to have been lumbered with a pig in a poke. However, I am well satisfied, and have since found more knowledgeable retailers, people to go to for advice and help.

When I got it home and opened the box, my heart sank at the sight of the two huge instruction manuals. This was something I had not bargained for. However, I got stuck in and quickly worked through the LocoScript section. There, like many people, I stopped for a time. To my layman's eyes the CP/M part looked highly complicated and technical.

At the first instance I decided to use LocoScript files as a kind of crude database, not having anything else to hand. Over a period of several weeks I tabulated all my circuits, making each one a separate document and allocating it a circuit number. The circuit numbers were written on the record cards at the same time.

So now, if a Mrs Davis telephoned and said that her child had seen me at Fergus McTavish's party, I could dig out McTavish's index card, find the circuit number, and run that circuit up on the computer.

There was no more need to drag out all the other index cards and write in the number of Davis show. All that I had to do now was to make out a card for Davis when the time came, and enter the circuit and show numbers and any other details that I cared to.

I then simply added the details of the Davis show to the circuit file on the computer and left it at that.

This was saving me a lot of time but there were still problems and I was not entirely satisfied. I had more than 150 circuits and provided that I knew the appropriate circuit number I could easily find the one I wanted.

However, matters are not always quite so straightforward. Often a booker might not be able to remember where they had seen me. Their party would be in a locality that I had worked before and might or might not be on a circuit.

It would be near to some other shows



and in all probability many of the children would be the same. I would then have to try and remember the name of one of these previous customers in order to get out their card and discover the circuit number. This often involved a lengthy search through my diaries.

One answer was to type out an index of circuits, listing the areas in alphabetical order, followed by the circuit number. This worked, but was not really satisfactory. For one thing, a circuit would "die" as the children grew up in a particular neck of the woods and moved on to discos or MacDonalds.

My index would show a lot of circuits on which no work had been done for several years. These would have the same area names as other circuits that were still current. This could lead to a fair amount of disc searching and changing to find the right one.

A few months ago, having a bit of spare time, I started to go through the CP/M section of the manual. This seemed rather dry and hostile after the comparative friendliness of LocoScript and its little menus.

It took a while for the penny to drop and for me to realise that the wild card facility offered by the CP/M system was the answer.

The book just does not explain it in a manner which immediately gets its full significance across to us middle aged professional buffoons.

If only they had told us, right at the start that what was on offer was a filing system, capable of holding up to 60 files on each side of a disc, locating any one of them by 11 different routes and bringing as many up at a time as is required.

Once this had been twigged, the problem was solved. I quickly converted

AMSTRAD PC1512 — PCW8256/8512
IBM PC/COMPATIBLES

SANDPIPER FILE MANAGER

FROM FILING CLERK TO FILE MANAGER IN 3 EASY STAGES

MEMBERSHIP RECORDS	
Name:	Introduced by:
Address:	Membership no:
	Notes:
Join date:	
Subscription:	
Interests:	
Meetings attended:	

MEMBERSHIP RECORDS	
Name:	Introduced by:
Address:	Membership no:
	Notes:
Join date:	
Subscription:	
Interests:	
Meetings attended:	

STEP 1

● DRAW A BOX

You simply tell the system where you want the box and Sandpiper will draw it.

STEP 2

● LAY OUT THE SCREEN

Write what you want where you want it — with facilities for underlining and highlighting.

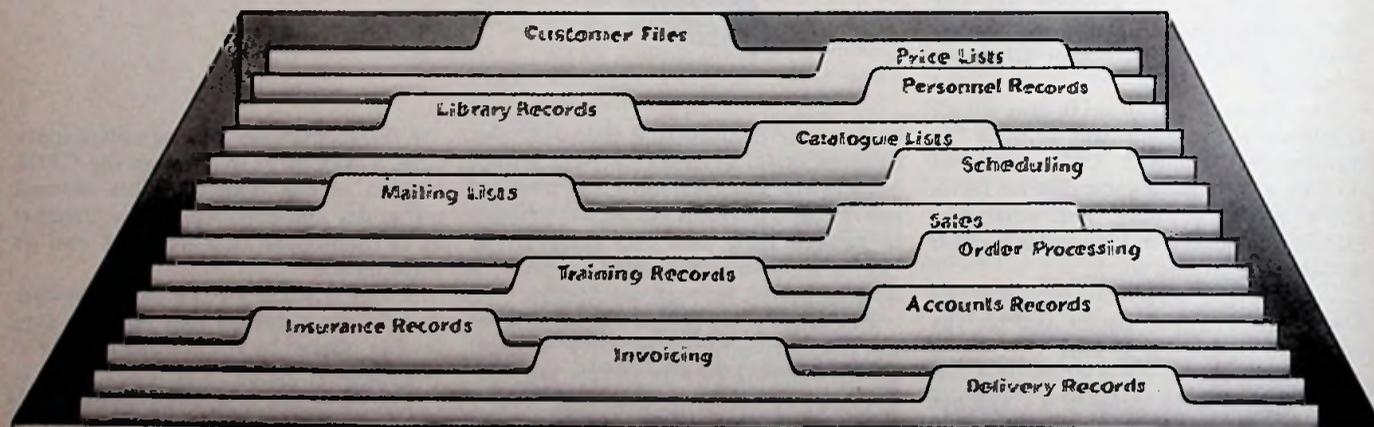
STEP 3

● DEFINE THE FIELDS

Tell the system what type of information is required. Let Sandpiper do the rest.

SANDPIPER FILE MANAGER — a comprehensive, fully relational, interactive and programmable menu-driven package designed to cater for individual business needs, and yet is so simple to use. Starting from simple systems and then expanding upwards, files can be selected, calculations made, information returned to any file, information updated and reports produced. No other Database package offers so much for so little.

FEATURES INCLUDE — ○ Easy to generate, attractive and functional Screen Formats. ○ Automatic File Generation to define layout and sizes. ○ Flow Control allowing simple creation of menus. ○ High Capacity-disc totally available for Database records. ○ Data Compaction. ○ Max. no. of characters per record 4000. ○ Max. no. of fields per record 250. ○ Max. no. of records per file 32,000. ○ Many more features available to suit all of your file management requirements.



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SANDPIPER

S O F T W A R E

all my LocoScript circuits into Ascii files and transferred them to newly formatted CP/M data discs.

All that I then had to do was to give each file an appropriate name to enable it to be located in a variety of different ways. All 11 would not be necessary in my case, since I only needed to be able to find a circuit:

- By its number (no problem there).
- By its area.
- By its price band. (Different prices are charged in different areas so as to take into account travelling time, petrol and so on. I have divided the area around my home into price bands, rather like a target with my base as the bull's-eye. The first band has a radius of 10 miles, the second 20 and so forth.)
- By usage. Is it now "dead", that is, has not been worked for over a year?
- By looking for it in the disc directory.

As mentioned above, searching by number was no problem. The last three figures after the dot in the file name would give me this. Here are typical file names:

DAGMNW1C.056
E18NEC10.124

In the first example DAGM stands for Dagenham, NW for north west. The 1 signifies that it is in the first price band and the C that it is currently being worked - meaning shows have taken place there during the last 12 months. The 056 is, of course, the circuit number. The second example is almost the

same except that, being in London, I use the postal districts whenever possible. This instance shows London E.18, the north east central part. It is also in price band 1. The O before the dot shows that it is an obsolete circuit and has not been worked for at least a year. However, at any moment it may spring back to life when a crop of younger brothers and sisters mature.

The system works excellently. If I get a call to go to west Dagenham, I simply have to type in:

TYPE DAGMW*.*

and there are all the west Dagenham circuits spread out for inspection. If I want to know how many obsolete circuits I have in price band three, I simply type:

TYPE ??????30.*

and up they all come.

To check that I have a circuit for a particular location, typing DIR[SIZE] arranges the whole lot into alphabetical order for quick inspection. The first three or four letters of each filename are a sufficient mnemonic for me to identify the area concerned.

Obviously there are other problems which have had to be solved. For instance, it is not unusual for circuits to crisscross one another. A booking in Romford might have come as a result of a party that I worked for a cousin in Bethnal Green.

In this case it may well be that the

second party is clearly identifiable with a circuit in its own area. If this is the case the two must be cross referenced, with details of each being entered on both circuit files.

I have found that the RPED facility is all that I need for updating the circuit records. I PIP this to drive M (both RPED files are needed), and then PIP the relevant circuits through. These are amended, the original files in drive A erased and the updated ones passed back.

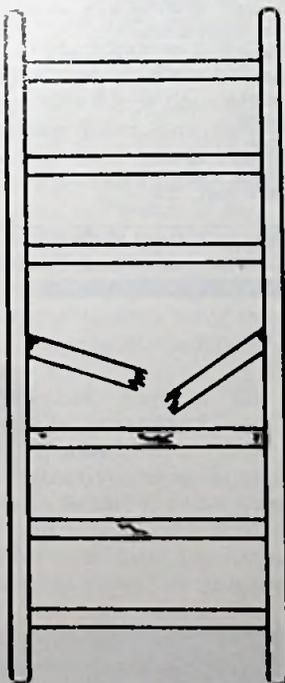
I suppose that one should really alter the names of the updated files so that they can be sent back before erasing the originals. Then in the unlikely event of a power failure I could start again with nothing lost. They could be given their original names back once the old ones had been removed.

My reason for telling you all this is that I feel the subject of naming of CP/M files does seem to get rather glossed over in a manual. It was many months before its power and significance began to dawn on me. I very nearly went out and spent around £50 on a database, which I would not have needed, just to do this job.

All of which goes to show that there's a lot more to your micro than you might think from an off-putting glimpse of the manual. As it is, just a little time and trouble showed me how easy and useful it is to work hand in glove with a PCW.

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on off the shelf software packages
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?????????
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REVIEW



Keeping it simple, keeping it straight

A cashbook is a ledger which is used on a daily basis to keep track of monetary transactions in a business. It may be a simple petty cash ledger or a more comprehensive type of account. Either way, all businesses keep a cashbook of some sort. Cashbook, from Integer Computer Systems uses the PCW to maintain the ledger and produce reports.

The program has the facility to maintain separate ledgers for different users. As such, it could also be used in multi-site applications or for maintaining separate ledgers within the same organisation. There is no restriction imposed upon the number of separate ledgers that can be maintained and you may extend the system to more than one disc.

In the box

The program is supplied with a small ring-bound manual, which briefly describes how to use the system. These descriptions are adequate since the whole package is menu-driven. There is

Nominal Codes	
Code	Description
1	Sales
3	Hire Deposits/Receipts
5	Purchases For Cash
6	Purchases
10	Rent & Rates
11	Heat & Light
20	Motor Expenses
21	Insurance
22	Petrol
25	Fines
26	Car Tax
30	Printing Post Stamps
31	Advertising
32	Telephone
50	Legal & Professional
51	Accountancy
60	Repairs & Renewals
70	Capital Equipment
71	Tools
80	PAYE
81	VAT
90	Cash
99	Nominal 99

Figure 1: Various Nominal Codes

Many businessmen only require a simple cashbook facility for their accounting records. Barry Pickles looks at just such a package from Integer Computer Systems.

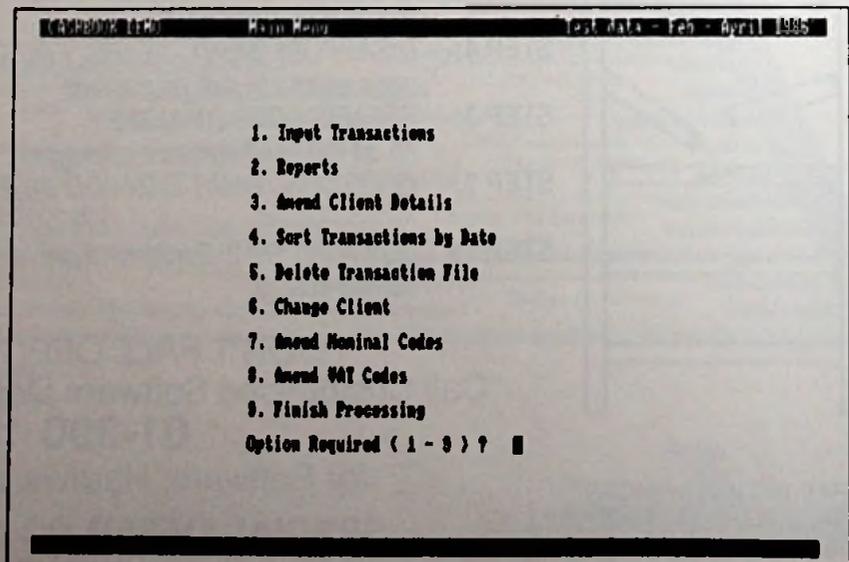


Figure 2: Main menu

PCW

the usual registration procedure to be gone through and the program is password protected.

Installation is a simple matter of answering a few questions about your system and then you're ready to go.

Firing up the program presents you with the main menu of options, as shown in Figure II. If this is the first use of the program, you will need to set up the nominal codes - option 7 (see Figure I).

This requires that you know something about accounting, but you can keep it simple or use all 99 available nominal codes - your accountant will advise you on these. Setting them up is simple enough, as is entering the VAT codes (option 8) of which 10 are available.

If you are using the system in a multi-ledger environment you will also need options Change Client and Amend Client Details. The former sets up a client data file on the disc. Including this filename on the command line when starting the system selects that data file.

Amend Client Details allows you to specify the client name, as displayed on the screen, along with the accounting period to which the data refers.

There is no real restriction on the period used and different periods may be used for each client.

Using the program

The next stage is to input some data. You enter the customer name, invoice number, amount, date and whether the transaction is for cash or is to be banked. You also indicate the VAT code and the program automatically works out the VAT content.

All data is done in batches and, by using the function and cursor keys, you are allowed to edit any part of the current batch - only when you press the Exit key is the data accepted and stored to disc.

After entering data, you can sort the transaction file in date order.

At any point, you may call up the report menu shown in Figure III. These options are self evident. Sample reports are given in Figures IV and V.

Output may be to the screen or to a printer. You should produce transaction listings at fairly frequent intervals and file them as they form the audit trail which your accountant or VAT inspector will require.

And that's about it. The program is simple to understand, easy to use and well explained.

Whether you're an accountant doing work on behalf of various small traders, or if you're in business yourself and want a simple cashbook accounting facility, I can recommend this program.

Product: Cashbook
Machine: PCW
Supplier: Integer Computer Systems
Address: 430, Bury New Road,
Manchester M25 5BD
Price: £99.95

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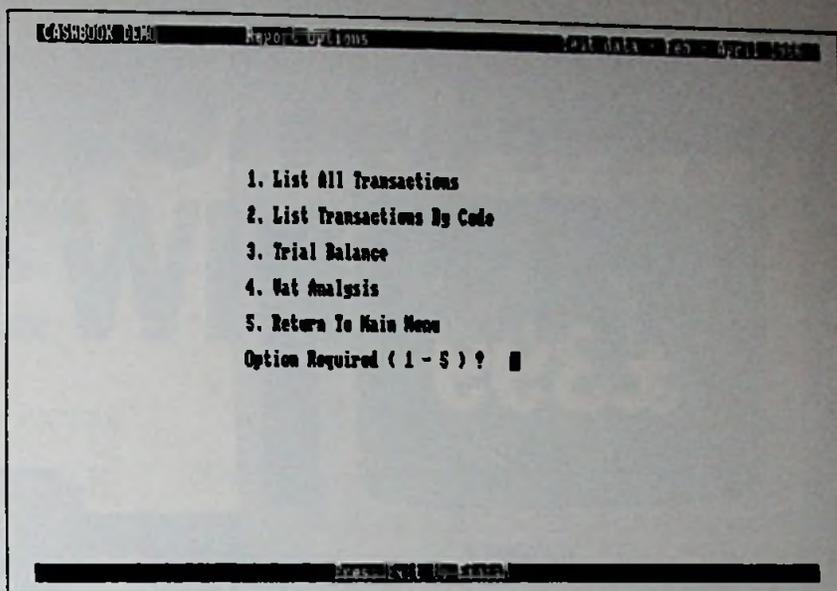


Figure III: Reports menu

No	Narrative	Debit	Credit
1	Sales		1559.56
5	Purchases for Resale	389.20	
32	Telephone	144.40	
70	Capital Equipment	300.00	
	Cash		447.81
	Bank	1281.83	
	Vat		100.06
		2115.43	2115.43

Figure IV: Sample Trial Balance report

Date	Customer Name	Inv No.	C	Gross Amount	V.A.T. Code	Amount	Code	Narrative
07.02.86	BS Spares	100	C	3.73		0.48		
07.02.86	Shepherd	101	C	24.00				
13.02.86	Fellon	102	C	12.00				
17.02.86	Abrams	103	C	44.38				
	Ford	104	C	35.00				
	BS Spares	105	C	11.25				
	Illison	106	C	11.25				
	Smith	107	C	11.25				
	Smith	108	C	11.25				
	Smith	109	C	11.25				
	Smith	110	C	11.25				
	Smith	111	C	11.25				
	Smith	112	C	11.25				
	Smith	113	C	11.25				
	Smith	114	C	11.25				
	Smith	115	C	11.25				
	Smith	116	C	11.25				
	Smith	117	C	11.25				
	Smith	118	C	11.25				
	Smith	119	C	11.25				
	Smith	120	C	11.25				
	Smith	121	C	11.25				
	Smith	122	C	11.25				
	Smith	123	C	11.25				
	Smith	124	C	11.25				
	Smith	125	C	11.25				
	Smith	126	C	11.25				
	Smith	127	C	11.25				
	Smith	128	C	11.25				
	Smith	129	C	11.25				
	Smith	130	C	11.25				

Figure V: Sample Transactions report



THE AMSTRAD 8256. MORE THAN A WORDPROCESSOR,

The Amstrad 8256 offers you more than the average wordprocessor for less than the average typewriter.

Its incredibly low price includes a monitor, disc drive, keyboard, word-processing software and a printer.

And with the 8256 you don't just get quantity, you get quality too.

A high speed RAM disc facility means you can store and retrieve information instantly.

The high resolution, green screen monitor can show 90 columns and 32 lines of text at the same time.

That's 40% more useable screen area than most PCs.

Special function keys on the keyboard save you memorising complicated codes.

And because all the necessary wordprocessing software comes free, you

FOR LESS THAN A TYPEWRITER.

won't have to pay for any hidden extras.

What's more the enormous 256K memory means you're also getting a powerful personal computer.

(If you want even more wordprocessing and computer power there's now the 8512 model, with two disc drives and 512K of memory.)

But what makes the Amstrad even more of a bargain is the fully integrated printer, with its automatic paper loader, tractor feed and choice of letter quality or draft speeds.

The 8256 is also backed up by numerous extras and services.

You can add an optional combined serial and parallel interface to gain access to modem, additional printers and other peripherals.

And business users can take advantage of our nationwide service and maintenance contracts, not to mention the many advanced training courses.

All this for a machine that costs just £399 plus VAT.

Which is less than you'd expect to pay for many other wordprocessors. Or obsolete typewriters.

Please send me some more information about the PCW 8256.

Home user Office user (Please tick)

Name _____

Address _____

Tel _____

Company _____

AMSTRAD PCW 8256

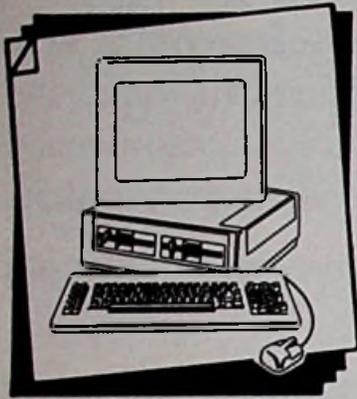
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APC

SPECIAL



Double trouble? Gordon Blaire starts a series exploring the PC1512's operating systems



The unprecedented success of the PCW series was due in good measure to Amstrad's having spotted a niche in the market which, with the benefit of hindsight, we can now say ought to have been staring computer manufacturers in the face. Vast numbers of ordinary people wanted a cheap word processor for a multitude of different reasons. They didn't want to compute, they didn't even want to know anything about computers.

What they needed was a plug-in-and-go mega-typewriter, and that's what Amstrad provided - dedicated word processing software, dedicated word processing keys, dedicated printer. The fact that tens of thousands of PCWs are now being used for many other things too is due primarily to software houses exploiting an already established word processing user base.

The Amstrad PC, on the other hand, is aimed at a different market. You don't get a printer bundled with the machine, nor any applications software - unless you count Gem Paint, but how many people are going to make serious use of that?

And Locomotive's Basic 2, however superior it is to the versions of Microsoft Basic given away with the IBM PC and its clones, has no doubt been included in the price of the Amstrad PC precisely because there seems to be a generally accepted rule that you give Basic away with micros.

