What a **performance**

Panicos Georghiades and Gabriel Jacobs investigate SmartDrive, which is installed on your machine but uses some of your RAM. Learn how to alter settings to improve performance.

There are many things you can do to your machine to increase its performance: get more RAM, get a larger and faster hard disk, get a faster graphics card, and so on. Of course, they all cost money. The cheapest and most effective option is to upgrade the RAM (12Mb is now our recommended minimum).

But there are other things you can do which don't involve buying anything, like taking a good look at how your machine runs and making a few changes to optimise its performance. Your machine is a team rather than a single worker, and the team needs to

be co-ordinated. Think of it as handling the queues at a supermarket, with ordinary checkouts, wide checkouts, checkouts for eight items or fewer, and so on.

While the performance of MSDOS programs relies mostly on how much free memory is available below 640Kb, Windows 3.x performance relies on the first few free megabytes of available extended memory, above what is required for Windows itself (a good average estimate to work with is about 3Mb).

Once Windows runs out of extended memory it starts using the hard disk to store temporary files, and hard disk performance can be between ten and thirty times slower than that of RAM. A PC fitted with 8Mb of RAM can be as slow as a tortoise, while the same PC with 12Mb of RAM can run as smoothly as if it had 32Mb. It all depends on whether the additional 4Mb has made the difference between swapping to hard disk or working in RAM alone.

Smart move

When your machine reads and writes data to the hard disk, it uses a program called SmartDrive (smartdrv.exe) to hold information in memory (in a so-called disk cache) so larger chunks of data are being manipulated at a time and fewer mechanical trips have to be made by the hard disk heads to the drive's magnetic material. If you can carry more things with you, you make fewer trips and your work is done more quickly.

SmartDrive is installed by default on your machine. It uses some of your RAM and you can alter the default settings to make things run more smoothly. On an 8Mb machine SmartDrive takes up 2Mb. The first megabyte of your RAM isn't available to your Windows programs either, since 640Kb is taken by MSDOS and some other bits and bobs like expansion boards (video cards, sound cards). Add in the 3Mb Windows itself needs and you're left with only 2Mb for your programs.

Many programs require more than 2Mb of RAM, and in these cases decreasing the amount of RAM used by SmartDrive from 2Mb to 1Mb can decrease, or even eliminate, disk swapping.

It's up to you to investigate how much RAM your individual programs use. Using Program Manager's Help and About menu option, check the amount of RAM you have
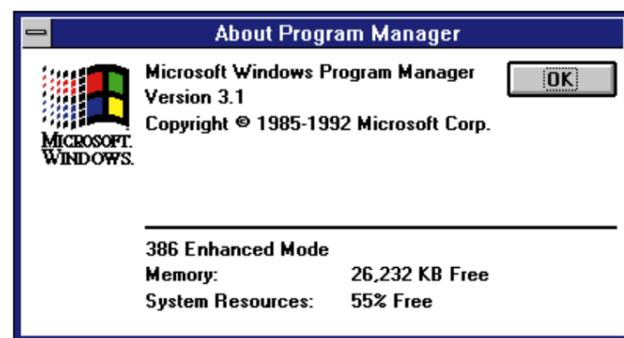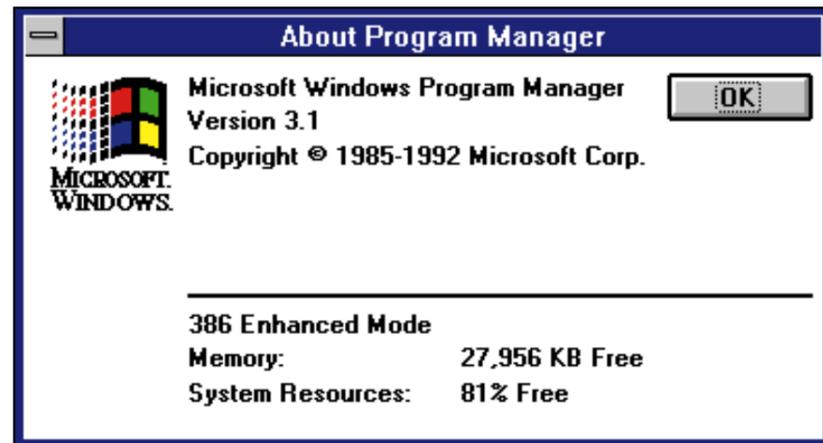
By checking memory beforehand and while an application is running you can estimate how much memory it uses

available before you start a program, then after you've started it and loaded a file, and subtract one value from the other to get the memory used by a particular program. Your aim is to fit that amount of memory within the RAM of your machine.

It may be evident at this stage that your programs need a lot of RAM (say, more than 2Mb or 3Mb) and that you do need to upgrade your RAM by buying more chips. To find the physical memory available in your machine and how it's allocated, type:

```
mem/c
```

from the DOS prompt, when you're not running Windows, not from the DOS prompt within Windows. And if you type:

```
mem/c >pcw.txt
```

the information will be stored in a file called pcw.txt so that you can do your calculations while reading this from Notepad instead of having the information flash up on-screen.

You'll now see how much RAM is free after loading MSDOS and SmartDrive. Subtract from this the 3Mb Windows will take up and you'll be left with the amount your programs can use. If they can fit within that amount, there won't be much hard-disk swapping — you'll be able to see and hear whether this is going on anyway.

To change the values used by SmartDrive, while still at the DOS prompt go to the DOS directory (cd \dos) and type

Help. Follow the instructions and check the syntax for SmartDrive. The two values of most interest to you are

those of InitCacheSize and WinCacheSize.

InitCacheSize sets the size (in kilobytes) of the cache when SmartDrive starts (before Windows is loaded). The larger the cache, the less often data needs to be read from the disk. If you don't specify a value, SmartDrive will set one according to the amount of memory your machine has.

WinCacheSize specifies (in kilobytes) how much the cache size will be reduced to allow for Windows itself (when you exit Windows, it returns to its initial size). The default value depends on how much available memory there is, but if you specify a value smaller than that allocated to WinCacheSize, InitCacheSize will be set to the same size as WinCacheSize.

If you're not running any DOS programs which require extended memory, both these values can be equal. We recommend a larger SmartDrive value if you think your hard disk is slow, and vice-versa. However, these values must be relative to the total RAM in your machine and we recommend no less than 512Kb for the WinCacheSize and no more than 25 percent of your total RAM for the InitCacheSize.
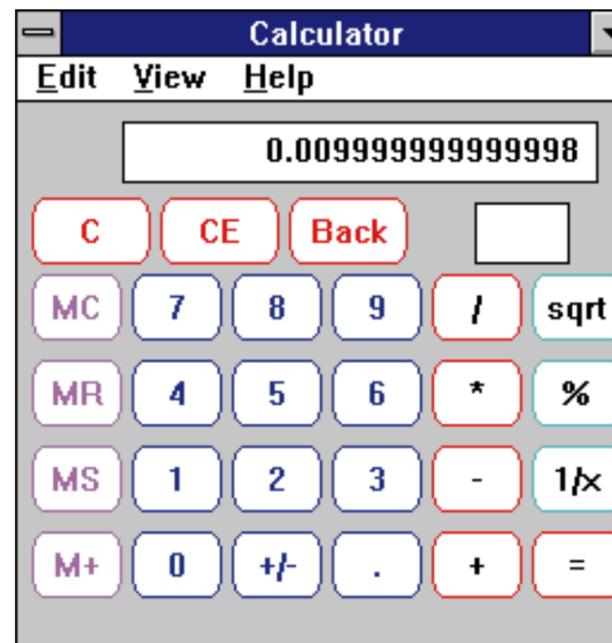
Above Old calculator result
Right New calculator result. See this month's disk for the upgrade to Windows Calculator
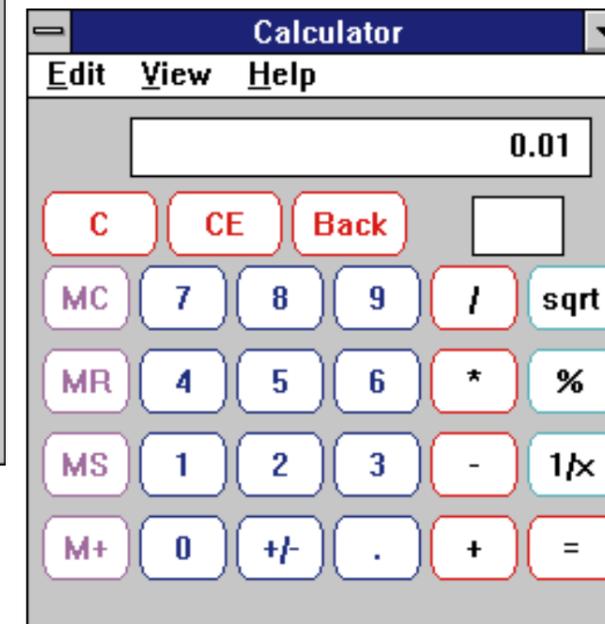
DLL dramas

Q. "I would appreciate your guidance on why DLLs seem to cause problems in Windows. I recently had to reinstall Word on a laptop. All seemed fine until I ran the application. At 9.30pm the only help I could think of was the Microsoft support desk in Canada! They very quickly identified the problem and helped me to edit a couple of DLL files before reinstalling Word again. This seemed to solve the problem but I didn't get round to asking for an explanation. Can you assist?"
Chris Kushner 100634.75@compuserve.com

A. DLLs (Dynamic Link Libraries) themselves generally don't cause problems, but they appear to because when errors are reported on the screen they refer to the DLL which was being called at the time.

DLLs are executable files that allow Windows applications to share resources. So, as their name suggests, they can for example link applications so that when one is updated, the other application takes account of the update. They're often to be found in the Windows or Windows\System directories, but can also reside elsewhere. They usually have a .DLL extension, but some have .EXE and other extensions.

If an application is missing one of its DLL files, an appropriate and quite commonly seen error message will appear: "Can't find ...." (make sure that the DLL file is in the correct directory). If an application is started with an outdated DLL file, the error message "Call to undefined dynalink" will be displayed, and that may well be the error message you got. We presume that the Canadians told you how to update the files.
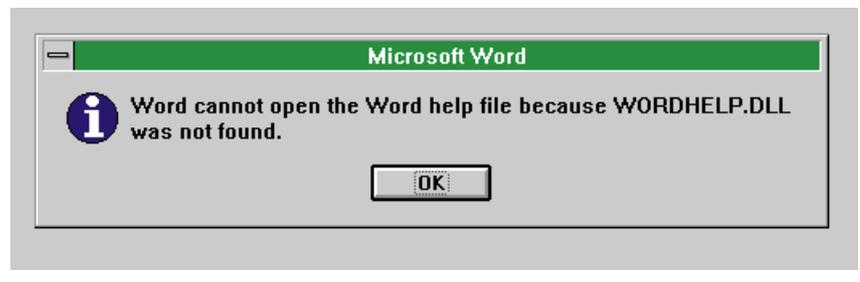
But there are no hard and fast rules. Play within those two limits and see if you can improve the performance by cutting down on disk swapping. Note that Windows for Workgroups 32-bit File Access replaces the functionality offered by SmartDrive. Cacheing is automatically disabled for drives using 32-bit File Access and its memory use is reduced to 128Kb. You still need to use it, however, for cacheing CD-ROM drives.

It's important you use the latest version of SmartDrive available to you, as there can be enhancements you require. You can check which version you have by typing:

```
smartdrv /s
```

Version 2.1 shipped with MSDOS 4.01, version 3.0 with Windows 3.0 and Windows 3.0a. Version 3.13 shipped with MSDOS versions 5.0 and 5.0a, and Version 4.0 shipped with Windows 3.1 and 3.11.

Version 4.1 came with MSDOS 6.0 and included support for DoubleSpace. Version 4.2 was available through online services only and included a switch to clear the cache. The latest versions are 5.0 which shipped with MSDOS 6.20 and 6.21 and Windows for Workgroups 3.11 (the first version to support cacheing for CD-ROM

drives) and 5.01 which shipped with MSDOS 6.22, fixed problems with Kodak Photo CDs and included support for DriveSpace disks.

It all adds up to a new Calculator
On this month's CD-ROM and floppy disk we distribute a new version of the Windows Calculator, released by Microsoft, which fixes a bug that occurs during subtraction of decimal numbers and also makes the calculator behave more like a handheld one. The bugged version comes with Windows 3.1 and 3.11. Try 25.22 minus 25.21. You'll get 0.00, 0.0099999999, 0.010000001 or 0.0000, rather than the correct answer of 0.01. Try also (1/3 + 10 - 10) x 3. You'll get 1.0 not 0.9999 which is what you would get on a handheld calculator. This is due to the fact that significant digits are lost by adding and subtracting 10.

See this month's disc for instructions on how to install the new Windows Calculator.

PCW Contact

If you have any queries or Win 3.1-related topics to discuss, contact **Panicos Georghiades** and **Gabriel Jacobs** at **Win3@pcw.co.uk**.

Font memories

It's not goodbye but *au revoir* to too many TrueType files — they can slow things down. Panicos Georghiades and Gabriel Jacobs show you how to group fonts for specific jobs.

Windows, and most of its applications, copy and store TrueType font files to the Windows\System subdirectory. But having lots of fonts installed (more than 100, say) can slow things down. So, it is a good idea to keep groups of fonts dedicated to different jobs in separate directories, and to edit the [Fonts] section of your win.ini file to keep only those fonts you need for a particular job, by adding or subtracting groups of entries.

Suppose you want to manage three groups of fonts: one for everyday use, the other two for projects on which you work only occasionally. Keep the everyday ones in the Windows\System subdirectory, create two other directories (for instance, Project1 and Project2) and install the fonts as necessary.

To move the currently installed TrueType fonts to a directory other than the default Windows\System subdirectory, open the Fonts icon in the Control Panel. Select all the TrueType fonts you want to move and then choose the Remove button.

The Remove Font window will ask for confirmation about deleting each TrueType font. Make sure that the Delete Font File From Disk check box is *not* checked, and then choose the Yes button — in other words, remove the fonts from the installation, but not from the hard disk (Figs 1 & 2).

Next, from File Manager move all the .TTF files, of those fonts you want moved, to the two directories (Project1 and
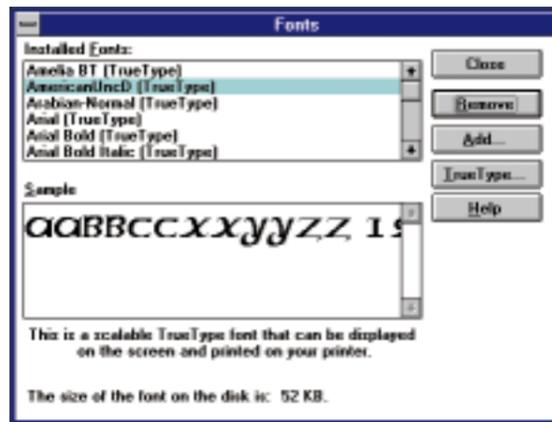
Figs 1 & 2
Remove fonts but do *not* delete them from the disk

Using an editor such as Notepad (run two instances) you can cut out and save to two separate files (say, project1.txt and project2.txt) the group of entries referring to the fonts in the two different directories. This will leave your win.ini with only the fonts for normal use. Each time you want to use the special fonts, all you need do is edit win.ini and paste in the lines you have previously cut out.

Question time
Q. "*Is there definitive literature on Windows for Workgroups 3.11 that explains the meaning of all valid entries in the system.ini and win.ini files, the relationship of these files and their entries in the registry and the software that may have caused the entries? I ask this with a view to removing any which are not required.*

"*In my win.ini file I have the title [wt4gpi8s56bz]. This precedes a selection of font types which are repeated in the section titled [fonts]. In my system.ini file under [386ENH] I have the following three entries:*
COM1AUTOASSIGN=
COM2AUTOASSIGN=
LPT1AUTOASSIGN=

Project2). Restart Windows, and from the Fonts icon in Control Panel choose the Add button. Specify the c:\project1 directory from the bottom of the Add Fonts dialogue box. Windows will begin retrieving all the font names from that directory (Fig 3).

Disable the Copy Fonts to Windows Directory option by clearing the check box at the bottom of the Add Fonts dialog box, choose the Select All button, then OK. Do the same for the Project2 directory fonts and restart Windows.

The [Fonts] section in your win.ini will still contain entries which will refer to .FOT font files in the Windows\System subdirectory, even though the .TTF files (the largest in size) are now in the Project1 and Project2 directories.

Fig 3 Re-install the fonts but do not copy them to the Windows directory

"*What are the valid parameters?*"
CA Hewitt
cc@dartnet.co.uk

A. The [wt4gpi8s56bz] section in your win.ini is the remainder of an aborted or failed upgrade session.

During an upgrade session (say from Windows 3.0 to 3.1 or 3.11) the first part of the Windows Setup disables certain Windows components: namely all fonts except the system, fixed pitch, and OEM fonts, the Shell (Program Manager, Norton Desktop for Windows, and so on), the desktop bitmap, screensavers, Task Manager and installable drivers loaded through the Drivers= line in the system.ini file. These components are to be replaced by the new version's components so that they don't interfere with the upgrade process.

If the Setup process is interrupted before the Windows graphical user interface mode portion has been completed, some or all of the above items may not be properly re-enabled. Fonts are disabled by renaming the [Fonts] section in the win.ini file to [wt4gpi8s56bz].

Setup can encounter problems with re-enabling the old fonts if the system memory is very low or if two aborted installations have occurred. If there is a problem, Setup will display a message box telling you that trouble was encountered when restoring the previously installed fonts and that the [Fonts] and [wt4gpi8s56bz] sections must be merged by hand. So to do this:
1. Open win.ini using Notepad.
2. Delete any line from the [wt4gpi8s56bz] section that is duplicated in the [Fonts] section.
3. Append the contents of the [wt4gpi8s56bz] section to the [Fonts] section.
4. Delete the [wt4gpi8s56bz] section.

The COM1AutoAssign= and COM2AutoAssign= lines indicate how Windows will treat requests for the use of your communications ports by more than one application if one of them is a non-Windows application.

A value of 0 means that any application can use the port at any time. A value of -1 means you will get a message asking you which application should be given control of the port.

The value of a positive number up to 1,000 represents the number of seconds after an application stops using the port before another application can use it (the

Calendar tricks

Many people use Windows Calendar as a simple alternative to Lotus Organizer and its ilk. Unfortunately, it is very limited. For example, it will not allow you to print the Month View grid. However, it is possible do this by pressing Alt +PtrScr to capture the grid to the Clipboard, opening Paintbrush or any similar program, pasting the picture, and printing it (Figs 4 & 5). Or, Calendar will print only appointment times if there's an entry. So, to print blank entries, simply enter a space on the relevant time line(s). By the way, put Calendar first in the Startup group, and you see immediately what you've got on that day as you boot up.


Figs 4 & 5
To print the month view of the Calendar, copy the screen and paste into Paintbrush
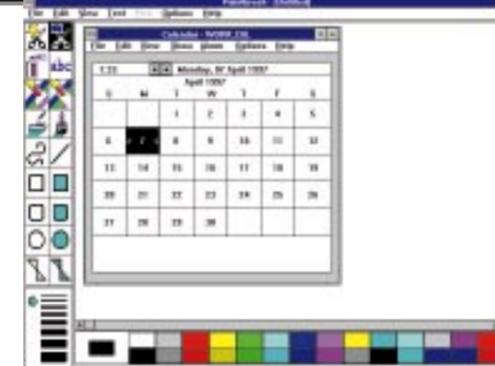
Sound Recorder

Sound Recorder is a free Windows accessory for playing, editing and recording sound files, although for recording you need a sound card and device drivers (to be installed in the Drivers section of the Control Panel). It's designed for small voice message files you would usually attach to documents, as opposed to long pieces of music. For this reason, it has a maximum default recording time of 60 seconds, but you can increase this time using this technique: Record for the 60-second duration and Save As using any name, say "empty.wav". Next, choose Insert File from the Edit menu, and select empty.wav. This increases the recording duration to 120 seconds. You can repeat the process as many times as you like, to increase the recording time, until there's not enough memory to continue.
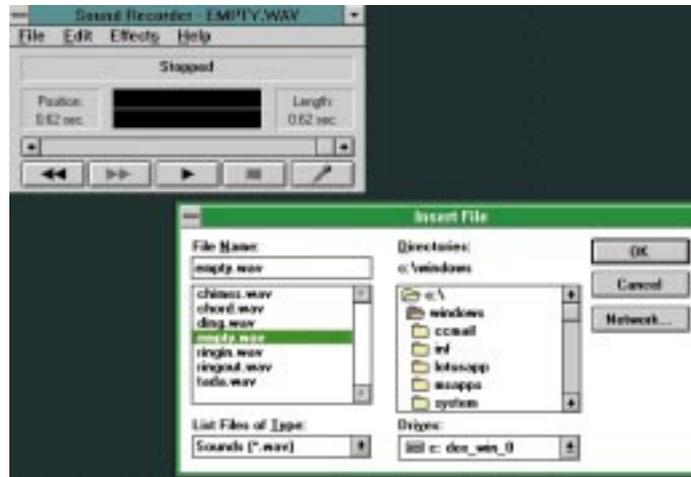
default is 2). To change a value, use the 386 Enhanced icon in the Control Panel.

The LPT1AutoAssign= entry is for your printer port and applies only to Windows 3.0. As in your case, although it may still appear in the system.ini after an upgrade, it will have no effect.

Template time

"*Regarding your 'Step-by-Step Guide to creating Write Templates'* [*PCW, April*[: *Although you are correct about using templates — and also probably following Microsoft's 'right way to do things' — when creating templates from Word or any other application, you can get away with just putting the path and filename of the template. Provided the file type is registered in File Manager, the relevant application will automatically be launched.*

"*I know this saves very little time compared with using a template but I had never thought of doing it the way you suggested. However, doing it in the way I have mentioned above has never been any trouble to me. Well, it takes different strokes, doesn't it?*"

Justin
justinc@j-catter.demon.co.uk

Yes, this will work fine for the example we gave about using templates with Windows Write (as well as with lots of other

programs). But be careful with templates that involve file types which can be associated with different programs; usually images (BMP, PCX etc. and files like TXT and DOC). New applications you install have a tendency to associate files to themselves.

Quick switch

"*Having read your column about booting Windows 95 and MSDOS off the same hard drive* [*PCW, March*]*, I thought I should mention that there is an easier way to switch back to DOS on booting.*

"*In your article, you mentioned pressing F8, then going to option 8. Instead of pressing F8, try pressing F4 and it will perform these two steps in one.*"

Chris Beaumont
cbeaumont@compuserve.com

Thanks, Chris. This undocumented option is what was used in the beta release of Windows 95 and it still works, provided you don't want to access any of the additional Start options available with F8.

PCW Contacts

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All that **glitters…**

Even if you upgrade your RAM, you may still get "low memory" messages; it's the *first* megabyte which sets the gold standard. Panicos Georghiades and Gabriel Jacobs explain.

Our March column, which dealt with installing Windows 95 and Windows 3.x/DOS on the same machine, struck a chord with many readers. We have been fairly inundated with queries about specifics, so here is a selection.

