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BITS & BYTES

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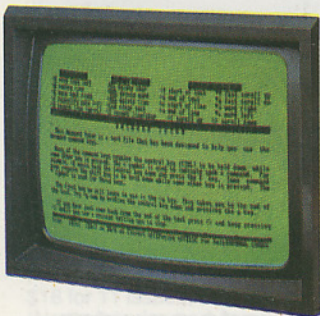
The Entertaining CPC6128

With over 300 colourful games already available covering everything from advanced flight and combat simulation to slick examples of all the arcade classics, the CPC6128 has an unfair advantage over its competitors.

There's shoot-outs, adventures, brain teasers, card games, 'simulations' — enough to keep the most agile and inquisitive minds busy indefinitely. As part of the CPC6128 package you will also receive CPM plus, GSX and Dr Logo, the world famous teaching and graphics language that introduces the concepts and ideas behind writing computer programs.

High Performance-Low Cost

The one thing you won't need a computer to work out is that the Amstrad CPC6128 represents outstanding value for money. You only have to check the cost of buying all the elements separately, 128K RAM computer, disc drive and monitor to realise that the Amstrad package is very hard to beat.



Wordprocessing and Amword can improve the productivity of everyone from unskilled typist to trained secretary.

An Expanding System

There is a complete range of peripherals available to CPC6128 which plug into built in interfaces. These include a joystick and printers. The Centronics compatible parallel printer interface connects to a vast range of printers, from low cost dot matrix through to daisywheel printers giving superb print quality.

The expansion connector at the rear of the CPC6128 contains all the signals necessary to implement a wide range of add-on peripherals. Modems, light pens, speech synthesizers and serial interfaces are amongst products already available or in development by either Amstrad or independent vendors.

Compatibility

The Amstrad Serial Interface (RS232C) is much more than just a complete means of connecting serial printers and modems. It's a complete extension and expansion system that incorporates its own ROM software to emulate terminals so that your CPC system can work in conjunction with mini and microframe computer systems.

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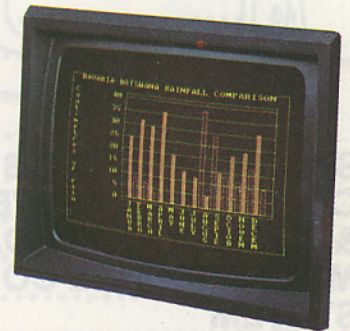
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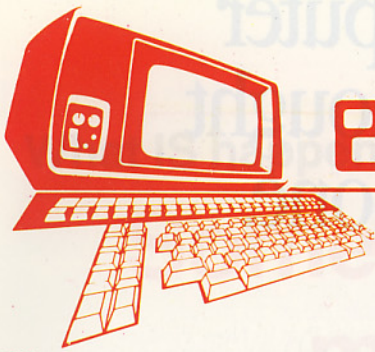
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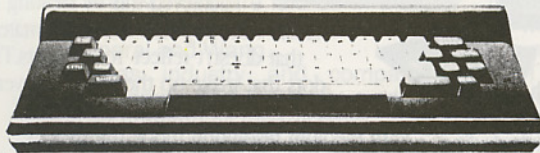
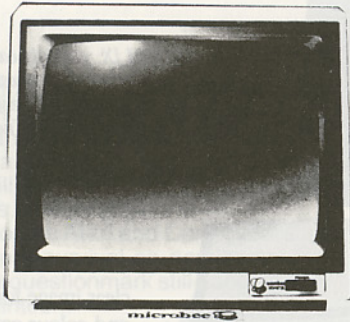
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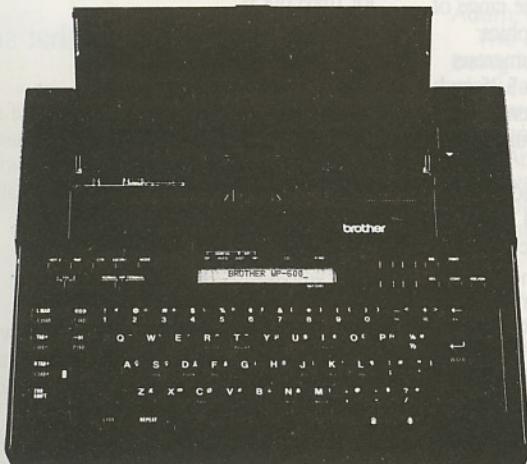
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The new IBM JX is not only easy enough to be your first small business computer — but powerful enough to be the only one you may

ever need.

It's designed to grow with you with standard interfaces that enable it to accept a wide variety of add-ons — including future technology yet to be realised. You can grow memory — up to 512KB. Add data communications capability and create an economical cluster of JX's with an IBM PC XT or PC AT.

It's also easy to attach any of a wide range of printers for correspondence or graphics.

And because the IBM JX has numerous ports and interfaces, you can add a 5.25 inch PC-compatible disk drive, a light pen, joysticks or a mouse to help you control your cursor on the JX screen.

Most importantly, you can be confident that because this computer comes from IBM it will adapt to your needs as they change and grow.

New 3.5 inch diskettes

The JX is the first IBM computer to use the advanced new 3.5 inch diskettes — hailed as the storage medium of the future. They may be only one third the size of a conventional diskette, but they hold the same amount of data.

And just as important, the diskette itself is protected inside a rigid plastic case, safe from dust, scratches and fingerprints.

High-Resolution, 16 colour display — standard

The IBM JX monitor provides a bright,

clear image for both text and colour graphics. IBM achieved this by treating the screen with a special non-glare material that doesn't reflect room lights. The dots that make up the image are very small, so the resolution is very clear.

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Choose the keyboard that suits you

The IBM JX offers you the choice of two precision-touch keyboards. They both use the proven IBM Selectric typewriter layout to help make typing quicker and more comfortable; both have an infra-red remote option.

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What IS happening in the US?

Somebody should make a movie about it ...

From Paul Crooks in San Francisco

For drama, tension, suffering and farce, Hollywood has nothing on the American personal computer industry.

Drama as sales slump, unsold computers fill warehouses and price cutting abounds.

Tension as Atari and Commodore pin their future survival on new computers — and a questionmark still hanging over the Macintosh.

Suffering as profits plunge (including IBM's) and workers are laid-off in their thousands at companies like Apple, Data General and Wang.

Farce as industry and company infighting grows and the grey market carries on bending all the rules.

So why has the PC industry plot twisted so dramatically — from soaring sales a year ago to a death today (indices compiled by research firm InforCorp, from reports by 300 dealers, now stand at 91 for dollar PC sales and 90 for unit sales compared to 135 and 130 a year ago).

I was given a dozen reasons during my stay in San Francisco in the heart of the PC industry in America.

Reasons that range from ones the industry can live with, like: "It's a natural process of self-correction — too many personal computer manufacturers competing with too many similar products."

Through not so comfortable explanations, like: "Its been caused by arrogance and over-confidence on the part of computer companies".

To the one reason guaranteed to give the whole industry palpitations: "Most of the people that really need computers now own one."

In fact it's more likely to be a combination of all three of the above.

There are too many competitors in the US marketplace.

At the retail level there are a huge number of outlets selling computers.

Most of them belong to large chains ranging from franchise operations like Computerland (with more than 800 outlets) and MicroAge selling business computers, to mass retailers like K Mart and Toys R'Us with thousands of stores that flog off home computers like lollipops (which most of them sell as well).

In between there are a number of independent stores struggling to survive and a growing band of "grey marketers".

The latter usually started out as cut-

price mail order companies but have since opened one or two retail outlets — also specialising in cut-price computer products.

For example an IBM PC with 256K of Ram, twin floppy drives and a monitor generally retails for around US\$2500 in one of the chain stores.

But the "same package" can be purchased for US\$1600 to \$1700 from a grey marketer.

In fact, it is not the same package. The grey marketers only buy the IBM PC case, motherboard and keyboard from IBM. They then add cheaper (usually from Asia) disk drives, monitors and expansion cards to bring the price down.

And if you thought New Zealand has a proliferation of computer brands and models, America is worse as just about every model that has ceased production is still available.

Computers like the IBM PC jr, VIC 20 (now selling for US\$70), the Coleco Adam, and even the Atari 400 (for \$40).

The competition for leading roles is being fought out amongst dozens of US manufacturers (most of whose computers are made in plants overseas), Japanese imports and even Amstrad and Apricot (who are trying to make headway in a market that has traditionally been a graveyard for UK computer companies).

But while, for marketing purposes, their products can be too similar, from the consumer point of view the products can be painfully dissimilar.

Incompatibility still afflicts the industry — evidence of the industry's arrogance.

This has never been more evident than in the area of computer communications. (However one US company, Banyon, has announced a network that it claims is capable of linking all existing computer networks in the world).

To be fair to the industry, the strive for technical innovation does of itself pose compatibility problems.

Do you settle on a standard for 8 bit machines knowing 16 bit and then 32 bit machines offer more advantages?

Or is too much emphasis being placed on hardware innovation and not enough on software innovation (interestingly the software companies have so far been relatively unscathed by the slump). It is recognised that software, in the end, is going to fulfil people's computing needs

and compel them to buy computers.

Ironically, as in those crazy car chase movies, PCs may be forever crashing but new ones always carry on the chase.

Lets look at the leading actors in the industry and the vehicles they are using:

IBM

The death of its PC guru, Philip Estridge, in an air crash, is just one of the fatalities suffered by the PC division of IBM in recent months.

Before that they had to announce the death of the PC jr, and it seems the IBM PC portable has also been quietly dropped in the face of competition from the Compaq portable.

The IBM PC itself has also ceased production and IBM are now selling the XT box (which has a bigger power supply and more expansion slots) with twin floppy drives as its PC.

And while the IBM AT is still selling well, IBM has just recalled a number because of defective chips.

One dealer described the AT as "a constant problem" with up to 50 per cent of units being defective.

As well the AT clones have arrived in force with models from Compaq, IT, Kaypro and Zenith already on sale.

Finally IBM has just been forced to announce that no PC 2 or any other replacement for the PC will be released this year. Apparently all the rumours of an improved PC has hurt sales, including IBM's.

In spite of its problems IBM continues to push into the PC peripherals and software market.

It now sells a range of its own printers and Enhanced Graphics Adaptor (EGA) card for the IBM PC.

But fearing too much dependence on IBM, computer dealers are wary about stocking only IBM products — and also, as one dealer said, "IBM has the worst margins."

Nevertheless customer support remains strong for IBM and while its earnings were down 13 percent in the quarter to June 30, it still remains the market leader.

(Continued 8)

(continued)

Compaq

In its last quarter Compaq announced an 80 per cent increase in sales and a 500 per cent leap in profits, attributed to "excellent user acceptance" of its new AT compatible models.

Compaq already has the satisfaction of beating, at least for the moment, IBM in the portable market.

Its biggest strengths are its large dealer network and the fact that so far it hasn't done anything wrong — being content to improve on what IBM offers but being careful to remain compatible.

Apple

Apple's recent "re-organisation" reduced staff by 20 per cent; the lay-offs including none other than founder Ste-

ven Jobs.

Since then Jobs has been strongly selling his Apple shares and rumours abound about what he is going to do next — including competing with Apple!

Meanwhile the Macintosh continues to be a problem. Research firm Info Corp reports July sales being half the June level. The much heralded Lotus 1,2,3 for the Macintosh, Jazz, is also not selling well — most reviews rate the Microsoft "Excel" spreadsheet package higher.

Nevertheless a large and growing third party hardware and software base (more than 500 programs) for the Mac is now in place — and its hard to imagine the Macintosh disappearing.

Among the upgrades now available is the addition of up to two megabytes of internal RAM. But there is still no word

from Apple on a colour Mac or other expected enhancements.

To encourage sales Apple is offering a \$250.00 rebate to purchasers of the Mac and \$150.00 rebates for the Apple IIe and IIc.

This drops the normal retail price of the Mac down to around US \$1250.00 (compare that to New Zealand prices).

While Apple undoubtedly has problems it should survive — but it may be due to the trusty Apple IIe, as several dealers told me it was still their best seller.

Commodore

Expected to announce a huge US\$80m loss in its fourth quarter, Commodore is now reported to be "betting the form" on the success of the Amiga.

The Amiga is due to be shipped to dealers about now and Commodore will put US\$20m into advertising it before Christmas.

A questionmark still hangs over software availability for the Amiga and who exactly it is aimed at, but Commodore's biggest, initial problem is distribution.

In recent years Commodore has relied on mass retailers (similar to the likes of Farmers Trading Co. in N.Z. to sell its computers.

But to sell the more sophisticated computers like the Amiga and the IBM compatible PC-10, Commodore needs specialty computer stores — and many of these stores are less than fond of Commodore after its move to mass retailers.

I visited more than a dozen computer outlets during my stay in a search for the Commodore 128.

Not one of the specialty computer stores sold any Commodore products and the mass retailers who did had never heard of the C128 (mind you, most of them didn't know the name of any of the computers they sold.)

This is in spite of the fact that Commodore is advertising the C128 extensively (list price in the US is \$349.00 which indicates the NZ price could be around NZ \$1000 to \$1200.

While Commodore internationally (including NZ) is still very strong, Commodore US has massive migraines.

Atari

Commodore may be "betting the form" on the Amiga but Jack Tramiel must be betting his own fortune on the Atari 520ST.

The former head of Commodore is firmly in control at his old rival Atari.

But like the Commodore, Atari has distribution headaches. (I couldn't even find the Atari 130XE on sale).

Meanwhile the Atari 8-bit range hasn't been a great seller, to say the least, for some time now.

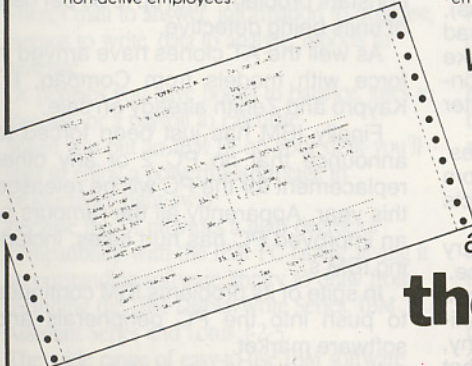
So if the 520ST doesn't go — Atari will. But everyone agrees, if anyone can pull it off, Jack Tramiel can.

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Micros to rave about

from Paul Crooks,
in San Francisco

These are indeed exciting times for the micro world.

For the first time since the arrival of the Macintosh (some 18 months ago) computer writers are raving about not one, but two new computers that have hit the marketplace almost simultaneously.

They are, of course, the Atari 520 ST and the Commodore Amiga — both based on the powerful 16 bit 68000 central processor and using Macintosh-like icons and windows.

The 520 ST arrived in August while the Amiga was not due to reach dealers in the US until the end of September.

Sidestepping factors like distribution, software, and who's going to buy these computers, a look at technically what they offer for your dollar reveals some tempting factors.

The Atari 520 ST with 512k of RAM, a 3½ inch 500k disk drive, a mouse and a colour monitor will sell for US\$999 (with a monochrome monitor for US\$799).

The Commodore Amiga with 512k of RAM, a 3½ inch 880k disk drive, a mouse and a colour monitor will sell for US\$1990 (or US\$1295 without the monitor and only 256k of RAM).

(NZ prices are difficult to gauge but they are likely to be 2.5 to 3 times the US price when we see these computers, which isn't likely until sometime in 1986.)

But the above only gives a brief outline of the power of these computers.

"Popular Computing" said: "It (the Amiga) provides phenomenal colour, graphics, animation, sound and multi-tasking capabilities".

While "Personal Computer World" stated: "There can be no doubt the Atari 520 ST is a very impressive machine.

From a technical view-point the machine seems to have everything going for it — good keyboard, lots of I/O facilities, lots of RAM...".

Considering the power of these machines, their prices are extremely competitive and in the case of the 520 ST almost unbelievable (Tramiel has lived up to his "power without the price" slogan).

At double the price, is the Amiga going to sell against the 520 ST?

No predictions yet, as I haven't seen the Amiga and saw the 520 ST only briefly, but stay tuned to Bits & Bytes for more details.



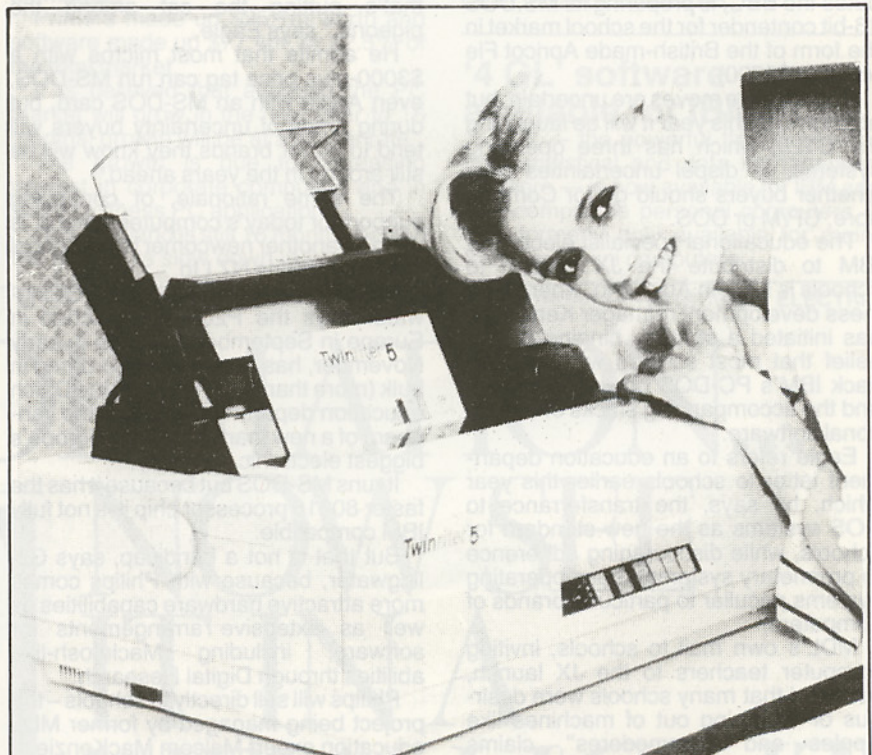
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Big Boys move into schools

By Steven Searle

The launch of the IBM JX last month and Philips' P2000V this month has stirred IBM look-alikes and others already active in the school micro market to run harder for new business.

Apple, for example, has dropped the price of its IIe starter pack to \$1995 (from \$2600, with single floppy drive).

And Barson Computers, which distributes the BBC, is preparing its MS-DOS 16-bit contender for the school market in the form of the British-made Apricot Fle (costing \$2700).

Commodore moves are uncertain, but at the end of this year it will be launching the C128, which has three operating systems, to dispel uncertainties over whether buyers should go for Commodore, CP/M or DOS.

The educational specialist elected by IBM to distribute the JX system to schools is MDL in Auckland, where business development manager Ken Eagle has initiated a strategy hinging on the belief that most schools will prefer to back IBM's PC-DOS operating system and the accompanying stacks of educational software.

Eagle refers to an education department letter to schools earlier this year which, he says, the transferrance to DOS systems as the new standard for schools, while discouraging adherence to proprietary systems (those operating systems peculiar to particular brands of computers).

MDL's own mail to schools, inviting computer teachers to the JX launch, revealed that many schools were desirous of "stepping out of machines like Apples and Commodores", claims Eagle.

The reason, says Eagle, is that there are two de facto standards for most computer-users, MS-DOS and CP/M, but only the former is used extensively in commercial (post school) environments.

"And also there is an increasing range of CAL and CAI (computer aided learning, instruction) in MS-DOS software."

The other key is the cost of computer systems while no government funding is available for computer purchases by schools, excepting a 10 percent tax exemption.

The MDL roadshow, of a JX network of 10 discless terminals and a hard-disc driver, will present both features — software standards and prices competitive with other school systems.

The teachers will also be offered, for eight weeks from October 7, a discount on a JX for their personal use.

Similar cost

A 10 terminal system, says Eagle, will cost a school about \$20,000, depending on the driver's configuration, which can run up to a 21 megabyte hard disc option.

He claims the 10 terminal IBM system, driven by a dual-floppy driver, costs no more than the BBC system: "IBM is in the unusual position of being cheaper than other valid options for schools, and that's putting the cat among the pigeons," says Eagle.

He admits that most micros with a \$3000-plus price tag can run MS-DOS, even Apple with an MS-DOS card, but during times of uncertainty buyers will tend to go for brands they know will be still around in the years ahead.

The same rationale, of continuing support for today's computer options, is used by another newcomer to the school market — Philips NZ Ltd.

Philips product manager Paul Gillingwater says the P2000V, launched in Europe in September and here in early November, has already been ordered in bulk (more than 6000 units) by the Dutch education department and is at the vanguard of a new market push by Europe's biggest electronic company.

It runs MS-DOS but because it has the faster 80816 processor chip it is not fully IBM compatible.

But that is not a handicap, says Gillingwater, because with Philips comes more attractive hardware capabilities as well as extensive arrangements for software, including Macintosh-like abilities through Digital Research.

Philips will sell directly to schools — the project being managed by former MDL education expert Malcom MacKenzie.

Gillingwater makes a similar claim to MDL's Eagle that pre-release response from schools had been positive.

At time of publication there was no price set for the P2000V.

The IBM JX has a retail price of \$2805 for the discless terminals and the cheapest (64 K ram) single drive version is \$3841.

IBM in Wellington has refuted Australian-sourced rumours that the JX is no longer in production in Japan, and added that the JX was also being launched in Australia, Hong Kong and Singapore.

The JX has not yet been seen in the UK, Europe or the US.

It would appear that in the local school markets both IBM and Philips have to climb over the same hurdle that other brands have overcome — a universal acceptance among teachers that at last

they have an options on which to build a curriculum that will endure for longer than the market life of any particular machine.

Existing school suppliers like Barsons claim the advantage of already having the selection of courseware that teachers in this country need.

And to back that point Barsons Acorn product manager Joe Joyce refers to his company's biggest sale yet of BBCs, a 19-terminal hard-disc driven network to Otago University, in August.

"There is no point in installing a computer without the courseware, and for that reason I believe few schools are willing to spend heavily on MS-DOS systems," says Joyce. The Fle, he says, is better together at tertiary institutes.

So far, he says, there are about 75 BBC networks installed in NZ schools, and a number of stand-alones in primary schools.

New software rights

Commodore Computer (NZ) Ltd is now the manufacturing agent here for Precision Software Ltd, a leading UK software company.

Dick Anderson, managing director of Commodore, sees this as "a real coup — we are the only company in the world to be entrusted with manufacturing rights for Precision products, including such popular packages as Superbase 64 along and new releases such as Superscript and Supertype".

"This will enable these products to retail in New Zealand with savings of up to 40% compared to fully imported products."

Superscript and Supertype are both targetted at Commodore 64 home computers.

Superscript offers a combination of word processor, spelling checker (with a 30,000 word expandable dictionary), fully integrated 5 function calculator and mailshot facility. It includes an audio learning course.

Supertype is a keyboard training package.

NCR unveils PC6

NCR Corporation has released a modular 16-bit IBM-compatible personal computer that processes information up to 38 percent faster than competing models in its class. The PC6, using Intel's 8088-2 microprocessor, is expected to compete with the IBM PC/XT. It can be configured with 40 megabytes of hard disc, 10Mbyte streaming tape and a floppy disc drive.

Microcomputer market grew 120% last year

According to a computer market report from Arthur Hoby & Associates, the number of PCs in NZ has grown 120.7% since April 1984. This amounts to an installed base of 15,500 p.c.'s.

The total New Zealand computer market, including mainframes and mini's in the year to April, and including hardware and software, was valued at \$629m — an increase of 49.9%.

It is forecast that there will be a 38.6% increase to an annual value in 1986 of \$873m.

Personal computers make up 19.3% of the total market with a value of \$121.5m worth of business.

It is predicted that the P.C. market will be worth \$95.9m in 1985-86 — 78.9% growth, bringing the total installed base to \$216.4m.

In the mainframe market (\$500,000 plus) IBM is a clear market leader followed by Burroughs, ICL, NCR and DEC.

In the mini computer market (\$50-\$500,000) Burroughs lead, followed closely by DEC, IBM, Wang and others.

In the PC market, IBM is in front.

Corporate use of PCs has jumped in the past year with 47.9% of organisations using PCs in 1985 compared with only 21.7% in 1984. The discovery of the utility of PCs in the corporate environment will be a major factor in maintaining the buoyancy in the PC market in NZ.

In this situation, 51% of PCs are used as stand-alone, and 38% are linked (networked) to other PCs. Their predominant uses are for spreadsheets, modelling, wordprocessing and accounting.

The value of the peripheral market was \$36.3m, or 5.8% of the total computer market.

Printers made up \$25.1m worth and software made up \$77.4m, or 12.5% of the total market.

It is believed that although the PC market will grow in the next year to 18 months, growth will be at a slower rate.

The growth is due to increasing interest in corporate computing and in small business PC applications.

New Zealand is still 18 months behind the U.S. in its slow down in both corpo-

rate use of PCs and small business use. So the problems affecting the US computer market are not likely to hit NZ for 18 months or so.

NEC gifts

Scollay Computers has given five NEC APCIII micro computers to Victoria University of Wellington.

The systems, complete with colour screens, additional disk drives and a full complement of memory will be used in teaching communications topics associated with the Sir David Beattie Chair in Communications.

'4 GL' software available for IBM PCs

SAS — the powerful 'fourth generation' statistical and data management software — is now available for IBM and IBM-compatible personal computers. It was formerly only available for mainframe and mini computers.

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Verbatim. 

The flight of Microbee

By Steven Searle

Microbee is a low-cost 8-bit computer designed for classroom use and, because of its Australian origins, has found wide favour in the Australian school market.

According to its maker, Applied Technology, Microbee has fairly stung the other "school micros", like Apple, BBC and (in Australia) IBM, by grabbing 40% of the school market since its launch less than four years ago.

The next question then is, why hasn't Microbee made a similar penetration into New Zealand schools — a Department of Education survey almost a year ago revealed that in our schools there were less than 60 Microbees installed?

By comparison, there were almost 400 Apples in New Zealand primary, intermediate and area (F1-7) schools.

The answer could have something to do with the fact that only now is Applied Technology attempting to establish a more determined presence here — a NZ subsidiary is being formed, and new premises are being adapted in Auckland's Avondale to function as an administra-

tive base, servicing centre and computer school.

The general manager of Microbee Systems NZ Ltd, Shane McKeown, an Australian, says the machine will have stronger support than previously, and that local users will gain direct benefits from a user base in Australia of more than 500,000 students.

In Sydney alone, he says, Microbees are used in more than 4000 schools, and educational software relevant to NZ classrooms was rapidly increasing.

Teacher groups

To endorse that optimism McKeown refers to a software catalogue produced by Primug, a NSW primary school teachers Microbee users group, and also to a software review journal published regularly by the Western Australia education department.

One example in the NSW teachers' catalogue is a database called Birds of Antarctica consisting of a file of 636

records with 24 major fields in each — an information retrieval programme designed to identify ecological resources.

The W.A. department journal pulls no punches in its rating of software deemed to be educational software support.

It concluded there had been a less dramatic increase of software for the Microbee, compared to the BBC and its "courseware" coming from UK schools, but that "with Microbee being installed in Australian schools in increasing numbers, it seems only a matter of time before the software needs (for teachers with Microbees) will be satisfied".

McKeown says Microbee is on education department contracts in all but two of the Australian states (South Australia and Tasmania) — the state support for selected machines varying from purchase subsidies to a software review service as in Western Australia.

Interestingly the W.A. education department finds Microbee having an advantage because it uses the CP/M operating system and its yield of prog-

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The logo features the '3M' brand name in a large, bold, sans-serif font, with the word 'diskettes' written in a smaller, lowercase font directly beneath it. The entire logo is contained within a dark, triangular shape that points downwards.

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Hardware Review

rammes such as Wordstar, Multiplan and Turbo Pascal.

Its computer specialists however do not consider CP/M to offer any great benefit in terms of schools developing their own educational packages.

In NZ some educationists concur with the MS-DOS backers' view that CP/M has had its day and is now out-of-date, and irrelevant to the likely computer environments into which school-leavers will graduate.

McKeown, however, sees the primary needs of schools being computers having "a wealth of software", large memory storage, ease of use, efficient networking, and low cost.

Regarding CP/M being considered almost obsolete, he claims that from the current user base in Australia, and Sweden, the list of educational software will lengthen dramatically, and that any programme would be available for a trial in a NZ classroom within two or three days of ordering.

Software reviews

Teachers already conversant with computers in the classroom will look at such long lists more objectively than first-time buyers and will measure the educational value of "software availability" qualitatively rather than in terms of quantity.

McKeown acknowledges this increasing concern among teachers that the streams of software are turning into rivers, requiring more time to evaluate.

He refers to a feature last month in Australia's National Times newspaper which reported that "educational software is a new field and the quality often poor, judging by teachers' complaints. Even the English used is flat and colourless. Yet third-rate material is being gobbled up".

One of the significant values in being on state contract supply lists was the Microbee software being among those evaluated independently by educationists in the state education departments, says McKeown.

The Swedish connection is another reason for some schools to look again at the Microbee — the Swedish education department selecting the Australian supplier from amongst several big-name tenders.

Two key factors, says McKeown, were Microbee's price-per-performance and the willingness of Applied Technology to adapt systems to schools' needs.

The starter machine is a PC85 — with built-in ROM-based word-processing, Basic calculator, telecommunications, self-test, machine code monitor, help ROM, and menu programme — costing \$695 retail, and 22% less for school buyers. More ROM can be added.

Niceties include a high resolution screen; annoyances are the lack of cursor-arrow keys and intrusive sound volume being nonadjustable unless a volume knob is added by AT.

The cost-effectiveness is in linking up to 16 of these (without degrading performance) in a Beenet to a 64 K Microbee with a 400 K 3.5-inch single disc drive (\$1350 retail) and an added second drive (\$475). An option was the 128K Microbee with a dual drive.

At high schools the usual configuration was a Starnet having the 64K Microbees all linked directly to a central processor (or driver) rather than linked like the PC85s in a daisy-chain manner.

The Starnet, developed two years ago for the Swedish tender, runs off a master unit, usually the 128 K machine with a floppy and 10 Meg hard disc drive.

It includes "write permission" controls to prevent unauthorised access to data, and the configuration enables various individual and concurrent uses of terminals.

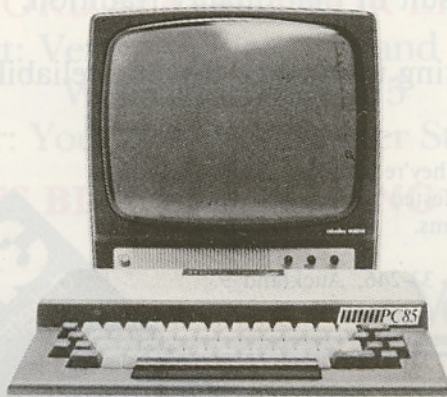
McKeown says Starnet is roughly half the price of similar networks having comparable performance abilities.

