Lapping it up

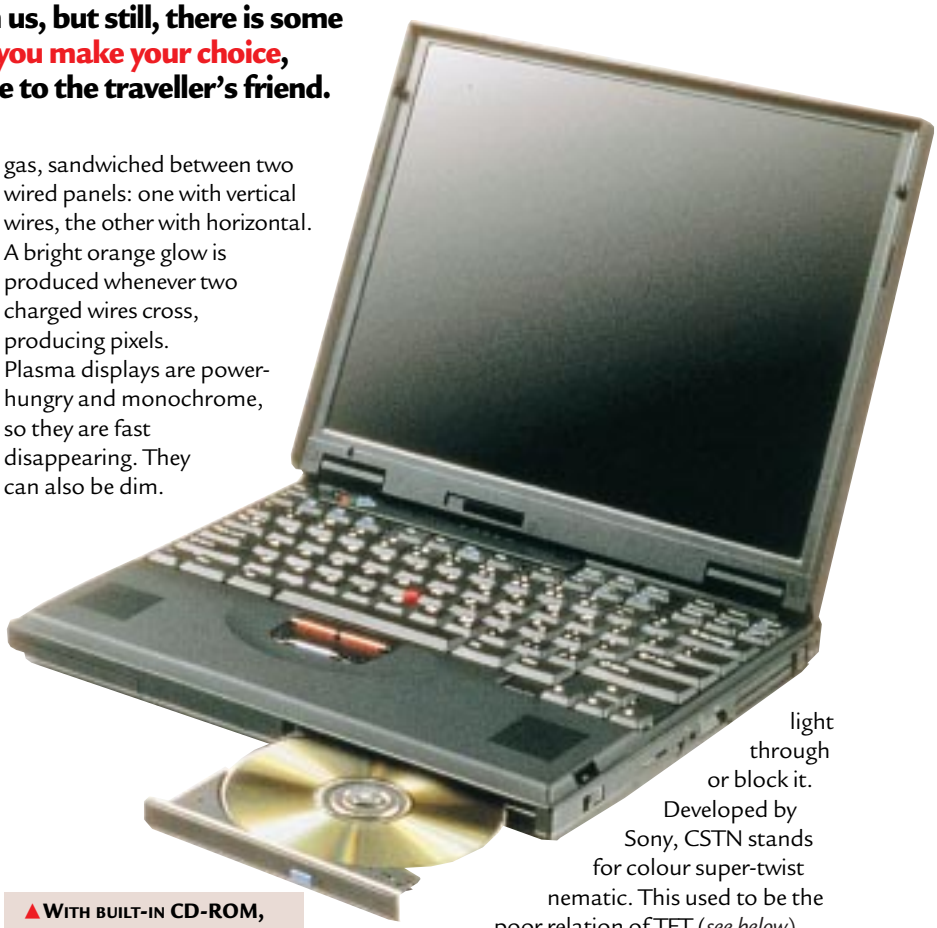
The perfect laptop is not yet with us, but still, there is some impressive kit out there. To help you make your choice, Mark Whitehorn presents a guide to the traveller's friend.

The perfect laptop is light, slips into a pocket, has a full-size keyboard and a 17in screen — let me know when you find one! Trapped as we are within the confines of current technology, this ideal specification will inevitably be subject to a degree of compromise. In fact, laptops are all about compromise. Our current state of technology permits no alternative to the fact that a laptop with a 15in screen has to be at least 15in along one of its dimensions. So, unless you have very large pockets, something has to give.

Not that companies haven't tried to provide workarounds. IBM's "butterfly" keyboard of some years ago was an ingenious attempt to defy the laws of physics. The keyboard folded out to full size as you opened the machine, full size being at least two inches wider than the closed laptop's footprint — clever. It even worked, to an extent, but the fact that IBM no longer makes them is an indication that the design was a little too compromised. The mechanical complexity of the keyboard movement often became worn enough to allow the closing lid to catch the retracting keyboard, potentially biting off the extra. In addition, the "feel" of the keyboard itself was compromised. As a confirmed gadget freak I still have one and love it's ingenuity, but it is now a museum piece that has to be closed very, very carefully. Laptops are similar to, but not the same as, desktops. So it is worth considering the following before you buy:

Screen technologies

There are many types of screen technologies used in laptops. On a secondhand machine you might still find a **plasma** display. This uses an ionised gas, sandwiched between two wired panels: one with vertical wires, the other with horizontal. A bright orange glow is produced whenever two charged wires cross, producing pixels. Plasma displays are power-hungry and monochrome, so they are fast disappearing. They can also be dim.



▲ WITH BUILT-IN CD-ROM, SOME LAPTOPS COULD REPLACE YOUR DESKTOP

When using on holiday in France, I was reduced to placing the whole machine inside a cardboard box to shade the screen to make it visible. The locals wrote me off as an eccentric Brit concerned about sunburnt hands... Happily, things have improved and new screens are much better, although the range of options can be unnerving: TFT, active-matrix, CSTN, HPA, passive-matrix, supertwist, double and triple supertwist — so the list goes on. In general, there are two technologies out there, passive and active.

