NEW ZEALAND'S PERSONAL COMPUTER MAGAZINE

BITS & BYTES

October 1985: $2.00

The launch of ComputerPhone

Other reviews:
The flight of Microbee
The Brother WP600

Big boys join the classroom battle

NEW

When you've already made the best home computer, what do you do for an encore?

$1995
with Colour Monitor
$1595
with Green Screen

Amstrad CPC 6128

with Colour Monitor or Green Screen

The Businesslike CPC6128

By including a disc drive and 128K or RAM with the CPC6128, Amstrad has elevated the budget price computer beyond being primarily a games console into the realm where serious business applications may be tackled with ease.

Digital Research's famous CP/M Plus operating system keeps your CPC6128 disc filing in order while programs like Microscript and Amsoft Business Control system (dual disc systems) keeps your business affairs in order.

The Amstrad CPC6128 is the ideal computer for the small business, and what with rates, mortgages, HP, income tax, insurance etc just about everyone can benefit from running their personal affairs with the aid of a low cost computer.

Give all your correspondence the professional touch. Plan your domestic budget, file names and addresses, organise your time more effectively. Amsoft has programmes already available to do all these tasks and many more.

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 Amsword 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 synthesizes 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.

There's a full PRESTEL mode with graphics and colour.

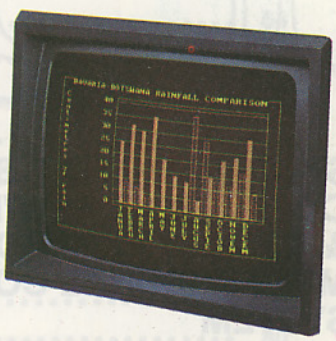
The built in ROM BASIC for the CPC6128 is in the tradition of excellence established by the CPC464 and CPC664. Programs written using the CPC464/CPC664 BASIC will run on the CPC6128.

Amstrad Join The Club

As a member you will enjoy regular magazines, competitions for valuable prizes and contact with other Amstrad users.

Whether you're a games fanatic or interested in serious business applications, you'll want to join the club.

Figure analysis made easy with Microspread.



GRANDSTAND AMSTRAD

YES

I'd like to know more about the totally professional CPC6128 Complete Computer System

NAME: _____

ADDRESS: _____

_____

POST TO: Grandstand Computers Ltd, CPO Box 2353, Auckland
21 Great South Road, Newmarket, Auckland. Phone: 504-033

RES 729

SPECTRAVIDEO

THE MSX COMPUTER THAT STANDS ABOVE THE CROWD

MSX. It's the new computer standard that puts MSX personal computers head and shoulders above the others. MSX is compatibility. Many of the world's largest computer and electronic companies are supporting MSX. Computers, peripherals and software that are completely compatible and interchangeable with others are available now — never again need you be totally dependent on any one brand for software and components. MSX — your key to computer freedom!

MSX

SPECTRAVIDEO 728

$695

Unbeatable value for an 80K RAM Personal Computer. Plus features you'll only find on much higher priced systems.

SPECTRAVIDEO 728 — COMPATIBLE, POWERFUL & TOTALLY EXPANDABLE MSX PERSONAL COMPUTER SYSTEM

Plug it into your T.V. and the SVI Data Cassette (or any standard cassette Player) and you're ready to run a huge variety of MSX software. The 728 is capable of performing the most demanding tasks with professional ease and results, including word processing, electronic home banking and budgets, plus communicating with other computers. Among its many features is a 90 key full stroke keyboard, numeric key pad, cassette recorder and printer interface, and separate MSX cartridge expansion port. Ask for a demonstration today — you'll be impressed.

SVI MSX

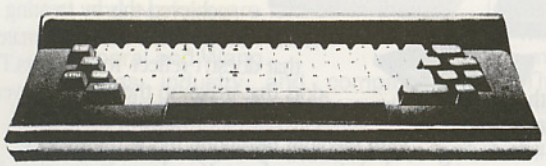
AVAILABLE NOW FROM AUTHORISED SPECTRAVIDEO DEALERS

DISTRIBUTED BY COMPUTER DISTRIBUTORS LTD.
PO BOX 31 355 MILFORD, AUCKLAND 9.
PH (09) 495 809 or (09) 495 624

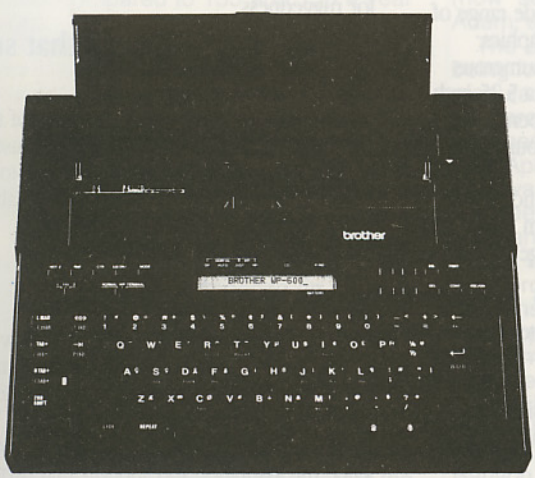
KDA5693

BITS & BYTES

October 1985. Vol 4, No 2.



Microbee's relaunch...



Brother's portable...

FEATURES

In the classrooms IBM, Philips and others are joining the fray. 10
Logging on to bulletin Boards and Prestel with Paul White. 35
Videotex and electronic banking. 45

HARDWARE REVIEWS

Brother WP600 gets a write-up from John Slane. 19
Microbee makes a bee-line for NZ schools. 13
ComputerPhone has good connections says Laurie Bisman 38

SOFTWARE REVIEW

Electronic Home accounts are perused by A R Mitchell 25

PROGRAMMING

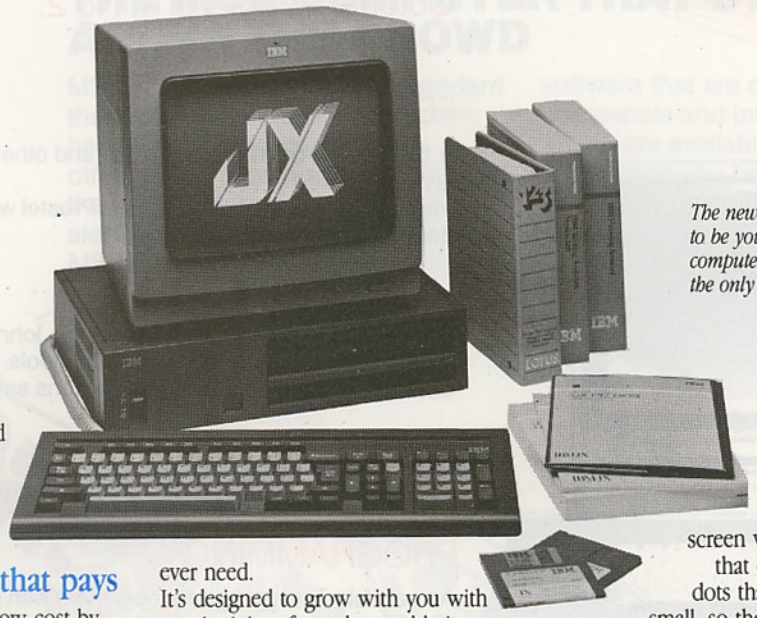
Assembly Language for beginners with Neil Williamson 26
Machine Language flagged by Joe Colquitt 67
Toolbox and the start of a "minimal database" with Gordon Findlay 31

COLUMNS

IBM 51
Sanyo 55
Commodore 59
Spectrum 64
Amstrad 68
Sega 70
MSX 71
Spectravideo 72
Apple 74
Atari 76
BBC 79
Book review 80
Book Club 81
Classifieds 85

BITS AND BYTES magazine is published monthly (excepting January) by Bits and Bytes Ltd, Denby House, third floor, 156 Parnell Road. PO Box 9870, Auckland 1. Phone 796-776, 796-775. **EDITORIAL:** managing editor, Gaie Ellis; editor, Steven Searle; Wellington reporter, Pat Churchill, 5 Lucknow Tce, 797-193; Christchurch reporter, Dion Crooks, 66-566. **ADVERTISING:** Auckland – Paul Harris, PO Box 9870, 796-776; Wellington –Marc Heymann, PO Box 27-205, 844-985; Christchurch – Jocelyn Howard, PO Box 827, 66-566. **SUBSCRIPTIONS:** First floor, Oxford Court, 222 Oxford Tce, Christchurch, PO Box 827, Phone 66-566. Manager, Mavis Shirtcliffe. **SUBSCRIPTION RATE:** $16 for 11 issues, school pupils rate $14. Overseas subs are $27/year surface mail, and airmail rates of $59 (Australia, South Pacific), $86 (North America and Asia), and $108 (Europe, South America, Middle East). **BOOK CLUB:** manager, Dion Crooks, at above Christchurch address, 66-566. **DISTRIBUTION INQUIRIES:** bookshops to Gordon and Gotch Ltd, computer stores to publisher. **PRODUCTION:** graphic designer, Shona Wills; typesetter, Monoset; printer, Rodney and Waitemata Times. **DISCLAIMERS:** The published views of contributors are not necessarily shared by the publisher. Although all material in Bits and Bytes is checked for accuracy, no liability is assumed by the publisher for any losses due to use of material in this magazine. **COPYRIGHT:** All articles and programmes published herein are copyright and are not to be sold or distributed in any format to non-subscribers of Bits and Bytes.

Now... the IBM computer for the business that thought it could never afford one.



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

The IBM JX is the newest and most affordable IBM computer incorporating some of the latest technology ever built into personal computers.

Advanced technology that pays

The IBM JX did not achieve low cost by reducing function. It achieves its outstanding price/performance through some of the most advanced component and production technology ever offered on any personal computer at any price.

Designed for businesses with work to do

Think of all the different things your office has to do in a day.
There's mail to answer, information to organise, memos to write, data to analyse, reports to generate..
Or perhaps you have books to balance, sales to forecast, or a payroll to calculate.
When you put an IBM JX on your desk you'll start to enjoy a powerful advantage in productivity right away.
Because the JX provides a high degree of compatibility with the IBM PC family, giving it an outstanding software library to draw from including the IBM DisplayWrite Series, IBM Assistant Series and Lotus 1-2-3.
The wide range of easy-to-use IBM software helps novice users quickly become productive.

IBM JX can grow with your needs

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.
In medium resolution mode the IBM JX monitor produces 16 colours at one time for impressive colour graphics. In high resolution mode it produces four colours.
A triple-chord speaker is built in.
For good measure, the monitor is metal-clad for ruggedness.

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.

Choose the power and performance you need

Your authorized IBM dealer can show you how easy it is to put together a JX system that meets your needs now and as far into the future as you want to plan.
Remember, whatever you decide, you'll always value the assurance and support that owning an IBM product can bring.
The IBM JX Personal Computer.
The waiting is over. See your authorized IBM dealer now.

IBM

WHANGAREI Businessworld Ph. 82-520 • AUCKLAND Businessworld Ph. 396-521 • Byte Shop Ph. 32-860 • Paxus Computer Services Ltd Ph. 770-239 • Financial Systems Ph. 789-068 • Powercorp Ph. 792-517 • Paxus Commercial Systems Ph. 504-609 HAMILTON Businessworld Ph. 392-416 • Powercorp Ph. 82-679 TAURANGA Powercorp Ph. 81-009 ROTORUA Businessworld Ph. 476-811 • Powercorp Ph. 479-172 NEW PLYMOUTH Powercorp Ph. 88-526 HAWKES BAY MDP Computer Services Ph. 84-528 • Powercorp Ph. 57-275 PALMERSTON NORTH Businessworld Ph. 79-255 • Powercorp Ph. 70-849 MASTERTON Businessworld Ph. 80-963 WELLINGTON Businessworld Ph. 731-152 • Powercorp Ph. 729-792 • Paxus Computer Services Ltd Ph. 737-483 BLENHEIM Berryman's Ph. 83-369 NELSON Berryman's Ph. 81-489 CHRISTCHURCH Berryman's Ph. 793-920 • Businessworld Ph. 64-617 • Powercorp Ph. 61-213 DUNEDIN Businessworld Ph. 773-150 • Whitcoulls Ph. 774-120 SOUTHLAND Computer Systems Ph. 44-144

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 drmatically — 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 satisfication 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 Steven 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.

Neverless 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 Commodores 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).

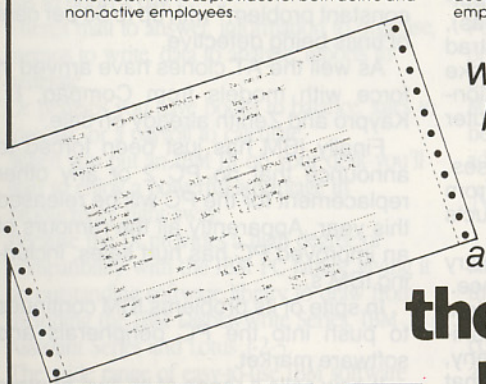
Meanwhile the Atari 8-bit range hasn't been a great seller, to say the least, for some time now.

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

Choosing a Payroll System

Read this before you decide

- The T.C.S. PAYROLL provides detailed reporting on each employee, detailed reports for each pay run, detailed reports for employers for M.T.D. and Y.T.D. totals.
- The T.C.S. PAYROLL is extremely flexible providing for multiple hourly rates, unit rates, extras and deductions.
- The T.C.S. PAYROLL calculates all tax deductions and retains totals for quick, accurate printing of IR12 tax forms.
- The T.C.S. PAYROLL provides for both active and non-active employees.
- The T.C.S. PAYROLL allows for a mixture of different pay frequencies between employees.
- The T.C.S. PAYROLL calculates cash breakdown and banking splits.
- The T.C.S. PAYROLL provides for rounding of pay if required.
- The T.C.S. PAYROLL was completely written in N.Z. and is fully supported in N.Z.
- The purpose of this Payroll system is to provide quick, accurate Payroll calculations, keep accurate records of employee totals and retain employer totals for necessary tax returns.



what you've been looking for?

at only **$499**

there really is no choice!

T.C.S PAYROLL

SPECIFICATIONS
- Runs under MS-DOS 2. Available for IBM PC and compatibles also Sanyo 550 series. (Commodore versions available)
- 128k memory for 200 employees
- 256k memory for 320 employees
- Hardware requirements
  - Minimum 128k RAM Micro Computer (MS-DOS 2)
  - One 360k Disk Drive
  - 80 column printer

Thames Computer Services
A division of James Electronics Ltd

FOR FURTHER INFORMATION CONTACT:—
THAMES COMPUTER SERVICES.
P.O. BOX 527 THAMES N.Z.
PH (0843) 86 893

OR RETURN COUPON TO ABOVE ADDRESS

NAME ADDRESS PH:

DEALER ENQUIRIES WELCOME

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 multitasking 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.

COMPUTERS FOR PEOPLE

SANYO MBC
SALES AND SUPPORT
35 Taranaki St, Wellington
Phone 847-668, 859-675
69a Rutherford St, Lower Hutt
Phone 664-069

COMPUTER GAMES FOR HIRE

Games available for weekly hire for the following computers:

★ ATARI ★ APPLE ★ CAT
★ TRS 80/SYSTEM 80
★ COM 64 ★ VIC 20 ★ BBC

Send for catalogue and membership details to:

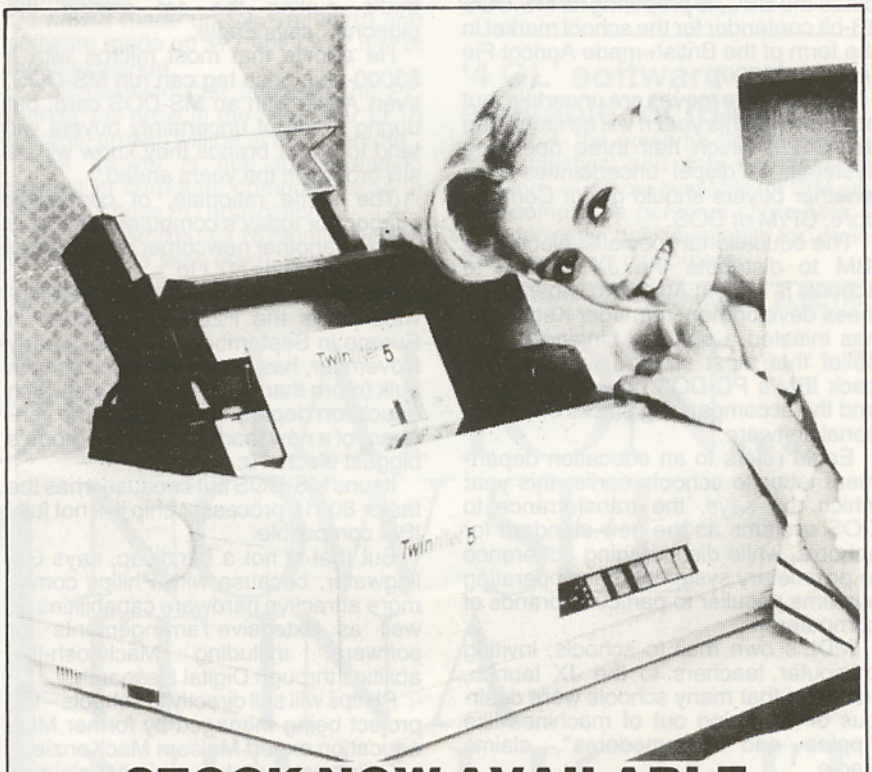
COMPUTER GAME RENTALS LTD
P.O. BOX 30947, LOWER HUTT.

Name.....

Address.....

.....

Type of Computer.....



STOCK NOW AVAILABLE

the amazing brother® TWINRITER 5

The first printer to combine daisy wheel and dot matrix printing in the same machine!

- *36 cps daisy wheel printing for word processing*
- *Choice of six dot desities*
- *Optional cut sheet feeding*
- *140 cps dot matrix for data processing*
- *Long life ribbon*
- *Serial and parallel interface*

Business Electronics Ltd
61 Hobson St, P.O. Box 588 Auckland.
Phone 798-569

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 FIe (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 FIe, 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 bouyancy 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 corporate 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.

ADVANCED AND EVER ADVANCING **MITSUBISHI ELECTRIC**

INFORMATION... NOW SEE IT IN A NEW LIGHT

The new 16 colour, AT-1332A 14" colour monitors from Mitsubishi Electric are just what's needed to liven up a software package. They offer a peripheral for all educational, CAD/CAM or imagineering needs that's hard to match for quality or value.

LOOK AT THE FEATURES

- Full IBM compatibility, to name just one!
- True medium-resolution colour that's right up to top international standards.
- DM anti-glare screen.
- 640 x200 pixels resolution, 0.4 mm line mask pitch.
- Unsurpassed colour quality and definition.

For more information, including details of high resolution colour and monochrome monitors, please contact:

NORTH ISLAND. Melco Sales (NZ) Ltd.
P.O. Box 30-772, Lower Hutt
Tel. Wellington (04) 663-107
SOUTH ISLAND. Solstat Industries Ltd,
P.O. Box 13-183, Christchurch 1.
Tel. (03) 588-202.

