

A Bunch of Fruit!



Johnny Appleseed would be proud: the industry has spawned plenty of Apple™ compatible computers, and Steve Rimmer looks at three: the Surplustronics 6502, the Franklin ACE 1200, and the Orange Peel.

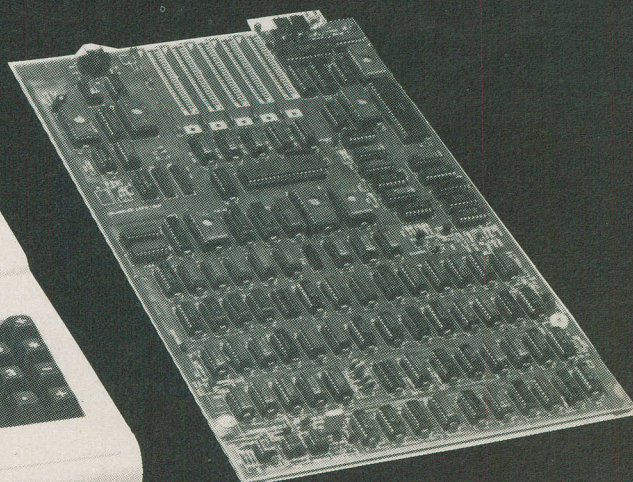
I FIGURE THAT in about twelve months or so it'll be impossible to register a fruit as the trademark of a micro-computer product without infringing on somebody's trademark. We now have Apples, Grapes, Peaches, Pineapples and Oranges. I myself have considered introducing my own

variety. It's a toss up between Passion Fruit and Green Banana... possibly the Mango. This wouldn't be a complete copy of the popular 6502 system. For one thing, it would eliminate the need for expensive floppy disks by utilizing exorbitant magnetic tape vacuum drives.

Back in the real world, there are a lot of types of fruit, or fruit by any other name, rolling around in the bottom of the basket. The first of the so called Apple clones were just that... more or less exact copies of the Apple computer. However, one of the facets of the Apple system which is rather less than splendid is the fact

that it's extremely old, and much of it is obsolete. For example, it has a forty column screen which lacks lower case characters. It can only support 48K of RAM on board, and its language in firmware is a dog. Its high resolution graphics facility is also a bit of a newt's doorknob, what with highly limited choices of colours available to the aspiring video artist, and things like sprites and complex drawing functions a thing of the mind.

Since modern technology now knows how to cure these things at birth, the designers of the clones were faced with the very real



The Surplustronics 6502

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possibility of creating systems which could actually out — Apple the Apple itself. With a bit of work it was possible to create computers which could run all the Apple's software, handle all the hardware peripheral gizmos that have been flanged out on the unsuspecting universe for it and, at the same time, overcome many of the limitations of the original design.

The modern Apple clone is an amazing creation. It has 64K of RAM, the maximum the 6502 processor can address without bank switching. It supports lower case characters from its shift key, making it useful for word processors. Note, though, that this does not mean that you can program in Applesoft in lower case. As such, these systems generally feature caps-lock devices. One of the ones that we'll look at here has its disk controller right on board, as well as a switchable forty and eighty column screen. The addition of an extra processor card avails the system of CP/M, a second disk operating system, and the whole range of languages available for it. This includes a pair of custom Microsoft BASICs, one which emulates the graphics functions of Applesoft.

In fact, none of these systems do anything that can't be done with a regular old Apple II. However, in most cases, they do it more conveniently, much more economically and with vastly fewer bits and pieces to fool with.

If you've been following the exploits of the great fruit farm in Cupertino, the Apple Corporation, you may have noticed the arrival of the Apple IIe system, an enhanced Apple II that carries official sanction. One may, in fact, wonder how this compares with the clones, or if a wave of cloned II's are about to supplant the cloned IIs. In fact, the Apple IIe has basically the same features as the clones we'll be looking at here, although its keyboard is rather nice, and adds a few programmable keys. However, it has been designed with a number of custom LSI chips, making it all but un-cloneable. However, it adds virtually no additional features above what the clones now offer.