Many new owners of the new PC will want to take the opportunity of dabbling with Basic 2. Some may even become competent programmers as a result. But the majority of people who buy the machine will do so in order to access the huge amount of software ready-written for the IBM PC, most of which can be handled by the new Amstrad micro. The fact that the Amstrad PC comes with two operating systems widens even further the choice of available software.

In a sense Amstrad had to include MSdos (Microsoft Disc Operating System) so that the PC would be compatible with IBM'S PCdos (they are almost identical).

And Digital Research (the creator of what for many years was MSdos's great rival, CP/M) doubtless saw in the PC1512 a major vehicle for getting back into the PC market after a frustrating period in the doldrums. It stepped in not only with an upgraded and specially configured CP/M operating system - Dos Plus - but also with Gem.

Herein lies Digital Research's real coup, since Gem Desktop - known in the trade as a front-end manager - is what most new owners will use first. The Instruction Manual is full of it, and you're told right from the start to get it loaded as the best introduction to the machine.

The chances are that users will be impressed with it, and many will certainly take the plunge right away by ordering the complete Gem set, heavily discounted as it is with the Amstrad PC.

But what exactly does a front-end manager do? Well, it shields you from an operating system. And why would you want to be shielded from an operating system? Well, they're supposed to be difficult to use.

There's definitely something in this. I have seen people totally new to computing handling Gem Desktop like experts, confidently pushing the mouse around, creating new folders, copying discs and drawing doodles within an hour or so of

Making with and

first powering up the machine. It's child's play.

But it won't do everything. For instance, don't bother trying to send anything produced under Gem Desktop - or any other Gem program for that matter - down to a printer which is not compatible with Epson standards. It can't be done, at least not at present.

Or again, if you want to activate a program which puts some information on the screen and nothing else, Desktop can't handle it.

Take CHKDSK, for example, an important utility for showing you things like how much room you have left on a disc - you'll find it on both the MSdos and the Dos Plus discs.

If you click this on with the mouse under Desktop the vital information it should be giving you flashes on the screen and disappears before you've really had time to register its presence, let alone read what it says.

To use a program like CHKDSK you have to lay down your shield and courageously bare yourself to the operating system.

Don't be afraid of doing this - it's not as aggressive as the writers of front-end managers would have you believe.

And like Beauty and her Beast, once you become acquainted with it you may find you can do very nicely thank you without Desktop or any other front-end manager. Everything can be carried out so much more quickly and efficiently when you're talking to the operating system directly.

So if you're a novice, by all means use Desktop to begin with. It's a way of easing yourself into the Amstrad PC and it also has some powerful features you may need later on when you're more experienced.

In between these two stages try MSdos

friends MSdos Dos Plus

and Dos Plus directly. But first understand what an operating system is and does. If you don't know, here's a quick and easy explanation.

Let's go back 20 years or so. You're a computer programmer using a programming language, but you don't know how a computer works.

You've been asked to write a simple security program. It is to display the words DO NOT TOUCH on a screen if someone presses a key, print a message on the printer that someone has been meddling and finally store that message on a magnetic disc.

You can't do it - and that's quite apart from the fact that at that time you would have been hard pushed to find either a VDU or a magnetic disc.

For a start, you don't know how the machine stores words in its internal memory. Nor do you know how it outputs them to a printer or a mass storage medium, nor how it registers that a key has been pressed.

Nor, even if you managed to get someone to write the appropriate screen, disc and printer drivers for you, will you be able to locate any errors in your program if it fails to work.

To solve what should be a trivial problem for you as a programmer, you would have to get involved in the complexity of the machine's circuitry. In other words you'd be solving problems which for you have nothing to do with the logic of the original one.

Today we have operating systems which automatically take care of those peripheral problems:

- They decide where data will be stored in memory and where precisely they will be held on a disc. In both cases they make sure that they're not overwritten each time something is saved.
- They call in languages, data, routines

and extra programs as required.

- They detect and interpret input, whether from the keyboard or any other device, such as a mouse, joystick or communications port. And they direct output as and when necessary to the correct destination - screen, disc, printer or some other device.

- They perform specific practical jobs, such as copying files from one disc to another, displaying a directory or catalog of files on a disc, erasing files and so forth.

- They tell you if something is wrong and at least give you an indication of where the fault may lie.

All in all, they allow people to use computers without knowing a thing about what's going on inside the machine.

At their lowest levels the two operating systems supplied with the Amstrad PC perform much the same functions as each other - those outlined above.

But they also come with sets of utilities which allow you to carry out basic operations yourself (and therefore more flexibly), rather than leaving them to be performed automatically. Some of these utilities are common to both, others not.

Let's take an example of something Dos Plus will do that MSdos will not.

Both operating systems have a so-called internal COPY command, that is to say that the command is built in to the system so you don't have to load it separately from disc. With a double disc drive, if you want to copy a file called FRED.TXT from drive A to drive B, in either operating system you can simply type at the A> prompt:

COPY FRED.TXT B:

followed by Return or Enter (we'll use Enter from now on to mean "type something in and press Return or Enter").

In other words, copy FRED.TXT to drive B, and give it the same name. Note that a colon must always appear after a drive letter to distinguish it from a

filename - it's called a delimiter.

If you have a single drive system and don't want to use the ram disc, you could also copy FRED.TXT, but it would have to be to another filename. You can't copy a file to one of the same name on the same disc. You would enter, say:

COPY FRED.TXT BLOGGS.DOC

(If you do have a single drive machine and want to try out the examples below, simply swap discs instead of using the B indicator.)

Dos Plus is a partial merger between MSdos and CP/M. In the old versions of CP/M there was no internal COPY command. To copy files, you had to use an external utility call PIP. This utility has been retained and appears on the Dos Plus disc as PIP.COMD.

To see this, turn on the machine and insert the Dos Plus disc. When Dos Plus has loaded, enter DIR at the A> prompt.

This will give you an alphabetised directory listing, with the size of each file in bytes (characters), and the date and time it was put on the disc. Four up from the bottom is PIP.COMD.

PIP's syntax is different from the internal COPY command. To carry out the same operations as above using PIP, you would enter:

PIP B:=A:FRED.TXT

or

PIP BLOGGS.DOC=FRED.TXT

which can be interpreted, in something vaguely approaching English, as: Bring up from disc the program PIP and use it to let Drive B become equal to Drive A as far as FRED.TXT is concerned. Or let a new file called BLOGGS.DOC become equal to FRED.TXT.

But what's the point of using PIP when you have the internal COPY command? The answer is that PIP is more powerful than COPY.

By setting one or more switches - enclosed in squared brackets at the end



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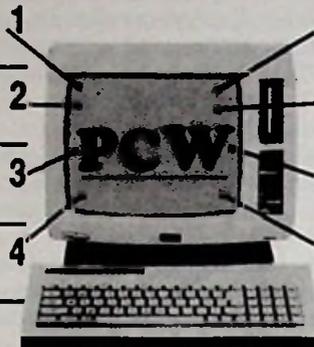
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of the command line – you can ask PIP to do things like convert all tab characters into spaces, copy only parts of a file, copy the file only if it has been modified since it was last copied (allowing you to do selective back-ups) and much more.

To take a simple example, the line:

```
PIP B:=A:FRED.TXT[UNA]
```

will copy FRED.TXT from drive A to drive B, converting all lower case letters to their upper case equivalents (the U option – Upper case) and adding line numbers to the new file (the N option – Number). But the operation will be carried out only if FRED.TXT has been altered since it was last copied (the A option – Archive).

Now look at the MSdos disc. Put it in drive B if you have a double drive machine (otherwise swap discs) and enter:

```
DIR B:/W or DIR /W
```

as appropriate. The /W is a command to the operating system to display the directory wide ways.

You need to do this with the MSdos disc because there are more files in the directory than will fit on the screen in one go.

You'll notice that with the /W(idth) option you see only the filenames, and no information about their size or the date and time of their creation.

You find that there are more files on the MSdos disc than on the Dos Plus disc and immediately there must also be MSdos utilities not offered under Dos Plus.

An example is KEYBUK.EXE, a command file which sets up a British – as opposed to American – keyboard in certain applications.

To activate this file under MSdos you simply enter KEYBUK. But try re-loading Dos Plus and entering at the A> prompt:

```
B:KEYBUK
```

(or with a single drive, swap discs).

This means: Activate KEYBUK.EXE (on drive B)

You will be told that you have an incorrect version of Dos, an example of the operating system sending you an error message. Admittedly the message can't be called crystal clear but without it you wouldn't even be able to tell if KEYBUK had been executed, except by trial and error.

What this also means is that the two operating systems are not completely compatible. Dos Plus recognises that KEYBUK is a command file, but no more.

And it's a worse state of affairs the other way round. If you load MSdos from scratch after turning on the machine, insert the Dos Plus disc in drive B, then try to activate PIP for instance – the command being B:PIP – you'll get a message to the effect that the command file can't be found. This is because MSdos expects its command files to have a .EXE or .COM extension, whereas Dos

Plus uses a .CMD extension.

So the files on the Dos Plus disc which do have a .EXE or .COM extension can be activated by MSdos, but only them. This is why Dos Plus represents a partial rather than a complete merger of MSdos and CP/M.

You might think that if you copied PIP.CMD to a file called PIP.EXE you could then activate it under MSdos. But if you do this the computer will hang and the only solution is to turn it off and on again. In other words perform a cold start. A warm start – pressing Alt, Control (Ctrl) and Delete (Del) together will not help.

You can now see why the software base for the Amstrad PC is immediately wider than that of the IBM PC or other compatibles. Programs written under CP/M-86, which will not run on straight MSdos or PCdos machines, can be run directly on the Amstrad PC under Dos Plus.

An alternative is to equip the machine with an emulator, but that costs money, and they don't always work perfectly. You can buy CP/M for other PCs but at

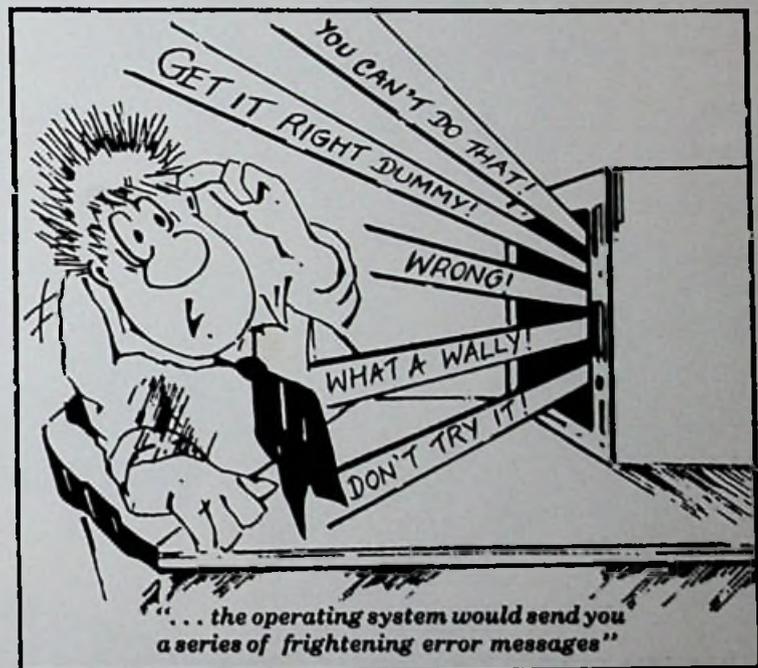
see how useful CHKDSK can be when called directly.

Under either operating system enter CHKDSK. You'll see the total capacity of the disc, the room taken up by hidden files (those used by the system) and directories, the amount of space left on the disc – you'll usually need to keep an eye on this for obvious reasons – and other relevant information.

Most importantly, the fact that you do see these things tells you that the disc is in good condition. If it were not, the operating system would send you a series of error messages, anything from corrupted tracks to mixed-up directories. That can be frightening, far more so than any operating system commands.

There is one tempting reason for those new to PC computing to use Desktop rather than direct operating system commands. With a bit of experimenting you can get away with a front-end manager without reading much of the User Instructions.

It's well known that many people simply don't like reading manuals and Desktop can if necessary be managed



least with Dos Plus you can read an MSdos directory, something straight CP/M again won't do without an emulator.

And what of the unfriendliness of entering Dos commands and thus using an operating system directly?

Well, both the internal commands and the external utilities of the two operating systems offer literally hundreds of features not covered here. However, many are quite difficult to use and some you will never need in any case.

But learning about them can be rewarding in itself and if you persevere you will probably find yourself using certain facilities for short-cuts or specialised applications and wonder how you ever did without them. For now,

with a few clicks of the mouse here and there and the occasional look at the instructions when things seem to be going wrong.

It's not the same with either Dos Plus or MSdos. You can't guess the command for erasing all files with a .TXT extension leaving all the others intact.

But it's worth putting a little study into handling the operating systems supplied with the Amstrad PC if you think you're going to be living with the machine for some time to come.

● *With this in mind, APC will be offering regular explorations of MSdos and Dos Plus, starting next month with the apparently bewildering but fascinating subject of directories and paths.*

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	Protext	Loco-script	Tasword 8000	Newword	Pocket Wordstar Deluxe
Version:	2.00	1.20	1.00	2.17	3.05
Computer:	PCW8256	PCW8256	PCW8256	PCW8256	PCW8256
1. Load document	6	12	8	10	10
2. Save document	7	84	19	16	19
3. Move paragraph to end	5	269	11	21	11
4. Move paragraph to start	0.5	34	6	3	4
5. Delete paragraph	0.1	15	3	4	3
6. Copy paragraph	5	128	297	73	208
7. Print paragraph	1	10	12	6	6
8. Move paragraph to end	0.2	42	13	9	9
9. Move paragraph to start	1	80	13	9	4
10. Delete paragraph	0.3	19	3	5	4

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FEATURES	Protex	Loco-script	Tasword 8000	Newword	Pocket Wordstar Deluxe
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Works with any printer	y	-	y	y	y
Unlimited file size	y	y	-	y	y
Two file editing	y	-	-	-	-
Auto re-format	y	y	y	-	-
Layout commands stored in text	y	y	-	y	y
Spelling checker	y	-	-	y	y
Spell check from within WP	y	-	-	-	y
Find/anagram options	y	-	-	y	-
Background printing	y	y	-	-	y
Insert or overtyp	y	-	y	y	y
Delete line command	y	-	y	y	y
On screen help	y	y	y	y	y
Dynamic screen update	y	y	-	-	-
Headers and footers	y	y	y	y	y
- different even and odd	y	y	-	y	y
Soft hyphens	y	y	-	y	y
Soft spaces/returns	y	y	-	y	y
Non break space	y	y	-	y	y
Decimal tabs	y	y	y	y	y
Format whole document	y	-	-	-	-
Page break indication	y	y	y	y	y
Page line number display	y	y	y	y	y
Column manipulation	y	-	-	y	y
Column transpose mode	y	-	-	y	-
Multiple block buffers	-	y	-	-	-
Underline	y	-	-	y	-
Underline on screen	y	-	-	y	-
Screen wrap	y	y	-	y	y
Clipboard	y	-	-	-	-
Print to printer	y	-	y	y	y
Print to screen	y	y	-	y	y
Print to file	y	-	y	-	-
Typewriter mode	y	y	-	-	-
Change printer at any time	y	-	-	y	y
Embedded printer codes	y	y	y	y	y
Print translated characters	y	-	y	-	-
Turn off printer code display	y	y	-	y	y
Display returns/tabs	y	y	-	-	-

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Handling commands, banishing nightmares

Even the most ardent fan of the Amstrad PCW would admit that, once you step aside from the protection LocoScript offers, the machine can be rather awkward to handle. Changing printer styles and using the CP/M Plus screen driver cause particular problems. These two listings however should make life easier.

The first provides a number of functions useful when handling the screen commands of the CP/M Plus screen driver. It works with both the PCW range and with the CPC6128. I have not implemented all the commands listed in the manual, just the most useful ones. Rather than having to remember complex escape sequences, all you now have to do is to type:

```
PRINT FNname;
```

where FNname is one of the predefined

functions. For instance:

```
PRINT FNcls$: PRINT FNat$(20,20);"Hello"
```

will clear the screen, move the cursor to column 20, row 20 and print 'Hello'. Simple isn't it?

The program given in Listing II is altogether more complex and provides a solution to the nightmare problem of setting up the printer. Though written for the PCW printer it should work with any Epson compatible printer, either on the PCW range or on the CPC range.

The program works by firstly clearing any remaining characters in the printer buffer and then resetting the printer to its default settings, so that you start with a known quantity. All this takes place on line 70.

Then, in simple stages, we build up a string of characters (*setup\$*) which will

Barry Pickles offers two Basic listings to make your Amstrad more user-friendly. Both listings are Mallard or MBasic compatible.

```
10 REM SCREENPACK
20 REM A utility for screen handling with VT52 terminals
30 REM Barry Pickles - October 1986
40 REM
50 DEF FNcls$=chr$(27)+"E"+chr$(27)+"H":REM Clear screen and home
60 DEF FNinverse$=chr$(27)+"p":REM Inverse video
70 DEF FNnormal$=chr$(27)+"q":REM Normal video
80 DEF FNat$(x,y)=chr$(27)+"Y"+chr$(32+y)+chr$(32+x)
90 REM That was a function to move the cursor to position x,y
100 DEF FNcuroff$=chr$(27)+"e":REM
```

```
cursor on
110 DEF FNcuroff$=chr$(27)+"f":REM cursor off
120 DEF FNx2400$=chr$(27)+"x":REM set 24x80 mode
130 DEF FNx3290$=chr$(27)+"y":REM set 32x90 mode (PCW only)
140 DEF
150 REM That was a function to set screen colours
160 REM to fX (foreground) and bX (background)
170 DEF FNulon$=chr$(27)+"r":REM underline on
180 DEF FNuloff$=chr$(27)+"u":REM underline off
190 REM
```

Listing I: Screen handling functions for the PCW and CPC 6128

ultimately be sent to the printer containing all the necessary codes to set it up as you have specified.

I am not going to go into great detail here, since the PCW manual describes all the codes recognised by the printer and what they do. However, I have made an attempt to split the program into sections of related items.

The program consists of a series of questions asking you how you want the printer set up. Your answers appear at the right of the screen. When you have

answered all the questions the program waits for you to indicate that the printer is ready to start, and then it sends out the setup string of escape codes.

For good measure it then prints out a test line followed by a form feed, so that you can check that the print is to your liking.

Don't forget that some options are not available on Epson printers - such as condensed italic print, so check with your manual if it doesn't work as you expect.

Finally, an interesting point cropped

up while I was preparing this program. The manual says that there is a mixed print mode, where print options are determined by a five bit number. I couldn't get this to work as described. Since the manual claims that the number required is in the range 0-63, which needs six bits, I suspect that the description is incomplete. Does anyone know about this mode?

