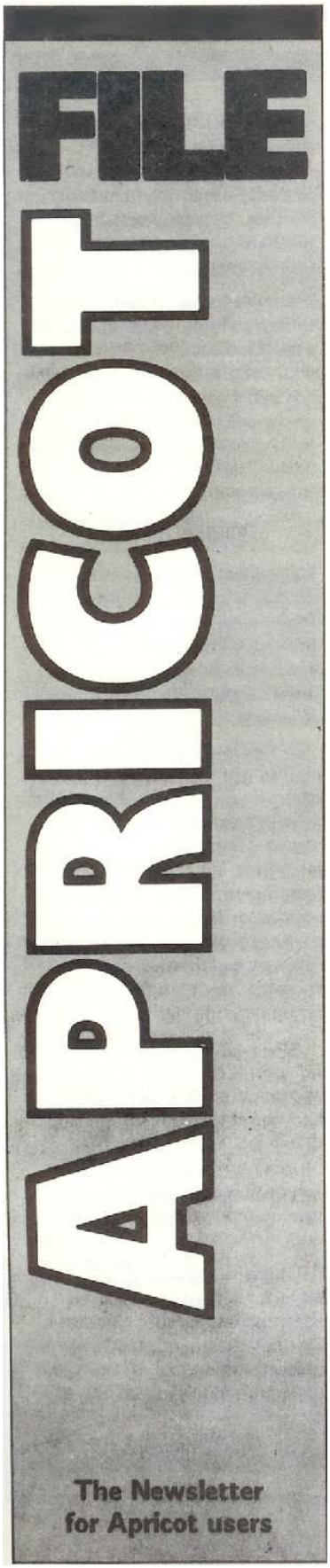
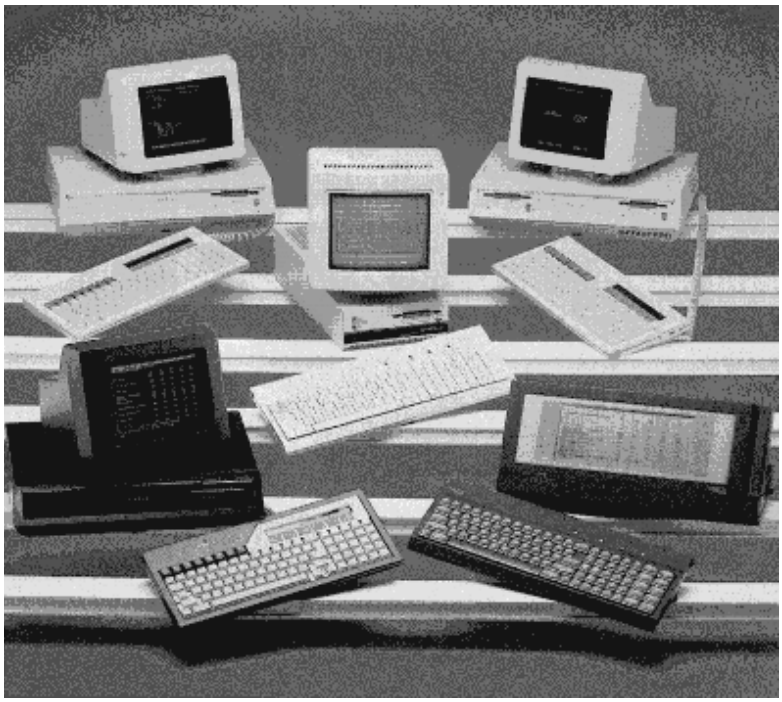


Apricot File 3.10



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Release 3.10

FILE APRICOT

The Newsletter for Apricot users

July 1988

Show Report

Seen at the PC User Show

The PC User Show at Olympia last month was frankly rather drab — lots of 386 machines to tempt the rich, lots of low-cost 286-based AT clones with prices between £900 and £1,600, but nothing very radical. It didn't help that most of the major players decided to stay away — **Apricot**, **IBM** and **Compaq** didn't go to last year's event either (the **Businessland** chain had the new Deskpro 386/25) and this time around the notable absentees included **Tandon**, **Victor**, **Ashton-Tate**, **Microsoft**, **Dell** and **Amstrad**. Some of those had booked and subsequently withdrew (and show organiser EMAP is demanding hefty cancellation fees).

The big names that did attend included **Borland** (very busy with the new SPRINT word processor and QUATTRO spreadsheet — neither of them earth-shaking), **Mission Computers** (had the biggest stand for its fast 386-based machines), **Olivetti** (which will consider missing next year's show, we hear — it had its sophisticated MULTILAN network at the show along with reduced prices for 286 and 386 machines) and **Hewlett-Packard**.

On the other hand, the tone was probably set by **Lotus**, which was mostly in evidence by sponsoring Lotus-compatible suppliers. Lotus itself was punting AGENDA, a kind of super-SIDEKICK which the company calls "a new kind of software tool ... a personal information manager". Although this kind of thing may be important as a marketing strategy to pull more users into the Lotus fold, we can't believe such products are really central to the firm's continuing success; it just illustrates the paucity of innovation at the show.

There was some evidence of AT-level prices drifting downwards despite the DRAM shortage and consequently volatile memory prices (several bumf sheets had small print warning that chip shortages might result in short-notice cost increases). Suppliers catching the eye included the Dutch-based **Tulip Computers** with some of the neatest small-footprint AT-class machines we've seen — very compact (12x15x5in) though not the cheapest (prices from £1,595 for 20MB systems).

We also liked the fax add-ons from **Softech Communications** — all IBM-compatible only, naturally, but still pretty impressive. Internal fax modems with software and mouse go from just over £1,000, and there was a beta-test version of a FAXWRITER tablet that can be used with the company's modems to send handwritten messages and sketches.

The other interesting fax product carries the uneuphonious name BEYOND FAX. It's an internal combination data/fax modem (the Microlink SPC-1) with front-end software that looked excellent in the demo; vendor **Firdata** quotes £1,195 to include a lightpen. And when was the last time you saw a lightpen in a general-purpose business application?

Toshiba had a UK first in the form of an A3 laser printer below £10,000 — well below, in fact. With POSTSCRIPT-compatibility the PAGELASER 8XL is £3,495, without it the printer is £2,295.

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The Disinformation Column

On keys and esoterica

By David Langford

In my last column I promised DIY instructions for a tiny .COM file to eliminate at least some keypresses in some situations. The chosen example was Turbo Pascal 3, whose compiler/editor asks first whether you want the error messages loaded (press Y or N) and then needs a one-letter command to make it do something — at start-up time this is almost always E for Edit.

You probably have your own favourite answer to the Y/N query. Select Y, and error messages are spelled out in some detail. Select N, and the absence of text messages allows you a bit more workspace for editing programs — not much, admittedly. (For Turbo Pascal version 3.00B the message file TURBO.MSG runs to 1,536 bytes, and for some reason you gain 1,641 added bytes of workspace by omitting it.) Either way, how do we minimise the keystrokes?

Batch file bodging

Let's suppose that you always type Y and then E when loading Turbo. If Turbo is run from a batch file, the batch file itself can 'type ahead' the necessary two letters using the ESC \ escape sequence mentioned in APRICOT FILE Release 2.10.

When the ESC \ characters are sent to the screen driver — that is, 'displayed' — they and the following character don't actually appear. Instead, this next character is put into the keyboard buffer, as though typed by you.

Here is TP.BAT, a tiny batch file to load Turbo with the Y and E preset:

```
ECHO OFF
ECHO ^[\Y^[\E
TURBO
```

Various word processors offer various ways of entering the ESC or ^[character into the text. For a batch file as short as this, it's easiest to create it at the MS-DOS prompt by typing COPY CON TP.BAT and then the three lines as above, inserting the ^[by pressing the ESC key, releasing it, and then typing a capital R. Finally, enter CONTROL-Z (hold down CONTROL, press Z) and Return to save the file.

Henceforth, the command TP will run TURBO.COM, load the error messages, and take you straight to the prompt message asking which Pascal file you want to edit. I don't recommend the reductionist approach of reducing the batch file's main name to a single letter (like T.BAT), unless your memory is good or you work with a system of batch files which gives a reminder menu on the screen.

Variations of this technique will let you load preset keystrokes for any program which doesn't clear the keyboard buffer before accepting input. (Be warned: all too many programs do clear the keyboard buffer, so check first.)

The .COM version

Rather than fiddle around with ECHO and ESC \ sequences in various combinations for different batch files, I decided it would be fun to make up a .COM equivalent to be called from any batch file.

All INKEY.COM need actually do would be to regurgitate its command line input as keystrokes loaded into the type-ahead buffer.

Here's the first version as created offhand with DEBUG. I used the old routine: run DEBUG, press A for Assemble, enter assembler codes as below (excluding the addresses at the left, generated by DEBUG when I commanded U for Unassemble), use R CX to set the program length of 25 hexadecimal, N INKEY.COM to name it and W to write it to disk. The result:

```
0100   CMP  BYTE PTR [0080],01
0105   JA   0109
0107   INT  20
0109   XOR  CH,CH
010B   MOV  CL,[0080]
010F   DEC  CX
0110   XOR  BX,BX
0112   MOV  AL,1B
0114   INT  29
0116   MOV  AL,5C
0118   INT  29
011A   MOV  AL,[BX+0082]
011E   INT  29
0120   INC  BX
0121   LOOP 0112
0123   INT  20
0125
```

This is the point at which to say a word about the command line, being whatever follows the name of a program or batch file when it's invoked. For example, if I typed 'INKEY HELLO' to load the useful word 'HELLO' into the type-ahead buffer, the command line contents would consist of a space and that word. There always has to be a space or something, otherwise text on the command line would blur into the program name and confuse MS-DOS.

When you're in a .COM program, it's invaluable to know that whatever was entered on the command line is made available by MS-DOS in a little 128-byte buffer starting at address 80 hex in the code segment. The first byte contains the number of characters actually typed on the command line following the program name; the rest contain the character codes themselves.

Thus the first thing my tiny program does is (address 0100) to test the byte at 80 hex. We Jump if it's Above 1 (0105) and get on with the important stuff; otherwise the program halts at once (0107). A character count of zero is obviously useless; one character is only enough to separate the program name from the command-line text proper, so is effectively the same as zero.

(In case you were wondering: when first creating such files I code forward jumps by putting in a fake address — eg JA 100 — and going back later to substitute the real one when it's known.)

We want to use all the text on the command line by looping through it a character at a time. The 'counter' register CX is handy for loop operations, so we clear its high byte CH (0109), load the command-line byte-count from address 80 hex into its low byte CL (010B), and subtract one (010F) because we're going to ignore that first 'separator' space. The index register BX will be used to point in succession to characters on the command line: we start it at zero (0110).

The next eight lines form the loop which does the actual work. Interrupt 29 and Interrupt F1 both send the character in AL to the screen, but the former is more reliable in early BIOS versions, so is used here. We put code 1B hex or Escape in AL (0112) and send it (0114), repeat the process with 5C hex or backslash (0116, 0118), and are now ready to transfer a character from the command line.

The command line text effectively starts at 82 hex: the byte at this address as offset by the value in BX is loaded into AL (011A) and sent like the previous ESC \ (011E). That's one character loaded into the type-ahead buffer.

To conclude the loop code we increment BX by 1 (0120) so that the next cycle through the loop will load the next command-line character; then we invoke the LOOP command (0121). This is really another sort of conditional jump: it reduces the value in CX by 1, disdainfully examines the result, and if it's not zero will transfer back to address 112.

(Hence the extreme necessity of a test for no command line characters. If you entered the loop with zero in CX, the first LOOP command would 'reduce' CX to FFFF hex, or 65535, and it would be a long while before INKEY stopped running and overloading the 80-character keyboard buffer to an accompaniment of horrid beeps.)

When every character has been dealt with, CX reaches zero, the loop stops looping, and the final INT 20 'end program' is executed (0123).

Once you've created INKEY.COM, the TP.BAT batch file suggested above can be simplified to ...

```
ECHO OFF
INKEY YE
TURBO
```

Taking it further

Using DEBUG alone, it's too boring to expand INKEY as above to issue nifty error messages ("Oi, sunshine, you haven't typed anything on the command line!") or to provide full facilities for loading hard-to-type characters which aren't on the keyboard or can't conveniently be given as command line input.

The obvious example of the latter is Return itself, since typing Return obviously terminates the INKEY command input. Here's a quick fix to let you specify a Return with the slash character (/ or 2F hex). Another character could be nominated for this role if you prefer — just use a different hex code below.

Instead of the lines from 011E onward, substitute this slightly different version:

```
011E   CMP  AL,2F
0120   JNZ  0124
0122   MOV  AL,0D
0124   INT  29
0126   INC  BX
0127   LOOP 0112
0129   INT  20
012B
```

Now AL is tested to see if the just-loaded command line character is a slash (011E). If it isn't, we jump (0120) straight to the 'send' interrupt line; but if it is a slash the program substitutes 0D hex, or Return (0122). Note the post-final address of 012B: you now have to specify a larger program size of 2B hex rather than 25 hex in the R CX command.

Now, every slash on the INKEY command line will become a spuriously 'typed' Return, and TP.BAT can be made more useful like this:

```
ECHO OFF
IF %1x == x GOTO NOFILE
INKEY YE%1/
GOTO PROG
:NOFILE
INKEY YE
:PROG
TURBO
```

If you just type TP, the test at line 2 will find no command line input to the batch file and will jump to the :NOFILE label. But typing TP MYPROG will cause the batch parameter %1 to take on the 'value' MYPROG rather than just a null. Line 3 will now be run, loading the type-ahead buffer with the usual Y and E keystrokes, followed by the name MYPROG (or whatever you entered after TP), followed by a Return — all this before Turbo loads. The end result: with a single keyboard command, you go straight into editing MYPROG.PAS.

Of course INKEY isn't restricted to Turbo Pascal: for example, I fudged up a variant for someone who wanted a batch file line which would (a) issue an EXIT command to return to WordPerfect (which had been left via 'Go To DOS'); and (b) run a macro when it got there. No problem:

```
INKEY EXIT/*MACNAME/
```

... where in real life the asterisk is actually ASCII character 181, as generated by the WordPerfect MACRO key.

The final edit

I needed recently to play around with the final, 'generic', BIOS 3.1 keyboard and font programs — particularly KEYEDIT.EXE. It's probably worth getting hold of (on DEALS FOR READERS disk AP029); it works quite well and has new facilities, but is slightly tortuous. Apricot never got around to doing documentation, it seems.

