

# THE ACORN MICROS

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Just look at our Acorn Show report and you'll get some idea of why the BBC machines are so popular. Widespread support from educationalists, continuous development by secondary manufacturers and a fanatical following from owners are the result of the BBC's powerful operating system, wide interfacing possibilities and top-class Basic. Now, with the Master series well established, even the problems of memory limitations are overcome, and the Beeb can compete with any other home/small business computer out.

Read the Show report for all the latest news of hardware, software and services. Catch up with the latest in computer music with our preview of the Music 5000. Get adventurous with our Graphic Adventure Creator review, and get the most out of WordWise Plus using the PenFriend utility. All this and more in our "BBC is Best" supplement! ◀

# Showing the BBC flag

July's Acorn show, the Fourth Official Acorn User Exhibition, was held as usual in the claustrophobe's purgatory, the Barbican Exhibition Centre. The hot-house atmosphere perfectly matched the feverish attitude of most of the visitors, eager to demonstrate their support for a company which exists only by the grace of support from giants Olivetti.

That aside, the Show featured no shortage of exhibitors. Acorn's own stand was large and impressive, though the emphasis was on establishing the Master series rather than on announcing new products.

Though for obvious reasons the Show featured many educational products, there were also plenty of hardware and

software novelties to see. **Wild Vision** demonstrated the Colour Graphics Card, which follows Beeb users to select any 16

more sophisticated image processing requirements there's the £925 Hawk V8 system, which captures real-time images from a video source and processes them without the aid of an expensive digital framestore.

Some equally impressive hardware was to be found on the **Griffin and George** stand; a satellite signal receiving dish and processor system. The Timestep range can receive weather pictures from polar orbiting satellites, space environment data from UOSAT, and processed pictures from Meteosat. Software for tracking satellites and interpreting data is supplied with the

system, which starts at £295.

**Star Microterminals'** Concept Keyboard, which substitutes touch-



A full house at the Acorn Show as dealers and users crowd the Barbican

of 4096 colours in Mode 2, and can be programmed using VDU 19 commands. The Palettemate costs £127.50, while for





Griffin &amp; George's satellite decoders

sensitive keypads for the BBC's QWERTY keyboard, was on show together with the wide range of teaching software designed to eliminate the "keyboard barrier".

The **Opus** disk drive, with a conventional double-sided drive plus a RAM disk, was on offer at a special show price; £169.95 for the 256 KRAM version, £199.95 for the 512K. Normal price for this Master compatible package with built-in interface is £249.95.

BBC stalwarts **Slogger** were demonstrating their range of software and expansion units; **ROMBOX**, an eight-socket ROM holder with follow-on port for the Electron; and the ROM-based programs **Starmon**, available for the Electron and Beeb, **Elkman**, a sideways ROM page manager allowing any ROM to be disabled or saved to tape or disk, the word processor **Starword** and the Beeb page manager **BeebMan**.

**Linear Graphics'** **PlotMate** graphics plotters operate using standard BBC graphics commands, connect to the user port or printer port, and come provided with system software and example programs. **PlotMate A4** costs £299, the more advanced **A4M** which features extra control panels is £399, and the larger **A3M** is £569.

**Akhter's** **UFD** data storage series, including the **Archive Winchester** storage unit with 10Mb tape streamer, 40/80 switchable drive and integral PSU was also on show.

**PMS's** 64K RAM module for the BBC B uses the officially documented Acorn memory expansion procedure via the 1 MHz bus. The module consists of an ABS-cased 64K memory add-on with power supply cable, and can be used from BBC Basic and other languages including **Forth** and **COMAL**. Utilities provided will test the RAM, back up RAM to disk,



Economics' robot constructions

and copy selected files. The **Ram Operating System** configures the module as a RAM disk which supports random access file operations. There's also a user-definable printer buffer. Price is £129.95.

Even more sophisticated

graphics hardware was shown by **CTS Recognition/Cadsoft**. The **CTS Artist Plus** consists of an EPROM, graphics tablet and colour card, which allows any eight of 4096 colours to be used by changing the RGB balance.