MITSUBISHI ELECTRIC
Dealer and O.E.M. enquiries welcome.

BGH 1895

FOR THE VERY BEST IN FLOPPY DISKS

THINK Verbatim®

WORD PERFECT FOR LIFE

Contact: Verbatim New Zealand Limited
Wellington 858-615
Or: Your Local Computer Store

THE WORLD'S BIGGEST SELLING FLOPPY DISK

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 administrative 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 relevent 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 bar 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-

Don't worry.

Since developing the first commercial computer tape in the early 1950's, 3M hasn't stopped looking at ways to anticipate users needs and initiate meaningful product improvements. The 3M diskette of today is the logical result of that quality tradition.

If you're seeking unexcelled diskette reliability, you've found it.

3M diskettes are on sale now. They're certified 100% error-free. Guaranteed for life. Tested 327 ways. And available for most computer systems.

Contact: 3M N.Z. Ltd. P.O. Box 33-246, Auckland 9. Telephone: 444-4760.

3M diskettes

One less thing to worry about.

TANDY
MOLYMERX

TANDY 1000	$3,190
with 2 DRIVES	$3,560
Internal hard drive 10 meg	$2,995
TANDY 1200	$7,495
TANDY 2000	$5,800
10meg	$9,995
TANDY 100	$1,280
with 24K	$1,690

AFTER SALES

Service and support is Professional and Ongoing. We support what we sell.

SOFTWARE SPECIAL

Supercross XT
transfer between TRISDOS, CP/M, MSDOS, PCDOS
$499

—THIS MONTH—

SPECIAL BARGAIN
(OCTOBER ONLY)

384K
Tandy model 1000

TWIN DRIVES PLUS
MONITOR PLUS

CASH LINK
ACCOUNTING PACKAGE
$60 per week

HOW TO ORDER THESE BARGAINS

MOLYMERX COMPUTING HAS A 24 HOUR ORDER LINE for PHONE ORDERS (Answerphone) – Ph.AUCK (9) 817-4372
Advice Line is (9) 836-9873
VISA, BANKCARD, BANK DRAFTS & CHEQUES accepted as are Personal Cheques (but see THE FINE PRINT below).
Written Orders to P.O. Box 60-152 (18 Okewa Rd.) Titirangi Auck.
Telex: 60657

THE FINE PRINT

Cheques Not cashed or Cards debited until goods are dispatched. Personal cheques must be cleared prior to dispatch. Freight is extra.

Molymerx

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 irrelevent 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.

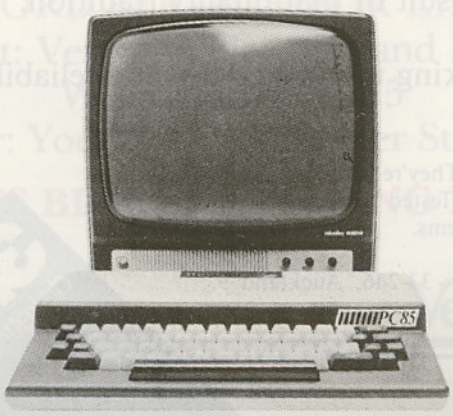
Regarding CP/M being considered almost obsolete, he claims that from the current user base in Australia, and Sweden, the list of educational software will lengthen dramatically, and that any programme would be available for a trial in a NZ classroom within two or three days of ordering.

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 softweare 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".

AMSTRAD SOFTWARE AVAILABLE FROM YOUR AMSTRAD STOCKIST

In just eight short months Amstrad have available one of New Zealand's most comprehensive ranges of hardware and software. Written by the UK's major software companies you can be assured of the best available disc drive and cassette software.

Talk to your Amstrad stockist soon and check out the range.

PRODUCT	CODE
AMSTRAD EDUCATIONAL SOFTWARE (TAPE)	
Word Hang	4312
Happy Numbers	4313
World Wise	4314
Animal, Vegetable, Mineral	4315
Happy Letters	4316
Happy Writing	4317
Time Man One	4318
Time Man Two	4319
Map Rally	4320
Screen Designer	4321
Pitmans Typing Tutor	4322
AMSTRAD GAME SOFTWARE (TAPE)	
The Key Factor	4324
Stockmarket	4325
Frank-N-Stein	4326
Jammin	4327
Roland In Space (Speech)	4328
Traffic	4329
See Saw	4330
Gun Dogs	4331
Star Eggs	4332
Bird Mother	4333
The Prize	4334
Brax Bluff	4335
Home Runner	4336
Grand Prix	4337
Harrier Attack	4338
Sultans Maze	4339
Spanner Man	4340
Oh Mummy	4341
Roland In The Cave	4342
Roland On The Rope	4343
Gems Of Stradus	4344
Chess	4345
Laser Warp	4346
Haunted Hedges	4347
Codename Mat	4348
Xanagrams	4349
Hunter Killer	4350
3-D Invaders	4351
Alien Break-In	4352
Atom Smasher	4353
Electro Freddy	4354
Admiral Graf Spee	4355
Star Command	4356
Crazy Golf	4357
Punch	4358
Roland Goes Square Bashing	4359
Pyjama Rama	4360
Cubit	4361
Roland Goes Digging	4362
Roland In Time	4363
Space Hawks	4364
Amsgolf	4365
Galactic Plague	4366
Roland On The Run	4367
Manic Miner	4368
Astro Attack	4369
Quack A Jack	4370
Classic Adventure	4371
Snooker	4372
Roland Ahoy	4373
Bridge It	4374
Fruit Machine	4375
Muttant Mounty	4376
Loopy Laundry	4377
Dragons Gold	4378
Centre Court	4379
Classic Racing	4380
Detective	4381
Blagger	4382
Splat	4383
Tapper	4524
Spy Hunter	4525
AMSTRAD GAME SOFTWARE (DISK)	
Grand Prix Rally	4600
Subterranean Striker	4601
Lords Of Midnight	4602
3D Grand Prix	4603
Sorcery	4604
Beach Head	4605
Raid Over Moscow	4606
Bruce Lee	4607
Zaxon	4608
Buck Rogers	4609
Gongo Bongo	4610
Tapper	4611
Spy Hunter	4612
Cyruss Chess	4613
Stockmarket	4614
Splat	4615
Jammin	4616
Centre Court	4617
Muttant Mounty	4618
Roland In Space (W/Speech)	4619
Fantastic Voyage	4620
Super Pipeline	4621
The Scout Steps Out	4622
Airwolf	4623
Traffic	4624
See Saw	4625
Gun Dogs	4626
Star Eggs	4627
Bird Mother	4628
World Cup Soccer	4629
Pyjama Rama	4630
Brax Bluff	4631
Alien	4632
Alex Higgins Pool (Speech)	4633
Dragons	4634
Fu Kung In Las Vegas	4635
Gate Crasher	4637
Pitmans Typing Tutor	4638
AMSTRAD GAME SOFTWARE (TAPE)	
Fu Kung In Las Vegas	4512
Fantastic Voyage	4513
Super Pipeline	4514
The Scout Steps Out	4515
Airwolf	4516
Grand Prix Rally	4517
Subterranean Striker	4518
Lords Of Midnight	4519
3D Grand Prix	4520
Zaxon	4521
Buck Rogers	4522
Congo Bongo	4523
Tapper	4524
Spy Hunter	4525
Jump Set	4526
AMSTRAD SOFTWARE (VARIOUS TAPE)	
Flight Path	4436
House Of Usher	4437
Survivor	4438
Alien	4442
Moon Buggy	4443
Sorcery	4444
Gate Crasher	4445
Alex Higgins Pool (W/Speech)	4446
Dragons	4447
AMSTRAD TUTORIAL, BUSINESS & HOME MANAGEMENT PROGRAMS (TAPE)	
Basic Part I	4384
Basic Part II	4385
Devac Assembler/Dissembler	4386
Home Budget	4387
Amscalc Spreadsheet	4388
Amsword Word Processor	4389
Hisoft Pascal	4390
Amsword Advanced	4391
Mastercalc	4392
Tasword Word Processor	4393
Masterfile	4424
Project Planner	4425
Entrepreneur	4426
Decision Maker	4427
DFM Database	4428
Home Account Manager	4429
Mastercalc	4430
Invostat	4431
Transact	4432
Stock Aid	4433
Fourth	4434
Introducing Pascal	4435
AMSTRAD TUTORIAL, BUSINESS & HOME MANAGEMENT PROGRAMS (DISK)	
Microscript	4448
Micro Pen	4449
Microspread	4450
Amsword Advanced	4451
Masterfile	4452
Project Planner	4453
Decision Maker	4454
Star Watcher	4455
Entrepreneur	4456
Stock Control/Sales Invoice/ Ledger	4457
Purchase Ledger	4458
Nominal Ledger	4459
Mastercalc	4460
Transact	4465
Invostat	4466
DFM Database	4467
Cashbook Account	4468
Stock Aid	4469
Devpac Assembler/Dissembler	4470
Pascal	4472
Fourth	4473
Screen Designer	4474
Home Account Manager	4475
Basic Compiler	4476
AMSTRAD SOFTWARE (VARIOUS DISK)	
Flight Path & Atom Smasher	4461
House Of Usher & Alien Break In	4462
Survivor & Atom Smasher	4463
Moon Buggy & Alien Break In	4464
AMSTRAD BOOKS & MISCELLANEOUS	
Concise Basic Spec	4400
Concise Firmware Spec	4401
Guide To CPM	4402
Guide To Logo	4403
Instruction Manual	4404
CPC464 Ring Binder	4405
Amstrad Computing	4406
Sensational Games	4407
40 Educational Games	4408
Amstrad Micro	4409
Computer Challenges For Amstrad	4410
Advanced User Guide	4411
Intro To Programming	4412
Exploring Adventures	4413
Amstrad Program Book	4414
The Working Amstrad	4415
60 Programs	4416
DDI Firmware	4419
Guide To CPM	4420
Amstrad Magic	4421
ALPHA LINK SERIES (DISK)	
Accounts Receivable	4701
Accounts Payable	4702
Cashbook	4703
Stock Control/Invoicing/ Cash Sale	4704
Job Costing/Stock Control/ Invoicing	4705
Import Costing/Stock Control/ Invoice	4706
Club Membership	4707
Cash Register	4708

Grandstand Computers Ltd,
C.P.O. Box 2353, Auckland,
21 Great South Road,
Newmarket,
Auckland.
Ph: 504-033.

GRANDSTAND AMSTRAD

The Learning Machine.

THE COMMODORE 16

If you're a first time computer buyer, we can show you the computer designed especially for you.

The Commodore 16.

And we can show you how easy it is to operate.

If you can type with one finger, you'll still appreciate the C16's full sized, professional typewriter style keyboard which has gained an enviable reputation from its big brother the Commodore 64.

The C16 opens up a fascinating world of games playing, with graphics and sound effects that you could never imagine.

And when it comes to education, the C16 scores heavily with software that makes learning fun, for children from pre-school right through the education process.

Commodore

Come along and see how easy the C16 is to learn.

For further information send to:

Commodore Computer (NZ) Ltd., P.O. Box 33-847, Auckland 9. (09) 410-9182

Name _____

Address _____ Phone _____

Everywhere you go there's a Commodore.

B&B

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.

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 firmwave, 4k character set
Input/Output:	Programmable 8 bit in/out parallel part, programmable RS232 part, cassette interface, direct video.
Keyboard:	60 key full-size querty, 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

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.

But at a business computer show in San Francisco I discovered the Zenith 171.

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 5¼ inch 360k floppy drives.
* Full typewriter style keyboard plus to 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 battery 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.

COMPUTERS AND SOFTWARE
for
BUSINESS AND HOME

We stock the following models!
BONDWELL — COMMODORE — SPECTRAVIDEO
AMSTRAD — ATARI
— Many specialised software applications available
— Many other products — games, computer furniture, joysticks.

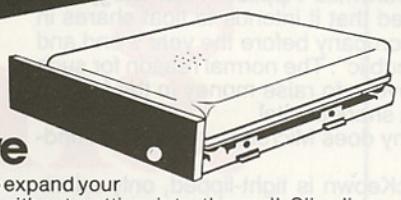
COMPUTERS LTD.
23 High Street, Lower Hutt.
OPEN SATURDAYS.

Save Hundreds!

MS DOS Software Specials!

		WAS	NOW	SAVE
X-5255	Perfect Writer	$695	$595	$100
X-5257	Microsoft Word	—	$900	—
X-5260	DBASE III	$1930	$1795	$135
X-5262	Perfect Filer	$595	$495	$100
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

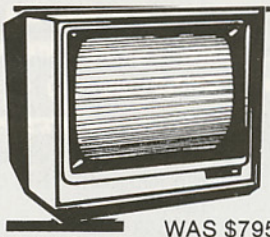
10 Meg Hard Drive



Now you can afford to expand your business computer without getting into the red! Slim-line model fits into same space as floppy drive (inside computer!)
Cat X-5208

SAVE $500 WAS $2995
NOW $2495

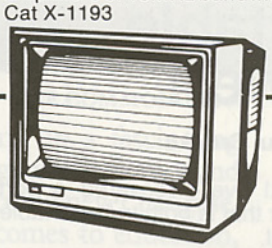
RGB Monitor
Unbelievable Value!



For the sharpest, brightest colour display, an RGB colour monitor is essential. Our RGB colour monitor has a 30cm hi-res tube coupled with video amplifiers of 18MHz bandwidth.
Cat X-1193

SAVE $100 WAS $795
NOW $695

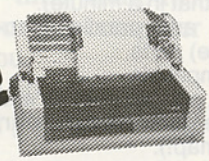
MITSUBISHI High Res Green Screen —
NZ's best price!



New Zealand's lowest price green screen monitor. Really easy on the eyes!
Cat X-1221

SAVE $10 WAS $289
NOW $279

Daisy Wheel Printer



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.

SAVE $100 WAS $795
NOW $695
Cat X-3270
(Tractor feed optional at extra cost)

NEED COMPUTER PAPER? Cat X-1184
BOXED FANFOLD 500 SHEETS — $19.95

•AUCKLAND

Downtown	Cnr Fort & Commerce Sts, Ph: 38 9974
Newmarket	98 Carlton Gore Rd, Ph: 54 7744
Papatoetoe	26 East Tamaki Rd, Ph: 278 2355
Avondale	1795 Great North Rd, Ph: 88 6696

• HAMILTON	450 Anglesea St, Ph: 39 4490
• WELLINGTON	154 Featherstone St, Ph: 73 9858
• LOWER HUTT	440 Cuba St, Alicetown Ph: 66 2022
• CHRISTCHURCH	Cnr Victoria St & Bealey Ave., Ph: 50 405
• DUNEDIN	Cnr Manse & Stafford Sts, Ph: 74 1096

DSXpress Mailorders - Dick Smith Electronics Private Bag, Newmarket. (09) 54 9924

bankcard welcome here VISA AGC

Specials apply October 1985 only or while stocks last.

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.

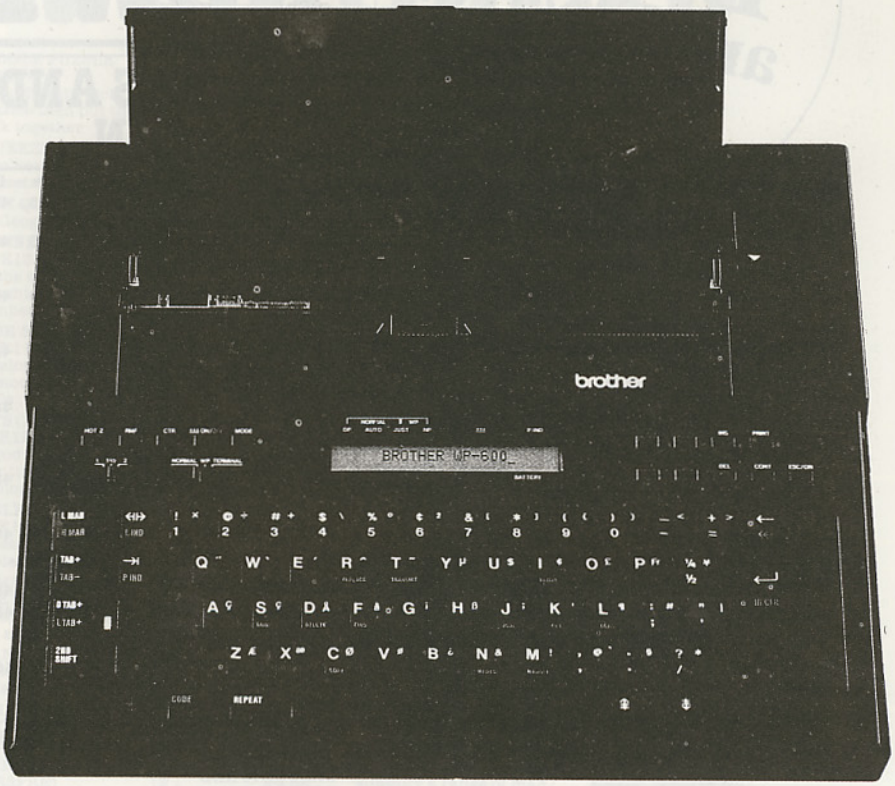
While you are typing, or with the typing switched off altogether, text can be stored in memory in one of nine possible files. From this file text can be recalled and changed by using the little display unit to view the text you have previously created. Most of the usual word processing commands are available 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 R5232 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 termal 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 termal 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

An example of one of the larges

NOW AVAILAB

BUSINESS AND PROFESSIONAL

	Tape	Disk/ROM
*VIEW (SBB03) A professional word processor		198.00 (R)
*VIEWSHEET (SNB07) Electronic worksheet		198.00 (R)
*VIEW STORE (SBB27) The latest data base		198.00 (R)
*VIEW INDEX (SNB17) To index your view files		48.00 (D)
*Fully integrated		
DATA BASE (SNB06) Easy to use data base system		85.00 (D)
DESK DIARY (SNB01) Address book and diary/planner	39.95	48.00 (D)
HOME FINANCE (BBC08)	39.95	48.00 (D)
COLLECTORS CATALOGUE (SBX05) Index cards, stamps, coins etc.	39.95	48.00 (D)
DEBTORS/STOCK CONTROL (ASNB92) A powerful fast package 1000 accounts 16000 transactions formats to tailor the system.		395.00 (D)
CASH BOOK (ASNB93) A professional package for all financial information. 300 definable ledger accounts.		395.00 (D)