KEYEDIT.EXE initially needed a lot of wrestling. You must first load one of those late-release graphics drivers, 800400EG.EXE for the PC/Xi/Xen or 640200EG.EXE for the F Series. KEYEDIT loads with a pretty graphics screen consisting of three windows — 'Active Font' at top left, 'Keyboard Map' at top right, and 'Key Edit Area' across the bottom half of the screen. (One oddity is that on the F Series, a large inverse-video block appears at upper left and obscures most of the Active Font window. It goes away if you select this window and use the cursors to scroll its contents up and down a bit.)

Options in this KEYEDIT are selected with the following keystrokes:

- TAB (or CONTROL-I) moves you clockwise from window to window, or forwards through the options in certain menus like 'Special Keys'. This is confusing, since the Windows-style pop-up menus (File, Options and Keyboard) can be moved through only with the cursor keys, which aren't available in menus where TAB works ...
- SCROLL (or CONTROL-J) moves you anti-clockwise, or backwards, in the same way as TAB.
- CONTROL-F selects the File menu, allowing the loading, saving or installation of keyboards; fonts can also be loaded for reference. Minor irritation : the .KB default extension is no longer assumed, so you have to give the full name of the keyboard you want to edit. More annoyingly, KEYEDIT doesn't bother to remember the file you loaded and to use that name as a 'save' default : when you save your edited keyboard, you must type in the full name again. The most interesting new feature here is the ability to load keyboards from — and save them directly to — a boot disk's system tracks.
- CONTROL-O offers special Options, most interestingly the chance to specify an IBM-style number pad which allows the entry of any ASCII character by holding down the ALT key and typing its number. (No ALT key? See below.)
- CONTROL-K for Keyboard merely allows you to swap keyboard maps so the display corresponds to the physical appearance of your PC/Xi, F Series or Xen. (The correct default is loaded automatically on my Xi and F10.)
- SPACE can be used to leave any of the above three menus without action.
- CONTROL-C, I suspect, is a programmer's short-cut which would have been defused when KEYEDIT was officially 'finished'. Pressing CONTROL-C usefully and instantly returns you to DOS, abandoning graphics mode and your two hours of painstaking keyboard modifications. Since it's so conveniently close to the indispensable CONTROL-F, this happens with exciting frequency. (Disable it? Good idea, but they've thought of that. You can't.)

To edit a key under the new regime, assuming you've done any required File menu loading, this is the procedure:

1. Use TAB or SCROLL to select the Keyboard Map.
2. Use cursors to highlight the chosen key.
3. Switch to the Key Edit Area to select Normal, Shift, Control or ALT mode with the left/right cursors. (If you're modifying an 'old' keyboard, the ALT positions will probably be full of bizarre rubbish.)
4. To make the key a Special Key like CAPS LOCK or ALT, select 'Special' with the up/down cursors and hit Return : move through the 13 pop-up alternatives from NULL to NUM LOCK with TAB (or SCROLL), select with Return, and escape from the pop-up menu by selecting OK.
5. To alter the Prefix (eg make this an ESC-plus-letter key), Repeat (turn on and off the repeat-if-held-down flag), Local (send characters to screen rather than keyboard buffer) etc. settings, select as for Special.
6. To program the key with actual characters, switch to the Active Font window with TAB or SCROLL. This is the most bizarre initial

stumbling block : to edit a key you must leave the Key Edit Area! You can then type in typable characters, being ASCII characters 33 (!) to 126 (~), and they'll appear in the appropriate window for Normal, Shift, Control or ALT at the bottom of the Key Edit Area. A backspace deletes the character just typed. Non-typable characters — which for some arcane reason include character 32, the space — are selected by positioning the cursor over them in the Active Font window and pressing Return.

Since you don't get any indication of ASCII code number in the Active Font window (you just get font characters, like a left-pointing arrow for Escape), it may be necessary to use 'Set Key I/O Mode' in the CONTROL-O Options menu to allow hexadecimal entry and display. Decimal entry is supposed to be selectable, but develops dreadful bugs if you try anything awkward and unusual, such as entering a decimal ASCII code above 29.

ALT — who goes there?

The main point of doing all this, in addition to escaping from the horrors of the ACTIVITY editor if you were stuck with that, is that the BIOS 3.1 key tables support the ALT key and thus allow many more combinations. By programming the ALT position of every key, lots of extra single-keystroke commands are made available. By using the Options menu to specify an 'IBM number pad', any character at all can be entered by holding down ALT and typing its ASCII number on the pad.

It does work ... but there are traps. Because of the way the Apricot keyboard interpreter operates, it seems decidedly dangerous to program ALT as the simple CONTROL+SHIFT combination which has often been suggested. Depending on the order of your key presses and releases, it's all too easy to wrong-foot the interpreter and leave the keyboard stuck for the duration in ALT or even SHIFT or CONTROL mode.

Nor is it sufficient just to pick a spare key and assign its unshifted position as ALT — the ALT mode won't turn off again unless you also assign the ALT position of that key as ALT ...

My test keyboard ended up with the conveniently-placed ESC being assigned as ALT in its normal and ALT positions (with ESC being still available in SHIFT and CONTROL positions). The number-pad entry then worked perfectly, but two other snags emerged.

First, all that rubbish in the ALT positions of a converted keyboard had to be tediously cleaned out — otherwise I kept getting appalling strings of nonsense by accidentally hitting the wrong key in ALT. It was particularly useful to make the decimal point on the number pad a null key with ALT — it tends to get pressed by accident when entering ASCII values.

Secondly, things are rather different on the F Series. The infrared keyboards don't apparently report SHIFT and CONTROL keypresses back to the main box: they merely send different codes along the infrared link when other keys are pressed with SHIFT or CONTROL held down. This means that the delusive SHIFT+CONTROL combination can't be programmed at all, and that the use of ALT has been fudged as a 'toggle' command. My same test keyboard with ESC as ALT worked on the F10, but confusingly — hitting ESC stuck everything in ALT mode until I pressed that key a second time.

Fons et origo mali

As for the corresponding FONTEDIT, it works in a similar way — right down to the disastrous effect of CONTROL-C. Here the windows are called Source Font and Destination (at top left) and Edit Cell (the whole right-hand half of the screen). CONTROL-O options let you copy characters at will between any two windows. Instead of CONTROL-K for Keyboard we have CONTROL-T for Type, allowing you to choose between any of the standard Apricot font sizes... 10x16, 8x8, etc. Beware: changing the font type destroys all your work so far, without any warning error message!

The large-scale Edit window is straightforward but sadly limited. All you can do, it seems, is to move around with the cursor keys and toggle cells on or off with Return/Enter. This program was clearly abandoned at a much earlier stage than the relatively sophisticated KEYEDIT. Most of the old PC/Xi FONTEDIT options have vanished along with the old labyrinth of menus. There's no line draw, horizontal/vertical line insertion/deletion, inversion, mirror-imaging, rotation ... and worst of all, no ongoing display of how the character being edited will look at 'actual size' — you apparently have to copy the Edit Cell to Source or Destination just to see how you're getting on. (Late extra: after repeatedly copying from Cell to Destination in a test session, I noticed that spurious bits were being set here and there in the font, little dots like flyspecks where no dots should be. Hmm.)

I'd guess that many more fun things were planned, and that some use would have been made of the quarter-screen at lower left which at present stays enigmatically blank. One tiny advantage of this FONTEDIT over KEYEDIT is that you are at least told the ASCII values of the currently selected Source and Destination character positions. KEYEDIT merely expects you to have memorised the table.

No doubt APRICOT FILE will now insert a small plug for numerous dynamic alternative font and keyboard editors written by DEALS FOR READERS contributors *(no, but we're open to suggestions — Ed)*. I suspect the amateurs beat the Apricot plc professionals hands down ... as usual.

A peculiar language

All this mucking around with editors was in connection with A Programming Language, or, for short, APL. A 'free' interpreter version was released this year by I-APL Ltd (the I is for International), and out of curiosity I took a look. The loud rumpus in the trade paper *Computing* had roused my interest: APL fans were promoting their preferred language in tones of passionate religious fervour, while opponents generally conveyed the impression that it was an insidious and evil brain virus from which computing would not be safe until the last APL disk had been wiped and salt ploughed into the ruins.

Well, it's certainly different, hermetic and incomprehensible, and when I incautiously confessed to being motivated by mere mild interest, I got a letter from one of the High Priests saying ponderously that "learning APL is an undertaking not to be lightheartedly embarked upon". The trouble is that the wretched 'language' is a tightly-compressed mathematical notation in which universe-busting programs to handle vast arrays and matrices can be dashed off in about two lines, but it takes you several years to work out what symbols go into those lines. There is no concession to paltry and outworn conventions like readability, maintainability or the English language.

(This appears as sacred dogma in the I-APL manual, where heresy is firmly snubbed — "the symbols are an essential part of the notation; it is only people who view APL as just another programming language that want to or could use keywords".)

Still, we must all have a streak of masochism, otherwise we wouldn't deal with Apricot plc. One aspect of I-APL makes it a seeming natural for the Apricot: the large non-ASCII character set which on IBMs must be tortuously simulated in graphics. Even on the IBM version supplied, a good many characters aren't typable and have to be entered as ALT-numberpad ASCII values. Hence my renewed interest in KEYEDIT and FONTEDIT ...

I'm not quite sure why I'm fiddling with this. There's a passage in one of Ernest Bramah's *Kai Lung* books where for plot purposes it's necessary for the villain to "commit about nineteen thousand lines of atrociously ill-arranged verse to the tablets of his mind". He has absolutely no visible motive for doing so, and the author shiftily remarks that he does it "with no other object than the prompting of an ill-regulated mind". That's me.

So far: I-APL runs on Apricots with a late-version IBM emulator, my own APL keyboard, and an as yet incomplete 10x16 font which shows all the directly typable characters (including inverted deltas, non-ASCII Greek letters, rectangles, dominoes, squiggles and shapes with which the feeble intellect of Man was not meant to meddle).

If anyone wants to try the most perverse and learner-resistant computer language ever devised, the opportunity may soon be with you, perhaps even as a DEALS FOR READERS offering. I bet you can hardly wait. ◆

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File o' Facts

Cries and whispers

Notes from the working week (2)

By Eddie Bromhead

Deals for Readers

Let me start out by stating that I have no axe to grind here, certainly not a commercial one (except a hope for longevity from the APRICOT FILE organisation and a childish glee when I find something amongst the DEALS FOR READERS disks which I can use).

My most recent discovery was LIST.COM on disk AP018. It's a superior version of TYPE — allows you to scroll through a text file up and down, and sideways, or to search it, or whatever, but doesn't change it. (Actually, the thing I *don't* like about this utility is the name. To me, LISTing means printout. But then, that's easily changed.)

When examining a long directory or subdirectory, try this in a batch file:

```
DIR > TEMP
LIST TEMP
DEL TEMP
```

This is better than DIR /W because you get dates and sizes, and better than DIR /P because you can move around and search it.

Like my other favourites SDIR and FDIR, LIST also works from the R run-a-program option under WordStar. When using LIST with a WordStar document file, you can get it to strip the high bit before display. This gives you readable text without going through slow old WordStar.

No Escape

A rare complaint, this one — why does the Apricot IBM emulator have to be so IBM-like? When you load it, you get no Escape sequence handling. Of course, you can't load ANSI.SYS because you aren't booting.

Twitters

Does anyone know why some RAM boards cause a twittering noise? ("Sorry mate, you've got Chirpies, that's a Canarial Disease, and it's Untweetable ..."). I don't get it from my Simon card (which REDLED upgraded from 256KB to 640K by adding the extra chips for £40-odd), and a QED 256K card doesn't do it either. Several other makes do, including 512K boards from RAM Electronics and Inpholink.

Just fishin'

After my summary of GSX drivers for the Apricot PC/Xi, Roger Gann sent me the very latest drivers he's collected for all the different machine types and screen resolutions. Oddly enough, the version numbers ranged from 1.6.2z through to 1.7.2. I'm hoping that he will publish a list and trawl for the latest versions of everything (*coming soon — Ed*). The same goes for the GEM screen drivers and the INT EC graphics extensions.

Sometimes the names are changed, and/or the file creation date is wrong. This is how to find out what you've got. First DEBUG the device driver — for instance:

```
DEBUG PC.GSX
```

Then issue the R-for-Registers command: that tells you in CX how long the file is. Suppose it's 4A00 hex in length. Now search for 'GSX':

```
-S 100 4A00 'GSX'
```

DEBUG comes back at you with the segment and offset where that string has been found, something like XXXX 3CF8 (the XXXX indicates a segment register which varies according to what machine you have and what utilities are loaded.) Then display from a few bytes before 3CF8 to about 20 after:

```
D 3C00 3D20
```

On the righthand side of the screen you will see in text a message about the driver.

Looking at GEM drivers is more difficult. Try searching for 'GEM', 'Series' or 'XEN' — or just **D**-for-Display your way through the whole lot!

Dumbo!

Ok, ok, so it's quite easy to use ANSI escapes in MSBASIC. That wasn't the point, really. I've never been keen on Basic, and the demo programs on the PC really confirmed that prejudice. What I was getting at is that the INTECH.SYS driver on the IBM compatible Apricot PC/S-286 supports some of the VT52 escape codes we've come to love, including ESC Y cursor positioning, and the demonstration of Basic incompetence was really to explain how I found out.

My latest hang-up

Sometimes when you think you have hung up an Apricot, you haven't really. I tried out a plot demonstration from an old 16 BIT COMPUTING disk. That only wanted to give me a printout of the picture as well as a screen display; but because the printer was off, the machine appeared to hang. Now I always keep a printer on-line when trying out something new.

Speed freak

A program of mine improved nearly 40 per cent in execution time on a co-processor Xen — from around seven minutes to about five — when compiled under MSFORTRAN v4 as against v3.31. On a co-processor PC/Xi that means a stunning 15 minutes saved per run. All with no changes to the source code (oh all right then, one change!).

The implication of this is that numerically-intensive software probably isn't running flat out at all: the compiler is generating inefficient code, and when you may think you need more advanced hardware, all you need to do is make proper use of what you've got.

80287 co-processors on a Xen-i fit straight into the socket provided, just as the 8087 does on a PC. Sadly, the real Xen needs a support chip from Apricot as well as the co-processor. So you can't use a 'bucket-shop' co-processor; you have to buy the complete pack from Apricot. There must be an opportunity in this for someone ... ◆

A Turbo Pascal Primer

Part Seven: More about data types

By Mark Whitehorn

Last month I talked (wrote) about declaring your own data types; this time we can apply a few names to the bits we have covered and finish off this topic.