Q. *"Your article encouraged me to try the Win95/3.x/DOS combination. As my present setup already has a multi-config start-up menu, I'd like to check whether or not this may cause problems? I hope it will be straightforward and that I can continue to enjoy multi-choice in DOS."*

James McFarlane
j.mcfarlane@uea.ac.uk

A. There will be no problems with your present DOS multiple-boot configuration menu. Since this is part of your DOS config.sys and autoexec.bat setup, it will come into effect only after you have selected to start with DOS instead of Windows 95.

Q. *"Having installed Windows 3.11 and Windows 95 onto the same hard drive in directories Win3.1 and Win95, is it necessary to load software into C:\win95\application or C:\win31\application, or do you just load them into C:\application?"*

John Wright
john_wright@compuserve.com

A. As we said in the article, only a few simple programs can be run from both 3.1
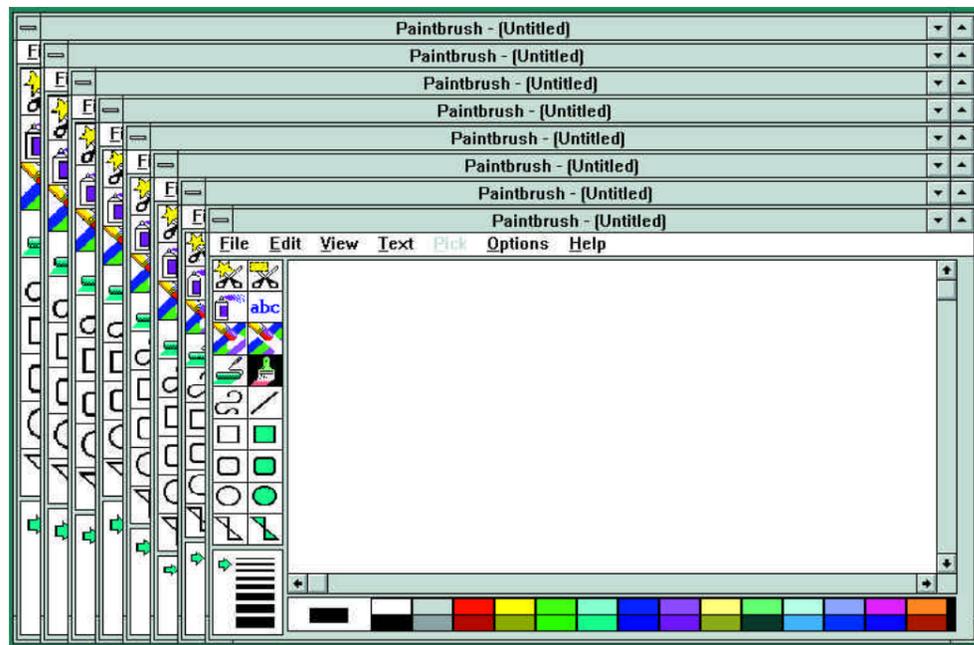
Fig 1 The size of the opening window of some applications depends on available resources. As resources get less, so does the size of the window [*see James Thompson's letter, overleaf*]

and 95 installations: those that don't, keep settings in the Windows INI files, and don't have their own INI files in the Windows directories. All the others must be installed twice; once for 3.1 and again for 95.

We don't recommend that you run programs installed under Win3.1 in Win95 or vice-versa. The idea is to use 3.1 for those programs that can't be run under Win95, either because they do something specific or incompatible, or because they use hardware peripherals for which you don't have 32-bit 95 drivers. Anyway, if a program runs OK in Win95, why run it under Windows 3.1?

To avoid problems, think of the two installations as two sides of a coin which

should never interfere with one another. The straight answer in your case is that you need to keep both application directories separate.

Q. *"I'm using Win3.1 but I also want to use Win95, and having read your article, I want to attempt the dual operating system. However, I've managed to get myself Win95 OEM, and was wondering if it is still OK to load it together with Win3.1. I understand that the OEM version handles FAT32, and I am not sure if it will still be safe."*

Panos Panayides
PAN4DEM@aol.com

A. You can't install both operating systems

using the method we described if you have the OEM version that uses FAT32 (File Allocation Table), otherwise known as the OSR2 version. Microsoft technical support says that you need a fix program which you can get from them.

Q. *"I'm a long-time PCW subscriber, still on DOS 6 and Windows 3.1. Could you please tell me how to ensure that an application always starts in a maximised window? Some of the programs don't seem to have an INI file associated with them."*

James Thompson

A. Under normal circumstances, unless your application has its own INI file or some special setting that goes in the win.ini file, you can't set it up to start maximised. This is true of applications such as Write and Paintbrush which open up windowed, and the size of the windows depends on resources — if you keep opening windows one after the other, they will get smaller and smaller (Fig 1). With applications that have an INI file, the setting would be

`Maximize=1`

If you have Visual Basic or some other Windows programming language, you can write a little program which will start the application you want and then maximise it, using the SENDKEYS command which sends keystrokes to the application you have executed.

One megabyte is worth its weight in gold

You've just upgraded your memory to 16, 32, or even 64Mb of RAM and yet you are still getting messages like "Application Execution Error", "Insufficient memory to run this application", "Quit one or more Windows applications and then try again", or "Not enough memory available".

You're not alone. Low memory is the root of many computing problems, and in many circumstances this isn't due to the physical memory in your machine. Unfortunately, when error messages refer to "memory", they're not all alluding to the same thing. Computer memory is divided into many different chunks, each with its own name and its own job to do. And the most important of these chunks is the first megabyte; the one in which DOS resides.

When Windows starts a new program (a task), it creates a task database (a TDB) for it. This contains vital information such as its current directory, its instance handle, and so on. To maintain compatibility with 16-bit Intel processors and MSDOS, the TDB is

The Write stuff

When using Write:
■ For a soft hyphen, press Shift + Ctrl + Hyphen (this is useful with the paragraph justify setting).
■ To select all, (mark) the entire document, press Ctrl and click between the left margin and the left edge of the screen. This is far easier than dragging the mouse through pages and pages of text.
■ To edit two documents simultaneously, simply run a second copy of Write while the first is still running (you can copy and paste between the two, of course).
■ To align decimals in tables, check the Decimal box in the Tabs window. To align tables of money values, set tabs and check the Decimal boxes associated with them.
■ To print multiple columns, print once for each column using different indents.
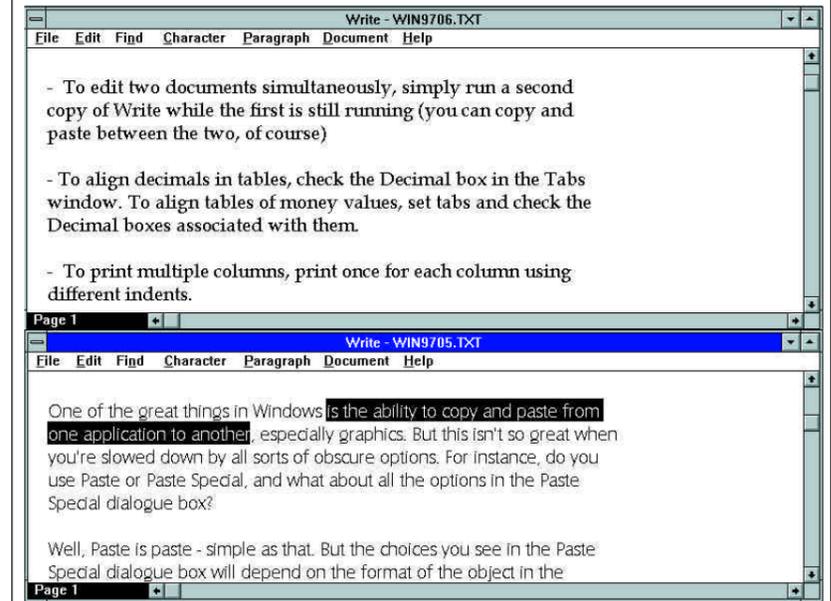
Above To edit two documents simultaneously, run Write, twice

Below To align numbers or currency, use the Tabs settings and check the decimals box
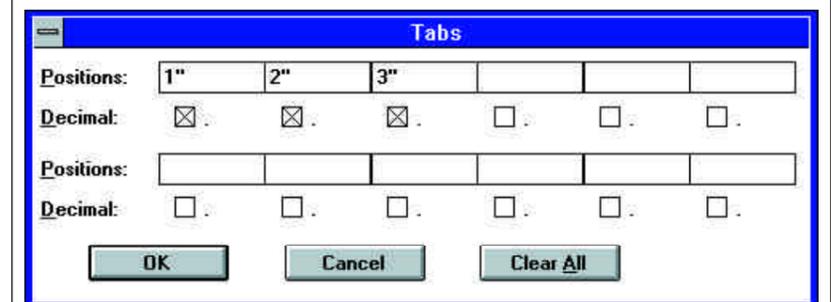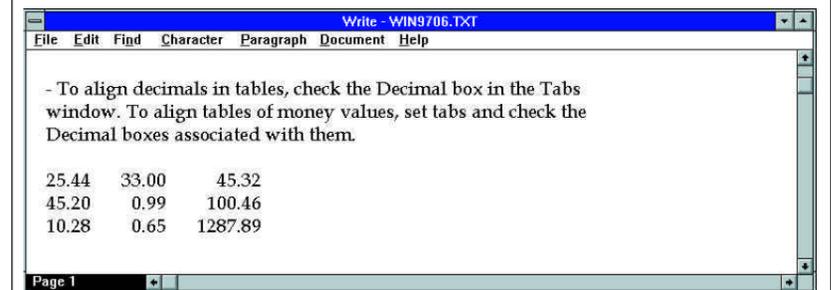
New names for old — a fast rename tip

When you rename a file in File Manager, the cursor goes automatically to the To: line in the Rename dialogue box, and you're expected to type in the new name. Very often you want the new name to be something like the old one. If so, you can avoid some re-typing by copying the old name in the From: line to the To: line. This is especially useful with convoluted or otherwise difficult filenames.

Unfortunately, you can't simply copy the filename by dragging and dropping. But there is a way around this. Highlight the old name (or part of it), press Ctrl + C, click on the To: line, and press Ctrl + V. You can then edit the new name in the To: line until you have the name you want.
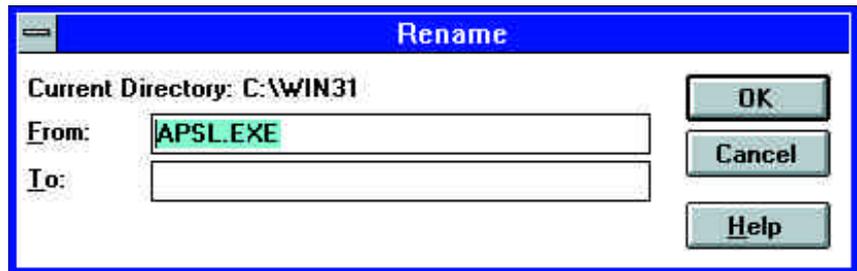
Use Ctrl+C and Ctrl+V to copy the old name to the new name, then edit it.

created in memory below 1Mb — in fact, in the 640Kb of conventional memory. This section of memory on your machine is so much in demand and so limited, that it should be treated like gold.

TDBs are not the only block of memory that may end up below 1Mb. Applications such as Word for Windows, Microsoft Mail, Schedule+ and multimedia packages are examples of applications that put DLL files into the first megabyte of memory when loading or performing certain operations. As Windows loads segments of code, it gives each segment an attribute which determines how it will be treated. Segments are marked, by Windows, as fixed or moveable. Fixed code is allocated bottom-up and, as the name indicates, cannot be relocated. But moveable code can be moved or discarded to make room for other segments. If a fixed segment is too big to fit into the available space, Windows moves some moveable segments, if necessary, out of the first megabyte of memory.

If there's still insufficient room, discardable segments, which can be brought in later as required, are discarded. All this moving and discarding is controlled by a program called KRNL386.EXE.

An "out of memory" error that you get when you try to start an application may happen because fixed segments (precisely because they're loaded from the bottom up) have been loaded in the first megabyte. They cannot be moved and end up using space which Windows may require to load the TDBs.

What's the practical answer to all this?

There are several, but in general the idea is to free as much conventional memory as possible. You can optimise conventional memory (with DOS 6 or 6.2) using MemMaker, and/or you can achieve satisfactory results by changing the order in which programs and drivers are loaded. It's difficult to give precise advice here and trial and error is usually the order of the day: altering the loading order may well affect where the fixed code gets placed.

Creating a multiple-boot configuration can also help minimise what loads into conventional memory for particular operations — it may free enough space for Windows to load the TDBs.

Other techniques include:
- Disabling any applications that start automatically when you start Windows (check the win.ini file and the Startup group).
- Running Windows Setup and changing to standard Windows drivers (VGA, No Mouse, No Network).
- Using the Program Manager (PROGMAN.EXE) as your Windows shell.

Finally, for troubleshooting, remove any third-party Windows drivers or virtual device drivers (VxDs) by re-marking them using a semi-colon (;) at the start of the line in the system.ini file.

PCW Contacts

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Starters orders

How to get applications to open on startup, getting stuck in to Paste, and gaining the upper hand when your computer hangs. With Panicos Georghiades and Gabriel Jacobs.

The usual way of automatically starting programs when Windows is loaded is by moving (dragging) or copying (dragging while pressing down the Ctrl key) all the application icons you require into the Startup group window. To automatically start all the applications found within a particular group, you can change the name of the Startup group entry in the progman.ini file. Using Notepad, edit this file to contain the line

`Startup="group name"`

where "group name" (quotation marks are needed) is any acceptable group in Windows. For example, to start the applications in the group Project A (a group you created, and added in all the programs you require for a particular project you are working on), you would add the following line to the progman.ini file:

`Startup="Project A"`

Acceptable group names are what's listed in the Window menu in Program Manager or at the title bar of the group you want to start automatically. Adding the above line in the Progman.ini disables the Windows Startup group until the line is removed or commented out with a semi-colon (;) at the beginning of the line.

What's a bitmap and what's a picture?

One of the great things in Windows is the ability to copy and paste from one application to another, especially graphics. But this isn't so great when you're slowed down by all sorts of obscure options. For instance, do you use Paste or Paste Special, and what about all the options in the Paste Special dialogue box?

Well, Paste is paste — simple as that. But the choices you see in the Paste
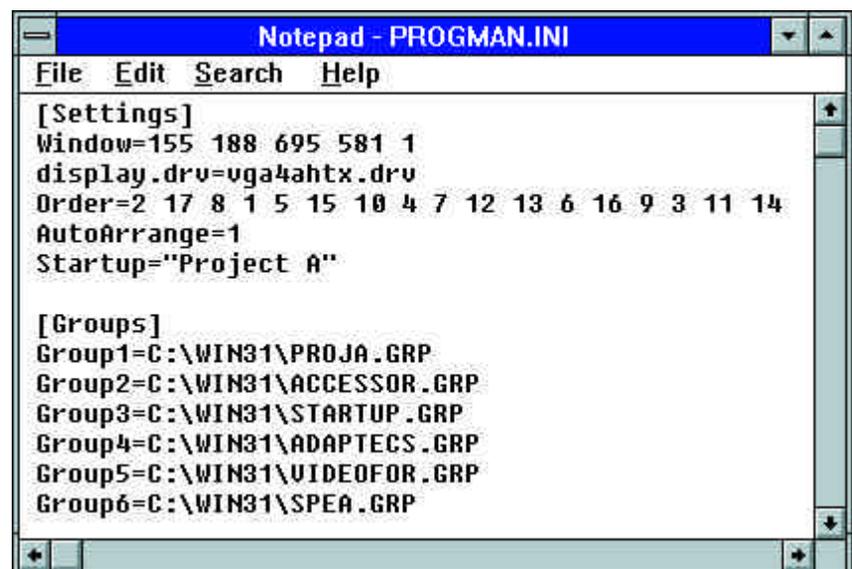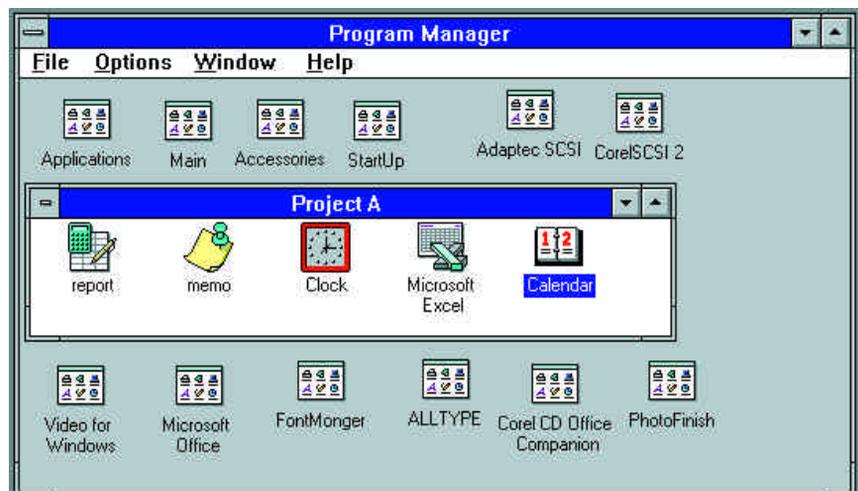
To automatically start all the applications in the group Project A (a group you created, and added in all the programs you require for a particular project you are working on), you would add the following line to the progman.ini file:

`Startup="Project A"`
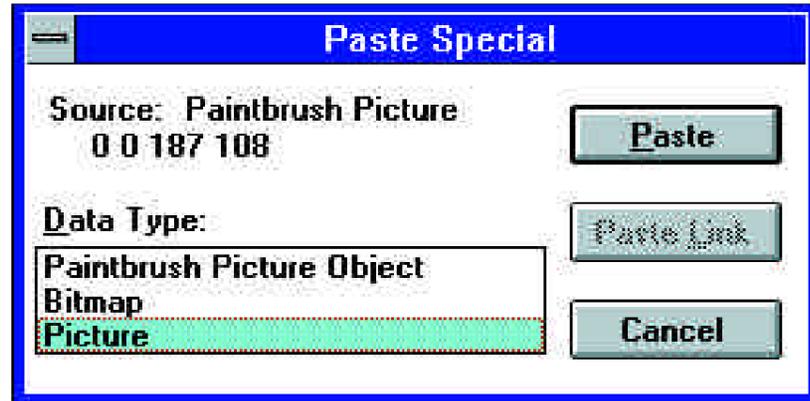
Special dialogue box will depend on the format of the object in the Clipboard. This can be a bitmap or a Windows metafile (Microsoft calls this a Picture), and selecting either of these means that the object is not part of an OLE (Object Linking and Embedding) library: it's a so-called static object with no links to anything else.

If you select Bitmap from the Paste Special dialogue box, the object will be painted more quickly but will take up more disk space when the file is saved. The reverse is true of a Picture.

A bitmap file (extension may be BMP, PCX, TIF, GIF etc.) is a grid filled in with coloured dots. Its file size depends on its width and height in pixels and its colour depth: black and white (1-bit), 256 (8-bit) or 16 million (24-bit) colours. Scaling (resizing) of bitmaps creates distortions, jaggedness, and other unwanted effects.

A metafile or picture (the extension is usually WMF) often consists of a variety of different data structures (usually scalable vector graphics, but it can include bitmaps) and takes up little space. Metafiles can be scaled, and printed using the highest resolution of the printer. However, if one of the data structures includes a bitmap, then scaling will produce the same kinds of distortion of the bitmap element as you would get with an ordinary bitmap.

Try copying a graphic from a paint program to the Clipboard and pasting it into another application. You won't see much difference whether you choose Bitmap or Picture in the Paste Special dialogue box. Now copy a graphic from an application which normally uses the metafile format (Excel, say). Do this first by choosing Bitmap, then Picture, and see the difference.

When in trouble ...
When your computer hangs, or when you get a message about something being

unrecoverable, giving the machine the three fingers treatment (Ctrl + Alt + Del) isn't always the best choice. Various problems can cause software to behave badly or crash, and even make your machine go into a deep sleep. Some of these problems may be caused by incompatibilities between programs, or between programs and hardware, or between different pieces of hardware.

Sometimes (although not often) you may find an answer in the documentation. If not, you may have to contact a support service. But when you do, you'll have to tell them exactly what has happened, and for them to be able to diagnose the problem, it has to be one that can be repeated. If it can't be, you may have to do a lot of detective work to find out the cause. Most problems in computing are solved by a process of elimination, which means you often have to make a fresh start. And if your system has crashed, you will have to do this anyway.

There are three ways to restart a machine: (a) pressing Ctrl + Alt + Del (the three-finger method); (b) pressing the Reset button; and (c) turning the machine off, waiting for a while, then turning it back on. Never turn the machine off, then immediately on, as you risk wrecking your hard disk.

Which method?
The three-finger method is known as a warm reboot and in most cases skips the power-on self test. What's more, it generally doesn't reset all the adaptor cards in the adaptor slots. Using the Reset button (a cold reboot) usually makes the machine go through its self test, but doesn't necessarily cut power to the motherboard or (once again) to the adaptor slots. Therefore, to be sure that everything has been reset from scratch, you should turn off the power completely. After about 15 seconds, the

capacitors in the motherboard will have discharged and the hard disk will have stopped spinning.

If you use the three-finger method or the Reset button and the problem isn't cured, but it is cured if you turn the machine off and on, this implies a hardware problem, usually with a graphics card, internal modem, sound card or other controller.

One final, important point: If you're using a write-behind cache, make sure that the contents of the cache have been saved to disk before turning off the machine. You can do this with smartdrv.exe 4.0 or later by entering SMARTDRV /C at the DOS prompt.

Disk dilemma
Christian J. van den Bosch writes: *"I had an empty 0.5Gb partition on my hard disk, and I decided to turn it into a compressed volume so I could copy a CD-ROM into it. I went into DOS, typed DRVSPACE, chose the partition, and chose to have 2Mb of uncompressed space on the drive (this being the minimum offered), but there were a number of anomalies. The process took about half an hour and included at least three defragment operations using Scandisk. The result was a 0.5Gb compressed drive occupying 340Mb of real space and a claimed compression ratio of 2:1, leaving 160Mb free (not 2Mb as requested).*

"All attempts to enlarge the compressed drive (reduce the uncompressed space) were rebutted: apparently, the remaining 160Mb of uncompressed space contained files that could not be compressed. In the end I just created a larger partition.

"Can you explain?"

<cjb@homenet.ie>

It's normal for the process to take a long time, even half an hour, and normal for the Scandisk operations to check the disk. DOS DrvSpace (originally known as DoubleSpace) does not precisely double the space on your hard disk. Doubling is an estimation derived from an average compression ratio. Different files compress at different ratios depending on what they contain. We carried out some experiments on this, with the results shown *(see the next column)*.

We can't explain why you got an estimate of 2Gb with a compression ratio of 2:1, except that sometimes the possible compression is overestimated. In any case, changing a drive's estimated compression

Utility of the month: SYSEDIT.EXE

If you like playing about with system files — editing your autoexec.bat, config.sys, win.ini, or the system.ini files — there's a Windows utility called SysEdit which has been designed especially for this purpose. SysEdit.exe can be found in the Windows\System directory (it can't be run from DOS) and it opens all four files at the same time. It also creates a backup of the original file with an SYD extension. When booting a system from a floppy drive, note that SysEdit brings up the autoexec.bat and config.sys files found in the root directory of your boot hard drive, not the ones on your floppy.