The impressive **Cadsoft** graphics station is a broadcast quality graphics computer displaying 16 colours from 4096 at a resolution of 832 x 575 pixels. It's Master 128 compatible and features a dedicated 1 meg graphics processor, integral system monitor and twin 3.5" drives. The system is driven from a professional graphics tablet using sophisticated paint software.

Finally, on the hardware side, **Economics** showed a range of control systems compatible with **Fischer-Technik** construction sets, which allow the BBC and Electron to control stepper motors, DC motors, switches and potentiometers.

The software side of the Show was marked by a dearth of new games, but a good showing for utilities and programming products.

**Minerva's** **System Delta** program development package deals with file handling, record search, screen design, data editing and menu selection. It's more than just a database (although a simple database program is provided free with the package) and is intended to speed up the development of applications programs written in Basic. All systems calls are performed in machine code, and there are 150 extra commands provided. Each file may consist of up to 8160 records, with up to 255 fields of a maximum of 200 characters length. **System Delta** is compatible with all BBC micros and costs £64.95.

**Merlin** showed the **Scribe** word processing package, which for £59.95 offers automatic disk buffering, status line display, directory display, on screen printer image formatting, word wrap, and all the usual word processor facilities.

**Newsight's** knitting software package – "a serious product with a long term future" according to the designers – produces designs on the monitor which can be manipulated and multiplied by the user and printed out in the form of a knitting pattern on squared paper. The package costs £51.50 and is undergoing further development at the moment.

**PMS's** **Multi-Font ROM**, which works with all **Epson RX/FX** compatible printers, features multi-height letters, backgrounds, underlining, inverse text, multi-width text, symbols, and a selection of fonts.

**Fernleaf's** educational software selection, designed for the 8-12 age range, concentrates on problem solving exercises rather than simple testing of knowledge. Titles include **Island Yacht Race**, **Ferry Captain** and **Fletcher's Castle**.

**Logosoft's** **Master Logo** package was on special offer – and educational establishments were offered the chance to try the package for a month before deciding whether to buy. The **Logosoft**



The Hybrid Technology Music 5000 from Peartree

package consists of a ROM, two toolkit disks and a fully illustrated manual.

**Audiogenic** displayed **Swift**, the BBC version of the top-selling **Commodore 64** spreadsheet. Provided on ROM at £29.95, **Swift** features pop-up menus, split screen display, and user-definable cell format.

**Parkside Developments** offered a unique service for users of the **Pagemaker** package; disks with a selection of digitised pictures, including photos of celebrities, cartoon characters and pictograms, plus a digitising service by which pictures can be put on disk. Eight full screens will go on each 80 track disk, at a cost of £1.50 per screen plus £2.80 per disk.

Other exhibitors at the Show included **Advanced Memory Systems**, with the **AMX** mouse and utilities, **Disking** with the **Banana** disk range, **Microdeal** with bargain software, **Micronet 800**, **Superior Software**, **Wigmore House** with the **MegaMouse**, and, for some unfathomable reason, the **Territorial Army**. Not a Show for great surprises, but a solid display of support from manufacturers and public alike. ◀



# FLEET STREET

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## Editor

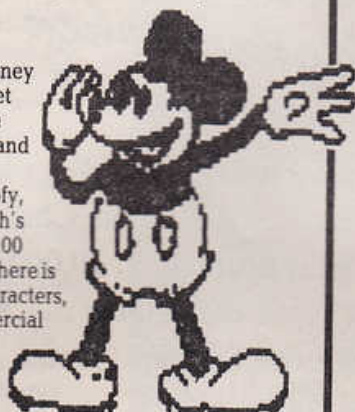
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Blockbusters	7.95	6.00
Beach Head	8.95	7.50
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Computer Hits 10 Vol. 2	9.95	7.50
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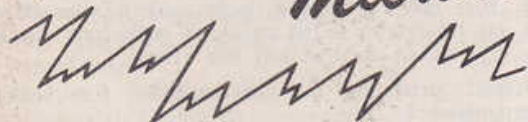
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# A sense of adventure

DO-IT-YOURSELF GRAPHIC ADVENTURES  
FOR ALL, COURTESY OF INCENTIVE'S GAC.  
REVIEWED BY RICHARD BENSON

**F**orget The Quill – if you want to write your own adventures, the easiest and most professional results come from Incentive's **Graphic Adventure Creator**. Already a hit on Commodore and Amstrad machines, there are now versions available for the Spectrum and the BBC B.