He says Beenet's main competitor would be the BBC system, but there was "a considerable price difference".

A relaunch

To relaunch the Microbee here McKeown has organised the Auckland base and an "educational support consultant" to be based in Wellington, and intends to organise regional consultancies geographically based on the education boards' regions.

"We are steering clear of salesmen. This type of machinery has to be presented by either educationists or people who can relate easily to the school-computer environment".



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World Wise	4314	Bridge It	4374	Subterranean Striker	4518	Nominal Ledger	4459
Animal, Vegetable, Mineral	4315	Fruit Machine	4375	Lords Of Midnight	4519	Mastercalc	4460
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Happy Writing	4317	Loopy Laundry	4377	Xaxon	4521	Invostat	4466
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Roland In Time	4363	Gate Crasher	4637	Micro Pen	4449	Stock Control/Invoicing/Cash Sale	4704
Space Hawks	4364	Pitmans Typing Tutor	4638	Microspread	4450	Job Costing/Stock Control/Invoicing	4705
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MICRO COMPUTER SUMMARY

Name:	Microbee
Manufacturer:	Applied Technology
Microprocessor:	Z80A
Clock speed:	3.375 Mhz
RAM:	64 to 128k 4k video ram
ROM	80k on PC85 8k firmware, 4k character set
Input/Output:	Programmable 8 bit in/out parallel part, programmable RS232 part, cassette interface, direct video.
Keyboard:	60 key full-size query, full travel.
Display:	80 x 24, 64 x 16 characters, upper/lower case.
Graphics:	Resolution to 512 x 526 pixels.
Sound:	Programmable sound generator
Disc:	3.5-inch 400k single/dual floppies. 10 megabyte hard discs.
Operating system	CP/M 2.2
Languages	CP/M options including Microsoft Basic, Turbo Pascal.
Costs:	PC85 \$870, 64k 1-drive \$1525, 128k 2-drive \$2795 (incl monitor)
Options:	Add-on sound, voice synthesiser. Matrix and daisy wheel printers. Direct dial 300-1275 baud modems.
Ratings:	Documentation 5, Language 5 Expansion 5, value for money 5

Most of Microbee's Australian sales force, he says, are former teachers.

A marketing emphasis will be to give parent-teacher groups, teachers and whole classes of students the opportunity to have hands-on lectures on Microbee applications.

This approach had long-term advantages: Australian schools that had purchased Microbees, says McKeown, tended to stay with the brand, even when upgrading a school's computer facilities.

Meanwhile Applied Technology has slipped that it intends to float shares in the company before the year's end and "go public". The normal reason for such a move is to raise money in the form of extra share capital.

Why does Microbee need extra funding?

McKeown is tight-lipped, only admitting that the company is endeavouring to develop "new products to meet ongoing demands".

To an outsider it seems Microbee could be attempting to find a pathway into a more up-to-date operating system — without excluding all that CP/M software from access to enhanced machinery.

Like Commodore with its C128 and Amstrad with its 6128, perhaps the way ahead for Microbee is to develop a computer having triple, or at least dual, operating systems.

Portable Power!

From Paul Crooks

At last! I've discovered a portable computer that is both truly portable and functional.

"Portable" computers until now have either been too cumbersome to fit my idea of portable, or, if the size is right, they have lacked important features needed to be useful.

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The Zenith 171 is about the size of a foolscap sheet of paper and weighs just 6.5 kilograms, but check the features it packs in:

- * 256k RAM (expandable to one megabyte)
- * Twin 5 1/4 inch 360k floppy drives.
- * Full typewriter style keyboard plus touch sensitive function keys.
- * Backlit 80 column by 25 line LCD screen (more on that in a minute).
- * Serial (RS 232) and parallel (centronics compatible) parts.
- * Fully IBM PC compatible.
- * Built in calculator, phone directory and planner software (plus a calendar, clock and world map!).

Available as optional extras (but in practice would probably be regarded as essential items) are a rechargeable bat-

tery pack, carry case and modem card.

The most significant enhancement of the Zenith 171 (other than bringing all these features together in the one package) is the display.

LCD screens in the past have suffered from being barely readable in some lights. But someone has thought of putting an adjustable coloured light behind the display (hence the term backlit). The difference in screen visibility is staggering.

The price for the basic system is fairly prohibitive at US \$2699.00 (multiply that by three to get a likely NZ price) but a number of other manufacturers are reportedly about to release similar models, so the price should come down with competition.

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X-5265 Lotus 1-2-3	\$1495	\$1295	\$200
X-5267 Microsoft Multiplan	—	\$535	—
X-5268 Microsoft Chart	—	\$675	—
X-5270 Crosstalk Communication Package	\$500	\$475	\$25
X-8650 Microsoft Flight Simulator	\$199	\$149	\$50
X-8749 Turbo Pascal V2.0	\$195	\$145	\$50

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If you're using your computer for word processing, this daisywheel printer will give you a top quality print at a budget price. Prints at a very healthy 18cps, with a choice of 3 pitches. Takes paper up to 330mm wide. Standard Centronics-type interface suits most popular computers.

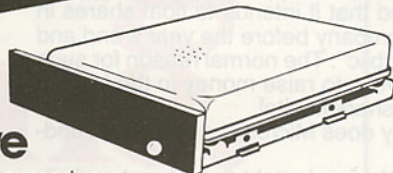


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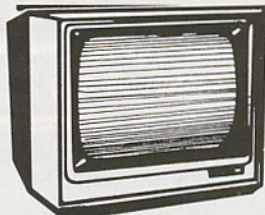
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(Tractor feed optional at extra cost)

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Cat X-5208



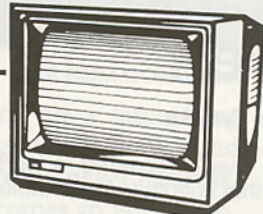
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NZ172

Dick Smith Electronics

COMPUTER CITY



The Brother WP600

A portable word-processor

By John Slane

An interesting and potentially exciting variety of configurations of electronic typewriters is now becoming available.

Last month I reviewed the Juki 2000, which combined a typewriter function with built-in facilities to take computer output and act as a letter quality printer.

I found that unit quite satisfactory generally, but in each of its roles it was something of a compromise. However, its cheapness could make the less satisfactory features quite acceptable to some users on a value for money basis.

I would have to say that the Brother WP600 is another example of compromise but this time at the higher cost of \$1495 — about one and a half times the price of the JUKI. Let's look at what you get for this.

The Brother can act as a conventional electronic typewriter operating in direct mode or auto-line. The operator is assisted by a 24 character display so it is possible to correct errors if you spot them before the line is typed. The display has the bare minimum of features, e.g. a lack of descenders, so 'g' and 'p' have a disconcerting appearance.

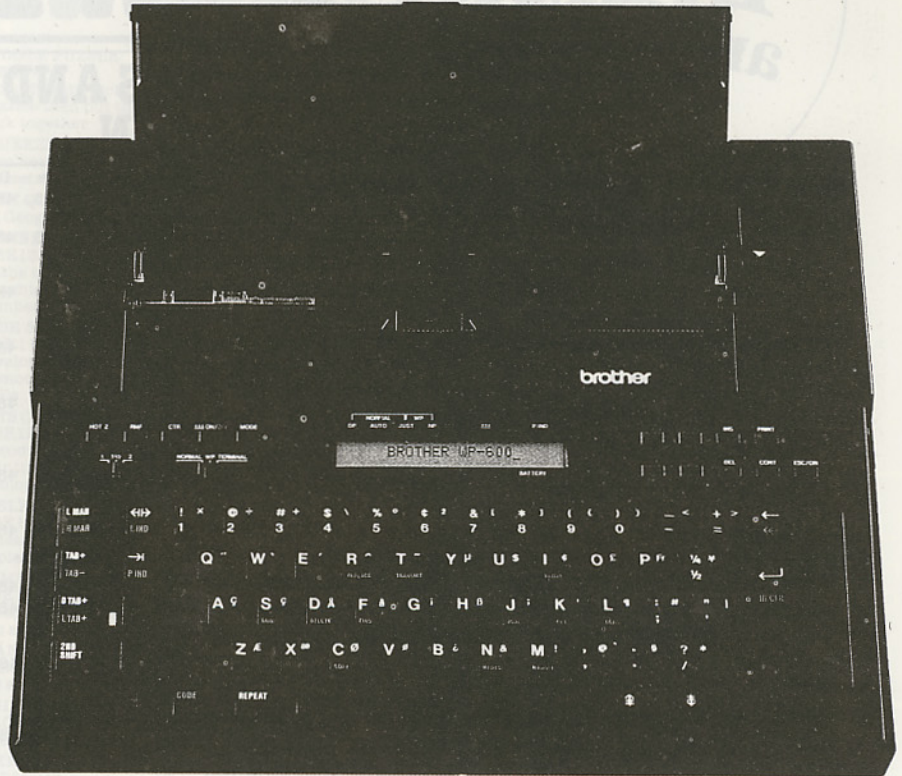
While you are typing, or with the typing switched off altogether, text can be stored in memory in one of nine possible files. From this file text can be recalled and changed by using the little display unit to view the text you have previously created. Most of the usual word processing commands are available for the editing process.

CRTronic WPI V2.5
characters 003352
errors tte 00
pe 00 fe 00

Finally, with the attachment of a suitable interface, the Brother can act as a telephone-coupled terminal and your text can be sent out to another computer or can receive text downline into one of its own files. Of course it can't actually function as a remote terminal until you have purchased or obtained the appropriate modem or serial cable. However, the software for terminal function is an in-built part of the Brother WP600 configuration.

The RS232 port, of course, does enable direct coupling to another computer and only an adjoining cable would be required.

All the above for about \$1500 looks reasonable. Let's see how it shapes up in practice.



...as a typewriter

The unit is a genuine portable. Together with its full-sized keyboard with good touch keys, the total unit is compact and light. There is a built in handle for carrying and the typewriter can be operated independently of mains supply using the standard batteries — 6 volts. A battery saving system turns off the unit if it is not used for several minutes. The press of one key reactivates the system at the exact point you left it.

The font is in ROM software as this is a thermal printer using a 24 dot matrix. There is no quibble about the quality of the print. It passes for letter quality. But the font you get, is the font you keep. There is one print style available only.

In common with other thermal printers, the bulky head doesn't make it convenient to target the print exactly where you want it — for example when typing on to a pre-printed form. Long term familiarity with the machine reduces this problem.

Printing is unidirectional and the quoted 10 cps rate allows for the dead time as the print head travels back to the left margin. Tabbing, centering, auto underline, repeat keys, alternate

characters, and right margin justification are all provided for. This is pretty standard now for a basic electronic typewriter.

Thermal printing may be directly on to special thermal paper (which is expensive and flimsy) or on to superfine offset (such as electrostatic copying paper) using a small carbon ribbon cartridge; if the right paper is used for the latter, print quality and density is perfectly satisfactory.

Printing is most expensive, though, in this latter mode. Thermal paper in packs of 250 is over 9 cents per sheet but that is your only cost. Use of the carbon ribbon on cheaper paper runs to about \$1.00 per page for ribbon only, assuming full A4 pages (57 lines by 80 characters and a 40,000 character life for the ribbon).

A fabric ribbon is not an available option for a thermal printhead.

...as a word processor

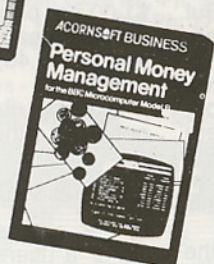
For a user not already familiar with word processing on any other device, the Brother WP600 would probably

(Continued 23)

B.B.C. and Electron users

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LE IN NEW ZEALAND

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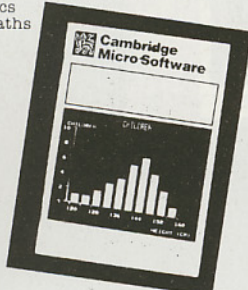
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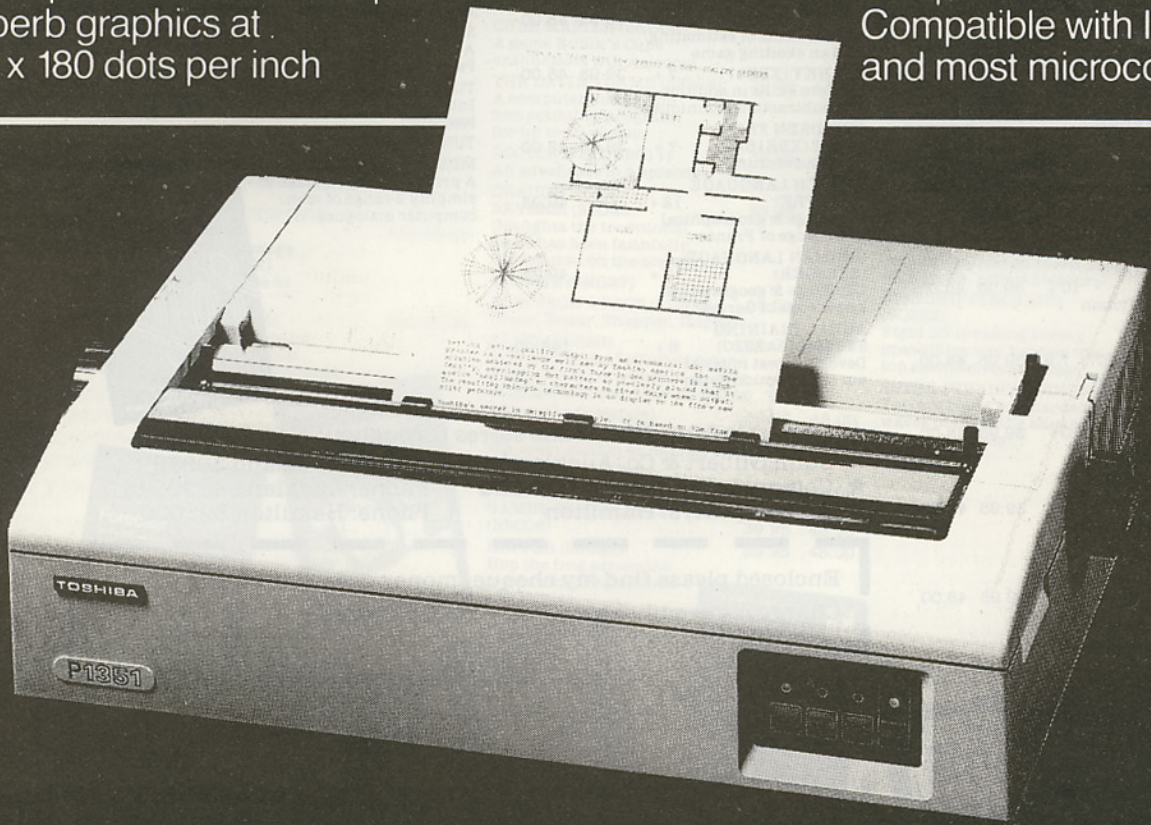
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(continued)

seem brilliant for the facilities it offers. Commands such as insert, delete, find, replace, cursor control of movement through text, and so on are great features to facilitate a polished piece of writing.

However, I suspect that people used to computer-based word processing programs would, like me, find the Brother WP600 version frustrating.

The greatest problem I found when using the Brother WP600 in the word processing mode was the difficulty of viewing the text by using the tiny display unit.

The first three characters of the display give the line number, so there are only 21 character positions to display text.

You can tell when you are looking at the beginning and end of, say, an 80 character line, but there is no way of telling whereabouts you are elsewhere in a line. Using the display only is like trying to read a newspaper by squinting through a drinking straw.

I don't have much to complain about in respect to the word processing commands available. A limited range of commands can still be useful. But when you can't see much text at one time the potential offered by word processing is largely wasted.

Probably the most practical way to use the Brother WP600 word proces-

QL software increasing

Support in the UK for QL is growing among third-party peripheral and software houses.

Five companies are now producing floppy disc systems for the machine, several more with memory expansion systems, hard disc interfaces, communications and terminal emulation products, printers and monitors.

There is even a company developing an interface with a Canon laser printer.

NZ distributor David Reid Data Products Ltd claims the most rapid expansion has been of QL's business software, where leading financial software houses, including Sagesoft and Accounting Software (a division of Quest International) have promoted their business software in conjunction with Sinclair Research.

The quality of games software for the QL also looks promising. Psions three-dimensional QL Chess programme got excellent reports in several UK consumer magazines when it was released earlier this year.

The recently released QL Caverns arcade game seems set to achieve the same result.

Other leisure software titles are currently in the pipeline.

sing facility is to select the "auto" mode which prints out each complete line after you have typed it. At the same time text is being saved to the file you have designated.

By this means you can see all of what you have typed and it is now relatively easy to search for any point where you want to make changes.

Using the above procedure, what is being printed is a throw-away version. It is really a hard copy of the screen on a genuine VDU word processor.

In order to operate in this "hard copy" mode, the word processor has to be working in the automatic justification mode (vertical right hand margin) — a forced choice.

There are other disadvantages. No way was found to number pages from the word processing mode unless the same line spacing is used for each print-out. If there is to be no change then by watching line numbers on the display, the end of page can be calculated and a separate line written for the page number. However, if one wished to print a version as a double spaced draft, then the pagination built into the text would not work.

The "delete" command is unreliable. Sometimes an end-of-line return code can be deleted to wind up the line below. On other occasions this would not work. The instruction manual is unhelpful on this point.

If the left and right margins are set to different values after the original text has been composed, some strange things happen on printout. Short lines that have failed to reformat keep popping up. Again this is evidence of a lack of suitable sophistication in the software.

On the plus side, auto return is actioned within the "hot zone" if a space or a hyphen is entered. The default setting for the hot zone is six characters and this seems to be a good compromise.

No limit was found to the amount of text that can be inserted into one line. The line appears capable of considerable expansion and reformatting is done when printed.

Printing may be started from the beginning of any line in the text, i.e. printing starts from the cursor position.

Finally, the operator doesn't have to worry about saving text. Saving to the memory file is automatic once the file has been opened and this is not destroyed by leaving the file or by switching off the power (provided you have batteries installed).

...using disk memory

For an additional \$700 a mini-disk drive may be plugged into the RS232 socket. Any blank 3 $\frac{1}{2}$ " disk can be used as there is a direct command to initialise or format for the Brother WP600. I was surprised to find that the disk's capacity

is only 100K. I've been used to working with 720K mini-disks.

Even the disk drive is fully portable — four small batteries can provide the necessary 6 volts for operation.

The directory will hold up to 40 eight-character file names, although I found that the names are case sensitive, i.e. if a file name is originally written in capitals it won't be recognised if called for in lower case letters. This is an unusually literal approach and reflects a very low-level approach to programming the operating system.

I had no complaints about the operation of the disk system. An excellent printout of the directory was found very useful.

...as a terminal

No modem was supplied with the review model, so I am unable to report on this. The manual is fairly detailed on terminal operation and there is no reason to expect it wouldn't work as described.

Summary

I found the Brother WP600 an interesting, if sometimes frustrating, system to use.

Regarding its usefulness, if it is to be used for preparation of reports in the field and then transmitted to home base, there isn't much need for a typewriter as well unless it is essential to have hard copy for the author. A conventional procedure for field notes is to use a dictaphone and to get a printed copy after return to base.

If it is thought of mainly as a word processor and printer in one package, then it probably wouldn't be too long before the user grew out of the limited facilities offered in the WR mode. In this respect, a decent sized display unit (multiple lines and full width) would make a great difference.

The basic unit has a memory of about 14K characters. More than enough to hold a review of this length.

The Brother WP600 is another machine which is capable of a variety of roles. The marketplace is all the richer for being able to offer a range of flexible packages at affordable prices.

NOTE: Although I have been critical of some shortcomings I found during the review of the Brother, there is obviously no way it could be outstanding both as a typewriter and as a word processor for only \$1500. The review has tried to identify significant strengths and weaknesses, but it is up to the reader to determine whether the machine has a useful configuration and operating features that make it good value for money with a specific function in mind.

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CDIO21	Fighter Pilot	D 74-75	SDDR031	Scuba Dive	T 30-50	ATERMINAL2	Star Commando	T 45-60	BMIC671	Castle Quest	D 79-60
CDOMARK1	A View To A Kill	T 53-55	SDDR041	Combat Lynx	T 45-60	ATH0011	Submarine Commander	T 49-95	BULT011	Jet Pac	T 43-25
CDJUR11	Combat Lynx	T 44-65	SDDR051	Deathbit	T 48-20	AVIRGIN1	Tank Commander	T 49-95	BULT021	Sabre Wolf	T 53-60
CEGDBR1	Brian Bloodaxe	T 40-8	SEDBBR1	Brian Bloodaxe	T 38-15						
CELA01	Hard Hat Mack	T 55-40	SELI011	Kokotoni Wilf	T 28-75						
CELA11	M.U.L.E.	T 64-09	SELI021	Airwolf	T 34-75						
CELI01	Kokotoni Wilf	T 38-20	SELI021	Dukes Of Hazard	T 34-75						
CELI031	Fall Guy	T 40-10	SELITE3	Frank Bruno's Boxing	T 34-75						
CELI051	Dukes Of Hazard	T 37-50	SFPAK051	B/Packers Guide/Univers	T 29-75						
CELITE1	Frank Bruno's Boxing	T 44-75	SFIREBIRD1	Buggy Blast	T 29-75						
CENG091	Witch Switch	T 44-75	SFIR011	Gyron	T 51-75	VADDICTIV1	Football Manager + 16K	T 28-95	RACC011	Beachhead	T 53-60
CEPYX1	Impossible Mission	T 39-75	SFIRB01	Booly	T 30-60	VANI011	Krazy Kong	T 40-25	RACC021	Raid Over Moscow	T 53-60
CEPYX2	Murder By The Dozen	T 77-50	SGARGOYLE1	Dun Darach	T 49-75	VANI041	Scramble	+ 16K T 40-25	RACC031	Ghostbusters	T 53-60
CEPYX3	Pitstop II	T 49-50	SGL011	Tir Na Nog	T 49-95	VANI051	Bongo	+ 16K T 40-25	RACTIVIS1	Software Star	T 39-95
CFBYK4	Rockaball	T 74-00	SGL021	The Illustator	T 75-05	VANI061	Flight Path 737	+ 16K T 40-25	RALL041	Defend Or Die	T 40-30
CFIR071	Elite	T 55-45	SGREMLIN1	Rocky	T 39-75	VANI101	Mintiron	T 25-75	RALO11	Blagger	T 40-30
CRIR071	Elite	D 94-30	SGREMLIN2	Tinderbox	T 24-95	VANIR0G12	Las Vegas	+ 16K T 24-95	RANIO11	Flight Path 737	T 35-00
CGARGOYLE1	Tir-Na-Nog	T 49-50	SH/MGIBB01	Charlie/Choc. Factory	T 42-50	VANIR0G22	Xeno II	+ 16K T 24-95	RANIO21	House Of Usher	T 35-00
OGI011	The Quill	T 73-85	SH/MGIBB02	Technician Ted	T 48-30	VVAUDIOG13	Super Screen + 8/16K	T 24-95	RARTIC1	Mutant Monty	T 29-95
CHEWSONC01	Grubby's Day Out	T 39-75	SIMW31	Hyper Sports	T 48-30	VVAF001	Cave Fighter	T 29-75	RBG01	Bounty Bob Strikes Back	T 53-60
CLUK011	Rockaball	T 37-50	SIMW41	World Series Baseball	T 33-60	VVAREBIRD1	Flight Zero One Five	T 30-50	RCL1	Rocky Horror Show	T 49-95
CIMAGINE1	World Baseball	T 39-75	SIMW051	Confuzion	T 31-05	VVHAR011	Hareraiser (Prelude)	T 28-95	RDESIGN1	Dark Star	T 41-95
CINCENTV1	Confuzion	T 34-95	SINCC01	Moon Cresta	T 34-75	VVHAR021	Hareraiser (Finale)	T 45-05	RDIGTAL1	Fighter Pilot	T 32-50
CINC02	Moon Cresta	T 30-65	SINCENTV2	Subterranean Striker	T 34-75	VVHAR021	Basic Programming	T 52-50	RDKT03	Minder	T 47-95
CINF001	H/Wikers Guide Galaxy	D 84-95	SINSGHT1	The Bulge	T 48-30	VVHAR021	Basic Programming	T 52-50	RDR022	Combat Lynx	T 43-95
CLEI01	Scrabble	T 73-95	SLOTBU	The K. K. Jump Challenge	T 39-10	VVHAR021	Basic Programming	T 52-50	RDR022	Combat Lynx	T 43-95
CLEI021	Mama Lama	T 39-10	SMAR011	B.J. Superstar	T 39-10	VIMAGINE12	Super Vaders Bomber Run	T 37-95	RELITE1	Frank Bruno's Boxing	T 44-75
CMAR011	E.J. Jump Challenge	T 39-10	SMARTECH3	The Odyssey Of Hope	T 32-85	VKTL011	Wizard And The Princess	T 30-50	RGARGOYLE1	Dun Darach	T 48-95
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CMASSTR1	Skyjet	T 12-95	SMELST1	Stiaron	T 38-55	VVMELO21	Cosmonaut	T 30-50	RINCENTV2	Confuzion	T 34-75
CMEI/HOU19	Way Of Exploding Fist	T 49-50	SMND011	Pyjamaroma	T 29-95	VVVIC011	Chariot Race	T 35-40	RINTERCEP1	Forest At Worlds End	T 29-95
CMEI/HOU29	Way Of Exploding Fist	D 59-95	SMIC031	Project Future	T 34-75	VVVIC011	Hunchback	T 31-95	RINTERCEP2	Jewels Of Babylon	T 29-95
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COAS031	White Lightning	T 87-95	SMIKROGE34	The Wiltons Cauldron	T 24-95	VVQSA071	Space Joust	T 30-50	RMICROG14	Pyjamaroma	T 24-95
COCE131	Baseball World Series	T 39-95	SMIN021	Alien	T 48-40	VVQSA071	Space Joust	T 30-50	RMICROG14	Pyjamaroma	T 24-95
COCEAN18	D.T. Decathlon	T 29-95	SMIPO2	F-15 Strike Eagle	T 53-60	VVQSA071	Space Joust	T 30-50	RMICROG14	Pyjamaroma	T 24-95
COM/REL11	Select 1	T 66-95	SMIRRR0S01	World Games/Mr Men	T 49-75	VVQSA071	Space Joust	T 30-50	RMICROG14	Pyjamaroma	T 24-95
CORIO11	Ultima III	D 105-85	SMND011	Indiana Jones	T 41-05	VVQSA071	Space Joust	T 30-50	RMICROG14	Pyjamaroma	T 24-95
CPPEHEUS1	Squash	T 45-60	SMNSGENER1	White Lightning	T 72-25	VVQSA071	Space Joust	T 30-50	RMICROG14	Pyjamaroma	T 24-95
CPV011	Cauldron	T 38-20	SODAS011	Gift From The Gods	T 49-75	VVQSA071	Space Joust	T 30-50	RMICROG14	Pyjamaroma	T 24-95
CPEA021	Tim Love's Cricket	T 45-60	SOCEAN2	Match Day	T 39-75	VVQSA071	Space Joust	T 30-50	RMICROG14	Pyjamaroma	T 24-95
CP.S.S.1	Theatre Europe	T 49-50	SOCEAN3	Hunchback II	T 37-55	VVQSA071	Space Joust	T 30-50	RMICROG14	Pyjamaroma	T 24-95
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CSDF091	A.L.M.A.Z.Z.										

Managing home accounts *Reviewed by A. Mitchell.*

ELECTRONIC HOME Series by DOT-SOFT supplied for review by Fountain Marketing.

The Consumer magazine in June stated that overseas surveys show that just over a quarter of home computer owners use their systems for home finance and filing.

This series of programmes from Dotsoft are another example of the aids that are available to increase that percentage.

There are six programmes, four of which are inter-related, and they are all designed to help manage your life and finance.

They come on disc and tape, and are just under \$35 and \$30 respectively. A brief run down of each:

Bank Manager: This is designed to help you keep track of your cheque account and is based on cheque numbers.

However with a little thought you could just as easily use it for any type of bank account.

You can define up to 15 groups for whom you write cheques (eg. food, power, rent, software) and two groups from which you receive income (eg. salary, royalties).

You can indicate paid cheques as you wish and thereby have an accurate display of your current financial situation.

Expense Manager: This is really the programme to use if your primary area of financial operation is not a cheque account.

The groupings are the same (ie. 15 groups out and two coming in), but cheque numbers are not required as part of the input data.

Both these programmes have the option to display expenditure and income as block graphs and to save the current information. You can also make hard copies of your information and format a new disc.

Budget: This programme inter-relates to the first two. It uses which ever "Manager" you have to set up a budget using the groupings you have already established.

Having made a budget in advance, when the actual month is past it will then use the financial position in the "Manager" for that month, to tell you whether you have lived at a profit or a loss.

Bill Payer: This is the fourth of the related programmes but I couldn't find out why. It didn't seem to use the "Managers" at all.

Basically this programme is a simplified version of the "Managers".

You load your bills as they arrive and you indicate that they have been paid as you write the cheque.

Again there are block graphic displays

of the comings and goings of your money.

You can also display your financial position by individual bills for a particular month or for the whole year showing total payments for each month.

Diary: This was an interesting little programme. You are able to record items of interest for a month and display them as required. The input asks for a date, and a comment of not more than 15 letters (eg. Anne's birthday.)

You also have to choose one of 6 "types" under which this entry is to be recorded — this I found a little limiting.

The information is recalled by specifying a year and month. This is displayed, with the appropriate days of the week, and you are asked to choose your display "type" (eg. anniversaries).

The days for which you have recorded a comment of this "type" are highlighted on the calendar and pressing Return gives you a display of the dates and comments.

Letter Writer: This is a very simple word processor. I found the responses slow, the commands extremely limited and I cannot recommend this programme at all. There are far superior programmes available in the public sector and I cannot imagine why this programme has been bothered with.

My first reaction to these programmes was one of shock — I could do better myself with a little effort and lot of time.

However when I reflected on my thoughts I realised that I was being a little harsh. These programmes are not designed for the programmer but for the software user.

As such they represent a group that could well be very useful for the person seeking to computerise their home accounts and perhaps even a small self-employed business.

The layout and screen menus are bold and clear, and there are numerous built in error traps for the careless typist.

However, I do have some criticisms.

First the instructions, which are on small one sided pieces of heavy paper. The stated philosophy is "read the instructions, then practise with the programme".

The instructions are just the main menu titles with a sentence or two of elaboration — the main one being "follow all screen prompts". Nowhere were there any instructions on how to load the programmes.

The usual "*, 8 worked but only if the machine was turned on from cold, otherwise it seemed to crash.

I was supplied with demonstration disks so perhaps the market version will be different and have something on the jackets.