GAMES AND FUN

	Tape	Disk
ARCADE ACTION (SNG06) 4 Good arcade games	39.95	48.00
ARCADIANS (SNG14) A fast moving arcade-style space game.	39.95	48.00
AVIATOR (SNG02) The hot flying program from England	39.95	48.00
CAROUSEL (SNG24) Version of fairground shooting galleries	39.95	48.00
CHESS (SNG10) Complete chess-playing program.	—	48.00
COUNTDOWN TO DOOM (SBG19) Finding treasures and working your space-ships components.	39.95	48.00
CRANKY (SBE17) Cranky the crazy calculator doesn't like rain.	39.95	48.00
CRAZY TRACER (SLG26)	29.95	48.00
CUBE MASTER (SNG08) A game Rubik's Cube enthusiasts will welcome	39.95	48.00
THE DATING GAME (SBS08) A computer dating and compatibility program for up to 40 people.	39.95	48.00
DOCTOR WHO (BBC11) An adventure in 4 episodes.	39.95	48.00
DRAUGHTS AND REVERSI (SBG20) Draughts the traditional game has been faithfully reproduced on the screen.	39.95	48.00
DRONGA (SNG27)	—	48.00
ELECTRON 4 PACK (SL003) Chess, Boxer, Snapper, Hopper	69.95	—
ELITE (SNG38) 3-D space game featuring interstellar travel in a distant cluster of galaxies in the outer universe.	48.00	69.95
FREE FALL (SNG28) Manoeuvring crewman around the space station as he tries to destroy Alphoids.	39.95	48.00
FUN GAMES (BBC05)	39.95	48.00
GAMES OF STRATEGY (BBC06)	39.95	48.00
HOPPER (SBG23) Hop the frog across the motorway dodging cars and lorries.	39.95	48.00
THE HOBBIT (BBC31)	76.55	—
JCB DIGGER (SNG09) You are in charge of a JCB excavator loader.	39.95	48.00
JUMBO (MMG01) A complex simulation of flying a 747 aircraft.	—	69.95
METEORS (SNG12) Manouevre your laser-ship through a hail of meteors smashing them with your laser bolts etc.	39.95	48.00
MISSILE BASE (SBG18) Protect your city from hostile missiles by firing your own rockets which explode into fireballs.	39.95	—
MONSTERS (SNG03) Pursued by monsters you must trap them in holes you dig in their path.	39.95	48.00
PHILOSOPHER'S QUEST (SBG01) An 'intelligent' adventure where you explore a strange land.	39.95	—
PLANETOID (SBG15) Save life forms from their attackers.	39.95	48.00
ROCKET RAID (SBG05) Fly over 5 different landscapes each with its own dangers.	39.95	48.00
SLIDING BLOCK PUZZLES (SBG12)	39.95	48.00
SNAPPER (SNG04) Guide the snapper through the maze eating dots and fruit.	39.95	48.00
SNOOKER (SBG21) A simulation of the game of snooker.	39.95	48.00
SPHINX ADVENTURE (SBG07) A classic adventure in which you move through caves, fight with trolls, collect treasure.	39.95	—
STARSHIP COMMAND (SCG22) Fight off invading enemy spaceships and become the top starfleet commander.	—	69.95
SUPER INVADERS (SNG32) You are being bombarded by waves of invading aliens varying in their ferocity.	39.95	48.00

HOME EDUCATION

	Age Group	Tape	Disk/ROM
HUMAN BIOLOGY (GARUB1) Action of the Heart/Kidney Structure	14-18		49.95 (D)

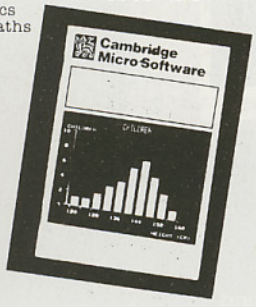
ranges of software in the world.

LE IN NEW ZEALAND

BLOOD CIRCULATION MAZE (GARAP4)	13-16		49.95 (D)
CHROMOSOME MAPPING (GARGB-6)	14 +		49.95 (D)
HUMAN BLOOD GROUPS (GARAP8)	14 +		
POPULATION GENETICS (GARGB-5)	14-16		49.95 (D)
SEED GERMINATION (GARPPI)	All		49.95 (D)
CHEMISTRY			
ATOMS ISOTOPES (BARSCI1)	14-16		49.95 (D)
IONS & CHEMICAL FORMULAE (BARSCI2)	14-16		49.95 (D)
MOVING MOLECULES (CAM7) Explains kinetic theory	14-16		66.00
TREE OF KNOWLEDGE (SCE04) Teaches categorisation and use of database.	All	39.95	48.00 (D)
DRAWING (BBC01) Explores graphics capabilities of computer		39.95	
PAINTING (BBC02) Enables user to create and learn about computer graphics.		39.95	
CRIME & DETECTION QUIZ (XBX 02) Test your crime and detection knowledge.	9 +	39.95	48.00
GRANNY'S GARDEN (EH2006) Adventure game stimulates classroom activities	7 +		69.95
PODD (EH4049) Develops spelling skills and expands vocabulary	5-11	39.95	56.50
SCIENCE FICTION QUIZ (XBX05) Teaches science fiction in widest sense	10 +	39.95	48.00
SENTENCE SEQUENCING (SBE07) Jumbled sentences to re-arrange	7-9	39.95	48.00
THEATRE QUIZ (XBX01) Entertaining & informative quiz	10 +	39.95	48.00
WORD HUNT (SLE05) From one word create as many smaller ones as possible	All	39.95	48.00
WORD SEQUENCING (SLE06) Teaches sentence structure awareness	5-8	39.95	48.00
EARLY LEARNING (SLE07) In colour graphics for spelling & maths	5-9	39.95	48.00
JUGGLE PUZZLE (XBE27) Mix different picture puzzles then put them back together	8 +	39.95	48.00
SQUEEZE (XBE28) Involves the use of geometric concepts	5-12	39.95	48.00
KIWI QUIZ (BALS40) NZ Geography test	13 +		48.00
NUMBER GULPER (XBE13) Maths improvement by achieving target number	5-12	39.95	48.00
HIDE & SEEK (XBE11) Develops short term memory and pre-reading skills	5-12	39.95	48.00
LETS COUNT (XBE12) Introduction to teach counting with 4 graphics & colourful games	3 +	39.95	48.00
TABLE ADVENTURE (XBE18) Times table learning by playing a game	5-11	39.95	48.00
NUMBER CHASER (XBE15) Put the skills of estimating into an exciting game	5-12	39.95	48.00
CRANKY (XBE17) Explore skills in addition and subtraction techniques	7 +	39.95	48.00
CHILDREN FROM SPACE (XBE16) Space Adventure	7 +	39.95	48.00
FRENCH LANGUAGE (BARSFRE) Language & geographical knowledge of France	12 +		49.95
GERMAN LANGUAGE (BARSGER) Language & geographical knowledge of Germany	12 +		49.95
AURAL TRAINING SYSTEM (BARS20) Develop & test musical aural perception skills	8 +		148.00
NUMBER BALANCE (SLE08) Pictorial prog. for simple maths practice	5 +	39.95	48.00
PEEKO COMPUTER (SLB02) Insight into how computer works	All	39.95	48.00
ALGEBRAIC MANIPULATOR (SBE01) Algebraic manipulations	All	39.95	48.00

LANGUAGES

	Tape	Disk/ ROM
LOGO (SBL06) The computer language children can use	—	245.00 (R)
ISO-PASCAL (SBC18) A powerful computer language	—	245.00 (R)
FORTH (SBL01) A compiled language runs fast	68.00	68.00 (D)
LISP (SBL02) A fundamental language very flexible	68.00	68.00 (D)
S-PASCALE (SNL08) A compiler for the subject of Pascal devised for teaching	59.00	68.00 (D)
TURTLE GRAPHICS (SNL07) Introductory package for teaching	—	81.00 (D)
TURTLE GRAPHICS BOOK	24.50	
MICROTEXT (SBL04) A programming package to simplify a range of man/ computer dialogues		112.00 (R)



★ Available from Whitcoulls stores throughout New Zealand.

★ John Gilbert & Co. Auckland	Phone: Auckland 30839
★ Computer Terminal. Auckland	Phone: Auckland 4190543
★ A1 Computers. Hamilton	Phone: Hamilton 393000

Enclosed please find my cheque/money order for $ _____

Charge my credit card ☐ Visa ☐ Bankcard

CARD NO. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

EXPIRY DATE ☐☐/☐☐/☐☐

NAME _____

ADDRESS _____

ORDER TYPE AND NO. _____

PLEASE TICK BBC ☐ ELECTRON ☐, DISK ☐ CASSETTE ☐

BARSON computers

Distributed by Barson Computers Auckland — Melbourne — Sydney
For your local dealer, Telephone Auckland (09) 504-049 or write P.O. Box 26-287 Epsom, NZ.

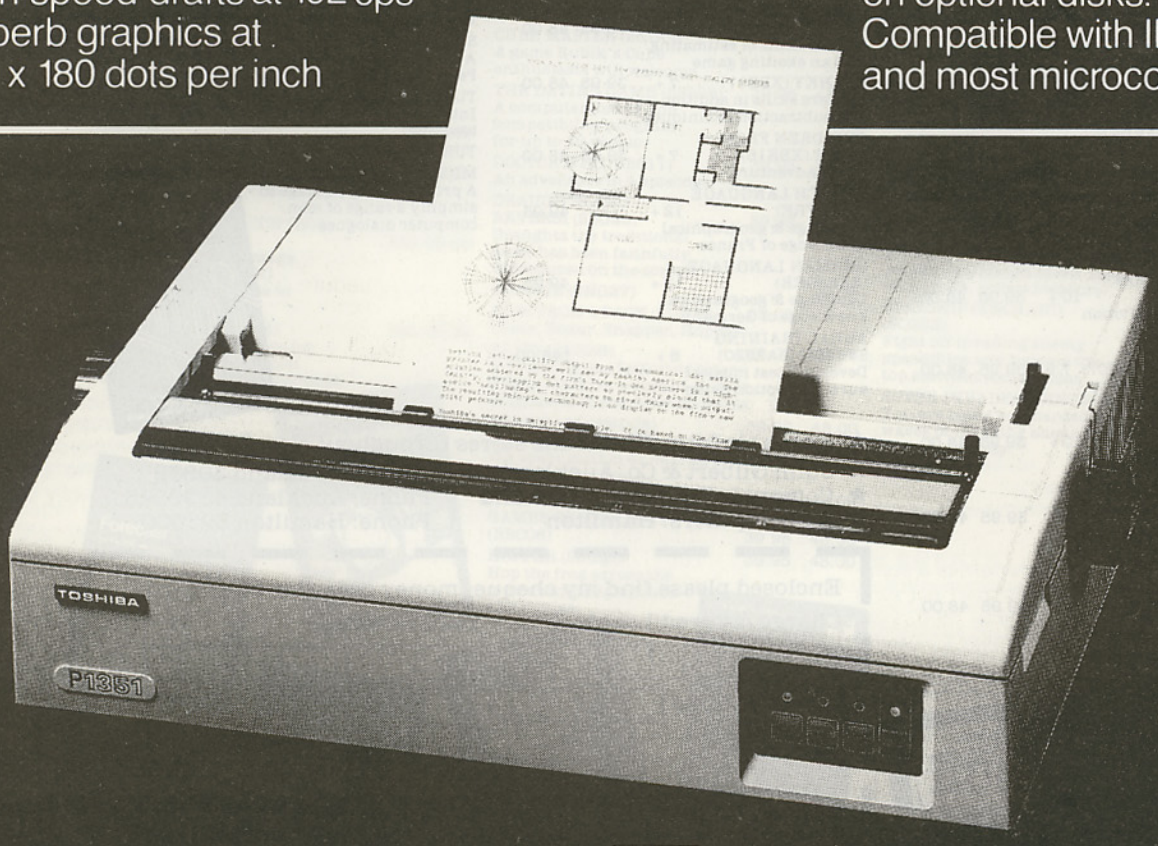
TOSHIBA

P1351

Three-In-One Printer

- Letter quality at 100 cps
- High-speed drafts at 192 cps
- Superb graphics at 180 x 180 dots per inch

Variety of fonts available on optional disks. Compatible with IBM-PC and most microcomputers.



For more information contact:

PAXUS COMMERCIAL SYSTEMS

incorporating SOUTHMARK ELECTRONICS LTD

2 Ngaire Ave. Newmarket Auckland
P.O. Box 6330 Auckland
Phone 504609

TCC 0124

(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 processing 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 printout. 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 3½" 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 orginally 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.

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.

LATEST SOFTWARE AVAILABLE IN N.Z. OR DIRECT OVERSEAS MAIL ORDER

COMMODORE C64

REFERENCE	TITLE	T/D	NZ$
CACCESS18	Raid Over Moscow	T	29-95
CACT101	Ghostbustsers	T	53-55
CACTIVISN3	Web Dimension	T	54-95
CACTIVISN4	Star League Baseball	T	54-95
CACTIVISN8	Mindshadow	D	99-95
CACTIVIS19	On Court-Tennis	T	56-95
CADDICTIV1	Stringer	T	37-80
CADDICTIV2	Software Star	T	39-75
CADV101	Gremlins	T	53-10
CALLIGAT1	Knockout	T	34-75
CANIROG1	Jump Jet	T	49-50
CARGUS1	Broad Street	T	39-95
CARGUS2	The Bulge	T	44-75
CARIOLASO2	David's Midnite Magic	D	56-20
CARIOLASO4	Raid On Bungeling Bay	D	56-20
CARIOLASO7	Murder On Zinderneuf	D	63-00
CARIOLASO9	Pitstop II	D	52-80
CAUDIOGEN1	G.C. Test Cricket	T	49-50
CBEYOND2	Romper Room	T	49-50
CBEYOND3	Shadowfire	T	49-95
SBEY091	Pystron	T	45-05
CBEY111	Lords of Midnight	T	44-65
SBEY151	Spy V's Spy	T	45-05
CBIG011	Bounty Bob Strikes Back	T	53-10
CBIG021	Bounty Bob Strikes Back	D	69-05
CBRITISHS1	Operation Swordfish	T	49-75
CBRO151	Stealth	T	69-30
CBRO161	Stealth	D	69-30
CBUB091	Agua Racer	T	34-95
CCOMMODOR1	International Tennis	T	49-50
CCOMMODOR2	International B/Ball	T	29-95
CCOS131	Talladega	T	53-60
CCOS09	Monster Trivia	T	46-50
COSMIC8	Super Huey	T	29-95
CC.R.L.1	The Rocky Horror Show	T	45-60
CDATASOFT1	Pacman	T	51-95
CDII011	Fighter Pilot	T	44-75
CDII021	Fighter Pilot	D	74-75
CDOMARK1	A View To A Kill	T	53-55
CDUR04	Combat Lynx	T	44-65
CEDGBR1	Brian Bloodaxe	T	40-15
CELA01	Hard Hat Mack	T	55-40
CELA11	M.U.L.E.	T	64-09
CELI01	Kokotoni Wilf	T	38-20
CELI031	Fall Guy	T	40-10
CELI051	Dukes Of Hazard	T	40-10
CELITE1	Frank Brunos Boxing	T	44-75
CENG091	Witch Switch	T	44-75
CEPYX1	Impossible Mission	T	39-75
CEPYX2	Murder By The Dozen	D	77-50
CEPYX3	Pitstop II	T	49-50
CEPYX4	Breakdance	T	44-75
CFIRO71	Elite	T	55-45
CRIR071	Elite	D	94-30
CGARGOYLE1	Tir-Na-Nog	T	49-50
OGIL011	The Quill	T	73-85
CHEWSONC01	Gribblys Day Out	T	39-75
CIJK011	Rocketball	T	37-75
CIMAGINE1	World Baseball	T	39-75
CINCENTIV1	Confuzion	T	34-95
CINC02	Moon Cresta	T	30-65
CINFO01	H/Hikers Guide Galaxy	D	84-95
CLEI01	Scrabble	T	73-95
CLLO131	Mama Llama	T	37-50
CMAR011	E.K. Jump Challenge	T	39-10
CMAR021	B.J. Superstar	T	42-25
CMASTERTRI	Skyjet	T	12-95
CMEL/HOU19	Way Of Exploding Fist	T	49-50
CMEL/HOU29	Way Of Exploding Fist	D	59-95
CMEL101	Grand Lacency	T	39-75
CMIA01	Herberts Dummy Run	T	49-50
CMIG0414	Everyone's A Wally	T	29-95
CMINDSCA18	Indiana Jones	T	29-95
CMIRROR18	Spitfire 40	T	29-95
CNEWGENER1	Amazon Warrior	T	39-75
COAS031	White Lightening	T	97-95
COCE131	Baseball World Series	T	39-95
COCEAN18	D.T. Decathalon	T	29-95
COM/REL11	Select 1	T	66-95
CORI011	Ultima III	D	105-85
CORPHEUS1	Elidon	T	45-60
CPVG011	Cauldron	T	38-20
CPEA021	Tim Love's Cricket	T	45-60
CP.S.S.1	Theatre Europe	T	49-50
COU/SILVA1	Gryphon	T	39-75
COU/SILVA2	Black Thunder	T	39-75
COU/SILVA3	Black Thunder	D	64-75
CSEGA18	Spy Hunter	T	29-95
CSOFTAID1	Softaid	T	33-75
SSTS091	Frak	T	44-75
CSTE011	Skull Island	T	78-85
CSTE021	Murder On The W/Front	T	78-85
CSOF091	A.L.M.A.Z.Z.	T	40-15
CSOJ051	Nut Cracker	T	30-20
CSOJO79	Jet Set Willy II	T	45-60
CSOLAR1	Jungle Quest	T	39-75
CSUB010	Flight Simulator II	D	129-00
CTAS151	Cadcam Warrior	T	53-80
CTASKSET3	Cadcam Warrior	D	64-75
CTHO04	Chopper	T	17-95
CTHORNEMI1	Ice Palace	T	39-75
CTRI01	Fahrenheit	D	112-70
CTYMAC1	Gandalf The Sorcerer	T	49-75
CTYMAC2	Flyer Fox	T	39-75
CUSGOLD1	Dropzone	T	49-50
CUSGOLD2	Conan	T	49-95
CUSGOLD3	Conan	D	74-75
CULTO1	Staff Of Karnath	T	53-40
CULTIMATE1	Entombed	T	49-50
CUSGOLD1	The Dambusters	T	49-50
CVIRGIN1	The Gates Of Dawn	T	36-50
CVIRGIN2	Ghetto Blaster	T	44-75
CVIRGIN3	Sorcery	T	21-75

