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The man behind the QL

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WILL ADAM EAT THE APPLE?

Coleco Adam

Some time ago, Atari realised that it wouldn't take a lot of work to turn its games machine into a micro. Now Coleco, the company which produced Cabbage Patch Kids, has done the same for its ColecoVision home entertainment centre. Surya takes a look at its Adam computer module.

There are probably three main routes into the home computer manufacturing business: the electronics companies like Sinclair which moved naturally into computing; the business computer companies like Commodore which moved downward into the home market; and finally the electronic games companies which have expanded into the home computing market as we have seen with Atari. Coleco belongs to the third category. The company has recently gone the same way as Atari and produced an 'add-on' system to turn the Coleco-Vision TV games console into a standard microcomputer.

A standalone Coleco Adam system is expected to be available later on this year. To begin with you will buy the ColecoVision Computer 'Module' add-on, which is the product reviewed here.

Hardware

The add-on system presupposes that you already have the ColecoVision games console. If you don't have this, add £150 to the price and become the proud owner of a games console.

Everything else you need comes in a single, very large box. It contains the 'memory module', keyboard, daisy-wheel printer, power-pack, three manuals, a frame for connecting the memory module to the games console together with all the necessary connecting leads and a clip-on joystick holder. The memory module incorporates a digital cassette drive, and three cassettes are supplied for use with this. Connecting the individual units takes about ten minutes the first time, but is a two-minute job once you know where everything goes.

The keyboard is slightly smaller than an Electron. It is connected to the main unit via a 75cm long coil cable. The connector is like a scaled-down telephone jack. The keyboard has 75 keys, and one of the ColecoVision joysticks can be clipped onto the right hand side of the keyboard to provide a useful numeric keypad too. I liked this arrangement, since it gives the choice of an extended keyboard with the convenience of a numeric keypad, or a more compact one without.

The feel of the keyboard is spongey. I've used far worse, but the Adam keyboard doesn't compare with something like the BBC. But the layout is well designed. All the standard keys are where you'd expect to find them, and special-purpose keys are sensibly placed. Cursor-control keys are laid out in a diamond shape, with the HOME key in the centre. The six keys dedicated to the built-in text editor are in a block above the cursor keys, and the programmable function keys run across the top of the keyboard. The keyboard is colour-coded: the qwerty keys are white; SHIFT, RETURN, TAB, are grey; and the programmable keys are black. The programmable keys are labelled
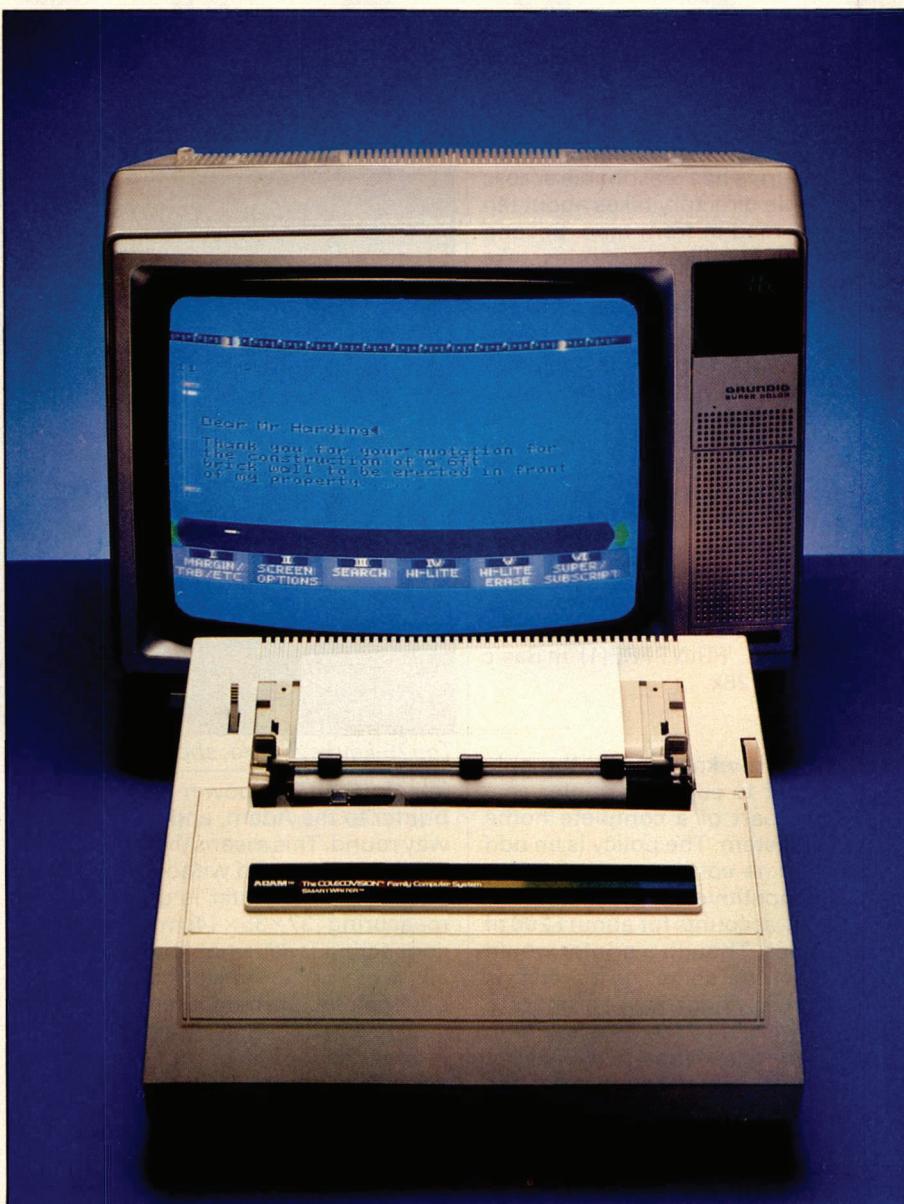
'...like splintering bamboo canes' — the SmartWriter printer