There are a number of clones which are built in the Orient and imported into Canada, and others that are either built here or in the States. The three in this article fall into the latter class. Two are, in fact, native sons, and represent some very clever bits of technology.

Just as we were going to press Patrick Heenan of Shamrock Computer Inc. wandered by with a cloud of his latest

clone drives, which turned out to be quite nice. They are Shugarts with a custom designed controller board and extremely quiet in all directions. The controller features a very low parts count for enhanced reliability, and intense greenness... what a shame you can't get these things with transparent covers. The controller card will work with most systems using Apple-like firmware although, as we discovered, it does make some calls to the ROM, so it's uncool on highly mutated systems. The drives are assembled in Canada, which is a good trip for service.

The Surplustronics 6502

One of the problems with this system is that it lacks a name. That's about all it lacks, though; it has its impressive bits. It is available through Surplustronics... across the street from Exceltronix, down the road from Parts Galore, a skip away from Supertronix, and so on. It is an extremely flexible system, and, above all, dirt cheap... if you own a soldering iron.

The system... how about 6502 BD... comes in kit form for \$649.00. This buys you the main mother board and all the parts you need to stuff it. At the moment you also get a blank Z-80 card to go along with it. This includes a case and keyboard, the latter with a numeric pad.

So, ho hum, another motherboard deal. Well, actually, this isn't just another motherboard. It has been completely redesigned, with a real high tech digital layout and everything. It has 64K of RAM on board, using eight 4164's, an eighty column feature built right in there, as well as an onboard disk controller. This has reduced the need for peripheral slots considerably... there are only five now. However, the best bit can be found in the lower left hand corner of the keyboard.

It has real actual genuine total lower case!

Yes, friends, for the first time on this or any other planet you can see a fully Apple compatible system in which the shift key actually runs the lower case function. No more CTRL-A... it's still there but you don't need it.

Well, I thought it was neat.

The lower case feature works in both eighty and forty column modes, and can be switched out with a caps lock button for those times when you're just programming in BASIC.

Now, there are a few catches to this thing which may sneak up on you if you aren't looking. The first thing is that there are basically the same minor interactive hassles involved between this board's eighty column circuitry and the basic 6502 drivers as one encounters with an Apple and an eighty column card. To wit, the HOME function from BASIC doesn't clear the screen... it just homes the cursor. You can go from forty to eighty



The Franklin ACE 1200 with an AVT monitor.

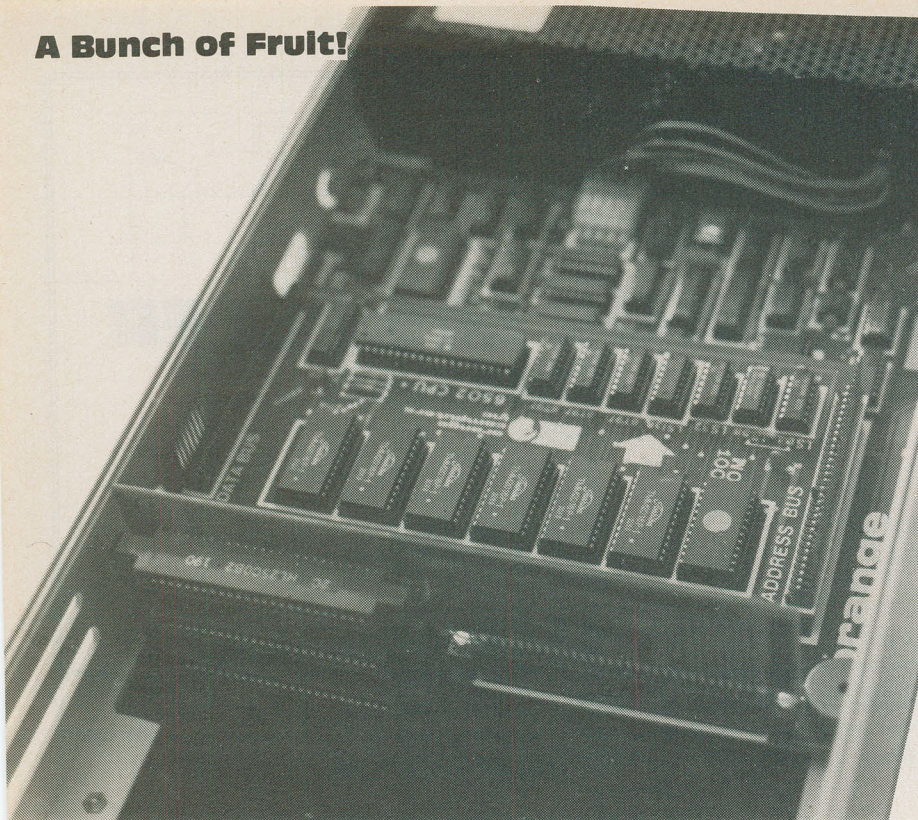
easily enough... just IN#3... but reversing the procedure requires a CTRL RESET, something a bit more drastic. There are, of course, no high resolution graphics allowed when you're in the eighty column mode... you can't have everything.