APC

```

10 REM PCW (EPSON) PRINTER SETUP
20 REM Barry Pickles - October 1986
6
30 REM
40 DEF FNcls$=CHR$(27)+"E"+CHR$(27)
)+"H": REM Clear screen and home curs
or
50 DEF FNat$(x%,y%)=CHR$(27)+"Y"+C
HR$(y%+32)+CHR$(x%+32): REM move curs
or to x,y
60 REM
70 PRINT FNcls$:LPRINT CHR$(24)+CH
R$(27)+"@": REM Clear and reset print
er
80 PRINT FNcls$:CHR$(7):"PCW PRIN
TER SETUP"
90 PRINT FNcls$:TAB(12):"Printer bu
tton has been cleared and the printer
is ready"
100 PRINT FNat$(1,5):"[1] Single sh
eet or [2] Continuous stationary? ";
110 GOSUB 1300
120 IF r$="1" THEN setup$=setup$+C
HR$(27)+"s" ELSE setup$=setup$+CHR$(27)
)+"c"
140 sheet%=VAL(r$):PRINT:PRINT " Do
you want to set page length by:"
150 PRINT " [1] the number of lines
or [2] paper length in inches? ";:G0
SUB 1300
160 setup$=setup$+CHR$(27)+"C": IF
r$="1" THEN most %:=127:t$="lines"::G0
0 100
170 setup$=setup$+CHR$(0): most%=22
:t$="inches"
180 PRINT FNat$(1,9):"How many ";t$
";? (1 - ";most%:") ";:GOSUB 1000
190 PRINT FNat$(77,9): INPUT;" ",n
%
200 IF n%<1 OR n%>most% THEN PRINT
FNat$(80,9) " ";CHR$(7):GOTO 190
210 setup$=setup$+CHR$(n%): IF sheet
%=1 THEN 300
220 REM
230 IF t$="inches" THEN lines%=n%+6
ELSE lines%=n%
240 PRINT FNat$(1,11):"How many lin
es to leave blank at the foot of the
page? "
250 PRINT "(0 - ";lines%:") ";:G0
SUB 1000: PRINT FNat$(77,12): INPUT;"
",n%
260 IF n%>lines% THEN PRINT FNat$(8
0,12) " ";CHR$(7):GOTO 240
270 IF n%=0 THEN setup$=setup$+CHR$
(27)+"0": GOTO 300
280 setup$=setup$+CHR$(27)+"N"+CHR$
(n%)
290 REM
300 PRINT FNat$(1,16):"ITALIC print
? (Y/N) ";:GOSUB 1100
310 IF r$="Y" THEN setup$=setup$+C
HR$(27)+"4" ELSE setup$=setup$+CHR$(2
7)+"5"
320 setup$=setup$+CHR$(27)+"p"
330 PRINT "PROPORTIONAL print? (Y/N
) ";:GOSUB 1100
340 IF r$="Y" THEN setup$=setup$+C
HR$(1): margin%=96 ELSE setup$=setup$
+CHR$(0)
350 PRINT "ELITE type? (Y/N) ";:G0
SUB 1100: margin%=80
360 IF r$="Y" THEN margin%=96: se
tup$=setup$+CHR$(27)+"M"
370 PRINT "CONDENSED print? (Y/N) "
";:GOSUB 1100
380 IF r$="Y" THEN margin%=139: se
tup$=setup$+CHR$(15)
390 PRINT "BOLD (shadow) print? (Y/
N) ";:GOSUB 1100
400 IF r$="Y" THEN setup$=setup$+C
HR$(27)+"E"
410 PRINT "DOUBLE STRIKE print? (Y/
N) ";:GOSUB 1100
420 IF r$="Y" THEN setup$=setup$+C
HR$(27)+"8"
430 PRINT "ENLARGED print? (Y/N) ";
:GOSUB 1100
440 IF r$="Y" THEN margin%=margin%
/2:setup$=setup$+CHR$(27)+"W"+CHR$(1)
450 REM
460 PRINT FNat$(1,24):"Set left mar
gin (0 - ";margin%-6:") ";:GOSUB 10
00
470 PRINT FNat$(77,24): INPUT;" ",
l%
480 IF l%>(margin%-6) THEN PRINT C
HR$(7):FNat$(80,24) " ": GOTO 470
490 setup$=setup$+CHR$(27)+"l"+CHR$
(l%)
500 PRINT FNat$(1,25):"Set right ma
rgin (";l%:" - ";margin%:") ";:GOSUB
1000
510 PRINT FNat$(77,26): INPUT;" ",
r%
520 IF r%>margin% OR r%<l% THEN
PRINT CHR$(7):FNat$(80,26) " ": GOTO 51
0
530 setup$=setup$+CHR$(27)+"@"+CHR$
(r%)
540 REM
550 PRINT FNat$(1,27):CHR$(7):"Set
up your printer and press SPACEBAR wh
en ready."
560 r$=INKEY$: IF r$<>" " THEN 560
570 LPRINT setup$: PRINT " Sending
test line to the printer ....";
580 LPRINT "This is a test line of
print to check that it has been corre
ctly set up."
590 LPRINT CHR$(12):FOR n%=1 TO 100
0:NEXT n%
600 PRINT CHR$(7):"Was that OK? (Y/
N)";:GOSUB 1100
610 IF r$="N" THEN RUN
620 END
630 REM
1000 PRINT " - Press RETURN after yo
ur answer.":RETURN
1100 r$=INKEY$: r1$=UPPER$(r$):IF r1
$<>"Y" AND r1$<>"N" THEN 1100
1200 PRINT TAB(80):r1$: RETURN
1300 r$=INKEY$: IF r$<>"1" AND r$<>
"2" THEN 1300 ELSE PRINT TAB(80):r$:
RETURN

```

Listing II: Printer setup utility for Epson and PCW Printers

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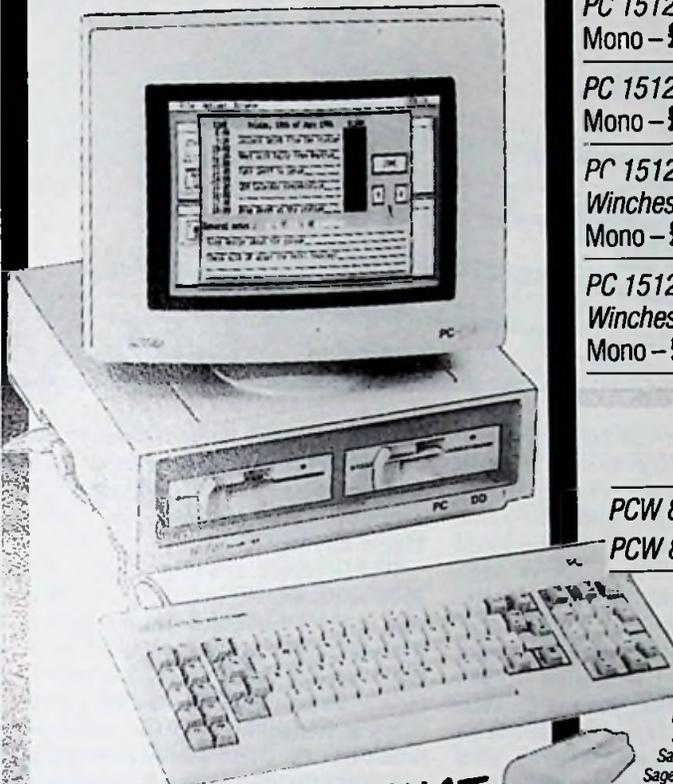
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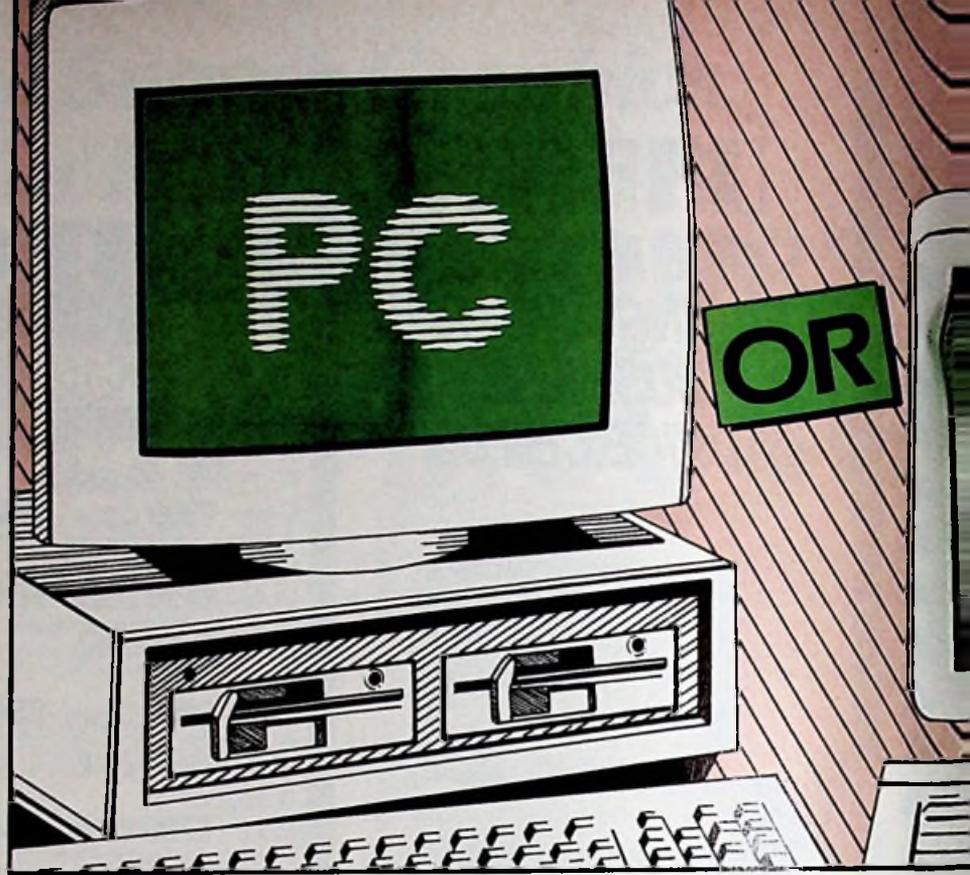
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REVIEW



Is there really competition between the PC and PCW for the small businessman, or are they different horses for different courses? Tim Woodward argues that the conclusions are not as obvious as they may seem.

No sooner had I got the box home and unpacked my shiny new Amstrad PCW8512 than I started to hear rumours of an IBM compatible from the same stable. Less than £400 for the basic model with a single 360k disc drive, 512k of memory, mono monitor, mouse, Gem, and so on, and so on.

Bigger, better and cheaper than almost anything on the market – well, actually it's smaller than many PCs – the PC1512 has arrived amid a fanfare of rave reviews enough to give you withdrawal symptoms before you're even hooked.

What does it all mean for those about to leap into the fray and buy a personal computer for their business needs, or indeed those of us convinced we couldn't justify the cost of an IBM compatible at the time we bought our PCW?

The question now is whether to go 16 bit or not, and in particular whether to PC or PCW your way to a more efficient working environment. Just what do you require of the computer that is going to automate your office, streamline your operation and allow you more time on the golf course?

Let's first establish the ground rules. As far as most business applications go, twin drives are pretty much essential, I would even go as far as to say indispensable for efficient operation – particularly for back-up purposes. So let's confine ourselves to the 8512, and compare it with the PC1512 dual-drive model.

The choice is still between MSdos (or Dos Plus) 16 bit on the one hand, and CP/M 8 bit on the other. It sounds easy – 16 bit must be twice as good as 8 bit, otherwise what's the point of all the cheerleading we're subjected to about the power of 16 bit machines?

In fact the decision is not quite as

obvious as it may seem. Although MSdos and Dos Plus can access greater areas of memory than 8 bit CP/M, most of the available 16 bit software packages are bigger anyway.

With a typical running space of 128k to 256k required, PC applications will still call overlay modules from disc when needed rather than loading everything into memory in one go. This is true even on a 512k machine like the PC1512.

It's a hangover from the dim micro-computing past (actually only a short while ago), as in a sense the problem of memory requirements is not so much of an issue today.

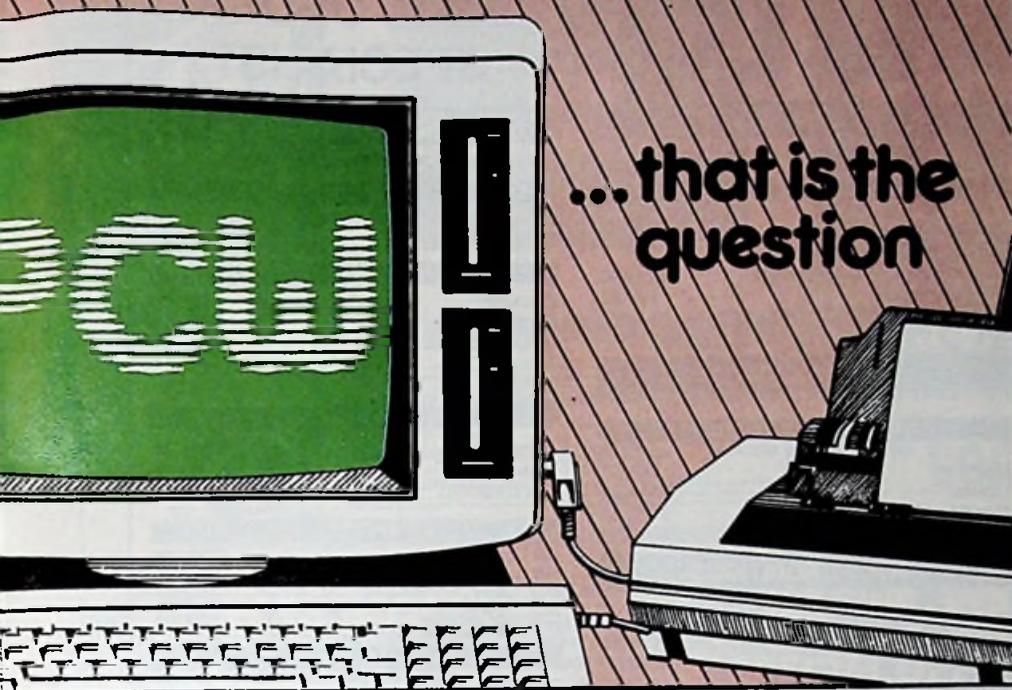
Only the Grand Blue Master himself markets a 64k version of his PC to an upgradable public, whereas most compatibles on the market come with at least 256k on board. Memory comes cheaper now – so long as you stick with the clones rather than the original!

Now both the 8512 and the 1512 have 512k fitted as standard, but we can't really consider the memory supplied on each as constituting a draw, because once again it's a matter of the use of memory rather than the memory itself which is the crucial factor.

Most CP/M programs run within 61k of program area, the extra space in the PCW being configured as a ram disc (drive M). MSdos and Dos Plus on the other hand allow much larger programs to be run, and in the case of spreadsheet applications, for instance, this can be an enormous advantage.

Some excellent spreadsheets are available for the PCW range, but the size of active cells – that is the amount of memory directly addressable to calculations – limits their full potential. A comparable version for the PC family could theoretically produce sheets up to 10 times the size, although it has to be

PC PCW



...that is the question

said that the best PCW versions do have some very clever ways of using link techniques to access multiple sheets from disc.

To compare the two processors on the 8512 and the 1512 is not really fair either. In theory the latter can address twice the data twice as fast as the former.

The 8512s and Dos Plus operating systems on the PC are far more sophisticated beasts than CP/M on the PCW. They have extremely versatile file handling capabilities and are generally bigger tools for a bigger environment.

Yet clever as they may be, they still are not much friendlier than 8 bit CP/M, presenting you with the familiar A> prompt as the only clue they are there and ready to go to work.

Thankfully, there are ways of making operating systems more user-friendly, and one of these is bundled free with the 1512, the graphic environment called Gem.

Gem replaces the usual waiting prompt with a graphical representation of the various options available, and allows manipulation of windows and icons to achieve the ends you require. But you never get anything for nothing, and Gem does tend to eat up lots of your memory - we're back where we started.

Two further areas worth considering are the range of software available for each machine and the question of expandability.

The 8512 has a good proportion of rehashed CP/M software being marketed for it, some of it excellent. There are also a number of notable titles from leading publishers written specifically for the PCW range.

In fact the cost of software for this micro has stood the industry on its head and led to some packages dropping to a third of their previous price. This in turn

has led to more interest in the machine itself, which has prompted more software to appear, and on it goes.

What's more, it's difficult to justify paying more for your accounting suite than you did for your computer, so cheaper hardware means cheaper software and a whole new sector of the buying public is introduced to computing.

If I had been looking at the software market for the IBM PC and compatibles a few months ago, there would have been no contest. Take a well-known accounting package from Sagesoft's Business Software range, Accountant Plus, which was advertised at around £435. This would, and did in my case, put off potential PC clone purchasers, since a similar and only slightly restricted version for the PCW range retailed at less than £150.

Things are changing now. Sage has released its Accountant Plus at £199, and many other applications packages have dropped dramatically in price.

It looks, therefore, as if Mr Sugar has done it again - the launch of the PC1512 has started a slide of software prices similar to that generated by his PCW range, with software houses tripping over each other to give us the bargain of the decade.

Well that's the way it seems, but once again beware - some of these packages are cut down versions with the original still available to those who can afford it.

Even so, I don't think PC software prices will ever be the same again. Keep your eye on the lookalikes especially, such as VP Planner, as this is where the real bargains will be had.

A PCW8512 will cost you £499, and this includes a printer and word processing software. Despite the often quoted reluctance of LocoScript to work

its way through a file at anything but a snail's pace, the PCW is not a slow machine (mine is faster than my wife's IBM PC XT at running through menus, but perhaps that's not such a feat).

A wide range of software is available for it covering all aspects of business life, and a few for leisure as well. It is not a toy, as one flash computer salesman tried to tell me, but then again his systems did start at several thousand pounds.

The fact is that at the price the 8512 can't be beaten as a complete system, though you must remember it is basically a closed box. Various peripherals, such as hard discs, can be attached to it, but the machine was not really built to be expanded.

On the other hand the twin drive 1512 is only slightly more expensive and not only represents an innovation in 16 bit computing but was designed for expandability and therefore choice.

Of course, you need to add the price of a printer and word processing software to compare it with a 8512 system, and that in itself puts it in a different market. But in terms of sheer value for money it's bound to be a winner in the business world.

If the PCW is a serious machine for the small to medium sized business, then the PC is that and much more. You have access to most IBM PC compatible programs including giants such as Lotus 1-2-3, the Pegasus suites, Delta 4 and so on.

It has three expansion slots ready to take PC cards of one description or another; it already comes complete with what on the IBM PC are extras, and it runs roughly twice as fast as the machine it is modelled on.

Moreover, since it conforms to what is called the industry standard you should have no problem upgrading to whatever system your needs dictate, and since it is expandable internally you can, if cash is a problem get the basic machine at £399, and go from there. That really is an important consideration, and one of the major reasons why you would buy the machine - so many add-ons are available that you won't need to change it if your requirements alter.

The 1512 is an introduction into the world of real computing and really sophisticated business applications. Before now, if you wanted to join this world you either took out a second mortgage and bought an IBM, or played Russian roulette with your company data on a Taiwanese import.

Today there's a simple alternative, the Amstrad PC1512. If you need more than the PCW can offer in terms of expandability, speed and compatibility, then the 1512 has all of these advantages and more for the extra cost of a printer.

**Tim Woodward runs an accounting service/computer training business in the West of England*

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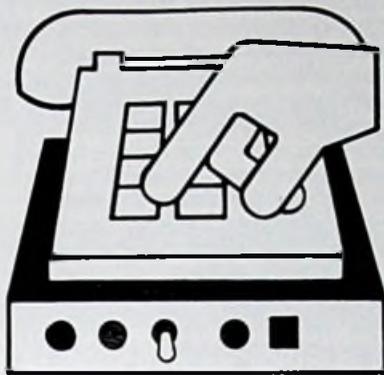
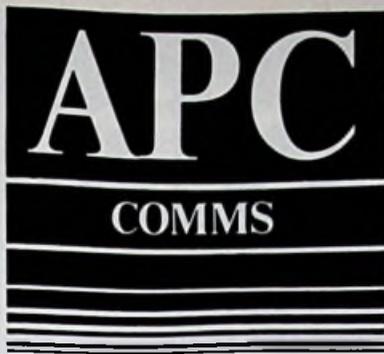
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Finding your way round the FidoNet

As promised last month, here's an introduction to Fido. This is a bulletin board system run on an amateur basis. The Fido software originates from the States and runs on an IBM PC or a compatible such as the Amstrad 1512. The version currently being used is, like its predecessors, public domain.

What sets Fido apart from the other bulletin board systems is its capacity to act within a network of other Fido boards. The network is so organised that it is possible to send messages (or any kind of data) to a user on any Fido system in the world, simply by dialling up your local Fido.

The way this works is by a network organisation called the FidoNet. Each country (or region) has a local network of Fido systems, referred to as nodes.

These are controlled by a Net Host, who is responsible for allocating new node numbers and for seeing that mail is transmitted to destinations outside the local net. Groups of nets are organised into continental-sized areas, again under the control of a Net Host.

Each Fido local network has a unique identification number, as does each node within that network. Thus any Fido board can be identified by the combination of net and node numbers.

By prefacing a message header with this code the destination is uniquely identified. So for example, to send a message to me you would log on to your local Fido board and head the message:

TO: Simon Kemp, Net 503/5

This identifies the board as TeePee Fido in Manchester, my local board. Your message, along with any others going via FidoNet, is sent out to the Host at a pre-determined time each day - in this country, between 0230 and 0330 hours GMT.

The Host identifies those destined for other nets and re-transmits them to the appropriate Net Host. In his turn, that Host re-transmits them to the appropriate node in his network, where they remain until the person for whom they were intended logs on.

This is all done via the PSS (Packet Switch Stream) Network, so the cost is determined more by the volume of data than by distance. But in addition, since

participation in the FidoNet is voluntary and Fido systems are run on a purely amateur basis, costs are in any case kept to a minimum.

You can send a message anywhere in the UK for less than the price of second-class postage, and messages to the States are much cheaper than by Telecom Gold.

However, there is one disadvantage. Messages sent via any of the commercial E-mail systems, such as MicroLink, are transmitted instantly and may be assumed to have been received there and then.