The innards of a laptop are more crowded than the M25 on a Friday night

Passive-matrix consists of a grid of horizontal and vertical wires. An LCD element (pixel) exists at the intersection of each pair of wires which can either let light through or block it. Developed by Sony, CSTN stands for colour super-twist nematic. This used to be the poor relation of TFT (*see below*) but recent advances in the technology have made it a viable alternative to active-matrix displays, at about half the cost. Some people actually prefer this type of display to TFT, when used in bright light conditions.

Active-matrix, also known as TFT, stands for Thin Film Transistor. It is a type of LCD screen in which each pixel is controlled by between one and four transistors. The TFT technology provides the best resolution bar none. For active, read expensive; but these screens are superb. I use a portable with a 14.1in TFT screen, and I now use it in preference to a VDU as I think the image is better.

Screens in general

The physical size of the laptop is generally limited by the screen or the keyboard, so don't just go for the largest screen that you can afford. Think carefully, because large laptops are a pain in the briefcase. You may find, on TFT screens, one or

more "dead" pixels. They may be stuck in one colour (red, blue, or green) or dead (black). The bad news is that a transistor controlling the pixel has died; the good news is that this is not an uncommon occurrence, given the number of transistors in a single display.

Whether you want — or are able to — return the machine for a replacement is up to you and to the supplier. Some manufacturers take the view that one or two bad transistors out of so many is good enough, while others expect to supply perfect screens. In general, the more you pay, the more chance you have on insisting that the screen is perfect. And one final point: the different ways in which screen sizes are measured mean that a 15in LCD screen, whether passive or active, gives approximately the same viewing area as a 17in VDU.

Using a mouse on an aeroplane is usually incompatible with good inter-seat relationships

■ Keyboard

Can you type on a small keyboard? If your hands are large, or your fingers spatulate, it may be physically impossible to use the smaller keyboards available. Is the tactile quality of a keyboard particularly important to you? And if so, trying out a keyboard before buying is definitely worthwhile. You're likely to be using the machine for the next two or three years at least, so making sure it suits you is time well invested.

■ Input devices

Using a mouse on an aeroplane is usually incompatible with good inter-seat relationships, and unless you travel first class, often impossible in the cramped space. So, in addition to mouse ports, laptops often come with one of several types of built-in pointing devices. Strangely, for some reason, the main contenders all start with the letter T:

- **Trackball** — clips to the side of the keyboard.
- **Touchpad** — built into the front of the keyboard and driven by finger pressure.
- **TrackPoint** — a tiny joystick built into the keyboard and surrounded by the G B H and N keys.

Touchpads appear to be in the ascendant at the moment but it is very much a matter of taste. I hated the early TrackPoints but have learned to live with the latest version.

Do you need a network card (*see Backup, below*)? A floppy disk drive? A CD-ROM/DVD drive? Given access to a network and a CD-ROM drive, you can largely circumvent the need for a floppy drive but you have no easy way of getting a file onto a floppy when you're away from the network. External floppy/CD-ROM drives give you something else to carry around to accompany the mains power cable with a lumpy in-line transformer. You need to consider all of this very carefully before buying. Why? Well, for a start, laptops are, as a general rule, much more difficult to upgrade than desktop machines. Let's ignore for a moment the fact that the innards of a laptop are more crowded than the M25 on a Friday night. Laptops often make use of non-standard components, which means they tend to have odd collections of drivers.

It is generally accepted that adding hardware to a laptop is a pain. A better answer is to specify the machine you require and make it SEP (Somebody Else's Problem) to ensure that they all work together in perfect harmony — before you hand over the money.

■ **Backup** is of course vital, but you don't want to bolt a tape-drive onto a portable. A network card allows you access to server drives which are the perfect place for backups.

■ Batteries

The latest Li-Ion batteries are more expensive than the older NiMH, although there is also a huge advantage to them — they have no memory so you don't need to deep discharge them. This is far more useful than it at first sounds, as for the first time you can simply use the battery when convenient and top it up from the mains whenever possible. Gone are the days of arriving on aeroplanes with half-empty batteries because there was no time to fully discharge and then recharge them.

■ Operating systems

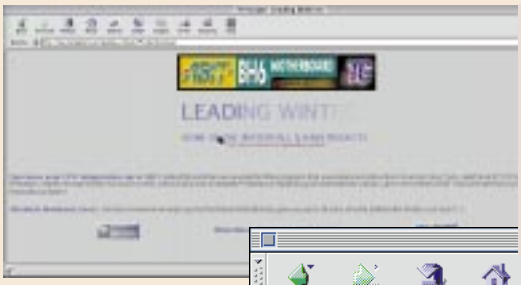
Until recently, it was rare to find manufacturers who would confidently put NT on their laptops. The problem was a lack of drivers and this has been largely overcome as NT has increased in popularity. These days, it's perfectly possible to specify NT as the operating system. There is a surprising side effect/advantage of running NT and that's its built-in CPU cooler. However, if you're using Windows 95 and have a hot CPU, there's a tip which may help to reduce overheating (*p250*).