You can run SysEdit by selecting File and Run from Program Manager
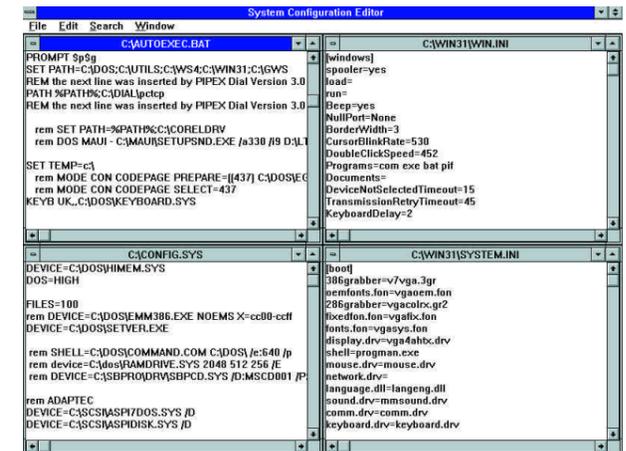
FILE TYPE	COMPRESSION RATIO (X:1)
Zip/GIF	1.0
BMP	1 - 10
ASCII	2*
Excel/Word Programs (EXE, COM)	2.4
	1.7

*Depends on content and whether it's 16,256 or 24-bit colour

ratio doesn't affect how much DrvSpace actually compresses the files; it changes only the way DrvSpace estimates the free space on the compressed drive. However, having the wrong estimated compression ratio for your files can cause DrvSpace to provide inaccurate space estimates to

DOS, which can, in turn, result in problems when storing files.

Anyway, we don't recommend the use of DrvSpace any longer because hard disk prices have dropped so low. You can buy a 2Gb IDE drive for just over £160, so why bother with compression? DrvSpace takes memory from your 640K, it's slower to defragment or to check with Scandisk, and can affect performance in other ways. And there may be conflicts with other programs. Our advice is: hard disk compression out, larger hard disk in.

The **mousetrap**

Yes, it's a good old-fashioned whodunnit: when your mouse trips up while treading the, er, mat, you can help it get its act together. Panicos Georghiades and Gabriel Jacobs direct.

With standardisation on Microsoft-compatible mice, mouse problems have lessened but haven't disappeared. Mice can still fail to function at all, be too fast, too slow, move in certain directions and not others, and work in some programs but not others.

Mouse matters come in threes. There are three types of mouse: Microsoft, Microsoft-compatible, and Microsoft non-compatible; three different ways of connecting them: via the bus, a PS/2-style socket, and a serial port; and they can be used in three types of application:
1. DOS applications, in which case they usually require a driver loaded in the config.sys or autoexec.bat files.
2. Windows applications, in which case the driver is provided by Windows, or a Windows driver is provided by the mouse manufacturer.
3. DOS applications running within Windows.

And, yes, there are three different

When problems strike, are you a man or a mouse? Take valuable advice on failsafe fix-its

causes of mouse problems:
1. Hardware: the mouse isn't plugged in properly, it's a bad or unclean mouse, there's a bad mouse socket, a bad cable, a slippery or uneven mouse mat, or the mouse is connected to the wrong port or with a wrong or bad adaptor.
2. Bad drivers: an older or incompatible version is being used.
3. Conflicting software: your mouse driver may not agree with Windows, or a particular program, or with some other program running at the same time like a TSR program, anti-virus software, or screensaver.

A classic situation is using too many drivers. Manufacturers provide drivers for Windows and DOS (and sometimes for particular DOS programs) and nowadays for Windows 95. Don't install them all —

Windows may not run properly if DOS mouse drivers are also there.

So, if you have a mouse behaving badly, first check for hardware causes — plug it into another computer, or plug another mouse into your computer. Next, establish that the mouse works in DOS and in Windows separately. If the mouse doesn't work in a DOS application under DOS, it will not work in that application if you run it under Windows. Install the DOS drivers needed in the autoexec.bat and/or config.sys files, as described in the mouse's documentation, and ensure that all works fine under DOS.

If you have a Microsoft mouse, use version 8.2 of the driver which comes with Windows 3.1 and, if necessary, expand mouse.sy_ and mouse.co_ (they're on the

Adjusting mouse settings

■ Lowering the Sensitivity value in the Mouse section of Control Panel makes the mouse movements less jumpy.
■ If the mouse is jumpy in Program Manager group windows, lower the granularity settings in the Desktop icon of Control Panel.
■ If you're using the DOS-based mouse driver mouse.com or mouse.sys version 7.04 or later, add the /Y switch to the end of the mouse command line

```
(c:\windows\mouse.com /y)
```

■ Note that erratic mouse movements may be specific to the application, video card, machine BIOS, keyboard BIOS, or machine type you're using.

Windows disks) to your hard disk as mouse.sys and mouse.com by using the EXPAND command at the DOS prompt. You can test whether all works well using a DOS program which supports mouse movements such as Edit. Then disable the DOS drivers by placing the word REM in front of the lines referring to them in the config.sys and autoexec.bat files, and check the mouse works under Windows.

The Windows mouse drivers are set using Windows Setup, and they appear in the system.ini file in the [Boot] section. Normally there should be a line like
`mouse.drv=mouse.drv`
To check you have installed the right Windows driver, exit Windows, change directory at the DOS prompt to c:\windows, and type SETUP. If you get a message saying no mouse has been detected, select the Microsoft or IBM PS/2 option.

Note that some so-called Microsoft-compatible mice are more compatible than others, and you might have to use some trial and error. In particular, try the drivers which come with the mouse installation disk rather than the Microsoft drivers. If all the above fails, try the following suggestions.
■ Search the drive for multiple mouse.drv files. If you find any, rename them to something else, except for the one in the Windows System sub-directory.
■ Test the mouse on a different port.
■ Check that there's only one mouse.ini file, and that the line
`MouseType =`
in the [Mouse] section of the file points to the correct port.
■ Try running Windows in standard mode. If all works well, try loading Windows by typing win /d:x. If all is still okay, add the following line to the [386Enh] section of system.ini:
`EmmExclude=A000-EFFF`
■ Finally, if you're using a mouse that came with its own drivers, try to borrow a mouse that uses the driver supplied with Windows. If that works, contact the manufacturer of your own mouse.

Out of Africa
"I am doing voluntary work in Nigeria, and have been working on a stock-control and tracking program using DOS 6.22 and QBasic (the v4.5 compiler), but the compiled version of the program gives a totally incorrect output at the printer — the numbers are all wrong. Inspecting the code doesn't reveal much, as the only difference

lies in an LPRINT statement (to printer) and a PRINT statement (to screen). There is no problem with interpreted printed reports or displayed reports. I've tried two different printers — no difference. I enclose some output samples. My big fear is a virus, as they are rampant here."
Leigh Bowden, Nigeria

The Microsoft Knowledge Base doesn't list your problem, but there are a number of possible causes.

We doubt a virus is the culprit — virus programmers tend not to target something as old as QBasic! We assume that you're not trying to print while running the program in a DOS session within Windows, as this doesn't work with all DOS programs.

The output samples you sent us show that the text prints fine; only the numbers are wrong. This obviously implies that the problem lies in calculations or statements to do with numeric data only — perhaps a different set of calculations is being used to output to the screen than to the printer. Programmers sometimes attach calculation statements to PRINT statements, and since QBasic needs two different statements, one for the screen and one for the printer, the set for the printer may contain errors.

Alternatively, it may be that certain formatting commands used for the printed output don't work properly when compiled. In any case, check you're using the right version of the compiler for the version of QBasic you have, and that you're setting the right options for handling numbers for the compilation. Also, have you checked the compiler documentation for supported statements and commands? Some statements are supported by the interpreter but not by the compiler.

The write font
A frustrated Bill Reid (mailto:reidw @nacn.dnet.co.uk) mailed us about being unable to change the default font in Windows Write. Each time you start Write, the default font is Arial: he wants it to be Times New Roman.

Trying to answer this query has prompted us to write about a method of creating templates for Windows Write, to use for letters, memos, and faxes, a feature available on all mainstream word processors but missing from Windows Write.

You can create your own designs and save them as standard Write documents. Give them names like letter.wri, memo.wri

A step-by-step guide to creating Write templates
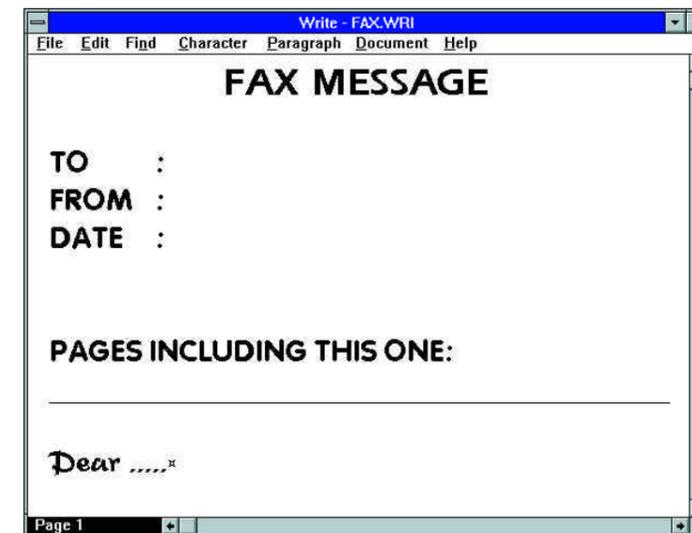
Above Create your templates in Write and save them as any ordinary Write documents

Right From File Manager make the template files Read only

Below Create multiple copies of the Write icon and edit each one to include the template file name in the command line
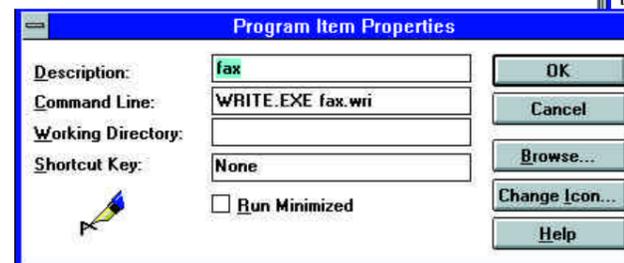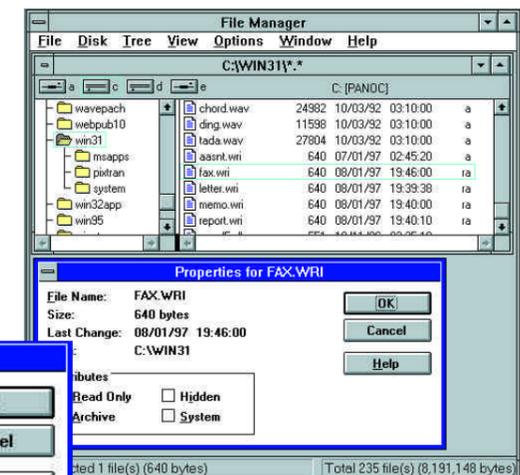
Right You will end up with multiple Write icons, each one starting a different template

Below To customise your templates even more, choose a different icon for each one using the icons embedded in Progman.exe, or any other icons you may have

and fax.wri. To prevent overwriting the templates, you have to use Save As, not Save, and to avoid using Save by mistake, make your template files Read Only by changing their Attributes in the Properties option of the File menu in File Manager.

To use the templates you open Write, then use File Open to select a template, or you can assign icons to each template so you can open them with a double click. To do this, start Write and the template in one go by editing Write's Properties in the File menu of Program Manager. In the command line of the Properties dialog box add the filename of your template, so the command line reads, for example, write.exe letter.wri.

Do this for all your templates by clicking and dragging the Write icon while pressing the CTRL key to make copies of it, then editing each one's command line to include a different template filename. Change the default Write icon to another one by using icons embedded in Progman.exe.

To change the default font from Arial to something else, create an "empty" template. The only problem is that the template can't be completely empty, so you need to type a space, say, then select that space with the mouse, and from the Fonts menu change the font to the one you want.

Double trouble

Windows 3.x programs running under Win95 is not a happy marriage, but don't despair — Panicos Georghiades and Gabriel Jacobs explain how you can have the best of both worlds.

The good thing about new versions of software is that they are usually better than their older counterparts. This was undoubtedly the case with Windows over DOS, as it is with Windows 95 over Windows 3.x. But we are talking here about general use rather than specific applications which, in some cases, do run better on an older operating system.

The bad points about upgrading to new versions (apart from the cost) are that newer software is more likely to have bugs, and your machine and peripherals may also need upgrading. There's also the fact that not everyone is upgrading overnight; it's a gradual process sometimes taking years to complete, by which time an even newer version is on the way.

It would have been great if, say, on the 24th August 1995, every hardware and software manufacturer on earth had Windows 95 versions and drivers available. We could all have upgraded immediately, and painlessly. This didn't happen, of course, and even a year and a half later, there's hardware out there which doesn't have Windows 95 drivers, and software which will never be upgraded to Windows 95.

Microsoft may boast that Windows 95 has sold more copies than Michael Jackson's "Thriller", yet the reality is that the majority of Windows users have stuck with 3.x (usually 3.1). Many large organisations have been holding back because they know that the cost, in time, of solving incompatibility problems from new software is often much higher than that of buying the new software in the first place.

So, if you're not fascinated by solving problems, we recommend that you run Windows 3.x programs under Windows 3.x,

and dedicated Windows 95 native 32-bit programs under Win95.

We're not saying that Windows 3.x programs don't run under 95, but problems arise with non-Windows 95 drivers for hardware, old Win95 drivers, and some program installation procedures. Even if a Windows 3.x program doesn't depend on drivers, its installation procedure, designed for 3.x, may cause problems under Windows 95. It may replace files with older versions, or it may install things like Video for Windows and other MCI Windows 3.1 code not needed in Win95. It may mess up your Win95 installation, to a point where your machine simply will not start.

In general, play safe: you're far better off running programs on the operating systems for which they were designed. On the other hand, Windows 95, like Mount Everest, is there. So the solution is to have the best of both worlds. If your machine runs 3.x and is not up to Windows 95, don't upgrade it. Keep it as a Windows 3.x and DOS machine to run your old software, and put the money you save towards a new Windows 95 machine.

If your machine is up to running Windows 95 and you have a large hard disk (1Gb or preferably 2Gb as hard disks are very cheap nowadays), it is possible to keep your old DOS/Windows 3.x installation as well as a new Win95 installation, on the same machine. This is fairly easy to do, and you can have both working in harmony (but not simultaneously) provided you watch out for certain things.

Here's what you have to do, although you can only do it with versions of MSDOS 5 or later (see Fig 1 for the technical reasons why):

■ When you install Windows 95 and you are asked in which directory to install it, choose a different directory name from the one that Windows 3.x is using.

If you are starting from scratch (which is not a bad idea) you can use names like Win31 and Win95. You will then be warned that you will have to re-install your applications — you will have to do that with your new Windows 95 programs anyway.

■ Go ahead with the Windows 95 installation as normal. Windows 95 will copy some of your MSDOS files (scandisk,

Fig 1 Boot room

Why can't you have a double boot (Windows 3.x and Windows 95) with DOS versions earlier than 5.0?

The answer is that Windows 3.x sits on top of DOS, and in the earlier versions of MSDOS, the first three sectors of the io.sys file has to be placed in the first three sectors of the data area of the hard disk. Following version 5.0, this constraint was removed from DOS.

When you install Windows 95 on a PC running DOS 5.0 or later, the setup routine actually keeps your previous io.sys, msdos.sys, command.com, autoexec.bat and config.sys files after renaming them with a .DOS extension (io.dos, msdos.dos, and so on).

If you install Windows 95 in a new folder, the line "BootMulti=1" is automatically added to msdos.sys, after which you can have a double-boot configuration. But if you delete io.dos, msdos.dos or command.dos, or if they get damaged in some way, or even if you simply move them to any other directory except the root directory of the boot drive, you can't boot under DOS, and therefore you can't run Windows 3.x.

Microsoft Technet: our productivity product of the month

There are many books, CD-ROMs, videotapes and all kinds of courses on Windows 3.x and DOS. However, the richest mine of information is to be found on Technet (Technical Information Network), a subscription CD-ROM from Microsoft. This monthly set of CD-ROMs contains specifications, updated drivers, press releases, lists of problems and their solutions, as well as hints and tips from the developers and technical support people at Microsoft on

not only Microsoft products but some third-party products, too. There are literally thousands of articles through which you can browse by using either an Explorer or File Manager tree-type structure, or the built-in search facility.

If you are working in a support department, or are simply interested to find out about how to get the best from your system, this is the tops.

■ *See "PCW Contacts" box for details.*
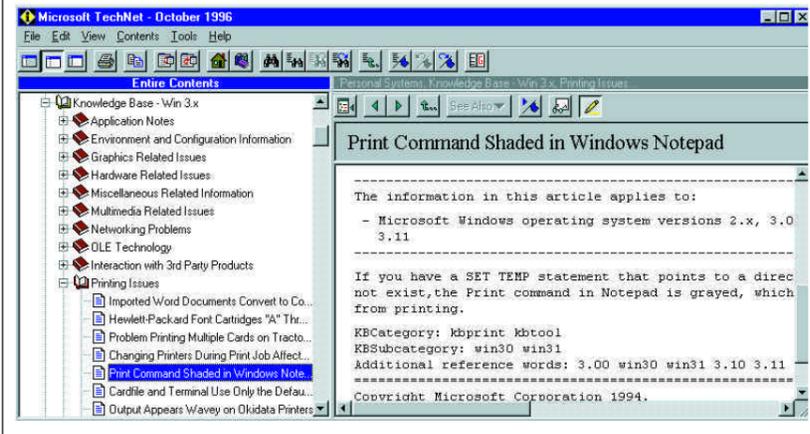
defrag, etc) into its own directories and replace them with batch files (Fig 2, below). It will also rename some of your DOS system files (see Fig 1) and will leave your Windows 3.x installation alone.

■ After Windows 95 has been installed, press the F8 key during boot-up (very shortly before the message "Starting Windows 95"). This will give you a menu with a number of options for starting up. One of them will be "Start your Previous Operating System".

If you select this, your machine will start as before under your DOS/Windows 3.x operating system. In other words, you should be able to run DOS and Windows 3.x as if Windows 95 were not there. The Windows 95 directory and programs will be

visible on your hard disk, but file and directory names will be shown in the DOS eight-characters-plus-three-characters format (using the ~ character) instead of the long filenames.

For example, the Windows 95 directory Program Files will look like this (see also, Fig 3):

`Progra~1`

■ After the message "Now loading your previous version of MS-DOS, please wait", you may get one of the following error messages:

`Your previous MS-DOS version is not supported. MS-DOS startup failed.`

or, you could get

`Your previous MS-DOS files were not found. MS-DOS startup failed.`
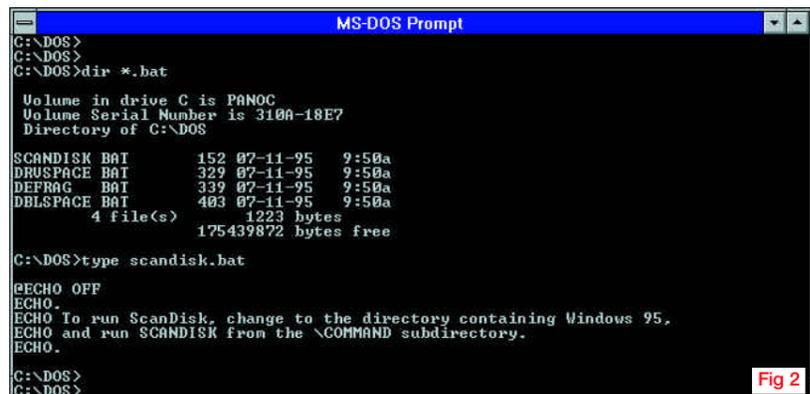
Fig 2
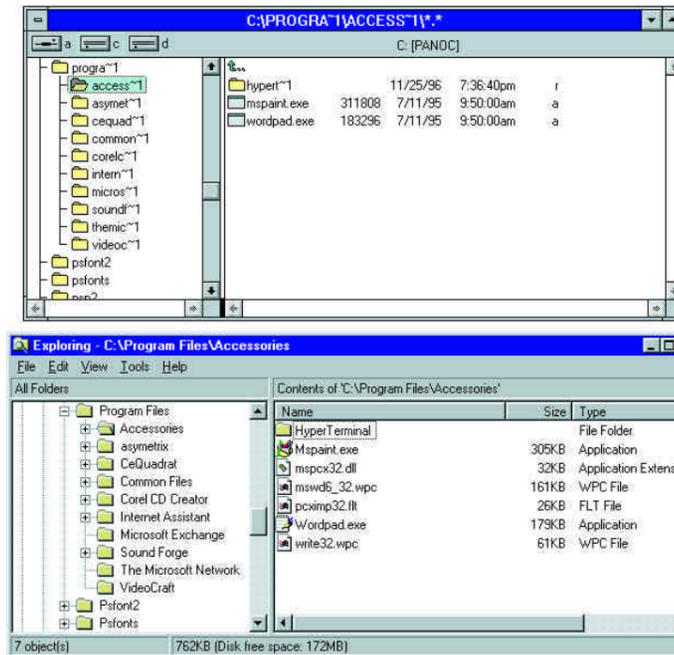
Fig 3
If you run Windows 3.1 and Windows 95 on the same machine, this is how the long filenames will look. This is normal

If you do receive one of these messages, you need to check whether the line

`BootMulti=1`

is present in the msdos.sys file in the root directory of your boot drive.

■ If it isn't there, you will have to edit the file and add that line. But take note that even though msdos.sys is a text file (and can thus be edited in Notepad) it is also a read-only, hidden system file so you'll need to change its attributes to modify it. You can

do this in Windows 3.x File Manager, or Windows 95 Explorer, or by using the ATTRIB command at the DOS prompt.

