



cassette currently in use transfers data at around 300 bits per second — this one goes at 6,000. It uses the superior hub drive technique rather than capstan and pinch roller; and instead of using audio tones it stores data on to neat dictation-type mini-cassettes by means of phase-encoding (which is basically the same highly superior technique that floppies use).

Depending on the form of sectoring use, mini-cassettes will hold up to 64k bytes per side and they cost about £15 for a box of six. The time taken to spool to a file is typically 20 seconds; the absolute worst case figure (end of end stuff) is 95 seconds. The recorder has its own RAM and doesn't use up any of Vic's.

We'll be reporting on this machine in a future issue. Meanwhile for anyone who can't wait it's available off the shelf from Currah Computer Components of Hartlepool. And yes we know how we spelt 'Computer' — that's how their name goes.

## Modem magic

Back in the States, Commodore has announced a \$100 modem for Vic. This will allow Vics to send and receive over phone lines. You'll need a bit of special software, but basically it's good news — a modem is a little black box that converts the computer's signals into those used by the telephone system, and vice versa; and \$100 is definitely cheap for a modem.

On such a device you can talk to other Vic owners (at the prevailing phone bill rates, naturally). You could also dial up information services, like the kind of 'bulletin boards' and 'electronic mailboxes' that have mushroomed in the States — or like CompuServe and The Source, which are the two commercial databanks mentioned in Commodore's official unveiling of the modem (well, the modem wasn't actually in view: it was just the news that was unveiled. Hmm. In view of the somewhat disappointing history of Commodore's withdrawn Pet modem, maybe a degree of scepticism is in order).

The US announcement also had an aside about a projected VicNet from Commodore as its own version of this kind of service. We'll believe that when we see it.

As for the modem, there's a chance that Europe might see it next year — once the production hiccups are cured and once everyone in America and Japan has bought one. By then the liberalisation of British Telecom could well have meant that several low-cost Vic-compatible modems are already available from independents.

# Eye on Commodore

By Dennis Jarrett

Commodore managed to cause a stir or two late in January at the Las Vegas Consumer Electronics Show with three products that we hope to get at during our trip to the Hanover Fair.

They include the long-expected 40-column 16k Super Vic. That'll be on sale in the States this Summer, says Commodore, and the price will give US buyers five cents change from \$400. Lightning currency conversion will tell you that this must surely translate into a UK price of between £220 and £270 depending on prevailing exchange rates and the transatlantic mark-up.

On the other hand, Commodore's PR people here put out one of those press releases which quoted the US announcements verbatim and finished off with an "on the other hand ..." tailpiece obviously contributed by Slough-based marketing people.

In this case the afterword piously mentioned "the work required to finalise PAL versions" and the anticipation that "worldwide needs will exceed production capabilities in the short term" (which means the rest of the world will get the Super Vic before we do). For those reasons, intones the press release, the new products won't be seen in Europe until Christmas at the earliest — and probably not until 1983.

That, of course, will give them a chance to sell as many 22-column Vics as they can during 1982.

The two other products are obviously regarded as more important by Commodore's American HQ for Galactic Marketing (K Spencer prop.) since they broaden the company's product line into new areas. One is the Ultimax, a real 'home entertainments' machine that will retail at \$149.95. This gives very high-resolution graphics for games, but it also has a clever slip-on second keyboard (they're membrane touch panels as used by Sinclair) that provides for musical keys.

With characteristic modesty and delicacy of touch the press release says the second keyboard "permits the Ultimax to function as a miniaturised musical instrument which duplicates with amazing simplicity the musical notes and sounds of a piano, harpsichord, clarinet or any one of several other musical instruments".

Well, there could well be a market for a really cheap synthesiser — if it plays chords: if it plugs into an audio amplifier: and if it's any good.

The other announcement is the Commodore 64, obviously the long-overdue replacement for the 40-column Pet: it too is a 40-column

micro, but you get 64k RAM (clever name, isn't it) and you also have full colour.