There is one serious problem as well. Because the eighty column card switches the video from forty to eighty in software, everything goes through it. If it gets confused, you're sunk. Unfortunately, some copy protected game disks load chunks of their programs into unusual places in the computer to confuse would-be pirates. Some seem to be bent on using a block of RAM that the eighty column card is fond of. As such, you can't actually run these games. One example of this phenomenon is David's Midnight Magic, the pinball simulator.

There is an on board jumper which switches the eighty column circuitry out entirely for this sort of situation, which, yes, will cure the problem. This can be brought out to a switch if need be. As far as I could tell, this will affect about ten percent of the available game software at the moment.

The big catch, however, involves the EPROMs. When you get the board it comes with a full set of EPROMs... many of which are blank. These are the proprietary ones... the folks who are flogging this system are taking no chances with the heat, so you will have to get your own firmware. This isn't quite so heavy as it may seem... locating a ROM bandit these days usually involves walking onto a main street and whispering... very quietly

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The Orange Peel computer with detachable keyboard and a Zenith monitor. (Left) Its innards. Lowermost connectors are the I/O ports.

... "I need some chips". Just remember to bring a large club to fight off the latecomers.

In fact, this system was supplied to us with blank EPROMs. The firmware for the system proper lives in two chips for this board, instead of the traditional six, one 2732 and one 2764. After some figuring we managed to combine the contents of a standard set of EPROMs into these little fellows.

This system, despite some of the funkier aspects of its distribution, represents one of the better values of our day. It's fully Apple compatible, so far as I've been able to tell, as well as running Apple CP/M with a Z-80 card. It seems to overcome most of the limitations of the Apple II design. It even runs cooler, using rather more modern chips, and a lot fewer of them.

The board is also available without the case, and can be installed in place of an existing 6502 clone ... or even a real Apple.

As such, aside from the necessity of having a monitor, this thing is a one piece system.

The first thing one notices about the ACE is that it has a lot of keys. There is a QWERTY pad, of course, and a numeric pad. The numeric pad can do double duty, as it is programmable in its shifted mode to be a cursor movement controller. You can, I'm told, set it up for any system you like, although it comes with the codes for moving the cursor in Wordstar.

The keyboard produces a full lower case character set from the shift key in both forty and eighty column mode, with a caps lock key for programming in Applesoft.

The system we got to play with came with two disks up in the hood and a dual disk controller, a combination serial/parallel port driver, a Z-80 card and 64K of RAM. On booting up it said ACE 1000, but it ran pretty much like an Apple.

Some of the software was quite interesting. There was all the usual stuff, and it all ran very well indeed. However, as this system was a bit of a fore-runner ... the first in Canada, I think ... there was no 80 column card in it. It did, however, come with a CP/M based program called 70COLUMN which, when run, produced a 70 column display on the screen by plotting the characters in high resolution graphics. They looked a little chunky but they were readable, and they moved around with no visible snow or weirdness. Clever, this.