Things to watch out for

This multi-boot option requires you to restart your machine (either a three-fingered warm reboot with Ctrl+Alt+Del, or Reset will do) as you can't switch between one operating system and another just like that. And, by the way, make sure Windows 95
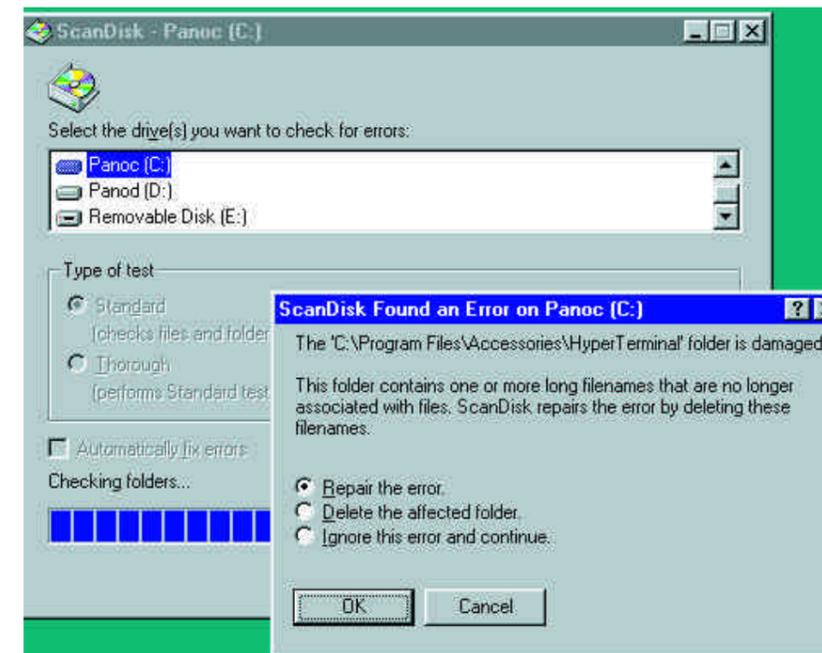
Fig 4 **If you delete files with long names in Windows 3.1 or DOS, you may well encounter problems when running Windows 95**

always shuts down properly first.

Most PC manufacturers do not install Windows 95 over MSDOS, so if you have bought a machine with this standard type of Windows 95 installation, DOS system files will not be on it and you will not be able to have the dual boot unless you re-install everything yourself.

On top of all that, even though you can share data files and even run some programs under both operating systems, there are a few things of which you should be careful.

1. Configuration settings: Programs that keep their configuration (INI) files in the Windows directory, rather than their own, may create two configurations and may run differently under the two operating systems. Don't expect the same settings to be available to you.

2. Long filenames: Use only the eight-plus-three format for any data files you intend to use under DOS and Windows 3.x. If you re-save or re-name a file (in Win95) created with a long filename, under Windows 3.x or DOS the name will be truncated and your long filename will no longer be available in your next Windows 95 session.

3. Disk manipulations (the importance of which cannot be over-emphasised): You should carry out all disk manipulations — defragmentation and scandisk operations, and as many file deletions and clearance sessions as possible — under Windows 95 instead of 3.x (Fig 4). At the very least, do not delete files with long filenames in a DOS or Windows 3.x session.

**4. Last but truly not least:** Do not use DOS and 3.1 disk tools (such as old versions of Norton and other, similar, programs) if you have Windows 95 in your machine. You may damage the Windows 95 installation.

■ Panicos Georghiades and Gabriel Jacobs have now taken up the mantle of Hands On Windows 3.1 from Tim Nott. In addition to writing his Windows 95 column as usual, Tim can also be found presenting Hands On Word Processing.

Light **relief**

So farewell then, Tim Nott — but only from the 3.1 column. He's going to try his hand at other Hands On highlights, but before he goes he wants to regale you with tales of shareware known and loved. By the way — did you know he cheats at Solitaire?

My goodness, this recursion thing is a popular problem. You may remember this first saw the light of day in last November's column: the contents of a directory also appear in a sub-directory, and so on in an endless recursion.

Tony Hill showed how to replicate the problem with a disk sector editor and said that Scandisk would fix it. Well, I haven't tried this — I might be brave, but I'm not daft. Paul Harrison had it when, as he said, "I tried to run a DOS-only program under Windows" and was "pretty sure" that Scandisk would fix it, but reinstalled anyway. James Mackintosh had it doing something with Linux, Paul Butterwick blamed it on a faulty motherboard and Ray Girling on a faulty power supply. Robert Carrington-Jones encountered it several years ago on XT machines running DOS 3, which, he said, "…precludes any Windows influence and points to something more fundamental going on with DOS."

I'll leave the last word to the oddly-named Satanic Avatar (he seems quite a nice chap, in fact): "I think it may be related to a game installation. Lemmings had a curious pirate security; the HD disk had a directory n times replicated, which made it impossible for pirates to copy. I dunno what your readers have been doing, but…"

Grovel

Several readers have pointed out that the Windows speaker driver which lets you play .WAV sounds through the PC speaker wasn't on last December's CD-ROM as stated. Sorry. It's such a tiny file it must have fallen through a crack in the online continuum. It should be on this month's disk in SPEAKER.ZIP (7,848 bytes).
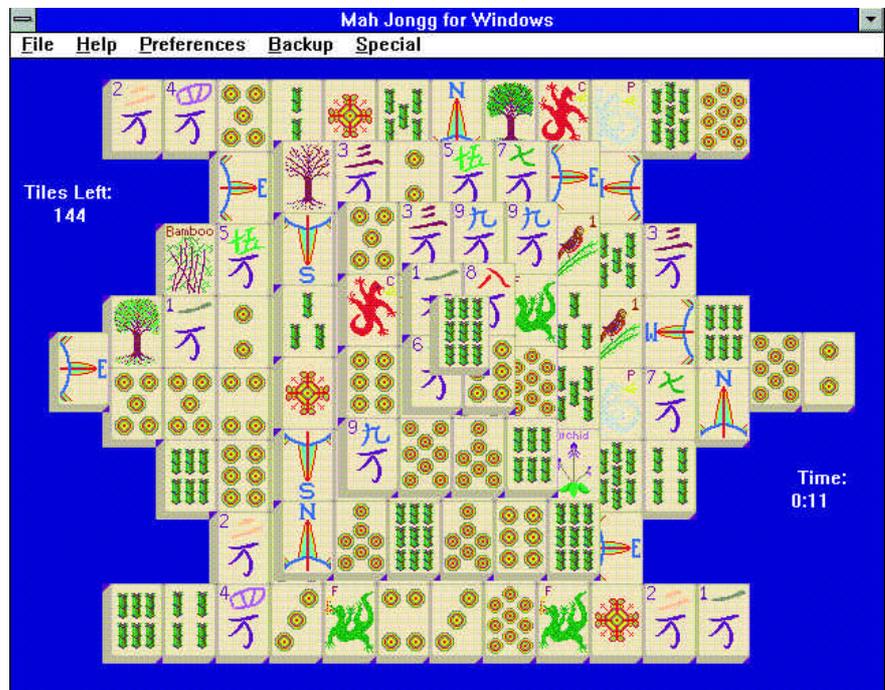
One of my all-time favourite time-wasters

Hands off

Forty-two, besides being the answer to life, the universe and everything, is also the number of Hands On Windows 3.x columns I've written for *PCW*. In that time we've seen two new versions of Windows and covered subjects of fearsome technicality such as DDE, a blow-by-blow guide to the .INI files, and what the various types of memory mean and what to do when you run out of them.

We've done worthy things, such as weeding out redundant files and mastering the Object Packager. Since last April we've been dicing with DOS, too. We've also had a lot of fun customising Windows in ways the manuals don't tell you and playing with
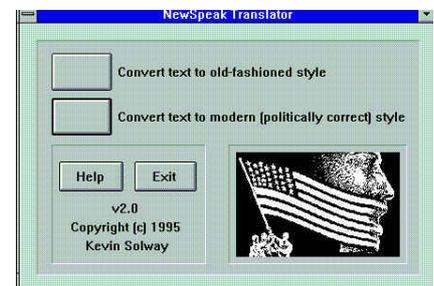
Transform your prose with Newspeak

various shareware utilities and diversions.

Anyway, I'm moving on — not so much to pastures new, as to a field not far away. Business will continue as usual in the Windows 95 column, but as from next month you'll find this one in the capable hands of Panicos Georghiades and Gabriel

Tim's top twelve favourites

And so, to tips. We've had hundreds over the past three and a half years — both from my own investigations and your feedback. So here is my all-time favourite dozen.

1. Starting Windows Change the Windows start-up screen by creating a bitmap (no more than 16 colours or 50Kb) in RLE format — say, newlogo.rle. You'll need something better than Paintbrush; Paint Shop Pro does the job well. Make a back-up of WIN.COM, quit Windows, and from the command prompt in Windows\System type:

```
copy /b win.cnf+vgalogo.lgo+newlogo.rle c:\windows\win.com
```

adjusting paths to suit. If you want an easier way, back up the existing VGALOGO.RLE and save the new file over the original. Use Windows Setup (again from DOS) to change any aspect of the Windows configuration. This rebuilds WIN.COM, automatically. Now run Setup again to change it back; the new screen will stay in WIN.COM.

2. Screensavers To run a screensaver on demand, first edit WIN.INI and add "SCR" to the line PROGRAMS=COM EXE BAT PIF. Then create an icon for the screensaver module with, for example, the command line "MYSAVER.SCR /s".

3. What the .DLL? You can often find out more about a system file (like a .DLL, .DRV or .EXE) from File Manager's "File/Properties…". Alt + Enter is the keyboard shortcut.

4. File and Program Managers Once you have the windows and icons arranged the way you want them, press Alt + Shift + F4 to save the settings. Don't forget to turn off "Save settings on exit" to stop this being overwritten.

5. Program Manager You can restrict users of a PC (providing they don't know this trick) by editing PROGMAN.INI and adding a [Restrictions] section containing the following:
- EditLevel= 1 — can't create, delete or rename groups; = 2 — nor program items; = 3 — as 2, plus can't edit item command line; = 4 — can't make any change to groups or items.
- NoRun=1 — disables the File/Run... command.
- NoFileMenu=1 — removes the entire "File" menu.
- NoSaveSettings=1 — can't save settings.
- NoClose=1 — can't close Program Manager.

6. Control Panel Control Panel can be similarly restricted: add a [don't load] section containing the items you want to restrict. For example:
- fonts=1   ● desktop=1   ● drivers=1

Note that the right-hand side of the equation can be anything you like; "0" or "gerbil" will work just as well.

7. Screenshots Grab your own. The Print Screen key copies a screen image to the clipboard. Alt + Print screen copies the current window or dialogue box. You can paste these into any bitmap program (including Paintbrush) edit, and save them as files.

8. DOS commands For quick help on most DOS commands, type the command followed by "/?". For more information type "help command".

9. Editing System files There's a little-known utility, called SYSEDIT.EXE, which should be in your Windows\System directory. It loads AUTOEXEC.BAT, CONFIG.SYS, WIN.INI and SYSTEM.INI (plus others if you're mail-enabled) for editing and automatically makes backups with the .SYD extension.

10. Your Program Manager Silly, but it works. Create an icon for PROGMAN.EXE itself in a Program Manager (PM) group. In the "Description" box type what you will. Launch it and you'll change PM's title to your chosen description. Stick it in the StartUp group, and it will be there to greet you when you switch on.

11. Control Panel If you need quick and frequent access to a Control Panel item, cut out the middle man by creating items in Program Manager. "CONTROL.EXE MAIN.CPL FONTS" as a command line, for instance, will jump straight to the Fonts section without loading the rest of Control Panel. For an added touch of class, dig out the relevant icon by browsing the .CPL file.

12. Fax Modems It's a pain when you have to close Fax receive standby software to launch a comms session. And even more of a pain when you forget to launch it again afterwards? Try setting up two COM ports (say, 2 and 3) from Control Panel/Ports/Advanced. Set them both to the IRQ and address used by the modem. Point the fax software at COM2 and the comms software at COM3. It fools my system, anyway.

Jacobs. The Lennon and McCartney of computer journalism, they should need no introduction to regular readers of *PCW*, but I'm giving them one anyway as I can't resist playing master of ceremonies.
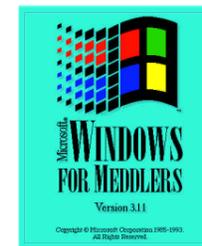
Oh, goodie...

We've seen weird and wonderful shareware and freeware over the past three and a half years. There was the Windows Non-Productivity Pack which contained essential desktop utilities such as the Virtual Cigarette and Elvis Detector. There was Bubba, the picture-based Windows shell for those who found Microsoft Bob too difficult.

For my final 3.1 column, I've included something old, something new, and made an extra special effort to find the ultimate in bizarre shareware.

First, the old. One of the first diversions I ever found for Windows 3.0 was Mahjongg, which I had lost, until today, when I stumbled across it in a shareware collection. It's a patience game based on the Mahjongg tile set: the object being to match pairs and remove them from the board. The tiles are arranged in a complicated pile, and you can only remove those that have a free space to the left or right.

It's quite tricky, very pretty, and has

Department of dishonour

Last month we found out how to cheat at Hearts. If you think that's sad, how about cheating at Solitaire?

■ Isn't it annoying when you've elected to turn over three cards at a time and you find yourself stuck with that vital card never making it to the top of the pile. Wouldn't it be nice to, just this once, turn over one card instead of three?

First, make sure no-one is looking. Second, hold down Shift + Alt + Ctrl as you click the deck, which will turn over just one card. Third, wallow in guilt, and if you've never, ever, won a game of Solitaire, persevere as there's a surprise in store.

■ Oh, and just to complete the set, here's the cheat for Minesweeper. Type "xyzzy". Hold down Shift as you waft the pointer around. Watch the top left pixel of the screen — yes, that's the whole screen, not the Minesweeper window. When you're on a safe square, it will light up (set your Desktop to a dark colour to see this better).
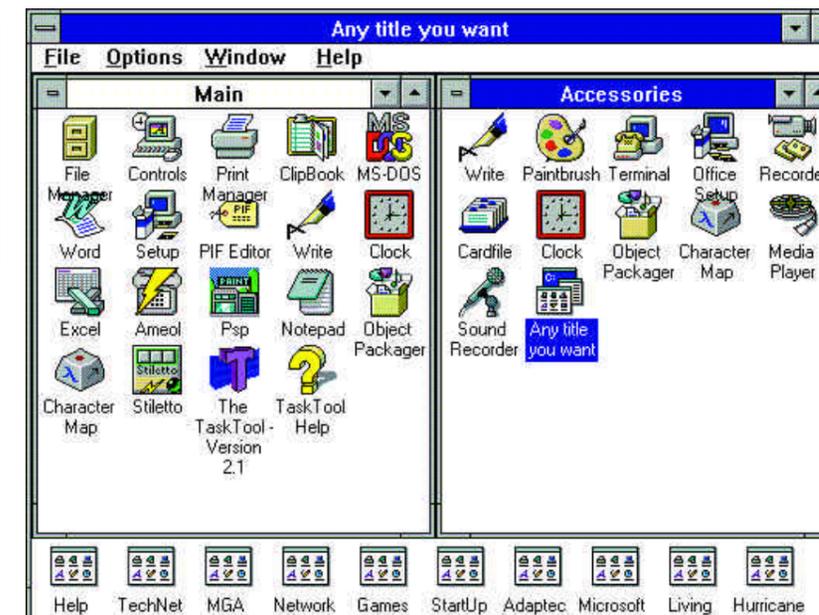
Aboveleft Roll your own Startup screen

Above Adding a personal touch to Program Manager

loads of different tile sets. If you have a paint program that can save 16-colour .PCX files, you can create tiles using the supplied template and DOS utility. I'm convinced it's a major contribution to not getting any work done. You'll find MJWIN.ZIP on this month's cover-mounted CD-ROM.

A more recent, and considerably weirder offering, is Kevin Solway's Newspeak. This takes input from a plain text-with-linebreaks file and gives you the choice of converting it either to elegant old English or a politically correct version — or, to use the latter form, "experientially enhanced" or "culturally sensitive". On balance, feeding it bits of this very column, I think I preferred the former: "Thee'll needeth something better than Paintbrush — Paint Shop Pro doth the job. Amen!" has a rather fine ring to it that my usual prose lacks.

In *PC* mode, it not only replaces such howlers in the text as "short" or "animals" (with "vertically-challenged" and "non-human beings") but adds disclaimers such as "Of course, the above is only one of many different sides to this question" after every statement.

Do make sure that the line breaks are there, as I found Newspeak crashed without them. Most word processors will "Save as…" with line breaks but if you're
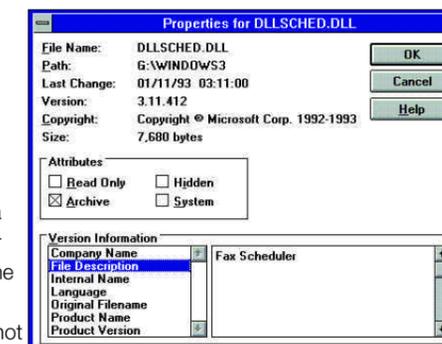
Ah, that's what it is — getting information via File Manager's Properties

using Notepad or Write you will have to put them in manually. The help file (which is actually twice the size of the program) contains several illuminating texts on the subject of political correctness which are both controversial and funny — although I wouldn't presume to cast doubt on the ideas anyone else has had on this issue.

■ *As from next month, Panicos Georghiades and Gabriel Jacobs will be writing about Windows 3.1. Tim Nott will continue to contribute the Windows 95 column. And also from next month, you'll find him writing Hands On Word Processing, too.*

Multiple mayhem

Multiple configuration options, low level Windows security, and the search for a cure for the dreaded RDS. All dealt with before Tim Nott posts his Christmas wishes up the chimney.

Martin deLoughery emailed me from Bahrain (he must be a devoted reader because *PCW* costs more than ten quid there) with a warning on multiple configurations, as discussed in my October '96 column.

He writes: "*I stopped using the DOS multiple configuration option thing aeons ago. Why? Well, the prime reason is that once you have set the whole thing up, would you be likely, thereafter, to never add another device to your system or do anything that will* not *require a change to either CONFIG or AUTOEXEC? I think not, and if you like your memory to be optimised (as I do) you will find that MEMMAKER and your nice new multiple-configuration CONFIG and AUTOEXEC will not be cheery bedfellows. Try running Memmaker with your config and autoexec setup for multiple configuration and see what happens.*"

Certainly, he has a point. However, it should be possible to run MEMMAKER on each individual configuration, save the results as CONFIG and AUTOEXEC.001, 002, 003 and so on, and combine the results into a single, multi-choice CONFIG.SYS and AUTOEXEC.BAT. That's not to say I'd really like to try it, so point taken.

Another observation came from Tim David, who complained that he couldn't get more than nine menu choices, but I think he was just showing off.

Stargazing

"We are all in the gutter, but some of us are looking at the stars." So wrote Oscar Wilde who, with remarkable prescience, also coined "Either that wallpaper goes or I do" shortly before his last and fatal GPF. But I digress.

As star watching seems appropriately seasonal, check out Chris Marriott's SkyMap on this month's cover-mounted CD. Chris, who comes from Culchet in Cheshire, has created a rather splendid planetarium for Windows. Tap in your latitude and longitude and you'll see not just stars in the east, west, south and north, but planets, asteroids, comets and deep sky objects. It's on the CD-ROM as Skymap.zip, which contains 16-bit and 32-bit versions. It's a 30-day shareware evaluation version. The full program shows over 250,000 objects.

■ Registration costs £29.95 (plus P&P and VAT) from the Thompson Partnership on 01889 564601.
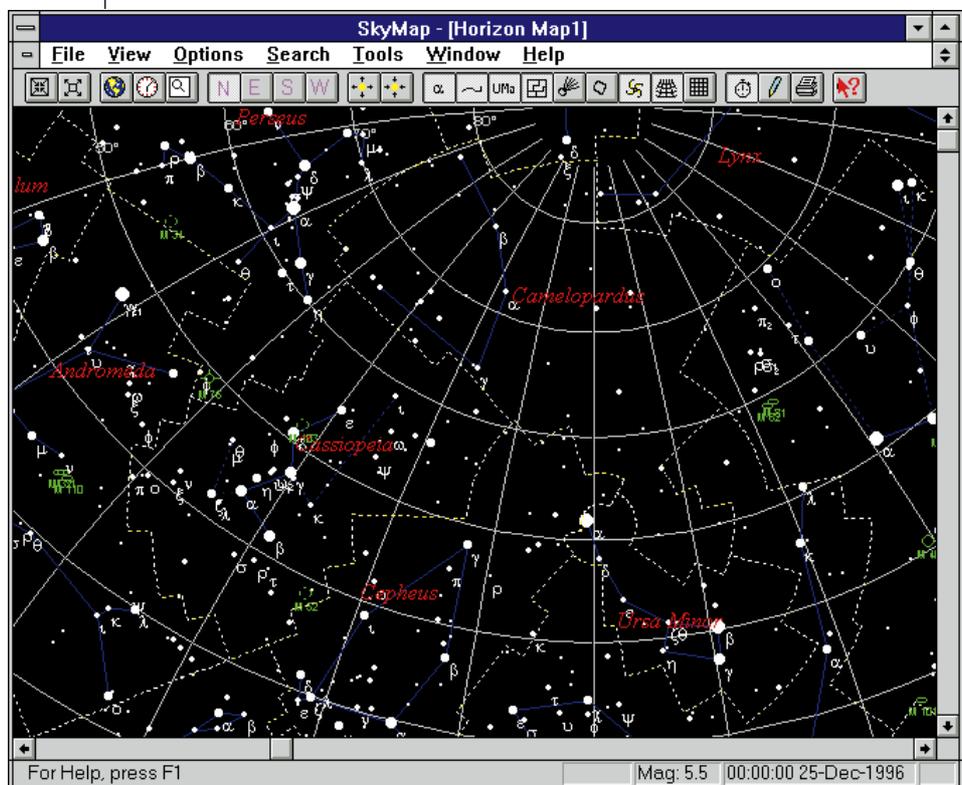
A starry starry night from Chris Marriott's SkyMap, which is available on the PCW CD-ROM this month (Skymap.zip)

If at first you don't succeed — cheat

If you're an honourable and upright citizen, skip this bit. Not to put too fine a point on it, this is how to cheat at Hearts.

Add ZB=42 to the [hearts] section of WIN.INI. (If you don't have a [hearts] section, create one including the square brackets.) Restart Windows. Play Hearts. Hit Ctrl+Alt+Shift+F12 — borrow some fingers if necessary — and watch as all your opponent's cards become visible.

But even having done that, I still find I lose — I don't really mind, but I do find it rather humiliating to be consistently trounced by someone called Terri. So if you're in the same boat, cheer yourself up by changing the default opponent names (on a non-networked machine) by adding entries for p1name=, p2name=, p3name= to the section as well.

Above
Cheating at cards…
Left
…and how to do it
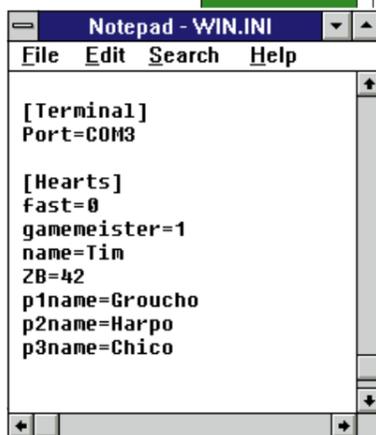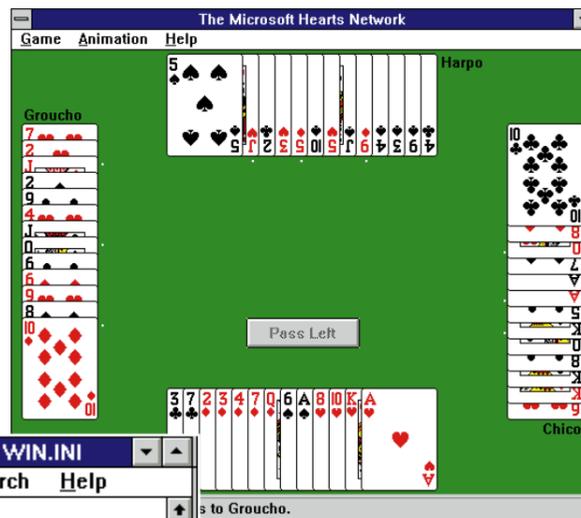
Jerking around

On a more positive note, our man in Bahrain has a rather novel use for CHOICE.COM (Hands On Windows 3.1, July '96). Being forced to share a PC with somebody he uncharitably (but probably justifiably) refers to as "the jerk", he first created two directories, "Hisstuff" and "Mystuff", and copied his PROGMAN.INI and *.GRP files into "Mystuff". He then created a custom Program Manager for the jerk, giving more limited access before copying this set of PROGMAN.INI and *.GRP to "Hisstuff".