Secondly there was quite a delay bet-

ween key press and screen display when input was required. I found this a little annoying especially when deleting something with the INST/DEL key.

Thirdly, and lastly, some of the display screens did not have a title so you did not know whether it was income or expenditure that you were looking at unless you looked at the display itself. Also, in some of these displays the groups previously mentioned are shown by group number rather than their title.

In summary then, these are mostly a good set of programmes for the home user.

As prices go they are good value and their usefulness would depend on the consistency with which they were used. By that I mean that to use them once a month to balance the bank statement would be a waste of time, but used weekly to establish spending patterns they could find a welcome place.

GEM Released

As part of the continuing battle between Microsoft (MS-DOS and PC-DOS) and Digital Research (CP/M, CP/M86 and CP/M68K) the latter have just released GEM, their Graphics Environment Manager.

The first machine to offer this in New Zealand is the ACT Apricot, for which GEM is set to become a bundled standard. GEM offers a menu-and-icon driven shell designed on lines of the Macintosh and Lisa computers. Apart from Apricots GEM will eventually be available on IBM-PC systems and other 8088/8086 machines. It is also rumoured to have been ported across to the 68000 chip for use by the new Atari machines, amongst others.

Digital Research offer the shell alone and a range of standard applications running under GEM (word-processing, sketching, drawing and spreadsheets). GEM supports colour and a mouse and requires a 256k machine to run, although 512k is recommended. Normally the shell uses about 70k of RAM but when standard applications such as Lotus are loaded GEM is backlined, leaving just a 1k module which reactivates GEM on exit. This allows use of existing software with minimal memory overheads.

Since the failure of Visi-On the world has been looking for a device to effectively imitate the Apple operating environments on existing 8080/8086 equipment, a development which would offer many current users a significant upgrade and enhance existing product lines. We plan a fuller review when more details are to hand.

AN INTRODUCTION TO

Assembly Language Programming Using CP/M

By Neil Williamson,
a presentation to the NZ Osborne
Users' Group.

When you use your CP/M based computer, you use programs written in Assembly Language, such as WordStar, SuperCalc, XDIR, MBASIC, and the operating system of your computer.

Assembly Language is one of the three levels of programming languages. **Machine code** is the lowest level and the computer operates in this. An instruction in machine code takes the form of a two digit hexadecimal number, which is translated by the computer into binary bit patterns. Machine Code is difficult to program as patterns of numbers are hard to recognise.

Assembly language is an intermediate level, where Memonics (memory joggers) give the programmer an indication of what the instruction does e.g JMP for Jump, and MOV for Move. The Assembly Language program is assembled into machine code before it can be used.

High level languages such as Basic, Cobol, Algol, Fortran, and Pascal. In these languages, an instruction is translated by the interpreter or compiler into machine code. One instruction can give rise to several machine code instructions.

Why use AL?

There are three main reasons for programming in Assembly Language.

First, speed of execution; because Assembly Language programs are in fact assembled into a machine code form, programs can operate at the speed the computer takes to execute instructions.

Compare this with, for instance, a BASIC program, where the Basic Interpreter has to interpret each Basic instruction into machine code line by line, and then execute the interpreted machine code.

Also, higher level languages involve compromises in their instruction sets to cover as many situations as possible, and this does not always make for efficient and speedy machine code execution.

Secondly, the ability to do things which cannot be done in a higher level language because one is limited to the instruction set in that language.

Thirdly, space saving. Frequently, an Assembly Language program in the

form of a COM file is very short, but this is not always true (cp WordStar and SuperCalc). Basic programmers will note especially that without the overhead of the MBASIC.COM program taking up memory, their equivalent programs can take up much less space.

What is involved?

Your computer is a device for moving BITS, which are the state of an electrical device being On or an Off (represented by a 1 and a 0).

Patterns of 8 bits, called a BYTE, represent characters in a code called ASCII (American Standard Code for Information Interchange).

Bytes are usually shown in Hexadecimal Arithmetic (abbreviated to hex) form, which is a numbering system based on the number 16.

One Byte is represented by 2 hex digits, so that a hex number such as 7F represents a Byte with the bit pattern of 0111 1111, as shown by the following table:

Hex Number	Binary Bit pattern	Decimal Equivalent
0	0000	0
1	0001	1
2	0010	2
3	0011	3
4	0100	4
5	0101	5
6	0110	6
7	0111	7
8	1000	8
9	1001	9
A	1010	10
B	1011	11
C	1100	12
D	1101	13
E	1110	14
F	1111	15

One Byte can therefore hold a hex number of between 0 and FF hex, i.e 0 to 255 decimal. It is important to be able to recognise bit patterns as many of the Assembly Language instructions depend on what happens to bits. Each group of 4 bits (i.e half a Byte) is called a NIBBLE (sometimes spelt Nybble).

Assembly Language programming is concerned with performing arithmetical functions and moving Bytes (each holding one character) between the REGISTERS of your computer and into or out of the memory and the input and output devices of your computer.

Temporary storage

The registers are temporary storage areas in the main processing chip of your computer where Bytes are stored, and manipulated.

The number of registers depend on the chip in your computer.

Most CP/M computers use either the 8080 chip, or a chip which is compatible with it. This article will concentrate on the 8080 instructions.

The 8080 chip has 10 registers. The registers holding 8 bits are the A, B, C, D, E, H, I, and L registers. There are two 16 bit registers, the Program Counter or PC, and the Stack Pointer or SP.

This introduction to Assembly Language programming is for those new subscribers to Bits & Bytes who would not have read our earlier coverage of this topic.

The A register (or Accumulator) is where most of the data manipulations and calculations take place, and as suggested by its name, is where results of calculations are accumulated.

The C register has a special function in Assembly Language programming with a CP/M based computer, as into the C register are placed the hexadecimal numbers for the various calls to the CP/M operating system.

The CP/M operating system is located in memory, and carries out various functions when called by the Assembly Language program.

There are 36 calls, covering such things as console (i.e the keyboard and screen) input and output, and the disk operations.

The system calls are subroutines to the main program. All of the system calls involve the use of BDOS (the Basic Disk Operating System) which is invoked by a call to address 0005 hex in memory.

The main registers A to E, H and L, each hold one Byte, or 8 bits. The B and C registers can be paired to hold 16 bits, as can the D and E registers, and the H and L registers.

Pairing the registers to hold 16 bits means that the register pair can be used to hold either a 16 bit number, or the address of a location in memory. The H-L register pair is used most frequently for holding an address in memory.

The memory of an 8 bit computer is

divided up into memory locations holding one Byte each referenced by a 16 bit address, starting from 0000 up to FFFF hex. There are 65536 memory locations in a 64K computer.

Stack pointer

The 16 bit program counter holds the address in memory where the next instruction of the program is stored. The 8 bit I register holds the current instruction being executed.

The 16 bit stack pointer points to a location in memory called the "Top of Stack". The Stack is an area of memory set aside to hold the contents of register pairs which are pushed into it by the program. The stack also holds the return address when a subroutine is called from the program. The stack works on a last in first out basis.

In a CP/M computer, the Assembly Language program is stored in memory starting at 100 hex. Each program instruction takes up 1 to 3 Bytes of memory.

In addition to the registers, there is a Byte contained in the processing chip called the Program Status Word or PSW. This Byte holds the 5 flags which can be set by operations in the various registers.

Flag Function

Zero	Is set to 1 when result of a calculation is zero
Sign	Is set to 1 if result is a minus
Parity	Is set to 1 when accumulator holds an even number of 1 bits
Carry	Is set to 1 when result involves a carry out of the 8th bit of a register
Auxillary Camp	Is set to 1 when result involves a carry from the lower nibble to the higher nibble of a Byte

The flags are normally set by operations on the Accumulator. Some other instructions also set various flags. The flags enable conditional branches in the program. The Accumulator and the Program Status Word can be together stored in the stack as a 16 bit valve.

An Assembly Language program is usually created by using a Text Editor, such as WordStar in its 'N' mode, to create a file with an ASM extension, assembling it using an assembler program such as ASM.COM, and then using LOAD.COM on the resulting HEX file to produce a COM file. Short programs can also be created and run using DDT.COM, or SID.COM.

Next month, part II features a sample programme in Assembly Language.

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Printing standard

Nineteen US companies have announced their intention to use the Interpress page-description language as a common electronic printing standard for computers.

Adopting a common print standard is seen as a major step towards ensuring compatibility among a wide variety of equipment. It frees the end user from the need to develop or obtain special software, or to know about the special characteristics of a particular printer.

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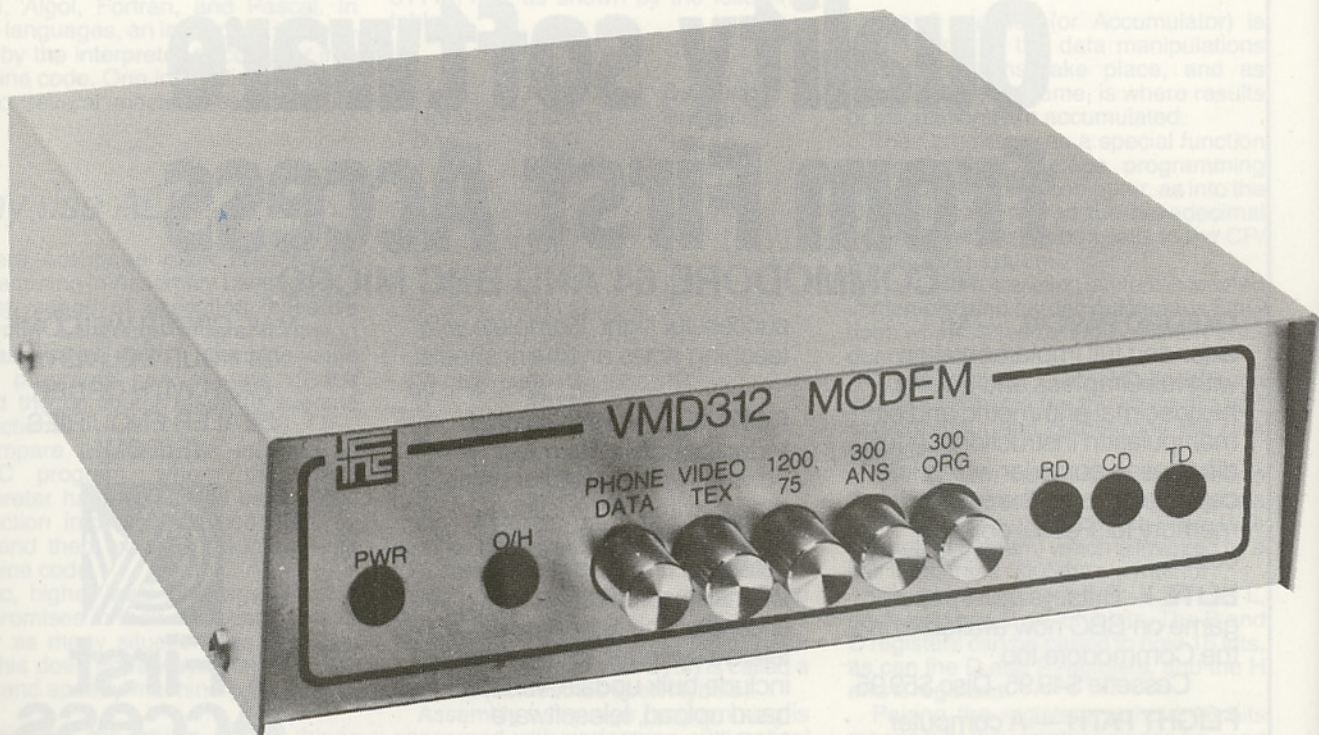
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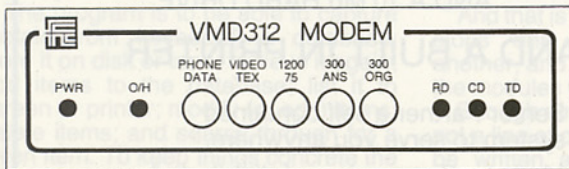


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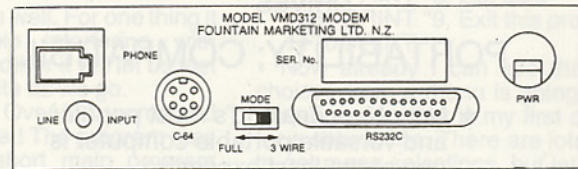
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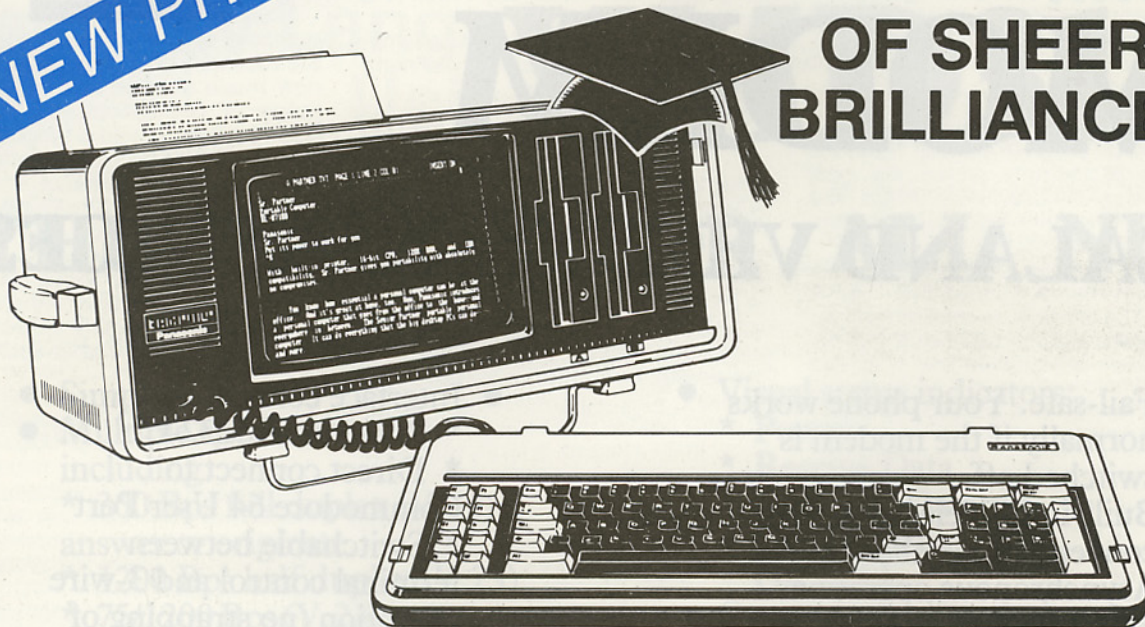
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A minimal database

By Gordon Findlay

This month, and next, I will take you through the design and most of the writing of a very minimal data handling program.

"Why?" I hear you scream — there are hundreds of these about! I'll tell you why:

The program will be built from routines which will be useful in other programs you want to write.

The design of the program will illustrate a useful "anti-bugging" technique — the technique of always dealing with a complete program as you develop the final masterpiece.

It will give you something to build on and customise to your requirements and last, but by no means least, it has been asked for by two of my loyal readers!

Now this really is a minimal program, and far from another DBase or K-Man. That is because the program will be written in a machine-independent dialect of Basic; because it will be (relatively) short; and because I have to have the thing written for this month's magazine, not the issue for July 2199!

It will be put together in such a way that you can adapt it for whatever data you want to deal with.

First let's do the design. Very often this phase of a program's development is done mentally, if at all, but we'll do it properly!

The program is to be able to capture (obtain from keyboard) a database; store it on disk or tape; retrieve it again; add items to the database; list it to screen or printer; modify (or edit) items; delete items; and search through for a given item. To keep things concrete the data handled will be the membership records for a club.

What is to be included? Each person will be represented by one RECORD, which will be made up of 3 FIELDS — NAME, ADDRESS, and PHONE NUMBER. You will be able to add fields very easily.

The program will be menu driven to make it easy to use, and all operator inputs will require the use of the ENTER or RETURN key, even those which are only one key long, to let the operators change their minds if they want to.

If you want it some other way, rewrite the subroutine at line 10.

How is the information to be represented? The natural way in Basic is to use three parallel arrays of strings, N\$, A\$ and PH\$.

If John Smith is member number 7, and he lives at 31 Main Street and his phone number is 789 123, N\$(7) is "JOHN SMITH", A\$(7) is "31 MAIN ST.", and PH\$(7) is "789-123". Clearly

the subscript, or element number, is the link between the different fields of the same record, and hence it is the subscript which we will work with most. This use of parallel arrays is quite standard in Basic, but not so in some other languages, such as Pascal, COBOL and C.

Many programmers would instinctively have used an array of numbers to record the phone numbers, thereby saving space. This would not allow phone numbers to include an area code, such as (03) 33-703, or any form of punctuation, or such numbers as "K1-9999", or even "69A". More importantly, it would mean that phone numbers would have to be handled differently from the other fields, and could not be substring searched, of which more (much more!) later.

As well as the three arrays, the program will need to know the number of records currently in the database (called NO from now on) and the maximum number there are room for (MAX). These two variables, and the arrays themselves, will be the only ones which the various modules of the program can assume are up to date.

This will allow us to write each module in a very independent way, and so long as each correctly maintains NO, MAX and the arrays, each module need not know what is going on in the others.

And that is just as well. For one thing it stops one module interfering with another, and for another it will let us test the modules we write as we go.

Enough already! Over 800 words and not a line of code yet! The program may be written as a short main program which does any required setting up (declaring arrays, initialising counters and so on) and then presents a menu. The choice made from the menu will determine which of several subroutines is called, and after each is complete the program can loop back to the main menu, unless the option chosen exits the program.

The main program can start at line 1000, thereby leaving room for any subroutines which we might want to come early in the piece.

The first line of all, line 1 say, must jump around these "utility" subroutines. The only thing setting up I can think of so far is to set the value of MAX, the maximum number of records we will allow, and the value of NO, the number presently in the database, and to dimension the arrays.

We can also clear string space, if that's needed in your version of Basic. Then onward! Clear the screen (I'll use CLS — change to HOME or whatever you need) and display the menu.



This is what it looks like:

```

1 GOTO 1000
1000 CLEAR 1000 : REM if necc.
1020 MAX = 200
1030 NO = 0
1040 DIM N$(MAX), A$(MAX),
      PH$(MAX)
1050 CLS : REM clear screen
1060 PRINT "Main menu: options"
1070 PRINT
1080 PRINT "1. Clear the database"
1090 PRINT "2. Load data from tape"
1100 PRINT "3. Save data to tape"
1110 PRINT "4. Type new data"
1120 PRINT "5. Delete data"
1130 PRINT "6. Change data"
1140 PRINT "7. Search for data"
1150 PRINT "8. List data"
1160 PRINT "9. Exit this program"
1170 PRINT

```

Now already I can see that getting choices from a menu is going to occur frequently, so that is my first candidate for a subroutine. There are lots of ways to get menu selections, but let's keep it really simple for now, and you can add the bells and whistles (such as the use of arrow keys and colour) later. The menu will just be a list, with the options numbered 1, 2, 3...

The subroutine must ask for, and obtain, the user's choice. The subroutine needs to check that the choice is a valid one — i.e. that it is not less than 1, and is not larger than the number of selections offered. So the subroutine must be told how many selections are in the menu. This number will be called CH (CHoices) and the value input called CS (Choice Selected). Here it goes:

```

10 PRINT "Your choice: 1—";CH;";
12 INPUT CS
14 IF CS <1 OR CS > CH THEN
      GOTO 10
16 RETURN

```

Your first task is to dress this up, with better error messages, noises for incorrect inputs and so on.

Once the user makes a selection, the program must choose where to go next.

(Continued 32)

Tool box

(continued)

The ON-GOSUB statement is a good one to use here:

```
1180 CH=9 : GOSUB 10
1190 ON CS GOSUB 1000, 2000,
3000, 4000, 5000, 6000, 7000,
8000, 9000
```

This long statement means that if CS is 3 the program will call subroutine 3000, the third one in the list.

Each subroutine will finish with a RETURN, which will make the program jump back to line 1200, which can restart the main menu again:

```
1200 GOTO 1050
```

Now all that remains is to write the 9 subroutines! Yes, that's all! The subroutines may vary in length, some will be quite long, but the problem we started with ("Maintain a membership list") has been replaced by 9 smaller ones (e.g. "Exit the program"). This is rather akin to moving a ten tonne boulder by blowing it to smithereens, then carrying each piece away individually.

Each subroutine may, for now, be represented by just a RETURN statement. That would give us a completely working, though useless, program. Better though to indicate which subroutine has been called by displaying a message, and waiting to give a chance to read it. Here is a dummy subroutine for line 3000:

```
3000 PRINT "Save subroutine
```

called."

```
3010 PRINT "Press ENTER"
3020 INPUT X$
3030 RETURN
```

I'll leave the other eight "stubs" as they are called to you.

I strongly urge you to get the program as it now stands entered and debugged. The program should now work, and it is pointless to go on until it does.

This organisation of a program: a GOTO, utility subroutines, a main program which displays a menu and does little else, and a collection of almost independent subroutines will serve as a basis for a very large number of interactive programs. Once you've understood the technique you will be able to use it again and again.

Now to start on the nine modules in earnest. The first (clear the database) is easy(just set the number of entries to zero, and return. But first let's check the operator knows what he is doing:

```
10000 PRINT "Do you really want to
clear everything?";
10010 GOSUB 20
10020 IF X$ = "Y" THEN NO = 0
10030 RETURN
```

We ask if the data is really to be cleared, and as this sort of "Yes or No" question is likely to be very common, a rubroutine (at line 20) is used to get the answer.

```
20 INPUT X$
```

```
22 X$ = LEFT$(X$,1)
```

```
24 IF X$ <> "Y" and X$ <> "N"
THEN GOTO 20
```

```
26 RETURN
```

Line 22 drops all but the leftmost character in the answer, so that Y and YES are both accepted (why don't all programs do that?). Line 24 checks that the answer, X\$, is indeed Y or N. If your keyboard allows for lower case letters add a line 23 which changes lower case to upper case:

```
23 IF X$ >= "a" THEN X$=CHR$
(ASC(X$) - 32)
```

It isn't necessary to actually clear all the arrays. As long as we don't try to access a record number larger than NO, the actual contents of the arrays will not concern us. Clearing all the arrays could take several seconds.

That completes the first of our nine modules. The EXIT routine, at line 9000, may be very similar, but of course doesn't RETURN unless the answer is NO. If the user really does want to exit, the screen may be cleared and that's it. A more elaborate program would keep track of whether the data should be saved, and warn if it wasn't.

```
9000 PRINT "Do you really want to
exit?"
```

```
9010 GOSUB 20
9020 IF X$ = "N" THEN RETURN
9030 CLS
9040 END
```

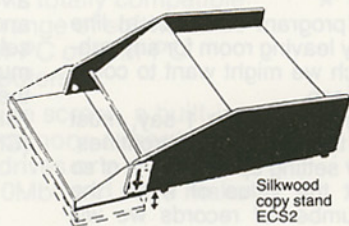
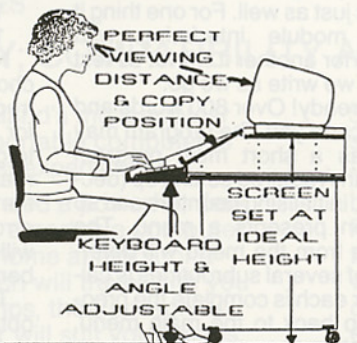
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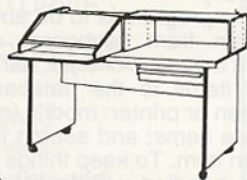


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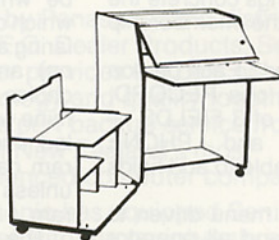
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That's enough for this month! You can get started on dressing up the screens and error messages. Just remember — always keep a complete program, even if many of the bits are stubs.

Two final comments. To avoid irate letters, yes I do know that the word "database" is being used very loosely in this application, and I do know the technical terms — but they won't help anybody who is trying to learn. And the line numbers aren't consecutive. I usually use line number ranges to indicate the major breaks in the code — 8000, 9000 and so on. You can always renumber if you like them neat and tidy.

Here is the whole program, as far as we have taken it so far

```

1 GOTO 1000
10 PRINT"Your choice: 1 - ";CH;" ";
12 INPUT CS
14 IF CS < 1 OR CS > CH THEN GOTO 10
16 RETURN
20 INPUT X#
22 X# = LEFT$(X#,1)
23 IF X# >= "a" THEN X#=CHR$(ASC(X#)-32)
24 IF X# <> "Y" AND X# <> "N" THEN GOTO 20
26 RETURN
1000 CLEAR 1000 : REM if necc.
1020 MAX = 200
1030 NO = 0
1040 DIM N$(MAX), A$(MAX), PH$(MAX)
1050 CLS : REM clear screen
1060 PRINT "Main menu: options"
1070 PRINT
1080 PRINT "1. Clear the database"
1090 PRINT "2. Load data from tape"
1100 PRINT "3. Save data to tape"
1110 PRINT "4. Type new data"
1120 PRINT "5. Delete data"
1130 PRINT "6. Change data"
1140 PRINT "7. Search for data"
1150 PRINT "8. List data"
1160 PRINT "9. Exit this program"
1170 PRINT
1180 CH = 9 : GOSUB 10
1190 ON CS GOSUB 10000, 2000, 3000, 4000,
5000, 6000, 7000, 8000, 9000
1200 GOTO 1050
2000 PRINT "Load data subroutine called"
2010 PRINT "Press ENTER"
2020 INPUT X#
2030 RETURN
3000 PRINT "Save data subroutine called"
3010 PRINT "Press ENTER"
3020 INPUT X#
3030 RETURN
4000 PRINT "New data subroutine called"
4010 PRINT "Press ENTER"
4020 INPUT X#
4030 RETURN
5000 PRINT "Delete subroutine called"
5010 PRINT "Press ENTER"
5020 INPUT X#
5030 RETURN
6000 PRINT "Change subroutine called"
6010 PRINT "Press ENTER"
6020 INPUT X#
6030 RETURN
7000 PRINT "Search subroutine called"
7010 PRINT "Press ENTER"
7020 INPUT X#
7030 RETURN
8000 PRINT "List subroutine called"
8010 PRINT "Press ENTER"
8020 INPUT X#
8030 RETURN
9000 PRINT "Do you really want to exit?";
9010 GOSUB 20
9020 IF X# = "N" THEN RETURN
9030 CLS
9040 END
10000 PRINT "Do you really want to clear
everything?";
10010 GOSUB 20
10020 IF X# = "Y" THEN NO = 0
10030 RETURN

```

Computer scholarships

Two Wellington Polytechnic students — Barbara Gawn and Julie Hewson — have become the first recipients of the Computerpeople Scholarships (of \$500) for full-time electronic data processing students.

Scholarship applicants are judged on their scholastic achievement, personal maturity and character.

The two women are taking a one year full-time course in data processing which leads to the Wellington Polytechnic Certificate of Data Processing, and stage three of the New Zealand Certificate of Data Processing.

Computerpeople offers similar scholarships in Auckland.

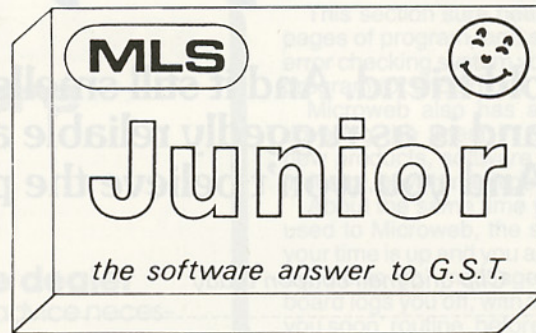
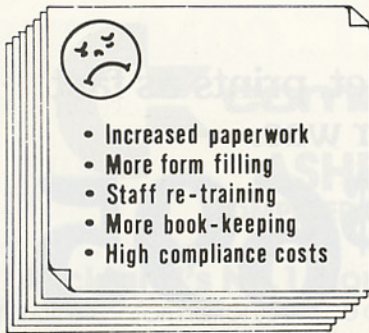
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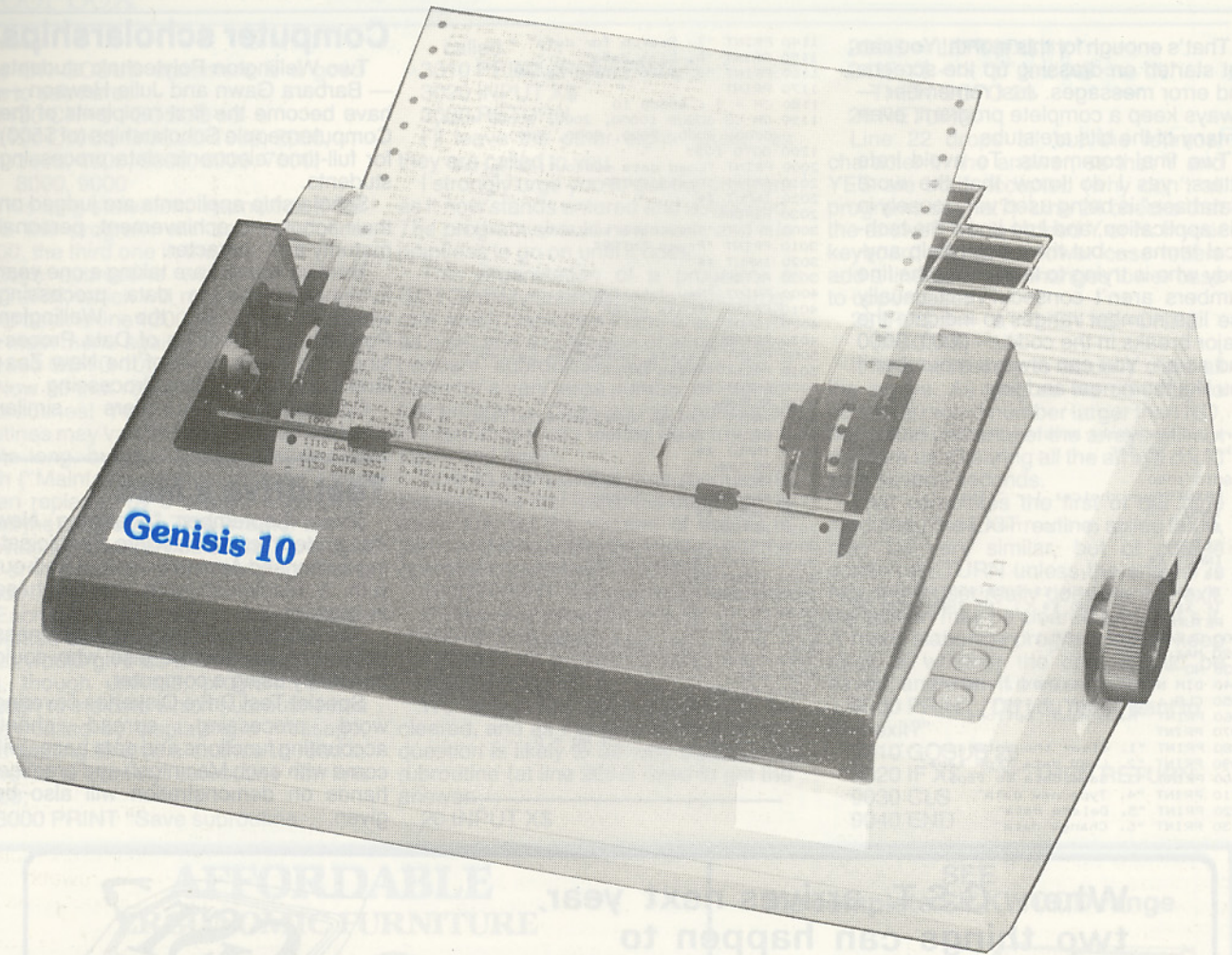
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Logging on to BBs and Prestel.