using Roman numerals to avoid confusion with the ordinary numeric keys. The RETURN key is well-placed and adequately sized.

The system has two reset keys. The first is the games console reset, which selects and initialises the ColecoVision system. The second is located on the top of the memory module. This initialises and selects the Adam, auto-loading whatever happens to be in the data drive or, in default, dropping into the built-in text editor. Either reset is fatal if you are in the process of creating either a program or text file, but both are well away from the keyboard and therefore unlikely to be pressed accidentally. The Adam's reset switch has an additional safeguard in that it is recessed and must be pulled towards you rather than pressed.

Digital data packs

The data drive differs from a standard cassette player in two ways: firstly, it uses preformatted tapes so that it can simulate random access files; and secondly it records data in digital rather

than analogue form. It is very similar to the Ikon Hobbit (reviewed in *PCW* January), except that the Adam drive uses standard-sized cassettes whereas the Hobbit uses minicassettes.

Unlike the Hobbit or Microdrive systems, Adam data cassettes are not formatted by the system but are supplied preformatted by Coleco. This is less than ideal in that — as with Microdrives — users are dependent upon a single supplier: both price and availability are correspondingly uncertain. Coleco's justification for this policy is that users would otherwise be tempted to buy poor quality tapes which are not data-certified in order to save money — and then blame the system when they find that subsequent loading and saving prove unreliable.

The total formatted capacity of a data cassette is 500k. On Coleco's estimate of an average 2k text per A4 page, this equals 250 pages per cassette — a respectable capacity even by disk standards. The system has room for a second data drive, though this is not available as yet.

The data drive has reasonable access times — a file directory takes about ten seconds to read in from tape. Second and subsequent file directories take only two or three seconds. I assume from this that the Adam stores the last directory and tape identifier in RAM and simply checks whether the tape has been changed. I say 'assume' since none of the supplied documentation comes anywhere near being a technical reference manual, and details such as how the system works are obviously not intended for the likes of you and me.

The memory module and ColecoVision system together give — according to Coleco — a total RAM capacity of 80k. While 64k of this is available to machine code programs, 'PRINT FRE(1)' in Basic responds with 28k.