Simple data types

The data types which are commonly used in Pascal — *integer*, *byte*, *Boolean*, *real* and *char* — are known as 'predefined' data types, for reasons which are (hopefully) self-evident.

All of these are also examples of *simple* data types: the bits of data that we place in them are always handled as whole units. You cannot, for example, take half a character and work with that. The antithesis of a simple data type is a *structured* data type; this is a collection of characters, and is clearly different from a simple data type in that we can chop it up into bits.

In contrast to predefined data types, the data types which you invent are *user-defined* data types (for example, *DayType* in last month's episode).

Scalar data types

Scalar types are data types in which all of members occur in a definite order with no gaps between them.

A good example is the data type *char*. The components of data type *char* occur in a definite order (a, b, c, d etc) and there are no half- or quarter-steps between any of the characters. In Pascal four of the five pre-defined data types are considered to be scalar: *char*, *integer*, *Boolean* and *byte*.

Data type *real* is not considered to be scalar because there is always another *real* which can be inserted into a sequence. For instance, in the sequence 1.13,1.14,1.15 ... we can always insert 1.131, 1.1311 and so on *ad infinitum*.

Now, are user-defined data types also scalar types? The answer is yes, for the following reason. Consider the example used last month, *DayType*. When I declared this as a type, I had to itemise (or enumerate) all of the possible values it could have:

```
Type
 DayType(Mon,Tue,Wed,Thu,Fri,Sat,Sun);
Var
 Day     :DayType;
```

Enumerated data types

The allowed values for *DayType* are indeed in an order — they're in the order in which I enumerated them. So *Thu* is next up from *Wed*, for instance, and one down from *Fri*. Note I have cleverly led us to another definition, which is an *enumerated* type (one in which the programmer enumerates all the possible values).

It is worth remembering that the Pascal compiler is not intelligent. I could list the possible values as ...

```
Type
 DayType(Wed,Tue,Mon,Thu,Fri,Sat,Sun);
```

... whereupon Pascal would happily think that *Mon* came after *Tue* and before *Thu*. Pascal will always assume that enumerated types are scalar. Hence, these are known as *enumerated scalar* types. (Sorry about all the names, nearly finished now.)

In the demo program, the 17 species of penguin (an approximation — experts disagree on the exact number) are enumerated in the data type *SpeciesOfPenguinType*. There is no intrinsic order to something like a species list; so I have chosen to list them in ascending order of size, the most sensible order of which I could think. I could have listed them by some other measure (loudness of mating call, for example) but size seemed the most sensible.

We have now reached the magnificent stage where we can refer to this as a 'user-defined enumerated scalar data type'. Only computer pseuds would tag all those together, however.

The only reason for defining things like this is to allow people to discuss concepts using the same language. Don't feel that the definitions are essential to an understanding of Pascal, they just help us to communicate ideas.

Scalar data type operations

Right, that finishes with the definitions. Pascal allows you to do three interesting manipulations on any scalar data type (see, the definitions *are* useful). All of these rely on the fact that scalar data types occur in an order.

1. We can ask Pascal to tell us the number of a particular value in the sequence. Consider the *SpeciesOfPenguinType*; the smallest penguin, and hence the first in the sequence, is *Little*. Computers usually count from 0, so *Little* has

DEMO.PAS

```
Type
  SpeciesOfPenguinType = (Little,Galapagos,Jackass,Rockhopper,
Peruvian,ErectCrested,FiordlandCrested,Magellanic,
SnaresIsland,Adelie,Chinstrap,Gentoo,Royal,YellowEyed,
Macaroni,King,Emperor);

Var
Penguin: SpeciesOfPenguinType;
Integ :integer;
{------------------------------------------------------------------------}
{This procedure just allows us to write the species names to the screen.}
Procedure WritePenguin;
Begin;
Case Penguin of
Little              :Writeln('Little');
Galapagos           :Writeln('Galapagas');
Jackass             :Writeln('Jackass');
Rockhopper          :Writeln('Rockhopper');
Peruvian            :Writeln('Peruvian');
ErectCrested        :Writeln('Erect Crested');
FiordlandCrested    :Writeln('FiordLand Crested');
Magellanic          :Writeln('Magellanic');
SnaresIsland        :Writeln('Snares Island');
Adelie              :Writeln('Adelie');
Chinstrap           :Writeln('Chinstrap');
Gentoo              :Writeln('Gentoo');
Royal               :Writeln('Royal');
YellowEyed          :Writeln('Yellow Eyed');
Macaroni            :Writeln('Macaroni');
King                :Writeln('King');
Emperor             :Writeln('Emperor');
End;
End;  {of WritePenguin}
{------------------------------------------------------------------------}
Begin;
      {This first section runs through the possible values for Penguin
       and uses WritePenguin to write them to the screen.  Note the use
       of the function Succ which returns the next value for Penguin.}
      ClrScr;
      Penguin := Little;
      While Penguin <= Emperor do   {an alternative here is}
                                    {While Ord(Penguin) <= 15 do}
      Begin;
            Write(Ord(Penguin),' ');
            WritePenguin;
            Penguin := Succ(Penguin);
      End; {While}
      {This bit demonstrates how the Pred and Succ functions can be
      nested.  Looks silly, but it can be useful on occasions.}
      Penguin := Royal;
      Penguin := (Pred(Pred(Pred(Pred(Penguin)))));
      Writeln;
      Write('Four back from a Royal is a ');
      WritePenguin;
      Writeln;
      Write('Two back and two forward from a ');
      WritePenguin;
      Penguin := (Pred(Succ(Succ(Pred(Penguin)))));
      Write('is, of course, a ');
      WritePenguin;
      Writeln;
      {Now a little pause.}
      Writeln('Press a key to continue');
      Repeat until Keypressed;
      ClrScr;
      {Finally, use Ord to write the ordinal values to the screen.}
      for Integ := 0 to 20
      do Writeln(Ord(integ));
End.
```

a numerical (or, as it is known, an ordinal value) of '0'. *Rockhopper* has an ordinal value of 3, and so on. You can recover the ordinal value of a parameter by using the function *Ord*: see the demo program for usage.

All scalar types will return an ordinal value, including the scalar data type *integer*. Since integers start at 0 and go up in value by steps of 1, though, we can expect *Ord[number]* (where *number* is of type *integer*) always to be equal to the value of *number* itself! So the process of asking for the ordinal of an integer is a bit of a waste of time.

Bear in mind also that *Ord[Ch]* (where *Ch* is of type *Char*) may not give the answer that you expect. If you try this and get a surprising answer, lie back and think of ASCII.

2. Following the idea that scalar types are always in an order, we can ask for the predecessor of a value in the sequence using the function *Pred*.

3. You could probably guess that we can also find the successor with a function called *Succ*.

All sorts of combinations are possible: again, the demo program has examples.

Error detection

Scalar types are really useful, but they can bite the unwary. Clearly it is possible to ask for a really silly thing like the successor to the last value in a scalar data type; Pascal will not draw your attention to these (potentially) disastrous mistakes unless you explicitly ask it to.

You can request this helpful checking by using a compiler directive, which simply tells the Pascal compiler to check that none of your code causes the values of your variables to fall outside their allowed limits. Just put *{$R+}* on a line of its own at the start of the program and all will be well.

To prove the point, the eagle-eyed among you will note a bug in the demo. If you include *{$R+}* at the beginning, the compiler will draw your attention to the problem.

There still remains the drawback that the program can come to a grinding halt if you have this compiler directive set. In other words, *{$R+}* is very useful in alerting you to potential bugs, but it doesn't eliminate them. There are several ways of removing said insects, notably ensuring that you never allow the data to fall outside its prescribed range.

As an exercise for next time, try to think of ways to ensure that this type of code can never crash. A good general hint is to remember that some data is cyclical in nature, like the days of the week in which *Mon* follows *Sun*. ◆

Contributors in this issue

Dennis Jarrett is Managing Editor of the TP Group newsletters and a frequent contributor.

Jeff Ashurst is a chartered engineer who believes that personal computing can improve both the efficiency and the quality of life. His specialist interest is in computer communications, and he writes on various aspects of the subject.

Edward Bromhead is Reader in Geotechnical Engineering at Kingston Poly, where he uses a couple of Apricots to model the behaviour of soil slopes and groundwater (mainly using his own Fortran software and GSX). He specialises in earthworks (eg for motorways) and landslides (he predicted the collapse of Carsington dam in November 1983: it fell over eight months later).

Terence Green is an unemployed Apricot owner (currently looking for a job). Formerly an unlicensed truck driver in Lesotho, he started on IBM 370s and worked his way down to micros; these days he minds the kids and scrapes a living washing dishes (and writing occasionally for APRICOT FILE).

David Langford is a full-time author and computer addict, whose latest book *EARTHDOOM!* — a spoof of disaster novels, written with John Grant and scorned by Kingsley Amis — is "by no means" about Apricot BIOS variants. (The inclusion of a permanently drunk character called Apricot should not be misinterpreted.) He is inordinately proud of being a guest of honour at the 45th World SF Convention last August.

David St. John-Wallis is a sort of psychologist who runs an export marketing consultancy and writes *enormously* thick marketing books about the developing world. He's a chastened man since he first leapt to journalistic prominence in these pages; vituperation, vilification, abuse, rejection and guffaws have nearly broken his spirit. So he now runs a sort of computer software company which doesn't do very well. He says that all contributions will be gracefully acknowledged.

Guy Sturges worked as a programmer for the largest software house in England before moving to Switzerland. He is now working in telecommunications, systems and programming in Geneva. Guy purchased an Apricot PC in October 1986 ("it was only then that they were a reasonable price") and is putting all the pieces together to make it work as it should.

Mark Whitehorn started life as a Cytogenicist but the Siren Song of the computer was too strong and he is now a private consultant and Advisor of Microcomputers to a Scottish university. He says his hobbies include penguins, building 1960s racing cars on the cheap, and indoor underwater powerboat-snooker (of which only the last is apparently untrue).

The Q&A Clinic:

Questions by subscribers, answers by APRICOT FILE

Between us, the staff of APRICOT FILE and our contributors offer an unusually wide range of expertise and experience. As many subscribers will know, we handle a lot of queries each month by mail or by phone; and every so often we run the Q&A page to present what we feel are the more interesting and/or useful of these. If you want to make use of the service, just drop us a line ...

Q. BSAVE/BLOAD

Is there an equivalent within GWBASIC for the MSBASIC BSAVE/BLOAD procedure for saving and loading screens?

A. Both commands (along with the essential DEF SEG) are indeed available within GWBASIC and should work as documented previously in the APRICOT FILE *Q&A Clinic*.

Q. Bell modems in Britain

Why won't the cheap modem I bought in New York work on my computer back in England?

A. Could be any number of reasons, but the immediate and probably inescapable one is that your US modem follows the Bell standards for data transmission. Before deregulation in the States, Bell Labs dominated the telephone business there and set a number of relevant standards that have become enshrined in common practice. For Europe, a body called the CCITT (which is dominated by representatives from bodies like British Telecom) set a different collection of standards.

Modems generate tones or pulses that correspond to binary 0s and 1s. In essence, the problem is that the (European-oriented) CCITT standard and the (US-influenced) Bell standard specify different frequencies for these signals. For instance, a 300bps CCITT-compatible modem in originate mode sends 0 as 1180Hz and receives it as 1850Hz; a US-derived 300bps modem will meet the Bell 103 standard, where 0 in originate mode is 1070Hz for sending and 2025Hz for receiving.

In short — if you're talking to a CCITT modem over European phone lines, you need to be sending and receiving CCITT-standard frequencies. To communicate directly with a Bell-standard modem, you need the Bell-standard frequencies.

Incidentally, the Bell modem won't have been approved by BABT. As a result, it's illegal to use it on public phone lines in Britain.

Mike Florey adds: There is a signal level offset of a few decibels between the US and UK networks. The reasons are historical, dating back to the days before thermionic valves: the only way to make signals go further was to improve the output of the transmitter (which means the carbon microphone) or receiver. Bell invented a better transmitter, the UK invented a better receiver: neither was more right or wrong than the other, and a combination of the two inventions would have been better still. So commenced the divergence of standards between the old world and the new.

Still, there's no problem — until you take a modem chip designed for the Bell network and use it over here (as is the case in every affordable modem on the UK market). It is easy enough to attenuate the transmit level to the -9dBm demanded by BABT; it's more difficult to improve the receive sensitivity *pro rata*. The net effect is that the modems we all use are not designed to cope with all dial-up circuits.

Some tests on using a Bell standard telephone on the UK network gave acceptable results for 75 to 80 per cent of calls compared with 95 per cent for a BABT-approved phone. 'Acceptable' is a subjective term, of course; the important thing is that there is a significant difference in performance, all other things being equal. The corresponding results for modems would probably be similar. If the same tests were carried out in the US the percentages would be reversed in favour of the Bell phone.

Since most of us operate comms from only one or two lines (home and office, say), rather than on a representative sample of lines, statistics can be misleading. The tendency is for people to experience big problems or very few depending upon where their exchange fits into the network and how far they live from the exchange. The same considerations apply at the other end, of course.

At first sight that should mean disaster for comms outside the US, Canada and Japan. But in practice this is not so. Within the UK, the vast majority of modems are used to access Prestel or services via BT or Mercury Packet Data Networks, which solves the line attenuation problem. Unfortunately that leaves the Bulletin Board enthusiast out in the cold. Such users constitute a market that is too small to justify development of special products and too price sensitive to be able to afford a suitable product if it was made (and BABT-approved).

With the benefit of hindsight it can be argued that an opportunity

was missed in the mid 1950s, when the planning standards for the British STD network were being determined. A decision to use four-wire switching rather than two-wire (thus keeping the send and receive signals completely separate between local exchanges) would have allowed the analogue network to provide line losses comparable to the now-emerging digital network. But post-war austerity and a variety of political constraints led to adoption of the two-wire approach.

The technical limitations resulting from that decision mean very little can be done to improve transmission performance without incurring additional costs out of all proportion to the benefits gained. But be careful not to confuse design limitations with equipment/line faults!