SPECTRUM

REFERENCE	TITLE	T/D	NZ$
SACCO11	Beachhead	T	43-70
SACC021	Raid Over Moscow	T	43-70
SACC031	Beachhead II	T	43-70
SACT051	Pitfall II	T	43-20
SACTIVISN1	Ghostbusters	T	49-95
SADDICTIV1	Software Star	T	34-75
SADV051	Spiderman	T	40-25
SADV/INT19	The Hulk	T	49-50
SADV/INT29	Sorc. Claymorgue Castle	T	45-90
SADVGR1	Gremlins	T	48-00
SALLKN1	Knockout	T	33-60
SANIROG1	Flight Path 737	T	39-75
SARGUS1	Broad Street	T	39-95
SARIAR	Archon	T	58-60
SART01	Strip Poker	T	41-05
SARTIC1	Mutant Monty	T	34-75
SATARISOF1	Galaxian	T	39-75
SATARISOF2	Pole Position	T	39-75
SBEY041	PSI Warrior	T	48-15
SBEY051	Dooms Dark Revenge	T	51-15
SBEYOND2	Spy Vs Spy	T	49-50
SBEYSH	Shadowfire	T	47-55
SBIG011	Bounty Bob Strikes Back	T	47-10
SBUBWI1	Wizards Lair	T	35-50
SCPS01	Superchess 3.5	T	48-15
SCPS081	Astronomer	T	48-15
SCRL2	Formula One	T	39-75
SCRLR0	Rocky Horror Show	T	46-60
SCRY06	Dark Star	T	37-50
SDIT021	Night Gunner	T	38-15
SDIT031	Thunderbirds	T	38-15
SDIT041	TT Racer	T	38-15
SDKT051	Popeye	T	47-55
SDKT06	Minder	T	47-50
SDOMUEL1	A View To A Kill	T	57-10
SDST01	Bruce Lee	T	43-20
SDST021	Conan	T	43-20
SDUR031	Scuba Dive	T	30-50
SDUR041	Combat Lynx	T	45-60
SDUR051	Deathpit	T	28-80
SEDGBR1	Brian Bloodaxe	T	38-15
SELI011	Kokotoni Wilf	T	28-75
SELI021	Airwolf	T	34-75
SELITE2	Dukes Of Hazard	T	34-75
SELITE3	Frank Brunos Boxing	T	34-75
SFAN051	B/Packers Guide/Univers	T	36-22
SFIREBIRD1	Buggy Blast	T	29-75
SFIR011	Gyron	T	51-75
SFIRB01	Booty	T	30-60
SGARGOYLE1	Dun Darach	T	49-75
SGAR021	Tir Na Nog	T	49-95
SGIL011	The Quill	T	74-05
SGIL021	The Illustrator	T	75-05
SGREMLIN1	Rocky	T	39-75
SGREMLIN2	Tinderbox	T	24-95
SH/MGIBBO1	Charlie/Choc. Factory	T	42-50
SHEW131	Technician Ted	T	29-90
SIMGHY1	Hyper Sports	T	48-30
SIMGWB1	World Series Baseball	T	33-60
SINCO01	Confuzion	T	31-05
SINCENTIV2	Moon Cresta	T	34-75
SINSIGHT1	Subterranean Stryker	T	34-75
SLOTBU	The Bulge	T	48-30
SMAR011	E.K. Jump Challenge	T	35-40
SMAR012	B.J. Superstar	T	39-10
SMARTECH3	The Odyssey Of Hope	T	32-85
SMASTERTR1	Finders Keepers	T	12-95
SMELST1	Starion	T	38-55
SMIA0314	Pyjamarama	T	29-95
SMIC031	Project Future	T	34-75
SMICROMEG1	Day In The Life	T	34-75
SMIH044	School Daze	T	24-75
SMIH05	Sky Ranger	T	28-75
SMIKROGEN1	Herberts Dummy Run	T	49-50
SMIKROGE24	Eyeyones A Wally	T	29-95
SMIKROGE34	The Witchs Cauldron	T	24-95
SMIN021	Alien	T	48-40
SMIP02	F-15 Strike Eagle	T	53-60
SMIRRORS01	Word Games/Mr Men	T	49-75
SMND011	Indiana Jones	T	41-05
SNEWGENER1	Squash	T	39-75
SOAS031	White Lightening	T	72-25
SOCE201	Gift From The Gods	T	49-75
SOCEAN2	Match Day	T	39-75
SOCEAN3	Hunchback II	T	37-55
SOCEDA1	Daley Thompson S/Test	T	34-50
SODIN1	Nodes Of Yesod	T	49-95
SOTJE1	Jet Set Willy II	T	30-50
SPALACE1	Cauldron	T	39-95
SPRT/PLOT1	Paint Plus	T	69-96
SQU/SILVA1	Glass	T	39-75
SREALTIME1	3D Tank Duel	T	26-50
SROMANTIC1	Wriggler	T	29-75
SRTS011	Star Strike	T	28-75
SSCORPI01	Alcatraz II	T	12-75
SSEG021	Tapper	T	43-20
SSEG051	Spy Hunter	T	43-20
SSEG061	Buck Rogers	T	43-20
SSILVERS01	Saimazoom	T	34-75
SSOFTAID1	Softaid	T	33-75
SSOT021	Lode Runner	T	53-60
SSSI041	Combat Leader	T	51-50
SSTS011	Boulder Dash	T	41-05
SSYN011	Fort Apocalypse	T	41-05
SSYSDE1	Deathstar Interceptor	T	47-55
STAK011	Super Pipeline II	T	48-05
STHEEDGE1	Brian Bloodaxe	T	39-75
STHR041	Black Hawk	T	37-50
SULT081	Underwurlde	T	51-80
SULT111	Alien 8	T	51-80
SULT091	Knight Lore	T	51-80
SUSGOLD2	Bruce Lee	T	39-75
SVORTEX14	Cyclone	T	24-75
SVORTEX24	Tornado Low Level	T	24-75

ATARI

REFERENCE	TITLE	T/D	NZ$
AACCESS2	Beachhead	D	79-60
AACTIVISI1	Decathlon	T	52-50
AACTIVISI2	Ghostbusters	T	56-70
AACTIVISI3	Pitfall II	T	52-50
AACTIVISI4	River Raid	T	52-50
AACTIVISI5	Space Shuttle	T	52-50
AARE01	Dropzone	T	53-60
AARE02	Dropzone	D	69-15
ACC011	Beachhead	T	49-50
ADATASOFT3	Dallas Quest	D	74-30
ADST181	Bruce Lee	D	79-50
ADST191	Bruce Lee	T	79-50
ADST231	Conan	T	53-60
ADST241	Conan	D	79-60
AENG601	Atari Hits	T	79-50
AENG611	Atari Hits	D	95-25
AEPX27	Pitstop	ROM	88-80
ALLA021	Mutant Camels	T	35-60
AMICROBYT1	Er*bert	T	33-85
AMIP011	Spitfire Ace	T	53-60
AMIP021	Spitfire Ace	D	69-15
AMIP071	Nato Commander	T	53-60
AMIP081	Nato Commander	D	69-15
AMIP081	Solo Flight	D	79-60
AMIP091	Solo Flight	T	79-60
AMIP111	F-15 Strike Eagle	T	79-60
AMIP121	F-15 Strike Eagle	D	79-60
AS/WPROJE1	Manic Miner	T	45-60
ASSI101	Combat Leader	T	79-60
ASUBLOGIC1	Flight Simulator II	D	133-50
ASYNSOFT2	Drelbs	T	49-50
ASYN341	Drelbs	D	53-60
ASYN151	Fort Apocalypse	T	53-60
ASYN161	Fort Apocalypse	D	79-60
ASYN411	Blue Max 2001	T	53-60
ASYN441	Blue Max 2001	D	79-60
ATERMINAL1	Lazy Jones	T	45-60
ATERMINAL2	Star Commando	T	45-60
ATHO011	Submarine Commander	T	49-95
ATHO031	Tank Commander	T	49-95
AVIRGIN1	Sorcery	T	48-10

BBC

REFERENCE	TITLE	T/D	NZ$
BAAR011	Zalaga	T	35-20
BAAR021	Frak!	T	45-05
BACORNSOF1	Revs	T	79-95
BACORNSOF2	Revs	D	89-95
BACORNSOF3	Labyrinth	T	44-75
BACORNSOF4	Elite	T	74-75
BACORNSOF5	Elite	D	89-95
BACORNSOF6	Aviator	T	74-75
BACORNSOF7	Aviator	D	89-75
BADD011	Football Manager	T	40-25
BADV041	Secret Mission	T	40-25
VADV051	Hulk	T	40-25
BADV101	Sorceror/Clay-Castle	T	40-25
BADV111	Spiderman	T	40-25
BALLIGATA2	Chart Buster	T	49-55
BALLI41	Son Of Blagger	T	40-25
BATARISOF1	Pole Position	T	49-75
BBIGFIVE1	Bounty Bob Strikes Back	T	53-40
BDAT011	Micro Olympics	T	30-50
BDATABASE1	Micro Olympics	D	39-75
BDMS011	747 Simulator	T	45-10
BDRS031	Gorf	T	40-25
BDUR011	Combat Lynx	T	45-05
BGEMINI1	Missile Control	T	46-70
BICON1	Contraption	T	44-75
BICON2	Caveman Capers	T	39-95
BIMAGINE1	Wizadore	T	39-75
BINCENTIV1	Confuzion	T	34-75
BKEMPSTON1	Chicane	T	39-95
BLEI011	Scabble	T	73-95
BMAL011	Blockbusters	T	40-20
BMAR031	B.J.'s Superstar	T	40-25
BMARTECK1	E.K. Jump Challenge	T	39-75
BMEL011	The Hobbitt	T	74-05
BMIC581	Mr Ee	T	35-40
BMIC641	Mr Ee	D	53-60
BMIC661	Castle Quest	T	69-20
BMIC671	Castle Quest	D	79-60
BULTIMATE1	Knight Lore	T	49-75
BULT011	Jet Pac	T	43-25
BULT021	Sabre Wulf	T	53-60

VIC20

VADDICTIV1	Football Manager	+ 16K	T	28-95
VANI011	Crazy Kong	+ 16K	T	40-25
VANI021	Mini Kong		T	30-50
VANI041	Scramble	+ 16K	T	40-25
VANI051	Bongo	+ 16K	T	40-25
VANI061	Flight Path 737	+ 16K	T	40-25
VANI071	Minitron		T	25-75
VANI111	Las Vegas		T	30-50
VANIROG12	Cosmic Commander	+ 16K	T	24-95
VANIROG22	Xeno II	+ 16K	T	24-95
VAUDIOGE13	Super Screen	+ 8/16K	T	24-95
VBUBBLEBU1	Cave Fighter		T	29-75
VFAC011	Flight Zero One Five		T	30-50
VFIREBIRD1	Mickey The Bricky		T	28-95
VHAR011	Hareraiser (Prelude)		T	45-05
VHAR021	Hareraiser (Finale)		T	45-05
VHON011	Basic Programming		T	52-50
VIMAGINE12	Bewitched		T	29-95
VKTL011	Super Vaders Bomber Run		T	37-95
VKTL021	Alien Demon/Plague		T	37-95
VMEL011	Wizard And The Princess		T	30-50
VMEL021	Cosmonaut		T	30-50
VMIC011	Chariot Race		T	35-40
VOCEAN1	Hunchback		T	31-95
VPALACE1	Squish		T	29-95
VQSA011	Tornado		T	32-75
VQSA061	Starquest		T	43-25
VQSA071	Skyhawk	+ 16K	T	43-25
VSOF011	Space Joust		T	30-50
VSOF031	Perils Of Willy	+ 16K	T	30-50
VSOF041	Dodos Lair		T	30-50
VSOFTPRO1	The Quadra	+ K	T	16-95
VSOFTPRO2	Fatty Henry		T	29-75
VTERMINA12	Line Up 4/Reversi		T	24-95
VTERMINA22	Log Run		T	24-95
VTHO011	Computer War		T	33-85
VTHO021	Submarine Commander		T	33-85
VTHO031	Tower Of Evil		T	33-85
VTHO041	Tank Commander		T	33-85
VTHORNEMI1	Fourth Encounter		T	12-95
VTHR011	Olly		T	35-40
VULT011	Jetpac		T	30-45

AMSTRAD

REFERENCE	TITLE	T/D	NZ$
RACC011	Beachhead	T	53-60
RACC021	Raid Over Moscow	T	53-60
RACC031	Beachhead II	T	53-60
RACTIVISI1	Ghostbusters	T	54-95
RADDICTIV1	Software Star	T	39-95
RALL041	Defend Or Die	T	40-30
RALL011	Blagger	T	40-30
RANI011	Flight Path 737	T	35-00
RANI021	House Of Ussher	T	35-00
RARTIC1	Mutant Monty	T	29-95
RBIG01	Bounty Bob Strikes Back	T	53-60
RCRL1	Rocky Horror Show	T	49-95
RDESIGN1	Dark Star	T	41-95
RDIGITAL1	Fighter Pilot	T	32-50
RDKT03	Popeye	T	35-60
RDKT02	Minder	T	47-95
RDURRELL1	Combat Lynx	T	43-95
RELITE1	Frank Bruno's Boxing	T	44-75
RGARGOYLE1	Dun Darach	T	48-95
RHEWSON1	Technician Ted	T	39-75
RINCENTIV1	Confuzion	T	34-75
RINCENTIV2	Splat	T	29-95
RINTERCEP1	Forest At Worlds End	T	29-95
RINTERCEP2	Jewels Of Babylon	T	29-95
RLOT011	Johnny Reb	T	35-40
RLOT021	Special Operations	T	35-40
RMARTECH1	B.J.'s Superstar	T	39-95
RMEL011	The Hobbit	T	74-05
RMICROBYT1	Er*bert	T	29-75
RMICROG14	Pyjamarama	T	24-95
RMICROMEG1	Codename Mat	T	29-95
RMICROPOW1	Ghouls	T	34-95
ROCEAN1	D.T.'s Decathlon	T	39-95
RPSS1	Battle Of Midway	T	49-95
RSOF031	Jet Set Willy	T	40-30
RSUPERSOF1	Interdictor Pilot	T	89-75
RTASKSET2	Super Pipeline	T	44-95
RTHORNEMI1	Danger Mouse/Daub-Troub	T	44-75
RULTIMATE1	Knight Lore	T	49-75
RVIRGIN1	Sorcery	T	44-75
RVORTEX14	Android 1	T	24-95
RWINTERS1	Ring Of Darkness	T	44-75

THE NZ COMPUTER GAMES CLUB
PO BOX 18 NELSON PHONE 89-100

REFERENCE	TITLE	TAPE/DISK	PRICE
			$
			$
			$
			$

ENQUIRY ONLY COMPUTER?.....

NAME (PRINT CLEARLY).....

TOTAL $.....

PAYMENT ENCLOSED OR CHARGE CREDIT CARD

...../...../.....

EXPIRY DATE.....

PIONEERS OF SOFTWARE HIRE AND DIRECT ORDERING

ENQUIRIES WELCOME FOR CLUB DETAILS — FULL LISTS OF SOFTWARE TO HIRE AND BUY

Managing home accounts *Reviewed by A. Mitchell.*

ELECTRONIC HOME Series by DOTSOFT 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 interrelates 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 between 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 consistancy 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 REGISTERES 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 holdsan 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.*

Assembly of PC boards

Making connections between large numbers of multi-pin packages during the assembly of printed-circuit boards is now made simpler and neater with a range of distribution and decoupling bus-bars from Arnold & Wright Ltd.

Made by Rogers Corporation, USA, the 'Q-Pac' components consist of 5mm strips of conductor separated by a dielectric. They distribute power supply and ground voltages to rows of components and decouple those voltages by virtue of the capacitance inherent in the construction. Each strip thus eliminates the need for two wires at each component.

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.

Quality software from First Access

COMMODORE 64 AND BBC MICRO

OXFORD PASCAL — An extended full implementation with full Graphics and Sound, hexidecimal arithmetric and bit manipulation instructions. A full disc based compiler which is capable of using the whole memory for Pascal object codes. $179.00

ELITE — Britain's most popular game on BBC now available on the Commodore too.
Cassette $49.95. Disc $59.95

FLIGHT PATH — A computer simulation which involves children in making accurate calculations and logical decisions to produce a successful flight. Complete with teaching notes and work sheets.
Disc $49.95

ROTAVIEW — Professional Videotex editor. The most powerful videotex editor on the market with WP functions, Memory buffers, etc. Local database of 400 frames, extensive carousel facility, access online to host and teletext systems. Enhancements include bulk update, variable baud upload, telesoftware formatter and local host system. The ideal videotex training and editing system.
Price on application.

MAIL ORDER WELCOME
24 HOUR DELIVERY.
CASH WITH ORDER
DEALER ENQUIRIES WELCOME

First Access

FIRST ACCESS LIMITED,
P.O. Box 26-287.
1 Ngaire Ave, Epsom, Auckland.

VMD312

THE MODEM FOR ALL NEW

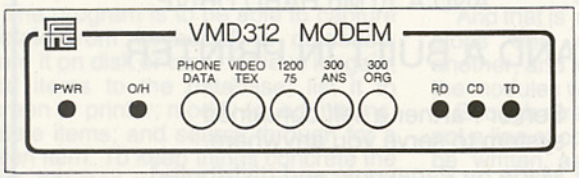
- Simple to use.
- Multiple speed selection including:
  * 300 Bps full duplex (V.21) answer or originate
  * 1200 Bps half duplex (V.23)
  * 75/1200 Bps (V.23) Videotex
  * 1200/75 Bps full duplex
- Visual status indicators:
  * Power
  * Receive Data
  * Transmit Data
  * Carrier Detect
  * Off Hook
- Compact slimline design.
- NZ designed and manufactured.

AN OFFICIAL COMPUTEX MODEM

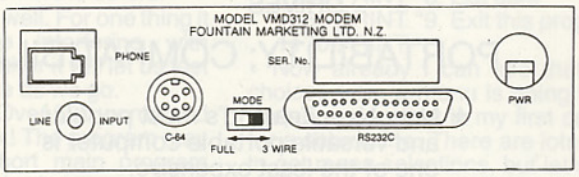
MODEM

ZEALAND VIDEOTEX SERVICES

- Fail-safe. Your phone works normally if the modem is switched off.
- Built-in BT telephone jack for convenient installation.
- Asynchronous operation.
- No adjustable circuitry.
- Tisco service throughout New Zealand.
- Interface connections:
  * Standard RS232-C
  * Direct connect to Commodore 64 User Port
  * Switchable between terminal control and 3-wire operation (no strapping of interface connections needed).
- Full 12 months warranty.



FRONT PANEL CONTROLS AND LIGHTS



REAR PANEL CONNECTIONS AND MODE SWITCH

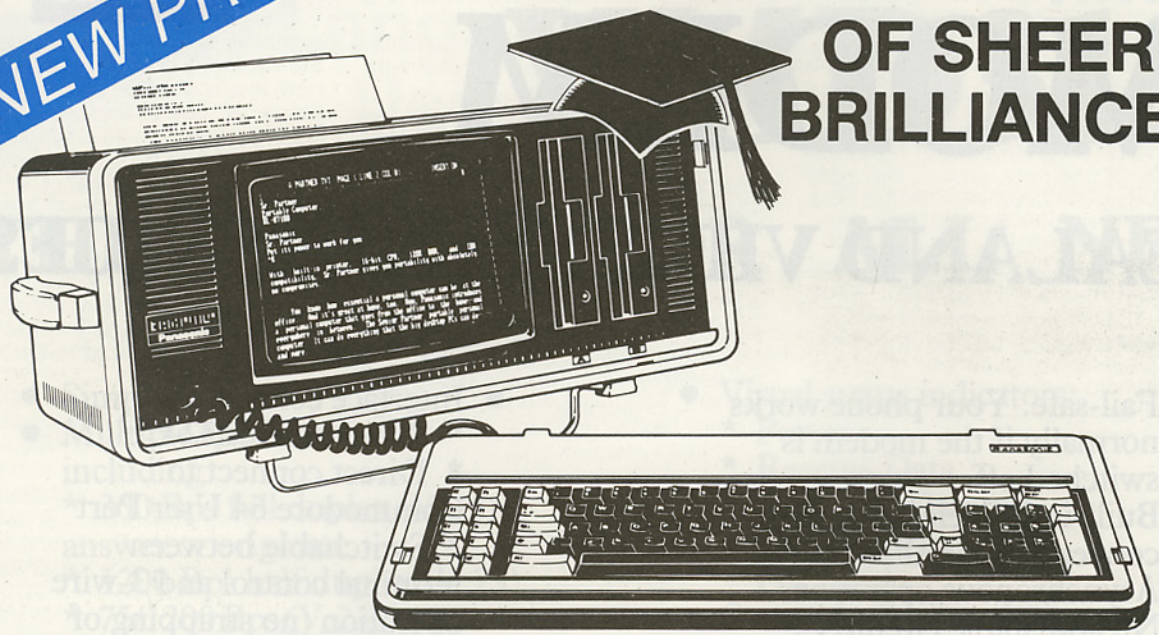
FOUNTAIN MARKETING LTD

Manufactured and Distributed in New Zealand by:

Fountain Marketing Ltd.
P.O. Box 5029, Auckland,
145 Nelson Street, Auckland.