By Paul White

We've all heard about the computer revolution, but now it is time to expand this idea; not the actual computer, but the world which surrounds it.

This article is about connecting to other computers, chatting to them and gaining information from them.

First you must acquire a modem, a device which enables your computer to change its digital signals into something which the phone lines can understand, these new signals are called analogue and consist of high and low sound pulses.

The modem MODulates the signals for the phone lines, and DEModulates them for the computer.

Over the past months many articles have covered the operation of modems, explaining how they work and the like. I'll try to explain the bulletin boards (called BB for short), and the databases to which they can talk.

There are many hundreds of BBs and databases around the world, which anyone this side of the globe can communicate with.

Bulletin boards are small databases, usually home grown, and run off a micro.

Microweb, for example, is run by the Micro User magazine which supports BBC computers. Its BB is run by a Tandy Model III with a winchester hard disk.

To connect to a BB, you switch your modem to 300 baud — just about all BBs operate at this baud rate since user

interaction is invited, i.e. your thoughts and opinions.

Now you're talking

After dialing the number, a loud tone will be generated by the computer when it answers the phone, and it is now that you switch on line, or if you have an acoustically coupled modem, replace the handset.

Now you are talking, and Microweb (I'll refer to this one since it is one of the easiest to use) will ask you for your name and address. This is for its records, so that the next time you call, it can welcome you as an 'old hand'.

At this point the Top Level Menu is displayed, and from here you can access all the features it provides. (You are also informed that you are limited to 12 min. of access, as there is only one line and only one person can use Microweb at a time.)

One of the more interesting aspects of BBs is the electronic mail facility. This enables for you to leave a message for either another user, or the general public.

If you have a problem, then by selecting <E> from the menu you can type your problem for all to see. Upon reading your problem a user may then leave mail for you, giving an answer or suggesting some course of action.



Should the System Operator (or Sysop for short) be in, he may reply to your problem right then and there, allowing you to chat with him directly.

Another feature of Microweb is to allow you to scan the public messages. These can be quite useful giving details on tape to disc transfer, programming tips and helpful hints.

One of the more colourful characters leaving messages on Microweb is a guy by the name of Dungeonmaster, one of the Sysops.

Microweb also supports software downloading, giving the user a choice of programs, be they games or utilities, which you can transfer via the telephone and then use as a normal basic program.

This section sure beats typing in four pages of program, and since there is an error checking system you get a bug free program (or should do).

Microweb also has a news section, covering the latest in computer news, new products, software, rumours in the industry, government policies and so on.

About the same time you start getting used to Microweb, the system tells you your time is up and you are given a few '1 minute to go' messages and then the board logs you off, with the 'Bye Bye see you soon' routine, before hanging up the phone on you.

Talking to Microweb, which is in England, costs around \$1.05 per minute in phone charges — not cheap, but it is fun.

Increasing start-ups

Here in New Zealand we have one BB up and running, with The N.Z Micro Club, and two which should be up and going soon. Across the Tasman, there

(Continued 36)

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(continued)

are around fifteen. Scattered around the globe there are some four hundred with more popping up all the time.

Prestel is the big daddy of bulletin boards. It is run by British Telecom and is the original vedeotex system, offering the home user access to more than 500,000 pages of information. It is run not on one mainframe computer, but on five or six.

Prestel is menu driven, i.e. to get to the games section you choose the entertainment section, then the games menu, then the type of game, ranging from crosswords to multi-player Star Trek, and finally a game display.

Prestel numbers all its pages, and sends a page at a time, not scrolling the screen, but replacing the previous page. To use Prestel requires an account no., and a password. Once this has been entered the introductory page is presented and you choose your area.

Prestel offers club bulletin boards like Microweb, a chatline where you can share your opinions with people from around the globe.

Since Prestel allows hundreds of people access at the same time, the people you talk with are actually logged in, just as you are.

On sending in a registration form Prestel also issues you with a mailbox number, and so you can leave messages for other users for when they log on, and they can send mail to you.

As well, mail can be left via Prestel for other databases around the world.

Accessing Citiservice on Prestel gives you the stockexchange, foreign exchange rates, share prices, travel booking, flight times, and rail schedules (these are admittedly English, and so not much use, unless you're planning a trip there). Even your banking can be done, not to mention the shopping.

An increasing number of firms sell their products via Prestel. The latest in international news, foreign affairs, weather, sports, whats on, which restaurant to eat at, local attractions, the theatre, the opera, you name it, Prestel has it. It will even give family planning advice.

Farmlink provides agricultural information, government reports and findings, crop advice, weather forecasting and so on.

There are specialist pages for lawyers, providing case information (we are after all based on English Law), hoteliers, estate agents, racing enthusiasts, just to mention a few. American Express offers a wine service.

Entertainment gives access to adventures of the mainframe variety, crosswords, large Star Trek type games, competitions, such as Twentieth Century Hamster, chess, arcade games and many more.

Micronet 800 caters for the home micro, giving hints and tips, a celebrity chatline, in which you ask the questions and the celebrity tries to answer — this unique facility is done live on T.V by the BBC, and some of those questions can be quite probing.

Viewfax is for the Commodore user, while Tubelink supports the BBC computer.

Schoollink is Prestel's answer to education. It gives career advice, microcomputing advice for schools, new products in software and hardware for schools. It gives both teacher and pupil access to information which schools can not otherwise provide.

As you can see Prestel is a massive storehouse of information. It is a many sided information service.

Prestel as such charges for its information on a quarterly rental of around £16 (\$42), and a usage charge of 17p (45 cents) per minute of connect time. Sound expensive ??, well compared to U.S databases, such as Source and Compunet, which offer the same type of service, Prestel is a gift, and in my opinion well worth the cost.

If you've ever gone to an encyclopedia and not found what you wanted, with Prestel you'd be hard pushed to run up against the old stone wall.

To avoid heavy phone costs, Prestel can be used with Pacnet. Information on pacnet can be found in Bits and Bytes, June 85, and if you are thinking of using Prestel, Pacnet is the way to get to it.

Download software

Homelink is for home computer users. Micronet 800, Viewfax, Clubspot, Tubelink all cater for the personal computer fan. They offer Telesoftware.

Why send for software when you can have it downloaded right then and there, not magazine programs, but commercial programs, such as Castle Quest for the BBC, or the latest from U.S Gold, Micropower, Alligator and all the other top software houses. (You will of course be charged, and this is added to your Prestel bill).

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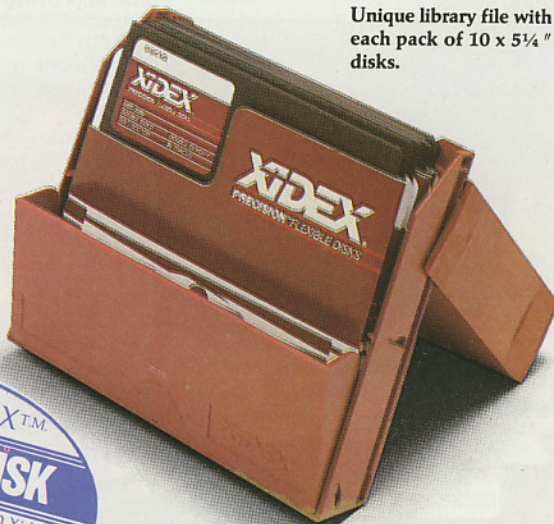
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A 'phone' with the right connections.

I.C.L. has produced an integrated work station called the "One Per Desk", which is being released here by the Post Office as "ComputerPhone". It is a desk-top facility incorporating several business-type applications.

By Laurie Bisman

ComputerPhone consists of a two-tone plastic encased computer keyboard and matching visual display unit. A colour VDU is available but is not supplied as standard; instead, a 23cm monochrome monitor is supplied with controls at the right hand side to adjust brightness and to switch on/off.

The computer, once plugged in, cannot be switched off without disconnecting the power source.

Power to drive ComputerPhone is supplied to the VDU which in turn supplies the power for the keyboard.

The VDU is designed in such a way that "burning" of the tube is minimised. Burning is when an image is displayed for too long, resulting in the phosphor coating inside being permanently damaged.

But with ComputerPhone, non-activity of about five minutes clears the screen. The image is restored by pressing any key.

The keyboard has no tactile feedback (high fallootin' words for key click). Quite a few keyboards these days emit a subtle click to reassure the user that a key has been adequately pressed, however, both novice and experienced keyboard users alike should have no difficulty using this one — despite its absence of reassuring clicks.

Some of the keys perform dual roles, but this isn't a new idea and again should not prove to be a problem.

The telephone handset is located on the left of the keyboard and numbers are "dialled" by pressing keys on the numeric keypad to the right.

Underneath the handset is a one-way loudspeaker which has a variety of uses such as hands-free dialling, ringing tones, beeps for errors etc. The sound level can be adjusted.

Two lines

Two telephone lines are provided but should only one line be available ComputerPhone can be made to use just the one. Each line has its own cord, which is Jack-ended, and in normal operation would allow for one normal telephone line and one data line.

This makes possible the transfer of data between computers (ComputerPhone has a built in modem), and normal telephone conversations at the same time.

Also incorporated on the keyboard towards the rear, are twin microdrive units. These units are identical to the ones that the Sinclair range of computers use although I.C.L. has spent some time improving the reliability of data stor-

age.

Each cartridge is capable of storing up to 100Kbytes of data.

Lacking is a port for plugging in conventional disc storage.

On power-up, ComputerPhone goes through an extensive series of self test routines and should problems occur, various error messages are shown on screen either in the form of graphics or written words.

When these checks have been successfully completed, the user is presented with the "TOP LEVEL MENU". This is simply a numbered list of eight options.

The user may select any option by pressing the appropriate number.

Each of these eight options has its own list of further options and so on; ComputerPhone is therefore said to be "menu driven".

Options one and two deal with telephone communications.

A telephone directory, created by the user, is capable of storing a few hundred entries and allows a short-code to be used. This allows a three letter word to be stored and used for making normal telephone calls.

Simply select dialling by either lifting the handset or pressing the "auto spkr" button and type the three letters for the person you wish to dial. ComputerPhone will make the call automatically.

It is also possible to automatically redial the last number by pressing just one button or any of the last ten number by pressing two.

Telephone control (option two), has further options to allow status reports, charge band totals and auto answer controls.

By using a charge band system it is possible to make ComputerPhone time and charge all calls made.

Speech synthesiser

Auto answer controls let the user set up messages by typing on the keyboard and then set times for answering. This means that if the user must be away or is busy, ComputerPhone can answer the telephone and speak a message to the caller.

The speech synthesiser is very clear and as each message is repeated twice, should be easily understood.

Messaging (another name for electronic mail) is catered for also. It is possible to "post" messages into an electronic letter box for other Computer-





Phone users, and receive appropriately addressed mail at your own ComputerPhone.

The main package of business software is contained in what is called XCHANGE. This is selected by pressing option number 4.

The four main software tools here are a spreadsheet called Abacus, a word-processor called Quill, a database called Archive, and Easel, the graphics package.

These are familiar to Sinclair QL users because these four are bundled with the QLs.

Spread-sheet programs are of course quite common these days, but to have one at your finger tips is a definite plus for any system.

Abacus is a particularly good one and extensive documentation is provided to allow a rank beginner to come to grips with it.

Basically it allows figures (and words) to be manipulated on an electronic sheet of paper. Certain figures can be altered and automatically all figures which are affected can also be brought up to date with just the press of a button.

Word-processing programs too are extensively used on computer systems all over the world, but again, to have one actually sitting on your desk waiting to be used whenever you require it is a great help.

Should word-processing be used, hard copy is usually, although not

always, produced. If this is the case an optional full-colour printer is available.

It is also possible to transfer documents between ComputerPhone and another computer over the telephone line.

Archive power

With the use of database programmes the real power of computers emerges.

ARCHIVE is a powerful tool when used properly. With a database programme and a set of data, questions such as "print a list of all females who live in the north island, are between 20 and 32, like ice-cream and can ride a bicycle" become simple and virtually automatic.

The uses to which a database programme can be put are limited only by a user's imagination.

Finally, the graphics package allows for figures to be presented within a wide variety of graphs.

Graphs can be made to display bars, lines, horizontal or vertical combinations of these, and pie charts.

Figures from other software packages such as Abacus or a program written by the user can be used by Easel.

Option five offers access to other computers.

A directory and short code dialling system are once again used. The computer directory is separate from the telephone directory.

Sets of information called "profiles" are able to be created and stored to allow not only quick access to the telephone network via the short code, but also the various hand-shaking and protocol exchanges, including passwords etc. can be all taken care of automatically or semi-automatically depending on what is required.

Another area of memory can be used as a "Page Store" and by making use of this, the user can store pages of information, such as via videotex, into memory for later perusal off-line. The limiting factor is the amount of free memory ComputerPhone has available.

Simple mathematical calculations are facilitated by selecting "Calculator" (option six).

Once selected the user is presented with a display of a calculator, and which keys to press for the required mathematical operation. A strong feature is the ability to keep calculations visible on the screen while working on something else. You can also see what is being stored in the calculators' memory.

Programming option

No matter how versatile or how many features a device has there will be some people who need something else. Option seven gives the means for designing and utilising new tasks.

BASIC is a programming language which is known by more people than can speak Swedish or Danish, put together. In its usual form it is easy to use and can be learned by almost anybody.

The Basic that ComputerPhone uses is not like most other Basic's.

It has been specially designed to produce good, clear and logical programmes — something that is difficult to achieve with normal Basic.

In fact this version is a subset of QL's SuperBasic.

There must be some trade-off, and it will be in the learning stage. It is harder to learn from scratch although experienced programmers will have no difficulty adapting. (In fact, once used it is difficult to return to the usual mish-mash and tangle that was previously used).

Data can be created and stored for later use with the business packages.

The facts and figures that were produced by the business packages become available to the user to utilise in other ways.

The insurance salesperson can write a program to produce instant facts and figures for clients, appointment diaries can be set up and the user can even play a game should he/she require an amusing distraction.

In essence it enables a form of multi-tasking, at least to the extent of not losing data when switching between options.

(Continued 40)

(continued)

A situation able to be handled by ComputerPhone, for instance, would be the accessing of a videotex database while in the middle of a phone conversation, and then retrieving on-screen some shelved calculations.

Housekeeping

The last of the eight options, and probably the one that will be used the most, is labelled "Housekeeping".

Housekeeping is a word that computer people use to describe the day-to-day odds and ends that must be done. The regular things such as saving the day's information, loading from cartridges, checking the battery, setting the time and date, preparing the printer or using the micro-drives and so on.

All of these things are lumped together and are easily accessible by selecting the appropriate number. Everything is explained in great detail in the various manuals that come with each ComputerPhone.

There are usually four manuals. The first one is a small booklet that describes how to set the system up. Another small booklet is entitled "Welcome Package" and contains a quick demo of most of the facilities offered.

The other two manuals are quite thick and contain all information about ComputerPhone, what buttons to press in what situations, what to do if things go

wrong and so on. The largest manual is on the XCHANGE and contains very detailed instructions on how to use the four business packages.

(The Post Office is considering the production of its own friendlier versions of these manuals to enable ComputerPhone initiates a less complicated familiarisation. - Ed.)

The optional printer is a thermal model, but one of the new breed. It is possible to use thermal paper and no ribbon.

The print quality in the correspondence mode is good, and being thermal, the operation is almost silent.

Normal typing paper can also be used but a ribbon is then required.

A full-colour ribbon allows production of graphs and charts in full colour, even directly on to acetate sheets, which can then be placed on an overhead projector.

So there you have it. Another communications advancement to fill a gap which has been there for far too long.

The Post Office will be releasing ComputerPhone about the same time as this magazine is released.

They have promised to keep rental prices (not for sale) competitive; in the region of \$150-\$350 per month, depending on the options chosen.

Laurie Bisman, a telecommunications tutor, has been testing the ComputerPhone as part of a Post Office evaluation.

What's new on Computex?

By Jeff Whiteside

Computex is beginning to roll. New people are joining the service daily. And here are some of the things they will be doing.

The Path to Madness is an interactive game for up to six persons at one time. The object of the game is to locate the Talisman, an object imparting mythical power on the user.

The catch is that each player is placed in a house with no outside exits and, to succeed, the Talisman must be found and taken out of the house.

Players are able to cancel out each other, join forces or simply pass by. New players are invited to join when one is removed from the game.

Action is the key and, unlike a regular adventure game, attempting anything will produce a result and not an 'I don't understand' message.

For help

Need help from Computex? Or want to suggest a new service? Or want to complain about anything?

Interact is the service for you. Here you have direct feedback to us. The best letters will be displayed on the system for others to read.

This is your opportunity to have your say! Your contribution adds strength to the service.

The programming hints and tips sections is being set up in each "suburb" for Apple, BBC, and Commodore. You will be able to check out the "city library" for other brands and general hints and tips.

Tucked away in the "general store" part of Electromall is the Bits & Bytes book club. Now you can direct-order by Phone!

Bits & Bytes is also to produce an online review of some Bits and Bytes features, including news up-dates.

And yes, you can also send them a message!

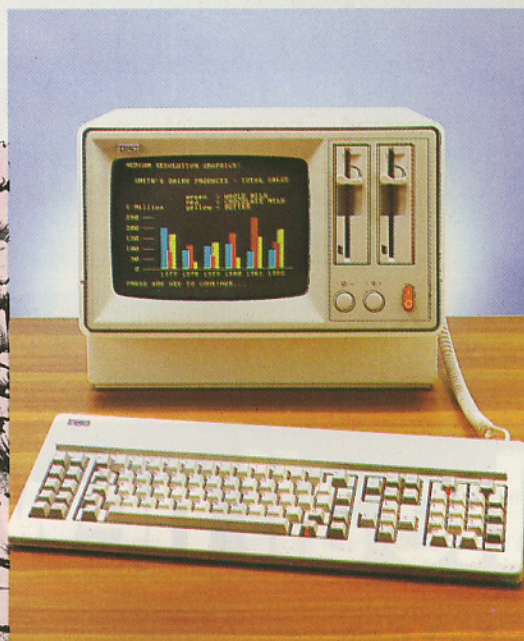
New parts of Computex will be added regularly. Watch this space for a selection of them!

MICROCOMPUTER SUMMARY

Name:	ComputerPhone
Manufacturer:	International Computers Ltd
Microprocessor:	Motorola 68008
Clock speed:	7.5 MHz
RAM:	128K dynamic 2K static (lithium battery backed)
ROM:	128K integral, 208 ROM pack
Input/output:	Nine way RS432 serial connector (printer connector) 1200 bps half duplex; 60 bps half duplex; 300 bps full duplex; 1200/75 bps full duplex modem.
Keyboard:	73 keys Qwerty, plus telephone style numeric pad
Display:	22cm monochrome
Graphics:	256x512 (4 shades/colours), 256x256 (8 shades/colours)
Sound:	TMS 5220 voice synthesiser, Tone generator.
Disk:	2 x 95K microtape drives
Operating system:	Proprietary
Languages:	Basic
Cost:	Basic monochrome rentals of \$250 to \$190 monthly — discount for 2-3 year contracts.
Options:	35cm colour monitor Thermal printer (Software options include Xchange package, ICL Link and VT-100, and Messaging)
Ratings: (5 highest)	Documentation 3, Language 5, Expansion 5, Value for money 3.

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Who would want ComputerPhone?

A few years ago integrated workstations were nominated as the key to office automation. They were seen as the ideal way to bring the advantages of OA — the convergence of computer and telecom technology, the integration of voice and data, and the growing range of OA products and services — on to the desk of the user.

But agreement about the need for such a product did not automatically guarantee its successful development.

Norman Nicholls, product manager with the Post Office's Telecom Marketing Division, says the main problem of OA was to achieve integration of computing facilities and telephony facilities in one machine.

"The problem was two-fold," he says. "Telecom manufacturers tried to put computing power into their telephone and text terminals. The result was a highly sophisticated telephone but a poor computer."

"On the other hand, computer manufacturers virtually stuck a telephone handset on to their pc's in the belief that such an addition could be called 'integration'."

Lately, he says, both areas have recognised their weakness and have formed alliances in an attempt to overcome such problems.

But even these alliances — alliances basically of engineering skills — were doomed to failure until those concerned really defined their target market and investigated what that market required.

ICL, with its One Per Desk, was the first to come up with an integrated workstation aimed at a specific market (managers) and designed to meet their needs. It was chosen by the Post Office for introduction into New Zealand under the name ComputerPhone.

Managers needs

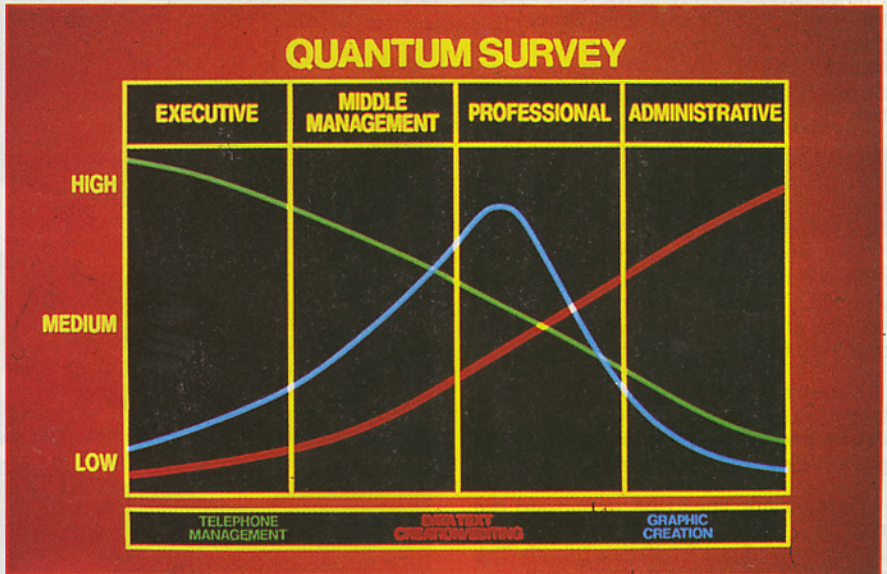
So what does ComputerPhone offer its target market?

Until now, office automation developments have centred on the clerical and support areas of an organisation. In many ways managers and professionals have been left out in the cold.

Their increasingly complex and heavy workloads are handled by unsuitable and often outdated tools — pens, paper, perhaps a calculator, or in some cases a personal computer with a capacity far exceeding most managers' requirements.

They face the all-too-familiar problems of paper-chasing and people-chasing to get the necessary information for quick and important decisions.

Their workload is distinguished by its variety. A typical working day is broken



into meetings, telephone calls, research and writing, clerical functions, retrieving and processing information, decision-making, interviews, presentations and a wide range of on-going tasks that may at any stage be interrupted.

The tool that fits this work pattern has to be integrated, simple to use, versatile, able to handle multiple tasks, and compact enough to fit on a desk top.

It has to offer the manager a little bit of everything — telephony, database access, personal computing, messaging.

ComputerPhone does just that.

It is an advanced telephone, a calculator, a word processor, a videotex and computer terminal, a personal computer, an answering machine and an electronic messaging terminal.

And it puts these facilities right where managers need them — on their desk.

Market interest

Interest in ComputerPhone has come from a wide range of people in the management/professional area, including:

- managers of small business (who don't have the clerical and secretarial back-up of larger organisations)

By Beryl Pears, Telecom Marketing Division, Post Office Headquarters.

- nationally based companies (who can see the added advantage of ComputerPhone's messaging options for in-house communication)

- freelance professionals (who need a compact portable office)

- middle management and assistant managers in medium to large organisations (whose work consists of actually doing tasks rather than arranging for tasks to be done)

- insurance salespeople and real estate agents (whose work involves keeping up to date client lists, a relatively large amount of telephoning, and on-the-spot calculations and client-tailored letter writing).

As Norm Nicholls says, the Post Office is promoting ComputerPhone as a tool that is versatile enough to meet the needs of many sorts of manager, professionals and executives.

"In Australia ComputerPhone has been marketed as an 'executive' workstation. We believe it has a much wider market in the middle management levels.

"Originally we saw the biggest demand probably coming from the large companies, but increasingly we are getting inquiries from small businesses and

(Continued 44)

Communications

(continued)

one-man bands," he adds.

"Businesses and individuals out in the marketplace will decide whether or not ComputerPhone meets their requirements. That's the final test."

Invariably any dramatic advance in communications or computers is hailed as 'the answer' which will sweep all before it. Of course it never does, but it does find its own niche and serve that well.

Nicholls sees the niche for ComputerPhone lying midway between a simple telephone/VDU type workstation for people whose primary tasks involve telephony and information retrieval, and an advanced type of integrated workstation.

Availability

The Post Office has placed a multi-million dollar order for ComputerPhone with ICL. This will arrive in New Zealand shortly, and the product will be available on a rental/lease basis late this year.

Meantime it is carrying out a low-key, targetted promotions campaign to inform potential customers about ComputerPhone and its capabilities.

Rentals are yet to be confirmed but indicative prices show the monochrome unit will be about \$250 per month, the colour unit about \$360 per month and the printer about \$75 per month.

There will be considerable savings for those who take out 2 or 3 year leases, and discounts for those buying in bulk.

Optional software and other consumables will be sold separately.

The Post Office is optimistic about the future of ComputerPhone. Already there have been numerous inquiries and a



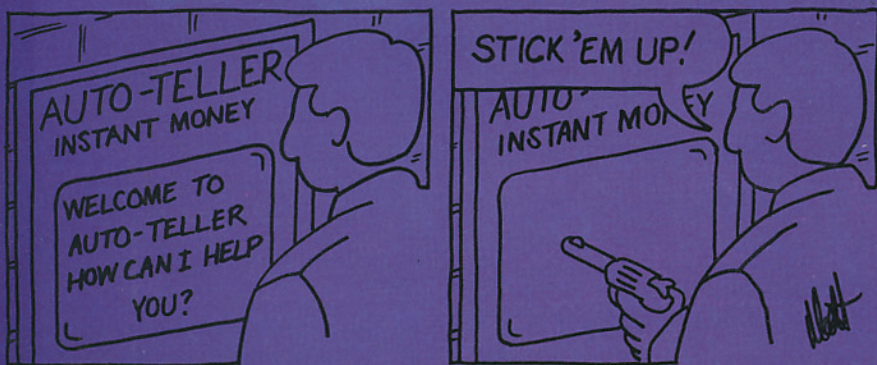
high level of follow-up approaches from those who have seen the product.

"We have people queuing up right now to be put on the waiting list," Nicholls says.

"Like us, they can see where the

future of good office communications and management lies — with ComputerPhone, on their desk."

For further information on ComputerPhone write to ComputerPhone, Freepost 122, P.O. Box 292, Wellington.



IBM gifts

IBM Personal Computer laboratories were recently opened at Waikato and Massey universities.

IBM gave each laboratory four PC General systems and one PC Advanced Technology system.

At Waikato University the lab is initially being used by academic staff to investigate ways for employing the computers in their various courses.

At Massey University the faculty of business studies intends incorporating more computer useage into its two-year post-graduate Master of Business Administration programmes.

Trading banks setting up videotex

Before the year's end, Bits and Bytes' Computer videotex service should be on-line. At Databank the designers of videotex services are also busy, and they outline key considerations in this article on a banking service.

By Alison Sims

New Zealand's trading banks, through their computer subsidiary Databank Systems Ltd, are pressing ahead with videotex "remote banking" and information services.

They are using the North American NAPLPS protocol as their preferred medium, but the banks still support other protocols such as British Prestel.

Although Naplps is the standard flavoured by the trading banks, Databank is developing videotex services in "a neutral environment".

The majority of trading bank services will be available to users irrespective of the protocol of their particular terminal.

Ralph Green, Databank's videotex promotion manager, believes today's videotex industry should have matured beyond technical wrangling over standards between rival systems.

"You use what is appropriate for the job in hand, given current technical capabilities," he says.

"Operators shouldn't still be politicking over videotex coding standards.

"This politicking only holds back videotex information services and focuses user attention on technical issues rather than practical meeting of needs," Green says.

Three years ago the New Zealand trading banks decided that videotex services had the potential to play an important role in future banking services. With Databank, they have looked at available systems as a whole, and assessed standards most appropriate to meet market needs and corporate objectives.

Videotex standards differ in the way they define codes for placing information on a video screen, and in the way they process and deliver information.

Standards accepted in New Zealand include "NAPLPS" (North American Presentation Level Protocol Syntax), French "Teletel", British "Prestel" (the earliest form of video tex), and the traditional computer industry "ASCII" format, which has no graphics capability.

To date, Prestel promoters have claimed the international spread of their system to be a significant success statistic, while the Teletel marketeers have quoted success in terminal numbers.

Meanwhile, as each European side battled for market supremacy, across the Atlantic, IBM and American Telephone and Telegraph (AT & T) com-

bined their massive weights to push the more recently developed Naplps.

Technical advancements of Naplps include facilities which satisfy the security demands intrinsic to videotex remote banking services.

Prestel cannot provide standard encryption facilities necessary to assure the security of a system and integrity of the processed data.

"We need to access information directly from our customer information files, and ensure we have confidence as to the identity of the customer accessing the file," says Ron MacFarlane of the New Zealand Bankers' Association Electronic Banking Project Team.

"The network controls are made available by the Naplps protocol, but not within Prestel. It is for this reason the trading banks favour Naplps as a protocol."

The Naplps protocol is desirable if banks are to deal with on-line transfer and retain security of financial information for videotex customers, he says.