Printer

Coleco is, to my knowledge, the only manufacturer to supply a printer as a non-optical part of a complete home computer system. The policy is an odd one: the home computer market is a fiercely competitive one, and this printer probably accounts for about £200 of the total price. Though a printer would be essential to some users and is always a useful thing to have around, to most hobbyists a printer is a luxury to be considered once their bank balance has recovered from the purchase of the computer itself. This policy perhaps is evidence that Coleco believes that it can make its mark on the business as well as the home market — a bundled printer would not be out of place in a business system.

I don't think I'm doing the 'SmartWriter' printer any injustice by saying that it is apparent from both appearance and operation that the designers were told to come up with a printer which could be produced as cheaply as is humanly possible. It works. That's the only thing I can honestly find to say in its favour. The 'SmartWriter' is slow (8-10cps) and extremely noisy. It sounds like someone splintering about half a dozen bamboo canes excrutiatingly slowly. The company comments: 'It's no more noisy than a typewriter would be.' The print quality is more on a par with a cheap electric typewriter than a letter-quality printer.

The whole system takes its power via the printer. A single lead connects the printer to the system unit, carrying power via the printer to the computer, and data from the computer to the printer. The dual-purpose lead is a good idea. Provided the two sets of wires are well-insulated from each other — as they appear to be — it's an effective method of cutting down on the number of leads wandering around. The prob-

The 75-key keyboard: spongey, but well laid-out

lem is that the power goes via the printer to the Adam, and not the other way round. This means that the computer cannot be used without the printer attached. The printer is quite large — measuring 37×35×14cm — and the connecting lead is not long enough to allow the printer to sit underneath the desk holding the computer. By the time you've got the games console, memory module, keyboard, printer and TV onto your desk, there's not a lot of room for anything else.

There are no parallel or serial interfaces. You have a printer already, of course, and Coleco promises an add-on modem, but in either case you either like the one Coleco supplies or do without. The only uncommitted interface is the edge-connector at the right hand side of the memory module, though if Coleco produces the 64k RAM pack, modem and disk drive as promised, this interface is going to be kept pretty busy.

The display, too, is limited to a TV: there are no sockets or leads to allow any form of monitor to be hooked up. This is a pity, since the Adam's graphics are quite impressive. It also belies the idea of the machine being used for business use: I can't see business users putting up with the quality of a TV display.

Software

The Adam has an advantage over most new machines in that it already has an established library of games software: since you have to buy the ColecoVision games console as part of the system, you can, of course, run any of the ColecoVision games cartridges. The catch is that you are buying games console software designed to be operated using a joystick with fire buttons, a

numeric keypad and no more. Consequently, there is no shortage of all-action, arcade-style, machine code games with flashy graphics and impressive sound affects, but that's it. 'Donkey Kong' may be fun, but it very quickly grows tiresome.

The Adam comes supplied with three pieces of software: a Basic interpreter, an arcade-style game 'Buck Rogers' and a text editor built into ROM. The text editor has a similar name to the printer: 'SmartWord'.

When you switch the machine on, the system checks for a tape in the data drive. If the tape is either blank or contains text files, the system assumes that you want to use SmartWord. If the tape is a machine code program, it loads and runs it. If the tape contains the Basic interpreter, it loads this. If there is no tape in the drive, the Adam defaults to SmartWord. This is the first justification I've seen for the word 'Smart' which is plastered over practically everything.

SmartWord

Assuming you have either nothing, a blank tape or text files in the data drive, the system calls SmartWord from ROM. The printer resets itself, noisily, and the 'Adam's Electronic Typewriter' display appears on the screen.

'Adam's Electronic typewriter' is just that. You press a character on the keyboard, and it is immediately printed on the printer. To enter the full text editor, you press the ESCAPE/WP key.

Since the 'SmartWriter' screen is only 36 columns by 20 lines, it cannot work on the 'what-you-see-is-what-you-get' principle. It overcomes this handicap remarkably well, tackling the problem by displaying both horizontal and vertical rulers. These rulers indi-

cate the current margin and tab settings, and give a graphical indication of the current cursor position as it will appear when it is printed.

When you first enter SmartWord, the display shows horizontal and vertical rules, a 72-character 'current line' window at the bottom of the screen and the functions assigned to the programmable function keys. You are automatically in a new, as yet unnamed, file. All you have to do to begin your document is start typing.