GAC's basic theme is the combination of adventure text and graphics into a program which can generate professional-standard, free-standing games. It operates using a series of menus and a special "language", and though it takes some getting used to, GAC is certainly more powerful than competitors such as **The Quill**.

GAC consists of two main sections, one to write the game and one to create the pictures. The adventure writing section takes most getting used to, but there is nothing here which cannot be mastered with practice. GAC language is not as complex as any regular programming language.



The first section allows you to define the verbs which you wish to be used in your game. Some of the most commonly used verbs – NORTH, SOUTH, GET, DROP and so on – are already present in the Quickstart File. To edit the list, you simply enter a number – the program copes with up to 255 verbs – and then the verb you wish to use. Allocating the same verb number to two different verbs means that they will have the same effect; for instance GET and TAKE.

The next section allows you to enter room descriptions. 9999 locations may be defined, memory permitting. Each room is assigned a name, a number, a description of up to 255 characters, and a number to link it to the appropriate picture if there is to be one.

You must then define the connections between the rooms, which are made in terms of verbs; for instance EAST 20 (the previous room number). You can have as many connections from other rooms as you can define in 255 characters. You can of course edit the connections at a later date.

Next bit is the Message section, in which you define all the WHAT NEXT



and YOU CAN'T DO THATs of your game. Again, you can define up to 255 messages of 255 characters each.

Nouns, adverbs and objects are defined next. This is the section where your "lit lamps" and "unlit lamps" come into their own. The two are defined as separate objects so that they can be treated differently in the Conditions section.

The Conditions section is the heart of the GAC system. Here you can use the code numbers for your verbs, nouns, and objects to create the body of the adventure, using a relational code which resembles Basic; for instance "IF (VERB 16 AND NOUN 2) LOOK WAIT END" means that if the player types in "Examine Room", the room will be described and the program will wait for a new command.

The Conditions page can check what words are entered, which objects are being carried, how much the objects weigh, whether doors are open or shut, how many turns you have taken, whether the room graphics are to be used, and so on. It's a long list, but allows you to



create very complex conditions once the principle is mastered.

The adventure writing section is easy to follow, and well explained in the manual. Unless you're a pure text fan,

you'll also be wanting to add pictures to your game, and this is where the graphics sections gets going.

Less powerful than a full graphics program, the picture generator is nonetheless capable of creating excellent illustrations in the hands of a fairly artistic user. Four initial colours can be used, with the cursor keys controlling the drawing position, and routines to draw ellipses, lines, rectangles, fills, and so on. There's a useful MERGE routine which allows you to reuse objects you don't want to have to redraw, and all the pictures are numbered as are the objects, nouns and so on from the adventure writing section.

GAC's text interpreter makes it capable of understanding much more complex commands than, say, **The Quill**. There is no truncation of vocabulary, so there's no danger of the programs confusing, say, TROUT and TROUSERS



(as in "put trout in trousers???") The parser splits any text entered into sections according to the punctuation, then scans then for recognisable verbs, adverbs and nouns, and checks these against the connection table and conditions table.

There's an example adventure included, which, although it's paralytically clichéd (get lamp ... light lamp ... enter cave ... get treasure ...) gives a good example of the results you can achieve.