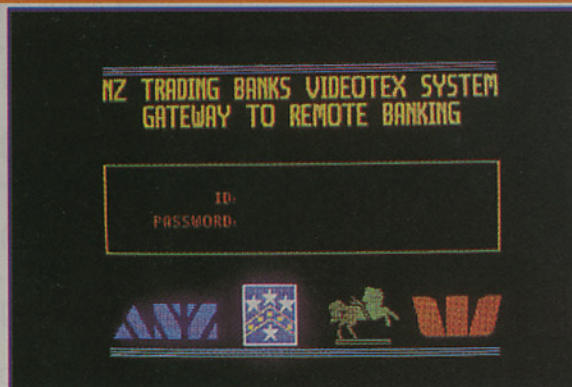
Prestel active

The trading banks are currently using Prestel databases to provide information services such as Forex (foreign exchange). Through the databases customers may have access to their bank accounts.

"We may well establish a money transfer service (MTS) facility using prestel videotex to feed into existing payment mechanisms and controls," says MacFarlane.

"However, this would be an interim move which would not use videotex to the full potential available to us through New Zealand's unique payments system."

The eventual key to stringent on-line banking security ties with Naplps. The system can transmit encrypted information in blocks. It uses traditional checking procedures throughout transmission with a final check once the message is complete.



In comparison, Prestel is limited in its ability to identify loss or corruption of data.

"Complete characters can go missing during transmission without being detected," says Pat Vallance, manager of research at Databank.

"Every character has a parity bit, but if an even number of bits are altered within a character, the Prestel system will, in most cases, accept it."

The Naplps network checks each block of data, or message, for missing or corrupted information and alerts the operating system for action.

Security 'too high'

Vallance challenges claims that Databank is setting the standard for videotex security too high.

"Because we are moving banking service beyond the security of the banking chamber, the foundation for our videotex services must be secure and conform to strong audit procedures."

"Naplps enables us to meet these demands".

In addition to providing a means for sophisticated security, Naplps brings better quality presentation to videotex screens with improved graphics.

Multi standard terminals are available for Prestel, Teletel and ASCII at around \$850 and a dual-standard terminal is being produced for Prestel and Naplps.

Personal computer users have potential access to all videotex standards and can select protocol software to suit a particular application.

Says Pat Vallance, Databank's research manager, "Naplps is a more efficient system in terms in storage capacity and transmission of information. As the numbers of databases in service grows, this will lead to significant savings."

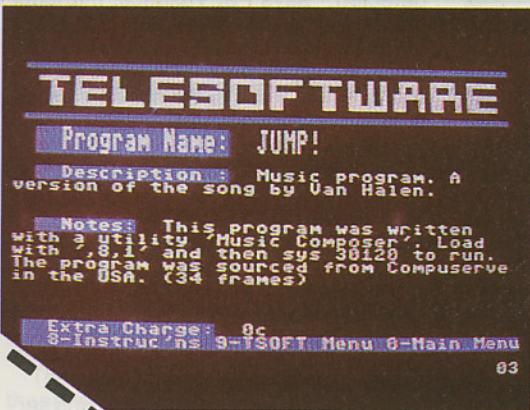
So far the BNZ and ANZ have recently launched videotex services — the BNZ offering money transfer abilities via videotex.



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How to use VDTs and stay healthy

As part of its in-house and on-going office automation programme, Philips NZ Ltd had begun to compile a guidebook for the company's visual display terminal operators.

However, the recent emergence of Repetition Strain Injury (RSI) as a major health issue in this country led to production of the booklet "Screen Sense" and a decision to make it and a poster (pictured) freely available to anyone.

To procure this well-intentioned advice, one merely has to write to "Data Systems Division, Philips NZ Ltd, PO Box 2097, Wellington" and ask for it.

Another big employer of VDT operators, Databank Systems Ltd, had recently made a similar effort to keep operators healthy by producing a videotape on RSI symptoms and prevention — the tape available to anyone outside Databank for a nominal production charge of \$45.

Below is a sampling of the good advice from "Screen Sense":

- **Position the keyboard for maximum comfort**

The keyboard should be within reach (around 45cm to 50cm from the body for the average person). You should sit or stand so that your forearms are horizontal while keying and there should be deskpace between you and the keyboard so that you can rest your hands when you are not keying.

- **Position your hands correctly.**

You should type with your wrists straight (with a straight line through the forearm and middle finger) or bent **slightly**. Bending your wrists too far back while keying places strain on the wrist muscles. You should "drop" your fingers down onto the keyboard rather than reaching back with your hand.

Initially, it may be an advantage to use wrist rests on your desk or workstation if they can be fitted. These allow you to rest your wrists at the correct angle above the keys. After you get used to the posture these can be removed and the position will become automatic.

- **Press the keys properly.**

Because VDT keys need very little pressure to work, skilled operators can

often develop a very light touch compared to a manual typewriter, for example. However, in a manual typewriter when you strike the key, the force you exert with your finger is absorbed by the typewriter in moving the key down. At the end of the key's travel, most of the force you have exerted is gone and your finger "bounces" back as the key rises.

Because of the lighter touch possible with VDT keyboards, there is a temptation to "flick" your fingers on and off the key. By doing this you are actually pressing your finger down and actively lifting it off, and when you lift your finger the force is absorbed not by the keyboard but by the finger itself. The keyboard does not help to bounce your finger up.

It's rather like raising one leg, pushing it down to lightly touch the floor then immediately raising it again. Compare the muscular effort needed to do this with stamping your foot down onto the floor then lifting it... in this case the floor helps bounce your foot up. Stand up and try it!

Try developing a keying action in which you use enough force to depress the key fully (and not skipping over the keys) without pounding on the keyboard (excessive force may damage the keyboard, and tire your fingers).

Developing the right touch will give you the best speed with the least strain, and after a while it will become automatic. It's rather like a pianist, who "strokes" the keys whilst playing.

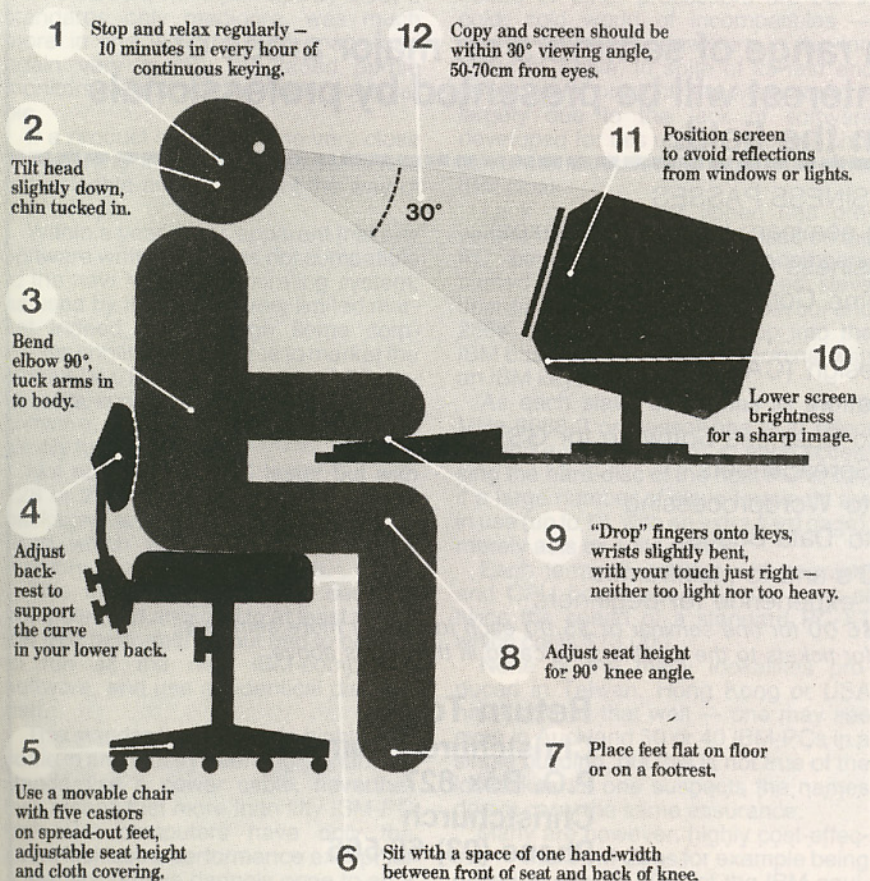
- **Take a break!**

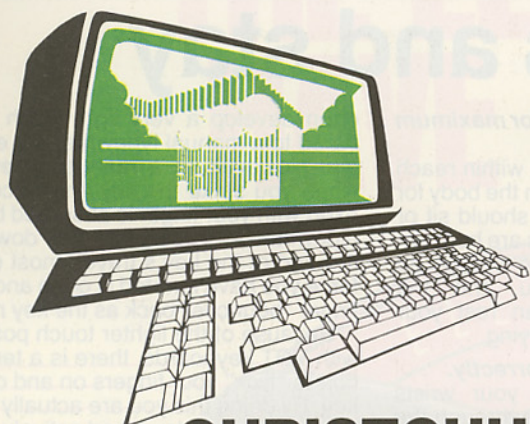
One of the major contributing factors to keyboard-related health problems is continual use of a VDT without a rest. In some countries laws say that a worker using a VDT must take a short break (often ten minutes) at hourly intervals if using the VDT continually (or five minutes every half hour).

Try to plan your working day so that non-keyboarding tasks which are not urgent can be spread throughout the day to give you short breaks away from the keyboard. You will find the quality of your work will be more uniform as a result.

Here's a useful exercise you can do to alleviate stress in your wrists and fingers. Try doing it when you take a break or when your hands feel tired.

Wrist extension. Hold your arm out from and down from your body at around a 45-degree angle. Stretch the arm out with the palms facing the floor and the fingers outstretched. Firstly move your wrist down as far as you can so that the fingers face the floor, then move your fingers into your palm and try and touch the heel of your hand. Hold this position for a couple of seconds then move the fingers out and straighten your wrist. Repeat the manoeuvre for the other arm.





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It's an IBM-compatible world. By Bernie Gunn

When IBM first entered the Personal Computer market, it did so in a way that surprised many of the computer professionals, world-wide.

Firstly it was hard to believe that the computer giant which already controlled two-thirds of the world's data processing, could seriously be interested in relatively low cost desk-top computers.

Secondly, Big Blue, instead of adopting a version of the CPM operating system which had come to be the 8-bit industry standard, went instead to an entirely new operating system, MS-DOS.

Even though it varied from CPM-86 only in minor ways, it nevertheless threw the bloodhounds, hot on the trail of producing compatible lookalikes, into delays of a year or more.

After all, as an industry spokesman said, "there never was a product but that someone could produce a little cheaper and a little worse."

Thirdly, the advent of the IBM-PC did cause a noticeable change in style. No matter that the new IBM keyboard had a universally hated layout, the quality was better than previously seen and keyboards with cheap-typewriter keys were soon seen no more.

The screen, while perhaps by today's standards only mediocre, was much more in line with the IBM image and again very quickly the faded purple monitors were simply no longer acceptable.

If a product couldn't come very close to matching the IBM standards, it was not saleable and soon went the way of the Kakapo.

Within a year it was apparent that any software written that was not compatible to the new MS-DOS operating system, as used by IBM, had a very limited market indeed, and though some companies continued for a time to market the older 8-bit CPM systems using Z-80 processors, such was the avalanche of new software, that many small companies simply had to upgrade.

Not only was the PC faster but with 128 or 256 kilobytes of memory, large packages and spreadsheets could be used which were impossible on the memory-limited 8-bit machines.

This meant that any new desk-top computer, not only had to at least match the IBM performance but had to be able to run all the new IBM-compatible software, and use an identical disc format.

This standardisation, while highly welcome in an industry seemingly unable to standardise a power cable, nevertheless means that more than fifty IBM-PC look-alike computers have only the same lacklustre performance except for a few which have daringly gone to an 8 Mhz processor and faster memory and

so doubled processor speed while retaining compatibility.

Within two years any computer has reached old age and one wonders why IBM themselves did not extend the life of the now somewhat middle-aged PC by using the 8MHz 8088-2; but perhaps they wish to move on with the new PC-AT.

Another unwelcome effect was the retention of the now outdated double-sided, 40-track 5 1/4 inch floppy drives of only 340Kb storage.

One or two manufacturers have retained software compatibility but totally done away with any pretense of hardware compatibility and gone to the much more compact and reliable TEAC or Sony 3 1/2 inch drives which store 1.5 Megabytes on two very unobtrusive drives.

The DG-1 for example can not only be carried in a brief-case, but one has to search to find the drives at all.

Another unfortunate side effect of the IBM domination has been that in order to retain compatibility, only the Intel 8088 processor can be used, or with some difficulty, its stable mates, the Intel 8086 or 80286.

All computers based on the Motorola 68000 or other processors are out in cold, cold world of incompatibles — indeed the recent downturn in the fortunes of Apple, in spite of its fast and rather novel product, the Macintosh, is largely due to the lack of software developed for this upstart who has chosen to stand outside the protection of the IBM cloak.

Lack of processor speed has prevented multi-user systems based on the PC being popular, but a company named Alloy Ltd has produced slave boards, each with its own processor and 256K of memory, which drop into the IBM bus and run a Kimtron terminal with an IBM keyboard.

As each slave board has its own 8 Mhz 8088-2 processor one is in effect running a network of PC's, each accessing the hard-disc of the host PC which, if a large number of slave terminals are in use (up to 18, with an extra card cage), merely acts as a file server.

Each terminal, costing with terminal and CPU board about \$5000, runs at twice the speed of a standard PC-XT which costs \$13,000.

None of the many lookalikes produced in Taiwan, Hong Kong or USA have sold all that well — one may see even in Auckland 30 or 40 IBM-PCs in a single building, but this is not true of the lookalikes as one suspects the names do not carry the same assurance.

Many are however, highly cost-effective — the OSM-Zeus for example being priced at exactly 50% of the IBM equivalent.

One large company with which I have been associated had recently signed a contract for some 40 IBM-PCs, but could have saved \$350,000 by using an identical lookalike such as the OSM-Zeus.

Some lookalikes however, have proved to be not completely compatible.

Some will run some software but not that requiring graphics, while others are only partially hardware compatible, a matter of importance when one reviews the very large volume of IBM compatible boards, slave processors etc.

We recently tested a ten Mbyte hard disc and back-up tape drive made by TEAC, the well known Japanese manufacturer of disc drives. This proved to be completely compatible with the IBM and with an NCR lookalike, but only partially compatible with a Sanyo machine.

How can one test whether compatibility really exists? Try and see!

IBM has begun marketing the PC-AT, which is about three times faster, has four times the disc storage and costs 50% more. However, the imitators are much closer behind this time, as it was well known that IBM would stick with Intel and use Intels 80286 processor, probably with the Xenix multi-user operating system, as already used by Intel who supply much of IBM's components.

The result has been that PC-AT lookalikes are already available, the OSM PC-AT for example (which is mainly manufactured in Korea though designed in USA) again selling for 50% of the IBM price.

Intel itself, the giant chip manufacturer, has now broken with a long refusal to compete with its best customers, and entered the micro market with the Intel 310, using the 80286, 80186 and 80287 processors in a multi-user system using Xenix.

Rumour has it that Intel was miffed by IBM's decision not to use one of Intel's ready-made SBC boards for the IBM PC or AT but to design its own using Intel components.

Intel have indeed done it better, as the Intel 310 runs at about 30% greater speed in all tests against the PC-AT, but it's intended to be used with four to eight terminals, whereas the AT can only support 3.

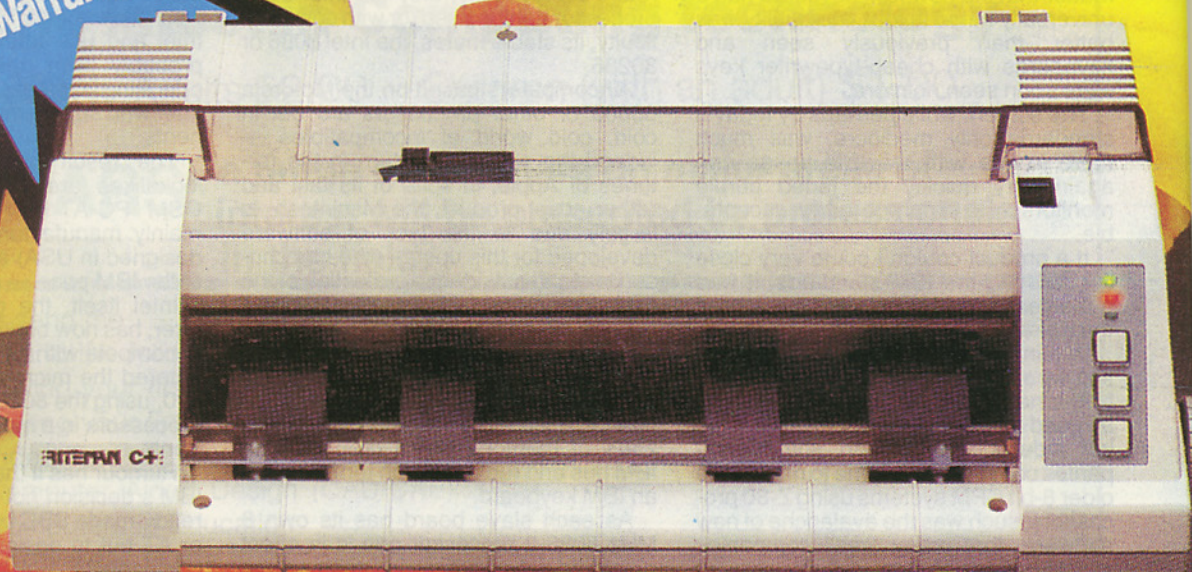
Moreover, IBM is still offering only the MS-DOS single user operating system, whereas Intel are a long way down the road, not only with Xenix but also in applications software mainframe interaction, and network controlling.

At a recent computer show, a PC-AT was shown networking a series of discless PC's and transferring data on the network at impressive speed — but it was an expensive system at about \$40,000 for four input stations.

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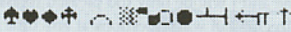
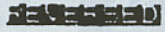
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80 CHARACTERS PER LINE	YES	80 CPL	YES	YES	YES	YES	YES
66 CHARACTERS PER LINE	YES	66 CPL					
132 CHARACTERS PER LINE	YES	132 CPL					
(PAPER HANDLING)			<h1>NO</h1>				
FRONT LOADING FOR							
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(SOFTWARE COMMANDS)							
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(CHARACTERS)							
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TRUE DESCENDERS	YES	abcbjppqyabc					
ITALICS	YES	ITALICS					
COMMODORE GRAPHICS	YES		YES	YES	YES	YES	YES
(OTHER FEATURES)							
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A tricky Debug

By Andrew Macpherson.

DEBUG is easy to use — once you know how.

The problem with this is the 'once you know how' part.

It is only due to trial, error and patience that I was able to compile a list of DEBUG Ver 1.08 instructions.

COMPARE — C

SSSS:SSSS,N,DDDD:DDDD

Where SSSS:SSSS and DDDD:DDDD are the memory locations to start comparing and N is the number of bytes to compare.

eg. C 0000:0000,5,1200:763E displays:—

```
0000:0000 76 FB 1200:763E
0000:0001 15 00 1200:763F
0000:0002 20 FF 1200:7640
0000:0003 03 00 1200:7641
0000:0004 11 FB 1200:7642
0000:0005 05 00 1200:7643
```

DISPLAY —1— D

—2— D SSSS:SSSS,N

—1— Displays the next 80H bytes. If D has not already been used then it will display the default of 075D:0100 for 80H bytes.

—2— Displays the memory from SSSS:SSSS on for N number of bytes.

EDIT —1— E SSSS:SSSS

—2— E SSSS:SSSS,B1,B2,B3,B4,B5

—1— Displays SSSS:SSSS and the byte for this spot. You may now type the new byte, or if it is correct press the SPACEBAR to move to the next byte. When EDITing is complete, press RETURN.

—2— Automatically replaces SSSS:SSSS on with B1,B2,B3 etc. The maximum number of bytes in this case is 15.

eg. E 0000:0000,44,45,42,55,47

This places the string 'DEBUG' starting at 0000:0000

FILL — F SSSS:SSSS,N,B

N is the number of bytes to fill, B is the byte to place in memory at spots SSSS:SSSS on.

eg. F 0000:0000,05,AA

fills:—

```
0000:0000 AA AA AA AA AA AA AA
00-11 05 40 00 11 05 40 00
```

GOTO — G SSSS:SSSS

Execute the machine language program starting at SSSS:SSSS

HIGHLOW — H N,M

Displays the values of (N+M) and (N-M).

eg. H 1234,10

displays 1244 1224

INP — I N

Displays the INP value of port number N

NAME — N (FILESPEC.EXT)

This is the NAME of the file you are either 1:CREATING 2:LOADING FROM DISK or 3: WRITING TO DISK.

LOAD — L

LOADS the filespec currently stored by the NAME command. This command must be used after the NAME command.

MOVE — M SSSS:SSSS,N,DDDD:DDDD

SSSS:SSSS is the source memory location. DDDD:DDDD is the destination memory location. N is the number of bytes to be MOVED. eg. M 0000:0000,80,1111:1111 Places 80H bytes from 0000:0000 on into 1111:1111 on.

OUT — O N,M

Puts the value of M through the N port.

QUIT — Q

Escapes back to DOS from DEBUG.

REGISTER —1— R

—2— R XX

—1— To display the REGISTERS, their values and the next line of disassembled OP-CODE.

—2— Replace REGISTER XX

eg. R CX

CX 000E

— prompt for new value of CX

SEARCH —1— S XXXX:

XXXX,N,'DEBUG' — can be any string.

—2— S XXXX:XXXX,N,

B1,B2,B3,B4 — any HEX digits.

—1— Search through memory starting at XXXX:XXXX for the string

'DEBUG'. This will display the memory positions where it found 'DEBUG'. Search for N number of bytes.

—2— This is used if you wanted to search for OD,ENTER or other codes that cannot be shown between quotes.

TRACER — T N

Displays register values while executing program lines. Executes N number of bytes. Starts tracing at the memory positions held by the registers CS and IP. TO make it so that the tracer starts at 1234:5678 then simply:—

R CS — this will be 1234

1234

R IP — this will be 5678

T 80 — start the trace.

OP-CODE —1— U

—2— U SSSS:SSSS,N

—1— Displays the next 80H bytes of disassembled OP-CODE. If U has not already been used then it displays the default of 075D:0100 for 80 bytes.

—2— Displays OP-CODE from SSSS:SSSS on for N number of bytes.

WRITE — W

Writes to disk with the filespec initialised by the NAME command. To alter the number of bytes to write simply replace the CX register. If you have loaded a program then CX will be the number of bytes long the program is and does not need to be altered to write the program back to disk. If you have created your own program using DEBUG then you will have to count the number of bytes long the program is, convert it to HEX and replace CX with the new value.

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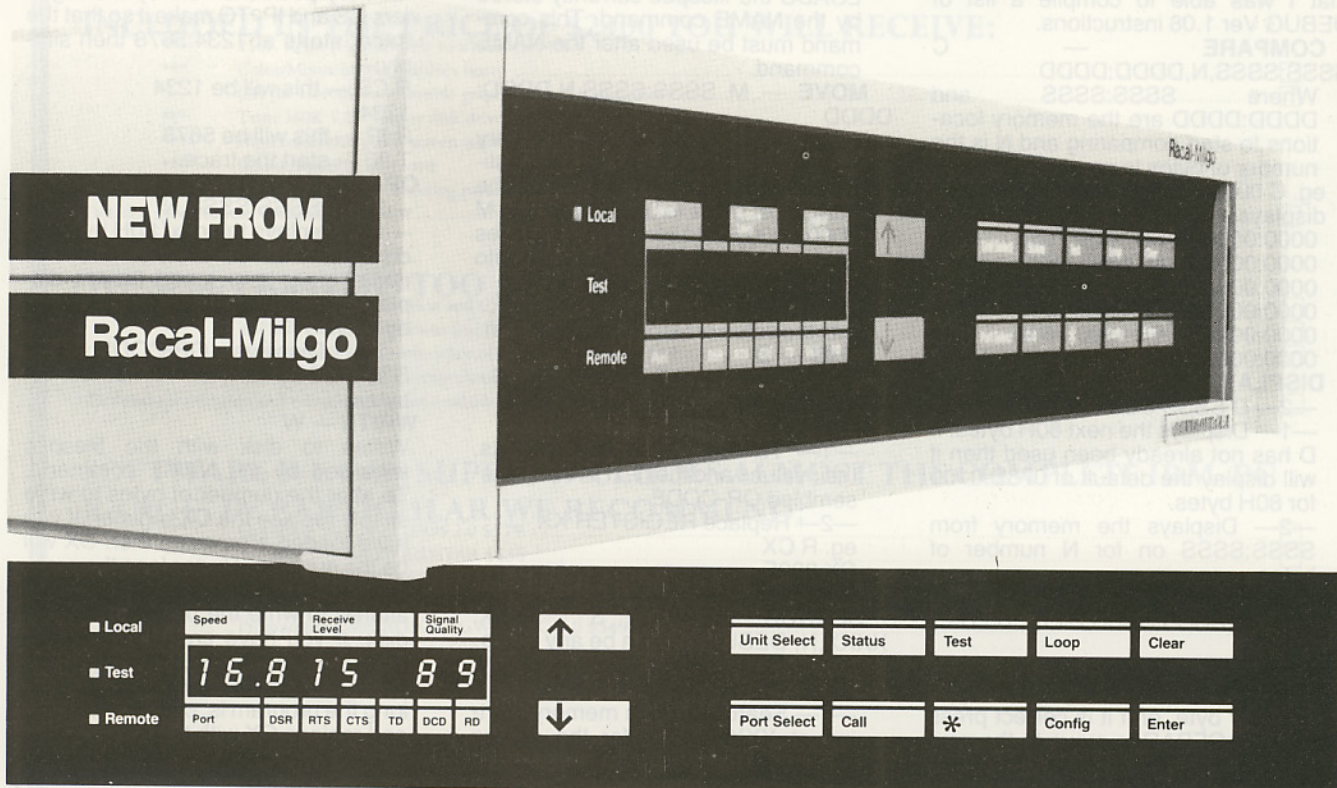
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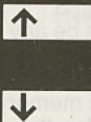
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Sanyo discoveries By Noel Weeks

A very useful item to buy for your Sanyo is a keyboard extension cable available from most audio/electronic shops.

All you ask for is a standard 180 degree DIN plug wired pin to pin.

There are a few commands that can be entered direct at the prompt or through an Autoexec file that can be handy to know.

MS-DOS does not normally verify what is written to disk, therefore it can be handy to turn VERIFY ON. (The default is VERIFY OFF.)

Although this does slow down the processing, when working with large data files, the lack of speed is probably outweighed by a bad write!

MD-DOS 2.11 has extra features on the Sanyo that are not easy to find. One of these is a way to speed up the internal data transfer rate.

When data goes to or from a diskette, it first passes through a buffer. (The Sanyo has a default buffer size of two 512 byte buffers.)

What MS-DOS 2.11 gives you is the capability to change that buffer size. With a larger buffer area, more information is transferred at one time, which means less I/O (i.e. faster processing).

To make this change you need to build a CONFIG.SYS file or modify your existing one if you have one. Config.sys is a file that MS-DOS automatically runs when the system is booted up.

When running check disk under MS-DOS 2.11 — it's important to know that Check Disk only inspects the disk for errors and unlike MS-DOS 1.25, has to be told to actually fix any errors found. This is done by simply issuing the command CHKDSK B:/F.

There is one other command applicable and that is /V. This command causes Check Disk to display the files as they are

being checked. Both /F and /V may be used at the same time.

If you've been having trouble with the Format command, the following table shows what switches are available with the format command in MS-DOS 2.11: (I wish these guys would stop hiding all these commands!)

- /V Will allow you to enter a Volume name for the disk after formatting has taken place.
- /S Will copy the Operating System to the disk being formatted.
- /1 Formats the disk to single sided, 180k format.
- /8 Formats the disk to 320k or, if used in conjunction with the /1 command, to 160k format.
- /O (the Letter O) causes format to produce an IBM-personal computer DOS version 1.X Compatible disk.

The directory will be configured with an OE5 Hex byte at the start of each directory entry.

BE WARNED: This format takes quite a while to do.

An example of these switches would be:

```
FORMAT B:/1/8/S/V
```

This will format the disk in the B: to 160k, transfer the Operating system and prompt you to enter a Volume label.

A useful tip writing Config.sys files, or for that matter, any small text files, is to type the following command at the system prompt:

```
COPY CON (filename)
(The text you wish to enter)
CONTROL Z (^Z)
```

The first line of the above simply copies from the keyboard to the filename given the following lines of text until a Control Z (^Z) is encountered.

A Config.Sys file is simply a text file and can be created using Edlin or Wordstar in non-document mode. To change the buffer size simply add the following line BUFFERS=n.

The "n" is the number of 512 byte sectors you desire to have for a buffer area. (I find "n" set to approximately 10 works fine.) If "n" is made too large things start slowing down again.

CTRL S and BREAK do not work on MS-DOS 1.25 because of a small bug in the Sanyo BIOS (Basic Input Output System). One of the routines that checks keyboard status returns an improper value. NS-DOS 2.11 do not have this problem.

The following are a few other useful features that can be included in a config.sys:

FILES = (a number). The number relates to the number of files that system calls can access at a given time.

BREAK = (On or Off). The default for this is OFF. When turned ON, the CPU will look for a Break signal more often than when turned OFF.

Another useful feature is the ability to change the PROMPT — that's the funny little symbol the computer puts on the screen when its waiting for your next command (e.g. A> or B>).

This can be very handy if you find you or your staff are unsure of where they are at times. I frequently place the following in an autoexec file to assist trainee computer operators:

```
PROMPT MS-DOS Logged drive is $n
Current Dir is $p$—$n$g
```

This produces the following on the screen when you are logged on to the B: drive and in the NOEL directory:

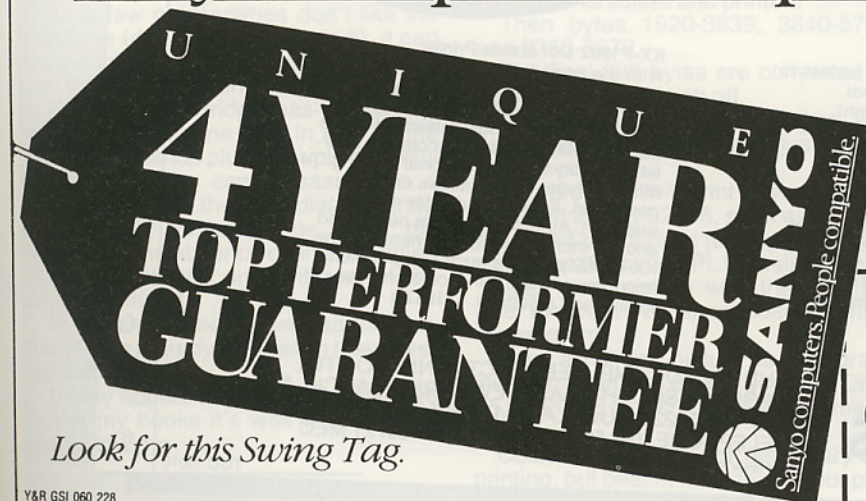
```
MS-DOS Logged drive is B
Current Dir is B/NOEL
```

```
B>
```

Each of those little letters following the

(Continued 85)

Sanyo computers. People compatible.