When the current V21/V23 modem chips were specified, the sole single-standard market in the world was North America and the Bell standard. Europe was a collection of state communications monopolies with rigid protectionist controls over the supply of equipment, and BT liberalisation (let alone privatisation) was not even a topic for discussion. The chip makers took the only course that was commercially viable and designed products for the market they knew they could sell into. UK modem-makers used to build modems to GPO specifications at prices that no individual with a mortgage to pay could possibly afford; today they bolt together standard chip sets to build products we can all afford — and which meet most requirements, but not all.

Salvation will come, eventually, when the UK network is fully digitised (another reason why the modem industry is unlikely to put development and BABT-approval effort into a short-term market). Until then, some frustration is inevitable. I suppose we can hope that the 'single European market' promised for 1992 will result in a sufficiently large user base and enough common technical standards to prevent this sort of anomaly happening again. On the other hand, how many flying pigs have you seen lately?

Q. Jost's MANAGER

Please can you ask Jost Riedel if he has ever tried to format a disk from the MANAGER Tools Disk utility; my experience both pre- and post-AP026 is that the FORMAT via Tools/Disk with BIOS 3.1 and MS-DOS 3.20 does not work — both hard and floppy disks are attacked at once. The floppy is formatted in unrecognisable format, and the hard disk is either corrupted or loses its identity label and has to be given a factory format to overcome its nervous breakdown.

This could be the same problem as with the original BACKUP/RESTORE that came with our Xi: under BIOS 3.1 it started chopping the end off long files that were being restored. It is a pity that older utilities are not checked under operating system upgrades and the necessary new utilities listed in a README file with the new operating system.

A. *Jost Riedel responds:* "My apologies for not having tested DISK — I didn't think anybody would want to actually use it. But despite the lack of a README file, there is my comment in LADDER.DOC on AP026: 'I would not recommend the use of DISK for formatting — after all, FORMAT is far better'.

"Well, I did not expect DISK to be so dangerous. As the screen display of all of the ladder-type programs works for BIOS 3.1.1, I was tricked into thinking that screen display was the *only* problem. For DISK, however, there is another one: it simply does not work under either BIOS 3.1.1 or (the patched) BIOS 3.1.2. So anybody trying to use DISK (unpatched) under BIOS 3.1.1 would have the problems described without me being involved at all.

"What's more, the ARCHIVE utility behaves a little strangely, especially the DIRS command (and even more strangely under BIOS 2.7); so forget about this too. BACKUP/RESTORE is better, anyhow.

"All the other AP026 utilities have been tested by me, and they do work."

Jost has now sent us an amended version of AP026, and this disk is now back in the DEALS FOR READERS catalogue. Most of its programs are untouched; but DISK and ARCHIVE have been deleted, SPOOLER.EXE is replaced by a SPOOLER.COM, the FONT etc utilities are updated, the documentation has been enhanced, and there are a few more very short utilities thrown in.

As for BACKUP and RESTORE, Jost comments that for starters there are two entirely different animals at play here. A BACKUP/RESTORE by MicroSoft was supplied with all generic MS-DOS versions (it still contains Zbikowski's name besides a Microsoft copyright note). But for some reason a few OEMs chose not to use this — IBM for one has its own BACKUP/RESTORE pair. The original Microsoft documentation refers to this and warns about possible incompatibilities (and then do you remember good ol' ladder-driven ARCHIVE?).

The newer versions of BACKUP and RESTORE are from ACT/Apricot plc; as a result, there are many versions in existence. Newer should be better, and we micro users shouldn't have the problems that *real* computer users encounter (they are Beta test sites, right? Hint: never use x.0 versions. And you really get stuck if a bug in version 4.3 hinders you, but 5.1 isn't yet available). With Apricots, Jost — among others — has been surprised to find that a late version of RESTORE won't get back something saved with an earlier BACKUP. He writes: "From that day on I have relied only on the original MicroSoft product, always wondering why someone at ACT did reinvent this basic utility. Until, that is, I came across the problem where a file spreading over several disks could not be restored. Chunks were missing, and only an analysis with DUMP plus a short Turbo Pascal program could rescue the old data."

There was also a bug in one of the older RESTOREs: the utility refused to restore files with a

Unanswered queries

Questions from readers, no answers from us: any and all input welcome ...

- Using the SuperCalc 3 /View facility to display colour graphs seems to upset my previously-set foreground/background colours and returns to a white-on-black display — though further View commands work ok. Is it possible to fix this?
- How can I print in colour (on an Epson JX-80) from SuperCalc?
- The only manual set-up code Randall McMullan gives in *SuperCalc Prompt*, CONTROL O, does work; but none of the other codes given in our Epson manuals do — why?
- I have a Portable with Communiqué, which works well enough in mono; but do you know of a way to convert it to access Prestel in colour?
- How does GWBASIC know when a monitor is attached, so that it can start on the monitor and reverts to the LCD screen on a SYSTEM command on a Portable?
- I use Lotus 1-2-3 and the Apricot-supplied RAMDISK.SYS on an 896KB PC. My largest spreadsheet (8 columns by 350 rows, less than 50K in size) has reached a point where garbage appears in the last few rows; and when I try to add any more rows the system crashes. If I boot *without* the RAMdisk, the problem goes away. Can the problem be solved by using another RAMdisk?
- *Advanced MS-DOS* mentions that strings can be added to the Environment block "either interactively or by the use of the SET command". Can anyone tell me how one can add a string (XYZ=ABC) to the master Environment block from a program such that it is still there when the program terminates?

garbled datestamp (whether or not you used the 'restore from specified date' switch). But the versions Jost uses at present — BACKUP 1.5.3 and RESTORE 1.5.2 — work "flawlessly", and we'd go along with that.

Jost adds that there's also a small difference worthy of note between ACT/Apricot's RESTORE and Microsoft's. Apricot leaves the Archive bit set for files that have been RESTOREd, Microsoft has it switched off. Apricot's solution is better; just imagine you are doing incremental backup of FILE1 (among many other files) to DISK1, then to DISK2. You then realise that you clobbered FILE1 before putting it on DISK2, so you restore to DISK1's version. Now, without having touched FILE1, you make an incremental backup to DISK3: Apricot's RESTORE will put FILE1 on to DISK3, Microsoft's won't. Your hard disk crashes so you now do a complete restore; from DISK1 you get the good version of FILE1, DISK2 gives you the garbled version, and finally DISK3 will give you nothing under the Microsoft régime — but you get the good copy of FILE1 with Apricot's.

On the other hand, Jost also points out that Apricot's RESTORE will thwart you if you use BACKUP in the way he sometimes does. "I have one disk on to which I back up all modified Pascal sources in my office and I RESTORE these on my machine at home. Then I work a little in the evening, do an incremental BACKUP, and RESTORE it next morning in the office. If the Archive bit is left on, this would eventually result in the complete source library being shuttled between the two machines". Switching off the Archive bits on the backup disk doesn't help; the Apricot RESTORE *always* produces files with Archive on. Which hints that ACT/Apricot's superiority in this respect is a mere accident: they just didn't bother with the Archive bit of files being restored.

One last annoyance with Apricot's RESTORE — the 'Disk No is 1, Press Y to accept any other key to ignore' question. It's easy to miss the Y key, especially on non-QWERTY layouts like the German QWERTZ). Despite being shown in upper case, the Y is not case-sensitive.

Q. FRIDAY on my mind

My computer is an Apricot PC with dual single-sided 315KB disks, 256KB RAM, and MS-DOS 2.00 which I have been using for the past four years. My main problem is that I have a data file on FRIDAY of 196,000 bytes; I need to transfer this to a text file in order to it within a new database format on an IBM-type machine. I have tried within FRIDAY to convert to an ASCII file; but the program crashes each time, whether I work to a blank disk or to the program disk. Do you have any miracle cure ?

A. This one has gone the rounds of the *Q&A* panel with little result. The best we can up with is the suggestion that the data file in FRIDAY format presumably 'unpacks' to somewhat larger than 196KB when output in ASCII format, and so won't fit on to a 315K disk. In that event the only realistic options are to save it in separate chunks on separate disks, or get hold of an Apricot with double-sided disks to use.

The other possible problem is that you're running out of memory to use for the file conversion. Maybe another 256KB would help ...

Why not go the whole hog and upgrade to a 20MB hard disk with a 512K memory card and the NEC V30 processor? It'll be better than an IBM-compatible for around the same price! ◆

Review

A modem for our times?

The Pace Linnet 1200 reviewed

By Jeff Ashurst

In a market contested by a large number of modem manufacturers, Pace is one of a handful which advertises fairly widely and is consequently relatively well-known. This company markets two families of intelligent modem, the LINNET and the more sophisticated SERIES FOUR; Pace also produces modems which sell under other names, and internal card modems for various computers.

The basic LINNET is a V21/V23 device identical in physical terms and with very similar operating characteristics to the model reviewed here, the 1200, which adds V22 capability (for 1200/1200 bps full-duplex operation).

Pace's LINNET 1200 is also an *intelligent* modem. That's to say it has its own microprocessor to control functions, its own ROM software, and a read/write memory area: it is a dedicated computer in its own right.

The SERIES FOUR line also starts with a V21/V23 model and moves up through a V22 modem to a top-of-the-range V22 *bis* (for bisynchronous) modem capable of 2400/2400 bps. With the SERIES FOUR you get extras such as a printer port and an LCD display of call information, not to mention dramatic wedge-shaped styling and (with the low and mid-range models) an upgrade path.

Unless it is essential to have V22 *bis*, however, I believe it would be difficult to justify extra expenditure of about £200 on a SERIES FOUR when a LINNET 1200 can be bought for so much less.

Externals

The LINNET is the ultimate in unobtrusiveness, being housed in a simple pale-grey cuboidal casing only 35mm high and scaling 160mm wide by 242mm deep.

The front panel has small windows on to six LEDs for power-on and call status information.

Mounted at the rear are a DIN socket for the external power supply, an industry-standard 25-way D-shape socket for your micro's RS-232 lead, the phone line, and a socket for a standard BT jack (in use the modem is plugged into a BT wall socket and your telephone handset plugs into the modem — this can effectively result in a useful extension to the telephone line). The rear panel also holds a small recessed Reset button, the LINNET's only manually-operated switch.

At work

The modem has two operating states. In *command* mode, all control of the modem is by character sequences sent from the computer via the RS-232 link. These sequences are instructions to the modem's in-built software, and are as defined in the popular Hayes command set (of which more later). Because of the modem's intelligence, any software which will output ASCII characters from the RS-232 interface will suffice to control it. I used the modem successfully with different comms packages, including the popular DIALUP from PMS.

Once it has locked on to the carrier tone from a host computer the modem goes automatically into *on-line* mode and transforms any microcomputer into a terminal. It senses the transmission speed and data format from the micro and adjusts itself accordingly. That includes the 1200/75 'split speed' used by viewdata and offered by several other dial-up services like the major electronic mail suppliers; IBMs and compatibles cannot handle the different speeds (or 'asymmetric duplex') of a V23 link, but the LINNET 1200 can buffer data flow and convert speeds by operating at 1200/1200 bps between itself and the terminal micro while simultaneously maintaining a 1200/75 bps V23 link with a remote host. If you thought you couldn't get Prestel on a PC clone, that's the solution!

Further, for the same reason this modem is in no way machine-specific. It will function with almost any micro, be it IBM-compatible or not.

The Hayes commands

The command set developed by the US modem manufacturer Hayes has been adopted as a *de facto* industry standard.

The commands are really easy to use: each instruction starts with the string AT — to grab the modem's ATtention — followed by one or more other characters that abbreviate specific commands.

Linnet Command Set

A	Answer call without delay
C	Carrier control [C0 = OFF, C1 = ON]
D	Dial number and originate call
E	Echo commands [E0 = OFF, E1 = ON]
H	Hook control [H0 = ON,H1 = OFF]
I	Display identity [In where n = 0, 1, 2]
M	Monitor status [Mn where n = 0, 1, 2]
N	Display/set number store
O	Go back on-line
P	Pulse dial
Q	Result codes [Q0 = ON, Q1 = OFF]
R	Reverse to answer after dial
S	Display/set S registers
T	Tone Dial
V	Result codes [V0 = numeric, V1 = English]
W	Wait for secondary dial tone
X	Extended result code [Xn where n = 0-4]
Z	Reset S registers/commands
&F	Restore Factory settings
&S	Show current settings
&W	Write back current settings

To illustrate the usage, let's look at a few of the commands. Take P and T, for example, which select Pulse or Tone dialling. The LINNET will operate either of these, and is therefore equally at home on a private BT line or when used with a modern tone-dialling PABX system; you just key ATP to select Pulse dialling or ATT for Tone.

In the PABX context the W command is interesting, and may be used in conjunction with D which instigates auto-Dialling. Where it is necessary to key '9' for an outside line, the LINNET can be instructed to Wait for a second dial tone: thus ATD 9W 1234567 causes the modem to call for an outside line before dialling 123 4567.

The N instruction accesses the modem's telephone Number store. ATN? will display the list of numbers currently stored; ATDN12 will cause the LINNET to Dial the telephone number stored at number 12 in the list. It's as simple as that! To store an item on the list, at number 28 say, enter ATN28= and the modem will ask first for a name and then for a phone number. If an outside line is needed, the 9W element may be included in the stored number.

Up to 32 names and numbers may be stored in this way, maintained in non-volatile memory by the use of battery backup; the battery is recharged automatically when the modem is under power.

The Hayes protocol also includes the use of a set of 'standard registers', or S registers. These hold the values of a set of parameters relating to the modem's function, including response times and characters recognisable as linefeed, backspace and the like. These parameters are listed below; default values are held for them, but all are user-programmable.

Linnet registers

S000=000	rings to answer on
S001=000	ring count
S002=043	ESCape character
S003=013	Carriage Return character
S004=010	Line Feed character
S005=008	Backspace character
S006=004	dial tone wait (seconds)
S007=040	carrier wait time (seconds)
S008=004	comma pause (seconds)
S009=006	carrier detect response (100ms)
S010=007	carrier loss response (100ms)
S011=090	duration/spacing of DTMF
S012=050	escape guard time (20ms)
S013=000	[reserved]
S014=247	[reserved]
S015=000	[reserved]
S016=000	[reserved]
S050=001	speed buffer enable is ON
S051=004	V22 1200/1200
S052=000	repeat dial tries
S053=001	auto baud rate scan is OFF
S054=003	baud rate scan period (seconds)
S055=000	[reserved]
S056=000	[reserved]
S057=010	inactivity timeout (minutes)
S060=011	FIDO result code override

Last words

At £229 plus VAT, the LINNET 1200 brings the speed of V22 operation (and the consequent economy in time and charges) to a wider public. V22 modems typically have price tags considerably higher, though you might get more frills — not to mention support, or even an RS-232 cable. Pace did operate a 'no cable supplied' policy last year, on the grounds that there are so many variations that it could not cater for all the different microcomputers. The LINNET reviewed arrived without a cable, so one can only assume that this policy still applies.