I for one intend to hack out an adventure using GAC as soon as I can. For the first time I feel that I've found a utility which can create free-standing programs (which Incentive say can be marketed with no restrictions so long as GAC is acknowledged), which are of such quality that they can hardly be distinguished from programs written from scratch. ◀

**Program:** Graphic Adventure Creator  
**Micro:** BBC B

**Supplier:** Incentive, 54 London Street, Reading, 0734 591678

**Price:** £27.95 disk, £22.95 cassette



# Mighty music maker

JAMES WOOD PREVIEWS THE  
UPDATED BBC SYNTH AND DECIDES THAT  
IT SOUNDS ASTOUNDING

**L**aunched at the Acorn User Show, the Music 5000 digital synthesiser was undoubtedly one of the most impressive products to be seen. For the first time, BBC micro owners can now create professional-sounding synthesiser music without having to spend many hundreds of pounds on MIDI-equipped keyboard instruments.

Music 5000, designed by Chris Jordan and distributed by Peartree Computers, is the successor to the Acorn Music 500 which is now being discontinued. It has a great deal in common with the earlier product, but has been made easier to use and compatible with a wider range of BBC micros.

The Music system consists of a hardware unit, which contains the digital synthesiser circuitry, and programming software featuring the composition language AMPLE.

The AMPLE language allows the user to define sounds, compose pieces of music, arrange these pieces into lengthy compositions, and assign the output to any chosen position in the stereo soundfield. Part of the problem, though, is that the software is so powerful that it takes a great deal of effort to learn to use it properly – starting from defining the basic waveshapes of the sound you want to use, and working all the way up to a full composition. Fortunately, the Music 5000 version of the software is much easier to use, with improved “front end” displays and a number of presets which save time and effort in constructing sounds.

Music 5000 features AMPLE Nucleus, and improved ROM-based version of the original software. The improvements include Studio 5000, which features a master menu, instrument editor and staff notation editor; the resident pre-defined instruments, envelopes and waveforms; extra commands for defining sounds, especially useful in the case of percussion sounds; software extension modules to support forthcoming hardware additions; improved documentation and full compatibility with BBC, B+, B+ 128K, and Master 128 models.

So, what exactly can you do with Music 5000? Designer Chris Jordan's demo at the Acorn Show proved that the system can create a full range of “FM”-type digital sounds, including convincing strings, brass, bass, flute, bells, pianos and so on. Importantly, the new system's pre-defined envelopes and waveshapes make it easy to produce convincing drum noises – kick, snare, syntoms, cymbals and so on – which mean that you don't



Music 5000 designer Chris Jordan plays around at the Acorn Show

have to splash out on a digital drum machine.

The great thing about AMPLE is that it allows you to edit sounds even as the music is running; either by selecting new presents, or by simply typing in new sound definition commands on the Studio page. This page also features an eight-channel “Mixer” display which allows you to adjust the volumes and stereo balances of the eight voices.

The Notepad section is a screen editor allowing you to compose in AMPLE, inserting or deleting characters or lines as you work, then playing the score before going on to the Studio page. There's also an instrument editing panel featuring drop-down menus for waveform and envelope choice.

The Staff Editor allows traditional music notation to be entered and edited. The set of symbols available includes the usual notes and rests, plus chords, dots and double dots, slurs, ties, triplets and so on. You can also enter commands for repeats, instrument dynamics and instrument changes here.

The Special Effects section allows you to define echos in fact, fading repeats – simulated reverb, articulation effects, and so on. Like the drum waveforms, this saves you money too; you don't have to buy a digital delay device!

The 14 predefined waveforms and 10 predefined envelopes can be assigned to any channel, and include basic and exotic shapes, vibrato effects, bends, slides, and so on. Envelopes can be applied to either pitch or amplitude, for exotic synth effects, and there are also ring

modulations (for bell-type noises), frequency modulation and synchronisation of channel pairs for howling distortion sounds.

The software includes several carefully written pieces which demonstrate the whole potential of the system, and the manuals cover AMPLE, using the system, and a step-by-step beginner's guide.

What's the situation for Music 500 owners? The 500 and 5000 are entirely software compatible, and all the improvements to the software are available to 500 owners as an upgrade pack. But the Music 500 hardware is incompatible with the BBC B+, B+ 128K, and Master 128K, and the upgrade pack will not remedy this.

