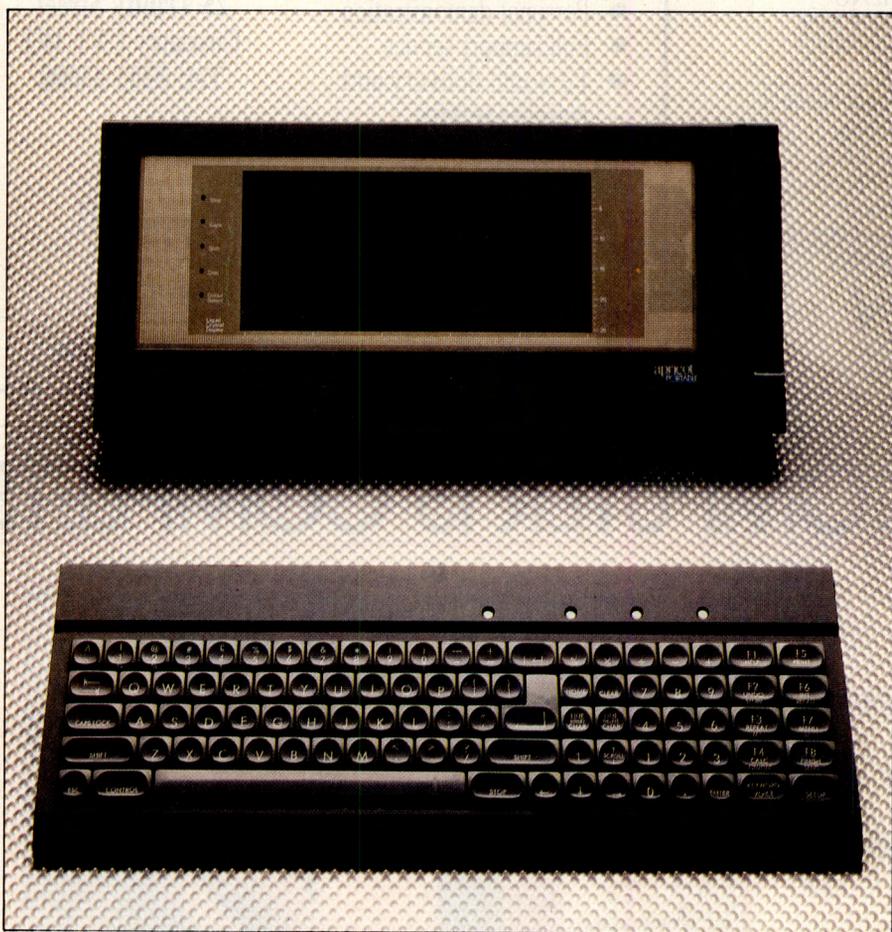




ACT Apricot Portable

Providing a lower entry level into the ACT range the Apricot Portable has some novel features to be proud of—one of which is a speech recognition facility as 'standard'. Unprecedented on a micro, Peter Bright wonders how useful this, as well as the machine's other innovative features, will be.



The Apricot Portable is one of two machines recently launched by Birmingham-based ACT. The other machine was the Apricot F1 (Benchtested last month). While F1 is not the most informative of names (it stands for First One), the Portable's title is at least self-explanatory.

The Portable certainly looks very innovative, with a 25-line by 80-column liquid crystal screen, built-in voice recognition, an infra-red keyboard and 16-bit computing power all for £1695.

Hardware

The brochure lists the Portable's dimensions as 450mm long × 172mm wide × 200mm high. In real terms this

means that it is larger than lap-held machines but much smaller than conventional desk-top or transportable machines. It is one of the few micros that I can think of which can happily sit on a desk without totally dominating the available space. Its lack of bulk also means that you can strap it into its hard carrying case and still have room left for a printer and assorted bits and pieces.

A look at the photograph will show that the Portable looks very unusual. The 25-line LCD display dominates the front of the unit with the single disk drive hiding away along the right-hand side. The microphone for the speech recognition unit is clipped to the front of the unit and can either be used there or

unclipped and held in the hand.

Along the back there is nothing to be seen apart from the power socket and a massive great heat sink. I/O ports are conspicuous by their 'apparent' absence. In fact they are just hiding and can be accessed by removing a large cover which runs halfway along the back.