NEW PRICE!

15 KILOGRAMS OF SHEER BRILLIANCE



THE SENIOR PARTNER COMPUTER FROM PANASONIC

$4,995.00
WITH DUAL FLOPPY DRIVES

$8,495.00
WITH A SINGLE FLOPPY AND A 10 Mb HARD DRIVE

PORTABILITY; COMPATIBILITY AND A BUILT IN PRINTER

- ★ Now New Zealand's most popular and versatile portable computer is one of the least expensive.
- ★ Whether you need a powerful, desk top computer, a portable computer you can take home at night, or a computer which will travel with you on business trips, the Panasonic Senior Partner will suit your needs.
- ★ Senior Partner is totally compatible with the huge range of software written for IBM-PC or IBM-PC lookalike computers.
- ★ A high resolution screen, a built-in printer, 256K memory, either twin 360Kb floppy drives or a single floppy and a 10Mb hard drive make Senior Partner a self contained system to serve you anywhere.
- ★ Made by Panasonic and distributed by M.E.C. Dealer Products, Senior Partner provides the best possible technology and quality together with expert backup service from one of New Zealand's most experienced computer companies.
- ★ Panasonic has equipped Senior Partner with the peripherals and expansion outlets necessary to adapt it to specialised uses.

For further information and the name of your nearest dealer contact:

MEC DEALER PRODUCTS

THE MICROCOMPUTER ELECTRONIC CO LTD.,
27 GREAT SOUTH ROAD, NEWMARKET, AUCKLAND.
P.O. BOX 9224, AUCKLAND 1, NEW ZEALAND.
TELEPHONE (09) 504-774, TELEX NZ 60721 MEC