The Music 5000 system costs £159.95, the upgrade pack £69, and an audio demo tape is available at £2.95.

On the strength of this preview, the improvements to the original software and the current price make the Music 5000 an exceptionally attractive package. With a full-size keyboard, the Music 400, and the possibility of MIDI interfacing in the future, Hybrid Technology's system looks as if it will continue to break new ground in computer music. ◀

**Hybrid Technology**, Unit 3, Robert Davies Court, Nuffield Road, Cambridge, 0223 316910.

**Pear Tree Computers**, St George's House, 14 George's Street, Huntingdon, Cambridgeshire, 0480 50595.



# SOUNDS SPECTACULAR



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The new AMPLE Romeasy to use, powerful and versatile menu driven music

language. Includes 'Island Logic' music system style of Staff Editor. The Music 5000 synthesiser is now compatible with BBC B, BBC B+ and Master 128 (Music 500 is not compatible with BBC B+ and Master 128)

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## PEAR TREE



**NEW  
ROM**

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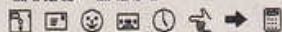
\* MICRO-JUSTIFICATION - right  
and left justifies proportionally  
spaced text

\* DRAFT mode - for fast, rough  
copy for proof reading - but with  
ALL NTQ features

NTQ comes in a 2 ROM set - one  
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and 3 fonts, the other containing a  
further 4 fonts. Any number of  
FONT EXTENSION ROMs can be  
added. USER FONTS created by the  
definer software supplied can be  
stored in ANY bank of sideways  
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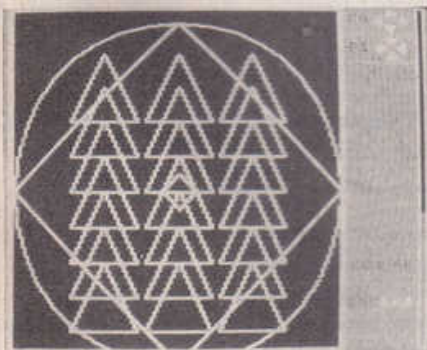
**H**ello children. Hello. Are you sitting comfortably? Then I'll begin. All turn on your BBC B's. We're going to play a picturemaking game. Yes! We're all going to make pictures with **Picture Craft**, the new educational software package from BBC Soft, then we're going to have some fun.

First, do any of you know what's wrong with most graphic design software packages? Hands up... yes, that's right. They all assume that you're Pablo Picasso, and give you a whole lot of facilities like lines, fills, circles and boxes to play with, but don't really teach you how to use them. Can any of you see how **Picture Craft** is different? One at a time... yes, you've got it. **Picture Craft** is designed by educationalists – that's a big word, isn't it? – and it's meant to teach children from six years on to use shapes, colour and space creatively. Once you have designed a picture, you can use it in all sorts of jolly games.

## Design

Now, let's look at the manual. It's 120 pages long – much longer than your Janet and John reader – and it comes with lots of teaching suggestions, worksheets, and keyboards which you place over the keyboard to indicate the controls for each part of the program. Let's boot the disk... no, Wayne, not with your foot... and here's the main menu. Let's choose the **Design Picture** option.

Aha. A big square. Not very informative. Let's look at the manual. Stop fidgeting, Darren.



The information at the right hand side of the design area shows you that only the F0, F1 and F8 keys are active, and the bar at the far right shows how much of the "picture memory" has been used up. In the centre of the screen is the shape cursor. This is a basic shape which you use to build up pictures; you can choose

from squares, circles, ellipses, triangles and so on by pressing the space bar, and alter the size and position using the cursor and function keys.

You can't move a shape off the side of the drawing area, Johnny, so don't try it.

You can fix a shape in position on screen by pressing RETURN, then if you like you can press F8 to select LINE mode, and draw lines, again with the cursor. Fix the start and end of the lines by pressing Return again.