Look for this Swing Tag.

Y&R GSI 060 228

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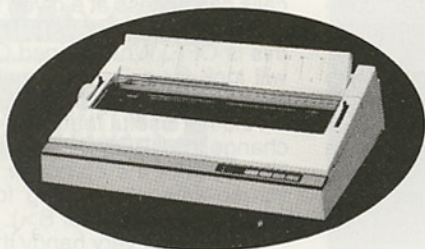
MEMO:

TO ALL COMPUTER OWNERS AND BUYERS

THE PANASONIC COMPUTER PRINTER
range will meet your requirements.

Attached are photographs and information
on the top selling four.

Look them over and contact me if you'd like
more information or the name of your
nearest dealer.



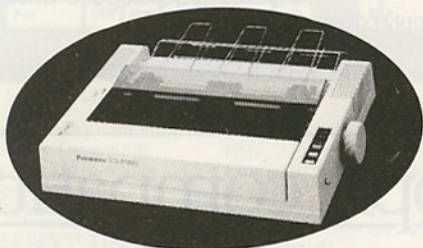
KX-P3151 Daisy Wheel Printer

The Panasonic KX-P3151 Daisy Wheel printer offers letter quality printing with fully formed characters. The KX-P3151 provides high performance, reliability, and versatility in word processing and multiple forms handling applications. Panasonic's Daisy Wheel KX-P3151 is compactly designed and offers outstanding print quality. **\$1495.00**



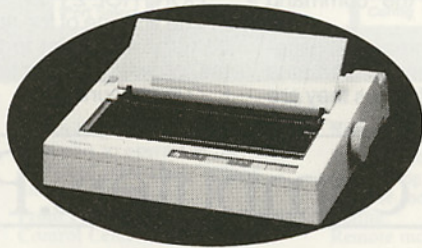
KX-P1090 Dot Matrix Printer

The Panasonic Matrix Printer KX-P1090 utilizes the latest technologies to supply quality copy and durability. State-of-the-art engineering and light-weight design, the sophisticated microprocessor-based electronics ensures the versatile and reliable performance. High resolution dot-addressable graphics and razor-sharp character printing that set high standards in variance and quality make the KX-P1090 today's most exciting news in matrix printers. **\$749.00**



KX-P1091 Dot Matrix Printer

Multiple mode printing gives you access to near-letter quality and proportional printing. By combining various print modes, the KX-P1091 offers a total of 64 different types of characters. These include double width, compressed and superscript/subscript with true descenders. A switch indicator on the printer body makes selecting draft, near-letter quality or proportional modes easy. 120 cps in the draft mode. Command mode compatible, it can be used with many, already-developed software programs. **\$895.00**



KX-P1092 Dot Matrix Printer

With the combined features of multiple mode printing and a draft mode speed of 180 cps, the Panasonic KX-P1092 is designed for demanding users. Multiple mode printing gives you access to near-letter quality and proportional printing. 74 different types of characters can be generated. A switch indicator mode selection. Automatic reverse paper feed and a 1-inch paper cut mechanism. The KX-P1092 provides razor sharp printing, economy and the Panasonic promise of quality and reliability. **\$1195.00**

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TCC 11016

Loads discs faster

Commodore 64 Fast Load Cartridge by Epyx \$89.95 agents: Blackwood Gayle Distributors
Reviewed by A.R. Mitchell

This is probably the best computer buy I will make this year.

I first heard of this cartridge at the agent's stand at Bits and Bytes Micro Show this year.

Since then a friend has bought it and as soon as I was able to afford it so did I.

The basic claim is to load disc programmes up to five times faster than the unaided 1541, and my timing tests confirmed that in some instances it matches the claim.

I timed 12 commercial programmes and five Basic programmes and the average increased loading was in excess of three times.

The games fanatic has the most to gain with the cartridge as the speed gain was consistently high.

What dragged the average down were the commercial 'utility' programmes such as Superbase which disable the cartridge slot as part of its loading procedure.

Fast loading is only the first advantage, as all loading, saving and disc commands are enabled with a single keystroke — no more OPEN & CLOSE commands necessary.

There is also a copying option built in which allows file copying of single programmes, active BAM or whole disk.

A further option adds deletion, locking, unlocking and renaming a file. Another option is for reading, editing and rewriting disc sectors.

As a few programmes don't like the cartridge (eg. Flight Simulator II), it can be disabled; an option which means it can be left permanently in place.

Finally the cartridge has a powerful monitor programme built in with all the usual commands plus a couple of useful extras (eg. you can disassemble a block but only list the immediates found).

The only disadvantage with the monitor, is the absence of an assembler. In fact this is the only criticism of the whole cartridge.

In the short time I have had this cartridge I am already wondering how I ever did without it.

It may appear to be a little expensive but in my books it's well worth it. Top marks to Epyx.

A Picture's Worth...

By Joe Colquitt

As an owner of a printer capable of user-defined graphics, I was determined to get the most out of it, so I wrote this program to do just that.

The program was written with the MPS802 in mind, and may need alteration in the output routine for others, such as the 1525.

The main program presented will allow you to dump a re-defined or bit-mapped screen.

For example, the electronic circuit below was printed using the program and a character set comprising about 230 re-defined characters, all bits of components etc.

I draw the circuit on the screen, using the cursor and key graphics, enter a SYS number, and there it is in hard copy.

The method I've used is this:—

The program first takes the user's re-defining data from 12288 onwards, rotates it and stores it at 8192 onwards. The rotation is necessary (on the 802) because the print-head requires it.

Next, the program works it's way through screen memory. It gets the ASCII value of the screen location 1024 contained a re-defined 'Z' (ASCII 26), the program calculates that there are 8 bytes of data at 8192+(26*8), the program calculates that there are 8 bytes of data at 8192+(26*8) to 8192+(26*8)+7.

These 8 bytes are then sent down to the printer.

The procedure is repeated over the range of the screen stipulated by the user.

There are two major loops in the main routine. One is for the columns range, and the other for rows.

Either/both can have start/end values pre-set.

Dumping a bit-mapped screen is the main routine done four times.

Bytes 0-1919 are taken out of the bit-map screen and converted to 240 re-defined characters and printed.

Then bytes 1920-3839, 3840-5759 and 5760-7679.

The final 320 bytes are converted to 40 characters to finish off.

A full bit-mapped screen takes 250 seconds to convert and print, just time to make a cuppa.

The program will print a screen contained at 24576-32575, such as the one produced by Paintpic (tm) by Kiwisoft of Auckland (5 Elwood Pl. Ellerslie).

Load your picture with the Paintpic User Program. As Paintpic loading/printing program.

Save a Paintpic picture as a program file with POKE43,0:POKE44,96:POKE45,64:POKE46,127:CLR:SAVE"screen", 8,1.

Colour memory is not necessary for printing, but bear in mind that colour pic-

tures are made up of dot pairs, ie 00 0x and x0. 00(both dots on) is Paintpic pen 3, and this gives a solid line or block. The other two pens produce dotted lines or stripes on paper, even though they may appear solid on the screen.

Sub-routines called in the program are;

- 1) 49487 (\$C135) engage printer, set line spacing and call sub-routines 2-5. Close files and disengage printer.
- 2) 49185 (\$C021) clear 8192-10239.
- 3) 49152 (\$C000) transfer 12288-14335 to 10240-12287.
- 4) 49234 (\$C052) work through 10240-12287, rotating 8 bytes at a time. Each group of 8 is stored sequentially starting at 8192. The process destroys memory contents of 10240-12287, hence the need to call \$C000 first. The program actually works on a copy of the character set.
- 5) 49361 (\$COD1) work through screen, decode and print.

The sub-routine that produces the print starts at 49549 (\$C18D), and should be changed to suit the syntax of your particular printer.

```
C18B TXA      store X register value
C18C PHA
C18D PHA
C18E LDX#$04  open channel 4
C190 JSR$FFC9
C193 PLA      get X off stack
C194 ADC$0A   add Paper Tab
C196 TAX      store in X
C197 LDA#$1D
```

```
          output X cursor-rights
C199 JSR$F1CA
C19C DEX
C19D BPL$C197
C19F LDA#$8D  send CHR$(254)
          (ie re-define character)
```

```
C191 JSR$F1CA
C1A5 LDA#$8D  send carriage
          return (no line-feed)
```

```
C1A6 JSR$F1CA
C1A8 PLA      restore register
C1A9 TAX
C1AA RTS
```

As the program proceeds, the X register holds the number of columns, and Y the number of rows, explaining the use of the X register to print cursor-rights. At \$C10E is:

```
C10E CPY#$28  compare
          Y with 40
C110 BNE$C0D3  if not equal
          keep printing on same line
C114 JSR$F1CA
```

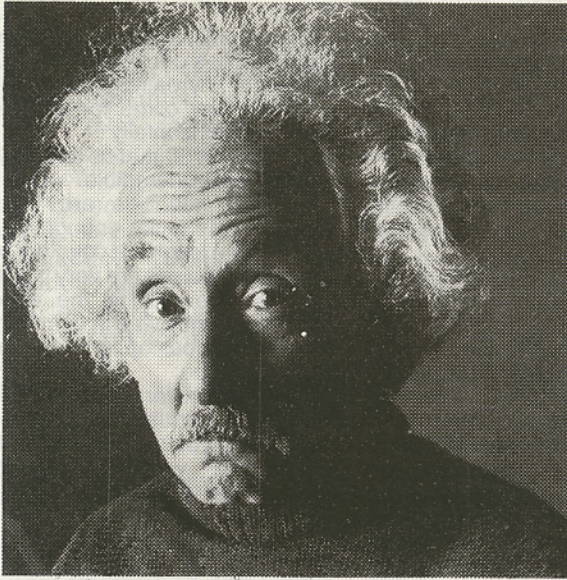
The way I use the routine is to draw on the screen, then enter
POKE43,0:POKE44,4:POKE45,
233:POKE46,7:CLR:SAVE"screen",
8,1

to save the screen contents.

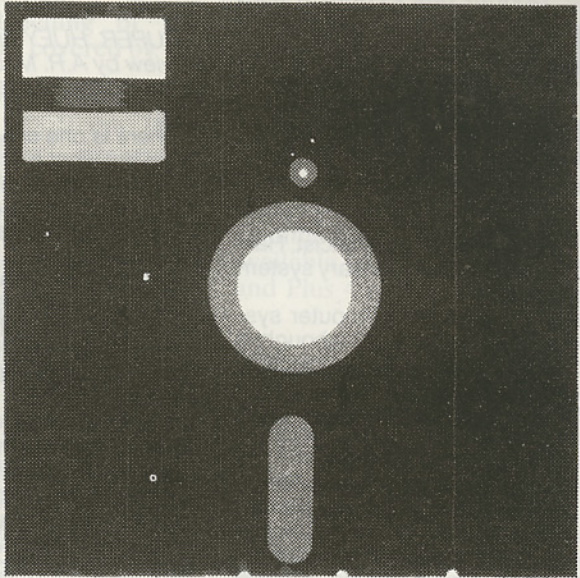
The main program should be saved after being typed in. Run it to locate any

(Continued 60)

GREAT LOOKALIKES



Einstein Lookalike
 Left school Age 9
 Works as caretaker in glue factory
 Failing Memory
 Likes a drink



Maxell Floppy Disk Lookalike
 One of several floppy disks on the market
 Inferior production techniques
 Unreliable characteristics
 Prone to losing data
 Deceptive Appearance

ARE NO SUBSTITUTE FOR THE GENUINE ARTICLE

Take floppy disks for instance there are a lot of them around and they all look like Maxells, but there's only one MAXELL FLOPPY DISK.

MAXELL are acknowledged experts in the field of magnetic media because MAGNETIC MEDIA IS ALL THEY DO.

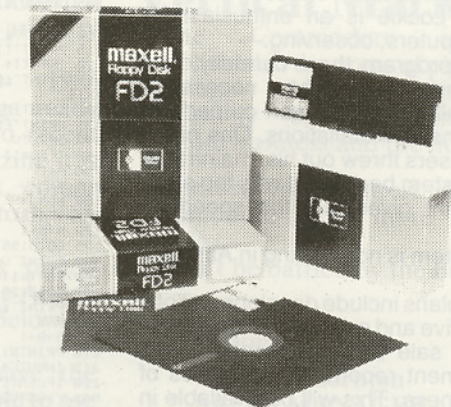
As a result of their long-standing, technological experience in this area, their superior know-how and rigid inspection standards, MAXELL produce Floppy Disks of an unparalleled performance and reliability which is widely recognised by computer manufacturers around the world.

Unfortunately these important distinctions are sometimes disregarded when choosing a floppy or floppy disk replacement from the wide selection available.

As one floppy disk looks much like another, scant

regard is sometimes paid to the type being used with your equipment. When something goes wrong, as it always does, your irreplaceable data can be lost for ever.

Assure yourself of Quality, Durability, Range, Interchangeability and Capacity. Make sure it's a genuine MAXELL FLOPPY DISK, not just another lookalike.



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AWD 2857

C64 prescribed

Last year Auckland pharmacist, Harvey Lockie, wanted a dispensary system for his pharmacy.

None of the available computer systems did what he wanted, so he bought a Commodore 64 and wrote his own program.

It has proved very successful — it did everything he wanted, and for only 25% the cost of the existing alternatives.

Other pharmacists saw the system in action, liked it, and now Harvey's working on computers full time and has just installed his 100th system in 15 months.

It appeals to 2 main groups — small pharmacies who like the cost (\$3,700 complete, hardware and software), and large pharmacies who like the speed and user friendliness for their large number of operations. There are now eight Urgent Pharmacies using the system, and they are among the busiest pharmacies in the country.

"I'm a pharmacist who got into computer programming — rather than a computer programmer who got into pharmacy", says Harvey Lockie, "and my program reflects this. It makes assumptions that a pharmacist makes, speaks his language, and so is very friendly to the pharmacist and easy to learn."

"Even small towns have a Commodore dealer, and they can usually lend a device 'ex stock' if something breaks down. So my users have had excellent service and the system is very reliable, which is essential for a business user with his main function on a computer."

Harvey Lockie is an enthusiast for small computers, observing:—

"If you program them carefully, and use machine code when necessary, these small computers can outperform very expensive installations. One of my program users threw out his 'mainframe on line' system because it was too slow. My program gives him the speed he wants."

The system is now selling in Australia also.

Future plans include development of a cost effective and easy system to handle "point of sale", "stock control" and "management reports" for all types of retail business. This will be available in time for GST next year, and will offer the same benefits for general retailers as the dispensary system does for pharmacists.

Helicopter simulation

SUPER HUEY from U.S. GOLD. A Review by A.R. Mitchell \$29.95 (tape) Supplied by Fountain marketing.

There is one only screen to this simulation but what a screen! Half of it is outside view, the other half is full of instruments. This is not a straight 50-50 split however but a realistic view from the pilot's seat.

Into the panel part is crammed 28 different gauges, instruments, and indicator lights, none of which I had any trouble reading. There is everything from an auto-pilot to the temperature of your exhaust.

Flying is not as easy as a fixed wing aircraft but once mastered (and it's not really hard) the thrill is tremendous.

While flying there are a number of things to keep your eye on and when landing your vertical speed downwards must not be more than structurally allowed.

When these are added to the Combat option, you certainly have your hands full.

The graphics are very good, the buildings and trees get smaller as your vertical height increases, but get slightly larger as they come toward and pass under you horizontally.

Try flying at 50 feet as fast as you can — the effect is incredible.

Coupled with this are the sound effects. I was lucky enough to have a flight in a helicopter a couple of months ago and the noises are very true to life. It was just like reliving the experience except this time I was in command.

There are four options, two on each side of the tape:

Flight Instruction — which leads you through the required procedures to fly while letting you do the hard work.

Rescue — you have to locate and rescue missing personnel.

Exploration — allows you to fly around practising your skill and mapping the terrain below.

Combat — you are charged with the protection of your base. Seek the enemy, determine their strength and engage if you have the nerve.

VIC-20

Commodore 64

Line Graph By B. G. Speers

This program will plot line graphs of data given by you, on a 1520 printer/plotter. Full instructions are given in the program.

```

10 REM*****
15 REM x
20 REM x
25 REM LINE GRAPH x
30 REM x
35 REM BY x
40 REM x
45 REM B.G.SPEERS x
50 REM x
55 REM x
60 REM x
65 REM*****
70 REM DEFINE VARIABLES
75 DIM X(11)
80 Y(1)=-450
85 Y(2)=-400
90 Y(3)=-350
95 Y(4)=-300
100 Y(5)=-250
105 OPEN1,6,1:OPEN2,6,2:OPEN3,6,3:OPEN4,
6
110 PRINT"E"
115 PRINT"TITLE OF GRAPH"
120 INPUT$
125 PRINT"ENTER MINIMUM VALUE FOR Y-
AXIS"
130 INPUT M
135 PRINT"ENTER INCREASING VALUE"
140 INPUT U
145 IF(U<11)>>999THEN180
150 A=1
155 M=M+U
160 X(A)=M
165 IFA=11THEN195
170 A=A+1
175 GOTO155
180 PRINT"VALUE TO HIGH"
185 FORT=1TO1000:NEXT
190 GOTO125
195 PRINT"ENTER X-AXIS VALUES"
200 B=0
205 B=B+1
210 PRINTB;
215 INPUTC(B)
220 IFLEN(C$(B))>3THENPRINT"TOO LONG (3
MAX)":GOTO210
225 IFB=7THEN235
230 GOTO205
235 PRINT"ENTER GRAPH POINTS FOR Y-AXI
S"
240 C=0
245 C=C+1
250 PRINTC;
255 INPUTC(C)
260 IFC(C)>MTHENPRINT"TOO LARGE("M"MAX)
:GOTO250
265 IFC=7THEN275
270 GOTO245
275 GOSUB585
280 REM DRAW AXIS
285 PRINT"2,0
290 D=50
295 PRINT"1,"M";D:-505
300 PRINT"1,"D";D:-500
305 IFD=440THEN325
310 D=D+65
315 PRINT"1,"D";D:-500
320 GOTO295
325 E=-500
330 PRINT"1,"M";45;E
335 PRINT"1,"D";50;E
340 IFE=50THEN365
345 E=E+50
350 PRINT"1,"D";50;E
355 REM FORMULAE FOR CONVERTING
GRAPH POINTS TO PLOTTER POINTS
360 GOTO330
365 F=1
370 PP(F)=Y(F)*X(F)
375 XY=XY+PP(F)
380 X=X+X(F)
385 Y=Y+Y(F)
390 X2=X2+X(F)^2
395 IFF=5THEN410
400 F=F+1
405 GOTO370
410 I=(5*XY-X*Y)/(5*X2-(X^2))
415 H=(Y-I*X)/5
420 J=1
425 K(J)=H+I*X(J)
430 IFF=7THEN450
435 J=J+1
440 GOTO425
445 REM DRAW GRAPH LINE
450 PRINT"2,3
455 PRINT"1,"M";50;K(1)
460 D=2:A=120
465 PRINT"1,"D";A;K(D)
470 IFF=7THEN490
475 A=A+70:D=D+1
480 GOTO465
485 REM TITTLE
490 B=-510:F=0
495 PRINT"2,2
500 PRINT"1,"M";1;B
505 PRINT"4,0;
510 IFF=11THEN525
515 F=F+1:B=B+50:D=D+0+U
520 GOTO500
525 G=1:H=30

```


Education

The latest Education Department statistics showed that Commodore is the most represented computer brand in the Primary and Intermediate schools and part of the 'Big 3' in Secondary schools - Apple, B.B.C and Commodore.

There are now over 260 schools using Commodore computers and with the wide range of Commodore computers to select from it would appear that schools are making good use of the variety.

The Commodore selection starts with the Commodore 16, the machine that replaced the Commodore Vic 20. The Commodore 16 has an improved level of BASIC (the machines language) a forty column screen and an increased memory of 16K. As a beginners machine it is proving to be very popular.

The Commodore 64 remains as Commodores' most popular multi-purpose machine and the one in most demand with the schools. The 'mountain' of software available for the Commodore 64 makes it first choice for anyone wanting to use their computer for recreation, education and small business.

The new Commodore 128, due for release later this year has been made compatible with the C64 and will run all Commodore 64 software. Another aspect of the Commodore 64 is that it is being used for Videotex - the computer communication via the telephone. The C64 would appear to be the leader and around for some time yet. One should note that the 5 millionth Commodore 64 will be sold somewhere in the world during 1985.

Another member of the Commodore family is the Plus 4 computer. The Plus 4 was built as a special purpose machine and has 3 software packages built into the computer. They include a word processor, a spreadsheet and a database as well as a graphics utility. All of the packages are integrated and very popular with people who want that convenience - especially those working on standard quotes that require doing calculations and putting them into a letter with the name and address coming from the database - all without changing a disk!

Schools are using the Plus 4 as a

specialist machine, with senior classes, in the teaching of the business applications covered by the in-built software.

The newest arrival to the family is the Commodore PC - the IBM compatible business processor. Although a bit of an overkill for schools teaching general computer studies, computer aided instruction or computer aided learning it still has relevance within some areas of the educational arena. Being IBM compatible means that it has access to a very large selection of software covering areas of school administration, subject tutoring and simulation. The Commodore PC10 is expandable to 512K with twin 360K floppies and full graphics, colour and networking capabilities. The Commodore PC20 is similar to the PC10 except that one floppy disk drive has been replaced by a 10 meg hard disk drive.

Although the Commodore PC is targeted at the business market, where it is very price competitive, it is also priced to match the new IBM JX within the Education market. If people require MS-DOS then it too can be supplied from within the Commodore family.

Machines yet to come include the Commodore 128 - three machines in one, a new C128 computer with level 7.0 BASIC, a Commodore 64 and a CPM based processor, the different computer characteristics can be selected at the press of a key. The C128 has an 80 column display, a very fast disk drive and already a large selection of software. Programs like Vizastar, Superscript, Superbase have all been converted across into C128 mode and are very impressive.

Looking ahead into 1986 Commodore has the Amiga ready for launch and according to recent reviews in the BYTE magazine it is being hailed as a very fast, colour version of the Apple Macintosh - an interesting option.

The Commodore PC is priced below its competitors and the Amiga will also be at a price well below its opposition.

It's not enough just to have the computer, you have to be able to use it and use it effectively with ease. In the schools this means gaining access to suitable software at reasonable prices and local support. The Commodore approach is to provide

such resources and support, usually at no charge, when the school sets up their computing facility.

For the home user Commodore also makes available a large collection of programs on diskette covering areas of education, recreation and business. Many of these programs are part of the Commodore Software Library, available for the Vic 20, C16, C64 and Plus 4 computers.

Product News

The very popular PRINTSHOP program is now being widely used on the Commodore 64 computer and it is excellent for doing letterheads, posters, banners and greeting cards. It has received good reviews in the overseas magazines and retails at \$99.50

Commodore have just released the first two programs from the 'Learning is Fun' series written by a New Zealand teaching couple - Geoff and Stephanie Williams. The programs are called 'Learn to Subtract' and 'Learning Addition' and have been educationally researched and designed to ensure that appropriate learning takes place. They are fully field tested with New Zealand school children and represent excellent value.

'Leapin Louie' has just been written for the C16 and C64 computers and it is a game full of action and exciting challenges. Other titles will be released as they are developed.

Vertical Markets

The Commodore is well established in the areas of pharmacy, farming, videotex, insurance, education, controls, small to medium business and the home.

Contact your nearest dealer or Commodore for more specific details.

Don't be baffled by the buttons.

Regards,

Richard Thornton
SALES MANAGER

Commodore Computer (NZ) Ltd
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PO Box 33-847
TAKAPUNA
Ph: 410-9182

Spectrum disks: why not?

by Gary Parker

When I first heard about disk drives for the Spectrum, I was reminded of that old joke about the guy with a 10Mb hard disk attached to his ZX81.

But these days lots of computer systems have disk drives which cost more than the computer, so perhaps that joke is a bit obsolete.

Why not have a disk-based Spectrum?

The fact that the drive costs twice as much as the computer doesn't make high-speed loading and saving any less useful!

Several Spectrum disk drive systems have appeared in Britain recently. One which has received good reviews is the Kempston disk interface, and this is now available through a New Zealand supplier.

The Kempston interface allows you to connect up to four "standard, independently powered BBC disk drives" to the Spectrum. In practice, this includes most drives which don't have a built in DOS (disk operating system), and which are capable of double-density operation.

So you can't use Commodore drives for example, because they have a DOS designed to go with Commodore computers. But 'dumb' drives are usually cheaper and faster anyway.

I tried out the interface using a Teac half-height 800K drive, as used with the BBC.

Since the Spectrum is not designed to supply a drive with power, you need a separate disk drive power supply. A cable to connect the drive to the interface is also necessary.

The Kempston disk interface plugs into the expansion port at the rear of the Spectrum. It is only about the size of a cassette tape, and is quite unobtrusive as it lies horizontally rather than sticking up vertically as some interfaces do. It has a small reset switch and a power-indicator LED on its top surface.

When the Spectrum is powered up, the Sinclair message which usually appears at the bottom of the screen is replaced by a Kempston message.

Magnifying glass

A manual supplied with the interface lists the commands available. One other item you need (which I neglected to mention above) is a magnifying glass — the manual has lettering 1mm high! Actually it is quite readable if you have sharp eyes. If you don't, I guess you can always make an enlarged photocopy.

All disk commands are preceded by PRINT #4

to differentiate them from ordinary tape or microdrive commands.

Apart from that, the commands are mostly standard Spectrum commands.

This is an excellent feature. It means the commands are already familiar to users, programs will be easy to convert

to disk, and a tape recorder and disk drives can be connected to a Spectrum at once using similar commands for both.

The Kempston disk interface is fairly fast in operation.

I can only compare it with the handful of disk systems I have used, but if you divide disk speeds into fast (e.g. BBC), medium (e.g. Apple) and slow (e.g. Commodore), the Kempston is in the fast category.

It is much faster than the Commodore 64, and faster than the Apple, but not quite as fast as the BBC which, after all, is renowned for its disk speed.

I measured various times taken in manipulating a program which took two minutes to load off tape. It took 19 seconds to save onto disk, 4 seconds to load off disk, and 3 seconds to erase. The loading time is particularly impressive, on par with the BBC.

The DOS has all the usual commands such as LOAD, SAVE, ERASE, CAT, and so on. It also has some added niceties not directly related to disk operation such as an ON ERROR GOTO command.

I couldn't find any reference to random access files in the manual, and it would be a pity if these weren't supported, although I suppose most users wouldn't miss them. Sequential files are

available.

Wildcard operations are supported. With these you can do specific things to all files which have certain characters in their name. For example,

```
PRINT #4: MOVE "","/text": PRINT d1, d2
```

will move all files with the name extension 'text' from disk drive 1 to disk drive 2. (PRINT is used to define extra parameters required by the DOS, in this case the two drives.)

Perhaps the most important question for many Spectrum owners will be "How easily can I transfer my programs to disk?"

Unprotected programs, of course, can be transferred very easily. You just load them off cassette with

```
LOAD""
```

and save them to disk with

```
PRINT #4: SAVE "whatever"
```

Protected programs present a problem for all non-cassette systems, as microdrive and waferdrive owners will know. This is because such systems invariably use some memory space and shift other programs up in memory.

But the designers of the Kempston disk interface have made every attempt to help the user save awkward programs to disk.

The interface has a built-in utility prog-

(Continued 65)

Key Finder

By Peter Smith

This program is an aid for musical Spectrum users.

It works out the relative minor of any major key, and draws the key signature.

It can work out all possible key signatures, and up to seven sharps and flats.

```
5 REM Key Finder
10 POKE 23658,8
20 GO SUB 280
30 INPUT "What is your major key "; LINE a$
40 CLS
50 RESTORE 230: FOR N=1 TO 16
60 READ B$,C$,B
70 IF A$=B$ THEN GO TO 100
80 NEXT N
90 PRINT "THAT IS AN UNKNOWN KEY!!!"
100 TRY AGAIN: FOR N=1 TO 200: NEXT N: CLS : GO TO 30
110 IF LEN A$=2 THEN IF A$(2)="-" THEN LET A$(2)=CHR$ 144
120 PRINT "THE RELATIVE MINOR OF ";A$;" MAJ IS "C$;" MINOR"
130 PRINT "THIS IS THE KEY SIGNATURE:"
```

```
130 FOR N=11 TO 20 STEP 2: PRINT AT N,0;D$: NEXT N
140 RESTORE 250
150 IF B>9 THEN GO TO 190
160 FOR N=1 TO B
170 READ A: PRINT AT A,N*2;"#": NEXT N
180 GO TO 30
190 RESTORE 260
200 FOR N=1 TO B-10
210 READ A: PRINT AT A,N*2;CHR$ 144: NEXT N
220 GO TO 30
230 DATA "C","A",0,"G","E",1,"D","B",2,"A","F",3,"E","C#",4,"B","G#",5,"F#",6,"C#","A#",7
240 DATA "C","A",10,"F","D",11,"B-",12,"E-",13,"A-",14,"F",14,"D-",15,"B-",16,"C-",17,"A-",17
250 DATA 11,14,10,13,16,12,15
260 DATA 15,12,16,13,17,14,17
270 STOP
280 RESTORE 280
290 LET D$="": FOR N=1 TO 27: LET D$=D$+CHR$ 145: NEXT N
300 FOR N=0 TO 15: READ A: POKE USR "A"+N,A: NEXT N
310 RETURN
320 DATA 64,64,64,96,80,72,72,12
330 DATA 0,0,0,255,255,0,0,0
```


(continued)

ram which copies protected (and unprotected) programs from tape to disk. To call it up you simply use

PRINT #4: COPY

It can even copy headerless files, although the new high-speed loaders seem to thwart it.

Another feature which enables programs to be saved to disk is a 'cruncher' utility. Since the DOS takes up some memory (but not much with this interface), some programs may no longer fit into memory when the interface is present.

The cruncher utility reduces the memory taken up by programs.

It does this by using methods which will be familiar to people who have owned a 1K ZX81: it replaces zeros with NOT PI, and suchlike.

What you end up with is a (rather illegible) listing which looks longer, but which actually takes up less memory. With any luck the program will now fit into the available memory. Several K can be saved with long programs.

Trial run

To find out what the interface was really like in use, I decided to write this article using the system.

First I had to transfer my word processor program to disk. This simply involved adding "PRINT #4" to some SAVE commands in the program, and took about five minutes.

Then I had to change the bits in the program which save and load the text file in the same way. This took about ten minutes.

Loading the word processor off disk took 5 seconds, which is fast considering it is a sizeable program with a Basic segment and three machine code segments.

Every so often I would save the text file as I typed. This only took a few seconds, depending on the size of the text file at the time.