But a FidoNet message will not be transmitted to the local Host for up to 23 hours and, if it is destined for another network, will be further delayed as each Host re-transmits according to his own schedule.

The result is that intercontinental messages can take a long time (weeks in some instances) to reach their destination. So it is not wise to send urgent or important messages via the FidoNet in its present state.

But the system is constantly improving, and the NetMail is well worth investigating as an alternative to dialling direct or for lengthy, non-essential messages.

To connect to a Fido system, first find your local node. The easiest way to do this is to dial up any Fido board, like the one mentioned above and download a directory list of all the Fido nodes (there are more than 100 in this country alone and over 1,400 world-wide).

Every Fido carries the list, usually in Ascii format. If you can't find it, leave a message for the sysop (the person in charge).

When accessing the directory you might also download the Fido user manual, to be found on all Fido systems. This could save you a lot of time and the sysop a lot of trouble, since you'll have a ready reference at hand whenever you run into difficulties.

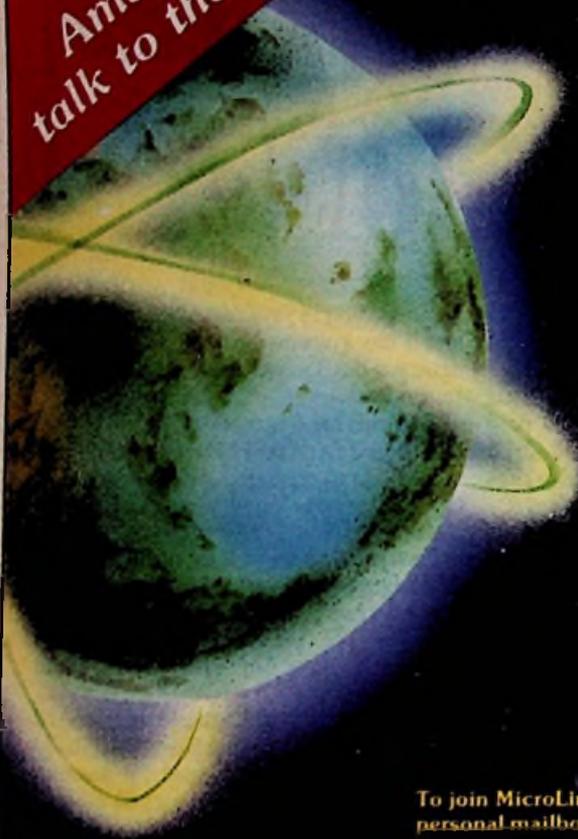
Once you have established which node is nearest to you, dial it up and register, by answering a questionnaire. Have a look around the board, and perhaps leave a message or two.

If you dial up again after about 24 hours you should find that the system now recognises you, and that you're able to use most of the board's features. Fido

Simon Kemp brings news of a cheap modem and explains how the largest amateur comms network can help you save money.



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These are basic charges. Most MicroLink facilities are free, including sending messages to other people on the system. Extras are:

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Telemessages: £1.45 for up to 350 words. An illustrated greetings card (for weddings, birthdays, etc) costs an extra 75p. Delivered anywhere in Britain first post the following day.

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Position

Company

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B. Please debit my/our Access/Mastercard/Visa/ No.
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Please indicate month of commencement 19

Date of first payment to be on 15th of month following commencement. Please complete billing authorisation form A, B or C.

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 Database Publications,
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 68 Chester Road,
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 Stockport SK7 5NY.**

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 Start date _____
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boards differ in the facilities they offer, depending on how much time the sysop can devote to maintaining the system and how much money he has at his disposal.

Remember that the sysops are donating a considerable amount of effort. All the sysops I know welcome constructive criticism but they don't suffer fools gladly. And they do expect users to contribute in some way, even if it's only by helping another user with a problem.

The question of providing free software is something of a sore point with many sysops. You hear them talk about "troughies" – those who log on, download as much as they can in the time available and log off without ever giving anything in return.

As one sysop put it: "If everyone who uses this board uploaded just one piece of software I'd have enough to satisfy everyone for years. If they just upload one file, or just solve one problem, that's all I ask".

Making software accessible inevitably causes other problems. In fact some misguided users appear to think that boards exist only to make life easier for pirates. And Fido boards are particularly susceptible to abuse since they are not continuously manned.

It is possible for a person to transmit a piece of commercial software, which a friend can then download by arrange-

ment. The file can then be erased from the board, leaving the sysop none the wiser.

This is a breach of copyright and no sysop will stand for it – if he catches people they will certainly be barred from his board and probably other boards too, since sysops are a close-knit community.

Likewise with hackers – those who take delight in obtaining illegal entry into computer systems. The one thing that these people forget – and it's worth noting if you're thinking of sending messages containing sensitive material – is that on amateur systems there are no secrets from the sysop. He can read all the messages, even the private ones.

One of the Fido services being tried on an experimental basis at the moment is the use of the FidoNet for global conferencing.

The idea is that someone starts up a topic for discussion which is of wide-ranging interest – say Turbo Pascal versus another Pascal implementation. Now, various Fido nodes around the world elect to take part in the conference and whenever someone on one of the participating nodes leaves a message on his local board it is automatically sent to all the other participants.

In this way, every participant gets all the messages on that topic from wherever they originated. This then becomes a global conference – not real-time it's

true, but a conference nonetheless.

And now for the latest comms news:
 ● PD FIDO, the bulletin board of the PD Software Interest Group has moved. The new telephone number is 08926 61149. As before, the system is on-line 24 hours a day and all baud rates are catered for. I am told that the software section has been expanded to 20Mb.

● The Tandy Intelligent Modem is being offered at a bargain price. It originally sold for £456, but in their latest catalogue Tandy has reduced this to a mere £115.

One of the first "intelligent" modems in this country, this is a rebadged version of the Racal CP2123. It handles 300/300, 1200/75, 1200/1200 half-duplex and also Bell 103 tones at 300 baud.

It features auto-answer, auto-dial and auto speed detect, has a self-test on power-up and is totally software controlled – not a switch or button in sight. Of slim dimensions, and with a separate power supply, it will easily fit underneath the phone.

I have used this unit extensively and can recommend it.

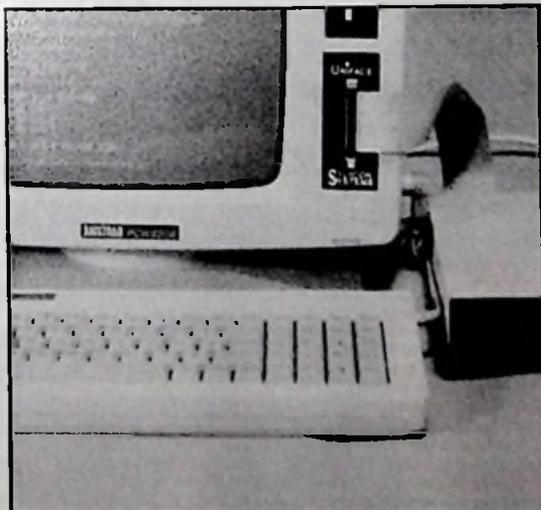
A final word: Thank you all for the feedback. It is proving most constructive. As always, if you want to leave me a message, you can do so on TeePee Fido (061 494 6938).

APC

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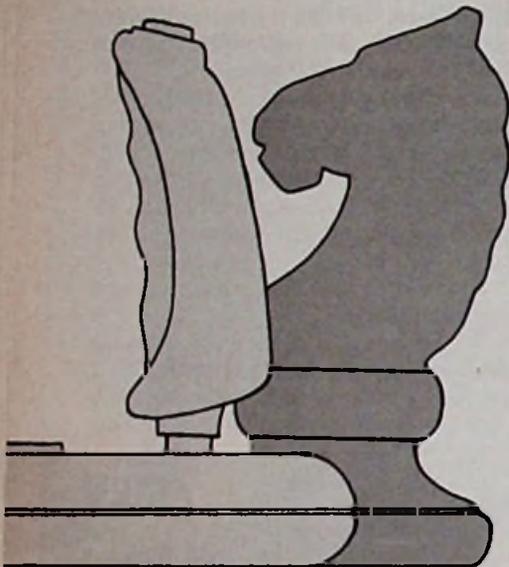
SIREN SOFTWARE

Trafford Technology Centre, 43 Elmwood Road,
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CONTEST



Win a joystick - and take your games seriously!

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Cascade is giving away 10 of these deluxe controllers, each with an interface, and a superb game for you to play - Colossus 4 Chess.

To win your joystick, simply answer the following questions, and send them on a postcard to us at the address below. The prizes will be awarded to the senders of the first 10 correct solutions opened.

All entries must be in by December 31, 1986.

Send to: **Joycestick Competition, APC, 169 Kings Road, Brentwood, Essex CM14 4EF.**

- Why is a PCW8256 called a Joyce?
 - _____ wheel
 - _____ house
 - _____ black
- Spinning _____
- Christmas _____
- Aunt _____
3. Which Joyce wrote _____?

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- Reference, e.g. ABC123 for a cheque number or invoice reference.
- A class code, one of up to 50 defined by you to suit your circumstances e.g. h0=Household expenses, h1=Mortgage, h2=Rates or p0=Production, p1=Raw materials, p2=Assembly, p3=Packing, etc.
- A description so that you can see what each transaction was for, e.g. "New gearbox" or "Box of 10 discs".
- An optional single character mark which you may include for further classification, e.g. b=business, p=private, etc.
- The amount of the transaction, which may be plus or minus.
- A marker to indicate whether the entry is exempt, zero rated or taxable for VAT, or alternatively the actual VAT paid.

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REVIEW



When cut price doesn't indicate cut performance

Extremely competitively priced, Zorland C surfaced recently at the PCW Show and caused a few rueful grins.

First because of the obvious take-off of the successful American company Borland, even down to the now famous "No Nonsense License Agreement". Second, because of the price - 16 bit C compilers are usually in the £250+ range. Could a £30 package really be any good?

Well, yes it could. But before you buy it think about what you need. Compiling programs in any language can be a trial - even small changes can require a lot of effort.

First you load your editor or word processor, type in the source code, save it on disc, compile it (two passes), then link the object code to the run-time routines. If there are any errors, find them (not always so easy), reload the editor, load the source code . . .

Borland scored highly with its Turbo Pascal, partly because it sidesteps the link stage, and includes a compile time error locator. But the majority of compilers require the steps outlined above, and Zorland C is not one of the exceptions.

This is a far cry from the Basic interpreters that most people cut their programming teeth on. With an interpreter you can type in your programs, run

and debug them relatively easily.

If you like this kind of instant programming environment and want to learn C, you should perhaps look at some of the C interpreters now coming on to the market (see Figure II).

The major attraction of compiling, however, is that the programs you write will be directly executable from Dos, since a file with a .COM or .EXE extension is automatically produced. Once the program has been compiled, just enter the name and it runs.

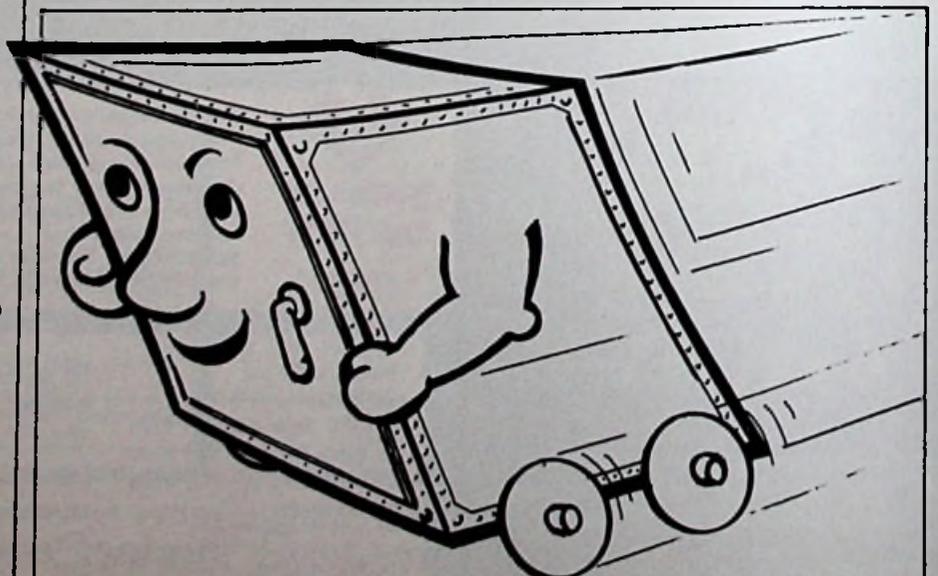
Compiled programs also have the advantages of speed of execution, security (no one can modify the program easily), and privacy (no one can have a look at your source code and make judgements on your programming ability or lack of it).

The standard Zorland C compiler supports only the compact and small memory models (maximum 64k program and 64k data). Programmers who require the "full memory" model support (maximum 1Mb program and 1Mb data) will need to purchase the Developers' Upgrade Kit, costing an extra £19.95.

Disc 1 contains the compiler itself, header, library and run-time files, as well as some demonstration utilities and installation batch files.

A word of warning here: Running the

*Does low price mean low quality?
Ken Clarke
evaluates a new C
from Zorland.*



"Compiled programs have the advantages of speed, security and privacy".

	Source Code	Object code	Final Size
Floating point .EXE file	1220	428	17712
Floating point .COM file	1220	428	17075
Integer only .EXE file	1220	428	15264
Integer only .COM file	1220	428	14631

Using different link options can vastly affect the size of the program produced, as these figures show. They were obtained from the standard C benchmark, the Sieve of Erastosthenes.

Figure I. Benchmarks

installation procedure will re-write your CONFIG.SYS and AUTOEXEC.BAT files, something which can be particularly annoying for hard disc users.

Disc 2 contains example programs, starting with simple printing and building up to using structures.

It also contains what is termed a WordStar-compatible editor – frankly a bit of a joke. You can move around the screen with the cursor keys and use block commands (move, copy, read, delete), but that's about it. No PgUp, PgDn, beginning/end of line, delete word, or other WordStar features.

For those PC owners who probably will not be using RPED, which in any case takes up far less space than the editor. Ostensibly the editor is included off the package, but as it is not used for the facilities provided it is hard to guess that the real reason for its inclusion was that it was written in C, and so was easy and cheap to implement.

If Zorland C needs rounding off, a much more serious sharp edge requires attention – the lack of a Linker utility.

Basically a Linker takes the compiled object code modules and links them to the run-time routines to make a directly executable .EXE or .COM file. The manual glibly states that the Linker comes with your MSdos disc. Well, not in the case of the Amstrad PC.

LINK.EXE comes free with the IBM PC on a supplemental Dos disc, but it can't be obtained separately (except by taking the rather drastic step of buying MSdos in its IBM guise).

If you are a serious programmer you probably already own, or at least are thinking about getting, a Macro-assembler (such as Mac-86) which will come with a version of LINK.

If not (and even if so), the future looks bright.

Aware of the problem, Zorland has decided to produce its own missing LINK which will be available as an optional extra at only £9.95. It is claimed to work four times faster than the MSdos equivalent.

Even discounting the current omission of a Linker however, Zorland is a good full specification C compiler. Kernighan and Ritchie laid down the standard for

Compilers

Digital Research C	£290.00
Lattice C v2.15	£295.00
Microsoft C v3.0	£290.00
Zorland C	£29.95
Zorland Developers' Upgrade Kit	£19.95

Interpreters

Instant-C	£360.00
Run/C	£75.00
Living C	£99.00
Introducing C	£99.00
Digital Research C	£290.00
Lattice C v2.15	£295.00
Microsoft C v3.0	£290.00

Figure II. C packages

the language back in 1978, and any C compiler or interpreter worth its salt follows this standard. Zorland C does.

But like natural languages, programming languages which do not evolve, die. A lot of C code has passed under the bridge in the course of the years, and the Zorland version embraces many of the new aspects of the language, including Unix-like I/O libraries and utilities.

As well as the standard input/output and Dos support libraries, additional libraries are supplied covering maths functions, type checking and time and date routines.

There are other extras, too. At run-time compiled code looks to see if there is a 8087 maths co-processor on board – that's what the big empty socket is for on the PC's motherboard – and if there, it is used for all floating-point calculations.

A routine is included to expand wildcards in command lines. Setting the argument counter (argc) to the number of files matching the file specification means that the argument vector (argv) will contain an entry for each filename.

While on the subject, printing an argument vector one higher than the number of arguments produces the message "Northwest C by Walter Bright". Did Zorland not consider the

name Northwest C suitable for the UK market, or is there some other reason for the change?

The advertising blurb claims Lattice C compatibility, although that is qualified in the small print as meaning compatibility with third-party libraries. This is in any case immaterial. The actual command line switches are not the same, but in practice that makes little difference.

One of the major advantages of Zorland C is that it compiles reasonably compact code, giving smaller object and executable code than some of the more established C compilers – Lattice for example – though not as small as the latest release of Microsoft C.

The package comes with a manual which is really rather good despite its comparatively short length (60 pages). There are some obvious typographical errors and paste-up mistakes, but it is generally well written.

It does assume some knowledge of Dos (referred to throughout as MSdos, though the compiler works quite happily under Dos Plus) but experienced C programmers will require no further documentation.

Most novice and intermediate users will want to buy the C programmers' Bible: The C Programming Language, by Kernighan and Ritchie (Prentice-Hall, 1978) or one of the good guides currently available from Sybex (UK agents Longmans).

All in all then, Zorland C is excellent as it stands, and will be even better when the in-house Linker is released.

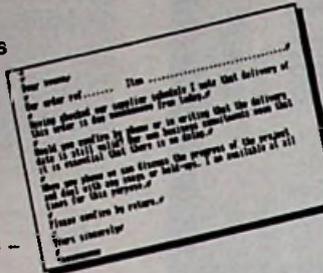
Low price does not in this instance mean a diluted version to excite the taste buds but leave you thirsty for more. It means a fully-fledged C implementation that is actually an improvement on some of the more expensive packages from the mega-corporations of America.

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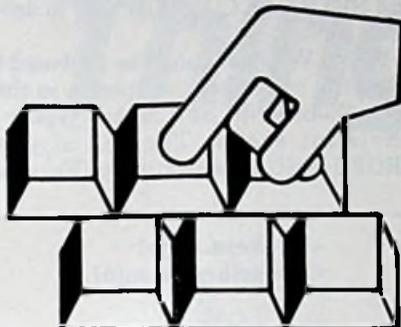
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APC

PROGRAMMING



Step up a gear with drive M

The CP/M Plus operating system provided with the PCW8256 enables it to run a large number of commercial programs, from databases to spreadsheets and even other word processors.

However these programs usually assume the host computer has two disc drives, one for the program and one for the data disc. Unless you have an extra disc drive or a PCW8512 you may think you have a problem, but Amstrad has thoughtfully provided a solution in the form of drive M, the silicon disc.

To configure programs to run from drive M may seem rather daunting to the average business user as it requires a knowledge of the various CP/M utilities.

In fact it is a fairly simple process, and even if you have a two disc system there are usually significant speed advantages where programs use overlays such as Supercalc 2.

As an example we'll look at the steps required to run Supercalc 2 from drive M. As well as reducing the time for help messages to appear, loading spreadsheets from a data disc will not require disc swapping with the program disc. The procedures to do this should also apply to other programs such as NewWord, Cardbox and such.

The first step is to load the CP/M utilities disc, the reverse of the Loco-Script disc. We will have to transfer a number of utilities to drive M for later copying on to the Supercalc disc. Enter:

```
PIP M:=*. * [c o]
```

This command allows us to copy every file from the disc to drive M, but before it copies each file it gives us the option of saying whether we want to copy or not.

The utilities we want to copy are J14CPM3.EMS - or J10CPM3.EMS if you have an early version of the disc - SUBMIT.COM, PIP.COM, SETDEF.COM and PROFILE.ENG. When these are displayed answer Yes and No to everything else. When you have finished check that drive M has the copies on by entering:

```
DIR M:
```

If you missed one enter:

```
PIP M:=missing.file [o]
```

and copy the missing utility. Before we copy from drive M to the Supercalc disc we have to rename PROFILE.ENG to

PROFILE.SUB, so enter:

```
RENAME M:PROFILE.SUB  
=M:PROFILE.ENG
```

Now after entering:

```
DIR M:
```

you should see PROFILE.SUB instead of the PROFILE.ENG you saw before.

The next step is to copy everything from drive M to the Supercalc disc, so insert this disc into the drive. Enter:

```
M:
```

followed by:

```
PIP A:=*. * [o]
```

Note this time we are not including the "c" option inside the square brackets as we want to copy everything from drive M to drive A. Using the asterisk wildcard character saves having to type the name of each utility we want to copy.