The Portable is not exactly overrun with I/O ports, just one centronics parallel, one RS232 serial, one for the RGB monitor and one Apricot-compatible expansion slot. The most likely card for the expansion slot is either ACT's modem card which allows access to remote dial-up services or one of its RAM expansion cards.

Getting inside the Portable is easy—just undo two screws and pull the front panel off. The first thing you notice is how closely packed the PCBs are—the review machine, a pre-production model, had an old Sirius guarantee card slipped in between to stop two boards shorting together!

The second noticeable thing is that there isn't a CMOS chip in sight. Absolutely no attempt has been made to allow this machine to run off batteries—it's strictly mains only. ACT thinks that CMOS technology is still too expensive to be viable in the portable price range and volume. A pity.

The PCB on the back of the LCD display is covered with 20 'flat pack' decode chips. These are square and unlike conventional DIL chips have pins on all four sides—much like the new Intel iAPX 186 & 286 CPU chips.

There are two main PCBs inside the Portable. The first fills the front of the unit and houses the main processor, RAM, ROM, display circuitry and the expansion bus. The board was well-made with little patching in evidence.

The board on the review machine used 32 Texas Instruments 64k × 1 RAM chips to give a total of 256k onboard. However, it is wired for 128k × chips, so you could have 512k if required. Unfortunately this is only available as a factory option, it isn't a field upgrade job. The board also contains 32k of

operating system ROM.

The processor is an Intel 8086 clocked at a fairly sedate 5MHz rather than the decidedly odd 4.77MHz of the F1.

The second board handles the RS232 and centronics ports, takes the output from the infra-red keyboard link and also takes the input from the microphone for the speech recognition. All in all the electronics are well up to ACT's usual high standards in terms of construction and ease of servicing.

The disk is located in the right-hand side panel. It follows standard ACT practice — Sony 3.5in, double-sided 720k. It worked fine in use (as have all the Sonys I've used). If you are going to be handling large quantities of data, ACT can supply a nifty little external 10Mbyte Rodime 3.5in hard disk called an MSD (Mass Storage Device).

The display is one of the major features of the Portable. As far as I know, it's the first production machine to use a full 25-line liquid crystal display. The display unit is made in Japan by Hitachi, but ACT wasn't happy with the controller, so it designed its own (very fast) display controller chip.

LCD resolution is the best I've ever come across. In text mode it can display 80 characters × 25 lines, while in graphics mode 640 × 200 pixels. Thanks to the dedicated controller, the LCD is also very fast.

LCD displays have two major advantages for portable machines. Firstly, they use very little power and so lend themselves to battery power. Secondly, they are virtually flat and, therefore, use much less space than a conventional cathode ray tube. ACT didn't go for LCD for its low power consumption (the rest of the system eats power), but because of the space advantages. Using the LCD it has managed to pack the display and the two main PCBs into a unit little thicker than an average paperback book. Impressive. The trouble with LCDs is that they aren't always easy to read. Whereas CRTs actually give off light, an LCD display can only reflect light shining onto its surface. This has two effects: firstly, if there isn't much light around, you won't be able to see the display; and secondly, even if there is enough light, you risk getting all sorts of nasty reflections back from the display.

Most micros which use LCDs try to get around these problems by allowing you to alter the tilt of the display and by providing for alterations in the contrast of the display. Although the Portable allows you to alter the contrast by holding down the SHIFT and UP-ARROW or DOWN-ARROW together, the angle of the display is fixed and there isn't anything you can do about it.

The upshot of all this is that display quality on the Portable can be appalling or acceptable — depending on how careful you are when you position the unit.

ACT rationalises this problem by saying that the LCD display was in-



'File' allows normal 'housekeeping'

tended to be used away from base. Back at base you would plug into the optional colour monitor and use that instead of the LCD.

The colour display is, in fact, very good. Its resolution of 640 × 256 pixels is higher than the LCD and it can also display up to eight colours simultaneously out of a palette of 16 on the screen. If you have the colour option, an extra 128k of dedicated video RAM is added to the system.

As with the F1, the Portable makes heavy use of Digital Research's GSX graphics extension to ensure that applications programs are compatible across the range. This means that so long as your applications software uses GSX you can run it up on either the LCD or the colour display, even though they have different resolutions and the LCD can only display black and white. All you need to do is install the appropriate GSX driver. (For more details see last month's F1 Benchtest.)