As you enter text, it appears in the black 'window' at the bottom of the screen. This window is designed to look like a typewriter platen which I tried to think of as just part of the wonderful variety of life. It didn't make it any less silly, but it helped. By default, the line-length is 60 characters. When you reach the right hand margin, Smart-Word automatically wordwraps and scrolls the text upwards.

Editing is straightforward, and you can edit any part of the document: the highlighted window has no significance other than to indicate the part of the document you are working on. As you use the cursor keys to find the text you want to edit, the screen scrolls upwards or downwards until the line to be edited appears in the window. To overtype, you simply position the cursor using the arrow keys and type in the new text. The old text is overwritten. To insert text, you press the INSERT key. The prompt 'Insert/Type text' appears on the screen, and text entered at this point is inserted at the cursor position. The function key definitions change to allow you to insert page breaks and subscript/superscript control codes. When you press function key 'VI' to indicate that you are 'DONE', the auto-wordwrap sorts itself out, reformatting as necessary.

The procedure for deleting text is much the same. You position the cursor and highlight the text you want to delete. Function key 'IV' toggles the highlighting on/off, 'V' cancels highlighting (so that you can change your

mind) and the DELETE key then performs the deletion. When you press the DELETE key, it will check by displaying an 'Are you sure?' prompt. If you press DELETE to confirm, the deletion is carried out. If you do not want to proceed with the deletion, ESCAPE cancels the command.

Be warned, however! If you press the DELETE key before highlighting the text, SmartWord assumes that you know what you are doing and does not present the 'Are you sure?' prompt.

If you do accidentally delete text, though, all is not lost provided that you realise your mistake before pressing anything else. For the Adam has that most wondrous of keys, UNDO! Smart-Word has two dangerous options: delete text; and clear text from memory. When the program performs either of these operations, the text is not actually deleted from RAM, but merely cleared from the screen and marked as OK to overwrite. The UNDO key simply removes the 'OK to overwrite' flag and restores the text to the screen.

Function key 'I' takes you into the print-format menu. This allows you to set vertical and horizontal margins, tabs, line spacing and insert page breaks. Line spacing is set to single by default, and stepped up or down in increments of ½ by keys 'IV' and 'V'. The minimum line spacing is 1, but there appears to be no upper limit.

Key 'II' allows you to configure the display to your own tastes. The three options set the 'paper' colour, the sound, and change the window. The default colour is black text on a light blue background; other options are black on white, green or grey, and white on black. The sound option allows you to select from 'full' sound (a short beep when each key is pressed, and a 'ping' for the CR or function keys), 'partial sound' (pings only!) and, thankfully, no sound.

The windowing option allows you to switch off the 72-character window and use the whole screen as a window onto the document. The difference is that in

the default mode, words wrap around so that whole lines are visible on the screen — the second half of the line appears underneath the first half, and is reformatted when it is printing. In full window mode, only a 36-character wide section of the line is visible at one time, and the cursor keys are used to scroll the screen left and right.

Key 'III' allows you to perform a literal (that is, ignoring case) search for specified text, once only or repeatedly. A 'find-and-replace' option is also offered. Searching is fairly slow, but not staggeringly so.

Key 'IV', as we have already seen, toggles highlighting on/off, while key 'V' cancels highlighting. Finally, key 'VI' inserts subscript or superscript control characters. Since the printer is a daisy-wheel, all this does is to move the roller ½ line up or down to print the text.

Loading and saving files is both easy and friendly. The Adam checks that you have a suitable tape in the drive before attempting a save, asking you to insert a tape if necessary. If you are loading a file, SmartWord gets the file directory from the tape and asks you to use the four arrow keys to select the file you want. If you load a new file while you still have text in the workspace, Smart-Word sensibly appends the new file to the bottom of the existing one.

SmartBasic

A manufacturer producing a new home machine has a choice of two main paths when it comes to the Basic interpreter. The first is to design a completely new and original one — as Acorn did with the BBC Micro — and the second is to use one of the old 'tried-and-trusted' varieties with whatever modifications are necessary for the machine in question, as do most manufacturers. Coleco took the latter route and came up with SmartBasic.