A Fisher & Paykel Subsidiary

TCC 11017

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 operatorschange 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 "KI-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 only 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 calljed CH (CHoices) and the value input called CS (Choice Selected). Here it goes:

```
10 PRINT "Your choice: 1—";CH;";
12 INPOUT 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)

(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.

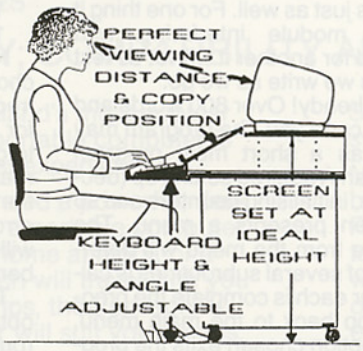
```
9000 PRINT "Do you really want to
     exit?"
9010 GOSUB 20
9020 IF X$ = "N" THEN RETURN
9030 CLS
9040 END
```

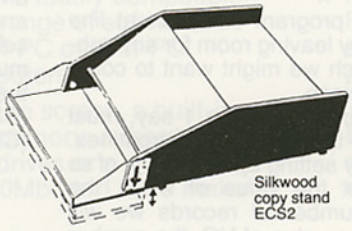

AFFORDABLE
ERGONOMIC FURNITURE

SET YOUR TERMINAL OR COMPUTER ON SILKWOOD FURNITURE TO MINIMISE RISK OF RSI, INCREASE COMFORT AND EFFICIENCY!

$ 135.00

(in Auckland - Sept. 85) puts your computer on a Silkwood Copy Stand ECS2 (illustrated) on your present desk.
Surprisingly little more buys a full work station proved to be EFFICIENT and ERGONOMIC by thousands of Companies countrywide.

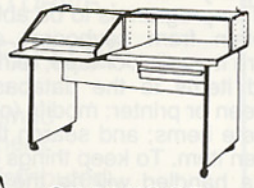



Silkwood copy stand ECS2

SILKWOOD COMPUTER FURNITURE MODULES ARE AVAILABLE FROM GOOD RETAILERS. BROCHURES. DATA SHEETS. OUTLET ADDRESSES AND FREE CONSULTANCY ADVICE FROM -

Silkwood Manufacturing Limited
8 TIRONUI ROAD, PAPAKURA. PH. (09) 298 7089

SEE the complete SILKWOOD range



SILKWOOD WORK STATION

Silkwood DATA CENTRE

SILKWOOD 'MULTI'

...and MORE

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.

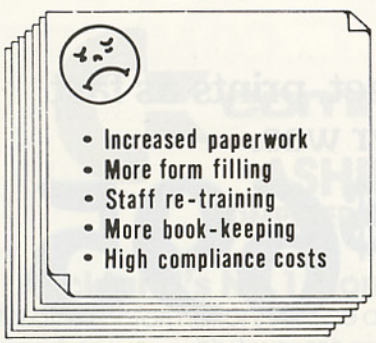
Test drive a Mac

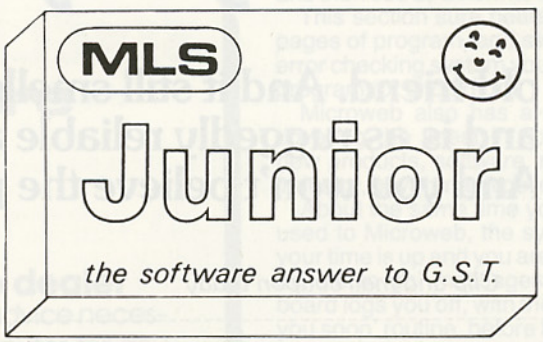
Since September "qualifying New Zealanders" could walk into a participating authorised Apple dealer and walk out with a Macintosh with no purchase necessary.

The offer is open not just to business people but to anyone else who could benefit by using a computer.

Special Test Drive Diskettes covering word processing, spread sheet, accounting functions and data bases will come with each Macintosh and practical hands on demonstration will also be given.

When G.S.T. arrives next year, two things can happen to your business .....





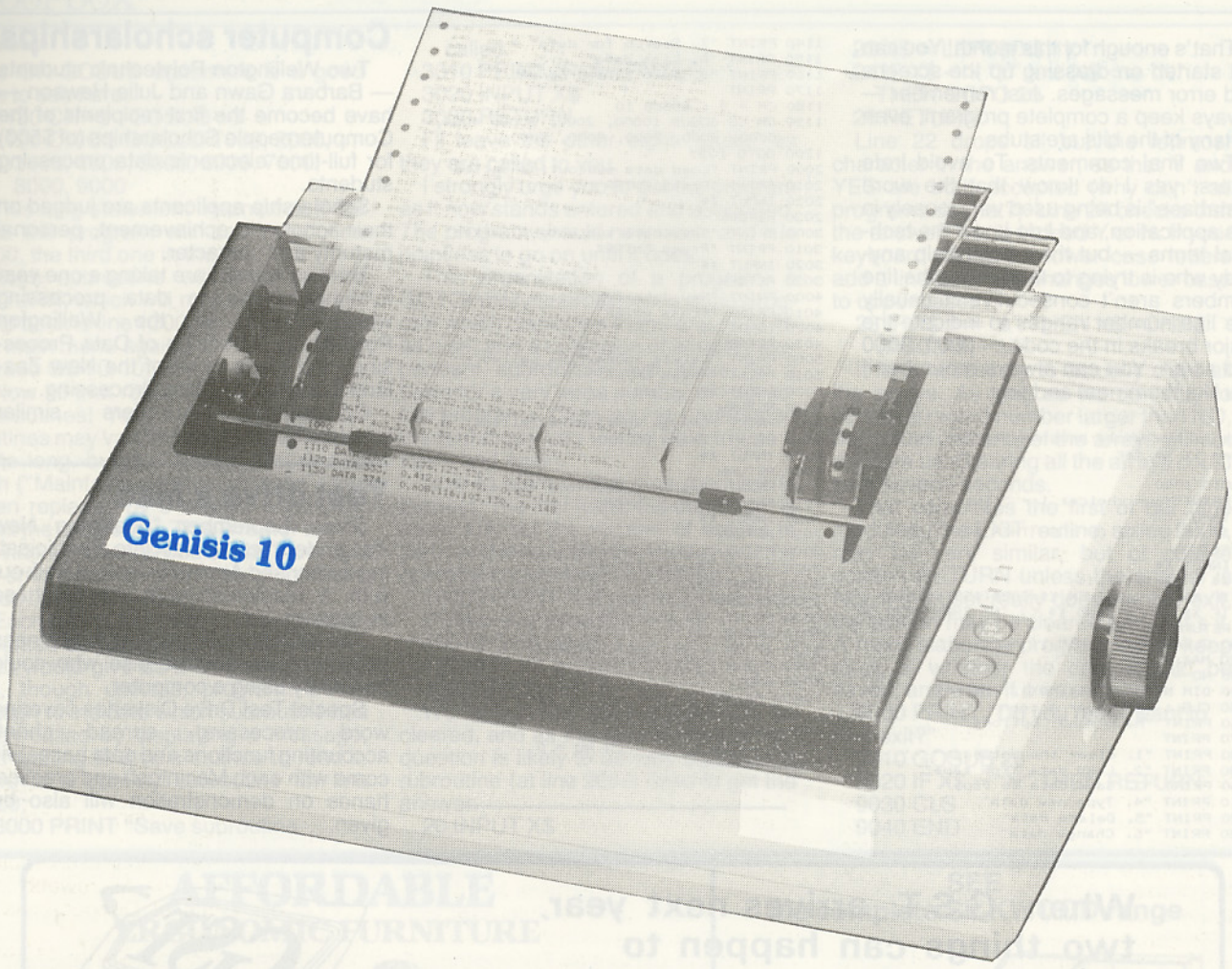
Designed in N.Z. specifically for the first time user, MLS Junior is a complete accounting system. You can raise tax-declared invoices, control your stock, supplier payments and debtors, and much more. Best of all you can grow with MLS. As your business expands, Junior can be upgraded to the MLS Professional series or even Multi-user!

only $1595

YOU'LL NEVER OUTGROW MLS

Of course to enjoy the benefits of Junior you don't have to wait for G.S.T. – call your local dealer today.

ML SYSTEMS, P.O. BOX 83-091, EDMONTON, AUCKLAND, PH. AK 810-9759



A rose by any other name...

old friend. And it still smells as sweet, prints as fast and is as ruggedly reliable as it ever was. And you won't believe the price. **$695**

Clip and mail coupon today

Yes, I would like more information on the Genisis 10. Please send me the name of the nearest 10 dealer.

Name .....

Address .....

.....

Phone .....

This really is the printer with the mostest for the leastest!

CHECK IT OUT - YOU WON'T BE SORRY

Distributed by:

Genisis Systems Ltd.

star printer distributors for N.Z.

47 Station Road, Otahuhu, Auckland, New Zealand
P.O. Box 6255, Auckland 1, New Zealand
Phone 27-67349 Telex 2814 (Rocket)

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 Operater (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 Microwebb 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)

commodore
ASHBY
COMPUTER CENTRE

Auckland's No.1 Commodore dealer
with all the information, service and helpful advice necessary when you wish to purchase your computer for any business application you wish to nominate. We do our best for the Commodore range.

Talk to our Sales Manager, Mr Graham Truman
or our Managing Director, Mr Kingsley Light

ASHBY COMPUTER CENTRE
93 ASHBY AVENUE, ST. HELIERS PH (09)588-301.

(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 scolling 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.

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).

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.

CORVUS

Hard Disks of 6,11,21,45 & 126 Mb
Back up to 200 Mb & Local Area Networks for Omninet, Omnishare, Appletalk & P C Network

for **Apple II, IIe & III**
Apple Macintosh
Apricot
Bondwell P C
Casio FP4000 / Canon
Columbia
Commodore PC 10 & PC 20
Corona / Phillips
DEC Rainbow
IBM PC / XT / AT
ITT
Kaypro 16
NCR PC
Olivetti / AT & T
Sanyo 775
Tandy 1000/1200
Ti Professional
Televideo
Zenith

IBM compatible LAN workstation now available from $3,500

Computer Broking Services Limited
Tel: 723-481 or Box 934 Wgtn

SINCLAIR Q.L. COMPUTER

Voted "Home Computer of the Year 1985" in Britain

FEATURING:
- 68008 & 8049 microprocessors
- 128K RAM expandable to 640K
- Built-in mass storage (Twin microdrives)
- Twin RS232 ports; Monitor output; TV output
- ROM socket; Twin Joystick sockets; Expansion socket
- Supplied with Wordprocessor, Database, Spreadsheet Business Graphics

NOW ONLY $995

OCTOBER SPECIAL
Four extra microdrive cartridges with each Q.L. purchased.
(VISA & BANKCARD accepted)

ALSO AVAILABLE: Disc Interfaces, Disc Drives, RAM Expansions, Centronic Printer Interfaces, Software.

Write or phone: **MICROWARE (N.Z.)**
P.O. BOX 6309
WELLINGTON PH (04) 675-182

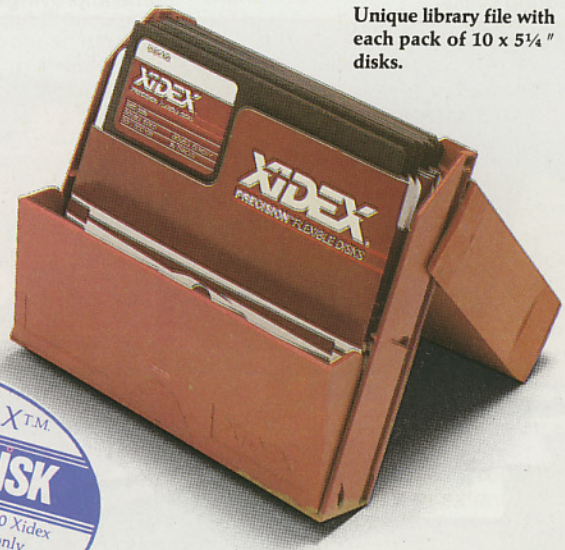
XIDEX

PRECISION *FLEXIBLE DISKS*

Each disk is backed by a final quality control of 18 exacting tests. Each disk is guaranteed 100% error free and backed by a 10 year warranty. Available in 3½", 5¼" and 8" formats.
If you want the best, don't ask for "flexible disks". Ask for Brand X . . . by name.

Quite simply, Xidex in Northern California's Silicon Valley, is the world's leader in polyester coating technology. Xidex coats far more polyester film each year than all other manufacturers of flexible disks combined. Unlike most disk manufacturers Xidex maintains total control of the manufacturing process.

For the technically minded Xidex's certification tests are the most demanding in the industry. Performance levels exceed, and in some cases far exceed, the standards set by ANSI, ECMA, ISO, JIS, IBM and Shugart.



Unique library file with each pack of 10 x 5¼" disks.

Brand X
XIDEX
PRECISION *FLEXIBLE DISKS*

Try Brand X™
1 FREE DISK
with every library file of 10 Xidex disks for limited period only.
XIDEX PRECISION FLEXIBLE DISKS

Available from Xidex dealers throughout New Zealand, or contact
Xidex New Zealand Limited, P.O. Box 6501, Wellington. Tel. 843-787

IDEAS687

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 storage.

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 correspondance 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.

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.

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!

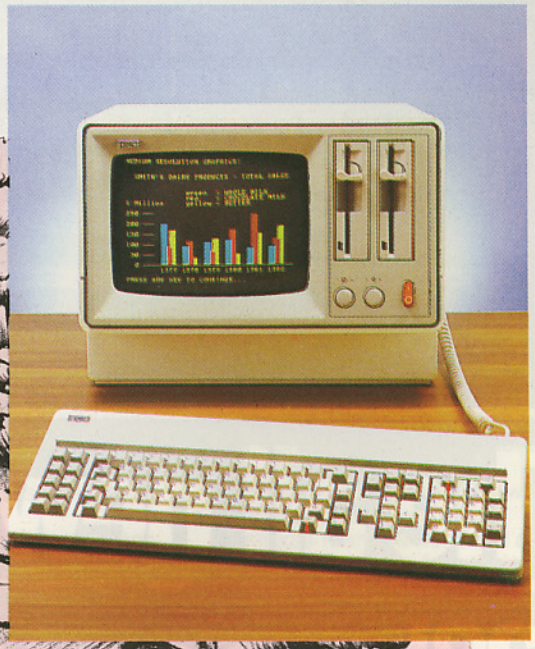
Bits & Bytes is also to produce an online review of some Bits and Bytes features, including news up-dates.

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!

Growing with your needs

Buy this NEW Personal Computer with more confidence, because...



Only the NEW NCR model PC4i Provides~

- Unique 12-month Guarantee*
- Proven, 'self-teach' free tutorial programme*
- 'Help' aid on all functions
- Full operational compatability with industry-standard software*
- New Easy-use keyboard
- Powerful, expandable RAM with virtual memory
- One-piece VDU/disc drives
- High resolution screen (even on monochrome graphics)*
- Manufactured with 100 years' tradition for quality.

Call NCR NOW for the Dealer in your area.

BACKED BY A NATION-WIDE, LONG-ESTABLISHED SERVICE NETWORK*, UNIQUE TO NCR

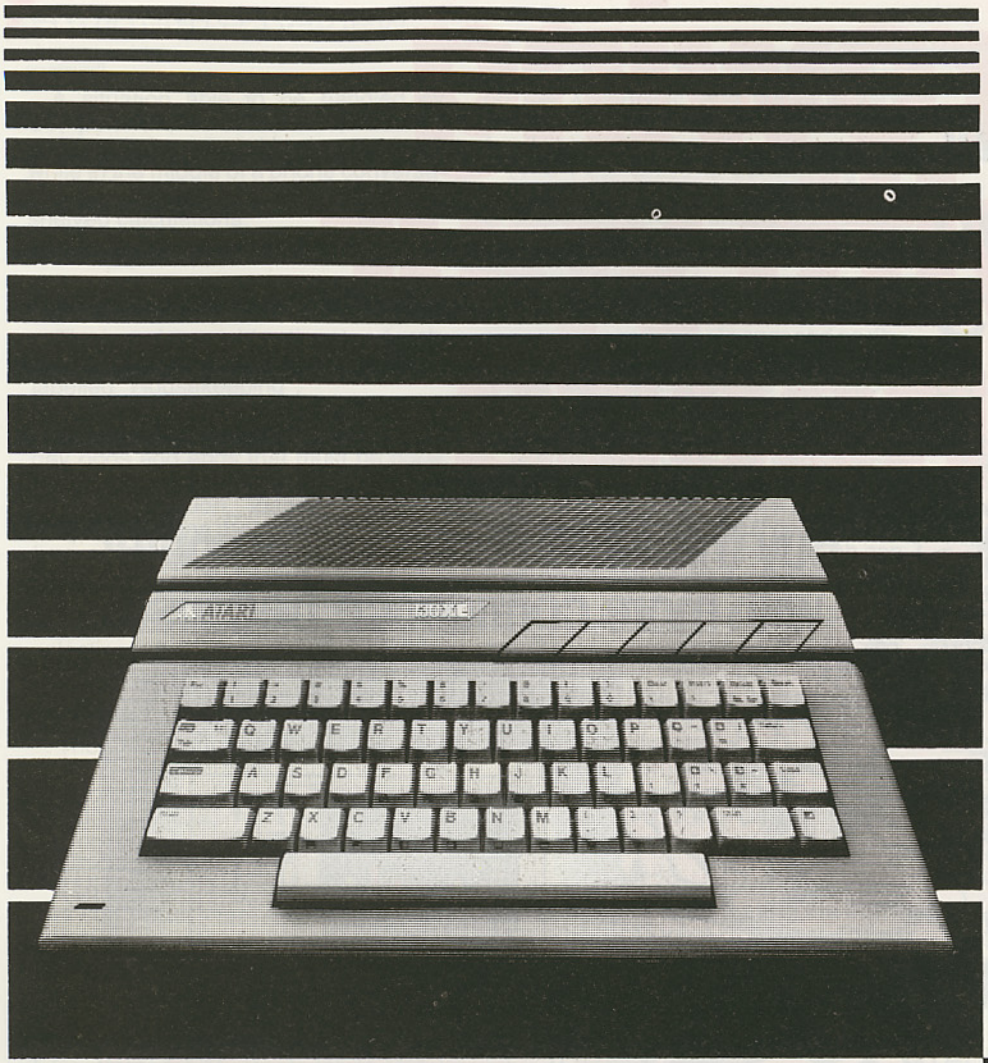
*Features which answer user priorities, as surveyed by Hoby & Assoc. 1984.

You can always grow with

NCR

NCR (NZ) Ltd, 46 Wakefield St, Auckland, P.O. Box 5945, Wellesley Street
Telephone 796-920, Telex NZ2621

NPW9425



ATARI

PRICEBUSTERS

Here to save the world from high computer prices.

The all new ATARI 130XE

128k memory for only $659!

For less than the price of an ordinary, outdated home computer you and your family can have the latest, most powerful Atari 130XE personal computer — the one with a massive 128k memory!

The new Atari 130XE makes personal computing twice as powerful, twice as much fun and makes choosing the right computer twice as easy!

It's here to save you from high computer prices!

SEE IT IN ACTION — PICK UP THE BOOK

Your nearest Atari Pricebusting computer store has the powerful new 130XE in action now, to show you the things it can do to help you and your family learn, grow and have fun all at the same time.

Ask for a hands-on demonstration, and pick up a copy of The Atari Book — the book that tells you everything you'll ever want to know about personal computers.

CLIP THE COUPON NOW AND WE'LL POST YOU A COPY OF THE ATARI BOOK — FREE

ATARI®

The Atari Book,
Atari Pricebusters,
PO Box 4399,
Auckland.

Please send me my FREE copy of The Atari Book. And tell me where I can see the new Atari 130XE in action.

NAME: _____

ADDRESS: _____

_____

_____

C6510

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.

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

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.

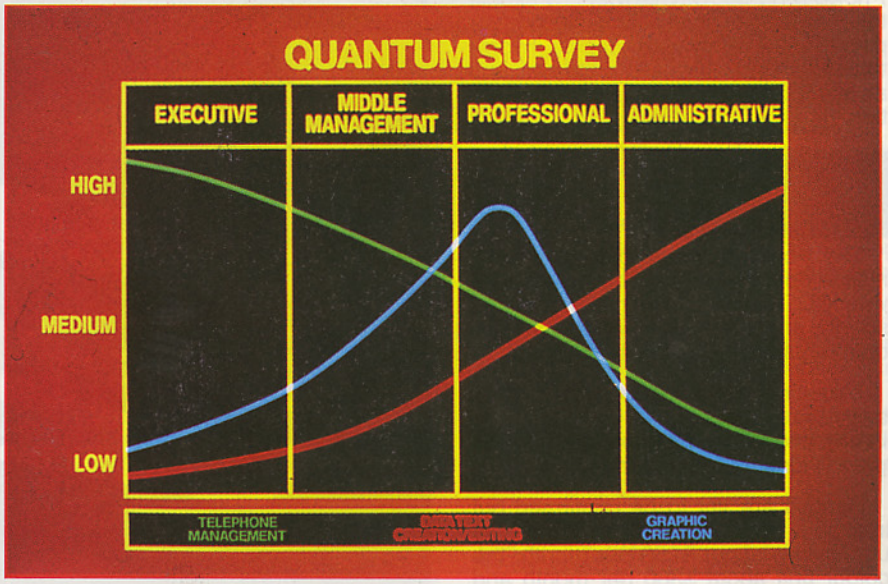
"The problem was two-fold," he says. "Telecom manufacturers tried to put computing power into their telephone and text terminals. The result was a highly sophisticated telephone but a poor computer."

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

(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.

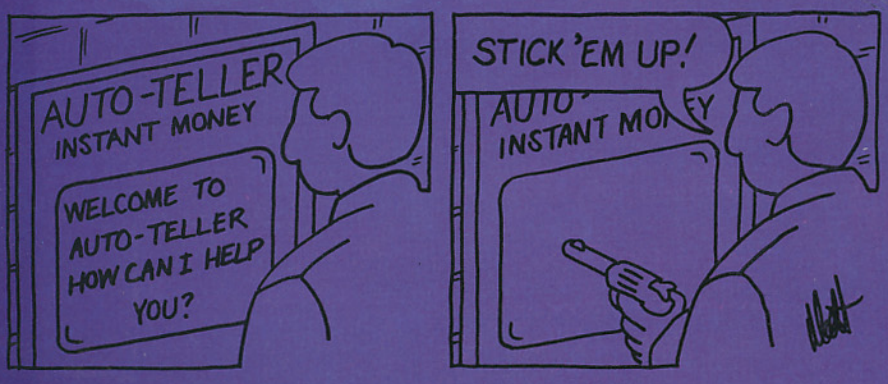
Optional software and other consumables will be sold separately.

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.

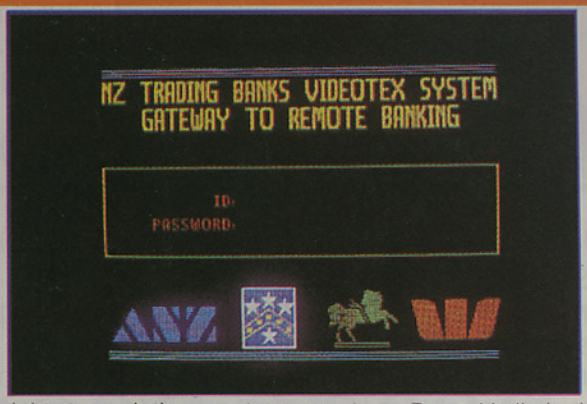
IBM gave each laboratory four PC General systems and one PC Advanced Technology system.

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 capabilaities," 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) combined 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."

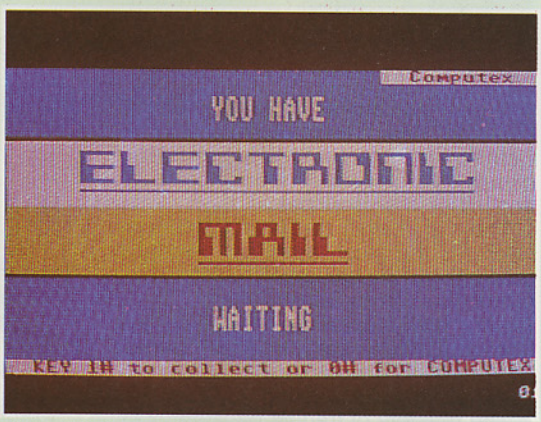
So far the BNZ and ANZ have recently launched videotex services — the BNZ offering money transfer abilities via videotex.

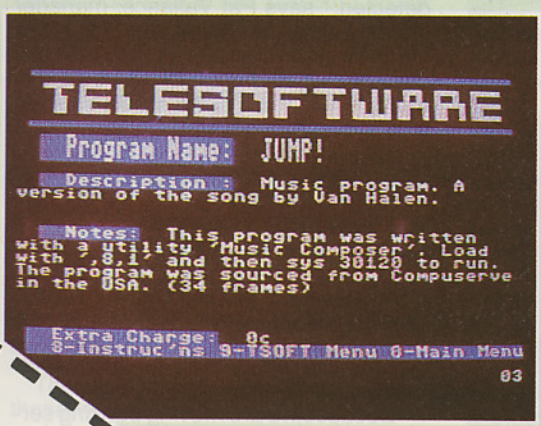
Computex is a whole new dimension

for your computer. By phone from anywhere in New Zealand your computer can harness the power of our mainframe. Whats more communication is two way. Computex is an extremely powerful service we have termed it the ultimate expansion.
650 frames (screens) are available now and many more are being added constantly. Something new every day.

What does it cost?

Initial registration is $99.00 with an annual subscription payable after one year of use.
From anywhere in New Zealand phone charges are 8 cents per minute, there are no extra charges.
The mainframe computer operators will charge you 17 cents per minute of access between 6am & 6pm on weekdays and a much reduced 10 cents charge outside those times.
With the exception of some of the better downloadable software all Computex information and services are free.





What will you need?

A modem. If you don't have one we can supply you a VMD-312 for $399. This includes your $99 registration for one year. Any modem with a 1200/75 baud capability will access Computex.

Communications software. If you wish to download software from the host mainframe library. The Communicator (an especially designed software package) is available at a cost of $49.95.

Computex users will have free access to the huge ADITEL information data base which includes a whole host of information including share prices, weather forecasts, ski reports and racing tips.

INTERESTED? THEN RETURN THE COUPON TODAY.

Yes! I am interested in adding the ultimate expansion to my computer.

Please rush me a no-obligation registration pack

NAME .....

ADDRESS .....

PHONE .....

I own ..... computer

I do/don't own a modem. (delete which is not applicable)

I do/don't own communication software. If you do name the software and if possible the name and address of the New Zealand distributor, or at least where you purchased it.

.....

Post to: Computex, P.O. Box 13-162, Christchurch urgently!

Post to: Computex, P.O. Box 13-162, Christchurch

TCC 13001

10 YEAR GUARANTEE

Maxell of Japan.

The floppy disk that lets PC AT™ speed ahead, makes PC/XT™ X-traordinary, and helps IBM® PC™ capitalise on its powers.

For your Big Blue, only the Maxell standard of excellence will do. The floppy disk chosen by many disk drive manufacturers to test their new equipment. Each Maxell disk is backed by a 10 year guarantee. And each is a perfect match for your IBM. In fact, there's a Maxell for virtually any computer made. Even if it's the new IBM PC AT!

maxell®

A NEW STANDARD OF EXCELLENCE

From your computer dealer or contact

COMPUMEDIA SYSTEMS LTD

NEW ZEALAND:
Auckland: P.O. Box 3273, Tel. (09) 444-6085. Tlx 60835
Wellington: P.O. Box 11091, Tel. (04) 851-548. Tlx 31415

PC AT, PC/XT and PC are trademarks of IBM Corp.

P2439

THE ELEPHANTS™ HAVE LANDED.

The USA's best known and most popular floppy disk has arrived in New Zealand.

IT IS NOW AVAILABLE FROM:

The Computer Experience

Einstein's ph. 64-108
154 Broadway, Palmerston North.

Einstein's ph. 851-055
177 Willis Street, Wellington. or 844-353

The Computer Experience ph. 730-348
James Smiths, Cuba Street, Wellington.

The Computer Experience ph. 81-969
at D.I.C. Garden Place, Hamilton.

Computer Experience
Shop 41, Cashfields Mall, Cashel Street, Christchurch.

Einstein's ph. 85-528
Corner King & Egmont Streets, New Plymouth.

- **AND OTHER LEADING COMPUTER STORES**
- **TRADE INQUIRIES WELCOME**

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 Injuiry (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 deskspace 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 if 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.

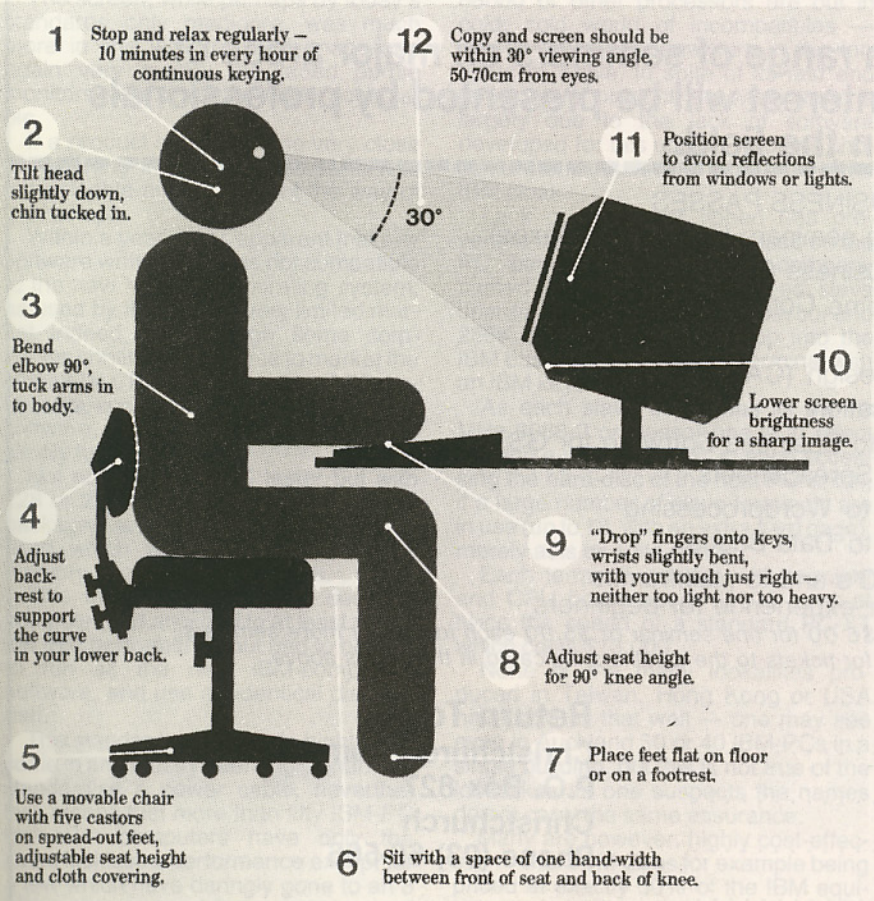
- ***Take a break!***

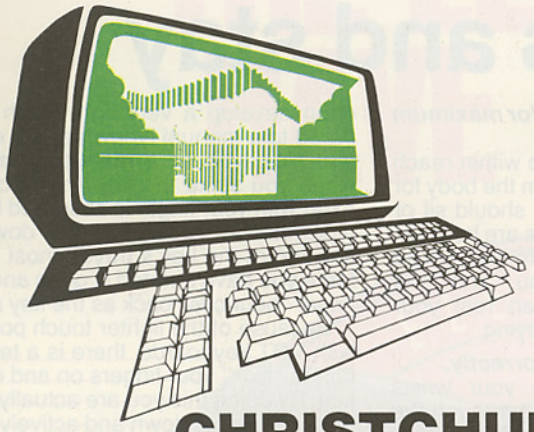
One of the major contributing factors to keyboard-related health problems is continual use of a VDT without a rest. In some countries laws say that a worker using a VDT must take a short break (often ten minutes) at hourly intervals if using the VDT continually (or five minutes every half hour).

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.





1985 CHRISTCHURCH COMPUTER SHOW

CHRISTCHURCH TOWN HALL

Friday, 22 November	**9a.m.—9p.m.**
Saturday, 23 November	**10a.m.—5p.m.**
Sunday, 24 November	**10a.m.—5p.m.**

Business admissions, Friday 9 a.m. — 5 p.m.

See the latest in Computing technology

ADMISSION: Adults $2.00 Children (with an adult) $1.00

SEMINARS: a range of seminars on major areas of interest will be presented by professionals in the field.

☐ Please send me..... BUSINESS PASSES

I wish to attend the following seminars (please tick boxes):

- Buying your first Business Computer ☐
- Buying your first Home Computer ☐
- Video Tex ☐
- Computer Aided Design (CAD/CAE) ☐
- Computers in Education ☐
- Software— Guide to Business Software for GST ☐
  - — Using Spreadsheets ☐
  - — Guide to Wordprocessing ☐
  - — Guide to Data Bases ☐
- Network PC's to PC's and to mainframes ☐
- Hands-on computer experience for beginners ☐

There is an admission charge of $6.00 for one seminar or $5.00 each for two or more seminars.
I enclose a cheque for $_____, for tickets to the seminars indicated in the boxes above.

Name: .....

Position: .....

Company: .....

Address: .....

.....

Return To:
Christchurch Computer Show
P.O. Box 827
Christchurch
Phone (03) 66-566

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 5¼ 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 3½ inch drives which store 1.5 Megabytes on two very unobstrusive 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 equivalant.

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 Japaneses 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.

COMMODORE ♥ RITEMAN!

COMPUTER NOW!

PAPAKURA
SELWYN ARCADE
GREAT SOUTH ROAD
PAPAKURA
TELEPHONE: 299-6112

BROWNS BAY
CIVIC CENTRE ARCADE
INVERNESS ROAD
BROWNS BAY
TELEPHONE: 478-1793

PONSONBY
100 PONSONBY ROAD
PONSONBY
TELEPHONE: 792-494

PUKEKOHE
9 QUEEN STREET
PUKEKOHE
TELEPHONE: (085) 85-855

OTAHUHU
168 GREAT SOUTH ROAD
OTAHUHU
TELEPHONE: 276-4537

Compare these specs before you buy...

RITEMAN C + VS. COMMODORE PRINTERS

FEATURES	RITEMAN C+	ACTUAL PRINT	COMMODORE PRINTERS				
			MPS 801	MPS 802	MPS 803	VIC1525	VIC1526
PRINT SPEED (CPS)	105		50	60	60	50	60
BIDIRECTIONAL PRINT	YES		NO	YES	YES	NO	YES
(COLUMN WIDTH)							
40 CHARACTERS PER LINE	YES	40 CPL	YES	YES	YES	YES	YES
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)							
FRONT LOADING FOR EASY PAPER SETTINGS	YES						
BUILT-IN PRINTER STAND	YES						
PRINT ON POST CARDS	YES						
(WARRANTY)							
ONE-YEAR WARRANTY	YES						
(SOFTWARE COMMANDS)							
DOUBLE STRIKE	YES	DOUBLE STRIKE					
EMPHASIZED	YES	EMPHASIZED					
COMPRESSED	YES	COMPRESSED					
UNDERLINE	YES	UNDERLINE					
SUPER/SUBSCRIPTS	YES	SUPER SUB SCRIPTS					
ITALICS	YES	*ITALICS*					
DOUBLE DENSITY BIT IMAGE	YES						
(CHARACTERS)							
9X9 FONT	YES						
TRUE DISCENDERS	YES	abcgjpqyabc					
ITALICS	YES	*ITALICS*					
COMMODORE GRAPHICS	YES		YES	YES	YES	YES	YES
(OTHER FEATURES)							
SINGLE DENSITY BIT IMAGE	YES		YES	NO	YES	YES	NO
EXPANDED	YES	EXPANDED	YES	YES	YES	YES	YES
REVERSE	YES		YES	YES	YES	YES	YES

NO

Available from

The Computer Experience and Einsteins

The Computer Experience ph. 64-108
154 Broadway, Palmerston North.

Einstein's ph. 851-055
177 Willis Street, Wellington. or 844-353

The Computer Experience ph. 730-348
James Smiths, Cuba Street, Wellington.

The Computer Experience ph. 81-969
at D.I.C. Garden Place, Hamilton.

The Computer Experience ph. 66-442
Shop 41, Cashfields Mall, Cashel Street, Christchurch.

The Computer Experience ph. 85-528
Corner King & Egmont Streets, New Plymouth.

MAJOR CREDIT CARDS ACCEPTED. EASY PAYMENT TERMS.

SAVE $1000 THIS MONTH

IBM — Compatible and ONLY $2400 (recommended retail is $3400) ☐

99% IBM Hardware and Software compatible

BEST BUY IN NZ OR AUSTRALIA

INCLUDED IN THE PRICE OF $2400 YOU WILL RECEIVE:

*** 256K RAM (Upgradeable to a massive 640K)
*** Color/Monochrome graphics board ☐
OR the Hercules compatible graphics board (same price) ☐
*** Twin 360K 5.25" floppy disk drives (IBM format)
*** High resolution green screen monitor
*** IBM compatible keyboard
*** 12 month warranty covering parts and labour
Detailed specifications available on request ☐

WE SELL PRINTERS TOO AND RECOMMEND:

*** 10" RITEMAN II (friction and tractor feed) **$895** ☐
*** 15" RITEMAN 15 (friction and tractor feed) **$1695** ☐
*** Printer Cable (free with either of the above printers) **$69** ☐
*** Printers come with a comprehensive 12 month warranty
Detailed specification and complete pricelist available ☐

SOFTWARE WE CAN SUPPLY INCLUDES ALMOST THE COMPLETE IBM-PC RANGE. IN PARTICULAR WE RECOMMEND:

*** Operating System PC-DOS 2.0 **$179** ☐
*** Word processing WORDSTAR **$535** ☐
*** Database dBASE II **$995** ☐
*** Spreadsheet MULTIPLAN **$535** ☐
*** Programming MICROSOFT GW-BASIC 1.0 **$349** ☐
*** Accounting CASHLINK **$1595** ☐
We have many other packages available and we are NZ agents for a dBASE compiler. For complete details mark the box ☐

MAILORDER WITH A DIFFERENCE

We deal only by mailorder but if you wish to arrange an appointment to view the products or if you want to discuss them with me please phone me and I will be only too pleased to assist. Once you have bought a product from me you can feel free to call with questions at any time and I will be at your service. I have an honours degree in electrical engineering and have taught in technical institutes for the past decade so I feel competent to answer most questions.

bankcard
MasterCard
WELCOME HERE

TO PURCHASE ANY OF THE ABOVE ITEMS

Mark the item(s) you want on this page (photocopy it first if you like), complete the details below and send me the whole page.

Please supply marked items
SIGNATURE _____
DATE _____

NAME _____
ADDRESS _____
_____

I enclose a cheque for $ _____

OR Please debit my BANKCARD $ _____
Card number: _____
Card expiry date: _____

(Free delivery by Courier)

TELEPHONE (09) 535-5060 Peter Parsonage

PARSONAGE ELECTRONICS

P.O. BOX 54-069, BUCKLANDS BEACH, AUCKLAND.

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 40 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 vlaue 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 stgring '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.

OFFICE ELECTRONICS LTD

Your West Auckland agents for

SANYO
BUSINESS COMPUTERS

NEW PREMISES
4 Waipareira Ave
Henderson

NEW PHONES
837-1362
837-1363

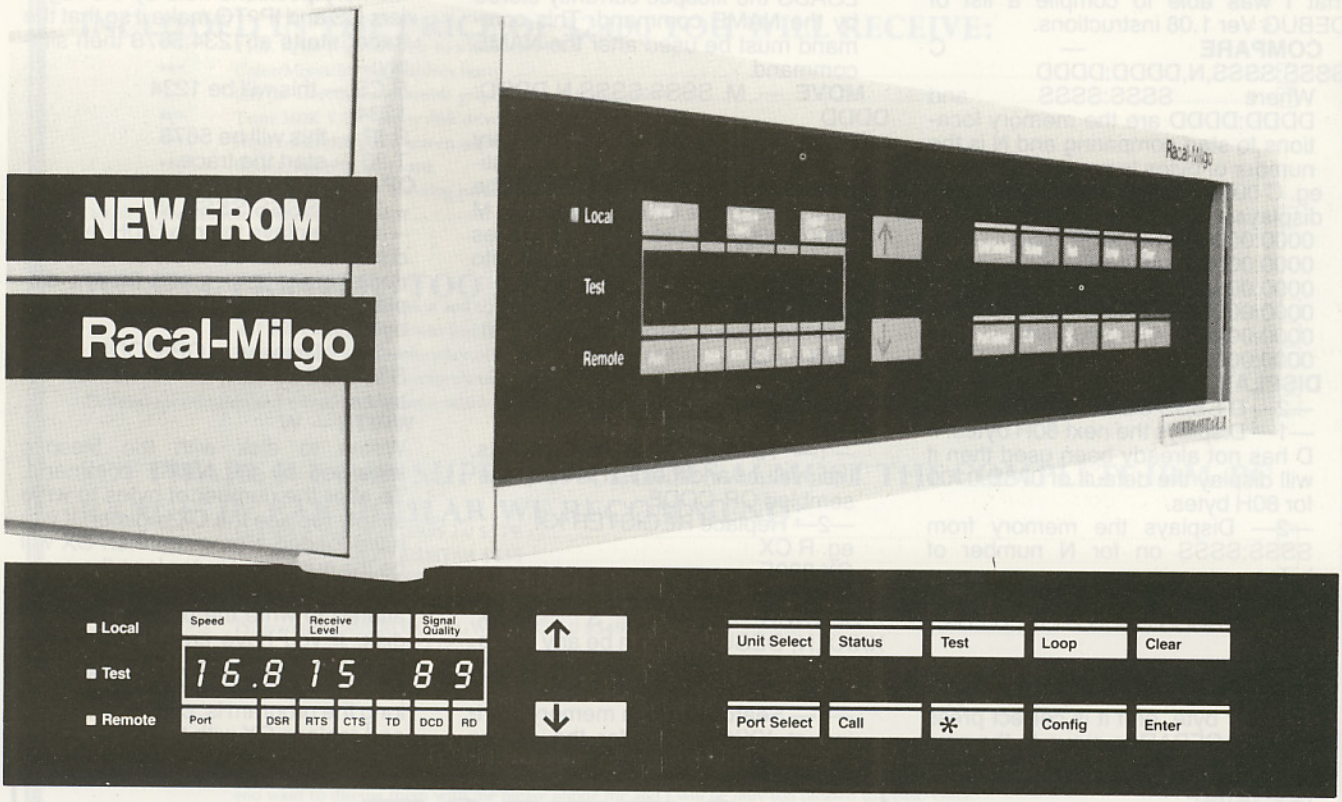
OMNIMODE 1614

Trellis-Coded Modulation

Offers much greater data transmission capability.

NEW FROM

Racal-Milgo



Racal-Milgo capability continues to grow. Now the Omnimode 1614 offers a high performance 16800 bps operation with complete network control.

This modem employs a totally new modulation technique, that of trellis-coded modulation which gives a better than 3db improvement in signal to noise ratio, quite apart from its greater data transmission capacity.

Among its many features are:

- The 1614 can stand alone or be mixed and matched with other modems to give you greater flexibility in creating your ideal network.
- The 1614 has convolutional coded modulation for superior on-line performance.
- Built-in remote unattended test.
- Firmware based for maximum flexibility.
- No hardware straps.
- Non-volatile storage (no batteries).
- Complete front panel control.

Standalone tabletop and high density central site card nest versions:

- Up to 16 modems in 15 ¾ inches rack space.
- Common front panel control.
- Mix with Omnimode 48, 96, and 14.4 in any combination.
- Redundant power supply available.

Multiport

4 port/6 port – combination of 2400, 4800, 7200, 9600, 12000, 14400, 16800.

Control signal simulation enables each port to operate in the "switched carrier" or "remote dial-up" mode.

Front Panel = Information and Control Centre

Complete modem, line and interface status.
Thorough diagnostic testing.
Full control of all modem configuration and option parametres.
Password access for network security.
Blank Front Panel also available for reduced cost and restricted access locations (RMC must be included).

Remote Modem Control

Remote modem status monitoring.
Remote modem diagnostic testing.
Remote modem configuration control, speed control, port configuration and straps.
Alarms for fault conditions.
Administrative message exchange.

Upward compatibility with Racal-Milgo Network Management Systems.

Racal-Milgo

Racal-Milgo New Zealand Limited
Box 26143, Auckland
Phone 504-309, Auckland: Phone 730-313, Wellington.

6650

RACAL

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—ng

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

UNIQUE 4 YEAR GUARANTEE

New and unique to Sanyo, you can keep your computer operating at peak by taking out the optional 4 Year Top Performer Guarantee. This covers you against all costs incurred in regular maintenance visits and any other service requirements. It applies to all 550 and 775 series computers from Sanyo.

Faultless performance guaranteed by Sanyo.

Please send me details of Sanyo's unique 4 Year Top Performer Guarantee.
Name:.....
Address:.....
.....

SANYO
BUSINESS SYSTEMS
Freepost 2002, P.O. Box 74-035, Auckland.
Telephone (09) 505-419.

MEMO:

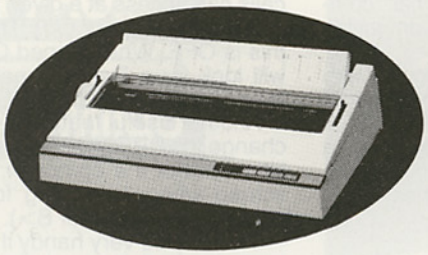
TO ALL COMPUTER OWNERS AND BUYERS

THE PANASONIC COMPUTER PRINTER

range will meet your requirements.

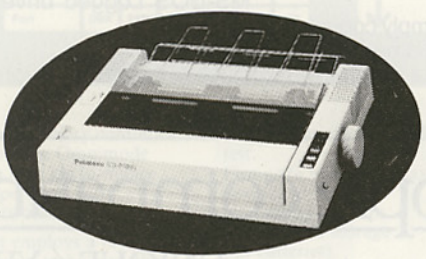
Attached are photographs and information on the top selling four.

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

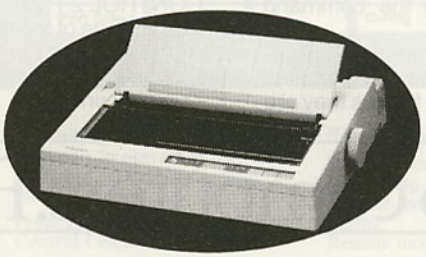


KX-P3151 Daisy Wheel Printer
The Panasonic KX-P3151 Daisy Wheel printer offers letter quality printing with fully formed characters. The KX-P3151 provides high performance, reliability, and versatility in word processing and multiple forms handling applications. Panasonic's Daisy Wheel KX-P3151 is compactly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

MEC DEALER PRODUCTS

THE MICROCOMPUTER ELECTRONIC CO LTD.,
27 GREAT SOUTH ROAD, NEWMARKET, AUCKLAND.
P.O. BOX 9224, AUCKLAND 1, NEW ZEALAND.
TELEPHONE (09) 504-774, TELEX NZ 60721 MEC

A Fisher & Paykel Subsidiary

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 dissassemble 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:POKE 45,64:POKE46,127:CLR:SAVEname", 8,1.

Colour memory is not necessary for printing, but bear in mind that colour pictures 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 $C000 first. The program actually works on a copy of the character set.
5) 49361 ($C0D1) 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)

(continued)

data errors.

The checksum is cumulative, so you can check each data line as you enter it. If all checks out OK, GOTO108 and use RETURN to save the ML.

The circuit below is an interface I use with the User Port to control external mains-driven devices.

For the opto-isolator pair D2/TR1, I use a red LED and an ORP12 in an opaque platic tube.

Integrated isolators are also available (4N26 etc.).

To save a bit, many metal can (TO18) transistors can be used if the top of the can is filed off. The relay has a low current coil, with 240V contacts.

Please make sure that someone who is qualified to do so does any mains wiring.

The physical separation between the computer and the outside world cannot be overstressed.

The last thing I want is anyone sending me their ex-computer in a plastic bag.

Ideally the 9Vac should be an external supply, but the User Port 9V can be used. Thishowever means a physical link for outside voltages to enter the computer, and must be taken into consideration.

PB0 is bit0 in 56576 ($DD01). To send a 1 after an elapsed period, use something like this,

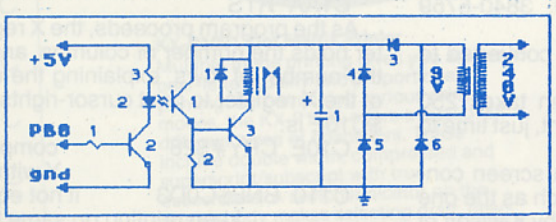
```
10 POKE56579,255:POKE56575,
0:rem set PortB to O/P, no signals out
20 TI$="time 1":rem initialise clock
30 IFT1$>"time2"THEN POKE
56575,1:END:rem send a 1 down
PB0
40 GOTO30
```

Another alternative is to PEEK locations 160-162. This is more suited to machine-code, and can be done in interrupt.

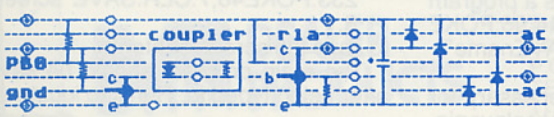
Both CIA's also contain very comprehensive clocks, also accessible in interrupt.

PBI-PB7 can be used in exactly the same way, separately or in combination.

Robotics anyone?