Then I would take a look at what was on the disk; the CAT command took less than 2 seconds even though there were myriads of short programs on the disk. Need I say more?

This disk system certainly makes word processing a pleasurable experience.

In fact all the commands are logically constructed, easy to use, and fast.

It is good to see that even though this DOS is an add-on, its makers have made it very user-friendly.

I haven't tried any other Spectrum disk systems, but comparing it with disk systems on other machines it is very impressive. If I was in the market for a disk system I would snatch this one up!

The Kempston disk interface is priced at \$280. It is available through Westbridge Computers, P.O. Box 7280, Christchurch. If you'd like more information, telephone Chch 389-605.

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ML Comparisons

If it's wet it's raining

by Joe Colquitt

There are a number of instructions associated with testing memory conditions, loops etc., all of which concern the status register (P), which has its bits arranged thus (bit 7 to bit 0); NV * BDIZC, corresponding to negative, overflow, (* unused, log1), break, decimal, interrupt disable, zero, and carry.

The instructions which use the status register are in three groups.

1) Compare: CMP, CPX, CPY, BIT

These compare a memory byte, the accumulator or an index register against a value and are usually followed by a branch instruction. As typical examples;

```
C000 LDA#000 ;SET THE COUNTER TO 0. THE Y REGISTER COULD BE USED.
C002 LDA#C010,K ;GET A VALUE FROM THE STORAGE AREA
C005 2ER#FFD0 ;PRINT IT
C008 2M ;INCREMENT THE X (OR Y IF USED) REGISTER
C009 CPY#015 ;COMPARE THE X REGISTER VALUE TO #015 (21 DECIMAL)
C00B BNE#C002 ;IF (015-X) < 0 THEN LOOP (BRANCH IF NOT EQUAL)
C00E RTS
```

```
C010 50 52 49 4E 54 49 4E 47 ;THESE ARE CHR VALUES, AS FOUND IN
C012 20 48 52 4F 4D 80 53 54 ;APPENDIX C OF THE USER GUIDE
C00E 4F 52 41 47 45 80 80 80 ;
```

This example will print out the message held at \$C010-\$C024. The counter runs from 0 to #\$14, with the BNE being ignored when X=#\$15

```
TO TEST A MEMORY BYTE (EO $3400)
C000 LDA#3400 ;GET THE VALUE (PEEK)
C003 BEQ#0000 ;IF VALUE=0 THEN BRANCH
;THE ZERO BIT IS SET IF THE TEST PRODUCES 0
C000 LDA#3400 ;GET THE VALUE
C003 CMP#3401 ;COMPARE THE VALUE TO PEEK($3401)
C006 BNE#0000 ;BRANCH IF PEEK($3400) < PEEK($3401)
C000 LDA#0000 ;LOAD A WITH 0
C002 BIT#3400 ;COMPARE PEEK($3400)
C005 BNE#0000 ;BRANCH IF BIT 3 OF $3400 (<) 1
```

2) BRANCH: BEQ, BNE, BPL, BMI, BCC, BCS, BVC, BVS

These all test particular bits of the status register, which are affected by comparison instructions. BEQ and BNE have been demonstrated, and are virtually interchangeable in most cases, ie. either a value is zero or it isn't. The same reasoning applies to the other branch instructions.

BPL and BMI can be used to test the magnitude of a comparison result. For example:

```
C000 LDY#00 ;SET THE COUNTER
C002 TYA ;TRANSFER THE COUNTER CONTENTS TO THE ACCUMULATOR
C003 STANC100,Y ;STORE THE ACCUMULATOR AT #C100+Y
C005 DEY ;DECREMENT COUNTER
C007 CPY#000 ;
C009 BPL#C002 ;LOOP IF #000-Y > 0 (IE PLUS)
C00B RTS
```

Bit 7 of (P) can also be used to determine if a number is negative or positive in the range -128 to +127. For example, if the binary representation of a byte's contents was 10001001, because bit 7 is set, the byte could be interpreted as containing -9. If the N flag was not considered, the byte would be construed as

holding +137. If the bit pattern was 00110010, the byte could be interpreted as containing +50. It all depends on whether bit 7 is taken into account.

BCC and BCS are used to test the carry flag, often after arithmetic operations. The carry flag is set by a byte incrementing past 255, shifts, and comparisons. Shifts will be dealt with fully in the mathematics topic. A compare will set the carry flag like this:

```
C000 CPX#$25
```

```
Sets the carry flag if 25 < X < 255
```

```
Clears the carry flag if 0 < X < 24
```

BCS and BCC can be used in a similar vein to BNE and BEQ, ie. almost interchangeable. This small routine adds 10 to a byte, and increments another byte if the first exceeds 255.

```
C000 CLC ;CLEAR THE CARRY FLAG (IE SET BIT 0 OF P TO 0)
C001 LDA#C021 ;GET #C021'S VALUE
C004 ADC#C020 ;ADD (WITH CARRY VALUE) PEEK(#C020) (-10)
C007 STANC021 ;STORE RESULT BACK IN #C021
C00A BCS#C000 ;IF CARRY SET THEN BRANCH
C00C RTS
C00D INCR#C022 ;INCREMENT #C022
C010 RTS
```

Here's a basic program to use this routine:

```
10 POKE49105,0;POKE49106,0;REM CLEAR #C021,#C022
20 POKE49104,0;REM SET ADDED VALUE
30 5049152
40 L#PEEK(49105)+PEEK(49106)
50 PRINTL,H,L#49256
60 007030
```

BVC and BVS test the overflow bit (6) of the status register. As in the previous 'bit' example, it can be used to test bit 6 of a byte.

```
C000 BIT$3400 ;TEST BIT 6
C003 BVS$XXXX ;IF BIT 6 = 1 then branch
```

The primary use of the overflow flag is to test for 'two's complement' overflow. This occurs when a number less than -128 results from a procedure. Because an 8-bit byte can only hold -128 to +127, the flag is used to determine the true sign of a result. Unfortunately, it would hold up the flow of things considerably if I attempted to explain every facet of each instruction, so I'll come back to these areas at a later date. Some will be included in other topics, so please be patient.

3) DIRECT ACTION: SEC, CLC, SED, CLD, SEI, CLI, CLV

'Set carry' and 'clear carry' have been covered. 'SED' is set decimal, used to work in decimal mode. This is particularly helpful when numbers are inputted and outputted and is most effectively

used where minimal calculations are required. When 'SED' is performed, the computer is forced to operate in what is known as 'binary coded decimal', and it works like this.

Say you had 9 in a byte. In binary representation, it looks like 00001001, or hex 09. If you add 1, to make 10, it becomes 00001010, or hex 0A. That 0A doesn't look like 10. Now if decimal mode is enforced, binary 00001001 + 1 = 00010000, or hex 10. Now it does look like the 10 that we are familiar with. The computer is told to treat the high nybble as 10's, not 16's, as is usual. This makes number storage less efficient, because a byte can now only hold 99, instead of 255, but the outputting becomes so much easier. To print the contents of a byte now, the two digits need to be extracted and converted to ASCII. This all sounds complicated, but it's a lot easier in practise than it looks.

'Set interrupt' and 'clear interrupt' are used mainly when resetting interrupt vectors. During the normal course of events, every 60th of a second the computer breaks from whatever it is doing, and does its 'housework'. This entails such things as updating the timer, the cursor, the screen or scanning the keyboard. However, you can make it perform a task for you before it does these things, and that is where changing the interrupt vector comes in. If you peek(788) and peek(789), you find the address \$EA31, the normal interrupt address. A routine like the next will allow you to break in.

```
C000 SEI ;DISABLE THE INTERRUPT
C001 LDA#00 ;CHANGE THE VECTOR TO #C000
C003 STAVE314 ;POKE 788,13
C006 LDA#C0 ;
C008 STAVE315 ;POKE 789,120
C00B CLI ;ENABLE THE INTERRUPT
C00C RTS ;RETURN TO BASIC
C00D LDA#EA ;
C00F STAVE400 ;POKE 1824 WITH AN ASTERISK
C012 LDA#01 ;AND COLOUR IT
C014 STAVE000
C017 JMP#EA31 ;CONTINUE WITH NORMAL INTERRUPT ROUTINE
```

Use SYS49152 to activate the new interrupt. A routine to restore the original interrupt would be similar to \$C000-\$C00C. Stop/restore will do it too. Any attempt to change the vector without disabling the interrupts will make your machine throttle itself. More uses for all of these instructions to come.

Anyone who would like a copy of the public domain monitor 'Supermon' + instructions for the C-64, please send me a tape or disk and a stamped return envelope. Joe Colquitt, 6 Martin Ave, Mt Albert, Auckland.

Amstrad in fast lane

By Craig Beaumont

This column is dedicated to the swiftly changing world of Amstrad computing.

The Amstrad is based on one of the most common and comparatively oldest CPU's — the Z-80. So the Amstrad cannot pretend to be "state of the art", but it's design satisfies the needs of both home and small business users at a reasonable price.

To show just how quickly the Amstrad world does change the recently released 664 has been superseded in Britain by a 128K version with a lower price. The 664 is being quietly phased out of production in favour of the — you guessed it — 6128.

The 6128 comes with an enhanced version of the CP/M 2.2 packaged with the 464 and 664 called CP/M Plus. It allows editing, multiple commands and recall of commands, all of which make life with disks easier.

The machine itself is similar in appearance to the 664, it has the same peripheral ports also.

The difference for the home user is not great, but the machine allows large CP/M business software to run with a good amount of room for data.

As always, the problem with buying hardware is whether to buy and use now, or wait for the improved model — it's up to you.

Peripherals — those things that hang off the back of the computer — are growing in number and variety for the Amstrad. My perception of some of them is:—

Diskdrives — these are good value if you have the 464 and don't feel like waiting 9 minutes for "Roland in Time" to load. The disks themselves are what you might call unfloppy. They look small but hold more than the average 5.25 inch

disk, plus they are faster. You will save big-bucks if you buy a 664 with built-in drive rather than add one on to a 464.

Printer — the DMP-1 is well named; it's slow and doesn't give true descenders (the tails on lower case letters). A new printer that has near-letter quality is in the pipeline according to Grandstand.

Joysticks — the JP-1 has been replaced by the JP-2, which gives two independent fire buttons. I'm not impressed with the durability of these sticks and if you can afford it go for a Wico model.

Modems, Speech Synthesisers and Light Pens are locally available. These are produced by other manufacturers, which shows support in the industry for the Amstrad.

Software is what makes or breaks a computer. The on-board software — the basic interpreter and firmware produced by Locomotive — has been acclaimed as fast and comprehensive, especially on the 664 with it's lightning fast fill command. Amstrad has also made available full documentation, to aid rather than hinder programmers (as some companies are renowned for).

The software range for the Amstrad is growing rapidly in number, variety and quality.

I counted 250 titles on a direct order list and it is probably about two months out of date.

It included software of every category: one that grabbed my attention was B.C's Quest for Tires — it was on T.V a while ago.

Others like Video Hire, Pole Position, Hobbit and Forth should satisfy the connoisseur.

At the moment I'm using Amsword with modifications, including a disk directory option.

The ability to customise the program easily is one of Amsword's many useful features.

I also use Hisoft Pascal and Devpac Assembler/Disassembler. The quality of instructions that come with these packages makes them very user-friendly.

As far as games go I find the graphics, scenario and playability of Knight Lore, Sorcery and Combat Lynx, to mention a few, to be astounding.

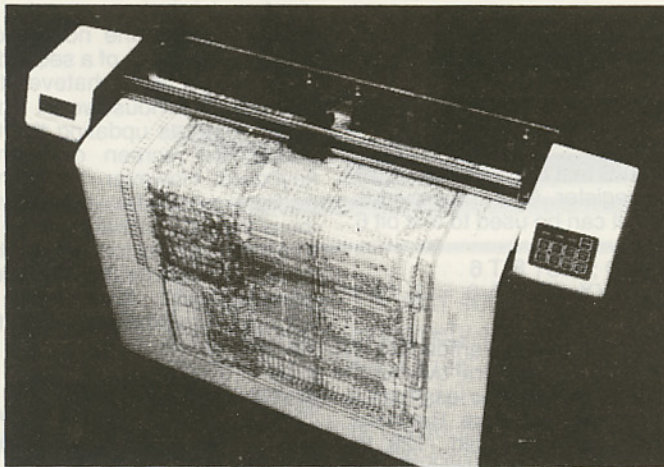
There are a few bad apples (I'm still talking software) out there however, so at least try before you buy.

If any retailers would like some free advertising then send me a program to review; due warning though — I might not like it!

I would like this column to reflect your interests. If you have something to contribute on anything to do with Amstrad computing then write to myself, c/- Bits and Bytes magazine.

To finish, you can enjoy computing a lot more in a group. To help start clubs Grandstand will insert a contact page into local Amstrad User readers' magazines — try it.

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More ways with Flags

By Joe Colquitt

Most 6502 machines will run these routines as long as absolute addresses are taken into account.

Atari users should double-check routine syntax as there are some differences.

Here are some more examples of flag usage, with an introduction to maths.

To use ADC (add with carry) and SBC (subtract with carry), an understanding of the carry flag is needed. Consider adding two numbers to give a result less than 256, eg. 40+96. The carry flag is set (if previously cleared by CLC) when an instruction causes a byte's contents to exceed 255.

```
C000 CLC                0
C001 LDA#$28           #$28 (40)  0
C003 ADC#$60 (96)     #$88 (136)  0
C005 STA$C100         #$88 (136)  0
C008 RTS
```

In this case the carry is not set by the addition, so the value in \$C100 (136) is the final answer. Now consider 131+210.

```
C000 CLC                0
C001 LDA#$83           #$83 (131)  0
C003 ADC#$D2 (210)    #$55 (85)   1
C005 STA$C100         #$55        1
```

The carry flag has been set, so the true answer is 256+85. As one byte can only hold 255, the program must allow for storage of units of 256, in this instance at \$C101.

```
C008 BCC$C00D ;IF CARRY ISN'T SET
          IGNORE NEXT INSTRUCTION
C00A INC$C101 ;ADD 1 TO THE VALUE
          IN $C101
C00D RTS
```

Now \$C100 contains #\$55 (85) and \$C101 contains #\$01 (if 0 previously) the answer is therefore $85+(1*256)=341=131+210$

The procedure for simple subtraction is similar, except that the carry flag is set in case subtraction requires a borrow eg. 48-34.

```
C000 SEC                ;
C001 LDA#$30 (48) ;
C003 SBC#$22 (34) ;
C005 STA$C100        ;$C100 NOW
          CONTAINS #$0E (14)
C008 RTS
```

Consider 300-71. First the 300 needs to be split into 2 bytes. One (\$C100) contains the high byte (1) and the other (\$C101) the low byte (44).

```
C000 SEC                ;SET CARRY
          (BORROW)
C001 LDA$C100 (44) ;GET THE LOW
          BYTE VALUE
C004 SBC#$47 (71) ;SUBTRACT
C006 BCS$C009 ;IF CARRY IS
          STILL SET IGNORE NEXT
          INSTRUCTION
C008 DEC$C101 ;DECREASE THE
```

HIGH BYTE VALUE BY 1
C009 RTS

After this sequence, the accumulator contains #\$E5 (229) and \$C101 contains #\$00, ie. $229+(0*256)=223=300-71$

Two other instructions used in arithmetic are 'ASL' and 'LSR'. These shift the bits in a byte left or right. Assume a byte contains 37 decimal if ASL (arithmetic shift left) is used on it, all bits are moved one to the left.

$32+4+1=37$ becomes $64+8+2=74$
 00100101 becomes 01001010

A zero is put into bit0 after ASL and into bit7 after LSR. If the leading bit (7 or 0) is on (=1), the carry flag is set when that bit is shifted out of the byte. Examination of the example reveals that performing ASL on a number doubles it.

If you look at the bit values you can see why. LSR has the effect of halving. In either case, the carry flag can be used to indicate if bits have been shifted out of the byte. Note that LSR will not produce decimals from halving odd numbers.

Using these instructions, adding, subtracting, dividing and multiplying can be accomplished. For example 20^5 could be done by $(20^2*2)+20$

```
C000 CLC                ;CLEAR THE CARRY FLAG
C001 LDA#$14 ;GET #$14 (20) INTO
          THE ACCUMULATOR
C003 STA$C020 ;STORE IT IN MEMORY
          FOR LATER USE
C006 ASL ;DOUBLE THE
          ACCUMULATOR (A=40)
C007 ASL ;AND AGAIN (A=80)
C008 ADC$C020 ;ADD THE ORIGINAL 20
          (A=100)
C00B STA$C020 ;STORE THE RESULT
C00E RTS
```

Whilst these routines are reasonably tidy for calculations involving small numbers, they would soon become quite unreadable for numbers in 16-bit or 32-bit calculations, where results may end up in tens of millions. 'Shift logic' is used in these cases and will be explained next time.

There are two instructions which are similar to ASL and LSR, but which use the carry status as part of their operations.

They are ROL and ROR, rotate left and rotate right.

When using ASL/LSR, only the 8 bits of the target byte are affected, and the carry flag can be considered as a completely separate bit, to be used or not used.

When using ROL/ROR, the carry flag becomes a ninth bit of the target byte, and is included in the shift, like this: ROL = $C<76543210<C$, ie. bit7 becomes the new carry status, and the previous

carry status becomes bit0.

For ROR, $C>76543210>C$, bit0 becomes the new carry status, and the previous carry status moves into 7.

Perhaps the best illustration is dividing/multiplying a two-byte number (word) by 2. Say that bytes \$FE and \$FF hold the value of 10200. Byte \$FE would hold 216 units, and \$FF hold 39 (256's).

The code to multiply/divide by 2 is

```
* C000 CLC                / C000 CLC
  C001 ASL$FE             C001 LSR$FF
  C003 ROL$FF            C003 ROR$FE
NOTE THE BYTE ORDER.

TAKING 10200*2 ;

                                $FE=216
                                1 1 0 1 1 0 0 0
ASL$FE 1 0 1 1 0 0 0 0
ROL$FF 1 0 1 1 0 0 0 0

                                $FF=39
                                0 0 1 0 0 1 1 1 CARRY=0
ASL$FE 0 0 1 0 0 1 1 1 CARRY=1 (BIT7 OF $FE)
ROL$FF 1 0 0 1 1 1 1 +C
```

The carry status is moved into bit; of \$FF instead of a zero. The net result is that \$FE now contains $128+8+4+2+1=79$ (256's). Expanding this: $176+256*79=20400$. The carry flag has the status of bit7 of \$FF before the shift (=0).

```
AND 10200/2 ;

                                $FE=216
                                1 1 0 1 1 0 0 0
LSR$FF 1 1 0 1 1 0 0 0
ROR$FE 1 1 1 0 1 1 0 0

                                $FF=39
                                0 0 1 0 0 1 1 1 CARRY=0
LSR$FF 0 0 1 0 0 1 1 1 CARRY=1 (BIT0 OF $FF)
ROR$FE 0 0 1 0 0 1 1 1 CARRY ENTERS $FE BIT7
```

The result here is \$FE contains $128+64+32+8+4=236$ (units) and \$FF holds $16+2+1=19$ (256's). This equals $236+(256*19)=5100$.

Anyone who would like a copy of the public domain monitor 'Supermon' for the C-64 should send me a cassette or disk and a stamped return envelope.

As I have an adjustable datasette, if you include a save sample on your tape, I can make sure my saves will load on your datasette.

Send to Joe Colquitt, 6 Martin Ave, Mt Albert, Auckland.

Practice for beginners

By Dick Williams

This month I have a few programs for beginners to experiment with.

When I first started computing I found simple programs like these helped a lot; just getting them to work was a major achievement and after correcting all my mistakes I would usually modify the programs and have a lot more mistakes to fix up.

I suppose everyone has had a syntax error in a program, and how long have you stared at that line trying to see the error.

There's only one way to improve your skill and that is to put in plenty of practice.

Fortunately the Sega is one of the best all round computers to learn on.

Program one is a guessing game.

Number two is a lot of circles, three is

more circles, four is a smiling face, five a plane and six is a tank.

Each of these programs can be easily modified to use your own ideas by adding backgrounds, stars, text etc.

By altering them they become your own creations, and more importantly, you learn a bit more about computing.

Three problems I am often asked to help with are:—

A) forgetting to press the CR key at the end of a program line,

B) using the two dots on the run key as a colon instead of the print key,

C) not putting speech marks at the end of text in a multi-statement line.

A) can be easily sorted out because a program will stop at the offending line and it just needs listed to show the problem. Another way is to list the program where you think there may be a problem and press the CR key against each line number.

If all's ok, the cursor will drop down to the next line number. If it drops down two line numbers then you will know that the line above is incorrect and is two lines joined together.

Problem C is like so:—

10 PRINT"JIM

20 PRINT"Fred":PRINT"BRUCE

The speech marks are not required if the text is at the end of a program line but are required within a line such as 20.

Talking of speech, I saw a remarkable game for the Sega recently.

It was a shoot'em up game with the usual aliens, but the remarkable thing about it was the speech — not a lot of speech, but very realistic and natural sounding.

You could pick the Australian accent a mile away.

Vortex Blaster from a new line of Australian software, distributed in New Zealand by Poseidon Software Ltd, Boc 784 Hamilton, have looked for some interesting software for the Sega from this company.

Another interesting program has produced the correct information to work the NZ telephone system so that by searching out a friends name from your computer and pressing a button, the number is dialled for you.

Interesting if you do a lot of telephone dialling.

I'm told its quite legal with no physical connection to the phone and will be available shortly.

I also hear that the Sega distributor, Grandstand Leisure, is working on a book dealing with the Rom Map and information about the routines.



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```

3 REM -----PROGRAM ONE-----
4 REM clr screen,set colour,sound off
5 CLS:COLOR1,15:SOUND 0
10 PRINT :PRINT "HI ?, I WILL THINK OF
  A NUMBER BETWEEN 1 AND 20
20 PRINT :PRINT "WHEN I HAVE , TRY TO
  GUESS ITS VALUE
40 A=INT(RND(1)*19+1):REM number
50 PRINT :PRINT "OK, I HAVE A NUMBER
60 PRINT :PRINT "WHAT IS YOUR GUESS
65 PRINT
70 INPUT C:IF C=0 THEN 70
80 IF C=A THEN 140
90 IF C>A THEN 120
100 SOUND1,120,10:PRINT "TOO LOW, NEXT
  GUESS
110 GOTO 70:REM try another number
120 SOUND1,500,10:PRINT "TOO HIGH,NEXT
  GUESS
130 GOTO 70:REM try another number
140 PRINT "YOU GUESSED IT !!!
150 SOUND3,200,15:SOUNDS,2,15
155 COLOR1,6:INPUT "PRESS CR KEY ";K$
160 GOTO 5:REM go back to the start
  
```

```

5 REM -----PROGRAM TWO-----
10 SCREEN 2,2:COLOR1,,1:CLS
20 CIRCLE(128,95),RND(1)*150,RND(1)*14
  +1
30 GOTO 20
  
```

```

5 REM -----PROGRAM THREE-----
10 SCREEN 2,2:COLOR1,1,,1:CLS
30 CIRCLE(40,40),RND(1)*35,RND(1)*15
40 CIRCLE(120,40),RND(1)*35,RND(1)*15
50 CIRCLE(200,40),RND(1)*35,RND(1)*15
60 CIRCLE(40,140),RND(1)*35,RND(1)*15
70 CIRCLE(120,140),RND(1)*35,RND(1)*15
80 CIRCLE(200,140),RND(1)*35,RND(1)*15
100 GOTO 30
  
```


Anyone for Golf?

Golf by Kjonami;
reviewed by Barbara Bridger

I was very impressed with this simulation of the game of golf.

The graphics are very good and give you a view not only of the immediate surroundings from where you are to play your next stroke but also an overall view of the hole.

The instructions are easy to understand and a close study of them is advised to make the most of the options allowed for.

The type of stroke is chosen from the available selection of straight, hook, or slice, the club is selected from a choice of 13 and the direction of the shot is indicated on the screen.

The last thing to select is the power of the shot and while this requires reasonable timing, on the whole this game can be played at your own pace.

This is a welcome change from all the games requiring fast reflexes and split second strategy choices.

Once on the green a careful reading of the lie of the green is needed to sink your putt.

This well thought out golf course of 9 holes is available in ROM cartridge at \$85. Both stroke play and match play are allowed for.

Dashing dishes

Mr Ching, by Hal.
Reviewed by Barbara Bridger.

This rather novel game has Mr Ching dashing about trying to get as many plates spinning on the top of poles as he can.

While rushing around he has to avoid such hazards as flying knives and plates. As well as getting plates on to the top of new poles he has to periodically go back and respin tottering plates on the earlier poles.

Success at this game requires a strong nerve, only respinning plates at the last moment and a constant alertness for the flying plates and knives.

Sound effects and graphics were good but there was no real variety between one level and the next. We were not able to progress to the 7th level where a Magic Mushroom comes to help Mr Ching out.

This ROM cartridge is available for \$75.

Armchair tennis

Tennis, by Kjonami.
Reviewed by Barbara Bridger.

Here the game of tennis is represented very realistically in a three-dimensional way, with the height of the ball above ground level being indicated by the size of its shadow.

There are three options for play, singles or doubles against the computer or singles between two players. The computer is a very tough opponent, particularly in doubles.

Scoring is done very correctly with deuces and advantages being coped with — although the set ends of 6-5 with-

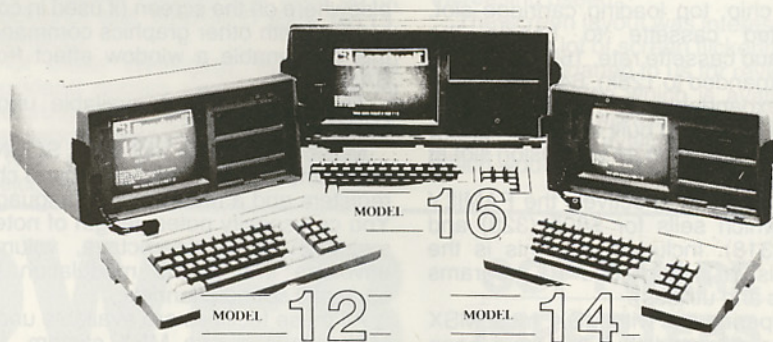
out the tiebreaker finish that is very prevalent these days.

The players change ends, as appropriate for real tennis, and a ball boy is there to retrieve the ball after a fault is served.

The graphic and sound effects are good with crowd cheers at the completion of every game. I liked the way the player waiting to receive serve hopped from one foot to the other.

This game is available as a ROM cartridge for \$85 — less than the price of a good racket — and it may well improve your strategy for the real thing, but unfortunately it won't help the waistline.

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Comparisons with MSX versions.

By Don Stanley

The SVI 318/328 have been around for a while now and have established themselves as leading micros.

With the recent award of Best Computer in its class from Technology Reviews it is a good time to take another look at what these two systems have to offer, and to compare them with their new relatives, the MSX versions.

Incidentally, this award was made ahead of machines of the Commodore range, the Amstrad, Atari and so on.

The SVI 318/328 systems were released in December 1983 in New Zealand. Both offer 32k ROM incorporating MicroSoft Extended Basic, 16k RAM dedicated to the video processor, a sound chip, top loading cartridge slot, dedicated cassette to handle the 1800baud cassette rate, 16k ram for the 318 (expanded to 128k), 64k ram for the 328 (expandable to 128k), numeric keypad (328) and built in joystick (318). Both systems have an expansion slot at the rear.

The above is effectively the FAMILY PAK, which sells for \$895 (328) and \$695 (318). Included with this is the manuals, a joystick and 10 programs (games and utilities).

Comparing this with MSX, most MSX systems released thus far have been 64k systems. They also include the 32k ROM and 16k video ram, along with a cartridge slot (usually top loading) and sound chip.

Some MSX systems (eg SpectraVideos) include an expansion slot at rear (SpectraVideo's connects a disk drive).

MSX does not call for a dedicated cassette, but the MSX specifications state that "...when using the optional 2400 baud cassette rate the manufacturer may have to supply a dedicated cassette..." In general any cassette with 8 din plug will be useable.

As many manufacturers are producing MSX machines, some may come with bundled software and some without.

The BASIC in the SVI 318/328 is Microsoft Extended Basic, and commands include interrupt handling to trap function key pressing, trigger pressing, break key pressing, sprite collisions and time intervals. All these are available in MSX BASIC too.

Bank Switching

Bank switching enables 328 owners with a 64k RAM expansion card to have up to 4 programs in memory at once,

although only 1 can be worked on/run at a time. MSX BASIC does not include bank switching commands, although the capability certainly exists.

Graphics commands for both systems include commands to draw lines, boxes, fill boxes, circles and a 'macro' language which allows connection of points based on direction (absolute/relative) points complete with scaling and other features.

Other graphic commands include lighting a specific pixel and painting within a border area.

SVI BASIC includes facilities for saving a rectangular portion of a graphics screen to an array and placing it elsewhere on the screen (if used in conjunction with other graphics commands this can enable a window effect from BASIC).

This facility is not available under MSX BASIC.

Music commands include a SOUND command to directly access sound chip registers and a music macro language. You can specify notes, length of notes, rests, sharps, flats, octave, volume, envelope shape and modulation for each of 3 sound channels.

All these facilities are available under MSX. (Indeed one MSX system, the Yamaha, comes complete with a music synthesiser and software to utilise this).

Cassette commands on the SVI systems include SAVE, CSAVE, BSAVE, LOAD, CLOAD, BLOAD and options include the ability to save in ASCII rather than tokenised form as well as being able to save the entire contents of video ram to tape (SAVE "filename", S if you didn't know).

This last feature is not present under MSX.

Usual reading and writing to OPEN tape files under program controls is implemented here also. All tape commands include prompts like 'PRESS PLAY ON CASSETTE', but MSX does not include these.

Under MSX tape handling, the cursor disappears and no prompt is given.

There are many other commands which I won't go into here. Some are disk commands and some are hooks to let you add commands to BASIC yourself. Of course all the 'standard' BASIC commands are also present.

When BASIC is booted you have about 29k to work with on an SVI328 and little less under MSX. However machine code programmers can access and use a further 32k RAM which the Z80 can't

usually access due to the ROMS over-laying it.

Both 318 and 328 users can access a further 15k from the video ram if they don't use ANY graphics in their program. More on this in a future article.

Nerve centre

Looking at the hardware briefly, the nerve centre for both systems is a Z80a running at 3.58Mhz.

The graphics chip is a TI9929A which allows 16 colours (but no more than 2 per video ram byte), 32 sprites (but no more than 4 per line), 3 sprite sizes (8x8, 16x16, 32x32 pixels). Separate chips exist to control sound (an AY-3-8190; and peripherals such as cassette, keyboard, trigger and also sound mixing (an 8255A).

The cassette is SVI's own dedicated cassette with a baud rate of 1800.

MSX offers 2 baud rates, either 1200 or 2400; you don't need a dedicated cassette. For the SVI systems, it takes about 90 seconds to load a 16k machine code program.

The 318 keyboard is a rubber keyboard with a built in joystick.

The 328 keyboard is a professional keyboard and numeric keypad.

Both systems include joystick, cassette, cartridge, TV, monitor, audio and expansion ports.

Expanding the system is done via either a single slot expander or a big box expander with 4 slots and disk drive.

Expansion options include printer interfaces (but this is a part of the big box expander anyway), disk controller, extra ram, 80 column card and RS232 interface. Choice of disks include double sided 320k formatted drives (1 or 2) or a single 320k drive and a 10Mg hard disk.

Further expansion capability includes a Local Area Network catering for up to 32 slaves (either SVI or MSX) sharing a host SVI328's 10Mg hard disk and printer.

Expanding to a disk drive includes a disk operating for BASIC and you get CP/M. The BASIC system includes a modem driver and 80 Column Card driver. CP/M is version 2.23 (double sided 320k drives) with a Xerox 820 II format.

I have yet to find any standard CPM software which does not run on the system. Unlike some other systems currently claiming CPM compatibility, SVI leaves the standard 56k available for use.

(Continued 73)

(continued)

Bundled with certain configurations are Wordstar/Datastar/Calcstar/Mail-merge/Reportstar as well as standard CPM utilities.

Additional hardware includes a graphic tablet and MSX adapter to allow the loading and running of cartridges and tapes up to 16k.

Virtually any printer will work with the system.

MSX does not currently offer anything like the SVI expansion possibilities.

At this stage a lot of MSX machines have a single cartridge slot, which is where games run from, and a rear slot usually allowing for a single disk drive.

The cartridge slot doubles as a single cartridge expansion slot (eg put an RS232 with modem in there).

SpectraVideo offer a range of MSX peripherals (single 320k disk drive, RS232, 80 column card, 64k expansion card).

However some MSX machines include extra hardware gimmicks, like Sanyo's light pen.

Software differences

The big difference between the systems (SVI318/328, MSX) is in software availability.

With MSX offering compatibility and a lot of manufacturers conforming to a standard, software houses have learnt to

produce software and many titles including games, languages, utilities are already available.

SVI does not offer the same range in the home area but of course has the enormous CPM range available.

About 120 titles relevant to the SVI Family Pak owner exist in New Zealand.

Books are similar to software in availability. Many MSX books are available, and comparatively few SVI books.

However, again virtually any CPM books are applicable.

A large amount of SVI expertise now exists in New Zealand and there are now at least 10 user groups.

If you wish to contact any of the CHRISTCHURCH, WAIRARAPA, TARANAKI, GISBORNE groups please write to the Wellington group for information.

Other groups are NELSON (contact Nelson Computer Centre), WELLINGTON (Box 7057, Wgtn), PALMERSTON NORTH (c/- Einsteins/Computer Experience), HAWKES BAY (Box 799, Napier), AUCKLAND (Box 3315, Auckland) and WAIKATO (Box 16113, Hamilton).

Of these Wellington, Waikato and Auckland publish newsletters, and all the groups have some sort of monthly or thereabouts meeting.

New users and beginners are very welcome.

Outer-space vacuuming

Roger Rubbish, by Spectravideo International.
Reviewed by Barbara Bridger.

This game is set in space but is a departure from the usual shoot-up with space aliens.

Roger has been sent out with his vacuum cleaner to suck up all the pieces of nuclear waste that are being thrown down on to the planet.

Unfortunately Roger and his vacuum cleaner are quite difficult to manipulate and no one in our family was able to develop the skill to get to a new level and thus investigate the variety the game has to offer.

There are eight different levels and in each level Roger visits a different planet with nuclear waste arriving at ever increasing speed.

The screen layout was interesting but there was a lot of screen flickering.

The copy loaned to us for review was a ROM cartridge which is available at \$75 but judging from the instructions this game is also available on cassette, which would be a lot cheaper.

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Printing the Logo screen

By Paul Left

Printing a copy of the graphics screen in Logo can be difficult, depending on the printer and the interface card you have attached to your Apple II.

This article explains how to dump the screen (the 'turtle-field') to a 'SUPER-5' or EN-P1091 dot-matrix printer, using an EI-EN interface card.

This printer configuration is similar to an Epson printer setup, and the suggestions should be easily adapted to other systems.

Other Japanese printers and cards use the very same control codes; check your manuals or contact the agent for your printer.

Let's start with the necessary process in its most elementary form, as instructions in immediate mode, and then describe easily-used procedures which send images of the graphics screen to the printer in various formats.

Listing 1 is a very simple procedure which offers only a normal dump; Listing 2 provides a set of procedures which add new commands to your workspace for enlarged, inverse, and normal dumps.

There are four steps in dumping the screen. First, the computer-printer interface must be turned on, then a code sent

to the interface to tell it what sort of dump to perform, and then the actual 'dump' command must be sent. Lastly, the interface must be turned off after the dump is completed. In BASIC, the sequence of instructions would be:

```
PR#
POKE 1913,1
(control-Q)
PR#0
```

The control-Q may be sent either by pressing these two keys together, or by the command PRINT CHR\$(17). These four instructions may be used in a program or in immediate mode. Bear in mind, however, that the PR#1 and PR#0 should be used as a DOS command in programs and therefore should be issued in the form

```
PRINT CHR$(4);"PR1"
```

Refer to the DOS manual if you are unsure about using DOS commands from within BASIC programs.

In Logo, different but equivalent terms are used, and you don't need to send commands through the DOS interpreter. The necessary instructions for a screen dump in Logo are:

```
.PRINTER 1
.DEPOSIT 1913 1
.PRINT CHAR 17
```

.PRINTER 0

Notice the full stop or 'dot' in the first two commands. Pressing Control-Q cannot be used in the same way as it is in the BASIC immediate mode, as this character is intercepted by Logo and interpreted as a distinct command before it can reach the interface card. Notice also that the instructions given assume that the printer card is in Slot 1. To cater for other setups, use

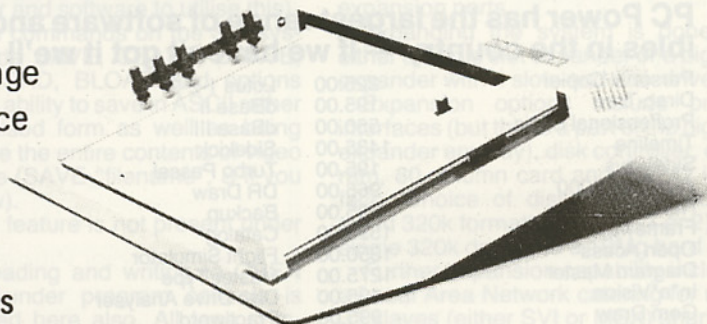
```
.PRINTER slot
.DEPOSIT 1912+slot 1
.PRINT CHAR 17
.PRINTER 0
```

We now have a simple set of commands which will dump the current turtle-field, even if it's not visible, to the printer. If you are concerned about using up memory, which can be rather confined in a 64K Logo, then use these as direct commands when required.

If, however, you have even a small amount of free memory (try RECYCLE PR NODES), Listing 1 presents a very simple procedure which is easy to use and takes very little space. To use it, just type DUMP and press 'Y' to confirm. Notice that DUMP concludes with a .PRINTER 0 command to turn off the card.

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When DUMP has been LOADED into your workspace, you have a new command which makes it easy to get hard copy of your explorations with the turtle.

Control of the printer becomes available even to very young Logo users!

Listing 2 is an extension of DUMP which adds four more commands to the Logo environment.

You may wish to save these procedures on your file disk and load the package before starting on a Logo session. A more convenient arrangement, however, is to have Logo load the package into memory automatically on booting. To do this, start with a fresh Logo and follow these steps:

- (1) Type in the 5 procedures as listed;
- (2) Type MAKE "STARTUP [RESET SETSCRUNCH 1.2]
- (3) Insert a new initialised disk;
- (4) Type SAVE "STARTUP

Now, when you boot Logo, insert this file disk when prompted and your new procedures are part of Logo's vocabulary. The commands work as follows:

LARGE sets the variable CODE so that any subsequent DUMP is double-sized. Keep your turtle away from the right-hand edge of the screen unless you are using a printer larger than standard size!

INVERSE sets CODE so that DUMP prints hard copy in inverse. These two commands can be combined in any order at any time.

RESET returns printer mode to normal, executes a garbage collection, and prints the number of free nodes available. This number multiplied by 5 is the approximate amount of free bytes.

MODE outputs the current state of CODE; Typing PRINT MODE, therefore, should output either LARGE, INVERSE, INVERSE LARGE, or NORMAL. Notice that MODE uses RESET to initialise CODE if an unacceptable value is found.

DUMP has been modified from the version in Listing 1 so that it uses the last-specified CODE for the screen dump. Notice that it too uses RESET to return the mode to normal after the dump is executed. If you want the last

issued INVERSE or LARGE to remain in force until RESET is run, change this line to

```
.PRINTER 0
```

If you've wondered why SCRUNCH is set to 1.2 upon STARTUP, my printer reproduces a square on the screen as a rectangle on paper. After this command, the square looks rather malnourished on screen but is a perfect square on paper. You might like to change this STARTUP to (RESET SETSCRUNCH 1) if you prefer a compromise, or if your printer has different characteristics from mine.

Once this package is installed, any Logo user can experiment with the print options offered with ease.

Young children may need to have the paper inserted for them, but they should get four or five images on one piece of A4.

In the classroom, get children to write the instructions they used below the image, preferably with a word-processor, and assemble and publish booklets of their favourite designs.

Listing One

```
TO DUMP
CLEARTEXT PR (MAKE SURE THE
PRINTER IS ON...)
PR () PR (HIT 'P' TO PRINT)
TEST RC = CHAR 80
IFF (STOP)
PR () .PRINTER 1
PR CHAR 17 .PRINTER 0
END
```

Listing Two

```
TO DUMP
PR (ARE YOU SURE?)
TEST RC = "Y
IFF (STOP)
PR CHAR 17
RESET
END
```

```
TO INVERSE
MAKE "CODE :CODE + 32
END
```

```
TO LARGE
MAKE "CODE :CODE + 64
END
```

```
TO MODE
TYPE (CODE =) PR :CODE
IF :CODE = 65 (OP "LARGE)
IF :CODE = 33 (OP "INVERSE)
IF :CODE = 97 (OP (INVERSE
LARGE))
IF :CODE = 1 (OP "NORMAL)
RESET
OP (STRANGE CODE... RESET
EXECUTED)
END
```

```
TO RESET
MAKE "CODE 1
MAKE "SLOT 1913
RECYCLE TYPE NODES PR (
NODES FREE)
END
```

School aims for 'literacy'.

That every pupil leaves school "computer literate" is the aim of the computer studies department at Pakuranga's Edgewater College in Auckland.

Students at the secondary school are introduced to the department's 16 Apple IIE machines in their first year with computer awareness courses that involve both considering computer applications like bar coding on supermarket products and the use of programming language LOGO.

Courses become more complex at senior level where a one year course for 6th form certificate students is designed to give them a thorough grounding in computer technology, starting with the use of programming in BASIC in a wide range of applications.

The course continues with studies on how a computer works and the types of equipment which are attached to it, careers in computing, the development of modern hardware and case studies of companies that have "computerised" some of their processes.

The last term of their course covers software packages that are currently being used in offices and industry.

Word-processing, data bases, spreadsheets and graphics are taught and students become thoroughly familiar with those. They can sit for a Pitman's certificate in computer proficiency at the end of their course.

Computer studies began in Edgewater College with two machines and they have now built up to a networked system of 16 Apple IIE machines in their own computer room.

The computer department is now giving about equal "time-on" to adult night classes.

Apples into universities

Apple Computer continues selling Macintosh computers to universities in massive numbers.

According to Apple, Venezuela's largest private university, the Metropolitana, has agreed to purchase between 4,500 and 6,000 Macintosh 512K personal computers during the next three years, with 3,800 of the units to be delivered this summer.

In addition, Mexico's Instituto De Tecnologico De Monterey has signed an agreement with Apple that will result in sales of about 10,000 other Apple models and Macs to students and the university over the next three years.

In New Zealand, Otago University recently purchased \$250,000 worth of Macs, IIs and laserwriters.

Advanced primary class

Takapuna Normal Intermediate in Auckland recently purchased 10 Apple IIC computers, giving it the most advanced computer room in the primary school service in the country.

At a cost of more than \$30,000, of which \$20,000 was raised by the pupils themselves, the school chose the Apple IICs because for their ability to be easily moved around so that teachers can get maximum "on time" in their classrooms and at home.

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In search for seven cities

By Michael Fletcher

Seven Cities of Gold, by Ozark software, is a graphic exploration of a new world and search for a crown.

This game covers both side of the disk provided, and throughout the game the computer is almost constantly accessing the disk for more information.

It's a very big program — I've had the game for two weeks and the country I'm exploring has had only 27% of the land discovered.

Initially you are presented three choices.

First is to create a country in which you can adventure — this takes about 15 minutes and you will need a free side of a disk; a good feature because you can always vary the terrain.

After loading, you start your game at your home country's port where you buy ships and men for the voyage.

On the opening screen there are five places your sea captain can go — movement is controlled by joystick — and they are the outfitter's, palace, home, pub (for pause/save), and flagship.

If you go aboard the flagship you will have to set sail and will be presented a scrolling sea. In the middle of the blue water is a round circle with a red arrow in the middle of it — this represents your ships.

It is best to head due west to find the new world.

It looks boring, moving in one direction without obstacles, but at any point a storm could erupt and sink some of your vessels.

Carefull study has revealed that the disk drive will start humming about five seconds before a storm hits you.

Once on the island you can either explore and map, or attempt to trade with the natives.

The more exciting is trade with the natives, who attempt to shelter their chiefs, and can attack.

A useful way of getting past the members of the tribe is to push the fire button and you will be presented further choices. The best choice in this predicament is to amaze the natives, who will

Faster spreadsheet

Sorcim/IUS of San Jose has released its latest version of SuperCalc 3 here through Albertland Enterprises Ltd in Auckland. Release 2, with FastMath, is claimed to be the world's fastest spreadsheet, making full use of the 8087 maths co-processor on a personal computer.

Only cells with active data are recalculated upon changes of variables, thus reducing the time to recalculate.

quickly move out of your way.

Once you have reached the chief of the tribe (he will be standing still with a crown on his head) push the fire button and you can commence trading goods for food and gold.

Excessive combat with the natives can invoke the court's displeasure and reduce your rating.

The new world can reveal gold mines, caches, rivers, mountains, swamp lands, forests etc, and discovery of these improves your rating.

On returning home you will be presented with a map showing how much of the island was discovered and will also be told how much money you have to spend on the next voyage.

I do not know how the game ends but I presume it finishes when you discover 100% of the land on the island.

As far as I know this game can only be bought at Einstein Scientific.

Seven Cities of Gold is a 48K disk and is produced by Ozark software.

Atari's showing

By Michael Fletcher

Atari enthusiasts visiting the annual micro show in Henderson this year were presented a mixed bag of lollies.

To begin with, Monaco was not presented.

In fact, there were few stands displaying Atari.

One excellent stand was the Tariland computer user group. They had several computers on display, but most notably they had a new 130XE showing what it could do with existing software.

The 130XE is compatible with existing Atari machines, but it boasts extra enhanced graphic modes, a new keyboard, and 128K RAM.

All this for only \$659.00. No wonder Monaco are using the slogan "Atari — price busters".

Offered at the show was an Atari advertising book, entitled "The Atari Book", featuring 24 glossy pages about Atari products and software available locally.

Among new software was Econosoft's 20 or so titles. The highest price was \$26.95, and the average was about \$19.95. Cartridges for normal Atari games, however, ranged from \$50 to \$70 dollars.

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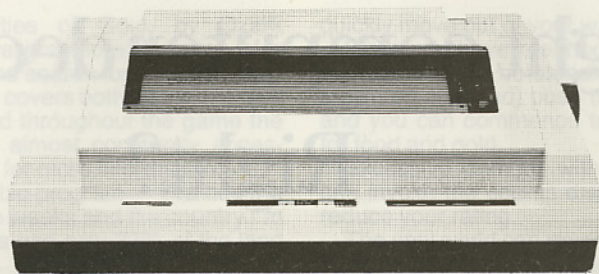
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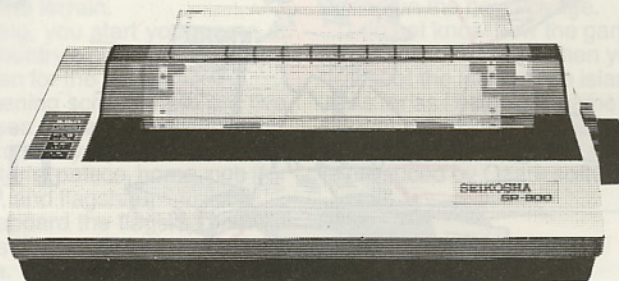
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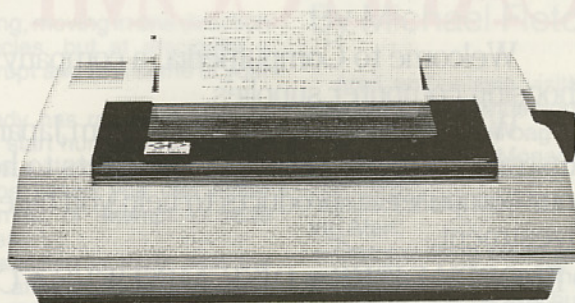
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128 k upgrade for BBC

Acorn Computers in England, has announced a 128K version of the BBC micro.

The extra memory will be available as a dealer fitted upgrade to the recently released BBC Plus, which has recently arrived in NZ.

Outwardly the same as a standard BBC, the BBC Plus has a redesigned circuit board with a standard 64K RAM and 32K ROM. It also utilizes the Western Digital 1770 disc controller chip, which gives more efficient use of disc storage than the Intel 8571 chip used in the BBC Model B.

The 128K upgrade used in conjunction with an enhanced version of BBC Basic will give a minimum 64K of use-

able address space for the Basic programs. The other 64K is available as 16K paged RAMs for running languages and filing systems.

The upgrade comes with extra utilities to make maximum use of the extra memory. These include the facility to load from disc or ROM into sideways RAM and to configure RAM in blocks for memory access.

The 128K upgrade is likely to cost \$250 to \$300.

Saga graphics and voice

Saga Systems in the UK is launching its Graph Pad and graphic software "Style".

A series of speech cartridges, collectively providing the BBC Micro with a vocabulary in excess of 1,000 words, is also to be made available and further keyboards are in the final stages of completion.



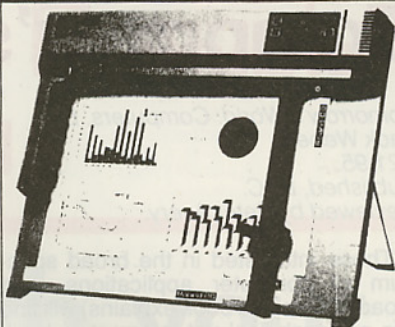
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Tomorrow's world

Tomorrow's World: Computers, By Jack Weber.
\$21.95.
Published, BBC.
Reviewed by Peter Avery.

Those interested in the broad spectrum of computer applications (and broad it is, as this book explains) will find this non-technical yet informative book colourful & "reader friendly".

That makes a change, because most books about this topic are all too full of jargon, and tedious reading for the person with a layman's interest in computers.

The book begins with a brief history and definition of computers, from the steam driven "number crunchers" of Babbage and Turin (two notable pioneers), to the present applications of computers (more modern versions of course) in our modern times.

At present the computer industry is a new "Space-Race". The Japanese are competing against the British and Americans to produce '5th Generation' machines.

Since the Japanese have little natural resources, gaining the edge on compu-

ter technology may be vital for their future economy.

The search is on for new more effective methods of miniaturisation; the problems and possible solutions are overviewed in the book.

Present chips tend to burn up when they are designed too small. The prophecy of coming '5th generation' machines requires faster working chips and VLSI beyond the present technological boundaries before they become a reality.

"Modern Architecture" is a chapter which describes in general terms the way that a microprocessor is designed and operates — a concise clear description of several speed developing techniques, parallel processing and pipelining.

Into the realm of Artificial Intelligence (AI), and the book describes Expert Systems working today that give mining companys such suggestions as where to look for valuable minerals.

Medical expert systems can diagnose your ailments with precision. A computer psychotherapist, called Eliza, computes drug designs.

Automatic translation systems are

being developed but because of the complexity involved, computers are still not the ideal medium.

A computer was asked to translate "The spirit is strong but the flesh is weak" and its translation was "The vodka is good but the meat is bad"; another example was "hydraulic ram" becoming "water sheep".

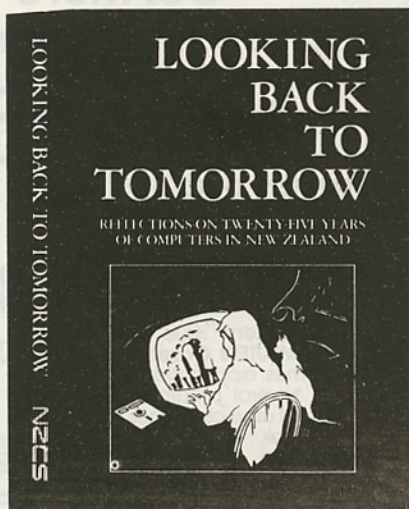
"Silicon cities" is a chapter which talks about the design of chips being very similar to townplanning — a single micro-processor has as much detail as the whole of London all squeezed into a few square milimetres.

There is a description of photolithography x-ray and electronbeam lithography. Ever wondered how detergents work and how they are related to chip manufacture? Or how to manufacture one-molecule thick layers of substances?

The author's parting words are "Computers are one of the most significant discoveries we have ever made; easily on a par with writing, fire or the wheel regardless of whether we find these machines stimulating or threatening... the very worst thing we can do is ignore them".

'Looking Back to Tomorrow'

A new book to commemorate the Society's 25th anniversary in New Zealand, and the 25th anniversary of the introduction of electronic computers in New Zealand.



192pp illustrated cased \$25.00

Chapters on the use of computers in government, banking, commerce, industry and education; a glimpse of information systems before the arrival of the pakeha; and some unexpected New Zealand connections with Charles Babbage, designer of the largest mechanical calculator in the world. The book also looks toward the future of NZ's computer industry and associated social implications; and includes pen sketches of those involved in the early days of computing in New Zealand.

For those who have been closely involved with computers in New Zealand it will bring back memories of early days. For new converts there is much to learn from the problems that have been overcome, and fascinating insights into problems still to be resolved.

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AppleWorks Made Easy Carol B. Matthews

Clear, simple approach to using AppleWorks on the Apple IIe or IIc. Business orientated examples used to show you how to apply the AppleWorks database, spreadsheet and word processor, working from simple tasks to using the three components as an integrated force. Author has worked with computers for more than 15 years and is now computer consultant.

Osborne/McGraw-Hill

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WordStar Simplified: Mastering the Essentials on the IBM Personal Computer Maureen A. Culleeny

Designed to help you master WordStar's features, including MailMerge and SpellStar. Shows you how to integrate them into business, school or office use. Book claims for main aims: to give an overview of word processing concepts and terminology; transfer typewriting skills to using WordStar; give hands-on experience in using WordStar; show that using a computer can be enjoyable and fun.

Prentice-Hall

Our price \$96.95
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Easy Writer II System Made Easy-er

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Practical approach to learning this word processing program for the IBM PC and PC Jr. Explains what you need to know for your work, and takes you through the learning process with the help of examples from real applications. Moves one step at a time and presents new commands in context. Each chapter contains goals, examples, hints and warnings drawn from experience, and a key point summary.

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Language/programming

Structured Programs in BASIC Peter Bishop
Opens with a discussion of program structure and design. The rest of the book comprises example programs, with the complete program design process (from initial specification to final listing) carried out. Excellent source of programming techniques, algorithms, program modules, ready-to-run programs and ideas.
Nelson

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MS-DOS User's Guide
Paul Hoffman & Tamara Nicoloff
Sets out to familiarise you with MS-DOS in all versions — IBM PC-DOS, and Versions 1.0, 1.1, 1.25, 2.0 and 2.11. Covers each computer running MS-DOS, gives the versions it runs and lists any improvements the manufacturer has made to the system. Complete information on software that runs under MS-DOS and products available to enhance the system.
Osborne/McGraw-Hill

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The MBASIC Handbook Walter A. Ettlin & Gregory Solberg
Concise, graduated tutorial to help you build programming skills for use in business, education and personal applications. Covers MBASIC tools; describes statements, functions, commands and sequential and random access files; debugging and documenting programs. Includes five fully documented business programs which can be customised.
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The Second Book of Machine Language Richard Mansfield
Written for programming with Commodore 64, VIC-20, Atari Apple and PET/CBM computers, this book contains the powerful LADS machine language assembler. As well as being a sophisticated program, the book is a tutorial on how large, complex machine language programs can be constructed out of manageable subprograms. Extensive documentation provided.
Compute

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The CP/M-86 User's Guide Jonathan Sachs
Comprehensive guide covering everything from Concurrent DOS CP/M-86 and Concurrent CP/M-86 to MP/M-86. Thorough explanation of commands, menu systems and files, then coverage of more advanced features such as DR Talk, DR EDIX or DR/Net. Advice on troubleshooting, full index and bibliography, and three machine-specific appendixes on the IBM PC and XT, DEC Rainbow and CompuPro.
Osborne/McGraw-Hill

Our price \$41.60. Save \$3.35

Adventures With Your Computer L. Rade & R.D. Nelson
Easily followed activities include 16 chapters of adventure followed by 16 commentaries, providing solutions and guidance on how to program these solutions in BASIC. Avoids getting machine-specific or getting involved in dialects of BASIC. Programs usually given in a flow-diagram form, using minimal BASIC.
Penguin

Our price \$9.20. Save 75 cents

Games

Arcade Games for Your VIC-20 Brett Hale
A 15-year-old whizz kid from Victoria, Australia has put together a collection of 20 arcade games for the unexpanded VIC-20. All programs listed twice — once for a straightforward keyboard play, and once for use with a joystick. All games extensively play tested. Selection includes Galaxy Robbers, Yackman, Sub Attack, Fantasy, Pinball, Indi 2000, Leaper and Bullet Heads.
Corgi

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More Arcade Games for Your Commodore 64 Brett Hale
Collection of Arcade games by Australian whizz kid, 15-year-old Brett Hale. Games are in BASIC and can be modified to your wants. And they are listed twice — for keyboard and joystick use. Includes Speedy Boulders, Encircle, Yackman, and Barrell Jumper.
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Arcade Games for Your Commodore Brett Hale
Fifteen-year-old Victorian whizz kid, Brett Hale has put together a collection of 12 extensively play-tested arcade games which are in BASIC and can be modified. Each is listed twice — for keyboard and joystick. Includes Tick, City Terror, Bricklayer and Surface Lander.
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John Wilson

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Practical Spectrum Machine Code Programming

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Designed for programmers who want to write faster and better programs than they can in BASIC. Assumes you have no knowledge of machine code and works through the details to the point where you are linking routines and using routines with BASIC programs. Questions throughout to test progress.
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The Spectrum Add-On Guide Allan Scott

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Data Management at Work: A Guide for the Personal Computer User

Kathy Lang

Sets up to help business and professional people get the best value from computers. Explains how micros can handle and process information in a structured, easily accessible fashion. Written in non-technical language, it covers choice of computer and appropriate system, and what questions to ask to decide your particular requirements.

Pan **Our price \$13.80. Save \$1.15.**

Sorry About the Explosion: A Humorous Guide to Computers

David C. Busch

Kitchen Table, a company which uses satire to poke tongue-in-cheek fun at the computer industry, has produced a book of tips on some unsual products, along with some honest, hard-hitting reviews of its user-hostile, manufacturer-friendly software. A few partially debugged programs add to the fun and frustration.

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Beginning Graphics for the Commodore 64

Michael P. & Gabrielle R. Barnett

Starts you off with simple drawings and patterns, helping you learn basic programming concepts which later lead to more complex illustrations. Covers screen coordinates, animated and two-dimensional effects, and rearranging colours.

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The Sirius & Victor 9000 Computer Book

Dennis Jarrett

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Rachel R. Avery

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George Stewart

Collection of more than 20 puzzles and games which take advantage of the Mac's special features. They include crossword puzzles, codebreakers, billiards practice, secret messages, and time machine. Beginners can access programs quickly, while experienced users can learn from the accompanying explanations for each project.

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The BASIC Explorer for the Commodore 64 Lee Berman & Ken Leonard

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(continued)

Dollar sign have a special purpose and must be preceded by a dollar sign.

These letters translate to the following:

- n Default drive (Logged)
- P Current directory of default drive
- (The underline key) Carriage return & line feed
- g Greater than sign (>)
- t Current time
- d Current date
- v MS-DOS version No.
- 1 Less than sign (<)
- e ASCII code for escape
- s A space
- h Backspace
- \$ Dollar Sign

To get back to the original prompt simply enter PROMPT (RET)

If you would like a really unusual prompt try this:—

PROMPT \$e[7m\$N\$1\$g\$e[m

(HINT — ANSI escape sequences can also be used.)

The MBC 550/555 uses a Standard Apple Compatible Joystick although beware, Sanyo Basic has a few hiccups with interpreting the signals being returned.

The Commands Are:

STICK (0) — Returns the Horizontal position of the stick.

STICK (2) — Returns the Vertical position of the stick. The value 0 will be returned at the left-most and up-most position.

STRIG (1) — Returns -1 if button#1 is pressed, otherwise 0

STRIG (3) — Does the same for button #2

The STRIG commands must be preceded by the "STRIG ON" command.

NOTE: The fire buttons and their commands as printed seem to have a few idiosyncracies which I'm still looking into. Comments would be welcome: Contact myself at P.O. Box 28-335, Auckland 5.

There is a Bug in Sanyo Basic 1.31 & 1.32. It is as follows:

When using the VAL (X\$) function, if the string begins with "D", "d", "E" or "e", a syntax error is returned, and the program crashes. This is possibly related to the use of D and E as exponent markers for the single and double precision numbers.

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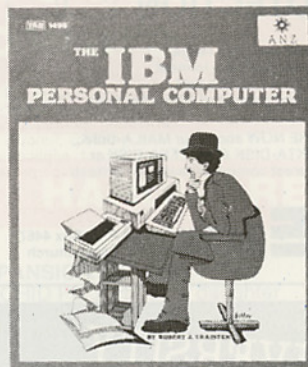
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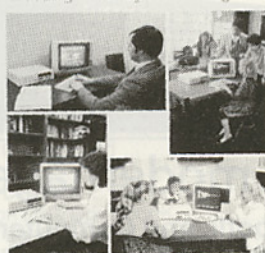
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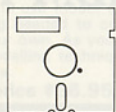
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