SmartBasic bears a great resemblance to Applesoft Basic. The commands, statements and functions appear to be 100% identical in purpose, format and syntax — right down to shape tables, a notable Apple peculiarity. Even the graphics-handling is the same. I'm quite sure that — with PEEKs, POKEs and other address-dependent statements removed — you could show a SmartBasic listing to any number of Apple programmers without any of them suspecting that the listing was anything but an Apple program. Even the prompt is an Apple one!

The strange part about Coleco using such an Applesoft-like Basic is that it has only gone halfway: the monitor is different. This means that the memory addressing is different, and hence any

Technical specifications

Processor	Z80
RAM	16k video,
	64k storage (28k Basic program storage)
Permanent storage	500k digital data drive
Interfaces	Proprietary; non-standard
Interpreter	Applesoft Basic
	(loaded from data cassette)
Expansion	Disk drive; 64k RAM expansion and modem planned

There was no time to do the Benchmarks at the time of writing. These will be given in a future issue.

The memory module incorporates a 500k digital data-drive

Apple listings involving POKEs, PEEKs, assembly or machine code will not run on the Adam, and visa versa. And as Apple programmers will know all too well, it is difficult to persuade an Apple to do anything useful without a fair sprinkling of POKEs and PEEKs.

The graphics are impressive: the high-res screen has a resolution of 256×159 and 16 different colour shades

The joystick acts as a numeric keypad

available using the standard Applesoft graphics statements.

There's not a lot I can say about the Basic. As far as I can see, it's Applesoft by another name.

Documentation

The documentation supplied with the Adam is written in an overbearing, patronising, American style, which I find infinitely worse than terse, unfriendly prose. Some of the demonstration programs in the Basic tutorial almost defy description, though puerile and infantile come close.

The authors seem to work on the principle that if a three-sentence explanation is clear, then a thirty-sentence one must be ten times as clear. On the positive side, I don't think anyone would have any difficulty understanding how to use the system!

Conclusions

During this review, the Adam was running continuously for 26 hours. The power pack grew too hot to touch, but the machine ran without error performing a variety of tasks.

In general, I tend to view upgrades to TV games machines as a less than ideal way to buy a computer. If the computer

has to adapt to the games machine rather than the other way about, it is very easy to end up with a system which is clumsy, limited and overpriced. The Adam appears to be neither clumsy nor limited, though I think it is likely to be overpriced.

The built-in text editor is an idea which seems to be catching on among micro manufacturers. SmartWord is friendly, easy to learn and easy to use. As a general text editor for correspondence and similar tasks, it is ideal. Given an 80-column monitor output, I think it would also be suitable for more ambitious tasks. As it stands, the 36-column by 20 line display limits its usefulness. For someone needing an easy to use text editor for general correspondence and so on, the Adam could well be a worthwhile investment for this purpose alone. The data drive does not compare to a disk system, but is certainly adequate for home and semi-professional use.

As an arcade-style games machine, it is impressive, but then you only need the games console for this! The only advantage of the rest of the system is that you can also load games from cassette.

As a programmers' machine, Applesoft-like SmartBasic is a reasonably pleasant implementation of the language and — thanks to the popularity of the Apple — there are a wealth of books available to help you. The graphics resolution of 256×159 compares well with all but the BBC, and the graphics statements are quite powerful. The digital data drive, too, is attractive, offering reasonable access speeds and reliability.

However, the Adam does have a number of serious drawbacks. The main one is the total lack of standard interfaces, particularly a serial port of some description. The UK price is as yet unknown, but is likely to be £600-£700 plus the cost of the ColecoVision games console (£150).

The BBC, as ever, is strong competition; a model B with a Hobbit data cassette and one of the £200 daisy-wheel printers which have recently begun to appear on the market gives an equivalent system for about the same price. The BBC, however, offers parallel and serial interfaces, a superior keyboard and a more powerful and elegant Basic. You also have a fairly wide range of single-disk micros to choose from which with a £200 printer could cost the same or less.

The Adam should be available in High Street shops in April or May. Details from CBS Electronics on (0734) 698188.

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