In addition it is also possible to display data on both displays at the same time. For example, if you are using Supercalc 3 you can display the spreadsheet model on the LCD at the same time as displaying graphs or pie charts on the monitor.

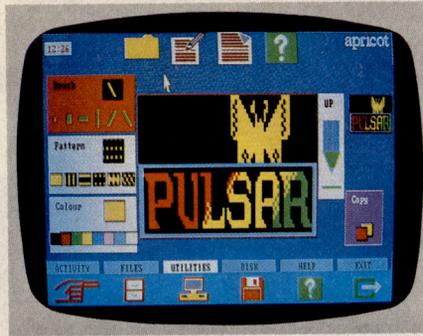
The keyboard is exactly the same as the one used on the Apricot F1: that is to say, it's a 92-key membrane unit with 10 function keys and a numeric keypad.

Anyone who read last month's F1 Benchtest will know that I'm not too keen on this type of keyboard. I don't like membrane keyboards, and even though this is a good one, it still doesn't have the feel of a good 'traditional' unit. Also the space-bar doesn't register until it's below the level of the keyboard casing. This gives your thumb a very hard time when you are touch-typing.

The keyboard's main claim to fame is not its keys but its infra-red link with the main unit. This does away with the traditional cable and uses a light beam to send each 32-bit keycode.

As with the F1, I found that this link either worked or it didn't — it never got the key wrong. The trouble is that I'm still trying to think of the advantages of infra-red as opposed to good old cable.

The Portable is also available with ACT's infra-red mouse. This is a very large mouse/trackball arrangement which is very useful when used in conjunction with ACT's new user-



Create ikons and save them to disk!

friendly applications packages.

Unfortunately, the pre-production infra-red mouse supplied with the machine wasn't feeling well and refused to work. I had the same trouble with the F1 last month — I only hope the production units are better. Anyway, it had to go to the vet, so I ended up using a Microsoft mouse plugged into the RS232 port. Apparently all the necessary driving software is buried somewhere in the GSX driver, so this could be a good alternative to ACT's offering. The Microsoft mouse worked faultlessly.

System software

As with the rest of the Apricot range, the Portable is available with MS-DOS Version 2 and/or Concurrent CP/M Version 3. The review machine was supplied with MS-DOS 2.11. Nothing strange to report.

What is much more interesting is that the Portable is also shipped with the 'Activity' front-end to the operating system. Those of you who have used an Apricot before may remember the 'Manager' front-end which ACT used to ship. I am happy to report that Activity is much better than that and it's a very useful alternative to the MS-DOS command line.

I looked at Activity in some depth in the F1 Benchtest last month. However, the pre-production version supplied with the Portable is much more complete than that supplied with the F1, so I'll have another quick look at it.

Activity is ikon-based and very heavily influenced by the Apple Mac. Most of the screen is taken up by a list of files on the current disk. As soon as you change a disk, the list is updated. Applications programs can be called from here. If an application is run, it overwrites Activity and it is recalled when you exit from the application. It is perfectly possible to run Activity within Activity, within Activity, within ...

Along the bottom of the screen are six ikons which allow you to play around with files, create new keyboards and characters, create new ikons and format and copy disks. In fact all your normal housekeeping can be done within Activity.

Three new features which weren't there last month are 'Help', 'Files' and the 'Ikon Editor'.

The 'Help' ikon is a large question

mark at the top of the screen. Selecting Help attaches a little box to the end of the cursor arrow which you then move to the area with which you are having trouble and an appropriate Help message appears. This is very impressive.

If the Help isn't enough, press the button twice over the Help ikon and you will be taken to a self-teach tutorial! Help is available wherever you go, but I found that after 10 minutes using the system it was so straightforward that it became unnecessary.

The 'Files' ikon wasn't implemented on the old version of Activity. It allows you to copy, rename and delete files and to move around, create and delete sub-directories.

The central part of the screen shows a list of the files on the current disk. To its left are a number of named filing cabinet drawers. These represent sub-directories. Below the file list are ikons for rename and copy, a dustbin for delete, and ikons for creating and deleting sub-directories.

To select the file you want to work on, you can either type its name or you can highlight it in the list of files. To perform the operation, drag the file to the desired ikon.

All in all this area of Activity has been well-executed. The only times I had to descend into MS-DOS were to TYPE a file and to copy a file to a sub-directory. Although the Files option allows you to play with sub-directories, my version wouldn't let me copy files to or from a sub-directory.