Using CHOICE with the /N and /T switches to suppress the prompt and timeout to a default, AUTOEXEC.BAT would always copy the jerk's Program Manager settings to Windows, unless he pressed a certain key (but unknown to him) during the crucial few second's pause. "*It never*

mattered" writes Martin, *"what he did to his program groups (lest he should have learned how) and never mattered whether 'Save settings on exit' was turned on, the jerk always got the same screen every time he started Windows. Crude, but at that level, effective security."*

Roger Pearson had a problem with Program Manager. It could be minimised or maximised but when restored "*…it appears as just a short title bar, and I cannot change its size or position from the top left corner of the screen. I have printed out all the obvious files but cannot find any differences between this machine and another.*"

This sounds very much as if PROGMAN.INI has been nobbled. Open it in Notepad and you should see a section headed [Settings]. In this will be a key named Window= followed by five numbers.

The first two give the position, in pixels, of the top left corner of the window. The next two give the size, again in pixels, and the last should be 1 for restored, 2 for minimised and 3 for maximised. When you restore Program Manager from either minimised or maximised, it will return to the position and size determined by the first four numbers. If these are unfeasible, you can get the problem Roger describes.

The simplest solution is to delete the entire line, or comment it out by putting a semicolon in front. Program Manager will then resort to something restored sensibly in the middle of the screen.

Recursive Syndrome update

A problem that's proving very popular is the mysterious Recursive Directory Syndrome (RDS), as reported in this column in November. This is where Norman Burnell reported that the contents of C:\GAMES was replicated in C:\GAMES\GAMES and so on *ad nauseum*.

A Mr (or Ms) Butterwick reported: "*I also had RDS, along with other things such as not reading a file that it had just verified as being saved, files not existing which File Manager or a DIR reading had shown to be in perfect condition, and CHKDSK reporting thousands of lost clusters or cross-linked files. After numerous checks and tests, it finally turned out to be a faulty motherboard — wish I'd thought of that before trashing a perfectly good hard disk.*"

Colin Mower had a similar problem, although "*…it only existed when I tried to open up my CD-ROM drive in File Manager when there was no CD in the drive. I would get thousands of directories reported as existing on an empty drive! This caused no problems in the running of Windows or DOS, until I tried to back up my hard disk. MSBackup would try and read all of these 'ghost' directories, and complain rather bitterly after about the 200th empty one. I tried everything to resolve this problem, but the only way I got out of it was to re-format my hard disk and start from scratch.*"

Chris Paget came up with a way of reproducing the problem. "*All it takes is ten seconds with Diskedit or an equivalent. Having run Diskedit, go to the root directory, pick a sub-directory and change the cluster number to zero. When you quit, that sub-dir will now point back to the root, and voila! a recursive sub-directory, exactly as described.*" Unfortunately, he doesn't tell us how to reverse the process. Not having

Dear Santa...

And so to my Christmas wish list. Last year, one moan was directed at multimedia applications which insist you change screen resolution before running. So hats off to Talking Books and Broderbund whose children's titles do this automatically, without having to restart Windows, and then neatly change it all back on exit — but only under Windows 95, alas. However, under 3.1 the titles will run without changing resolution.

Likewise, in response to another moan, there's a refreshing trend for games and entertainment CD-ROMs to copy nothing but an icon to the hard disk.

Another wish (which made the charts two years running) was that memory prices would drop in accordance with other PC components such as processors and hard drives. I'm delighted (well, not that delighted, as I bought all my current memory before the drop) that this has come true, and after two years of £20-plus, a megabyte of RAM is, at the time of writing, less than £5 although it seems to be creeping up again.

A third wish that came true (or very nearly so) was for a UK version of Encarta. I've had to settle for a "World English" edition but this does a great deal to redress the over-emphasis on US sport, natural history and culture in favour of more important things such as cricket, nightingales and the Archers. And yes, it runs under both 3.1 and 95, but just to show you can't win them all, it installs 4.5-11Mb of files to your hard disk.

Another wish was for a superfast and stable video card. And I think I've found one — a Matrox Millenium that provides 16.7 million colours in up to 1,280 x 1,024 resolution. It seems solid as a rock and, something that's been on my wish list for a long time, lets you change resolution and screen depth without restarting Windows. And that's not just 95 but 3.1, too. And it's fast. In fact, it's too fast, as selecting or dragging text in Word is impossible if the startpoint and endpoint aren't on-screen at the same time: everything scrolls far faster than I can react.

And so to this year's wishes...
1. Can I have an option to slow down scrolling in Word 6 (and 7) please, so I can get my dragging and dropping back under control?
2. Can I ask printer manufacturers to take a rest from developing? I keep reading of colour inkjets that get ever better and ever cheaper. But just when I've set my heart on replacing my six-year-old (but still going strong) Star dot-matrix with the latest technological marvel from Hewlett-Packard (for instance), Epson, Canon or Lexmark — to name but four at random — move the goal posts. And by the time I've found the definitive best buy from that lot, guess what? HP has moved them back again.
3. But if I've really got to force a decision, then can I have an HP 690c, please. And could I possibly have it a bit early so I can produce those amazingly original Christmas cards I've been meaning to do for the past five years?
4. And while we're in an artistic vein I'd like one of those dinky little Artpad graphics tablets with the cordless pen, from Wacom. I had an all-too-brief loan of one and fell deeply in love.
5. Last but not least, a repeat of last year's wish. Keep developing for Windows 3.1!

Tumpty-tumpty-tumpty-tum… Microsoft discovers the true meaning of culture

Diskedit or a spare PC to hand, I managed to resist the temptation to try this out. This one, I feel, will run and run, but hopefully we might find a solution.

The **error** of our ways

Tim Nott dives into the murky waters of the UAE, fishes out the most common error messages and shows how to deal with them.

Some 2,400 years ago, Euripides proclaimed: "Those the gods wish to destroy, they first make mad." Were he alive today, he'd probably amend that to "first send error messages" as he watched the first draft of the Orestes vanish into digital oblivion as his word processor collapsed in a Windows GPF. So here follows a not-entirely-serious look at the subject of error messages, what they mean and what to do about them.

The doyen of them all is the UAE: not the United Arab Emirates but Unrecoverable Application Error. This is a throwback to Windows 3.0 days.

The world's biggest UAE occurred at the Hippodrome, Leicester Square in January 1991 at the public launch of Excel 3. Some say it was tempting fate to have the Microsoft UK managing director, David Svendsen, wafting through dry ice in a ballroom at ten o'clock in the morning before a packed audience of eager businessmen and women. Others blame the enormous display screen used for the ensuing demonstration. In any event, the presentation team were adequately prepared and, when the unthinkable happened, were able to continue the demonstration on another well-known, and apparently more stable, software platform.

UAEs could be caused by anything from errant applications to wallpaper that was exactly 1,024 X 768 pixels. As Windows 3.0 matured into Windows 3.1, the UAE matured into the GPF, or General Protection Fault, that we know and love today. This is an example of chaos theory in action and can be caused by anything ranging from an incorrect hardware setup to the wrong type of butterfly beating its wings on Mount Fuji.
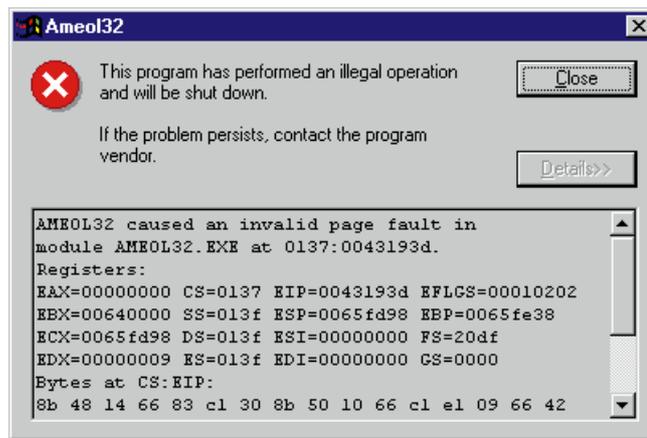
Fig 1 (left) Funny, it was working this morning — but Win95 users get GPFs, too

Fig 2 (middle) The not-very-helpful message

Fig 3 (bottom) Better, but it's probably a DLL, not the EXE

What it means is that an application has written, or attempted to write, to an area of memory already in use by Windows.

A really good GPF can spread like an instant plague. Even if the offending application is closed, others will spring their own GPFs in a merry round of "Atishoo, atishoo, we all fall down".

There are two slim hopes. One is to click the Ignore button if you're given the chance and hope that the problem goes away for long enough to allow you to save your work. You may have to do this several times, so don't give up if the error message returns after the first click.

The other chance is to press Control + Alt + Del to force a "local reboot". You'll get the blue screen of death with instructions to close the offending application and return to Windows. Sometimes, this actually works.
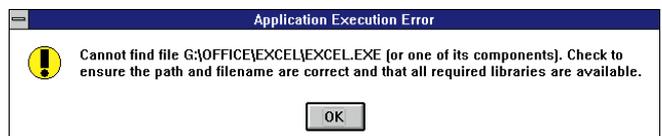
Although GPFs still occur under Windows 95 (Fig 1), personal experience has shown them to be less frequent and you stand a better chance of recovery.

■ "Cannot find the specified file or one of its components" (Figs 2 & 3) leaves it up to you to guess which component, as it probably isn't going to tell you. The most likely cause is that a DLL has gone AWOL. A Dynamic Linked Library is a central collection of routines that can be accessed from Windows applications. These cover everything from File Open/Save dialogues, OLE to bits needed for all those shareware

Visual Basic applications. One tip here is to try opening the program in a different way: try the Program Manager icon, the File Manager .EXE and an associated data file. One of these may be kind enough to mention the missing DLL.
■ "Call to undefined dynalink". The application is looking for a routine in a DLL… It's found the DLL (hooray!) but not the routine (boo!). Almost certainly, one of your DLLs has been overwritten with an older version. A variation on this is that there are two versions of the DLL on your disk and Windows is finding the older one first. This happens, for instance, with the
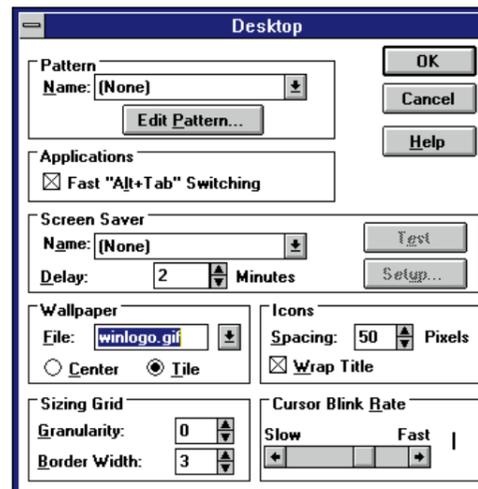
Fig 4 (above) Mission impossible: this will earn you an "out of memory" error

Fig 5 (left) It could mean anything, but I made this one by renaming calc.exe to talc.exe and saving it from Notepad…
Fig 6 (left, bottom) …and this one means you've got too many icons in high colour depth

Windows 3.1 Dr Watson and TOOLHELP.DLL. Old versions of SHELL.DLL, COMMDLG.DLL and the various OLE DLLs can also cause this problem. If there are duplicates in WINDOWS and WINDOWS\SYSTEM, remove the older versions and make sure the newer ones are in WINDOWS\SYSTEM.
■ "This application has violated system integrity and will be shut down". This headmasterly pronouncement is the equivalent of being caught with a packet of B&H fags behind the bike sheds and accused of trying to burn the school down. It's usually caused by an errant DOS application, but an interesting variation is that it can happen if the processing of an MS LAN Manager script takes longer than the allotted thirty seconds.
　There's nothing you can do but follow the instructions to save everything else, restart the PC and run the application from plain DOS next time. If a Windows application produces this, it's probably been at something stronger than B&H which has corrupted the .EXE, so reinstall.
■ "Cannot read from drive X:" Oh dear, this could mean that your hard/floppy/

Readers' write

Two neat DOS tricks from Steven Nicolaou of Nicosia. First, to find out the number of lines in a text file, use the FIND command with the /V and /C switches and a string of gibberish. For example:

```
FIND /V /C "zzyyxxyy"
c:\wherever\myfile.txt
```
This will return the number of lines not containing "zzyyxxyy" which in most texts will be all of them. If "zzyyxxyy" is a word you use a lot, modify it to suit.
The second is using wildcards in the REN (rename) command. REN ABC?.BAT CBA?.BAT will rename ABC1.BAT, ABC2.BAT and ABCD.BAT (for example) to CBA1.BAT, CBA2.BAT and CBAD.BAT

CD-ROM drive is up the swanny. Or it could mean a loose cable. If it happens in a DOS box, it might just mean that the file DOSAPP.INI is corrupt. This retains a list of settings for Windowed DOS sessions: you can delete it and Windows will recreate it.
■ "Insufficient memory to complete operation" (or variations) — (Figs 4, 5 & 6). This one could mean anything. Word for Windows 2 used it as a default error message. Control Panel uses it if you try to

specify a wallpaper file that is not in the .BMP or .RLE format. It can also arise if you've loaded an .EXE file into Notepad, saved it and tried to run it. But you wouldn't do anything quite so daft, would you? Probably the most common cause is Windows running low on resources, like the 64Kb of memory that stores things such as icons, control buttons, cursors and other odds and ends.
　Check the About box from any Help menu. If resources are below 20 percent, trouble is looming (see Figs 7 & 8). When they get really low, TrueType displays in the system font and things like buttons and scroll bars disappear. The obvious antidote is to close some applications: heavyweight office suites are the prime offenders. However, some applications leak resources and don't give them all back to the operating system when closed. Save everything and restart Windows.
　A related problem is the black icons mentioned in the October column. If you have a high colour depth display and more than around 16 icons in a Program Manager group, you'll get an Out of Memory error if you try to add more icons.
　A more obscure variation is that you are low on the first 640Kb of DOS memory. Every Windows application needs a tiny slice of this, but some are far more greedy. I've found mail and fax software to be particularly so. To get the lowdown on this area of memory, use Matt Pietrik's Fix1Mb, included on this month's cover-mounted CD-ROM (Fix1mb.zip). It could mean just what it says, which is that you are out of common-or-garden global memory. Buy, or at least clear, some hard disk space and defrag to create a bigger swap file.
■ "Bad or missing command interpreter" (DOS message). If you get this after quitting Windows, the chances are you've deleted or corrupted COMMAND.COM. First of all, you are going to have to reboot from a

floppy system disk. You did make one, didn't you? Then, from the A: prompt, type SYS C: which will restore the DOS system files, namely COMMAND.COM, IO.SYS and MSDOS.SYS. Should you get this from a Windows DOS box (or should a DOS box refuse to load), it's possible that DOSPRMPT.PIF is pointed at the wrong version of COMMAND.COM. If there's a SHELL= line in CONFIG.SYS or COMSPEC

Ten top tips

Last month it was Program Manager. This month it's the turn of File Manager.
1. Hold down the Control key to select multiple files individually.
2. Hold down the Shift key to select everything between two files. (These two tips also work with some dialogue boxes: e.g. adding fonts in Control Panel.)
3. Single click on a drive icon to change the current window to that drive. Double-click to open a new one. Ctrl + Letter also switches drives.
4. Shift + double-click on a directory symbol to open a new window on its contents.
5. Alt + Shift + F4 saves the current arrangement and settings. "Options/Save settings on exit" will override this, so turn it off if you want File Manager to keep your carefully crafted arrangement.
6. Don't save settings, either way, with a window open on a floppy or CD-ROM drive. Next time you open it, it will grind away for a long time before realising the drive is empty.
7. Control + F4 closes the current window.
8. F5 refreshes the contents of a window.
9. Shift + F4 tiles Windows side by side.
10. If you're looking for a file in a large directory, click in the right-hand pane and type the first letter of the filename. The highlight will cycle through all the files starting with that letter.
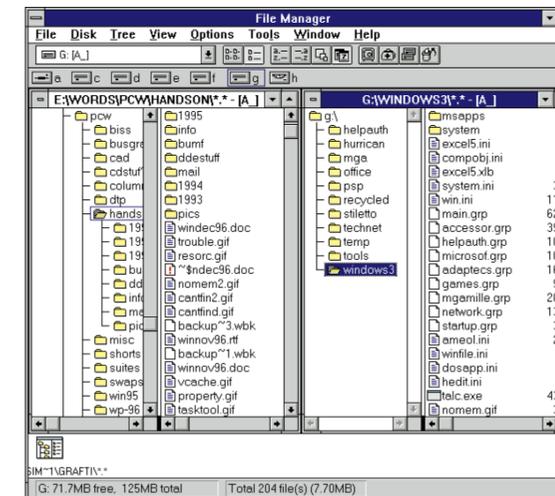
Fig 9 This month's star turn tip is File Manager
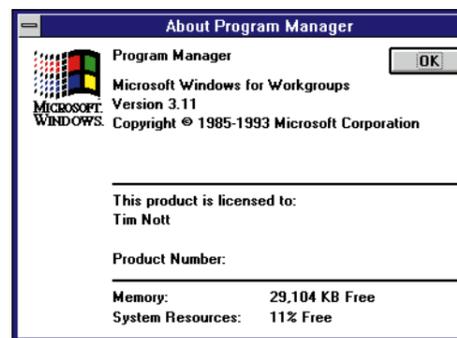
Fig 7 (left) Resources down to 11 percent means trouble is on the way…
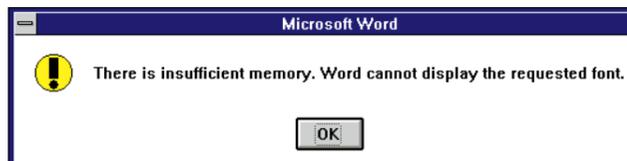
Fig 8 (below) …and sure enough, here it comes

in AUTOEXEC.BAT, run PIFEDIT, load DOSPRMPT.PIF and check that it points to the same location. If not, it should normally point to C:\.
　Another possibility, especially if the error message occurs repeatedly, is that the SHELL command is being used without the /p switch. This causes COMMAND.COM to unload itself, given the chance. The /p switch should follow the path: SHELL=C:\DOS\COMMAND.COM/p.

Squeaky speaky

If you're tired of being the only kid on the block without a sound card, then take heart. It is possible to use the built-in speaker on your PC to play .WAV but not .MID files. Quality will depend on the nature of the speaker in the PC but it will probably be more whimper and squeak than Bang and Olufsen. Look on the CD for SPEAK.EXE which is a self-extracting file. It's old but it works, even in Windows 95.

Weird and **Windowful**

Tim Nott turns agony uncle to tackle a strange DOS problem, smartdrive and vanishing Windows worries. There are ten top tricks to teach an an old dog, plus two treats on our CD.

Norman Burnell wrote from Cheshire with one of the weirdest problems I've heard for a long time. Something had gone wrong with a DOS game (so, nothing new there) on a friend's PC. Using Dosshell revealed a path which went:

```
C:\games\games\games\games\games\
games\…
```

and so on, until Dosshell ran out of memory some 6,000 directories later. Moving to Windows File Manager, it got stranger still: the contents of C:\games\ were a replica of the contents of C:\ as were the contents of C:\games\games\, C:games\games\games\ and so on. Another directory (C:\mp2\) behaved in the same bizarre, recursive, fashion.

Norman tried deleting some of the surplus directories. "*Too late I realised that ample disk space indicated the number of files was not a problem and it was the directory structure that was haywire. I had already cautiously (or so I thought) tried deleting one of the sub games directories, only to find that these apparent duplications were the real thing, hence DOS and Windows were among those that were no more.*"

The vital clue that he'd missed wasn't what was going *wrong*, but what was going *right*. If Windows was still loading, then the damage couldn't have been too severe. I searched the Microsoft Knowledge base for similar reports but unsuccessfully. I can only guess that there was an error in the disk directory structure which was responsible for the problem. Scandisk (or Chkdsk in earlier versions of MS-DOS) should be able to fix this automatically. It's certainly worth a try before deleting the lot and reinstalling. As to how it happened, I have no idea, but
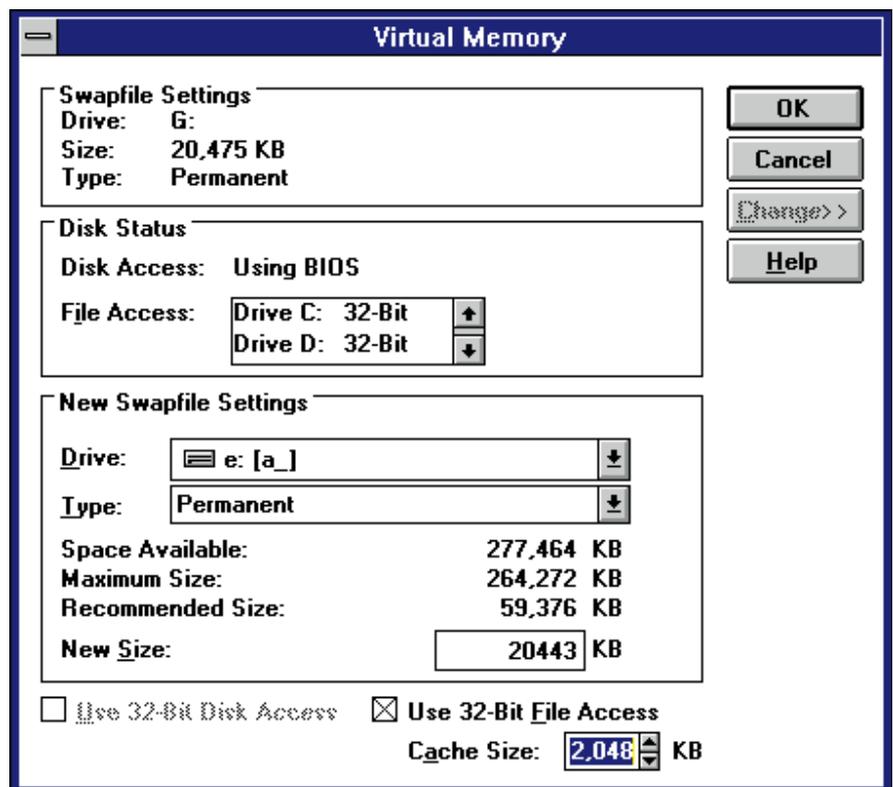
Fig 1 You need to set up Windows 3.11 32-bit file access from Control Panel. It isn't automatic

as ever in the mysterious happenings stakes, checking with an up-to-date virus detector is always a good idea.