Pity. I like the LINNET: it's well-made, it's a pleasure to use — and the Hayes commands couldn't be easier. Little matters like starting with no cable take off the gloss, and will be likely to deter corporate users in particular from placing orders.

But wait! There is a better offer: MicroLink, the comms service running on Telecom Gold, is currently offering the LINNET 1200 for £169 including VAT under the name 'MicroLink MultiSpeed'; the only difference from the model reviewed is the colour of the case. With the modem MicroLink bundles a cable, a comms and word processing package called MINI OFFICE II, a free subscription to MicroLink (which includes all the standard Telecom Gold services and then some), free Telex validation (meaning you can use your mailbox to send and receive Telexes — normally an extra subscription charge), and one month of free connection to MicroLink/Telecom Gold. I don't think the software is anything to write home about, but there is no denying the value of the package. If you don't mind a black modem with red stripes, this is the way to acquire a LINNET 1200! MicroLink is on 0625 878888.

In short — the LINNET 1200 is a working, functional tool that handles what is probably the most useful line speed the average modem user should consider: it's a modem of today. ◆

Pace Linnet 1200

Description:	Externally-connected V22 modem — intelligent, Hayes-compatible, buffered for 1200/75 bps operation, automatically senses and adjusts for line speed.
Supplier:	Pace Micro Technology
Address:	Allerton Road Bradford West Yorkshire BD15 7AG
Telephone:	0274 488211
E-mail:	Telecom Gold 79:PCE001 Prestel 274729306
Telex:	51338 PACE G
Fax:	0274 547124
Price:	£229 plus VAT
Configuration:	Any computer with standard RS-232 port
Conclusion:	Good value for general-purpose async comms.

Make more of your disk

Further space-saving notes

By Guy Sturges

Last month I looked at how files are stored on a disk and the use of archiving to save on disk space. This instalment will look at disk storage in more detail.

Directory space

When data is stored on a disk there must be an easy way of retrieving it. This is achieved by setting up a directory that effectively works like the index of a book. In a directory is stored the name of the file, the date and time it was created (and *not* when it was *stored*), its size, and where exactly it is located on the disk.

It's important to distinguish between the date a file is *created* and the date on which it is *copied* to a directory. There is no means of knowing when a file was copied, for this operation is not date-stamped by MS-DOS; more on this later though.

The directory itself also takes up space, in terms of clusters. In the example I used last month we had 21 data files of 378 bytes each which on a hard disk took up 168KB. Those files will also occupy space in the directory. The directory is organised such that there are 16 entries of 32 bytes apiece in each 512-byte sector; our 21 files will therefore take up 21 entries out of a possible total of 256 in one cluster.

Now, the archival process makes a single file from these: so only one entry is required in the directory, leaving room for 255 more. So as well as compressing the files themselves to save space, the archiving process additionally recovers the directory space that would otherwise be required for the separate files — 640 bytes in this case (20 32-byte entries).

On some systems the root directory has an absolute limit of 256 entries on a hard disk, 112 on a floppy. All other directories can be expanded to take more entries when a cluster becomes full. So here is another space-saver, albeit a small one, resulting from compressing many files into one.

On the other hand ...

Good disk management tells us to make use of directories the better to access and organise disk files. This is largely true; but it can be overdone, with a consequent waste of space — *every* directory takes a minimum of 8K in the example we are using. Again disks with less sectors per cluster waste less space with directories. You should give careful thought to directories when before creating them unnecessarily.

Entries in a directory are stored in the order they are created or added, as long as no files have been deleted from the directory. This means that entries which are added by a COPY operation will be stored in chronological order of their addition to the directory; that could give a rough idea of the time they were added.

Deletions

When a directory entry is deleted, it is flagged as such. This is how some of the 'undelete' utilities are able to recover erased files. New files that are added or created will however overwrite the first directory entry that is flagged as deleted, and new entries following deletions will therefore *not* be in chronological order of addition.

The clusters assigned to deleted files are handled differently by different versions of MS-DOS. In the later versions they are not overwritten like the directory entry itself; instead they are left unused until there is no more free space available for allocating files. On a newly-formatted disk each free cluster is adjacent to the next; but once all the initially contiguous free space is used up, MS-DOS starts to allocate space used by deleted files.

This facilitates the recovery of deleted files, but it does mean that the disk can become fragmented with pockets of clusters which are no longer used by files. A large file may have to be allocated many clusters in different locations on the disk, and the result is a relatively slow access as the disks heads have to move all over the disk surface to read all of the file.

Other space savers

There are other products that can save on disk space: LIB, for instance, is a program that groups many .OBJ files into one. There's no compression; the space-saving is due to many files being replaced by a single one.

Perhaps of more general use, MAKE is a program for maintaining dependencies between certain files which in the process of their operation can behave like a sort of generalised BAT file. This behaves like one batch file and performs the functions that many BATs might perform; it gives a space saving as it can exist as one file.

MS-DOS 3.2 improved the speed of processing batch files; thought should be given to making generalised BAT files which accept the necessary parameters to operate correctly, rather than using lots of little batch files. If these generalised BATs are stored in a RAMdisk which is in the PATH, they can be accessed without any need to read a real disk — thus speeding up execution.

Making mini-disks

It may be a good idea to have clusters with a lot of sectors to speed up access to data if you have a big disk with lots of free space available. What happens if you don't have much free space left?

InfoSoft's SPLIT is a neat program that creates 'virtual' disks within the main disk. This means that rather than having one big disk of 10 or 20MB, you can 'split' it into many smaller 'disks'. This can be useful as the individual drives appear as if you added extra floppy drives of any size you need (drives D, E, and so on); that can help too with those older programs which can't accept directory names in their paths, only drive names — instead of loading files into a directory, you can keep them on these 'virtual floppies'.

And where is the space saving? Well, the virtual floppies use a different number of sectors per cluster — namely two. So moving our example 21 data files of 378 bytes each from the main drive to a virtual floppy would reduce the amount of space used from 168K to 21K!

Keep your house in order

By copying files to a temporary directory, deleting the original, and then copying them back into the original directory, you can keep a directory free of entries flagged as deleted.

There are several utilities that reorganise directories by sorting the entries and rewriting them. This could be useful; but I believe it is more important to retain the chronological order of directory entries and use directory listing programs (like SDIR) to give sorted directory lists rather than storing them in sorted order.

There also exist utilities for rearranging the clusters assigned to files on a disk in order to make the clusters for each file contiguous. Some of them are smart enough to put regularly-used files together at the beginning of the disk to minimise the movement required of the disk's read/write head — which speeds up file access. For example, for the boot-up process it makes sense to have COMMAND.COM, CONFIG.SYS, AUTOEXEC.BAT and all system files close together. Often editors reallocate their files elsewhere on the disk so that CONFIG.SYS or AUTOEXEC.BAT, if they have been edited, can be a long way from the other system files, thus slowing up the boot process. ◆

Sources

The DEALS FOR READERS mail-order service can supply several of these useful space-saving utilities:

- Versions of the ARC archiving utility are on disks AP018, AP021 and AP035 — all at £15 (we'd recommend AP035).
- The InfoSoft SPLIT disk-separating utility we sell as disk AS033, price £56.
- The SDIR sorted directory utility is on disks AP001, AP002 and AP004, all at £15.
- Directory-sorting utilities include DS.EXE, supplied as part of the NORTON UTILITIES package — disk AS155, price £80.

As always, these prices include VAT and despatch.

Diary dates

On with the Shows

A round-up of potential relevance

September 1988

13-16 Info North *Manchester.* The Northern version of BED's everything-for-the-office show. *Organiser: BED, tel 01-647 1001*

14-18 Personal Computer World Show *London.* The best London event for home and business microcomputing — moves to Earls Court this year because "the Show has outgrown Olympia both in terms of floorspace and the increased number of visitors" (80,000 punters last year). This time the Show will be split "clearly" into separate areas for business, 'general computing' and leisure. *Organiser: Montbuild, tel 01-486 1951*

27-29 London Business Show *London.* BED's local everything-for-the-office show is to be held just round the corner from our offices in Islington. *Organiser: BED, tel 01-647 1001*

October 1988

13-15 Desktop Publishing Show *London.* Small and quiet last year, but the DTP industry seems to be gathering steam again now. Apple will presumably dominate again, but new software, graphics utilities, and POSTSCRIPT-compatibility may re-fire the enthusiasm. Should be around 100 exhibitors. *Organiser: Database Exhibitions, tel 061-456 8383*

24-28 International Business Show *London.* Giant office show — 200 exhibitors covering everything for the office. Tends to major on furniture and office consumables rather than computer-based equipment. *Organiser: AGB Exhibitions, tel 01-868 4499*

26 October — 2 November IBM '88 *London.* IBM's very own show, the company's major showcase for its products (and there are several new IBM machines this year). Last year's inaugural event was done very well, probably because it comes from the PR budget rather than as a straight commercial venture. *Organiser: IBM, tel 01-578 4399*

November 1988

14-18 Comdex Fall *Las Vegas.* By comparison with Comdex Spring, this one has nearly twice as many exhibitors for the noisier and probably more important half of the giant twice-a-year US show for the computer industry. *Organiser: Interface Group, tel [USA] 617-449 6600*

December 1988

6-8 Online Information 88 *London.* The 12th International Online Information Meeting offers a lively seminar and associated exhibition — mostly for on-line information services and CD-ROM publishing. Last year's event demonstrated that the exhibition side was outgrowing the previous hotel venues, so this time it's moved to Olympia. *Organiser: Learned Information, tel 0865 730275*

Readers' Writes

Your chance to have a say

Of noise and modems

In his *Doodles* column for APRICOT FILE Release 3.8, David St.John Wallis discovers the effects of stray electrical fields on computer equipment (unless it was sheer vibration!). Rather more severe problems lay in wait for modem users: the pair of wires that carry your voice and/or modem tones have a few side effects (outside the control of BT) that may cause trouble.

- Any long length of wire acts as a radio aerial, and a telephone line is no exception; powerful low-frequency transmitters can even couple into buried telephone lines.
- Direct coupling of electrical surges can happen where telephone lines run near to power lines or (electric) railway lines. Similar effects can occur when domestic mains supplies pick up interference from dimmer switches, central heating thermostats, washing machines, electric cookers and the like.
- Earth potential differences between the telephone exchange location and the modem/computer also produce problems — generally caused by unbalanced phase loading on mains supplies (at either end) or by industrial activity that involves heavy current discharges to earth (BR Southern Region's third-rail system is also a prime offender in this respect).

In all three cases the interference appears between the telephone line and earth rather than between the wires; it is referred to as 'common mode' interference. An ideal modem would ignore such signals; but in practice they are merely attenuated by an amount which depends on the design of the modem and sometimes on the amplitude (voltage) of the interference.

The ability of a modem to attenuate common mode signals is known as the 'common mode rejection ratio' (CMRR) and may be of the order of 40dB where line transformers are used. An electronic transmission bridge as is used in many modern telephones gives a much better CMRR, but only so long as the interference is at a fairly low level: too much and the CMRR collapses to near zero.

Telephones are pretty well immune to this type of problem because they are not earthed locally. Even so there have been a few extreme cases.

The end result of common mode interference is data errors, conventionally attributed to 'line noise'. Some modems seem to turn in a consistently better performance than others whatever line they are used on; the foregoing may be one of the reasons and you will find nothing in a modem specification that gives any inkling of which category that particular modem belongs to. What we users need are some proper modem performance standards so prices can be compared on a genuine like-for-like basis. My gut feeling is that products like the Dowty Quattro will see off most examples in the recent influx of cheap V22 *bis* modems ... but there could be some nice surprises. Finding out the hard way could be expensive.

I suppose one day we will all be connected up with optical fibres: pricey at the moment, though.

Mike Florey
Croydon

Updating Apricots

Back in 1985, we decided go down the network road. The idea of each member of my staff having a standalone word processor was ok in theory (we are a PR agency and directory publisher); but for practical purposes everybody working off a central file server seemed a better idea. Three twin-floppy Apricot PCs were purchased (replacing two Superbrains) with a Point 32 file server, and later a Xen FD was added.

After initial problems trying to persuade WordStar 3.3 run on the network the system has run faultlessly, turning out many millions of words over the years.

But like all PC users who look to the future I could see problems when Apricot decided to go over to IBM-compatibility. The promise of help for the next five years looked like typical Apricot PR hype; there would be no Apricot upgrade for the popular software packages and the use of lasers would be severely limited.

So when Apricot announced the PC-286 upgrade package we were extremely sceptical. Apricot is a typical micro manufacturer; we saw it as an announcement today that constituted an invitation to try and work it out tomorrow.

Which way should we go? The options were ...

- upgrade our very successful PCs
- part-exchange the system for something else, either an Apricot or the monster type of IBM clone that take up so much desk space
- port the machine as suggested in APRICOT FILE Release 3.6 and run an Apricot alongside a clone.

The last idea was turned down: in effect it would reduce the

advantage of networking, though of course we could hook up a laser to the single machine.

At the *Which Computer Show* we saw the PC-286 actually running — and very impressive it looked. In the event, we have gone the Apricot route — upgrading the three PCs to PC-286s, part-exchanging the Xen for a Xen-i 45MB file server, and turning the old 20MB file server back into a PC with a secondhand 12in screen and the mostly-redundant keyboard from the new Xen-i. The mods were done by Apricot on site as per their literature and we loaded the new software ourselves with the aid of a clever nephew graduate from Imperial College. (Small business such as ours cannot afford Network Managers!)

As far as software is concerned, WordStar 4 is real network software and a joy to use. We were always happy enough with the old version; but it suddenly looks old-fashioned compared with the contemporary Professional which has over 120 new features. Most of these can of course be overlooked, but the subdirectory path support is of great use; and with the Apricot extended memory, the software and document file are all loaded into RAM — which makes the whole thing very fast. Printing is now by spooler and there are lots of small improvements, many of which we are still finding out. The spelling checker is easy to use, and the Thesaurus is great.

The MicroPro upgrade is really good value at £99, and so too is the updated Cardbox Plus which cost us £50 from Business Simulations.

Both MicroPro and Apricot are now happy to give support over the phone.