The third new feature is the Ikon Editor, which again wasn't operative on the last version. This is a fairly basic painting program which allows you to create ikons which can subsequently be attached to application programs for display on the main Activity screen.

On the colour screen, the Ikon Editor allows you to choose from six different brush shapes, six different fill patterns and eight different colours. Like all painting programs you can have hours of endless fun playing with different pictures.

Applications software

The Portable is supplied with a great deal of bundled software — SuperWriter, SuperCalc, SuperPlanner, ACT Diary, ACT Sketch and an interactive tutorial. ACT says the majority of standard Apricot software will run provided it doesn't make direct calls to the hardware.

The last main claim to fame of the Apricot Portable is that it boasts built-in speech recognition. Most speech recognition systems rely on highly expensive, complicated hardware to sample and process the signal from the microphone. The Portable's speech system relies instead on highly complex algorithms built into the software. This



makes it economical to build speech into a budget product.

The recognition system can work in two ways: simple and complicated. In its simplest form the output from the recognition is just dumped into the keyboard buffer. This can be used with most applications programs because the program just thinks you've typed the command in. The second method is to write the applications program with voice recognition specifically in mind. This obviously allows you to do more, but the software is likely to be quite specialised.

The voice system on the Portable allows you to have a vocabulary file of up to 4096 words. However, only 64 words can be held in RAM at any one time, so a fair amount of shuffling is necessary with large vocabularies.

Before the system can understand your commands, it is necessary to create a vocabulary file and train the system to understand your voice. The Portable is supplied with a program which allows this to be done.

The first thing to do is to create a vocabulary disk file. You can have as many of these as you like. The training program prompts for a name and then opens a disk file under that name with a .VOC extension.

Next you enter the words you want to use, along with an optional command which you want the machine to respond to. Once you have entered all the words, you can go into training mode. To do this you speak the words into the microphone and the program records the voice patterns. The more times you repeat each word the better the result.

After you have trained all the words you can go on to see how well the machine understands you. I found that the majority of words worked straight-away but some needed more effort.

By way of a test I had a go at teaching the Portable *Mary had a little lamb*. It did pretty well but had problems with the difference between 'had' and 'and'. I think many of the problems I encountered were associated with the microphone — it's a cheap electret type and I had to virtually swallow it to get the machine to register my voice. This in turn induced stress in my voice which didn't do much for accuracy.

Overall, I reckon the review machine was 80-90 per cent accurate. The problem is that you never remember

the times it got it right, just the times it made a terrible mistake. ACT reckons it is going for 99 per cent accuracy in production versions. I'll be interested to see if the company makes it.

One of the applications programs bundled with the Portable is an electronic diary program which was written specifically for use with voice recognition. The program makes good use of graphics — it even has a picture of an open diary onto which it displays its information.

Unfortunately, the review version of the Diary program was not compatible with my version of the voice training program. This meant that the results using voice were not good. The production versions of the programs will be compatible.

Documentation

Final versions of the documentation were not available with the review model, except for an applications manual covering Superwriter, SuperCalc and SuperPlanner, and a Microsoft manual covering MS-DOS and GW-Basic. Both are attractive presentations of fairly standard information.

Prices

A basic machine with 256k of RAM costs £1695. A colour display with an extra 128k of video RAM and a mouse will add £300.

Conclusion

When I looked at the F1 last month it was easy to write the conclusion — the machine was cheap and offered exceptional value for money as a small desk-top machine which was also transportable.

Things aren't nearly as clear-cut with the Apricot Portable. Although it's got more bells and whistles, it isn't obvious who will want them. Let's take the features one by one.

The 25-line LCD display represents a first, yet the machine requires mains power. This isn't necessarily a bad thing as most users will no doubt carry out their 'heavy computing' back at base with lots of power and a colour monitor for easy readability. The LCD will probably only be used on occasional forays out of the office to impress clients. I think the LCD is also a statement of intent from ACT. Maybe the next machine will be a CMOS machine with a colour LCD?

The infra-red keyboard link is a marketing gimmick, but the voice recognition capability is potentially very useful. Much depends on how accurate the system proves. I would hate DIR to be interpreted as FORMAT! If ACT does achieve the 99 per cent accuracy it is striving for, then the machine will undoubtedly bring respectability to voice recognition.

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