Get smart…
Roger Caton, of Bradford, writes: "*I have Windows for Workgroups 3.11 installed, I've enabled 32-bit file access and I'm told that I no longer need Smartdrive. However, the line C:\WINDOWS\SMARTDRV.EXE 2048 128 still appears in my AUTOEXEC.BAT file. Has Windows fouled up?*"

Roger is right, but so is Windows. To explain briefly, Smartdrive is a disk cache.

That is, an area of memory that acts as a holding area for disk data. If it thinks the same data is likely to be read again, it stores it. Memory access is much faster than disk access, so performance is enhanced. Similarly, disk writes are held in the cache until it is "flushed" and all outstanding data written to disk. With Windows 3.11 came 32-bit file access and VCACHE (Fig 1), which replaces (and outperforms) Smartdrive when Windows is running.

The line in Roger's AUTOEXEC.BAT contains two numbers. The first is the size (in kilobytes) of the cache under DOS. If you
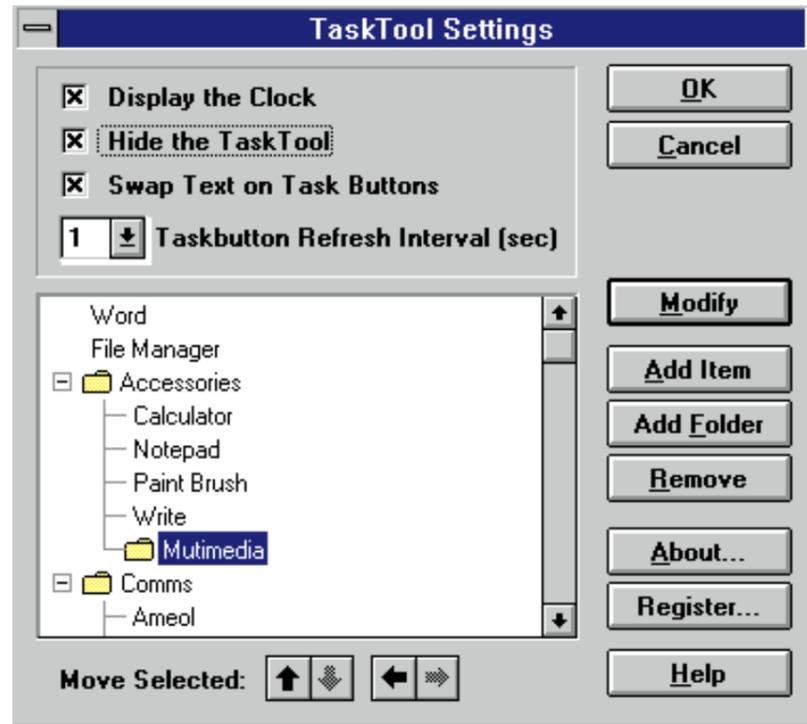
Fig 2 (above) Setting up TaskTool's cascading start menus — just like Windows 95
Fig 3 (right) Default values for positioning the Help screen are defined in the Win.ini file
Fig 4 (below, right) Various bugs on the Windows 3.x calculator have been fixed. Check out our cover CD for the new version

use any DOS applications, especially disk-intensive items such as databases, you still need this. The second figure shows the size of the cache under Windows, in this case a modest 128Kb. So why have it at all? The answer is that VCACHE doesn't work on floppy drives or CD-ROMs, so you'll find that even with this small cache, floppy access is much improved. Note that in order to cache CD-ROMs, the MSCDEX.EXE entry should appear before the SMARTDRV.EXE entry.

Where are they now? part II
Further to last month's "DIY" session on how to find missing bits of Windows,
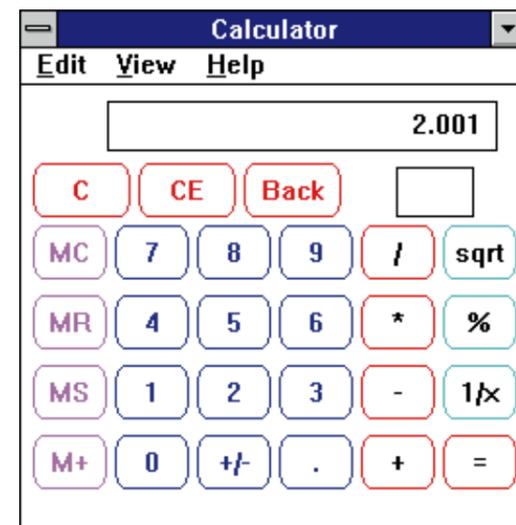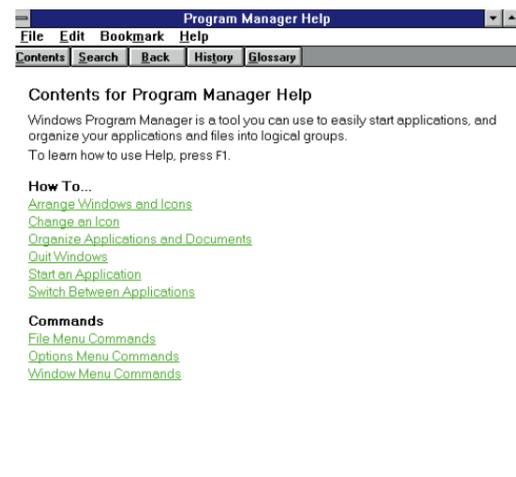
Ten Program Manager tips

Despite the alternatives, the old dog can still get up to a few tricks. Here is my top ten, collected from various *Hands On Windows* columns over the last three years.
1. You can change the starting directory of programs. For example if you store Write documents in C:\data\writings, select the Write icon, go to File/Properties… (or press Alt+Enter) and enter this path in the Working Directory box. When you Open or Save As… you'll be in the target directory without having to traipse up and down the tree.
2. Further to the above tip, you can have multiple entries for the same program pointing to different working directories.
3. Icons use Resources — don't try to install more than 40 items per group and keep as few groups open as possible.
4. A related problem is that in 16-bit or 24-bit colour the limit decreases drastically. You'll get "out of memory" errors and solid black squares instead of icons.
5. For keyboard fans, Control + Tab switches between groups, Enter restores a minimised group or launches an item and the arrow keys move between items.
6. You don't have to use the icon that comes with the program. Hit the Change Icon button in File Properties and browse through .EXE and .DLL files. There's a good range of spares in Progman.exe and some tailor-made for DOS programs in Moricons.dll.
7. You can drag files from File Manager and drop them into Program Manager to create icons for programs or associated files.
8. If you've tidied up Program Manager and want to keep it that way, press Alt + Shift + F4 to save the current settings. Turn off "Options/Save settings on exit" to stop this being overwritten when you close down.
9. You can change the horizontal spacing between icons from Control Panel/Desktop, but to change the vertical spacing you need to add IconVerticalSpacing=nn to the [Desktop] section of WIN.INI, where nn is the number of pixels. Setting this to 50 gives room for just one line of text…
10. …so from File/Properties…, edit the Description of long-winded programs such as *The Universal Widget for Windows version 3.3* to something more succinct.
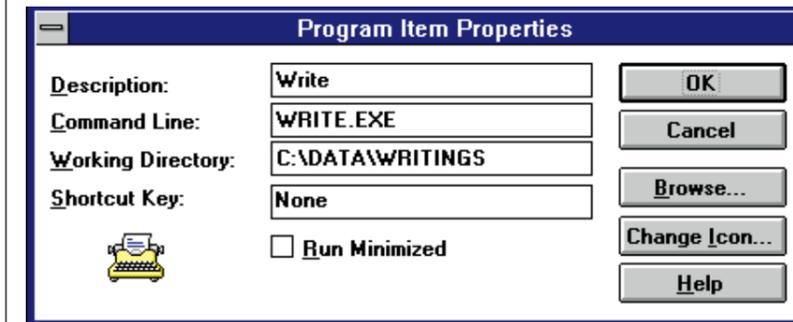
You can start a program in any directory you choose and change the icon

another component prone to doing a vanishing act is Windows Help (Fig 3) and this is usually because it has been moved off-screen.

The quick and ruthless approach is to open WIN.INI and delete the [Windows Help] section entirely. It will be rebuilt with sensible default values next time you start up Windows. However, if you really want to show off, the entry M_WindowPosition, followed by five figures gives the distance in pixels from screen left to window left, screen top to window top, width, height and a final 0 or 1 to signify windowed or

maximised. The copy, history and annotation windows have similar entries, starting with C, H and A.

A dodgy takeaway
As has been reported to this column, the Windows 3.x calculator is broken for all values of x. One, purely cosmetic, bug is that zeroes to the right of the decimal point don't appear in real time. Try entering 5.0005 and you'll see what I mean. Nothing appears after 5.0 until the final digit has been typed. A rather more serious problem is that it doesn't subtract very well: for

example, try 2.01 minus 2.

The good news is that (after four years) it has been fixed (Fig 4) although I don't believe the fixed version ever made it to the Windows installation disks. Anyway, you can find it on our cover-mounted CD-ROM, this month. Newcalc.exe is a self-extracting file containing the fixed calc.exe a swell as a readme file.

Called to the bar
From something old to something new. Well, new to Windows 3.x users anyway. Another utility on our CD-ROM this month is TaskTool (Fig 2). Copy Ttool21.exe to a temporary directory and run it to install. It consists of a bar that sits at the bottom of the screen, containing buttons for each application running, a button to launch applications from a cascading menu, and a clock. If all that sounds familiar, yes, it's almost exactly like the Win95 Taskbar.

There's some nice attention to detail. Click on the clock button and the date pops up, the bar can be set to hide itself, reappearing when you move the mouse to the bottom of the screen and there's even an option to reverse the text on the buttons, so you see "Mydoc.wri - Write" instead of the other way around. This is especially useful when you have lots of windows open and the full title is too long for the button. You can tell the application from its leading icon, so its name isn't essential. Unlike Windows 95, this works with Microsoft Office. There's a Run command on the launcher menu, which, like its 95 counterpart, remembers a list of the most recently run commands. The launch button itself is titled Task Tool rather than Start, but works in a similar way — you can group programs into folders, rather like Program Manager groups except that they can be nested. About the only Windows 95 lookalike features you don't get is shortcuts to folders and the recent documents list.

The only faults I could find with it were that it caused a phantom bar to appear halfway up the screen (which went away when windows were resized), would only show the date in US mm/dd format and incorrectly reported the title of its own help file on the buttons. The version on the CD is a 30-day trial and registration is $19.95.

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What's on
the menu?

Advice on config.sys menu features from Tim Nott, and
how to find those lost bits and pieces.

In July's column I described how you can use CHOICE.COM to offer alternatives on bootup. Thank you to Raymond Jones and Knut Jespersen who both pointed out a better way, which is the built-in CONFIG.SYS menu feature introduced with MSDOS 6. This is much more elegant and versatile, as it means you can control not just the commands processed by AUTOEXEC.BAT but those in CONFIG.SYS as well. Inevitably, it is rather more complicated.

Let's take a likely example. You've got a PC with a CD-ROM, sound card and mouse. Normally you boot straight into Windows, in which case you need the DOS CD-ROM drivers but not the mouse or sound-card drivers as these are taken care of within Windows. At other times you want to boot to the command prompt and need the mouse and sound card.

There is a utility called Interlink that you sometimes use for transferring files from a notebook PC via a serial cable connection. This needs to be loaded into memory before Windows starts, but you don't want to use that memory unnecessarily.

You may occasionally want to run your PC completely "stripped down" to diagnose problems or get a memory-

hungry DOS game or application to load, so you need a choice of four configurations.

The easiest way to explain this is by using an example (Fig 1), with an imaginary set of CONFIG.SYS and AUTOEXEC.BAT. The former is broken into "blocks", each of which starts with a label enclosed in square brackets.

Fig 1 config.sys à la carte

```
CONFIG.SYS
[menu]
menuitem=windows, Start Windows
menuitem=dos, Normal DOS
menuitem=interlink, Windows with Interlink
menuitem=bare, Bare DOS
menudefault=windows, 5
menucolor=15,2

[common]
files=50
buffers=10
device=C:\himem.sys
shell=c:\dos\command.com c:\dos\ /p

[dos]
device=c:\cdrom\mycddriv.sys /D:MSCD001
device=c:\sound\dossound.sys
device=c:\dos\mymouse.sys

[windows]
device=c:\cdrom\mycddriv.sys /X /Y

[interlink]
include=windows

[bare]

[common]
```

The first section defines the subsequent sections of commands as well as their descriptions on the menu. The "menudefault" command sets the default choice and delay, and "menucolor" sets the background and text colours. So here we'll see, on booting, a numbered list of four items, starting with "1. Start Windows…". If no-one presses a key during the next five seconds, this will be the automatic choice and all will appear in vibrant yellow text on a blue background (see the panel, "Over the rainbow", page 261, for a list of the colour values).

The next section is entitled "common": it doesn't correspond to a menu choice but contains everything that's common to each (i.e. things that will always be loaded or set). After that come the individual menu-defined sections, each containing the relevant options over and above the common set you'll see. It doesn't matter in which order they come. You'll see that the (interlink) section has the "include=windows" line. This saves us copying the contents of the (windows) section line by line.

Although the [bare] section is empty, it must be present as it corresponds to a menu item. If omitted, you'll get an error message. There's another [common] section which is empty now, but if any third-party installation adds lines to the end of CONFIG.SYS they will be processed. If this was left out, they'd be tacked on to the [bare] section, which would cause much wailing and gnashing of teeth.

Life's a batch
The astute reader will notice that there is absolutely no difference between the "Start Windows" and "Interlink" choices at this stage. This has to wait until AUTOEXEC.BAT, which "remembers" the choice made in

CONFIG.SYS as this is passed on as an environmental variable with the name CONFIG. A mythical AUTOEXEC.BAT might look like this:

```
AUTOEXEC.BAT
prompt=$p$g
set temp=c:\temp
c:\dos\smartdrv.exe
goto %config%

:windows
path c:\windows; c:\dos
mscdex.exe /D:mscd001
win
goto end

:dos
path c:\dos; c:\dosapps
mscdex.exe /D:mscd001
c:\sound\soundos.exe /X /Y
goto end

:interlink
path c:\windows; c:\dos
mscdex.exe /D:mscd001
interlink.exe
win
goto end

:bare

:end
```

Here, the first three lines constitute the common section, and the "GOTO %CONFIG%" command branches to a label that corresponds to the section header in CONFIG.SYS. This time, the labels are preceded by a colon rather than being enclosed in square brackets.

The "windows" section contains its own path command, loads the other part of the CD-ROM driver and starts Windows. The "DOS" section specifies a different path,

loads the CD-ROM software and processes some imaginary command to initialise the sound card. The "Interlink" section does all the "windows" stuff, but loads INTERLINK.EXE as well, and the "bare" section doesn't do anything. Once again, it has to be present otherwise the "GOTO" command will produce a "label not found" error.

Note the very important "GOTO END" command after each section. It doesn't have to be "end" but a corresponding label must be placed at the end of AUTOEXEC.BAT. If you don't do this, the commands will run on, unlike the sections in CONFIG.SYS. So, on exiting Windows, the batch file would try to run mscdex.exe again, load interlink then restart windows.

If you want to be really clever and are familiar with batch programming, then you can also use the "IF" command with the CONFIG variable. In this case, CONFIG must be surrounded not just by percent signs but by double-quotes, too. Remember you can use SYSEDIT.EXE to edit CONFIG.SYS and AUTOEXEC.BAT side-by-side from within Windows.

Where are they now?
From time to time, bits and pieces of Windows may go missing. There's usually a fairly irrational reason for this, so before you reinstall check out the following guide to self-enlightenment:
Q. Where have all my TrueType fonts gone? They're all listed in WIN.INI, and the .FOT and .TTF files are all present but I can't see them on my word processor's list.
A. Do they all display correctly in Control Panel/Fonts?
Q. Yes.
A. Have you clicked on the TrueType button and checked that TrueType is enabled?
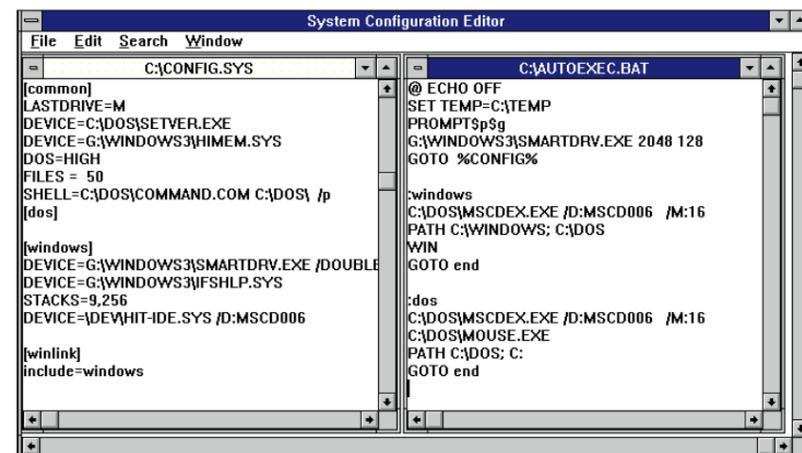
Using Sysedit on AUTOEXEC and CONFIG. It makes backups as .SYD
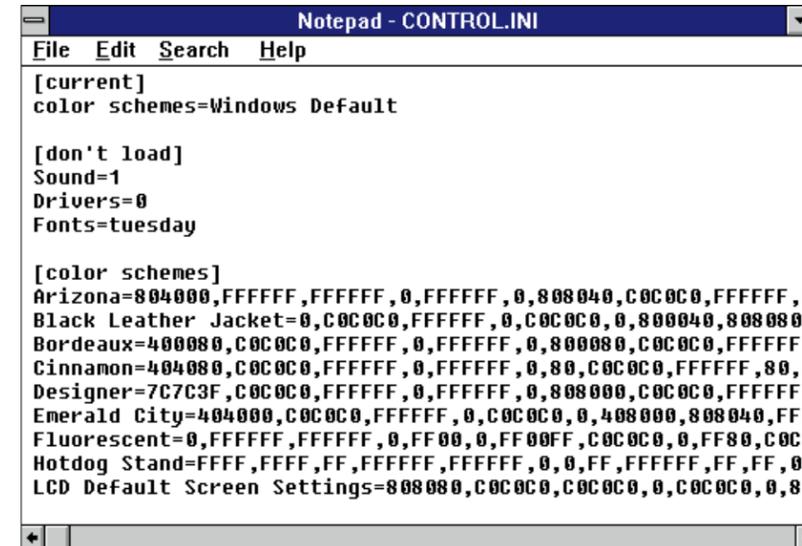
It doesn't matter what it equals…
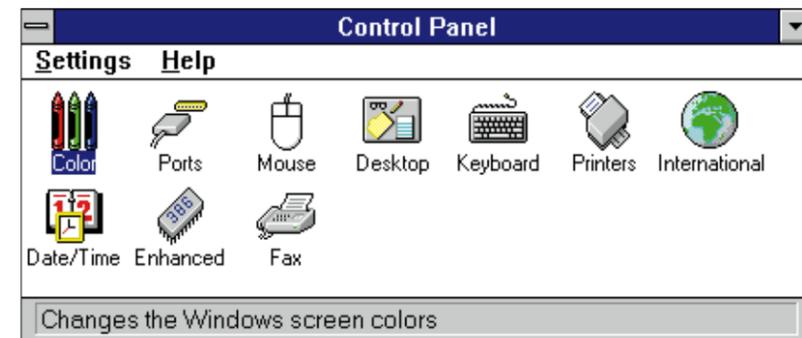
…if it's in [don't load] it won't load

Q. Of course. Do you take me for a fool?
A. No comment. Have you got a printer driver installed that will print TrueType?
Q. I most certainly have. It was all working yesterday.
A. Is it still set as the "Default Printer"?
Q. …I think I see the problem. The default printer is set to "Generic /Text Only".
A. Which, of course, doesn't support TrueType.
Q. OK, clever-clogs, now tell me where my icons have gone. I just see black blobs in Program Manager.
A. Have you upgraded your display card

recently? Are you running in 16- or 24-bit colour?
Q. 'pon my soul! If that's the same as 65,000 or 16.7 million, you're dead right.
A. This is a known bug. There's a memory limit in Program Manager groups which limits the size to 64Kb. This translates to around 18 icons in 24-bit depth. Use fewer colours, or split groups into smaller ones.
Q. And what about Control Panel? Some of the icons have disappeared completely.
A. Are all the .CPL files present? In Windows/System, you should have MAIN and CPWIN386. If you have multimedia stuff installed, you should also have DRIVERS and SND, and with MS Mail, FAX. You might also have third-party .CPLs for other devices.

If any of these are missing or damaged, you can reinstall them by using EXPAND.EXE on the original compressed files on the installation disks. Look for the corresponding .CP_ file. Another possibility is that there is a copy of KRNL386.EXE in the Windows directory. This should only be

You'll only see files that match what's in the "Name" box

Over the rainbow — the standard DOS colours

0	Black
1	Dark blue
2	Dark green
3	Dark cyan
4	Dark red
5	Dark magenta
6	Brown
7	Light grey
8	Dark grey
9	Light blue
10	Light green
11	Light cyan
12	Light red
13	Light magenta
14	Yellow
15	White

in WINDOWS\SYSTEM.
Q. They're all present, and apparently undamaged.
A. Then someone's been editing your CONTROL.INI and has added a [Don't Load] section. Anything listed under here (the names are the same as the Control Panel icons) followed by an equals sign, followed by anything, won't load.
Q. And what if Control Panel disappears altogether?
A. Once more, someone has been meddling in CONTROL.INI. If there is a negative value for X or Y given in the [MMCPL] section, then Control Panel is loading "off-screen".
Q. Good grief, there are some wicked people about. Now look, this is getting rather embarrassing as loads of files seem to have gone missing. According to DOS, there are 32 assorted files in this directory, but File Manager only shows README.TXT and REGISTER.TXT.
A. You haven't got the others set to "hidden" or "system", have you?
Q. Of course I haven't. And anyway, I've got "Show System/Files" checked in the "View/By file type…" dialogue.
A. And above that?
Q. Yes, Directories, Programs, Documents and Other files are all ticked.
A. And above that?
*Q. Aha! I think I see the problem: some bounder has set the "Name" box to *.txt.*
A. Which is why you only see .TXT files.
*Q. Indeed. Back it goes to *.* and all my files are back. Hurrah!*

Roll playing

It's hard to believe that Windows-as-we-know-it has only been around for six years; less if we include all the trimmings like multimedia and TrueType. Over the next few months I'm going to take a fresh look at some of the new wonders of the nineties desktop. One of the fun things introduced with Windows 3.0 was wallpaper. You can have a bitmapped image as a backdrop to your screen, which can be a full-screen picture, or a smaller image centred in the screen, or "tiled" as a repeated pattern.