Including the software, the total cost has worked out at around £5,500 — not that much cheaper than the list price for a very basic Apricot diskless four-workstation system, and no doubt more than a 'here today gone tomorrow' clone dealer could offer us.

The PC-286s are excellent (why doesn't Apricot bring back the old PC with new internals? It would really sell) and the change-over was really easy. We still have Apricot-portability and the ability to use the machines as standalones, and the user of each station can download their day's work on to a floppy. Roger Foster has kept his promise and Apricot flies the Union Jack in the world of the sophisticated PCs. We think we have gone the right way.

Malcolm Ginsberg
Potters Bar, Herts

SuperWriting with lasers

It may just be my good luck, but I have had few of the difficulties Eddie Bromhead encountered in trying to get a laser printer to turn out high-quality copy (APRICOT FILE, Release 3.8). Incidentally, on the question of quality it should be remembered that an off-the shelf laser printer at 300 dots per inch may be nearly four times faster than a matrix printer, but it cannot be expected to compete with a standard phototypesetter at 1,270 dpi or more.

Back to cases. I am one of the diminishing band still loyal to SuperWriter; and while the printer installation list of that venerable package contains no lasers, it does of course support a whole range of Epsons. I plumped for a Brother HL-8 laser which is capable of Epson emulation.

Behind the façade the HL-8 is actually a Hewlett-Packard engine in a different box. This means it accepts HP font cartridges, and when I finally get around to changing my software I shall have access to all the facilities of full HP-compatibility. Until then I am tied to the limitations of treating the laser as an Epson.

This is much less of a restriction than you might think: even without extra font cartridges or resorting to downloadable fonts, I can get four font sizes and three different faces — though admittedly I cannot get all the fonts at every size. Also missing is the ability to mix all the faces on the same page, but anyone who would want to do this ought to be subcontracting their artwork to a publishing house rather than subjecting their correspondents to such unpleasantness.

The normal SuperWriter controls are sufficient for most features such as italics, bold, underlining and sub- or superscripts. Other features like switching typefaces or using enlarged print have to be called with escape sequences — well documented in by Brother, or easily cribbed from your Epson manual. In spite of Eddie's dire warnings, none of the codes I have cause to use contain more than six digits, preceded by the usual **\out** command characters.

By the way, if David St.John Wallis wants to include the current date automatically in a SuperWriter document, he could always use the **\%date1** system variable designed for this purpose.

Steve Allen
Dunn Laboratory, Cambridge

Points taken, but is it worth spending £2,000 to get a modest-speed Epson with admittedly elegant print — when a good 24-pin near-letter-quality dot matrix printer and/or one of the sub-£1,500 inkjets will do the same job? Well, maybe it is for some applications.

Actually the printer engine inside the Brother isn't HP's — both manufacturers used Canon's (as do many laser printers). And the HL-8 doesn't promise full HP-compatibility in the sense of matching HP's top-of-the-line models, complete with bit-mapped graphics and the extra 1.5MB that needs. Still, we have heard generally good things about this printer; it would certainly be among our choices for basic laser-printing, possibly along with the Centronics PP8 (because it's being so heavily discounted) and the rather more equivalent Citizen Overture.

Power of the press

Let no-one criticise the pulling power of APRICOT FILE. My ads

for a printer and a computer (both sold at the asking prices, or jolly close) are a testament to your innovative entrepreneurial flair and general cleverness and wit and good looks not to mention hirsute suavity. It is *not* true that you bought me a pint of Crème de Menthe to write this letter and I will challenge anyone to bunfights at dawn who dares to impute etc.

David St.J Wallis
Stockbroker Belt

Apristrad?

Amstrad is getting the Apricot 'wally' disease. My daughter has an Amstrad PPC640 portable, which according to the handbook can be used with either its built-in LCD display or an external monitor. And an Amstrad monitor could also power the PPC as well as the screen. The dealer said he couldn't supply a monitor: try writing to Amstrad.

So she did. Amstrad's reply: "Be advised Amstrad do not supply monitors separately".

Daughter: "It says in the handbook you can use the PPC with an Amstrad monitor. I only have a PPC. Can I buy a monitor?" Amstrad: "Be advised Amstrad do not supply monitors separately".

Daughter: "How can I get an Amstrad Monitor?" Amstrad: "Buy an Amstrad PC".

Daughter: "Suppose my monitor has been stolen or caught fire; can I buy a replacement?" Amstrad: "Only if you send us the burnt-out bits or a statement from the police confirming the reporting of the theft".

Sounds like statements from Birmingham ...

Tony Carroll
High Wycombe

NEC has said that its standard monochrome monitors (from around £200, but heavily discounted everywhere) will work ok with a PPC.

Amending SDIR

While it does work correctly in MS-DOS 2.11, the DEALS FOR READERS utility SDIR.COM (version 2.50) cannot list an MS-DOS 3.2 directory without adding *.* on the end of the command — you can't use something like SDIR A:\BIN, giving just the directory name. This is due to two faults: SDIR incorrectly checks the return codes from MS-DOS, and MS-DOS 3.2 returns different values from 2.11.

This is easily corrected, however. Use DEBUG to Unassemble from location 4CD and you should find this:

```
A>  DEBUG SDIR.COM
    -U 4CD
    xxxx:Ø4CD B443  MOV  AH,43
    xxxx:Ø4CE CD21  INT  21
    xxxx:Ø4CF ØACØ  OR   AL,AL
    xxxx:Ø4D1 751B  JNZ  Ø53C
```

Replace that JNZ with this:

```
    -A 4D1
    xxxx:Ø4D1       JB 4FØ
    xxxx:Ø4D2       JB 4FØ
    -W
    -Q
```

If the code is not found, you have a different version of SDIR — try locating it somewhere else in the file.

The change corrects the checking of the return code from MS-DOS. Previously SDIR was checking AL (which was 0 in MS-DOS 2.11) for an error condition; MS-DOS 3.2 returns a value in AL even when there is no error (an undocumented feature). The correct procedure is to test the carry flag to see if an error has occurred, which is the alteration we have made here.

I have also come across an interesting bug which can apply when certain word processors are used to create batch files; it highlights the need to end all ECHO statements with CR/LF. The last line of my BAT file was an ECHO to display 'END OF BATCH FILE', and the word processor I use (PMATE) doesn't create an automatic Return with linefeed — so the batch file ended with the word 'file'. This caused an automatic ECHO ON before the ECHO was executed, so the result appeared on the screen as ...

```
ECHO End of BAT file
End of BAT file
```

G M Sturges
Trélex, Switzerland

BIOS 3.1.2 screendumping

In your *Q&A Clinic* of Release 3.8, you refer to the patched BIOS 3.1.2 ejecting the page after hardcopy is done in a screen dump. That's not the case with my version from AP026; I have had to patch it myself, using the location you identified *and* also location 1083 hex. There the following appears:

```
xxxx:1083  B00C  MOV AL,0C
xxxx:1085  E668  OUT 68,AL
```

The alteration required is to change 1083:

```
xxxx:1083  B000  MOV AL,00
```

Andrew Glennie
Christchurch, New Zealand

Thanks for pointing that out. Both patches are now incorporated on the (newly revised) AP026. ◆

Write On

The Readers' Writes page is your chance to share your thoughts with other subscribers — we'll print any and all comments, queries, complaints, compliments, tips that we feel may be of general interest. Letters might be edited for grammar and length, but in general we print more or less exactly what we receive.

Send your letter to us via electronic mail (Telecom Gold 72:MAG068) or by land mail to:

APRICOT FILE
TP Group
PO Box 509
London N1 1YL

A dBASE Primer

Part Three: Changing the database

By Terence Green

So far we have covered database creation and some of the dBASE commands used to manipulate data.

Before diving into the aspect of dBASE which causes most comment — the programming mode — I want to expand somewhat on the interactive mode; here the methods and commands used are simply automated in a .PRG command file, rather like a macro. If you understand how to move through your data and manipulate it interactively, you then need only to pick up a few programming constructs in order to create a working dBASE program (well, that's the theory anyway).

Fieldname changes

MODIFY STRUCTURE is a highly destructive command. But it can be very useful when a fieldname needs to be changed, perhaps for improved clarity; or when fields need to be added or deleted from the structure.

With careful use of the export and import capabilities in dBASE II, changing the name and order of fields is easily done.

dBASE III is even easier, though it has hidden pitfalls for the unwary. If you change the order of fields in dBASE III using ASSIST, they are only backed up from fields of the same name in the source database; if you change the name of any field or fields, and then the order of fields is altered too, you will lose the contents of the fields whose names you have changed. This is because dBASE III creates a whole new database structure and appends records from the source database (which is then saved with a .DBB file extension). Records can only be appended correctly if dBASE knows where to find them and where to put them.

Take the case where the structure looks like this:

```
Name
Address1
Address2
Postcode
```

If the *Address* field names only are changed, dBASE appends correctly because it knows the length of each field. But say you add a new field:

```
Name
Street      (formerly Address1)
Town        (formerly Address2)
County      (new field)
Postcode
```

Now dBASE III has no way of knowing which of the three middle fields are to be appended from the source *Address1* and *Address2*: result — confusion. The answer is *never* to change field details (name, type, and suchlike) at the same time as the number or placement of fields is changed.

This is how to modify the structure of the database in dBASE II. dBASE III does it for you in ASSIST mode, but only warns on the bottom line of the likely loss of data without actually preventing an accidental erasure if changes to fields are likely to cause this.

```
USE OLDFILE                    the file to be altered
COPY TO NEWFILE                     the modified file
USE NEWFILE
MODIFY STRUCTURE                     make the changes
APPEND FROM OLDFILE                 bring in the data
```

Now NEWFILE can be renamed as the original file. Just in case something goes wrong, it is sensible to keep another copy of the source file before renaming the temporary file to the source filename ...

During a MODIFY STRUCTURE procedure, these editing commands are active:

- CONTROL-T delete a line
- CONTROL-N insert a line
- CONTROL-W write changes to disk
- CONTROL-Q quit without saving changes

EDIT and BROWSE

We've mentioned EDIT before. Though it is extremely useful, it is also destructive in that changes can be made permanently to a database with no recourse.

BROWSE is another similarly useful but destructive command. It presents a screen window into the database, one record per line; the display can be scrolled through and edited. If the record is longer than the screen width, CONTROL-B pans the window right and CONTROL-Z pans left.

A scope parameter is useful with BROWSE if only a few fields are to be examined or changed:

```
BROWSE FIELDS name, address1
```

All the full-screen editing commands are active during BROWSE and EDIT. These are the most useful:

- CONTROL-U delete the current record
- CONTROL-W exit and save changes
- CONTROL-Q exit without saving changes

Bulk changes: REPLACE, DELETE

Selective mass changes can be made using the REPLACE command:

```
REPLACE ALL surname WITH 'Jones'
```

dBASE will whip through the records deleting whatever it finds in each *surname* field and putting 'Jones' in its place.

The DELETE command can be used for mass erasure — as in DELETE ALL. Or it can be used selectively with an expression and/or scope:

```
DELETE ALL name FOR name = 'Jarrett'
```

The scope is 'ALL name'; within that scope, all records with a name field containing 'Jarrett' will be deleted.

Or rather, the records themselves will not be deleted: instead they will be marked for deletion with an asterisk. A LIST will show 'deleted' records with the asterisk next to the record number. (If it doesn't, enter SET DELETED OFF and try again. This alters the dBASE environment so that LIST commands show deleted records. They won't be copied or appended, though.)

To remove the records permanently you need a PACK command. The file is automatically re-indexed after a PACK if an index is active for the file in use.

If you decide that some or all of the asterisked records should not be deleted, they can be restored with a RECALL command. For the purposes of selection RECALL can take the exact form of the original DELETE or any other expression:

```
RECALL ALL
```

will recall all deleted records and remove the asterisk marker.

```
RECALL ALL name FOR name = 'Jarrett'
```

will reverse the DELETE example above.

Incidentally, all the dBASE commands here are shown in full and in upper case; but they may be abbreviated (to a minimum of four letters) and entered in upper *or* lower case. These, for example, are all valid commands:

```
DISP                    (Display)
Pack
list stru               (List Structure)
reca ALL                (Recall All)
```

The SET commands

The DELETED marker is one of a number of system defaults that can be altered by issuing a SET <parameter> ON/OFF command. These can be issued from the dot prompt, or incorporated into a program file to be run at start-up.

If you want to check the system defaults, enter DISPLAY STATUS (or LIST STATUS) and you should see a status list something like the following:

```
TODAYS DATE          — 19/05/88
Default disk drive   — A:

ACCENT      — ON
ALTERNATE   — OFF      BELL       — ON
CARRY       — OFF      COLON      — ON
CONFIRM     — OFF      CONSOLE    — ON
DEBUG       — OFF      DELETE     — OFF
ECHO        — OFF      EJECT      — ON
ESCAPE      — ON       EXACT      — OFF
INTENSITY   — ON       LINKAGE    — OFF
PRINT       — OFF      RAW        — OFF
SPACE       — ON       STEP       — OFF
TALK        — ON
```

These are the default settings. Some of the more useful are SET ON/OFF commands are:

SET PRINT ON	echoes output to printer
SET ESCAPE ON	the ESC key will interrupt processing
SET BELL OFF	stops that beep!
SET CARRY ON	in APPEND, displays contents of previous record; useful for repetitive entry of similar data
SET DELETED ON	dBASE ignores records marked for deletion
SET INTENSITY OFF	turns off highlighting of the entry area when adding and editing records.

Field types

A note on field types: don't use numeric fields unless you want to TOTAL or SUM on a field. Numeric fields also drop leading zeros and justify to the right, so they can't be used for codes such as '00056'. But numeric fields are useful for page numbers or other right-justified numbers that don't require calculation.

Printer control

Production of printed output is one area of dBASE which is particularly poorly supported — it is difficult to produce formatted output without resorting to programming. The REPORT command soon becomes too limiting, and printer control is barely touched on in the reference manual. The relevant function is in fact CHR(), and there is no explanation beyond that "this function is useful when the user needs to send direct controls to the printer".

CHR followed by a numeric expression in brackets will convert that number to its ASCII equivalent. To test it, type this at the dot prompt:

```
. ? CHR(65)
```

dBASE returns the character 'A', the ASCII equivalent of 65 decimal. (The question mark is an alternative shorthand form of the DISPLAY

command when it is followed by an expression. Effectively it asks dBASE to display the following expression; the result is displayed after a carriage return/line feed. A double query ?? outputs the result on the same line.)