Using this method it's very easy to build up complex geometrical patterns. The next step will be to colour them in, and this time you won't be able to spill paint all over your trousers, will you Darren? Because the computer will do the painting for us, using the **Design** option. Place your **Design** help card over the keyboard. Come along... good. Now place the cursor over the area you want to paint, choose one of the eight colours available by pressing the space bar, then press Return to fill the area. Now, Kevin, you've made a balls-up of that haven't you? Yes. So press F4 – twice, to be certain – and all the paint will clear. Now do it again, then press Escape and you can save your picture to disk, with a seven-letter file name.

## Games

Now we can play some games. Go to the main menu, select **Games**, and you have five to choose from... **SWAPS** will split your picture into four to twenty-five squares and shuffle them around the screen. There are four difficulty levels to choose from, and all you have to do is mark the two squares you want to swap using the cursor, then press Return to swap them over. Eventually you will have sorted the picture into its original form. Don't cheat! I saw you pressing F0 to see the finished picture! Write out "I must not cheat" ten thousand times.

What other games can we play? There's **Twister**, which is a bit easy; it just rotates the picture squares by different degrees, and you have to twist them back. Then there's **Swaps and Twists**, which combines the two. Lastly there's **Block Slide**, which removes one picture square then slides the remaining ones around. You use the cursor keys to move one block at a time until the picture is restored. A bit like **Splitting Images** – sorry, **Split Personalities**, from those nice Domark people.

The last "game" isn't really a game at all. **Magic Painting** creates a picture on the screen, but leaves all the colours the

same so that it's invisible. Don't be impatient, Warren, there is a point to it. You use the fill commands to colour in one part of the picture at a time, and you have to guess what the object shown is before it's completed.

The little boys and girls can go for their milk now. The bigger ones can stay while we look at the advanced facilities.

The **Design** unit has lots of facilities



which needn't be used for the basic functions. For instance, you can edit the shape set, either basing your designs on the originals or starting from scratch. You can stretch or squash the shapes you create, flip them on the X or Y axis, use "hidden line removal" to create an illusion of depth, and replay the process of drawing your shape using the R key. The **Paint** unit also features a selection of four pattern fills in addition to the plain fills. The pattern fills can consist of any two colours from the seven available, so some quite complex results can be obtained. You can also print out finished pictures on an Epson compatible printer.

## Hometime

So what do the kiddies get from **Picture Craft**? Well, it can simply be used to create pictures; it can provide shape and colour recognition practice; it can help in designing board games, creating mobiles, suggesting project ideas, and, since the program can be used with Econet and pictures saved to be used in your own programs, **Picture Craft** need not be limited to one machine and one user.

This should keep the little devils occupied for quite a few rainy afternoons. OK, one minute's silence then it's home time. ◀

**Product:** **Picture Craft Micro:** B, B+, Master 128K **Supplier:** BBC Soft, BBC Enterprises Ltd, 35 Marylebone High Street, London W1M 4AA



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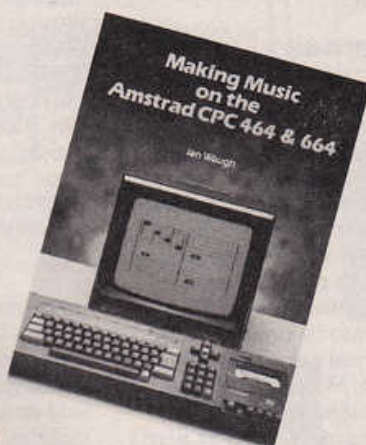
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# A pen-friend for Wordwise Plus

JOHN WATERMAN ON THE ROM UTILITY  
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WORDWISE PLUS USERS

**W**ord Processing magazine doesn't just pontificate on the latest software, or produce obscure programming tips which have no relevance to ninety percent of its readers. It's full of information, concentrating mainly on the BBC machines, which enables you to get the most from your word processing.

More to the point, WP produces useful software utilities which overcome genuine operational problems. One of these is **Pen-Friend**, a **WordWise Plus** utility which benefits from feedback from the magazine's subscribers.