Now enter:

```
A:
```

and then:

```
DIR
```

and you should see the utilities on the disc along with the Supercalc files. If you made your copy of the Supercalc distribution disc as described in the Supercalc documentation you will see after typing DIR the message "system file(s) exist".

These are the files which we want to transfer to drive M so replace the CP/M utilities disc and enter:

```
SET A:=*. * [DIR]
```

When prompted insert the Supercalc disc and press any key then type:

```
A:
```

then:

```
DIR
```

and you should now see all the files on the disc. Make a note of what these are - you should see these five files along with those you copied from drive M.

```
SC2.COM  
SC2.OVL  
SC2.HLP  
SEPERC.SUB  
DATTIM.COM
```

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shows how you
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The next step is to edit PROFILE.SUB to operate on these five files. Place the CP/M utilities disc in the drive and enter:

RPED

When this program is loaded place the Supercalc disc in the drive and press the fl function key. For "name of existing file" enter PROFILE.SUB, and for "name of new file" just press Return as we wish to preserve its name after the edit.

The screen should clear to show the contents of the PROFILE.SUB file, with the editing functions shown on the top line. The screen should look something like this:

```
setdef m:,* [order=(sub,com)
temporary = m:]
:ip
m:=basic.com[o]
m:=dir.com[o]
m:=erase.com[o]
m:=paper.com[o]
m:=pip.com
m:=rename.com[o]
m:=setkeys.com[o]
m:=show.com[o]
m:=submit.com[o]
m:=type.com[o]
```

Using the Cut key erase all the files

from BASIC.COM onwards. Now type in:

```
<m:=sc2.com[o]
<m:=sc2.ov1[o]
<m:=sc2.hlp[o]
<m:=superc.com[o]
<m:=dattim.com[o]
<
m:
sc2
```

Press the Exit key to save the new version of PROFILE.SUB on to the Supercalc disc. That's it - go ahead and press Shift+Extra+Exit all at once and the Supercalc disc should now boot up and display the opening page.

Press the ? key to see just how much quicker the help message comes up. You can now remove the Supercalc disc and put in your data disc without having to constantly change it. When loading and saving files always prefix the filename with a: for example:

a:MORTGAGE.CAL

From now on to run Supercalc all you need do is switch the machine on and insert the disc and it will boot up automatically. For inexperienced users this is a great boon. Running programs in this way is known as turnkey operation.

To summarise the five steps - firstly copy J14CPM3.EMS, PIP.COM, SETDEF.COM, SUBMIT.COM and PROFILE.ENG from the CP/M utilities

disc to drive M. Then rename PROFILE.ENG to PROFILE.SUB. Copy these files to your working copy of the program disc.

Then read the directory of the program disc. If system files exist use the SET utility to allow these to be listed. Make a note of these files. Finally edit PROFILE.SUB using RPED to copy these files over to drive M.

Users of NewWord will be able to run it from drive M following these steps. They might also like to copy the KEYS.WP and SETKEYS.COM files over to drive M as well.

KEYS.WP configures the keyboard to allow the cursor keys to operate as they do in LocoScript and makes typing a whole lot easier. The end of your PROFILE.SUB file should look like this:

```
<m:=keys.wp[o]
<m:=setkeys.com[o]
<
m:
setkeys keys.wp
nw
```

A final word of warning. This method will only work if all the files will fit on to drive M. If they are too big consider upgrading to a second disc drive or adding an extra 256k to drive M.



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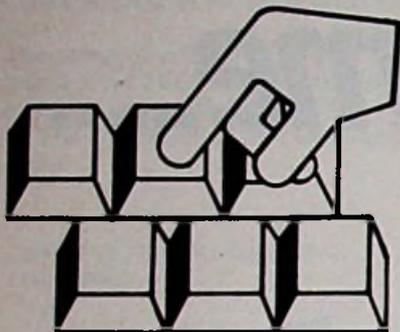
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SETSIO

Your key to contact with outside world

On the PCW SETSIO.COM is a CP/M utility provided for use with serial ports which conform to Amstrad's specifications.

A brief understanding of the functions of an RS232 interface is required in order to appreciate this utility.

In an ideal world 8 bit data from a computer's 8 bit "parallel" bus could be sent down eight strands of wire and input to another device - a printer, modem, and so on - with ease.

Unfortunately, due to an effect called data skew, it is inappropriate for the 8 bit output of a computer - that is, eight pieces of wire - to be extended much above a metre, since some electrical data will become out of sync with other data running along the 8 bit bus.

This effect is due to the fundamental laws of physics which dictate that electrical signals of different frequencies travel through conductors at slightly different speeds.

Coupled with almost imperceptible conductive differences between two otherwise identical strands of wire, data skew applies itself with gusto to parallel computer outputs, causing problems with even short runs of eight-way cable.

To solve this problem early computer users devised a means of sequentially transmitting data down a two wire cable, each bit being transmitted down the wire in turn.

To make sure that the data which arrives at the distant end of the wire is intact, a marker is placed at the beginning and end of the 8 bit stream of data - a start and stop bit.

Add a sum and difference check bit - a parity bit - and the recipient device can be sure that it is receiving data which is both intact and in the correct sequence.

That, at least, is the theory - now for the practice of a serial data interface.

When a character is typed or otherwise entered into a computer, it is expressed in binary - base 2 - notation. The letter A, for example, is expressed as 10000101 in 8 bit binary notation.

In order for a character to be

successfully transmitted over a serial/RS232 interface, it must be transmitted as a series of high-low tones, directly analogous to the zeros and ones used in the binary notation.

Using this two-state convention, the letter A (Ascii 65) is converted as follows:

High	Low	Low	Low	Low	Low	Low	High
1	0	0	0	0	0	0	1

This is an 8 bit sequence which is used in many serial applications owing to its correspondence with the eight bits of most popular computers.

As mentioned above, as well as eight data bits, a start, stop and parity bit are also added to an 8 bit data stream to verify the data's integrity. Such are the vagaries of the computing world that some computers use seven data bits to transmit a character.

Lord knows who invented such a convention, but thanks to this, serial data transmission is subject to the following variances:

- Data bits: Seven or eight.
- Start bits: None, one or two.
- Stop bits: None, one or two.
- Parity: None, even or odd.

The process of setting all the above conventions is called setting protocols. It is also known by other names, including handshaking, though strictly speaking handshaking refers, not to software, but to hardware control, and it is used in that sense in SETSIO.

Whatever you call the dataflow procedure, if just one of the variables is set incorrectly at one end, the resultant effect is that the data will arrive at its destination corrupted in some way.

And this is where SETSIO.COM comes in. It allows even the most novice of users to interact directly with the heart of the computer to control all the above variances in an easy to understand menu system.

SETSIO may sound an odd name for a program, but if you think about it for a

David Osborne concludes our guided tour of the CP/M utilities by looking at SETSIO.COM.



moment you realise that it is an abbreviated mnemonic for SET (S)ystem (I)n and (O)ut ports.

Running SETSIO.COM – it is on side two of the first PCW system disc – gives the following on the screen:

```
A>SETSIO
Baud 9600 Bits 8 Stop 1 Parity None
Xon off Handshake on Interrupt off
```

Reading along the line, we can surmise the following:

- Baud rate: The rate at which data is being transmitted is set to 9600 bits per second (approximately).
- Bits: 8 bit data convention is being used.
- Parity: None – no parity error checking is being used.
- Xon off: Flow control (see below) is not being used.
- Handshake on: Handshaking is enabled.
- Interrupt off: The computer's ability to deal with incoming data while carrying out some other process is disabled.

The notorious word Xon relates to a convention used in computer communication called flow control.

It refers to being sent down a serial link data to be processed in some way in order to fulfil a useful function. In this context it may be displayed on screen, written to disc or memory or printed.

All these transactions take time and, in order to slow things down so that the distant end of a serial link can cope with the data, a signalling convention called Xon/Xoff is used.

When things get too much at the distant end of the link the receiving device says: "Hold it for a moment while I catch up". This is called an Xoff signal.

When the distant device has spare capacity to cope with incoming data it signals to say "Ok to send more data down the line". This this is called an Xon signal.

By adding suffixes to the SETSIO command on the PCW, the various parameters can be altered. Thus, typing in:

SETSIO RX1200

changes the rate at which data is received to 1200 baud. Similarly:

SETSIO STOP 2

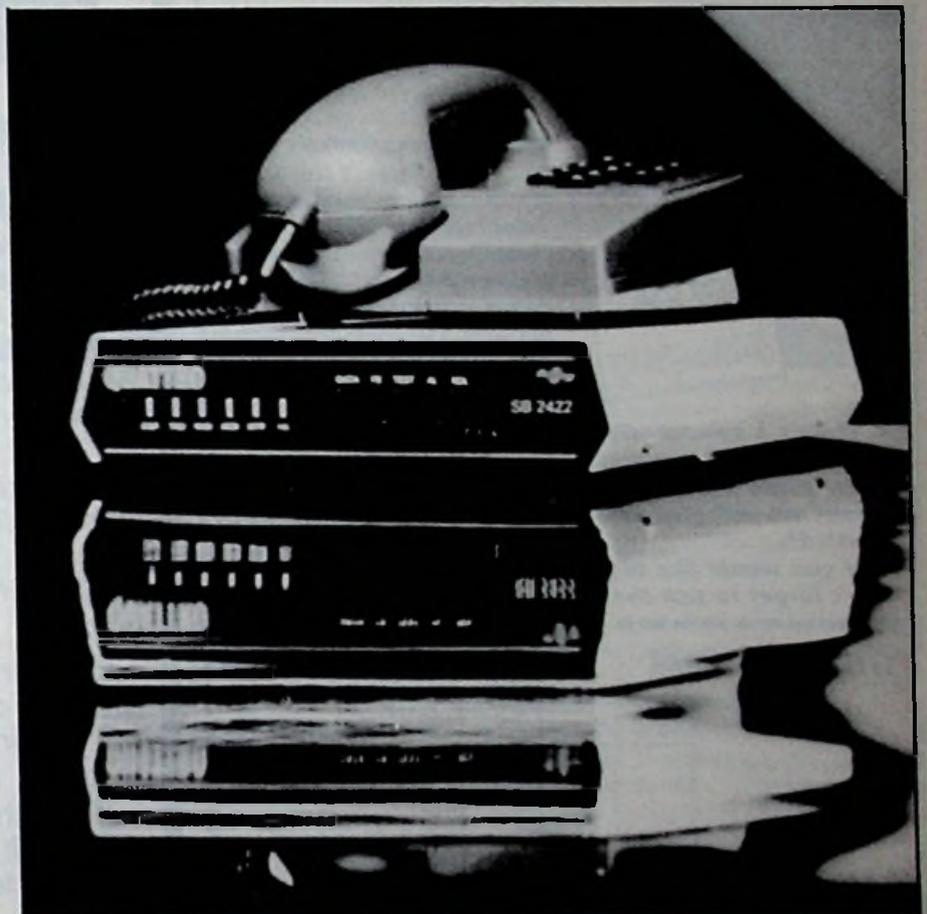
changes the number of stop bits used in the transaction to 2.

Command suffixes may also be chained together on one line like this:

**SETSIO RX1200 TX75 BITS 7
PARITY EVEN STOP 1**

Parameter	Name	Short name	Option
Receive rate	Rx	R	50, 75, 150, 300, 600, 1200, 2400, 3600, 4800, 7200, 9600
Transmit rate	Tx	T	50, 75, 150, 300, 600, 1200, 2400, 3600, 4800, 7200, 9600
Character size	Bits	B	5, 6, 7, 8
Stop bits	Stop	S	1, 1.5, 2
Parity type	Parity	P	Odd, Even, None
Xon state	Xon	X	On, Off
Handshake state	Handshake	H	On, Off
Enable time sharing	Interrupt	I	On, Off

Figure 1: SETSIO parameters and options



This command changes the serial link parameters to:

- Receive rate: 1200 baud.
- Transmit rate: 75 baud.
- Seven bit data transmission.
- Even parity.
- One stop bit.

That, in a nutshell, is what SETSIO.COM does on the PCW – and most CP/M machines. It sets the various parameters of the data links to the outside world.

In Figure 1 you'll find the complete list of all the options and parameters open to you in SETSIO.

Finally, once you become proficient in the use of SETSIO conventions, you will find that several of the commands may

be abbreviated. For instance:

SETSIO R1200 T75 B7 P EVEN S1 achieves the same as the previous example.

Incidentally this example represents the correct protocols necessary for a modem link to Prestel, BT's public viewdata network. You may find this convention used on some other viewdata networks. When in doubt as to the conventions used refer to the system instructions.

In the case of other computers and printers a quick look at the relevant manual will often save you several hours of frustration trying all the combinations applicable to the SETSIO commands.

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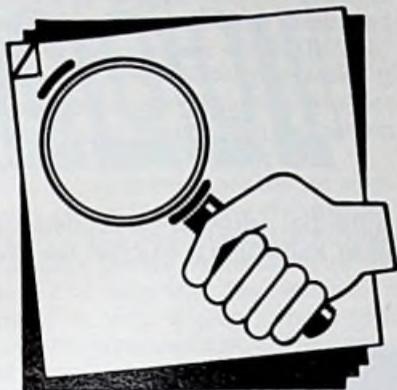
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REVIEW



A print shop on your desk

Hardly an issue of a computer magazine goes by without some mention of desktop publishing. Just what this wondrous new jargon phrase means is a considerable mystery to many, while to others it is the best thing to happen on a micro.

Desktop publishing, as it was originally conceived, was the action of using computer hardware and software to by-pass all the tedious, mechanical stages of typing, correcting, editing, assembling and, finally, producing printed material.

There have been electronic publishing systems for many years but they were, and generally still are, expensive in the extreme. Apple's Macintosh, coupled with the new generation of "page printers" made the process possible at a cost within the reach of thousands of individuals rather than a select few.

The device we call a page printer, by the way, is more usually referred to – much more excitingly – as a laser printer. But as page printers don't all use laser technology we'll stick with the proper term.

The reason that the Macintosh, hardly a favourite among the business community, has been so successful in its guise as a publishing system is due to the fact that it was the first to provide a common user-interface for all its software. This means that it is generally easier to use, and data from one program can be transferred more simply to another, a feat requiring skill and patience on machines like the IBM PC.

Add to this the fact that Apple was the

first and, until very recently, the only supplier to offer a complete system, and its success is no great surprise at all. That dominance is now being challenged as PC manufacturers slowly come to terms with the potential market for desktop publishing.

Basically four elements are required before a system can even begin to be considered as a desktop publishing tool.

- A computer with a graphics capability, preferably monochrome and as high a resolution as possible.

- An operating environment which allows simple and effective data transfer between programs. This is standard on an Apple Macintosh, but on PCs you need software such as Gem or Windows to achieve it.

- A page printer, and ideally one with a page description language built in (but that's not completely essential as we'll see later).

- Software that can run under the environment manager and allow the results of programs such as word processors and graphics packages to be merged to produce results on the page printer.

As far as the software is concerned, in the first instance the potential buyer must look to see if the program offers certain important capabilities.

Does it have a WYSIWYG mode or – to put this into English – do you see on the screen exactly what you'll get on the page? Can it read text files from a word processor and pictures from a graphics package? Does it allow graphics to be

Henry Budgett delves into the world of Desktop Publishing.



PC



Adding captions to a digitised image in Fleet Street Editor

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- *enabling communication with all the major online services* such as Prestel, Micronet, Easylink, BT Gold, Microlink, One-to-One, etc.

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scaled up or down to fit? Can the text and graphics be moved around once they have been placed on the page?

If the answer is no to even one of the above then the product is not truly providing a replacement for the layout artist - the human being who normally does page make-up.

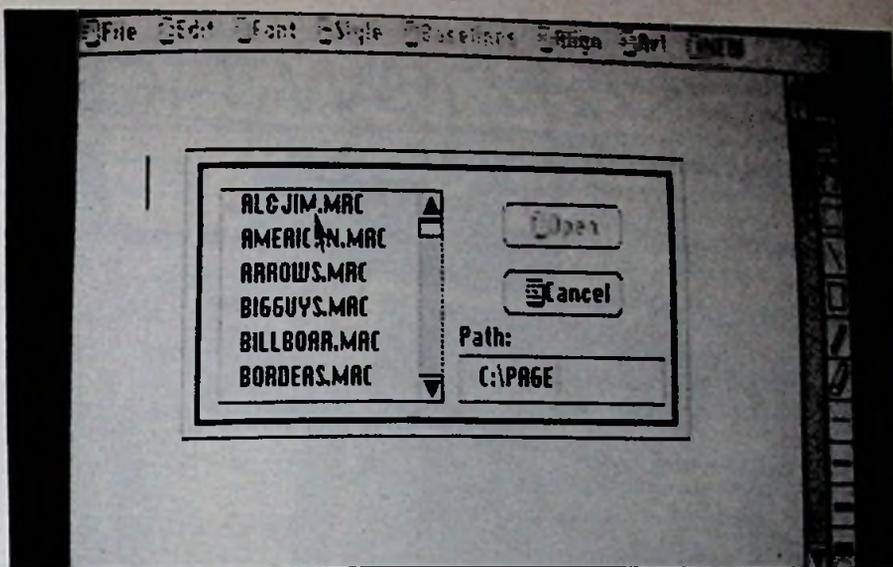
Several of the products around today do not meet the requirements. But for many people all that will ever be needed is a program which provides word processing with the capability to get decent quality print out of a page printer. There is apparently much to choose from and some, but by no means all, fit the bill.

The key to almost all the page make-up software problems is to discover whether the program supports a page description language.

Here the program describes, in step-by-step terms, the process of constructing a page, and passes these instructions to the page printer which recreates the image. If it does, then the product, in conjunction with a page printer that speaks the same language, will be a great deal more powerful than one that doesn't.

Currently two page description languages are getting all the attention - PostScript, adopted by Apple and many other hardware and software companies, and DDL, recently taken up by Hewlett Packard.

Page description languages are currently a hot topic, with much being said about the relative strengths and weaknesses of the various offerings. In fact, the user couldn't care less about the details of a piece of software as long as it doesn't matter which one is used. The most important consideration is whether it is widely supported by both hardware and software producers, so giving a choice rather than a single option. Still, page description languages are a useful way of detecting the desktop



Selecting a file in Fleet Street Editor

publishing bore!

Desktop publishing, as far as the user is concerned, is really the action of producing documents that look as though they have been professionally designed and produced by traditional methods.

The software used is, by and large, fairly irrelevant. The important thing is to establish just what the end result is to be and then find the right software. Attacking the problem from the other end can be expensive and time consuming involving skills which the artistically untrained user is unlikely to have.

If all that is needed from the computer system is a means of generating high quality text output then settle for a word processing package that can talk to a page printer.

There are several - Wordcraft, Microsoft Word, WordPerfect and certainly more to come. All can converse quite happily with one or more of the common page printers with or without the help of a page description language.

Should the requirement be for text with the occasional graphic such as a bar chart or line drawing, many will look after this as well.

It is only when you move into the realms of complicated, multi-column pages which have several different sizes and styles of print, with perhaps some photographs as well, that you really need to worry about page make-up software.

Once again, there are many names to choose from, but it is at this point that the design of the Amstrad PC starts to interfere. Because of the restrictions placed on adding high-resolution display cards or monitors, much of the products on sale will not operate. Limiting oneself to just the products which run on the standard graphics card, be it colour or monochrome, reduces the options to a mere handful.

Two programs which are virtually guaranteed to work, however, are Fantasy and Fleet Street Editor (which to all intents and purposes is the same as Clickart Personal Publisher). While Fleet Street Editor is much more of a page makeup program, than Fantasy, they both produce roughly the same results at the end of the day.

A product well worth noting that definitely isn't a page make-up package in the terms described here but which does a better job when it comes to producing newsletter pages and so on is Newswriter. This should also work perfectly happily on a 1512 system as it makes no special demands on graphics presentation.

Unless someone can crack the problem of how to incorporate higher quality displays and graphics cards in an Amstrad PC it is unlikely that the machine will figure largely at the page makeup end of the market. In most cases the processing power required is that of an IBM AT type machine with a Hercules or EGA graphics card, so until Amstrad come out with the next generation machine this aspect of desktop publishing will have to wait.

There is, however, nothing to stop the PC1512 being used where either text on its own or simple text and graphics from

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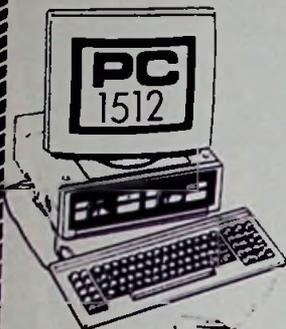
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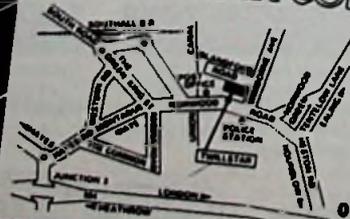
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REVIEW



Databases come in all shapes and sizes, many set up for specific applications. Barry Pickles examines a package aimed at video shops.