```
R1 10k      C1 1000uF   D1   1N914
 2 10k     TR2 BC548     2   Red led
 3 220R      3 BC548    3-7  1N4001
user port connector pins   utilux M4338 12
                           utilux M4573 TI
```



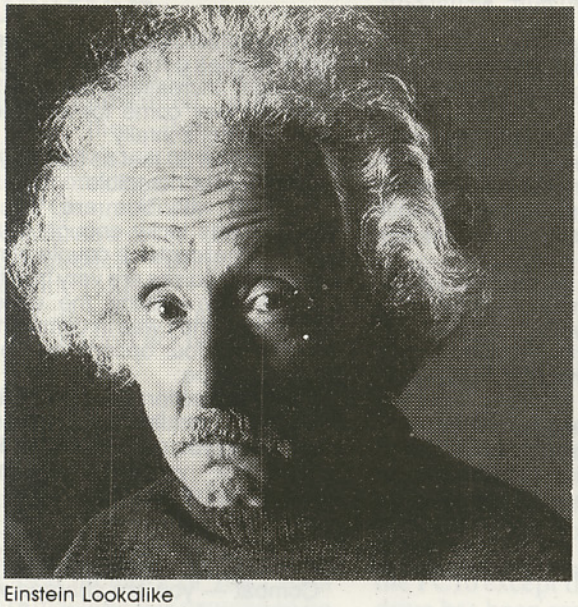

```
10 FORI=0TO682:READML$:IFLEFT$(ML$,1)="X"THENI=I-1:GOTO14
12 ML=VAL(ML$):POKE49152+I,ML:A=A+ML:GOTO16
14 AA=VAL(RIGHT$(ML$,5)):IFA<>AATHENPRINT"ERROR",A,ML$:END
16 NEXT:END: Rem Goto 108 to SAVE ML
20 DATA169,0,133,250,133,252,168,169,48,133,251,169,40,133,253,177,X02478
22 DATA250,145,252,200,208,249,230,251,230,253,165,253,201,48,208,239,X05860
24 DATA96,162,0,169,0,157,0,32,157,0,33,157,0,34,157,0,X07014
26 DATA35,157,0,36,157,0,37,157,0,38,157,0,39,232,208,229,X08496
28 DATA96,162,0,138,157,0,4,169,10,157,0,216,232,224,240,208,X10509
30 DATA242,96,160,0,162,0,44,0,40,48,3,76,104,192,24,185,X11885
32 DATA0,32,125,172,193,153,0,32,232,238,87,192,224,8,208,230,X14011
34 DATA162,0,30,0,40,232,224,8,208,248,173,180,193,141,87,192,X16129
36 DATA200,192,8,208,207,24,173,180,193,105,8,141,180,193,141,87,X18369
38 DATA192,141,96,192,141,102,192,141,115,192,144,12,238,88,192,238,X20785
40 DATA97,192,238,103,192,238,116,192,173,88,192,201,48,208,163,169,X23395
42 DATA32,141,97,192,141,103,192,169,40,141,88,192,141,116,192,169,X25541
44 DATA0,141,115,192,141,87,192,141,102,192,141,96,192,141,180,193,X27787
46 DATA96,160,0,162,0,169,0,133,251,189,0,4,133,250,6,250,X29580
48 DATA38,251,6,250,38,251,6,250,38,251,24,169,32,101,251,133,X31679
50 DATA251,138,72,152,72,162,5,32,201,255,160,0,177,250,32,202,X33840
52 DATA241,200,192,8,208,246,104,168,104,170,32,139,193,232,224,40,X36341
54 DATA208,195,169,13,32,202,241,24,169,40,109,218,192,141,218,192,X38704
56 DATA144,3,238,219,192,200,192,6,208,169,169,4,141,219,192,169,X41169
58 DATA0,141,218,192,96,169,5,162,4,160,5,32,186,255,169,0,X42963
60 DATA32,189,255,32,192,255,169,4,162,4,160,255,32,186,255,169,X45314
62 DATA0,32,189,255,32,192,255,169,6,162,4,160,6,32,186,255,X47249
64 DATA169,0,32,189,255,32,192,255,162,6,32,201,255,169,20,32,X49250
66 DATA202,241,162,4,32,201,255,169,13,32,202,241,32,33,192,32,X51293
68 DATA0,192,32,82,192,32,209,192,76,157,194,138,72,72,162,4,X53099
70 DATA32,201,255,104,101,12,170,169,29,32,202,241,202,16,250,169,X55284
72 DATA254,32,202,241,169,141,32,202,241,104,170,96,128,64,32,16,X57408
74 DATA8,4,2,1,0,128,103,0,111,128,118,0,126,169,0,141,X58447
76 DATA170,194,133,77,169,0,133,75,169,96,133,76,169,48,133,78,X60300
78 DATA160,0,177,75,145,77,200,208,249,230,76,230,78,165,78,201,X62649
80 DATA56,208,239,169,48,133,78,32,33,192,32,0,192,32,82,192,X64367
82 DATA32,65,192,32,209,192,138,72,174,170,194,189,181,193,141,197,X66738
84 DATA193,232,189,181,193,141,201,193,238,170,194,238,170,194,104,170,X69733
86 DATA173,170,194,201,4,208,173,169,0,141,197,193,169,96,141,201,X72169
88 DATA193,169,1,141,39,193,173,20,194,201,8,208,32,162,0,189,X74092
90 DATA0,126,157,0,48,189,0,127,157,0,49,232,208,241,32,33,X75691
92 DATA192,32,0,192,32,82,192,32,65,192,32,209,192,169,0,141,X77445
94 DATA216,192,169,4,141,217,192,170,32,201,255,169,13,32,202,241,X79891
96 DATA162,6,32,201,255,169,28,32,202,241,76,157,194,162,6,138,X81952
98 DATA141,39,193,189,142,194,157,124,193,202,16,247,96,162,6,189,X84242
100 DATA148,194,157,124,193,202,16,247,169,15,141,39,193,96,32,189,X86397
102 DATA193,76,157,194,32,33,192,32,0,192,32,0,0,162,6,32,X87730
104 DATA201,255,169,29,32,202,241,76,231,255,0,X89421
108 PRINT"■■■POKE52,208:POKE56,208"
110 PRINT"■■POKE43,0:POKE44,192:POKE45,171:POKE46,194:CLR"
112 PRINT"■■S◆"CHR$(34)"ML DUMP"CHR$(34)",8,1■"