■ Windows 98

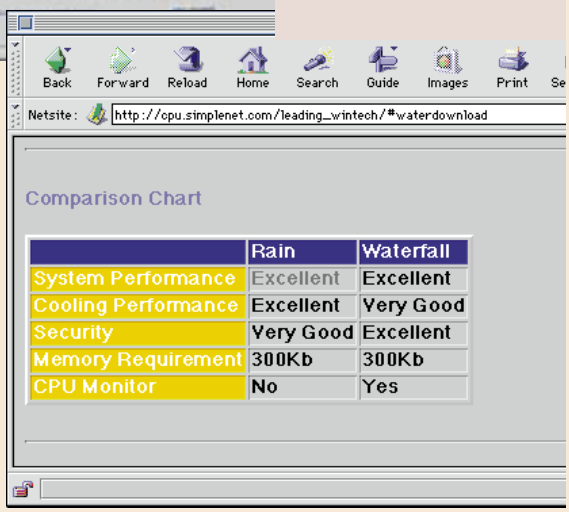
Currently, it appears that some people are experiencing problems upgrading from Windows 95 to 98 (he typed circumspectly). Look carefully at what 98 has to offer and make sure that you need some of the extra features before taking the plunge. And even when you are convinced that you need to upgrade, check for advice on your manufacturer's web site before going ahead. Manufacturers of certain models are advising against even attempting the upgrade (but don't let me put you off).

▶ IN ALL SHAPES AND SIZES, THE LAPTOP COULD BE YOUR PERFECT PORTABLE PAL

LAPTOP TIPS



WHET YOUR APPETITE FOR A COOL LAPTOP WITH WATERFALL OR RAIN



Overheating
Laptops compromise absolutely everything, even cooling, and some are notorious for overheating. Though, amazingly, there is a software fix you can try — in fact, two of them. These are two utilities called Waterfall and Rain that can be used on machines running Intel, Cyrix, AMD and IDT CPUs (Pentium or later). Waterfall and Rain make use of the HLT command which puts part of the CPU into suspend mode. This command can be executed while parts of the CPU are idle, saving power and dropping the temperature. You can find more, and the programs themselves, at http://cpu.simplenet.com/leading_wintech/. Neither of these programs works under NT, for the simple reason that NT already comes with an option to execute HLT instructions when the CPU is idle.

First power-up
A friend recently interrupted the initial power-up of a Toshiba. True, a silly thing to do, but the machine had to be returned to base. The first power-up of any laptop may require you to make choices, so don't try it on the train going home. Relax and allow plenty of time; just don't turn the machine off during that initial startup!

Every laptop comes with a built-in UPS
It may not be immediately apparent, but the battery in your laptop works in just the same way as a UPS (Uninterruptible Power Supply). So, if you are working on a desktop PC and storm clouds gather, switch over to your laptop in case the power goes down.

Finding the CMOS setup program
The key combination to get CMOS setup varies with different machines. If your manual is missing, or doesn't supply the information, try the following early in the boot process:

```
DEL
F1
CTRL+ALT+ESC
CTRL+ALT+S
CTRL+ALT+ENTER
 FN+F1
FN+ESC
```

Power saving
Different manufacturers have differing strategies for saving power on laptops. Common ones are sleep/hibernate (states into which the machine will pass if you stop using the keyboard and mouse) but don't power the machine down. And since each manufacturer tends to define the terms differently, I'd advise sticking to generic descriptions.

In sleep mode the system completely shuts off all the hardware (disk, screen etc.) but keeps the RAM alive. This uses a small amount of power but the system comes up very fast when you next use the machine. If it eventually runs out of power, though, you will inevitably lose the data that hasn't been saved to disk.

In hibernation mode, the system writes everything to disk and shuts everything off, so there is no power use whatsoever. However, when you wake the machine up, it takes longer to wake than it would from sleep mode, but less time than a full reboot.

Size (and weight) is important
As a practical example, I am writing this on an IBM ThinkPad 770. It has a magnificent screen, oodles of brain, a keyboard with a good, positive feel, DVD drive, internal modem — the works. I also splashed out on the optional leather case, which was, I now realise, a huge mistake.

The leather case recently travelled to America in the hold of a Virgin Atlantic 747. While it nestled among its fellow suitcases, I was left holding the unprotected laptop for 12 hours on the flight. *Why?* Virgin decreed that the bag, laptop and accessories weighed more than the cabin baggage maximum of 5kg: the machine alone weighs a hefty 3.7kg.

As I said at the start, all laptops are a compromise. I knew all about the weight and size but I accepted those hits because I needed not just a writing machine, but a portable server. The 770 runs Windows NT and functions both as a data warehouse and an OLAP server. For writing, I carry a Psion — tiny but perfectly formed. Hmm... I wonder if I could mate them?

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