The system comes with a very

good manual that augments the available documentation from Apple quite well. Whether for reasons of corporate pride, or, more likely, protection of the corporate behind, many of the usual Apple disk utilities have been renamed and slightly altered ... this is all explained in the book. CP/M is explained very briefly, with the more common commands outlined. There are a number of cute drawings that make the thing seem real friendly. There's even a section that explains exactly how and where the system differs from a standard Apple, in case you run into freaky compatibility problems.

My favourite bit in the manual detailed the addition of a second disk drive to a single drive ACE. The disk drives, it seems, came packed in a very sturdy metal sleeve. The neat thing about this sleeve is how much it resembles a standard Apple type disk case. You remove this packing sleeve and bolt the drive to a plate in the disk hood.

This computer is a fairly good trip for anyone who wants to run Apple and CP/M based software in a sort of turnkey environment. It's probably not so good for those of us who get into playing with the peripheral cards and prodding around inside the case. The disk hood is a moderate pain, in this respect; you can't get at the peripheral slots without lifting it up, a bit of a chore. This invariably rips the disk controller out of its slots. Plugging cards involves some calisthenics in bending over the open hood and

The ACE 1200 is the only non-Canadian fruit we've looked at ... it's built in the land of Reagan. An interesting thing, this. More or less an Apple clone, it has a number of highly interesting innovations.

The Ace comes in a rather large ABS case which looks like it was designed to withstand shelling. It's made up of two bits, the bottom part where the motherboard, power supply and keyboard live and an upper "hood" that contains the disk drives.

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aiming for a slot, but this is probably good for you. Short people may have to stand on a box or develop a "leap and plug" technique.

Despite the fact that the ACE is made in the States, it is distributed by a Canadian company, which is a good trip. It is well built, and, it appears, well supported. If you want a no-hassle enhanced Apple clone and like having all the squirming creatures in one unbreakable cage, it's probably a very good system to consider.

The Orangepeel

The Orangepeel is a rather unique Apple compatible system. Built entirely in Canada, it involves a number of radical departures from the traditional fruit. At the very least, it's an interesting looking thing.

The Orange, first off, comes in two pieces. There's the keyboard, a very fancy hall-effect serial deal in which all the non-alphanumeric keys are bright orange. Everything else is tan. There is full shift key lower case and a caps lock feature for programming in BASIC ... complete with status LEDs to tell you what's happening. The keyswitches have a very comfortable feel. Then there's the main computer proper, a very low profile thing that looks like a TV converter of some sort. A coiled telephone-like cord connects the two. There is a phono jack to drive a monitor; alternately, an RF modulator can be plugged in to fondle a TV set.

The system will support the usual assortment of Apple peripheral cards but, as it turns out, rather few of them at any one time.

Old South

As it turned out, I didn't get to see as much of the Orange as I might have liked to. However, what there was was quite innovative. The case is made of some very clever extruded plastic which is held together with bolts and, when you get these out, with velcro. As such, getting inside the thing is a bit of a pain, and the system is probably not ideal for someone who is up for doing a lot of card swapping.

The heart of the Orange ... Oranges can't really be said to have cores ... is a single main motherboard which in no way resembles that of the Apple II. It holds the 6502 and allows a number of other things to plug into it. However, one thing it does not have is any place to mount ROMs. The Orange does not use pirate firmware by the simple device of its not having any firmware to speak of at all.

The top chunk of the memory bus, which is usually occupied by firmware in an Apple system, is dealt with by a piggyback board in the Orange which can access the address and data busses through pins prodding out of the motherboard. It holds 12K of RAM plus a boot PROM. When you boot the system it wants to load Applesoft or some other language from the disk into this area. As such, if you don't have a disk drive you're quashed ... it just sits there scrolling "Orangepeel Computer" followed, in rapid succession, by the names of the four guys who own the company that makes the thing.

However, as we found out much to our dismay, even if you do have a disk you may well be quashed. The system, as I have just observed, does not have any ROMs, and, as it happens, some disk controller cards will not run in a system which is ROMless. P.J. Heenan's card, otherwise quite respectable, is lost in such an environment. Many clone cards from the mysterious East don't seem to work either. The only cards which are sure to work are the proper Apple II controllers or exact clones thereof. There is some indication that Orange will release a controller.