Keeping tapes on disc

Increasingly we are seeing packages being written for specific applications sold into specialised areas of the Amstrad PCW market. This vertical marketing is especially evident in the world of video rental.

You may not be aware of it, but video rental shops have to keep a sizeable number of records. As well as details of individual members, they also keep records of their films, how much each film has earned in rental charges and how many times each film has been rented.

The reason for this is simple enough. Video rental is all about cash. Each outlet has fixed overheads – wages, building rent, and so on – as well as the cost of the films themselves. A popular film can cost as much as £65.

In order to be profitable, the shop has to rent out enough titles at between 50p and £2 a time to more than cover its overheads. This means that films which are not earning their keep must be identified, so that room can be made for more popular titles.

The proprietor who's really on the ball will also know the regular renters from the casual, and will have some idea of their tastes, which he will reflect in the titles he stocks.

All this adds up to a fair amount of paperwork, but in a cut-throat market like video rentals (just count the number of shops or garages in your area that stock videos) only those that do their homework survive.

Computer aid

Videogem from Gemini runs on the PCW range only. On a single-drive machine record space is limited, so a two-drive system is preferable. The package is supplied with the instruction manual on a single disc. From the same disc you must create a working copy as a

start-of-day disc.

When you run the system you are presented with the main menu shown in Figure I. On a newly-installed system you will first need to use options 3 and 4, to create your database. Figures II and III – the member and film data editing screens – illustrate the range of information which is kept.

You may re-edit any record at any time but you should note that there is no password protection – this might be important if the system is to be used outside your control.

As films are issued and returned via options 1 and 2, all the related records are updated, so that recalling members' records shows any overdue payments and keeps track of the last eight titles each has hired.

Likewise, the film record shows the last three hirers of a tape and lists the films that are out on hire – recallably the system will not allow a film to be hired out if it is on the hire list, or be returned if it isn't.

It is normal in video shops to refer to films and members by numbers and this system adopts the same practice. The header display on each screen shows the number of the last member and film dealt with on that day, as well as the next number available for new members/films. The utilities menu – shown in Figure IV – allows you to search the database by various parameters, useful if you forget the numbers.

Printing Reports

So far, all reports have been generated to the screen. The utilities menu allows you to generate more reports, and this time to the screen or the printer.

The first option produces a report of a day's transactions. This shows who hired what, how much the rental charges were,

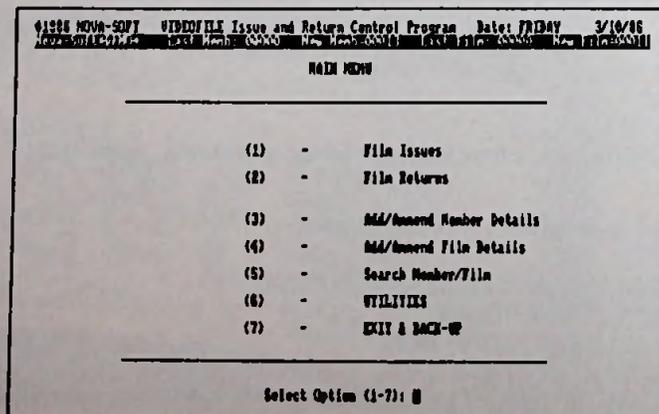


Figure 1: Videogem main menu

PCW

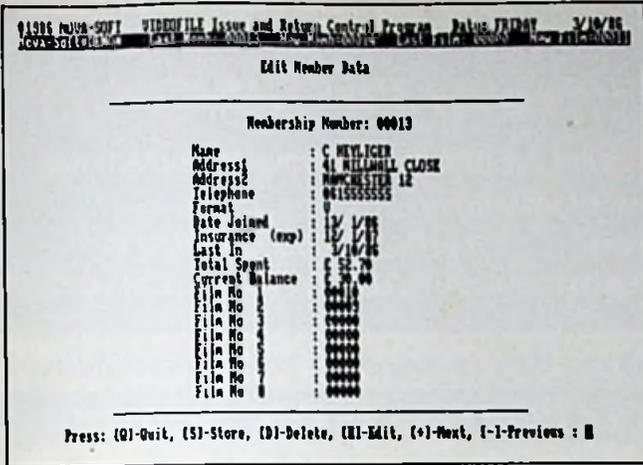


Figure II: The member editing screen

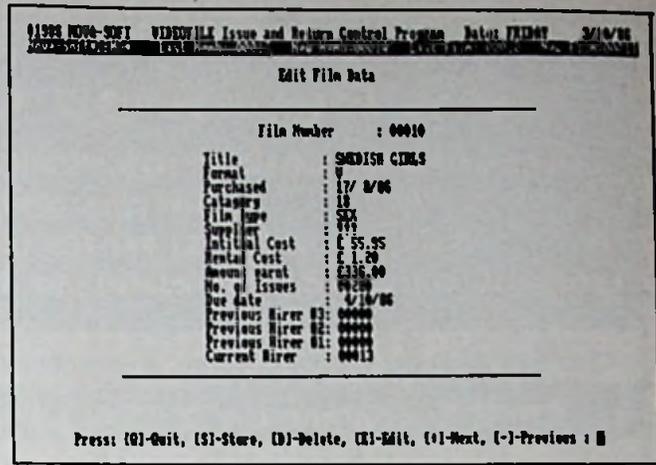


Figure III: The film editing screen

and produces summaries of the cash situation, including any shortfalls.

The system stores these transactions by day rather than date. This means that if you asked for a report of, say, Thursday's transactions, it will produce a report of the last Thursday that it was used, whatever date that happened to be.

It also means that you may only go back over seven days' actual transactions, so it is very important to keep the printouts.

Option 2 lists all your current members, when they were last in, how much in total they have spent at your shop, any balance on their account and what film format they use.

Option 3 produces a similar list of all your titles and shows how much each has earned, who has got it and when it's due back, the format, and the number of times that it has been hired. Normally this list is in numerical order, but option 4 produces a list of the top 20 in order of popularity.

Option 5 allows you to put a special marker on a member's record. This can be used to indicate whatever you want, for instance to show that this member should only be allowed one film per visit.

Another marker is set to act as a record lock which will make the system refuse to

issue a film to a member until the lock is removed. In either case these markers will be displayed whenever that member's record is accessed, including during the issue and return procedures.

Option 6 provides for film reservations. Any film on this list will be issued only to the member who reserved it. Films which are reserved but not actually taken by the member will remain on the list until deleted.

Finally option 7 allows you to re-index member or film lists, closing up the gaps where records have been deleted. I

suggest that you think hard before using this option.

And that's the system. I found it very easy to use and, once the working disc has been created, quite suitable for an inexperienced operator.

The system is well error-trapped and has nice prompts. It produces a range of reports that are very useful to a video shop and the larger the business the more they are likely to need this kind of system.

At the end of the day it is, of course, a standard database, but then that applies to most customised retrieval packages in a vertical market.

What you pay for is not so much the program, but the specialised knowledge of the market's requirements that has been programmed into it. Certainly, Videogem seems to have all the necessary ingredients to make it a valuable and worthwhile tool.

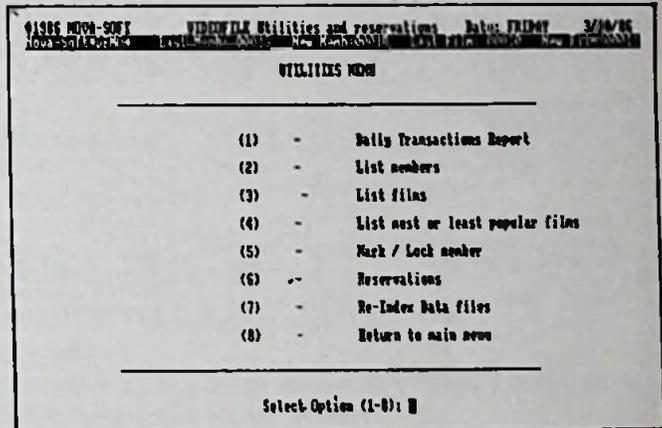


Figure IV: The utilities menu

Daily Transaction Report For TUESDAY 19/ 8/86			
Member No.	File No.	Rental.	Due Back.
00001	00001	£ 1.50	20/ 8/86
00001	00005	£ 1.50	20/ 8/86
00001 Total rent		£ 3.00	Total Charged £ 3.00
0001E Total rent		£ 0.00	Total Charged £ 0.00
0001E	00008	£ 1.00	
0001E	00003	£ 1.50	
0001E	00008	£ 1.50	
0001E	00004	£ 1.50	
0001E Total rent		£ 5.50	Total Ch

Listing Film Details						
Number	Title	Earned	Hired	Due back	Format	No of Issues
1	00010 SWEDISH GIRLS	£ 336.00	00013	17/10/86	V	00280
2	00003 NO SURRENDER	£ 3.00	00013	17/10/86	V	00002
3	00003 LAST STARFIGHTE	£ 3.00	00002	18/ 8/86	V	00002
4	00001 RAMBO	£ 1.50	00002	18/ 8/86	V	00002
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8	00004 DEATH WISH II	£ 1.50	0001E	0/ 0/ 0	V	00001
9	00003 KARATE KID	£ 1.50	00002	18/ 8/86	V	00001
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11	00011 Deleted or Blank File					

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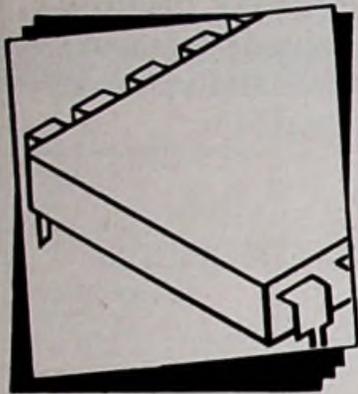
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Open heart surgery on the PC1512

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The bad news is that there's no simple way of explaining the enormous complexity of the 1512's engine. But for those interested in at least getting an idea of what happens when it is running, here's an overview of the heart of the machine.

The heart in this case is a micro-processor chip, that part of the computer which manipulates data, performs calculations, and so on. The processor in the 1512 is Intel's 8086 running at 8 MHz - in other words pulsing eight million times a second.

The internal structure of a processor is called its architecture. And for a machine code programmer, the most important components of processor architecture are the registers, which are electronic devices for storing and retrieving information. They accept information, hold it and transfer it under the direction of the processor.

The 8086 has a total of 14 registers, each capable of storing 16 bits of information (bit is short for BInary digiT, and is the smallest unit of information). Each bit can be set (numerically 1) or clear (numerically 0). A 16 bit register may hold any whole number from 0 to 65,535.

Apart from the 14 registers, of course, the 1512 has 512 kilobytes (512k) of memory. (1 byte is 8 bits; 1 kilobyte is not 1000 bytes but 1024 bytes.) So what is the difference between a register and an ordinary byte (or two) of memory?

Well, information may be accessed more rapidly from registers than from a memory cell, largely because memory, being external to the processor, has to be accessed via what is known as a bus transfer. The bus is the common data pathway to which the processor, the memory and all peripherals, such as input and output devices, have access.

Perhaps more importantly, registers have direct contact with other com-

ponents of the processor, such as the arithmetic and logic unit (ALU). The ALU handles arithmetic computations, such as addition and subtraction, and logical operations, such as comparisons of values.

Not all the registers in the 8086 serve the same purpose. For example, four accumulator registers, named AX, BX, CX and DX, are used for arithmetic calculations. Each of these 16 bit registers may be employed as two separate 8 bit registers.

This is an important factor in speeding up calculations, since it allows operations such as counting in the limited range (0 to 255) to take place without reference to the full 16 bit register.

Each of the accumulator registers also has a specific role in the functioning of the processor.

AX is the register used for all input and output operations. That is, all values input to the computer - for instance, via the keyboard - appear initially in AX, and all values to be output are loaded into AX to be sent to the relevant destination (screen, printer, disc drive and so on).

BX is also called the Base register, and is used in the calculation of memory addresses, that is to say to direct operations to particular parts of the computer's memory.

CX is the Count register, used to control such things as the number of times a loop in a program is to be performed. For example, if 400 pieces of data are to be input, CX is first loaded with the value 400. The input routine is then put into operation, so that the first number is read in and stored somewhere in memory.

The value in CX is then reduced

MOV CX,190H	!load 190H into CX
ILOOP IN AX,06H	!input 16 bits from port 6 to AX
OUT DX,AX	!output AX contents to port in DX
DEC CX	!decrement CX
JNZ ILOOP	!jump if not zero to ILOOP

A simple Input/Output loop

The 16 bit 8086 microprocessor is vital to the Amstrad PC. Alan Meyer investigates its workings.



(decremented) by 1 and the result is compared with zero. If CX is not zero the loop is performed again, and another piece of data is input. If CX is zero all 400 data values must have been read in, so the program proceeds with the next instruction after the loop.

DX is called the Data register. Its special role is to identify the input or output port for some operations. For instance, when an instruction is given to output a value, the contents of DX may decide whether the result goes to the printer or the screen.

Of course, not all the operations of the 8086 will be between registers: Memory and peripherals will have to be accessed via a data bus. Intel's 8088 chip, used in machines such as the IBM PC, has the ability to address a megabyte (about 1,000,000 bytes) of memory, and is often described as a sixteen bit micro-processor.

The drawback of the 8088, however, is that it has an eight bit data bus rather than the sixteen bit data bus of the 8086. The 8086 communicates via a highway which is twice as wide as the corresponding 8088 highway, and is capable of handling twice as much traffic. The 8086, therefore, has a true sixteen bit architecture.

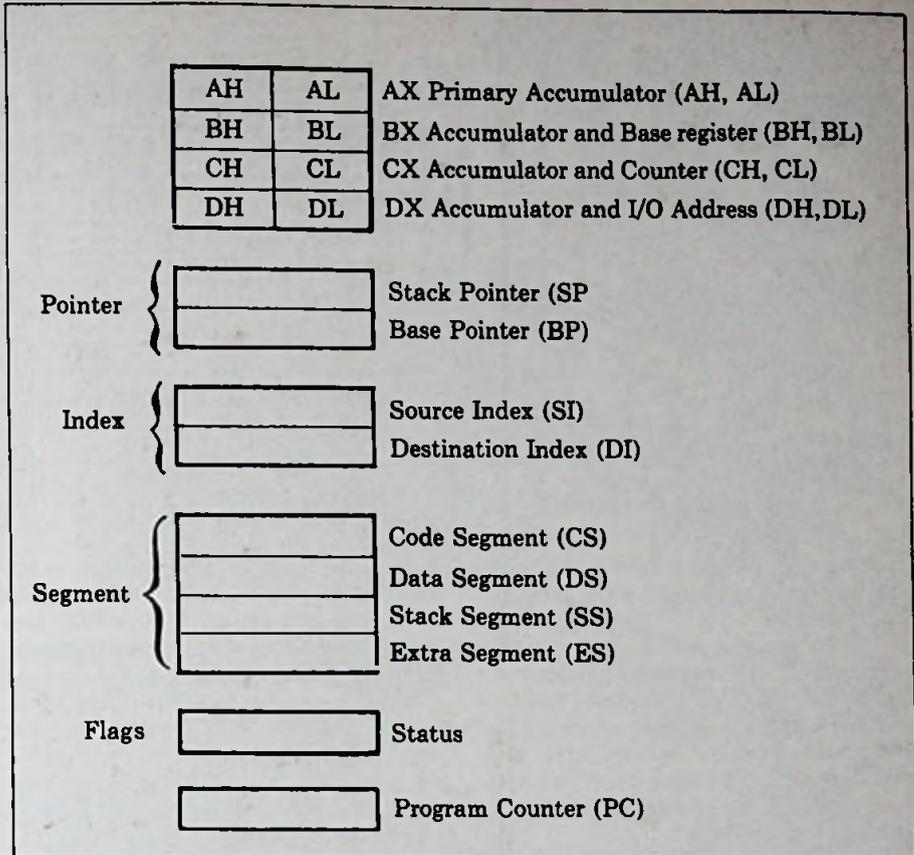
Having a powerful design is one thing, making use of it is another.

When we turn on the power to the 1512, we immediately get a response on the screen - a prompt, a mouse pointer or whatever - and when we press keys on the keyboard the corresponding letters appear.

Before we load a program from disc, or type one in from the keyboard, it is tempting to think that there is no program in the computer. However, the very fact that things appear on the screen demonstrates that a program is already at work - the operating system.

Machine code programs like the operating system are made up of a series of memory bytes which contain particular values. The contents of these memories are read in order by the processor, and different values cause different actions to be taken. Each instruction such as "load the value 400 into register CX" has an operation code (op-code) followed by a number of address fields or operands.

The processor keeps track of its position in the program by means of a



8086 registers

special register called the Program Counter, which holds the memory address of the next instruction to be executed. In general, the Program Counter points to the instruction immediately following the last one read, but some instructions manipulate the Program Counter itself, causing a branch to another part of the program.

This facility is used in the loop described earlier: When CX is non-zero, the Program Counter is adjusted to cause the loop to be executed again. When CX is zero no adjustment is made to the Program Counter and the program continues with the next instruction.

The conditional aspect of "branch unless CX is zero" is controlled by another special register called the Status register. This is another 16 bit register, but only 9 bits are used as Status flags. One of these, known as Flag Z, is the Zero status.

Z is set (that is, equal to 1) when the result of an operation is zero, otherwise Z is cleared (equal to 0). The branch

operation required for our loop, therefore, will check the Z Flag and branch only if Z is clear. Z would have been set if the decrement instruction on CX had resulted in a zero.

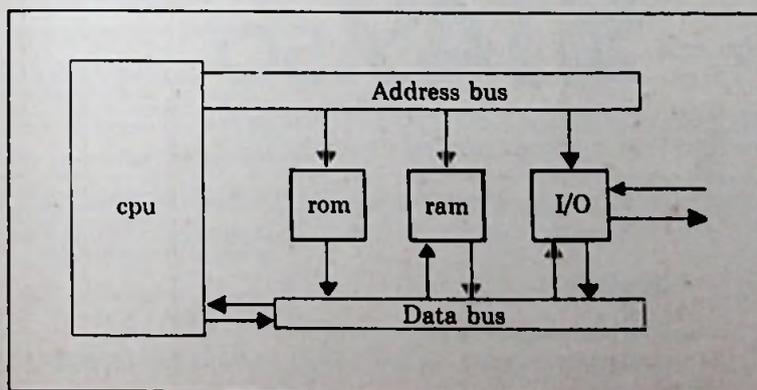
The statement that the Program Counter holds the address of the next instruction is not the whole story. It is not possible to address 512k of memory using only a 16 bit register.

A 16 bit register can address 64k of memory, so the 512k are divided up into segments of 64k, and there are four segment registers whose purpose is to record which segment is being addressed by a particular register. The Code Segment register (CS) is the one which records the segment for the Program Counter.

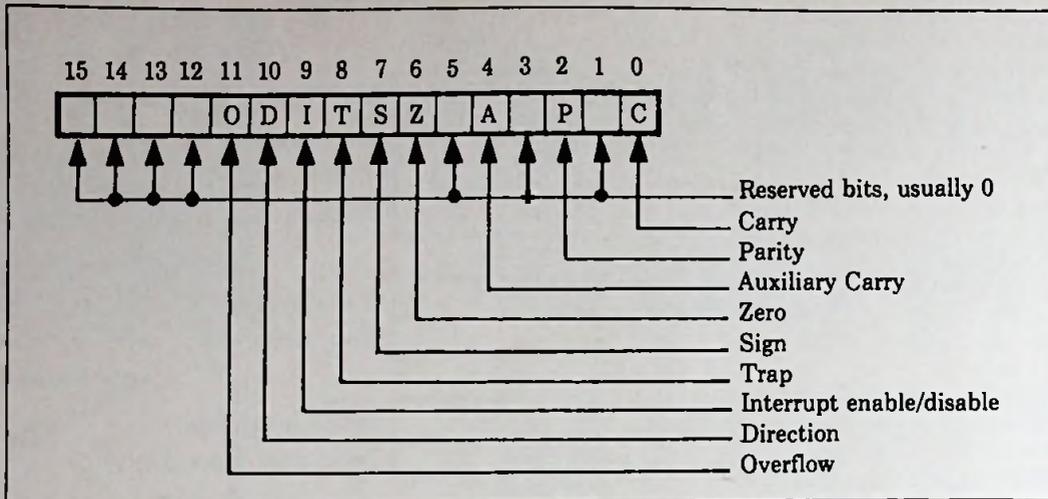
Although a microprocessor is perfectly happy to receive its instructions in the form of a series of numbers, mere humans who have the job of programming it find considerable difficulty in writing program code in this form. So we normally refer to instructions by means of a mnemonic related to the function of the instruction. For example, "decrement register CX by 1" is written DEC CX.