It's all rather fun, especially if you ditch the rather boring examples supplied with Windows and go after your own. You doubtless know that you change the wallpaper from Control Panel/Desktop, but there are a few undocumented wheezes here. For a start, Control Panel will only look in the Windows directory for the list of possible files. However, if you type in the path to a file elsewhere, Windows will find it and use it.

You can use Paintbrush to create wallpaper: set "Options/Image Attributes" to your screen size first; but you'd need to be especially gifted to create a startling, original work with that piece of software. It's easier to use it to vandalise or, depending on your artistic sensibilities, improve on an existing work. Remember that you can use any of your fonts in Paintbrush to add embellishments such as speech balloons.

The downside of wallpaper is that it
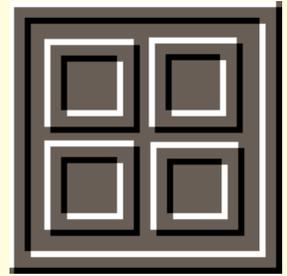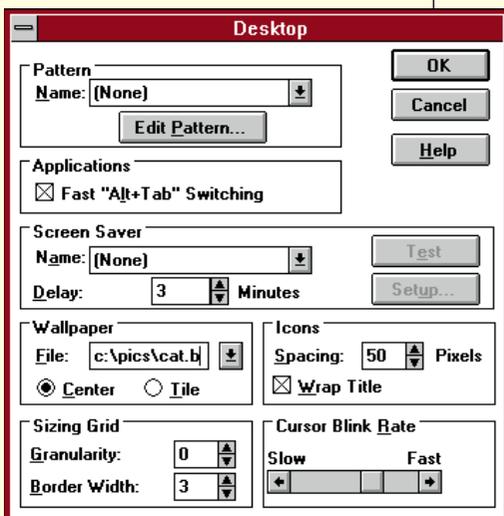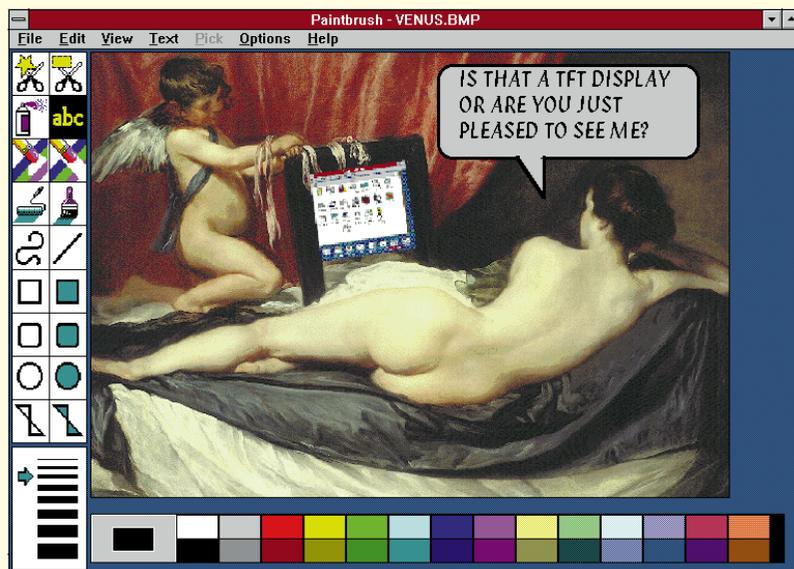
Vandalising great works with Paintbrush

The RLE files won't appear in the Control Panel/Desktop list but, once again, you can type them in (including the extension) by hand and Windows will display the file in an identical fashion to a BMP.

Paper puzzle

If you want to really confuse nosey-parkers while you're away from your desk, try the following. With plenty of "interesting" windows visible, press PrintScreen to copy a screen image to the clipboard. Open Paintbrush, set "Image attributes" to the same size as your display, then Zoom out. Paste in the captured screen (you may have to do this twice) and save. Quicker still, paste, then immediately "Edit/Copy to…" an appropriate file name.

Set this file as your wallpaper, and close everything except Program Manager. Select "Move" from the Control menu (Alt+Space) and use the arrow keys to move Program Manager completely off the screen. Press Enter to fix it in place, then make yourself scarce and watch the fun as the victim clicks around the fake desktop wondering why nothing works. To restore Program Manager, Ctrl+Esc and "Tile", or select it with Ctrl+Esc, press Alt+Space, then arrow back on to the screen. This way of clearing the desktop is also a good way of grabbing a screen of

takes up space, both in memory and on disk. A 1024 x 768 x 256 colour backdrop takes up three quarters of a megabyte, so if RAM is at a premium choose a smaller, tiled picture, or fewer colours. If you're going to change your wallpaper often, disk space will be an issue, as well.

One way around this is to convert your files to the RLE format using image processing/conversion software such as the shareware PaintShop Pro. BMP files store the information as a straightforward list of pixels — for example, red, red, red, white, white, blue, blue, blue, blue. Run Length Encoding stores the same information as "three red, two white, four blue". Depending on the type of picture and the amount of detail, this will shrink the file size; it doesn't work too well on photographic images but is good on pictures with large expanses of the same colour, such as cartoons.

Time for a change — type the path if the file's not in \Windows

Tim's Tips — What the f?

Be the life and soul of the pub with these funky function key shortcuts:

F1	All applications	Gets help.
F2	File Manager	Drops the list of drives.
F3	Most text applications	Starts the "find" command or repeats the last "find".
F4	Write, Cardfile	Go to a page or index.
F5	Notepad	Inserts the time and date.
F5	Cardfile	Dials the first number with four or more digits on the card.
F5	Write	Normal text (F6,7,8 for bold, italic and underline).
F5	File Manager	Updates the contents of the active window.
F6	File Manager	Switches through current file/directory/drive.
F6	Cardfile	Edit index entry.
F7	Cardfile	Add a record.
F7	Program and File Managers	Move selected item.
F8	Program and File Managers	Copy selected item.
F9	Calculator	Toggles +/-. And there are lots more in scientific mode (too boring to list here).
F10	All applications	Highlights the menu bar — use the underlined letter or Arrow keys, then Enter, to open a menu.

tiled wallpaper that you might want to use as a background to some other creation. Another rather surreal effect is to take a screenshot of Paintbrush, paste it into Paintbrush, and continue the process in a recursive manner.

What on earth?

Just to show there's always something new under the sun, I came across an interior decorating tip today, that I'd never seen before. Have a careful look at the screenshot, below, with the 256-colour "Planet Earth" backdrop. Bitmap size 640 x 480? No. It's only 260 x 340.

The desktop colour has been set to black, the same colour as the background to the photo, the wallpaper has been set to centred rather than tiled (hence the Tile-WallPaper=0 in WIN.INI) but I've moved the goalposts (or rather the centre) so the picture sits in the top right-hand corner.

The lines to add to WIN.INI are:

```
WallpaperOriginX=number
WallpaperOriginY=number
```

As you can see from the screenshot, the capitalisation doesn't matter and *number* is the distance in pixels from the top left of the screen to the top left of the image. Note that if you set the number to zero, this is the same as omitting the entry, and the position reverts to the centre.

Now entering the ChromaZone

And now for something equally frivolous: screensavers. I must admit I've had loads. At one time I had this little man with a beard who lived on a desert island. Every day he'd do something different. Or not. You could watch it for hours on end, with absolutely no satisfaction whatsoever, rather like daytime television.

Then there are those things that take up tens of megabytes of disk space, ferret

Cornering an image
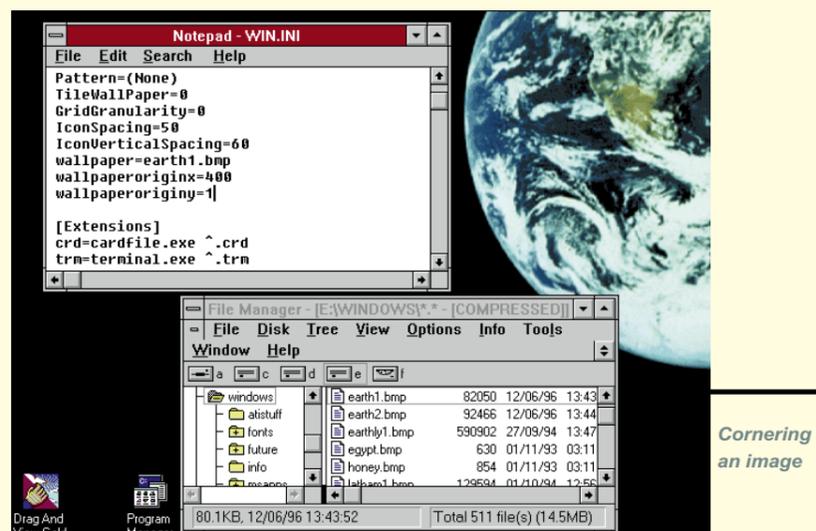
OEM text

A quick query from David Clarke harks back to my February-issue column about the clipboard.

David says: "*I was impressed by the facility to view text copied from a DOS application in its original spacing and OEM font. Is there a way of pasting this into a Windows application together with the original formatting and spacing? And what does OEM stand for?*"

To answer the last question first, OEM stands for Original Equipment Manufacturer. The reason why Microsoft should thus name a font that comes with DOS and Windows is lost in history, but the OEM character set differs from the Windows one. If you look at the Terminal font in Character map, for instance, you'll see that the upper range of characters include the box-drawing and shading symbols used in DOS screens. If you open Write, for example, and switch to the Terminal font, you'll see that Alt+0206, which normally produces an uppercase E-acute, now produces a double top-left corner. Unfortunately, this doesn't work via the Clipboard — whatever you set the font to in the target application, you still get the normal Windows characters. The nearest you can get is to take a screen image of the DOS or clipboard window by pressing Alt+Print Screen.

deep into your system files and are screamingly funny — for the first fortnight. Then there are the ones that by some triumph of PR over reality, achieve cult status: oh, *why* did I download the Guinness advert? Peer pressure? Beer pressure?

Anyway, I've just found a screensaver I
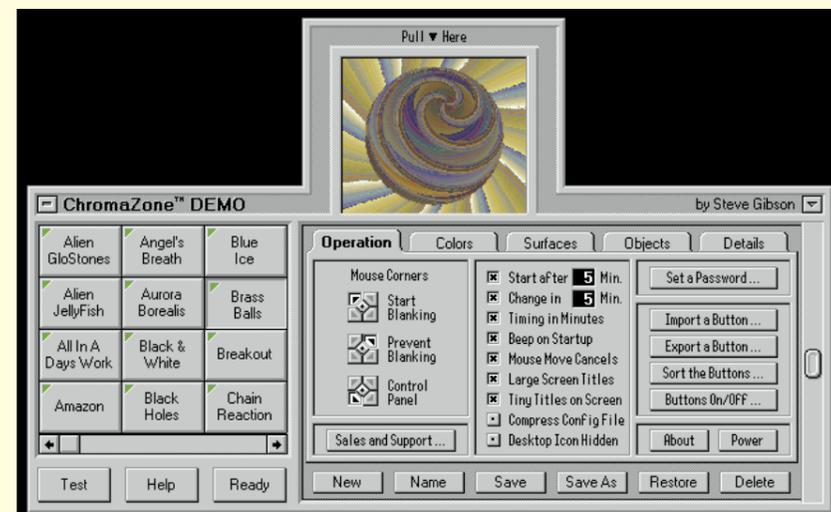
Welcome to the ChromaZone — who said windows have to be rectangular?

rather admire. It has three things going for it. First, it produces wonderfully hypnotic, swirly patterns without the user having to resort to pharmaceutical assistance. Second, there are hours and hours of displacement activity to be had configuring it. Third, it packs an enormous amount into a tiny space.

The demo, included on this month's cover-mounted CD-ROM, unzips to a single 180Kb executable and contains 100 different preset effects, all of which can be tweaked and twisted — in the full version you can save your own.

It was created by Steve Gibson, who wrote the hard disk utility, Spinrite. It's writ-

ten in assembler, which means it's fast, compact, and you can do wonderfully non-Windowy things such as open sliding panels to get your hands on the controls. In order for it to work you need a 256-colour display, as the secret of the "animation" is that it's not animation at all — the shapes stay put but the colour palette shifts, giving the illusion of movement. ■

PCW Contacts

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PaintShop Pro Digital Workshop 01295 258335; theworkshop@cix. compulink.co.uk
ChromaZone (US) 800 736 0637; ChromaZone@grc.com
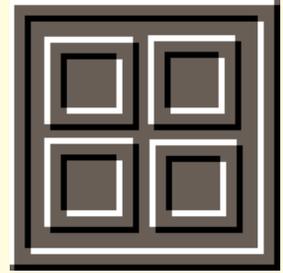
Abort, retry, forget it

DOS gets a look in as **Tim Nott** passes on some handy tips. Plus, the latest accessories for Windows and a close up on the alt key.

Our embracing of *Hands On DOS* has had a mixed reaction. Hoi Lam, of Hook in Hampshire, says: "*Please don't look back to the DOS commands…*" Ulrich Schneider, on the other hand, writes from Germany to say: "*I am a very keen reader of your contributions to Personal Computer World. I especially like the old DOS — er, sorry, Windows 3.1 — Hands On section.*" Well, Ulrich, flattery will get you anywhere; so the DOS stuff stays.

Permanent deletion

Ulrich also included three DOS tips, the first of which covers deleting files. As you no doubt already know, deleting a file doesn't remove the data from your hard disk — it just marks the sector available for writing. If nothing has been written to the sector since the deletion, the file can be recovered with the DOS or Windows undelete utility.

But if you truly want to delete a file completely and immediately, Ulrich suggests overwriting it with a series of null characters. The relevant command is:

```
COPY NUL FILENAME.EXT
```

Replace FILENAME.EXT with the name of the file you want to get rid of and use with care.

No more empty messages

Ulrich's second tip is one I've never seen before and seems to be undocumented. If you add the /F switch to the end of the Shell= line in CONFIG.SYS, then DOS behaves in a rather more friendly manner when you try to access an empty floppy disk drive.

If, for example, you type DIR A: from the C: prompt, and there is no disk in the A: drive, you get the "Abort, Retry, Fai'" message. I don't know about you but it

always takes me several attempts to abort, fail or whatever and get back to the C: prompt. With the /F switch (which actually is a COMMAND switch that is passed on by SHELL) DOS gets back to the C: prompt automatically. You can return to the old way by starting a new command processor, COMMAND /D.

Finally, for those for whom every second counts, adding SWITCHES=/F to your CONFIG.SYS file shaves two seconds off the delay when the "Starting MS-DOS…" message appears.

Accessorise

And now to please everyone else, let's get back to Windows. Two version 3.x accessories I continue to use under Windows 95 are Write and Cardfile. I use the former because it is much, much faster than its native Windows 95 counterpart, WordPad, both at loading itself and documents. Rumour has it that Microsoft lost the original source code to Write, which may explain why Word-Pad is such a dog.

I still use Cardfile for several reasons. The first is sheer laziness. I've had an address book in Cardfile format for more than six years. Since those early Windows 2.11

days, not only has Cardfile remained exactly the same, but I've never found anything that made me want to change. All the personal information managers I've seen, ranging from Organiser to Windows 95 Exchange Address Book, are simply too complicated and too inflexible. Microsoft Schedule, for example, has room for eight phone numbers but no room for an email address.

I like Cardfile because it's quick and easy to copy and paste addresses into other applications, it autodials phone numbers, and if there's too much information to fit on one card, you can open another one with the same title.

This month brought with it two challengers. Both are shareware, both are British and both are available in 16-bit and 32-bit versions. Michael Marshall's Jot 1.2 costs £20 to register. Weighing in at 725Kb in contrast to Cardfile's 91Kb, Jot's first advantage is the size of each record. Each entry can be 64,000 characters long with a
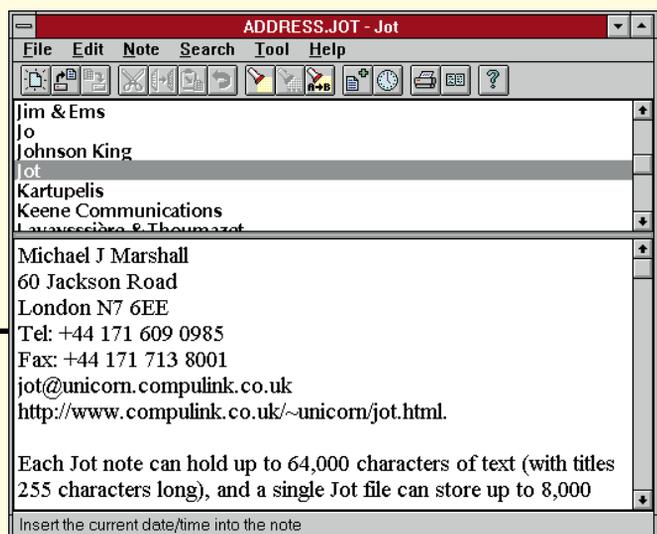
Jot — a simple database for long-playing records

Yet more keyboard tips…

In the June issue, we admired the shine of the Shift key, in July the complexities of the Control key, and this month, in the third and final part of the trilogy, it's time to consider the allure of the Alt key.

1. File Manager
Alt + drag will move, rather than copy, files between drives.

2. File Manager
Alt + Enter summons the Properties dialogue box for the highlighted file or directory.

3. Program Manager
Alt + Enter summons the Properties dialogue box for the highlighted icon or group.

4. Clipboard
Alt + Print Screen copies an image (or screenshot) of the current window to the Clipboard.

5. Write
Select some text in Write, release the mouse button, press Alt, and wherever next you click the mouse, the text will be copied. Hold down Shift, as well, if you want to move rather than copy.

6. All applications
Alt + <letter> opens the menu which has that letter underlined in the menu bar.

7. All applications
Alt + Tab switches to the next window on the desktop. Keep Alt held down and you'll see the title of the next window each time you Tab — release Alt when it's the one you require.

8. All applications
Alt + F4 closes down.

9. All applications
Alt + Spacebar produces the System Menu — equivalent to clicking on the little bar at the left of the Title Bar.

10. Text entry
Alt + <number> returns the character whose ANSI code is <number>. The numbers must be typed from the numeric keypad and start with a zero. For example, Alt + 0169 produces the copyright symbol ©.

255-character index (Cardfile's limits are 400 and 40). It's also got a much smarter interface than Cardfile, with a button bar, a status line, a time stamp and other goodies such as context menus, a choice of fonts, columns and print preview.

It imported my Cardfile database beautifully, but I was less impressed with the navigation. Unlike Cardfile you can't press Control + Shift + W to go to the start of the Ws in the index. In addition, although the search feature handles wildcards and regular expressions, it doesn't wrap. In other words, if you're looking for entries containing the word "Scunthorpe" and you start from the Ps, it will only search from P to Z. Finally, unlike Cardfile, you can't include pictures in a record.

Clever clogs
The second new offering is Oakley Data Services' SmartAddress V3, a hefty 1.6Mb of executable plus a sprinkling of .DLLs which costs £25 (plus VAT) to register. As the title suggests, this is a specific address-book application although it does include a diary and calendar. It bristles with buttons, tabs and features, and includes auto-dialling, call logging, labels and a DTP-like designer. There's so much to SmartAddress that there simply isn't room to describe it all here, so I'll confine myself to its address book facility.

Each record has five tabbed pages. Address is self-evident, as is the free-form Notes. Reminders

Smart Address — everything you could possibly need
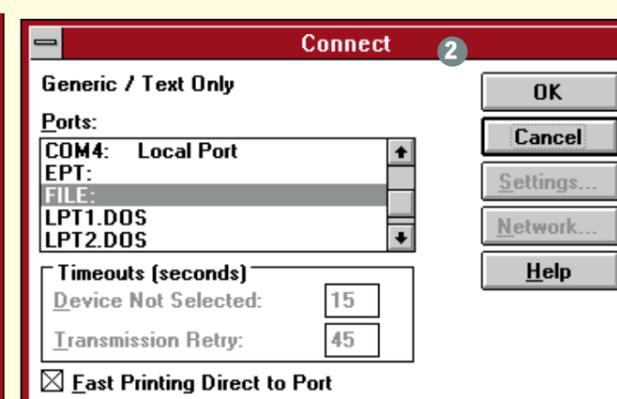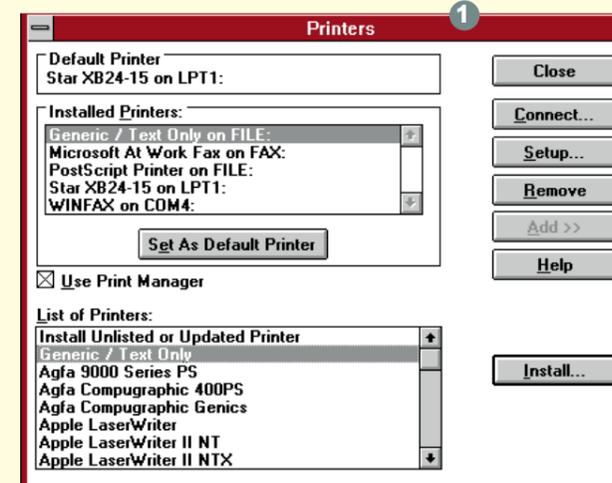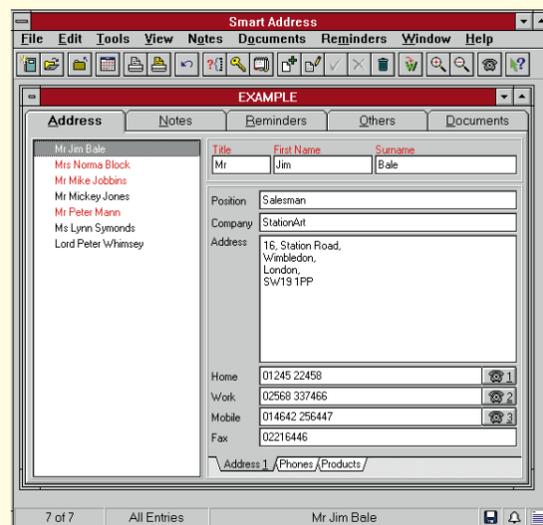
*Fig 1 (left)
Installing the text-only printer driver…*

Fig 2 (above) …and connecting it to "FILE:"

links to the diary and calendar, Others contains additional information such as the date when someone last telephoned you, and Documents lets you add OLE links to any other file. This last facility is great — an accountant could have links to clients' spreadsheets, a builder could have links to estimates and so on.

The address page itself can have additional sub-pages, such as those dedicated to home and work addresses. In addition, you could have another page containing a price list, club membership data or list of favourite foods, for example. These extra pages are defined on a per-record basis, so you can mix and match family, friends, suppliers and customers, all with their own custom pages.

There's a neat feature for inserting an address into a variety of word processors. Because the data is separated into fields, I could not import my Cardfile, but apart from that hitch SmartAddress seems to have everything you could possibly wish for — other than the ability to show pictures. Both Jot and SmartAddress are on this month's cover-mounted, CD-ROM, so see what you think.

Latest export
Finally, although we've had this tip before, it's a very useful one and deserves another outing.

If you want to export a Cardfile as a plain text list, then the simplest way to do it is to print it to file. To do this you first need to install the Generic/Text Only printer driver from Control Panel/Printers. Windows will prompt you for an installation disk: when the driver is installed, hit the Connect button in the Printers dialogue box and select FILE:.