The astute observer will, mayhaps, look at the case of the Apple II and then look at the case of the Orange and commence to wondering exactly how all that Apple stuff can fit in such a little box. It's simple; it doesn't. The Orange has been designed using much more modern ... denser ... ICs, and fewer of them, which improve its reliability considerably. However, those of keen orb will also note that the case is rather shorter than that of the Apple, which is to say, shorter than the average Apple peripheral card. One wonders how one can get seven peripheral slots in to such a thing.

Well, one can't. In fact, the system only has three. They are set on a daughterboard that plugs into momma and puts the slots horizontally along one side of the case. The cards can be accessed by unbolting and de-velcroing a side panel. There are slots out the back to allow cables to exit the box.

This strikes me as a supreme pain for real peripheral card honchos ... and, with the low cost of these cards it's easy to become one. The lowest slot is permanently filled by the drive controller, leaving two blank ones. Add a Z-80 card and perhaps a printer interface and that's all she wrote. Swapping cards around a lot is not particularly convenient; you must either leave the side panel off or keep

fighting with the velcro.

There is fairly little to say about the documentation; what we got was a handful of photocopied pages. If you are sufficiently clever to be able to make sense of these you can probably figure out the computer for yourself. However, they were amusing in places and, we understand, proper documentation is due out shortly. Why do people always write the books last?

The Squeeze

The Orange is probably not a real hacker type hobbyist system. It is quite well suited for applications wherein one wants to use the system for something specific ... word processing, order entry, etc. In this sort of trip there is relatively little requirement for a large array of cards, and, usually, you aren't up for getting really low cost accessories; you can buy a drive card that you can be sure will run in it.

It's probably a fairly good choice if you are interested in a computer solely to write programs on ... there are a few other assembled systems available for its price. It would be a great box for schools, being much less easily pried open than a traditional Apple.

The system has the distinct advantage of its being built in Canada; if it commits smokey suicide one fine afternoon you don't have to ring up the sunny South to try to get a spare fuse. It's actually beginning to get a pretty good dealer network happening, so getting support for it probably won't be a problem. Overall, its construction is very sturdy, and it should take fairly kindly to strenuous work. Its detachable keyboard lends it to all sorts of applications where one does not want to have the system exposed to the real world.

Another distinct advantage in the Orange is that it does not fall into any of the ROM legality hassles. Thus, one can expect its creators to be around even if a future legal dar-game spells doom for the firmware banditos.

If you are considering the purchase of a fruit you should at least try an Orange. It has a lot to be said for it ... and some failings, as is the case with most systems.

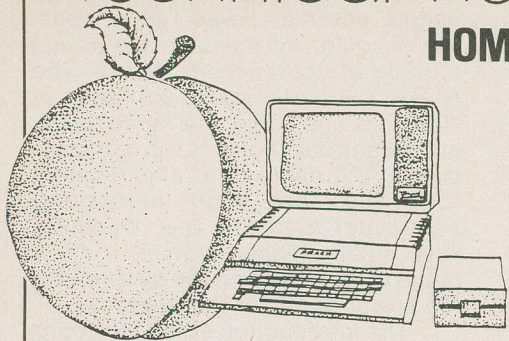
One thing you can't deny, though ... those orange keys are a freak out.

The Orange is available from Altair Electronics, 660 Progress Avenue, Kingston, Ontario K7M 4W9, 1-(613)-384-3876 for \$790.00 plus provincial graft for Ontario residents.

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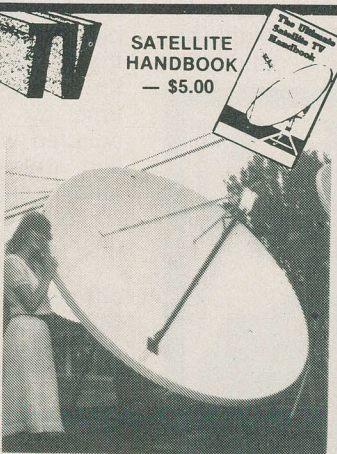
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