Programs written in this form need to be translated into the corresponding machine code bytes for the benefit of the processor. This translation is called assembling and is usually performed by a special program called an assembler. The assembler recognises DEC CX and translates it into the single byte whose decimal value happens in this case to be 73 (in binary code 01001001).

The remaining registers of the 8086 processor are mainly used to access data. Data can be stored in the memories of a micro in a variety of ways, and the best



Microprocessor architecture



8086 status register

method of organising it for a particular application is a matter for the programmer to decide.

The processor itself stores return addresses for subroutines by means of a linear sequence of memories called a stack. This is a structure in which the last item stored must be the first item retrieved. It is therefore called a last-in first-out (LIFO) structure – the items are stacked top-down.

Implementation of a stack requires an area of memory to be allocated, and a special register called a Stack Pointer (SP). The 8086 uses a stack pointer to keep track of the top of the stack. When a subroutine is called – using the

mnemonic CALL – the contents of CS and the Program Counter are pushed on to the top of the stack, before their new values are read in, and SP is adjusted to point to the new top of stack.

When a Return (RET) statement is encountered, these values are popped or pulled back off the stack and restored to CS and the Program Counter, so that execution can continue from the point at which the subroutine was called. The programmer can also manipulate the stack himself, by means of PUSH and POP instructions.

To illustrate the idea, consider that this kind of process is taking place when you call your Gem Desktop calculator

and click it off again.

In this very brief tour of the 8086 I have concentrated on the fundamental use of registers, because this is the most important aspect for a machine code programmer. But there is much more to the 8086 processor than that, and if you're interested in delving into its architecture (and you have the heart), I can recommend *The 8086 Book* by R. Rector and G. Alexy (Osborne/McGraw Hill).

**Alan Mayer lectures in statistics, and has a background in machine code programming for commercial applications.*



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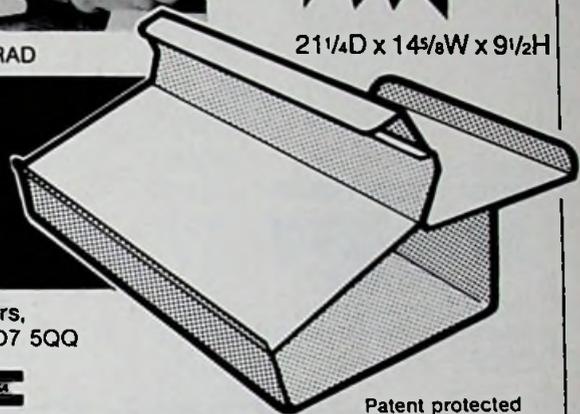
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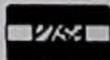
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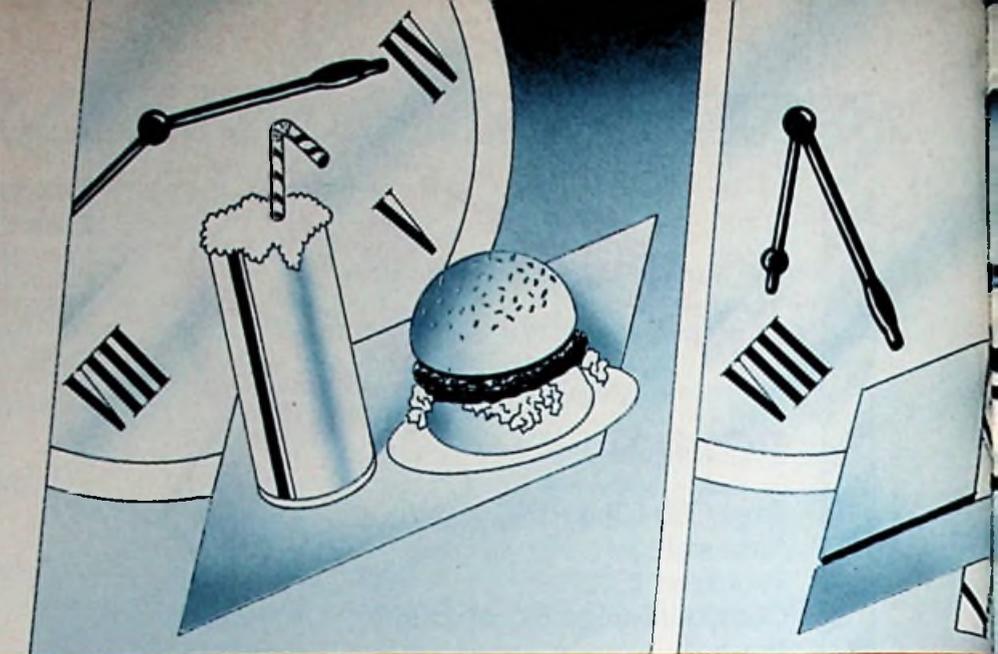
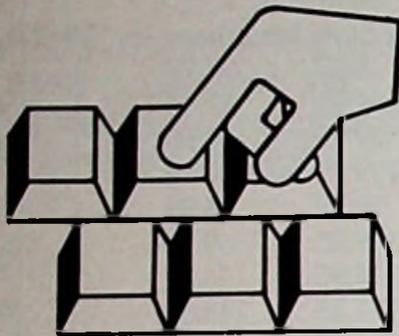
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APC

PROGRAMMING



WORKING OUT

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Of course the people who work in modern fast-food places, card shops and emporiums have their own problems. Many have to be available to pick up their infants from school, catch their Open University program, or cook dinner for their spouse. Others who are entitled to payouts from the Government have limits on the amount they can earn.

With these kinds of parameters for the time periods in which employees are available for work, and restrictions on the total pay they want to take home, figuring out work schedules can call for a computer program.

You could, of course, write one in a programming language, but if you have had the foresight to invest in a Supercalc spreadsheet package all you need is a few formulae.

First look at the sample printout of the final result. Let's suppose that this is for a work week in the life of Jackie, a part-time waitress.

Sunday is her big day. She starts at 8 am and works until 10.30 pm with two 45 minute breaks and two of 15 minutes. We'll lump all the breaks together and put the total in the Less Breaks column.

We enter 8.00 and 10.30 and 2.00. The program fills in the rest of that line. It calculates that her gross day is 14.5 hours and her net day is 12.5 hours.

On Mondays Jackie puts in only 3.25 hours, coming in at 8 am and finishing at 11.15 am

On Tuesdays she comes in at 8 am and works continuously till 5.45 pm. She probably gets a break for lunch, but

without losing any money for it. Anyway, this is merely an example of a full day without anything in the Less Breaks column.

The entries on the sample for Wednesday through to Saturday are all instances of what should happen if you make entries in only one of columns B, D or E; or if you "misuse" the column D. You should get a blank in the columns I and K. Column D records the end of a day which consists only of a morning shift.

Now we get to the interesting part. You'll note that we're entering Jackie's comings and goings in hours and minutes, but the program is converting these to percentage parts of an hour.

So at the end of the column I it can total how many hours Jackie plans on working this week.

In the last column, opposite Rate, we enter her hourly wage (£2.50) and the program calculates her weekly gross. Under that total we enter a percentage rate for deductions (taxes, insurance and so on) and the program calculates her take-home pay at both a weekly and monthly rate.

Now look at the listing. Don't let it unnerve you - much of it can be entered with Supercalc's Replicate function.

One of the limitations of Supercalc 2 is that formulae can't exceed 116 characters. However, the restriction can be overcome as follows.

If you give a column a width of zero its contents will not print out. So the formula we would have put in column I, but couldn't because of the length limitation, can be divided between columns C, F, G, H and I - and only column I is printed.

It's in column I that the program looks at what you've entered and decides whether to print a result or not. The



WORKING HOURS

formula says simply that I is blank if D and E are blank (as per Thursday in the example); or if B and D are blank (see Saturday); or if B and E are blank (like Friday); or if D and E both have entries (like Wednesday). Otherwise - and the only combinations left are shown under Sunday, Monday and Tuesday - print in column I the calculation done in H.

In column H (along with a few preparatory steps taken in columns C, F, and G) is the formula which converts the times entered in columns B, D and E (8.00 am, 11.15 am, 10.30 pm, and so on) into decimal fractions of an hour (14.50, 3.25, 9.75 ...).

Once the formulae have been entered in C4, F4, G4, H4, I4 and K4, they can be replicated down to C10, F10, G10, H10,

I10 and K10.

I suggest that initially you enter the times given in the example (in columns B, D and E) and the Breaks total (column J) to check that you get the same results and thus confirm that you have entered the formulae correctly.

Before you enter anything however, first set the following column widths: Columns C, F, G and H are zero; column A is 10; and columns B, D, E, I, J and K are at the default of 9. Also make user-defined format 1 global and apply format 2 in cell K15 only. Set the user-defined formats 1 and 2 as shown in Table I.

It's also worth mentioning that in Supercalc the # sign (entered in J13, J14, J16 and J17) prints as a £.

Format	1	2
Floating \$	N	N
Embedded commas	Y	Y
Minus in ()	Y	Y
Zero as blank	Y	Y
%	N	Y
Decimal places	2	1
Scaling factor	0	2

Table I: User-defined formats

So there you are. Jackie's employer doesn't need Basic, Pascal or Fortran to work out her part-time schedule - Supercalc handles it as easily as plain old income and expenditure.

Listing starts
on Page 106

	A	B	D	E	I	J	K
1:	sched						
2:						Less	
3:		a.m.	a.m.	p.m.	hrs.	Breaks	Net hrs.
4:	Sunday	8.00		10.30	14.50	2.00	12.50
5:	Monday	8.00	11.15		3.25		3.25
6:	Tuesday	8.00		5.45	9.75		9.75
7:	Wednesday		10.00	6.00			
8:	Thursday	8.00					
9:	Friday		10.45				
10:	Saturday			5.45			
11:	Total				27.50		25.50
12:							
13:	Rate					£	2.50
14:	Total					£	63.75
15:	Deductions Rate						20.0%
16:	Net Week					£	51.00
17:	Net Mth.					£	221.00

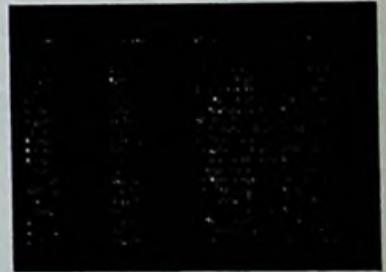
Sample printout - a working week in the life of Jackie

```

A1 = "sched
J2 = "Less
B3 TR = "a.a.
D3 = "a.a.
E3 = "p.a.
I3 = "hrs.
J3 = "Breaks
K3 = "Net hrs.
A4 = "Sunday
B4 = 8
C4 = B4-(INT(B4))
E4 = 10.3
F4 = B4-E4
G4 = D4-(D4-INT(D4))
H4 = IF(D4>0,(G4+((D4-INT(D4))/.6))
-(F4+(C4/.6)),(12-(F4+(C4/.6))
+(E4-(E4-INT(E4)))+(E4-INT(E4))/.6)))
I4 = IF(AND(D4=0,E4=0),0,IF(AND(B4=0,
D4=0),0,IF(AND(B4=0,E4=0),0,IF(AND(D4>0,
E4>0),0,H4)))
J4 = 2
K4 = IF(I4=0,0,I4-J4)
A5 = "Monday
B5 = 8
C5 = B5-(INT(B5))
D5 = 11.15
F5 = B5-C5
G5 = D5-(D5-INT(D5))
H5 = IF(D5>0,(G5+((D5-INT(D5))/.6))
-(F5+(C5/.6)),(12-(F5+(C5/.6))
+(E5-(E5-INT(E5)))+(E5-INT(E5))/.6)))
I5 = IF(AND(D5=0,E5=0),0,IF(AND(B5=0,
D5=0),0,IF(AND(B5=0,E5=0),0,
IF(AND(D5>0,E5>0),0,H5)))
K5 = IF(I5=0,0,I5-J5)
A6 = "Tuesday
B6 = 8
C6 = B6-(INT(B6))
E6 = 5.45
F6 = B6-C6
G6 = D6-(D6-INT(D6))
H6 = IF(D6>0,(G6+((D6-INT(D6))/.6))
-(F6+(C6/.6)),(12-(F6+(C6/.6))
+(E6-(E6-INT(E6)))+(E6-INT(E6))/.6)))
I6 = IF(AND(D6=0,E6=0),0,IF(AND(B6=0,
D6=0),0,IF(AND(B6=0,E6=0),0,IF(AND(D6>0,
E6>0),0,H6)))
K6 = IF(I6=0,0,I6-J6)
A7 = "Wednesday
C7 = B7-(INT(B7))
D7 = 10
E7 = 6
F7 = B7-C7
G7 = D7-(D7-INT(D7))
H7 = IF(D7>0,(G7+((D7-INT(D7))/.6))
-(F7+(C7/.6)),(12-(F7+(C7/.6))
+(E7-(E7-INT(E7)))+(E7-INT(E7))/.6)))
I7 = IF(AND(D7=0,E7=0),0,IF(AND(B7=0,
D7=0),0,IF(AND(B7=0,E7=0),0,IF(AND(D7>0,
E7>0),0,H7)))
K7 = IF(I7=0,0,I7-J7)
A8 = "Thursday
B8 = 8
C8 = B8-(INT(B8))
F8 = B8-C8
G8 = D8-(D8-INT(D8))
H8 = IF(D8>0,(G8+((D8-INT(D8))/.6))
-(F8+(C8/.6)),(12-(F8+(C8/.6))
+(E8-(E8-INT(E8)))+(E8-INT(E8))/.6)))
I8 = IF(AND(D8=0,E8=0),0,IF(AND(B8=0,
D8=0),0,IF(AND(B8=0,E8=0),0,IF(AND(D8>0,
E8>0),0,H8)))
K8 = IF(I8=0,0,I8-J8)
A9 = "Friday
C9 = B9-(INT(B9))
D9 = 10.45
F9 = B9-C9
G9 = D9-(D9-INT(D9))
H9 = IF(D9>0,(G9+((D9-INT(D9))/.6))
-(F9+(C9/.6)),(12-(F9+(C9/.6))
+(E9-(E9-INT(E9)))+(E9-INT(E9))/.6)))
I9 = IF(AND(D9=0,E9=0),0,IF(AND(B9=0,
D9=0),0,IF(AND(B9=0,E9=0),0,IF(AND(D9>0,
E9>0),0,H9)))
K9 = IF(I9=0,0,I9-J9)
A10 = "Saturday
C10 = B10-(INT(B10))
E10 = 5.45
F10 = B10-C10
G10 = D10-(D10-INT(D10))
H10 = IF(D10>0,(G10+((D10-INT(D10))/.6))
-(F10+(C10/.6)),(12-(F10+(C10/.6))
+(E10-(E10-INT(E10)))+(E10-INT(E10))/.6)))
I10 = IF(AND(D10=0,E10=0),0,IF(AND(B10=0,
D10=0),0,IF(AND(B10=0,E10=0),0,IF(AND(D10>0,
E10>0),0,H10)))
K10 = IF(I10=0,0,I10-J10)
A11 = "Total
I11 = SUM(I4:I10)
K11 = SUM(K4:K10)
A13 = "Rate
J13 = "#
K13 = 2.5
A14 = "Total
J14 = "#
K14 = K11*K13
A15 = "Deductions
B15 TL = " Rate
K15 2 = 20
A16 = "Net Week
J16 = "#
K16 = K14-(K14*K15/100)
A17 = "Net Mth.
J17 = "#
K17 = K16*52/12

```

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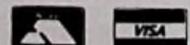
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AI? Artificial stupidity is easier

This month we introduce a new software tool, called Wisecrack, designed to be only slightly more useful than last month's Waffle Generator. Wisecrack inhabits the no-man's-land between a utility and a language. Like the others in the series it is offered in the hope that it will introduce certain important concepts into computer science.

It all started when I found a computer scientist friend of mine working on a Pilot interpreter. You may not know that Pilot is a most ingenious language designed for programmed instruction in schools and universities. Its strength is the ease with which it is coded up to deal with tasks involving the recognition of words and phrases.

My friend waved me to a chair as he compiled and linked a Pilot program. "Try it," he said, as he loaded it. A prompt appeared. "Type something in", he continued. I entered:

Anything exciting happened?
and the program came back with:

Not a lot.

I was momentarily startled. I tried:
These are hard times
and the program came back with:

The government has got
a lot to answer for

My friend chuckled and said, "I've programmed it to look through everything you type and match it with a whole range of possibilities. According to what you say, it comes back with a reply. "I've been going round listening to conversations and I have discovered that people converse along well-established tracks.

"A particular statement is always met with one of a small number of replies. It's as if the hearing of a sentence or phrase triggers off the production of a reply somewhere at the mid-brain level".

I knew something about this already. Clinical psychologists call it "cocktail party syndrome". It is possible to keep a veneer of bright chatter when the brain is almost completely disengaged. You can burble on as if by simple reflexes.

My friend, being a computer scientist, had never really considered this phenomenon. Computer science has pursued the unattainable goal of artificial intelligence without spotting how simple it is to achieve artificial stupidity.

I had to point out that you don't need the complexity of the Pilot language to simulate a dull human conversationalist. Essentially you need only take what he says and analyse it for a phrase. Having

matched a phrase, you select one of a set of stock sentences in reply.

Let's take a simple example. If you hear a remark about the weather, you usually say - with variations due to regional or cultural differences - something like "Not bad for the time of year", or "The weathermen always seem to get it wrong".

All we need for a micro simulation of a dull conversation is to have enough of this sort of material and to present it in the right order so that the specific is searched first and the general left to last.

As in normal conversation, if you get something you didn't quite understand you can fill in with a catch-all phrase such as "Quite", "There's a lot in what you say" or "Oh really". This is the approach I took with Wisecrack.

I use the same basic reasoning as underlies Scrivener and the Waffle Generator: I put all the information in a text file; the program gulps up the text and works its will on it. In the case of Wisecrack, what is required is a text file containing several lines. Each line corresponds with a phrase to match, and a selection of alternative sentences to respond with if the phrase is matched within the input.

I had to decide how to format the information. To keep things simple, I chose to use the ! character as a delimiter. The weather example might be formatted like this - in reality in one long line:

weather!Not bad for the time of year!Surprisingly cold at night The weathermen always seem to get it wrong.

You could do the same for when someone types "How do you do?" at the keyboard. In this case it would look like: How do you do?!How's!the family?!Not too bad, and you?!I'm fine OK, what about you?

The program checks what you type in to see if it contains any of the phrases in its memory. Essentially it goes through each line, takes the initial phrase terminated by the first ! character and sees whether it is within the sentence you typed in. The parser of an adventure program is much more sophisticated than this, but we're keeping things as simple as possible here.

If a match is found, one of the replies is chosen at random and displayed on the screen. If only one reply is offered, it is printed; if none, then the reply on the next line is chosen.

This is all we do, in essence. But we

This program from Andrew Clarke gives a new meaning to the man-machine interface - and computerised boredom!



really need to take it a little further to make the program more useful.

What if you wanted to check the start of the sentence that you typed in, rather than look all the way through it for a match? This may be important. You might want to specify a reply for when a What is typed at the start of a phrase or sentence, for instance:

What is the use of trying?

or:

What indeed!

But you would not want to produce the same reply if the someone typed:

I do what I like

We therefore make a rule that this simpler search takes place if you start the phrase with a [character so that:

[what ; looks only at the start of the sentence for the word what, while what ; looks throughout the whole string.

To make things symmetrical, we add the rule that the] symbol at the end of the phrase denotes that the phrase must be at the end of the sentence. what]; looks only at the end of the string.

Additionally, we will want to allow certain characters in the phrase to match any characters in the original sentence. In accordance with established tradition, we use the question mark as a wildcard. You can get carried away with this sort of thing and it's fun to hack searches about to increase their complexity. We shall resist the temptation.

However, we need to add a few more features such as macros, as we did for the

Waffle Generator. These are simply numbers preceded by a backslash. If a question is:

Did you do the crossword today, /0? and you had programmed Wisecrack with your name, then it would substitute your name for the 0.

We can also add some of the other backslash features from the Waffle Generator, simply because there's so little effort involved - and one should always pinch good ideas from other programs.

There are other important things to keep in mind when writing a program. Keep it simple at first, in order to get something up and running quickly and keep all your old routines for re-use if possible.