Pen-Friend is a 16K ROM specifically intended for disk users, although some of the routines included will work with tape versions of WordWise Plus. Surprisingly, the Pen-Friend utilities can all be accessed through drop-down menus, making them integrate easily into WordWise Plus without the necessity for remembering special embedding routines. Versions are available for the BBC B and Master 128K.

## Preview

Pen-Friend should be placed in the highest priority socket free, for the greatest speed. You must, of course, already have WordWise Plus installed to make use of the Pen-Friend facilities.

So what drawbacks of WordWise Plus is Pen-Friend meant to rectify? The main problem with WordWise Plus is that it is not a WYSIWYG program; it's not true that "What You See Is What You Get" on the printed page, since you must type in one mode, and go to preview mode to see the printed layout. It's therefore difficult to tell how much you have written, and what page and line you are currently writing on. One of Pen-Friend's main routines can give you this information from within edit mode.

On Accessing Pen-Friend the main menu is placed in memory segment 0. As we'll see later, the WordWise Plus concept of memory segments can lead to some problems, but these can be overcome.

There are thirteen options available from the main Pen-Friend menu. The first option allows you to customise printer output codes. WordWise Plus normally assumes an Epson compatible printer is being used, but only supports double-striking and underlining through embedded commands, which are complex. The printer support menu of Pen-Friend drops down and allows you to choose underlining, double strike, bold, Elite, wide, or various combinations of printing - if your printer supports them.

Driver files for other printers can also be created if you know the necessary escape codes.

Pen-Friend's second routine works in a similar way to the printer section, allowing you to embed printing commands in the text. These include new page, indent, page number, printer pause, justification on/off, and so on. All very useful if you want to produce anything more than straightforward printouts.

Option C, Embedded Values, is in some ways the most useful part of Pen-Friend. It displays the values for indentation, margins, page lengths, headings, and so on, which are embedded in the text at the current cursor position, using a numerical code. It's therefore possible to keep track of the state of your

Option F allows you to define function keys. This is possible with WordWise Plus, but has to be repeated each time you start up. The Pen-Friend routine allows you to store a set of function key definition on disk, and several examples are provided; for instance, common phrases used by estate agents, useful editing codes, frequently used business phrases and so on.

Option G allows files to be auto-loaded, either overwriting the current text or from the cursor position, while Option H is an auto save. Option I is a complementary file save checker.

Option J is a dual-column formatter which overcomes some of the problems associated with WordWise Plus's DUALCOL, while Option K is a useful label printer which allows you to define the page offset, label spacing and column spacing, then create an address file. All addresses must be six lines long.

Option I displays the ten memory segments which are used by WordWise Plus, allowing you to check whether they hold text segments which can be used to create form letters by "boiler-plateing", or whether they contain program routines. Another great time-saver.

Lastly, option \* allows star commands such as CAT, TITLE and DIR to be sent directly from the Pen-Friend menu to the operating system. Other commands such as COMPACT and COPY have to be used carefully to avoid corrupting text in the memory.

Pen-Friend is full of good ideas and certainly makes it easier to work with WordWise Plus. As mentioned earlier, it is possible to run into problems due to WordWise's memory segment system. Other utility disks and ROMs for WordWise may well clash with Pen-Friend; so the programmers provide a customisation service, which also provides personalised default values for your own particular version of Pen-Friend.

Written by the Editor of Word Processing magazine, Paul Hendy, Pen-Friend is a clear and straightforward product which fulfils a specific need at a reasonable price, £14.95. ◀



document without continually referring to the preview screen, which normally calculates all the margins, indentations and so on. The Embedded Values menu also allows you to edit these values quickly and easily.

Option D is auto-load. This places the printer codes, embedded codes and embedded values routines in memory segments 7, 8 and 9. It's just a handy time-saver.

Option E, Format Commands, allows you to define a file of page length, line length, tab and other settings, which can be embedded at the start of a document. The main function of this segment is to overcome some of the more unclear aspects of formatting in WordWise Plus.

*For more details of Pen-Friend, and Word Processing magazine, which is available bi-monthly on subscription only, contact PO Box 67, Wolverhampton, West Midlands, 0902 788207.*



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