To use this for printer control you need to know the numeric codes which your printer requires as a command string. Epson printer manuals always list the full command set, and I am using that for the examples here.

Here's an ordinary listing of the database structure:

```
. SET PRINTER ON
. LIST STRUCTURE
```

Now try some formatting using CHR:

```
. SET PRINTER ON
. ? CHR(27)+CHR(15)
. LIST STRUCTURE
```

Voilà — condensed output! Any string of commands can be sent in the same way, though dBASE doesn't like CHR(0) which is commonly used in the Epson set — use CHR(48) instead. The question-mark command will be printed too; the only way to avoid this is to go a stage further and use a program file.

Common Epson controls

Don't forget: if you turn on an Epson mode, you must turn it *off* before selecting another mode on — otherwise the two will be mixed (if that is possible). Turning on compressed mode then expanded will produce compressed expanded print.

Style	Control sequence
Compressed on	CHR(27) + CHR(15)
Compressed off	CHR(18)
Expanded (one line)	CHR(27) + CHR(14)
Italics on	CHR(27) + CHR(52)
Italics off	CHR(27) + CHR(53)
Elite (12cpi) on	CHR(27) + CHR(77)
Elite (12cpi) off	CHR(27) + CHR(80)
Pica (10cpi) on	CHR(27) + CHR(80)
Emphasised on	CHR(27) + CHR(69)
Emphasised off	CHR(27) + CHR(70)
Double-strike on	CHR(27) + CHR(71)
Double-strike off	CHR(27) + CHR(72)

If you don't want the output from these commands on a page of output, issue an EJECT command after the Epson printer command. This will formfeed a page.

Last word

To wind up this instalment I'd like to briefly reflect on why dBASE is worth taking up as a data or file manager.

And there is a downside to dBASE:

- dBASE programs run slower than compiled programs
- text processing capabilities are limited
- using two or more indexes slows down data entry substantially
- dBASE III uses a lousy method of file copy protection
- dBASE cannot easily use arrays
- maths is slow

Having said that, dBASE is still a good representative of relational database managers on micros. For example, it can link the records from an invoice file to a supplier file. Several invoices may come from the same supplier; rather than enter the supplier name in each invoice record, it is far easier to enter it once in a separate customer file keyed or indexed file linked by a common key field in the invoice file. The advantage lies in less duplication of entries; that cuts down the data entry time, and more duplication means more chance that the information will be out of date or redundant.

Invoicing is a pertinent example because many accounting packages have been prepared with dBASE. To speed them up (because dBASE interprets a program file line by line) some dBASE applications are compiled using third-party compilers; and literally hundreds of add-ons like these are available to make dBASE faster, or easier to use, or more versatile.

The other way of adding to dBASE II of course is to move up to dBASE III. dBASE III and higher versions are complete rewrites of dBASE II rather than mere updates of the original.

Another plus: although off-the-shelf commercial software often costs less than learning to program and use dBASE, a system can be quickly set up and tested before getting down to the fine detail. It is much faster than a conventional programming language when it comes to common data management tasks.

All in all, dBASE II makes a very convenient way of storing and maintaining information on a small business. ◆

Commands covered here

MODIFY STRUCTURE	SET ON/OFF
BROWSE	REPLACE
PACK	RECALL

Doodles by David

Tips and Tricks

The occasionally essential column

By David St.John Wallis

How to give up smoking

Make up a batch file, thus:

```
FACE
ACTILOG SMOKE
```

Put it in a directory pathed to FACE.COM (which puts a very irritating bug on the screen) and ACTILOG.EXE (which records things you want logged). Call the file FAG. Every time you have a fag, type 'FAG' at the DOS prompt. After no time at all your screen gets cluttered with lots of little bugs which dart around the screen at random colliding with each other. If you count them, you can tell how many fags you've smoked; and you get an ACTIVITY.LOG which might look something like this:

```
20-05-88  09:04  COMPUTER BOOTED
20-05-88  09:04  SMOKE
20-05-88  09:04  METRO
20-05-88  09:05  WORD-PROCESSING
20-05-88  09:07  SPREADSHEETING
20-05-88  09:18  SMOKE
20-05-88  09:27  BLOODY LOTUS CRASHED
20-05-88  09:37  OFF TO PUB
20-05-88  18:07  DOSKEY
20-05-88  18:35  TORNADO
20-05-88  18:46  SMOKE
20-05-88  19:15  COUGHING
20-05-88  19.16  SMOKE
```

No, it didn't work for me either. But, if you've got an IBM clone and ACTILOG, it might for you ...

Lost and found

Have you ever written a bit of script and completely forgotten what you called the text file? Well, there's a program called PCTOOLS which can solve the problem ... though not on 'generic' Apricots. All you have to be able to remember is some word which is likely to have occurred in your piece of text. Then you load the program and call FIND; you enter the word you know is in the file (in hex codes or as real characters) and sit back while the prog checks through everything looking for it. Whenever it comes to that particular word, PCTOOLS displays the file it's in and asks you if that's the one you want or to go on searching.

And, to paraphrase the words of immortal Sir Humphrey, let me add to your anxiety still further. Even non-programmers can do jolly things with this utility and muck about with .EXE and .COM files. This is a joy.

Here's what you do: use something like Ansible's SEE program to see what ASCII characters you *can* play with quickly — on big files you can re-direct output of this (you go SEE THISFILE.EXE > THISWUN. You can then examine THISWUN with a word processor to decide how to play this game.

Use the File Search argument to get to the file you want. Choose F3 for Edit. Choose F1 to Toggle Other Mode — that gets you into English rather than hex. Use the cursors to get to the bit you want to change. Type in changes. Update (save) the changes to disk ... and lo! You've debugged.

My first effort at COMMAND.COM timidly changed 'Are you sure (Y/N)' to 'Are you ABSOLUTELY AND POSITIVELY determined to do this damn silly thing (Y/N)?'. Only a very unwise punter would follow these advices. And, by the way: what we need real soon, David, is the reverse of SEE so that text can be put into as well as extracted from such files.

Optimisers

A chap in one of the Amstrad mags said he thought the day of the optimiser was done since hard disks are so good and clever and quick these days. Did he ever hear of interleave factors? Has he given up beating his wife? But he did make one good point — use a vanilla booting disk before optimising. These things just *hate* pop-ups.

Another thing: they all seem to fail to recognise each other's efforts. Thus, Norton's re-optimises COMPRESS, which doesn't go a bundle on MACE UTILITIES (and what Paul Mace thinks of Peter Norton is the pits).

Before running an optimiser, use something like this:

```
REM SAFEST.BAT
CD\
CLS
ECHO OFF
COPY AUT*.* \BIN
DEL AUT*.*
ECHO NOW REBOOTING .... YES? PAUSE
RESET
```

Magnificent Thatcher

Staff cuts at one of our biggest utilities did not stop two nice chaps from coming to buy my elderly machine. "Keen on Apricots up the Pxxt Offxce, are they?" I query in jocular tone. "Well, it's got to be better than the Commodore Pet we use for the sorting" they enunciate, cleaving into the sulphurous night in a cloud of mountainously unpleasant diesel smoke.

Memory map

A tragic day was yesterday when the old faithful Xi went out of my life forever (see item above if you must). Rather than try to find all the IDs, I thought it would be best to transfer everything on to the Xen clone using TRANSEND and then re-

format. But for once Malcolm Messiter's program failed to work. The familiar messages 'XXXX bytes being transmitted' and 'YYYY bytes being received' were there, but nothing was happening. It was but the work of æons to check the wire was plugged in, that it was the right wire and the right ends of it were plugged in the right way round. But still no TRANSENDing.

Some programs are picky about the amount of memory they need, so I checked my memory map by the expedient of typing Map at the prompt. Here's what emerged:

```
ALLOCATED MEMORY MAP — BY TURBOPOWER SOFTWARE —
VERSION 2.3

PSP   BLKS BYTES OWNER    COMMAND LINE  HOOKED
                                        VECTORS

0008    1   56832 CONFIG
17D1    2    3280 COMMAND                22 24 2E
18AA    2   11920 640350EG
1B96    2    1440 MARK
1BF2    1    6208 N/A      LPT1:,,P     14 17
1D77    2    1440 MARK
1DD3    2     560 QUICKEYS               08 09
1DFC    2    1440 MARK
1E5C    2     768 CLOCK                  60
1E92    2    1440 MARK
1EEE    2    1024 VSCREEN
1F30    2    1440 MARK
1F8C    2   26544 VKETTE                10 1C
260D    2    1440 MARK
2669    2   10176 CACHEM                13 19
28E6    2  487840 FREE

BLOCK   BYTES   (EXPANDED MEMORY)
-----   ------
    0   376832
 FREE    16384
TOTAL   393216
```

So although I still had 881K, to spare this was not enough for Malcolm. I had to get rid of the cache program, the floppy accelerator, the screen accelerator, the clock (this beeps on the quarter hour to remind how tempus fugit), the key accelerator and the MODE command which I'm convinced is setting up nothing for the printer ... and then I could carry on TRANSENDing. Such a relief!

Morals: if you want a sad experience, ignore your memory. If you want to get rid of TSR programs, get MARK — in the public domain and free off bulletin boards.

You're welcome

Thrust into the debate of which computer to get next, I called the IBM HotLine. "I expect someone can tell me about an 80386 MCA machine" quoth I. "Where do you live?" came the strange and lateral reply. "Betwixt Petersdorp and Guildville" was my opinion. "Call Datasolve at Farnborough for advice on IBMs. They're the lads. Gung ho on 80386s they are".

A few moments later: "Is that Datasolve, gung ho for IBM? Please tell me how much a PS/2 Model 80 is with all the bits like VGA and two meg of RAM and can I get it cheaper by quoting my journalistic eminence." Answer: "Oh, you mean the Compaq. It's very fast." "No, I mean the IBM one, you know, the original." "Oh yes. Well, we recommend the Compaq. It's very fast you know."

Come back Apricot, all is forgiven.

Look out

According to the fine chap who bought my Xi, those of you who have purloined the Apricot diagnostics should avoid TES005 like the plague. What I do when faced with a prog I don't know is at least to run SEE on it. Or SCAN, which is of course, much better. These at least give you some kind of clue as to parentage.

Said nice chap didn't do these things and wiped out an awful lot of useful utilities and ruined his FAT 1 and Sunday to boot. Well, actually not to boot. He couldn't boot afterwards.

MicroScreen Tip revisited

My MicroScreen Tip in Release 3.8 (soon to be a major musical) got edited all to buggery. The batch file should read like this:

```
ECHO OFF
CLS
ECHO  Initialising the MicroScreen now baby!
MS 1  "CACHE " "cache@"
ECHO  That's Cache in there now
MS 2  "METRO " "me@"
```

... and so on. If you use a batch file to call an application with the MicroScreen keys (thus *me@* types 'METRO' and issues a Return) you can insert a Mark before the program so that you can release TSR programs at a later point. So ME.BAT reads ...

```
MARK
CD METRO
METRO^Z
```

To release METRO from memory (provided you haven't loaded anything later) just type 'RELEASE'. Alternatively, make up BUZOFF.BAT which simply repeats the RELEASE command as often as you need — to load 1-2-3 if you have SQZ and HAL enabled you need to release RELEASE practically everything if you've only got 640K.

Fiction, thy name is Epson

Choosing a new printer is fraught. A request to Epson for bumf brought a very glossy magazine — *Which Epson, Spring 1988* costs less than APRICOT FILE but has even less nudes. And its prices are curiouser. A call to an Apricot dealer delivered the information that an LQ2500+ was listed at £1,100 — which Epson puts at £1,045. But any peasant looking through the computer magazines can see the thing discounted to £690 ... lower than the distributor price. ◆

Free Small Ads

Apricot Xi for sale

■■■ XI — 10MB hard disk, 720KB floppy, hi-res monitor, MS-DOS, MS-Basic, comms, SuperCalc, SuperWriter, SuperPlanner. A superb programming machine. Bargain — £750 plus VAT. View London or Manchester. Mike Seaton, 061-428 5975.

■■■ XI — 10MB hard disk, 720KB floppy, 256KB RAM. Excellent working order, lots of software. £400 (or 27.000 Belgian francs). J Degayse, Av P Verheyleweghen 17-in, 1160 Brussels — tel [Belgium] 02-672.46.63.

Apricot Portable for sale

■■■ APRICOT PORTABLE — 512K, MS-DOS 3.2, BIOS 3.1, NEC V30 chip, Second-issue GEM (debugged 'B' version), mouse, MiniPrinter, Dragon speech, Turbo Pascal 3 with Tutor, TranSend comms plus serial cable, carry case, 30+ public-domain and shareware disks: £425. Ring Mark Wren, 06473 2520 or e-mail to Gold 72:MAG20590.

■■■ PORTABLE with 256KB RAM, RGB, speech recognition system, usual software and some extras. Excellent working condition: £150 (or 10.500 Belgian francs). J Degayse, Av P Verheyleweghen 17-in, 1160 Brussels — tel [Belgium] 02-672.46.63.

Extras for Sale

■■■ LOTUS 1-2-3 spreadsheet, SPELLBINDER word processor, Micro Focus LEVEL 2 COBOL with FORMS 2 screen generator. All at bargain prices! Mike Seaton, 061-428 5975.

■■■ CLEAROUT — Multicard Xi EXPANSION BOX (takes one Xi slot, room for five cards); Apricot internal MODEM; external printer BUFFER; Apricot Xi COLOUR CARD and driver, as new. Also BACK ISSUES of Apricot File (back to 1.1), Comms File (first year), 16 Bit Computing (incomplete). Offers? Ring Mark Wren, 06473 2520 or e-mail to Gold 72:MAG20590.

TP Group Services

■■■ DISK RECOVERY: problems with deleted files, scrambled hard disks, and the like? We can (probably) help — no fix, no fee! Call Roger Gann at TP Group on 01-833 3501.

■■■ FILE TRANSFER: we can convert files between Apricot single- and double-sided, IBM PC format, PC/AT format, and Sirius — cheap! Call Roger Gann at TP Group on 01-833 3501.

■■■ DESKTOP PUBLISHING: we can produce your newsletters, price lists, press releases etc in near-typeset-quality on our laser printer using our DTP software NEWSWRITER from your disks in virtually any format produced by word processor and/or computer. Fast turnaround, guaranteed quality, low prices. You're reading an example of our work right now ... Call Roger Gann at TP Group on 01-833 3501.