With these nostrums in mind I have produced a program that maintains a linked list of responses. Each response in turn consists of a linked list of which the root is the phrase to match within the sentence that has been typed in.

This design is used because the search is a simple sequential one and you have no way of knowing how many possible responses will be in the file, or how long they will be. You just let them grow like a crystal - a data structure that would warm the heart of any computer scientist.

It actually takes little time to write once you have grasped the structure. But the internals are of interest only to those who wish to get an armlock on a programming language. I must admit to

having been slightly carried away. One problem with writing a program to achieve a simple task is that you keep adding features to extend its usefulness. This is called, in the trade, Rampant Featuritis. Inside many a complex integrated package is a nice simple program struggling to get out.

Although Wisecrack is intended as a boring conversationalist it will also come in handy for simple database work. If for example you typed all your local telephone exchanges, followed by a ; character followed by the exchange code, you would have a rudimentary and rather useless databank. The phrase at the start of the line, in essence, becomes the key for the sentence that follows.

In the case of the dialling code finder, it would be quicker to use the phone book. But that's the problem with a tool like this - the more you hone it to be fit for a particular purpose, the less fit it becomes for any other.

● Last month we omitted to include details of how to get the source for my Waffle Generator. Readers may like to know that I always put the programs written for this column in the Software Library of the CP/M User Group (UK), and they are also available for downloading from the Gamlingaye Bulletin Board on 0767 50511.



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REVIEW



Turbo-charged programming

If you are thinking of using your PCW or CPC6128 to develop programs you should certainly take a look at Borland International's Turbo Pascal. It combines the benefits of structured programming, the convenience of an interactive development environment, and the speed of a compiled language.

It is suitable for professional programming jobs, but at the same time is easy and fast enough to be useful for writing small applications.

It is also a good foundation as a first computer language, since Pascal was designed to encourage good programming practice, particularly in its modular approach.

For a general introduction to Pascal, there are many books on the subject, but the complete beginner would probably also find it worthwhile investing in Borland's own companion tutorial, Turbo Tutor.

Turbo Pascal consists essentially of an editor and a compiler, both called from the Turbo main menu. Source code – your program – is written using the editor, although you can read in and compile code written under another editor or word processor, as long as it produces text in Ascii format. When the code editing is complete you switch back to the menu, from where the program can be compiled.

Unlike mainframe implementations of Pascal, no intermediary Link step is required. Code can either be compiled in memory, where the program can then be executed – the quickest for testing and

debugging purposes – or compiled to disc as a command (.COM) file, which then runs as a stand-alone program directly from CP/M without Turbo Pascal needing to be present.

The first error found by the compiler in your source code will halt the compilation and drop you back into the editor, with the cursor positioned at or near the line of code that caused the error.

This makes changing and re-compiling fairly effortless compared to traditional methods, particularly since the compile process is very fast – a 700 line program compiles in about 20 seconds on the PCW.

The editor itself includes all the commands you're likely to need: Find, Find and Replace, Block Copy and Move, Block Read/Write to and from disc, an Insert/Overwrite toggle, and so on. It also defaults to lining up the start of a new line with that of the preceding line following a carriage return, which is handy for formatting indented code.

In terms of dialect, Turbo Pascal follows the standard defined by Jensen and Wirth with only one or two minor differences – for instance there is no GET or PUT, but the easier to use READ and WRITE have been extended to handle all I/O needs.

Where Turbo differs considerably from standard Pascal is in its extensions, but these are all bonuses (screen-handling procedures, and so forth). For more on them, see Figure 1.

With about 30k of TPA free on 8 bit

Katherine Cranford examines an implementation of Pascal that will suit dabblers – and professionals.

- STRING type for string handling – maximum length of 255, automatically packed.
 - In addition to the standard scalar types (integer, real, Boolean, and char) there is type BYTE – a subrange of and compatible with type integer.
 - RECORD type can have a variant part. Nested WITH allowed.
 - Component type of FILE may be of any type (except file).
 - File handling operations include in addition to READ, WRITE, EOF, and so on, a number of others, such as ERASE (erase a file from disc), FILESIZE (return size of file), and RENAME (give this file a different name).
 - Numerous string-handling extensions.
 - Full set of arithmetic, scalar, and transfer functions.
 - Parameter passing by value or by reference.
 - In-line machine code can be inserted directly into the program.
 - Full range of CP/M Bdos and Bios functions supported, user-written I/O drivers also allowed.
 - Overlay system and INCLUDE compiler directive for large programs.
- Additional procedures and functions include (among many):*
- LOW/NORM VIDEO Set screen to high/low intensity video.
 - CLRSCR Clear screen
 - KEYPRESSED Scan keyboard and return a Boolean value.
 - GOTOXY(x,y) Move cursor to given screen coordinates.
 - DELAY(n) Delay for given number of milliseconds.
 - UPCASE Convert to upper case.

Figure 1: A selection of Turbo Pascal's language extensions and features.

CPC PCW

Amstrad machines for both code and executable file, you can compile about 700 lines of source code in memory. Programs larger than this have to be compiled to disc, and for programs bigger than about 1200 lines you would need to make use of the compiler INCLUDE directive.

This facility allows chunks of a program to be written and saved as separate modules, then put together at compile time, something which also lends itself neatly to building up a library of re-usable subprograms.

700 lines of code will compile to about 19k on disc, but 11k of this is Turbo's run-time overhead, so a 2,000 line program in fact compiles to a proportionately smaller 35k or so. For command files too large to be accommodated by the computer's memory - about 60k - you can use overlays.

Turbo comes supplied with its own installation program, TINST, which allows the screen to be set up very easily since there are ready-configured options

Execution times: A crude benchtest shows Turbo Pascal's speed - a program multiplying a three figure number by itself 10,000 times took three seconds to complete on the PCW compared to 25 seconds for a comparable loop routine written under Mallard Basic.

for the PCW 8256/8512 and the CPC 6128.

Not so simple is the command installation, also carried out using TINST. The Turbo editor comes configured with commands resembling a subset of the WordStar command set, and although by and large these are quite acceptable, there are at least a handful of essentials you will need to set up, including cursor keys.

Here a bit more attention to customisation would have saved the user a good deal of effort, but there again, installation is only a one-off process.

Documentation consists of a comprehensive 376 page reference manual. The contents, although sometimes too succinct, are well set out in a good clear typeface, and there are illustrations throughout.

The Turbo disc also contains the source code of a spreadsheet program, ready to be compiled. This has detailed comments, being intended as an extensive example that can be learnt from, and even developed further if you feel inclined.

However, don't expect to find any mention of Amstrad machines in the documentation. There is a section on CP/M, but this is a generic text, from which you have to sift the relevant parts. Particularly galling for PCW and CPC6128 owners is the section called IBM PC Goodies - describing windows, colour and graphics commands, and so

Portability: Source code is portable to other machines running Turbo Pascal under CP/M, MSdos or PCdos, with no alteration, assuming screen coordinates are either kept to 24 x 80 or adjusted accordingly, and the specialised machine-dependent routines avoided.

on - features which are not implemented on non-IBM machines, but which the PC1512 takes full advantage of.

In conclusion, Turbo is a very pleasing implementation of Pascal, with editing and compile facilities that allow very rapid program development. Despite the lack of special customisation for Amstrad 8 bit machines, whether you're intending to write professional software or simply wanting to dabble, using Turbo Pascal is probably one of the best ways of doing either.

● Next month I shall delve into those tantalising IBM goodies, and assess how Turbo Pascal shapes up generally on the PC1512.

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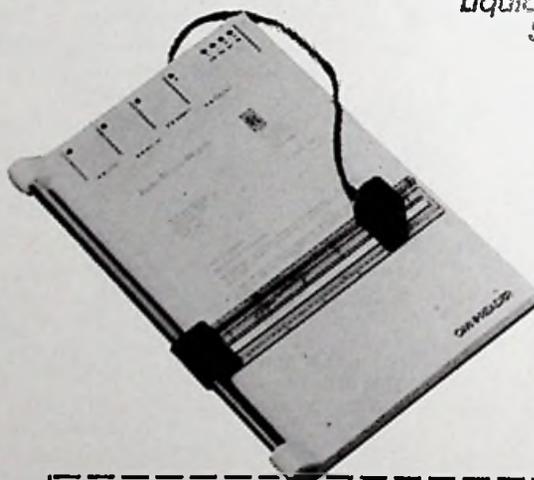
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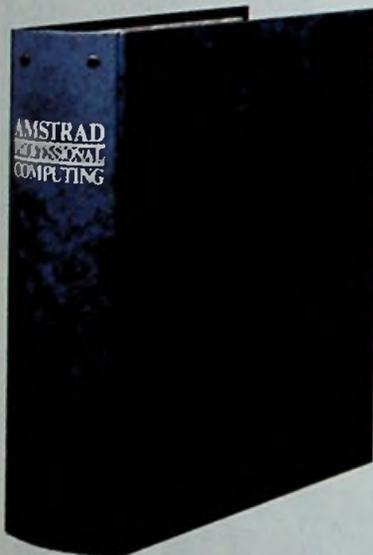
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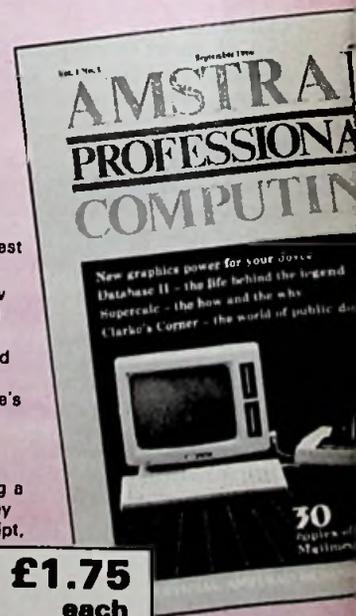
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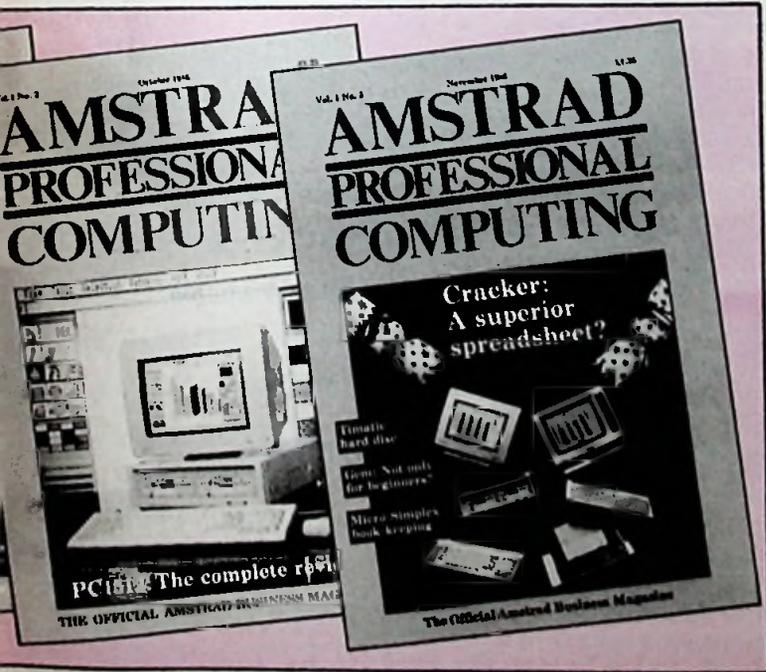
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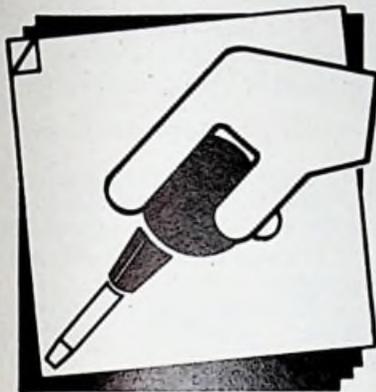
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Techlet special

David Osborne finds ways and means to print pictures from Gem and to let your Amstrad talk to a BBC Micro.

Many of you who bought the Amstrad PC will know about the very powerful painting utility that's supplied with it – Gem Paint. It allows you to create pictures at will, change them, add to them and so on. In a way it's an artist's version of a word processor.

But all this is done on the screen. Unless you want to take your Amstrad with you to your local art gallery to display your picture, somehow you'll have to print it out. And there's the rub.

For a start, at present Gem supports only Epson or Epson-compatible printers. Unfortunately, if you don't have access to one there's nothing you can do to print your picture until printer drivers for other machines appear.

But say you're one of the lucky ones. You've probably found out already that it's incredibly difficult to get the machine to print your Gem picture. That's because there's no room on the Gem Paint disc you created to hold all the necessary print fonts.

The solution is simply to create another disc containing only the Gem output application and all print fonts. Then you can use this for printing.

The following are the instructions for a double-drive machine. Owners of a single-drive machine will, unfortunately, have a fair amount of disc-swapping experience already. By now they're likely to know how to adapt double-drive instructions to a single drive!

You can use the Gem Desktop application to create this special print disc. Here's how:

- Insert a blank, formatted disc into drive B. Put your Gem Startup disc (disc number 2) into drive A.
- Open the GEMSYS directory on A (double-click on the left mouse key).
- Open a folder on B and name it GEMSYS (double-click on the empty folder and supply the name GEMSYS).
- Open the GEMSYS folder on B by double-clicking the left mouse key.
- Copy METAFIL6.SYS, OUTPUT.APP, OUTPUT.RSC and DEFAULT.OPT from A to B. (Page 146 of the User Instructions tells you how to do this.)
- Remove your Gem Startup disc from A and insert your Gem Desktop disc (disc 3).
- Press the Escape key.
- Copy the EPSMONH6.SYS and all the EPSHSS and EPSHTR files from A to B.

Now you have a working print disc in drive B, so label it as such.

To use this disc you operate Gem Paint as usual. However, when you want to print out your picture (after saving it on to a data disc first), Quit from Gem

Paint, taking you back to Desktop.

Replace the Gem Desktop disc with your print disc and press the Escape key. Then double-click the mouse on the GEMSYS folder in drive A. Somewhere in the set of files that appears will be OUTPUT.APP. Double-click on this and your picture is on the way to making an appearance.

Chapter 9 of the User Instructions tells you how to set up an output list and what to do next.

Finally it's useful to note that by having a separate print disc in this way you don't have to go through Gem Paint before printing out a picture that's been stored already. Simply print straight from the print disc in drive A.

Two way traffic

Connecting one computer to another is something that many people shy away from because of the outward appearance of high technology – and perhaps a fear of damaging the machines.

But if it's done carefully, the benefits of being able to transfer information from one machine to another are quite considerable. Perhaps you use one type of machine at work and another at home. Or you might have been using one type of machine and then bought another.

There are lots of BBC Micros around. They're found in schools and in quite a few small offices, so it's a machine many people will have used and are likely to have information stored on it.

Then again, the Amstrad range is so powerful. The PCW has been a run-away sales success and the PC looks as if it's set to follow. There must be thousands of people who have – or will have – files on both the BBC Micro and an Amstrad machine, and who will want to get one to "talk" to the other.

This communication takes place through the serial interface of each machine – generally called the RS232 interface. (Acorn Computers use an RS423 serial interface on their micro, although to all intents and purposes it's the same).

To get information from one machine to another two features have to be right: The software controlling transmission speed, and the wiring connecting the two machines.

The controlling software on the PCW resides in the SETSIO utility and is described in the article on Page 84 in this issue. On the Amstrad PC it's called DEVICE.COM. The equivalent software on the BBC Micro is controlled using *FX commands. We'll look at these aspects in a moment.

To connect the serial ports of the BBC

Micro and either Amstrad you'll need a 5-pin DIN plug for the BBC Micro end. Page 499 of the BBC User Guide shows the pin arrangement.

Both Amstrad machines will need a 25-way D-connector (but be careful - the Amstrad PC needs a plug and the PCW needs a socket). Figure 1 shows the wiring connections between the BBC Micro plug and the D-connector.

As you can see, a five-core cable is needed to connect the plugs. The BBC Micro plug perspective in the diagram shows how it would look to you if you were soldering the cables to the pins while the plug is clamped in a vice.

In other words it shows a pin-upwards perspective. With the D-connector, things are easier since the pins are always numbered.

When you've made up the connector you're in business. All that's needed now is to set the relevant software.

Both the PCW and the PC need to have their serial ports set to transmit or receive at a particular rate, with specific parity checking and so on.

- For the Amstrad PC, use the Dos Plus disc (disc 4) and enter:

```
DEVICE COM1[SP=(1200), DAT=8,
PA= NONE,ST=1]
```

- For the Amstrad PCW use disc 1 side 2 and enter:

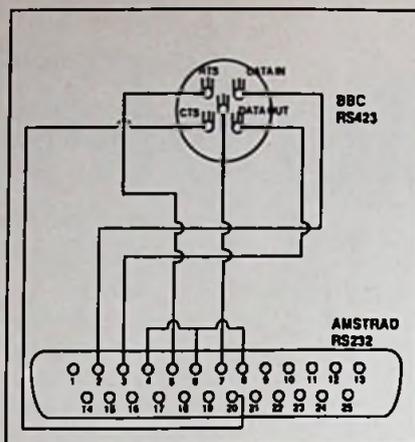


Figure 1

```
SETSIO 1200 BITS 8 STOP 1 PARITY
NONE
```

Transmitting from the BBC Micro to either Amstrad is now easy. Insert your data disc into the Amstrad drive B and enter:

```
PIP B:filename=AUX:[e]
```

With your Ascii file in the BBC Micro drive enter:

- *FX 8, 4
- *FX 3, 5
- *TYPE filename

When the file has been transmitted, press Control+Z on the BBC Micro.

To transmit from an Amstrad is quite simple. On the BBC Micro enter:

- *FX 7, 4
- *FX 2, 1

and on the Amstrad enter:

```
PIP
```

and at the asterisk prompt type in:

```
AUX:=CON:
*BUILD filename
```

- filename being the name of the file you want to store your information on the BBC Micro disc - and press Control+Z.

Continuing on the Amstrad enter:

```
AUX:=filename
```

- filename here being the name of the file on the Amstrad to be transmitted.

The file will be echoed to the BBC Micro's screen - don't worry about the line numbers that appear.

When transmission is complete press the Escape key on the BBC Micro.

On the Amstrad enter:

```
AUX:=CON:
*FX2
```

and press Control+Z.

You should now have a file on the BBC Micro disc containing all the information from the Amstrad file.



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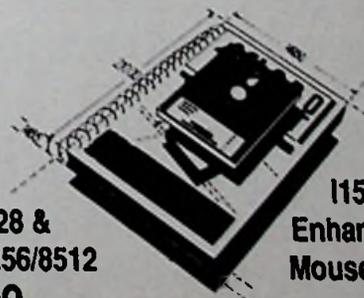
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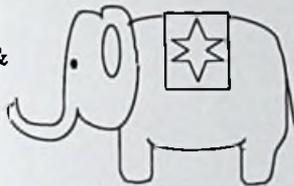
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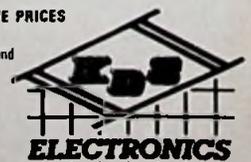
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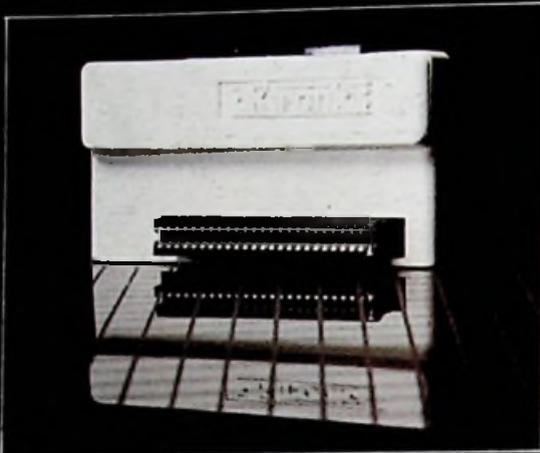
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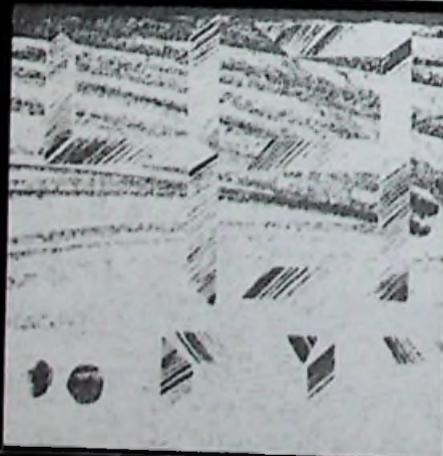
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