As well as that there's music, graphics, joysticks, a serial bus, and an RS232 interface. "The world's lowest-priced microcomputer with 64k" trumpets the US press handout, pointing gleefully at the Atari 800 and the ageing Apple II. All three are full-colour 40-column computers, but the Commodore 64 has more memory — the Apple II gets only 48k into the cabinet, the Atari 800 stops at 16k.

What's more, it will be a lot less expensive too. At \$595 the Commodore 64 will be a third cheaper than the Atari and less than half the price of the Apple ... assuming no price wars get started to distort those claims.

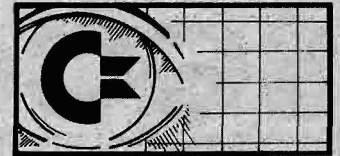
That's actually not unlikely. Apple must be interested in moving up-market with its Apple III, now starting to sell at last, and the forthcoming 16-bit machines: so a bit of stock-clearing on the Apple II isn't out of the question. Atari's machine is not all that youthful, either, and a replacement is rumoured for later this year: you can't believe all you hear, but there might be some discounts going there too.

The trade and business press fell overboard for one of the more throw-away lines in the promotion for the Commodore 64. There was some talk of a CP/M option, a comment which can be taken with a truckload of salt as far as the early production models are concerned: the processor Commodore is using is the 6510, a technology upgrade of the trusty 6502, and for CP/M you really need a Z-80 or 8080 derivative.

Of course you do it by running a kind of slave processor as a peripheral. That's what happens with Apple (the Soft-card option is a plug-in PCB containing a Z-80 and running CP/M and with the Pet (Small Systems' Engineering give you CP/M by plugging in a box containing it and a processor). In Commodore's case it sounds as though the Commodore 64 will have a CP/M processor in a plug-in cartridge, rather like the Vic's expansion port cartridges.

All that sounds technically quite feasible, and in marketing terms it sounds quite likely too. That way a single machine costing say \$1,000 (\$595 for the Commodore 64, about \$400 for the CP/M addition, say \$600 for a disk drive, plus a \$400 printer) would be able to run all the software developed for Vics, for 40-column Pets, and for CP/M. Sounds good?

Well, yes and no. So much of the 'standard' CP/M software comes only



in specific disk formats. So either Commodore will have to start using someone else's disk formats (not likely): or you'll have to get your CP/M programs by down-line loading from a CP/M machine, by direct cable connection or via the phone links (possible but difficult): or someone will have to start putting CP/M programs on to Commodore-compatible disks.

Then there's the next step, the 'all-purpose microcomputer' that so entranced journalists on (among others) The Wall Street Journal, the Guardian, The Financial Times, and Computing. If all the reported interviews with Commodore bigwigs are to be believed, Commodore is on the verge of bringing out dozens of plug-in emulator models — so that the Commodore 64 (and its progeny, of which there are said to be many in embryo form) can run programs not just from the CP/M stable but also from other environments.

In theory this is feasible. You get hold of the processor that IBM is using in the Personal Computer, copy the thing's operating system, and package it as a ROM-plus-microprocessor cartridge which enables your computer to run IBM's programs as well as your own. Or rather, instead of your own: you'll probably have to switch between 'IBM' mode and 'Commodore' operation, such that data files couldn't normally be accessible to both.

Great. Except that it's only easy for CP/M systems. That's because Digital Research, who wrote and own the CP/M operating system, will sell it to anyone with the money to buy. There seems very little chance of Commodore getting at the Apple III operating system or the IBM DOS or even Tandy's TRS-DOS without a few patents being infringed.

The other problem is the 'so what?' factor. By the time you've added all those trailing leads and extra hardware and other stuff to a Commodore machine, you might have been tempted to buy the neat wholesome 'real' computer from the 'real' vendor — who at least will be keen to supply decent manuals and grade A support. So who's going to try to save a few pounds on that?

Not me, and no mistake. A cheapish plug-in CP/M cartridge I'll buy, because there is indeed a great deal of excellent software available in package form at quite modest prices for CP/M. But I'm not sure there's anything in the Apple or TRS-80 catalogues that I want so desperately: and as for the IBM Personal Computer, I think I'd rather pay the premium to get the promise of IBM quality.