There are a few options to play with for sending control codes to the printer, or mapping the extended character set, but these are not relevant to this operation.

Go back to Cardfile, and select Specific Printer — Generic/Text Only on FILE: from File/Print Setup. If you open the Page Setup dialogue box you can change (or get rid of) the header and footer for each page. Then select Print All and you'll be prompted for a file name. And that's it — you'll get a text file, which although rather over-rich in leading spaces and carriage returns, is still readable and editable. ■

PCW Contacts

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Dirty **DOS**-ing

Tim Nott gets his hands dirty in DOS and brings news of Calypso, a freeware utility which brings you two of the best bits of Win95.

As I have mentioned before, this column now flies the DOS as well as the Windows 3.1 flag. I haven't given the former much coverage over the last two months so let's rectify that now.

A perplexed Henry Bevan emailed, saying: *"In my c:\ directory, I have got these copies of Autoexec and Config. Which ones can I delete? Autoexec.000, Autoexec.001, Autoexec.bak, Autoexec.bat (I know I can't delete that one…), Autoexec.cdd, Autoexec.dos, Autoexec.old, Autoexec.bat, Config.000, Config.cdd, Config.dos, Config.old and Config.sys (…nor that one)."*

Good question. As Henry and I would imagine everyone else realises, Autoexec.bat and Config.sys are the startup files in current use. So what are all the rest and where do they come from?

The most likely explanation is that an installation of new hardware or software has changed these files and backed up the originals. There's no real rhyme or reason to the naming but if you've recently installed a "Cacophonous Custom Doomblaster" card, that's probably where the .CCDs came from. Any polite installation routine that makes changes to these files should firstly make backups, and secondly tell you what it's called them. Really polite installation routines will comment the new files, something like this:

```
REM - Following line added by
Doomblaster
device = c:\dblaster\bignoise.sys
REM - Previous line added by
Doomblaster
or if it removes a line
REM - device = c:\oldcard\oldcard.sys
- removed by Doomblaster
```

REM statements (REMarks) tell the PC to ignore the rest of the line — they are just there to inform humans. If the setup routine didn't comment the lines it added,

you can always compare with the backup and add your own REMs. It's worthwhile doing it at the time as you can then delete the relevant backups. If not, it's worth keeping them around, at least until you're sure everything is working correctly. Though I said there's no rhyme or reason to the naming, there are a couple of exceptions. If you use the Windows System File Editor (SYSEDIT.EXE) to edit these files, it will automatically create backups with the extension .SYD.

The other extensions to watch out for are .DOS and .W40. If you're dual-booting between Windows 95 and Windows 3.1, the system maintains two sets of AUTOEXEC.BAT and CONFIG.SYS, which are renamed on startup. When you're in Windows 95 or DOS 7, then the Windows 3.1/DOS 6 (or earlier) set is renamed with the .DOS extension. When you're in the earlier version, the 95 set is renamed with the .W40 extension, so don't delete these. Just to confuse matters, you may not have these files under Windows 95, as it doesn't need them if
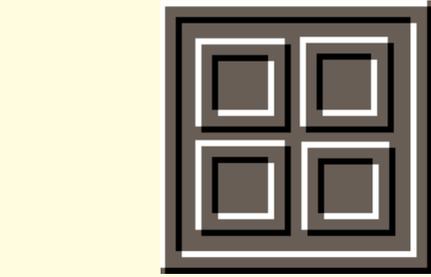
"Protected Mode" drivers are installed for all your devices. But if you have; again, don't delete them.

A matter of Choice

Reader Mike Coe asked: *"I believe there is a way of defining alternative startup configurations for DOS. Specifically, I like to boot into Windows by default (i.e. just by turning the computer on and waiting). However, I would like to be able to boot to a DOS prompt as an alternative, just by pressing a single key on start-up, so that AUTOEXEC.BAT is processed in its entirety, except for the last line, 'WIN'."*

Well, there's an easy way and a complicated way to do this. The easy way involves using the MSDOS "CHOICE" command. This comes with version 6.x but was widely available before that. You can only use it in batch files and what it does is prompt the user for a choice, then act according to the "ERRORLEVEL" returned. To do what Mike asks is simple but let's first practice on a dummy batch file. Create this with Notepad, or DOS EDIT and save as "CHOOSE.BAT".

```
@ ECHO OFF
CHOICE /C:YN Start Windows now?
IF ERRORLEVEL 2 GOTO SKIP
ECHO You pressed Y
GOTO END
:SKIP
ECHO You pressed N
:END
```

The "@ ECHO OFF" stops the commands "Echoing" to the display: without this you see everything twice. The next line invokes the CHOICE command and will produce the prompt "Start Windows

	File	Disk	Tree	View	Options	Info	Tools	Window	Help	

C: [QUANTUM]

a c d e f

c:\				
acroread	386spart.par	0	27/02/96	14:23:30	a
arome	a$c3364.tmp	0	26/03/96	12:19:54	a
booksh~1	autoexec.95	173	27/02/96	15:38:10	a
chroma	autoexec.arm	906	27/02/96	19:05:40	a
cleans~1	autoexec.b~k	926	27/02/96	13:31:40	a
corel	autoexec.syd	910	28/03/96	09:30:14	a
cserve	command.w40	92870	11/07/95	09:50:00	a
dos	config.b~k	951	27/02/96	13:37:46	a
ds	config.syd	951	27/02/96	13:37:46	a
duke3d	config.sys	813	27/02/96	14:05:14	a
encarta	msivid.386	9288	13/05/93	08:00:00	
	tsivid.386	9288	13/05/93	08:00:00	

C: 99.5MB free, 503MB total   Total 13 file(s) (123KB)

Will the real configuration files please stand up?

```
                            Dos
 File  earch                                           elp
                    MS-DOS Help: CHOICE
 ◄Note►  ◄Examples►

                            CHOICE

 Prompts the user to make a choice in a batch program. Displays a specified
 prompt and pauses for the user to choose from among a specified set of keys.
 You can use this command only in batch programs.

 For more information on the ERRORLEVEL parameter, see <CHOICE—Note> and the
 <IF> command.

 Syntax

     CHOICE [/C[:]keys] [/N] [/S] [/T[:]c,nn] [text]

 Parameters

 text
     Specifies text you want to be displayed before the prompt. Quotation
     marks are necessary only if you include a switch character (/) as part
     of the text before the prompt. If you don't specify text, CHOICE
 F1=Help   Enter=Display Menu   Esc=Cancel   Arrow=Next Item   N 00001:002
```

The DOS help file gives the full lowdown on this versatile command

now? [Y,N]" which is fairly self-evident. CHOICE returns an ERRORLEVEL depending on the key pressed — the first choice produces 1, the second 2. In this example, we have only two choices but you can have more.

What's important is the way DOS interprets ERRORLEVELS. "IF" statements will be deemed to be true if the ERRORLEVEL is equal to, or greater than, the number specified. Hence, in a simple two-way choice, "ERRORLEVEL 1" will always be true so we have to process the ERRORLEVELS in descending order. The next line, therefore, tells DOS to go to the label "SKIP" if the ERRORLEVEL is two — i.e. the user pressed "N". Note that labels themselves (:SKIP and :END in this case) are preceded by a colon, but references to the labels (…GOTO SKIP) aren't.

If the user pressed "Y", then the "IF" statement is false and the first GOTO ignored. The message "You pressed Y" is ECHOed to the screen, the next GOTO bypasses the SKIP label and the "You pressed N" message.

CHOICE is a fairly user-friendly command — it isn't case sensitive, unless you use the /S switch to make it so, and if the user types any other key it will just sit there and beep until "Y" or "N" is pressed, or Control + C which cancels the batch file.

There remains, however, one further refinement to satisfy Mike's brief. Add the switch "/T:Y,5" to the CHOICE command. This will instruct CHOICE to wait five seconds (values can be from 0 to 99) before returning a default choice of "Y".

So, moving on to the real thing, it's even simpler. If you substitute the following for the "WIN" line at the end of AUTOEXEC.BAT, you'll get five seconds in which to opt for Windows or DOS. Do nothing, and Windows will load as before.

```
CHOICE /C:YN /T:Y,5 Start Windows now?
IF ERRORLEVEL 2 GOTO DOSPROMPT
WIN
:DOSPROMPT
```

Number nine dream
One of my all-time favourite DOS utilities is just coming up for its ninth birthday. It's a text viewer that, unlike Windows Notepad, can display any size file. It will search for text, view in hex or ASCII, filter out junk, split the display into two windows, and you

Keeping control

Last month, the Shift key had the spotlight — this month it's the turn of that ever popular denizen of the keyboard, the Control key.

1. File Manager
When dragging files between directories, holding down Control forces a copy, even on the same drive.

2. Program Manager
The same trick works for copying Program Manager icons between groups or to the same group.

3. Clipboard
Control + C copies to it leaving the original, Control + X copies and removes the original. Control + V pastes from it.

4. Write
Control + click in the margin selects the whole document.

5. More Write
Control + B, I or U toggle Bold, Italic and Underline on and off.

6. Even more Write
Control + Enter forces a page break. All these work with Word, too.

7. Most applications
Control + Z undoes the last action.

8. Paintbrush
Dragging a "cut-out" with the Control key held down leaves the original in place.

```
                            Dos
                LIST — Version 6.2a — 5/07/87
                <c> Copyright 1987 Vernon D. Buerg
                456 Lakeshire, Daly City, CA 94015
                For personal use only. Not for sale or hire.

 F1  Display HELP info    a-A  toggle APX/DU/DD    I HOME   go to Top of file
 F2  change FIND bg       a-B  mark Bottom line    B END    go to Bottom of file
 F3  Find next text       a-C  Clone LIST.COM      D PgDn   forward one page
 F4  change FIND fg       a-D  write to file       U PgUp   back one page
 F5  change text bg       a-E  toggle EGA 25/43    c-PgUp   list previous file
 F6  change text fg       a-F  get new Filespec    c-PgDn   list next file

 all available conventional memory. Defragmenter can make use of up
 to 384K of extended memory and 12K of upper memory.

 To increase available memory, carry out the procedures in "An MS-DOS
 program displays an out-of-memory message" in the chapter "Diagnosing
 and Solving Problems" in the MICROSOFT MS-DOS 6 USER'S GUIDE.

 If less than 384K of extended memory is available, carry out
 the procedures in "Freeing Extended Memory" in the "Making More
 Memory Available" chapter in the MICROSOFT MS-DOS 6 USER'S GUIDE.

 6. THIRD-PARTY PROGRAMS
```

Vernon Buerg's file viewer — vintage 1987, but still excellent

can load a series of files by using wildcards. Type *.TXT at the load prompt, and Ctrl + Page Down/Up will cycle through all the .TXT files in the current directory.

You can change the number of lines and the display colours, shell to DOS without closing the current file, and there's even online help.

Unbelievably, all this packs away into just 8,192 bytes of code. It's called LIST.COM and it was written by Vernon D Buerg in 1987. While it's not — as far as I know — marketed as shareware, the help screen suggests that: "If you find LIST of value, a gift of $15, or any amount, would be greatly appreciated." I don't have an online source, but it's on this month's cover-mounted CD-ROM. ▣

PCW Contacts

Tripping the light Calypso

```
                   c:\
 acroread    arome    booksh~1    chroma
 cleans    ┌──────────────────────────┐
 │ Open            Enter         │
 │ Open file with.. Ctrl+Enter   │
 ds  │ Rename...        Ctrl+R        │
 │ Delete          Ctrl+Del      │ ge
 │ Properties...    Alt+Enter     │
 fifvie│ Create shortcut  Shift+Ins     │ s
 │                               │
 │ Create Folder... Ins          │
 msoff│ Run...                        │ ~1
 │ Print...                      │
 │                               │
 progr│ View                       ► │
 │ Window                     ► │
 │ Disk properties... Ctrl+P     │
 │ Options...       Ctrl+O       │
 temp     vault    win95     winzip95
 words  wingames.inc  msivid.386  tsivid.386
 55 object(s) 302.10KB   Selected 1 item(s) 0 bytes
```

Nested folders and right-button shortcuts — Calypso brings the Windows 95 look to 3.1

Back in the gloriously GUI-world of Windows, the most fun I had this month was with a prototype model of Li-Hsin Huang's Calypso. This was written in Borland Delphi and there's no complicated installation routine — you just copy the files to a new directory. Run Calypso and two little icons appear at the left of your screen: one entitled "System", the other "Trash". Double-click on the System icon and a window with all your disk drives appears. Double-click on one of these and all the directories and files in the root appear in a separate window, and so on down the line. You can drag files to the Trash icon, drag them between windows and create shortcuts to files or directories on the desktop. And if all this sounds terribly familiar, well, it *is* almost like Windows 95. It's on the cover CD as Calypso.zip, and the author can be contacted as Lhh@doc.ic.ac.uk. Remember though, this is a prototype and hence, freeware. Read the documentation for a list of possible problems. You should also note that it won't work with the "large fonts" option of display drivers and that the Trash Can auto-empties itself on exit.
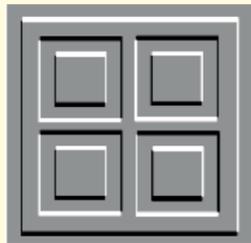
.Inf Formation

How to purge those troublesome redundant drivers from your system, and Plug-In presents you with a full system enhancement. With Tim Nott.

TWO MONTHS AGO I PROMISED that we'd take a closer look at third-party .INF files and how they can help you weed out redundant drivers from your system. Last month I broke that promise in order to fulfil another one made in December 1993, concerning DDE. So here comes the inf on the .INFs.

On a non-networked Windows 3.1 installation, there are three .INF files used for setting up:

● **SETUP.INF** contains all the general information needed, including lists of all the possible options and where to find the relevant files. If you run Setup from within Windows and choose Add/Remove Windows Components, you'll see the lists — for instance, Wallpaper and Sounds — that are stored in SETUP.INF. It also contains details of the Windows generic video drivers such as VGA or SVGA, as well as the standard mouse and keyboard options.

● **APPS.INF** contains information on third-party applications for setting up the correct PIF and icon settings.

● **CONTROL.INF** contains the list of standard printer drivers and international settings that are set up from Control Panel. The INF files are organised much as INI files, with section headings in square brackets, each containing keynames and values. They can be edited with a text editor, though you'd really only want to change them if you were custom-installing Windows on multiple machines.

No place like OEM

When a third-party video, printer or other hardware driver is installed in Windows

An OEM .INF file in the spotlight

3.1 it should come with its own .INF file, which is stored in the Windows\System subdirectory so it can be read by Windows Setup in "maintenance mode" — i.e. when you're changing system settings rather than installing Windows. If this has the same name as an existing OEM (Original Equipment Manufacturer) file, then it is renamed to OEMx.INF (where x is a number). These OEMx.INF files are linked to the Windows SETUP.INF file, so that all available display options are listed in one place. So, even if you've removed the driver files themselves, if the OEMx.INF file remains, you'll still see the driver listed as an option when you run Setup.

If you open an INF file in Notepad, one of the first sections you'll see will be "[disks]". This lists all the disks that the

setup program is likely to need, each identified by a number or letter. Obviously this will include the disk(s) supplied with the hardware, but may also include some of the Windows installation disks for resources such as screen fonts.

The next section — assuming we're looking at a display driver .INF file — should be "[display]" and this contains the nitty-gritty on the driver and supporting files. There may be just one line here or several, depending on whether separate drivers are used for different resolutions, or one "catch-all" driver is supplied with a separate utility for switching resolution. Each line is divided by commas into several sections. First comes the keyname or "profile" of the driver, used to refer to it elsewhere. Next follows an equals sign and the disk ID and filename of the driver (.DRV) itself. After that, in double quotes, comes the description — what you see listed in Setup, followed by three numbers that define the "aspect ratio" of the system

If you're using Microsoft Excel 5.0, Word 6.0 or PowerPoint 4.0, and the Help/About… box doesn't show the version with the "c" suffix, turn to the *Hands On* Windows 95 section where you may find something rather worrying.

Finally, a reminder that this column now encompasses DOS. Although we haven't done any DOSing in the past two months, it will return with a vengeance next month.

Looking Shifty

Some of the following have appeared before in this column, but here are ten really fascinating things to do with the Shift key.

1. File Manager
To tile Windows side-by-side, press Shift + F4.

2. File Manager
To save settings, press Alt + Shift + F4.

3. Program Manager
The same Shift + Alt + F4 trick works here, too. Unlike an unshifted Alt + F4 it doesn't close Program Manager. If you want to make sure the settings stay saved, untick Save settings on exit from the Options menu.

4. Starting Windows
Holding down Shift stops the Startup group from loading.

5. File Manager
Highlight a file, hold down Shift and select another: all those between will be selected as well.

6. Write and Notepad
Shift + Arrow keys selects text rather than just moving the insertion point. The trick also works with the Home, End, Page Up and Page Down keys.

7. Pasting
Shift + Insert pastes from the clipboard — handy for southpaws as you don't have to let go of the mouse.

8. Write
If you highlight some text then hold down Shift + Alt, the selected text will be moved to the location of the next mouse-click.

9. Program Manager
Shift + double-click starts an application minimised.

10. Paintbrush
Dragging a cutout with the Shift key held own paints the image with multiple copies of the cutout.

fonts — generally 100,96,96 for standard VGA or 100, 120,120 for large fonts. Next come five more disk IDs and filenames. The 286 "grabber" (*.2GR) is used for copying data from DOS windows in standard mode, and the *.LGO file contains code for the windows startup screen.

Next comes the Virtual Device Driver (*.386), also used for DOS sessions, followed by the (*.3GR) "grabber" for enhanced mode. There may follow an "ega.sys" entry, but usually this is skipped — you'll just see two commas.

Then comes the *.RLE file, the actual bitmap of the startup logo, as some OEMs like to install their own to remind you that you're using their wonderful equipment. And finally, an optional field to point to another section in the .INF file, that may contain details of other files that need to be installed.

Drive away

So, let's assume you've installed a new video card and want to get rid of the excess baggage from the old one. The first step is to create a "safe" directory and copy SYSTEM.INI and all the OEM*.INF files there. Next, open all the original OEM*.INF files with Notepad. You should then be able to pinpoint the redundant files and move them from the Windows\System directory to your "safe" directory.

If a file appears in both the old and new .INFs, then obviously it's not redundant — most *.FON files, for example, are the Windows standard. Check, too, the optional field mentioned in the previous paragraph: if a separate section appears in the old .INF for this, there may be further redundant files. The entries here have the format: File, Destination, System.ini, Section, Keyname, Value. If a line starts with two commas, it means there's no file involved, but there is a section or key in SYSTEM.INI that can be removed. When you've finished, you can delete the redundant OEM*.INF file — keep the "safe" backups until you're sure everything is working properly. You'll no longer see the old drivers listed when you run Setup.

VGA holds sway

Finally, there may be more. If your old card had its own icon in Control Panel, there will be a redundant .CPL file lurking in the System directory. Alternatively, if there is an icon in Program Manager, you can hunt the .EXE down with the File/Properties... command. It is not a good idea, by the way, to remove the standard Windows VGA driver files — VGA.DRV, VGA.2GR and VGA.3GR.
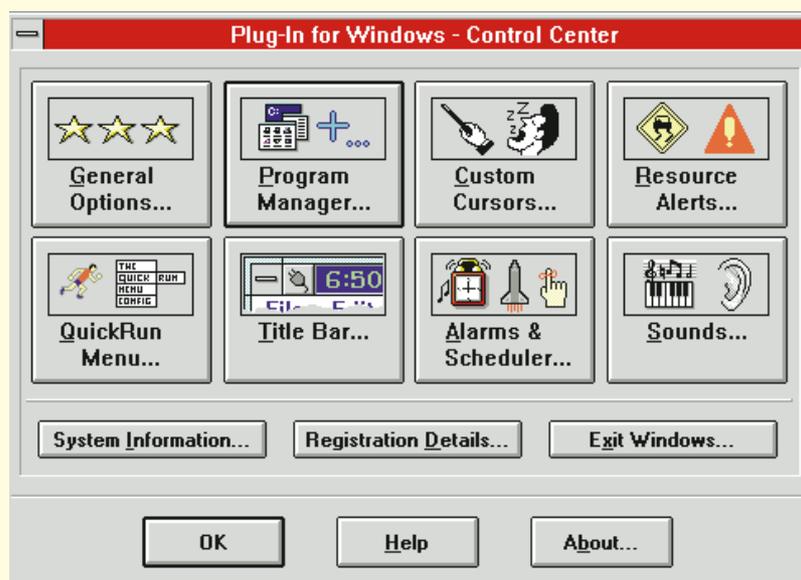
Plannet Crafter's Plug-In — a customiser's delight

Even if you never use standard VGA resolution, it's a great diagnostic aid. When a program (or Windows) won't run properly, the first thing to try is "does it work in VGA?"

Keep on Plugging

In September 1993 I was raving about Plannet Crafter's Plug-In, a shareware utility that added all sorts of enhancements to Program Manager and the Windows Interface in general. Since then it has won several awards, and this month brought a disk with version 2.6.

You can have nested Program Manager groups, groups can have their own icons, and you can have all sorts of additions — including date, time, resources, memory and disk space — shown in the title bar of applications. You can change the title-bar font, there's a range of wacky cursors and even a talking clock.

A little plug icon attaches itself to the title bar of all applications, with a configurable cascading menu system, so you can run one program directly from another without having to go via Program Manager.

What's really cool is that the menu is also available from a right-mouse click on the desktop, and you can use Plug-In as
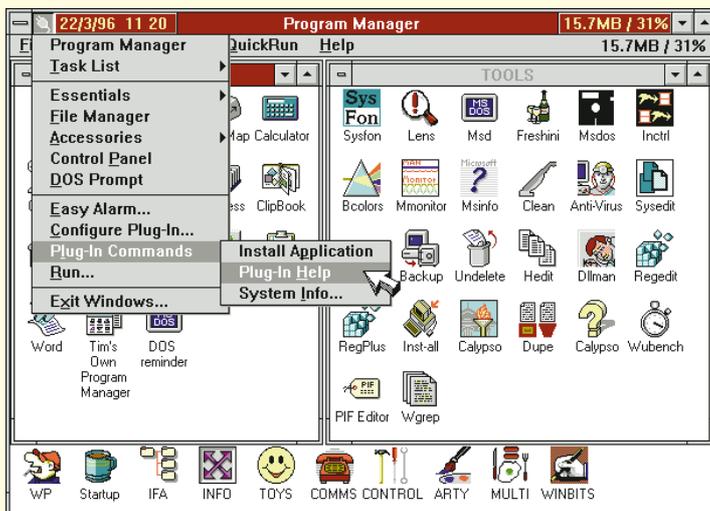
Plug-In's cascading menu allows you to run programs directly without having to go to the Program Manager

your "shell", the program that kicks off and exits Windows, instead of Program Manager. This is a strange experience when you first try it, as you start with a completely clear desktop (Windows 95 users, eat your hearts out). When you right-click, the shell — Plug-In's menu system — reveals itself. It's on this month's CD, or can be downloaded from ftp.uu.net (/vendor/plannet).