Other services offered

■■■ HELP for PC/Xi/Xen users — setting up systems, MS-DOS, directory organisation, comms, modems. ALSO utility and business software written (in C, assembler or Basic). Call Tony Bridges, 01-948 1603 any time.

■■■ REPAIRS guaranteed. Martin Filmer Computing Services. 01-761 0425.

■■■ A0 PLOTTING — time on a Calcomp A0 plotter available for rent: Sirius or Apricot disks plotted on your paper or ours. Terms negotiable, but cheap. Phone James McEvoy on 01-859 4014 or 01-852 7981; or write to 16 Dunvegan Road, London SE19 1SA.

■■■ SUPERWRITER BUGS CURED — twelve files identifying and curing errors in SuperWriter version 1.03 program and manual, all for a copying fee of only £5.75 (includes VAT). Call Tudor Wynn-Williams on 097 081 375.

■■■ HARDWARE AND SOFTWARE at bargain prices. Will beat any written quotation. Try us before you buy. 0382 66312 (day), 021-454 0898 (evening).

■■■ APRICOT F1 MOD — end keying uncertainty. If you can solder two wires, you can apply this simple mod. £5 for full details: W Houston, 11 Brian Close, Chelmsford, Essex CM2 9DZ.

Wants

■■■ GSX PROGRAMMERS MANUAL and USERS GUIDE desperately wanted! Also any secondhand Borland programming languages (especially PASCAL or BASIC) — must run on an F1. Phone Tim on 01-444 9265 after 4pm.

■■■ APRICOT PC with monitor and twin 720K drives wanted — would consider an Xi. Call James Gray, 01-839 6651 (day).

■■■ APRICOT PC TECHNICAL REFERENCE MANUAL wanted. Phone Simon Protheroe, 01-836 5454 ext 2161 (office hours) or 01-263 4489 (after 6pm).

■■■ APRICOT PORTABLE wanted, 512KB. Also SOFTWARE for FP and PC. Phone 0423 521439 or write E Holgate, 18 Montpellier Parade, Harrogate, HG1 2TG.

Contacts

■■■ F SERIES user wants to get in touch with others in the States. Contact Bob Mandel, Lewis & Clark College, Box 96, Portland, OR 97219, USA.

■■■ GOSPORT BULLETIN BOARD has an active and knowledgable Apricot section (used to run on an Xi!) with mail, PD software, lots of tips, etc. Set up for N-8-1, call 0705 552 4805 — speeds between 300 and 2400 bps.

■■■ SOUTHERN APRICOT GROUP meets near Salisbury six times a year. Information: Mike Dirom, Highover, Glasses Lane, Sutton Mandeville, Salisbury, Wilts SP3 5NB (SAE please) or call 0722 70219.

■■■ SWITZERLAND: Apricot user would like to contact others, preferably in the Zurich area, to exchange experiences and help each other with problems. Contact John Solomir, Stockenstrasse 67, 8802 Kilchberg.

■■■ PORTABLE user would like to contact another in South London to exchange information. Contact Geoff Reade, 9 Taymount Grange, London SE23 3UH.

Use the service!

The Classified Ads service is free to all readers of APRICOT FILE. Just let us have a sheet of paper with the words (not too many); your ad will appear at least once in the newsletter and for around three months in the quarterly DEALS FOR READERS broadsheet.

Show report (continued)

CONTINUED FROM PAGE ONE

Toshiba also announced a network and a file server, declaring a new rôle for itself as "a solutions provider" (they're all doing it). There were several other low-cost network offerings on view, but not for the first time we were most impressed with the undersung British company **Nine Tiles** — maybe it needs a decent PR firm, but Nine Tiles has cheap, simple and effective multi-machine token-passing networking that even includes connection for old-style Apricots.

As usual, the show was opened by a politician; interestingly, and perhaps prophetically, the individual in question was from Kinnock's "unelectable" opposition. Labour's **Brian Gould** gave a speech promising "a hands-on approach to industrial policy" via development work and skills training.

He also tried to score a few points by reference to the **Transputer** (developer **Inmos** was sponsored by the Labour government), and indeed there were quite a few working examples of add-in IBM-compatible Transputer boards at the show — applications remain esoteric, the prices look sure to maintain that.

Last word on **WordPerfect**: at the show we came across a discount mail-order supplier called **Software Rack** (*aka* Computer Deals) which is doing WordPerfect 5 for £199 — less than half RRP. Lots of other cut-price goodies on the company's list, and "some are probably available in Apricot format" ... details from **0963 24551**.

The other show recently was **Networks '88**, where we noted a couple of items of interest. In particular, **Dowty** showed a pre-release version of its **Quattro Plus PC** — a multi-standard modem (all speeds up to 9600bps, MNP error-correction to Level 5) with the somewhat novel characteristic that its software doesn't come on a PROM chip. Instead it's downloaded from disk into the modem, which means bug fixes and upgrades will never require the kind of hardware mods that characterise contemporary modems.

We also like the idea of a rentable network: **Micro-Rent** is offering short-term rentals on four-workstation Novell systems, largely to give the company a foot in the door while the user undertakes a serious evaluation.

Pi-eyed

Oh, *quelle embarrassement*. Mark Whitehorn's *Turbo Pascal Primer* in APRICOT FILE Release 3.9 proposed to calculate radius by multiplying *pi* by diameter. Our O-Level Maths correspondent (and indeed several other people) noted that this makes an interesting contrast to the more frequently accepted wisdom of *pi* times *circumference*.

The next desktops

We don't normally highlight product launches by **Compaq** in APRICOT FILE, but in our view the new **Deskpro 386/25** is an important announcement. Why? Because it is the first micro to use Intel's new 80386SX chip. This is a version of its 32-bit 80386 microprocessor, and it promises to determine the pace for the next round of desktop computer products.

The new chip runs all 80386 software, but at half the speed — which is still pretty nippy by comparison with the Apricot's 8086. In any case, Compaq is claiming a clock speed of 25MHz for the Deskpro 386/25 (hence the name), and that isn't exactly sluggish. And of course the 386SX is cheaper for system builders — supposedly some 30 per cent less than the standard 80386. (The immediate result is that Compaq can now undercut the new PS/2 Model 70, asking £5,695 against IBM's £6,486 for a broadly competitive spec.)

In short, the implications are that the 80286 will displace the 8086 as the preferred chip for entry-level business micros (as Intel's Product Manager put it, "the 80286 will move downstream") with the 386SX fitting in at the kind of price/performance levels we associate today with 286-based systems. Straight swaps of the 386SX for a 286 aren't possible; all 286 software will run, but the 80386SX is not pin-compatible with the older, slower microprocessor — system designers will need a bunch of new support chips for the 386SX.

With the 80486 reportedly on the horizon for 1989, it looks as though Intel has decided that the 80286 and the 80386 family will apply to quite different classes of systems — much as the 8086 and 80286 are today being differentiated from the 'power users' with their 386s.

Olivetti, NEC and IBM are all expected to feature the 386SX shortly; and of course **Dr Peter Horne** of **Apricot** promises to have it Real Soon Now, which presumably means the product launches set for the first week of July while we're on the printing presses.

Blowing our own trumpet

One of the more depressing aspects of this job (as with many such) is the lack of acclamation — we normally hear from subscribers only when they feel aggrieved, or puzzled, or angry. Which is probably as it should be: after all, you're paying for the service and you have a right to expect a minimum standard of quality. The same applies to the OMEGA AT Apricot-upgrade system we're selling — we don't expect to hear from purchasers unless they have a problem. Which makes it doubly gratifying to receive a note from an OMEGA purchaser complimenting us on the accompanying documentation we're produced for the system: "manuals and instructions are the best I've seen ... details of what the files on disk actually *do* is unbelievable ... why can't Apricot plc do this kind of simple documentation?" Thanks for that: and we haven't the faintest idea why other suppliers can't produce similarly painless documentation. *(Ok, end of back-patting — Ed.)*

Dig deep (again) ...

There's yet another sponsorship form enclosed with this issue. At least it's for a different cause — TP Group's Subscriptions Manager Terrance Duggan is taking a sabbatical to walk around the Middle East in the footsteps of Alexander the Great, and he's seeking per-mile sponsorship in support of the Bart's Hospital Appeal. Please be generous!

User groups

It looks as though APRICOT FILE and Ansible Information are just about the only active sources of Apricot-related help and advice now available — see the *Contacts* section of the Small Ads, though. Of the two user groups, **Gateway Users** seems to have disappeared completely; and Sydney Harrod's **Apri-Soft-Exchange** has reduced its operations to the maintenance of a 'contact directory'. Neither are publishing newsletters, and as far as we know neither is supplying public-domain disks and other handy extras. Incidentally, Apri-Soft has a new address — **57 Fincairn Road, Drumahoe, Londonderry BT47 3LD.**

EEC levies: Brother's view

Brother is not participating in the chorus of anguished squeals coming from Japanese-based makers in the wake of the EEC printer import levies. "Back in 1984 ... we realised that irrespective of the merits of the case the European Commission was determined to impose sanctions" with the result that it went into production last October with a printer plant at Ruabon in North Wales. "We do not expect to suffer any levy impositions on our dot matrix printer range."

Micronet counters cost ...

To counter the 1 July global price increases at Prestel, the microcomputing IP **Micronet** — the largest Prestel information provider — has come up with an attractive-sounding package deal that includes Prestel, its own Prestel-based services, *and* Telecom Gold all for **£23** a quarter. There are no other up-front charges. According to Micronet, "It makes sense for computer users who access Prestel and Telecom Gold to use Micronet as well — and at this price, they'd be silly not to". Micronet is on **01-278 3143.**

... MicroLink offers alternatives

That may not stave off defections from Prestel, especially now that the Telecom Gold operation of **MicroLink** has introduced a clutch of new facilities specifically intended to attract PC users away from Prestel. Under the label PC GOLD are a number of extras that should simplify navigation around the MicroLink database, especially for first-time users — among them "a blaze of colour" for IBM-compatible users with colour screens, new main menu displays, an on-line library of reviews of PC hardware and software (with keyword searching), and a redesigned and simplified fill-in-a-form Telex service. All this applies to IBM-compatible users only, of course; details from **0625 878888.**

IT qualifications

It's long been our view that Britain needs some kind of formal qualification in general information technology skills to help employers. There are no end of hardware-development and software-writing degrees, certificates and standards; but the bulk of computer use happens at the sharp end, in using applications and real-world systems. At least the **Royal Society of Arts** is trying to fill the gap; there are already several RSA qualifications in office and business skills (no, we don't know why a Royal Society of *Arts* does them) and to those the RSA has added three new ones — a Vocational Certificate, a Diploma in Information Technology, and an Advanced Diploma. Fees will be modest (£18 to £25). In theory this could fill a yawning gap. Info from RSA at **01-930 5115.**

Company news

BOS Software had long been planning a stock market flotation, but the October crash and a subsequent **£5.8 million** offer for the company changed the mind of chairman **Alistair Jacks.** The new owner is a USM-quoted insurance software specialist called **Misys** which has excellent prospects as a result of the demands of the Financial Services Act. Last year Misys reported profits of £910,000; BOS did £381,000 on sales of £3.8 million. City analysts approved the move, with this year's grouped profits expected to approach £2 million.

Ok, so our share tips about MBS aren't producing immediate dividends — rumours of divestitures and takeovers depressed the share prices. But the rumours have been dispelled, MBS has continued to acquire small but potentially lucrative sidelines (like the recent takeover of a computer-industry recruitment agency), the round of draining rights issues appears to be over, and at last some key City analysts are revising the 1988 profit forecast up from around £7 million to something nearer £11 million. Result — the shares are drifting back up again. Stick with it!

Two years ago its managers bought **Bristol Software Factory** from its original progenitors, both of whom were by then residing in tax-haven luxury (the Channel Islands). Now MD **Mike McDonald** has acquired 90 per cent of the company for himself, buying out former sales director **Richard Maugham** who has moved on. McDonald is promising a major revamp of the current Silicon Office product.

Words of wisdom

Quoth Apricot people in an interview with *PC Dealer* magazine: "One of our policies is to really listen to our dealers to find out what they, and our end users, want from us ... We're aware of what's really going on in the PC marketplace far more than a mere clone manufacturer. This enables us to stay ahead of the pack ... Most customers are aware that they must be sure that the dealer they buy their kit and software from will be around in a few years' time ... Apricot has a wide variety of interests in the computer field. If a dealer comes into the Apricot fold then he or she is assured of being among friends ..." ◆

Input wanted

We've been receiving a number of information requests recently about accounts software for the Apricot PC/Xi. TP Group uses Cashlink, and we know that's still supported; are there any other accounting packages that readers can recommend as (a) useful (b) usable and (c) supported?

St. Bartholomew's Hospital

The Walk Appeal for St Bartholomew's Hospital

My name is Terrance Duggan and I currently work at TP Group, a specialist computer-industry publisher and consultancy in North London.

I leave London and TP Group on 11 July to walk the length of Alexander the Great's Near-East campaign of 333BC - a minimum of 3,000 miles that will take me approximately 14 months.

I am paying the direct costs personally, but I am seeking sponsors for the walk. All the money raised by your sponsorship will go to St Bartholomew's Hospital in London.

The route follows Alexander the Great's first campaign of 333BC. It starts at Pella in Macedonia (now in Northern Greece); passes across the Turkish border and down the western seaboard to Anatyala; and takes in the Turkish capital Ankara. From Ankara the campaign route then moves down to the border with Syria; along the Syrian coastline to the Lebanon; then through Israel via Sidon, Tyre and Gaza; and finally moves into Egypt to finish in Alexandria.

The reason I'm looking for the sponsorship for the hospital is because Bart's needs the money - and I know, because I spent quite some time there recently with multiple fractures after being hit by a motor car. Last November I went back to Bart's to have a 44 centimetre stainless steele K Nail taken out of my right leg. There was a shortage of wheelchairs with leg rests for the orthopaedic ward I was on: clearly there is little money for capital expenditure within the hospital, even for essential items like those.

If you would like to sponsor me for a distance, or to make a donation, please fill out the sponsorship form giving your full name (or company name) and address with the amount per mile and send it to:

The Walk Appeal
c/o Mr D J Sharp
Central Administration
St Bartholomew's Hospital
West Smithfield
LONDON EC1A 7BE

... cheques payable to St Bartholomew's Hospital.

Please return the form as soon as possible - I start walking on 12 July!

THANK YOU



TERRANCE DUGGAN.

THE WALK-
SPONSORSHIP/DONATION FORM

DONATION.....

NAME & ADDRESS	*PENCE per Mile*