READY.
```

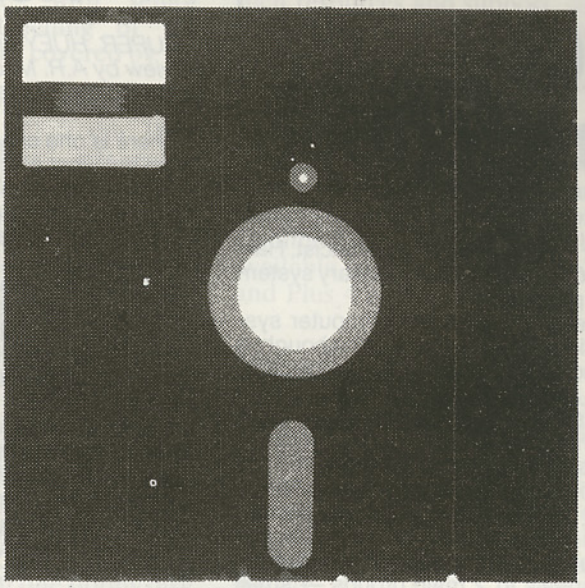
```
5 REM LOADER/PRINTER
10 C=C+1:IFC=2THEN100
15 IFC=3ANDFL=1THEN200
20 IFC=3THEN210
25 LOAD"ML DUMP",8,1
30 INPUT"PICTURE NAME";PN$:FL=1
35 LOADPN$,8,1
60 INPUT"CHARACTER FILE-NAME";CF$:FL=0
65 LOADCF$,8,1
100 INPUT"■■B■ITMAP OR ■C■HARACTERS";BC$
105 IFBC$="B"THENSYS49773:GOTO30
110 IFBC$="C"THENSYS49789:GOTO60
120 GOTO100
200 INPUT"# OF QUARTERS";NQ:NQ=NQ*2:POKE49684,NQ
205 INPUT"PAPER TAB";TA:POKE12,TA
207 POKE53272,28:SYS49461:END
210 PRINT"■SYS49461 WHEN READY"
220 INPUT"START ROW";SR
225 S=1024+SR*40:H%=S/256:L=S-H%*256:POKE49370,
    L:POKE49371,H%
230 INPUT"# OF ROWS";NR:POKE49447,NR
240 INPUT"START COLUMN";SC:POKE49364,SC
250 INPUT"# OF COLUMNS";NC:NC=SC+NC:POKE49423,NC
255 INPUT"PAPER TAB";TA:POKE12,TA
260 PRINT"■POKE53272,28■■■"

READY.
```

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.

maxell Floppy Disk

AWA New Zealand Limited

Data Systems Division
Head Office: P.O. Box 50-248 Porirua

AUCKLAND	WELLINGTON	CHRISTCHURCH
P.O. Box 1363	P.O. Box 830	P.O. Box 32054
(09)760-129	(04)851-279	(03)890-449

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 structually 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 REMxxxxxxxxxxxxxxxx
15 REMx               x
20 REMx               x
25 REMx LINE GRAPH    x
30 REMx               x
35 REMx      BY       x
40 REMx               x
45 REMx B.G.SPEERS    x
50 REMx               x
55 REMx               x
60 REMx               x
65 REMxxxxxxxxxxxxxxxx
70 REM DEFINE VARIABLES
75 DIMX(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"s"
115 PRINT"TITLE OF GRAPH"
120 INPUTT$
125 PRINT"sQENTER MINIMUM VALUE   FOR Y-
AXIS
130 INPUT M
135 PRINT"ENTR INCREASING    VALUE"
140 INPUTU
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"sQENTERX-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"sQENTER 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*C(J)
430 IFJ=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 IFD=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,Q;
510 IFF=11THEN525
515 F=F+1:B=B+50:Q=Q+U
520 GOTO500
525 G=1:H=30
530 PRINT#1,"M";H;-560
535 PRINT#4,C$(G);
540 IFG=7THEN555
545 G=G+1:H=H+65
550 GOTO530
555 PRINT#1,"M";100;10
560 PRINT#2,2
565 PRINT#3,2
570 PRINT#4,T$
575 PRINT#3,1
580 END
585 PRINT"sQQQQQQQQQQQ
]]]]]]PLEASE WAIT"
590 RETURN
```

commodore

Commodore News

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 coving 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 tc 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
250 Forrest Hill Road
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

willmove 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 k
ey "; 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 K
EY!!!"''''''"TRY AGAIN": FOR N=1 T
O 200: NEXT N: CLS : GO TO 30
 100 IF LEN A$=2 THEN  IF A$(2)=
"-" THEN  LET A$(2)=CHR$ 144
 110 PRINT "THE RELATIVE MINOR T
O ";A$;" MAJ IS "'C$;" MINOR"
 120 PRINT '''"THIS IS THE KEY SI
GNATURE:"
 130 FOR N=11 TO 20 STEP 2: PRIN
T 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#","D#",6,"C#","A#",7
 240 DATA "C","A",10,"F","D",11,
"B-","G",12,"E-","C",13,"A-","F"
,14,"D-","B-",15,"G-","E-",16,"C
-","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$="": FOR N=1 TO 27: L
ET D$=D$+CHR$ 145: NEXT N
 300 FOR N=0 TO 15: READ A: POKE
 USR "A"+N,A: NEXT N
 310 RETURN
 320 DATA 64,64,64,96,80,72,72,1
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.

TANDY...

ADVANCED TECHNOLOGY

IBM-PC COMPATIBLE

* Runs most IBM-PC software, e.g. Flight Simulator, dBase III, Framework.
* Graphics/colour board included as standard.
* 90 Key keyboard with CAPS and NUM Lock Lights.
* Takes many IBM hardware boards.
* Most communication protocols available.
* Includes as standard Desk Mate applications package featuring Text processor, spreadsheet, filer

from only $3900

AVM ELECTRONIC

CHRISTCHURCH
149 Hereford St.
P.O. Box 2823
PH 797-279

WELLINGTON
Dominion Bldg.
35 Mercer St.
Ph 731-097

The microbee Computer-in-a-Book represents a novel, practical effective low cost way of advancing to disk drive capability

The microbee 3.5 inch 400K high speed/high density Drives are very compact, extremely tough and represent the best value-for-money 'Real Disk Drive' on the market today. The Computer-in-a-Book comes complete with all the software you will need to get started including demo program, MW Basic, Wordbee Wordprocessing, Telcom communications and CP/M with utilities.

Microbee 64K with Single Disk Drive $1,350
Add-on Disk Drive in matching volume $470
Ask about Modems, Printers and Business Software.

microbee computer

Designed and manufactured in Australia by Applied Technology

Head Office: 438b Rosebank Road, Avondale, Auckland 7
Postal Address: P.O. Box 71107, Rosebank, Auckland 7, New Zealand
Telephone: (09) 88-1138 or 88-1139

REPRINT

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, logig 1), 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 LDX#$00      ;SET THE COUNTER TO 0. THE Y REGISTER COULD BE USED.
C002 LDA#C010,X   ;GET A VALUE FROM THE STORAGE AREA
C005 JSR$FFD2     ;PRINT IT
C008 INX          ;INCREMENT THE X (OR Y IF USED) REGISTER
C009 CPX#$15      ;COMPARE THE X REGISTER VALUE TO $15 (21 DECIMAL)
C00B BNE$C002     ;IF ($15-X)<>0 THEN LOOP (BRANCH IF NOT EQUAL)
C00D RTS

C010 50 52 49 4E 54 49 4E 47  ;THESE ARE CHR$ VALUES, AS FOUND IN
C018 20 46 52 4F 4D 0D 53 54  ;APPENDIX C OF THE USER GUIDE
C020 4F 52 41 47 45 00 00 00  ;
```

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 (EG $3400)

C000 LDA$3400     ;GET THE VALUE (PEEK)
C003 BEQ$XXXX     ;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($3401)
C006 BNE$XXXX     ;BRANCH IF PEEK($3400) <> PEEK($3401)

C000 LDA#$0001000 ;LOAD A WITH 8
C002 BIT$3400     ;COMPARE PEEK($3400)
C005 BNE$XXXX     ;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 magniture of a comparison result. For example:

```
C000 LDY#$40      ;SET THE COUNTER
C002 TYA          ;TRANSFER THE COUNTER CONTENTS TO THE ACCUMULATOR
C003 STA$C100,Y   ;STORE THE ACCUMULATOR AT $C100+Y
C006 DEY          ;DECREMENT COUNTER
C007 CPY#$20      ;
C009 BPL$C002     ;LOOP IF $20-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 wil 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 BIT0 OF P TO 0)
C001 LDA$C021     ;GET $C021'S VALUE
C004 ADC$C020     ;ADD (WITH CARRY VALUE) PEEK($C020) [+10]
C007 STA$C021     ;STORE RESULT BACK IN $C021
C00A BCS$C00D     ;IF CARRY SET THEN BRANCH
C00C RTS
C00D INC$C022     ;INCREMENT $C022
C010 RTS
```

Here's a basic program to use this routine:

```
10 POKE49185,0:POKE49186,0:REM CLEAR $C021,$C022
20 POKE49184,10:REM SET ADDED VALUE
30 SYS49152
40 L=PEEK(49185):H=PEEK(49186)
50 PRINTL,H,L+H*256
60 GOTO30
```

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#$0D      ;CHANGE THE VECTOR TO $C00D
C003 STA$0314     ;POKE 788,13
C006 LDA#$C0      ;
C008 STA$0315     ;POKE 789,192
C00B CLI          ;ENABLE THE INTERRUPT
C00C RTS          ;RETURN TO BASIC
C00D LDA#$2A      ;POKE 1024 WITH AN ASTERISK
C00F STA$0400
C012 LDA#$01      ;AND COLOUR IT
C014 STA$D800
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 comparitively 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 supersceded 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.

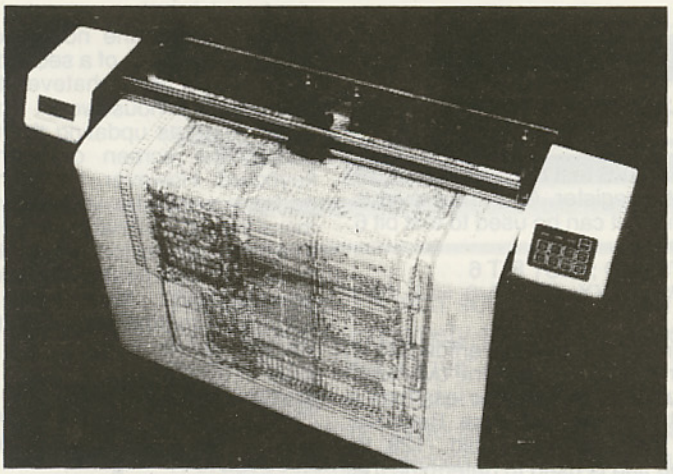
If any retailers would like some free advertising then send me a program to review; due warning though — I might not like it!

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.

NEW from houston

A Breakthrough in Plotting Power



Model DMP 52 MP

14 Pens of any colour or line width.
Constant Velocity Control: .001" resolution
High Power Servos 22 ips to 4g acceleration
Houston powerful "DM/PL" Plotting language
Strong Software Support programme
POWERFUL, RELIABLE, LOW COST

Dealer Enquiries invited to:—

N.Z. REPRESENTATIVE.
S.D. MANDENO ELECTRONIC EQUIPMENT CO.
10 WOODHALL ROAD EPSOM AUCKLAND 3 PHONE 600 008 TELEGRAMS NUCLEONIC

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 under-standing 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

0 0 1 0 0 1 0 1 becomes 0 1 0 0 1 0 1 0

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 examaple 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 seperate 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

          $FF=39
    0 0 1 0 0 1 1 1  CARRY=0
ASL$FF0 0 1 0 0 1 1 1  CARRY=1 (BIT7 OF $FE)
ROL$FE0 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

          $FF=39
    0 0 1 0 0 1 1 1 CARRY=0
LSR$FF0 0 0 1 0 0 1 1 CARRY=1 (BIT0 OF $FF)
ROR$FE0 0 0 1 0 0 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.

```
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:SOUND5,2,15
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
```

MICRO SOFTWARE HIRE CLUB

OPEN WEEKDAYS & SATURDAY MORNINGS

Commodore VIC20 & 64 – AMSTRAD
ATARI – BBC – SPECTRUM – ELECTRON

☆ ☆ **BRANCHES** ☆ ☆

AUCKLAND
C.B. CENTRE PH 444-8063
15A Porana Rd., Takapuna
THE COMPUTER TERMINAL PH 419-0543
257 Hinemoa St., Birkenhead
ABACUS VIDEO CENTRE PH 864-151
16 New Bond St., Kingsland
K ROAD COMPUTERS PH 399-655
65 Pitt Street
ROTORUA
CHANNEL FIVE PH 89-164
87 Fenton Street
NORTHLAND
GARNET KEENE PH 84-999
36-40 Rathbone St., Whangarei

TAUPO
Kiwi Computer Services
C/- Terrys Tyre Services
Runanga Street
Taupo Ph (074) 86-180

WAIKATO
COMPUTER ROOM LTD. PH 437-876
177 Ward St., Hamilton
GISBORNE
PERSONAL & BUSINESS COMPUTERS LTD
PH 88-256. 115 Gladstone Road
NEW PLYMOUTH
TRIO BUSINESS CENTRE LTD. PH 85-226
635 Devon Road
TOKOROA
COMPUTER CENTER PH 64-900
Dreghorn Place
HAWKES BAY
COMPUTER CONECTION PH 51-965
18 Dalton St., Napier

GREYMOUTH
Centrepoint Records
Mackay Street
Greymouth Ph 5956

Mail Order other than through Clubs –

NORTH ISLAND
Kiwi Computer Services
P.O. Box 822
Taupo Ph (074) 86-180

SOUTH ISLAND
Centrepoint Records
Mackay Street
Greymouth Ph 5956

★ ★ *Trade enquiries welcome* ★ ★
A Branch Franchise may be available in your area.
Please Contact Phone 444-8063 or write
Box 33-196 Takapuna, Auckland.

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.

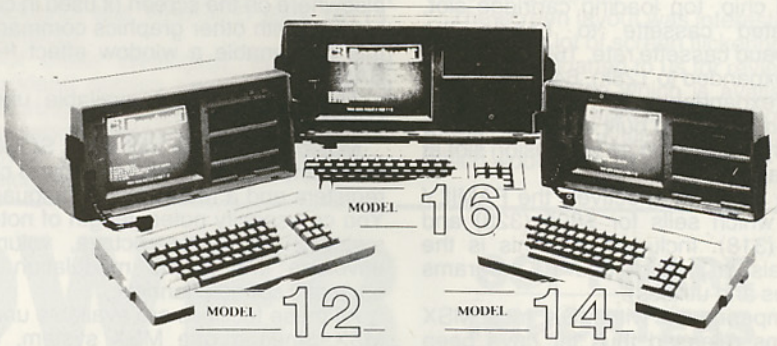
Scoring is done very correctly with deuces and advantages being coped with — although the set ends of 6-5 without the tiebreaker finish that is very prevalent these days.

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.

Bondwell



A complete system from only $2995

DEPOSIT $500 ($25 WEEKLY)

Free Software

• Debtors • Stock Control • Invoicing
• Word Processing with Mail Merge
• Financial Planning Package • Database – filing system
• Speech Syntheziser

TOTAL VALUE $3,400

Check these features

Bondwell 12	Bondwell 16	Bondwell 14
RAM 64K	RAM 128K	RAM 128K
DISK 400K	DISK 10,000K	DISK 800K
Fully portable	Fully portable	Fully portable
CP/M	CP/M	CP/M

SUPATECH ELECTRONICS
430 MT. EDEN ROAD PHONE 605-216 Late nights: Thursday & Friday
OPEN ALL DAY SATURDAY

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 overlaying 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/Mailverge/Reportstar as well as standard CPM utilities.

Additional hardware includes a graphic tablet and MSX adapter to allow the loading and running of cartidges 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 leapt 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 alients.

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 pseed.

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.

P.C. Personal Computer POWER

SOFTWARE IMPORTERS

PC Power has the largest range of software and utilities for IBM PC's and Compatibles in the country — If we haven't got it we'll get it.

Personal Copier	225.00	Lotus 1-2-3	Call	Concurrent PC DOS	995.00
Direc-Tree	195.00	dBase II	995.00	Energraphics	1295.00
Proffessional Basic	550.00	dBase III	1565.00	PC Draw	1195.00
Timeline	1485.00	Sidekick	205.00	GATO	125.00
Sideways	195.00	Turbo Pascal	240.00	Hitchhikers Guide	125.00
Wordstar 2000	966.00	DR Draw	850.00	Hardrunner	129.95
Norton Utilities	295.00	Backup	450.00	Typing Tutor III	167.95
Framework	1595.00	Catalog	295.00	Turbo Tutor	175.00
Open Acess	1350.00	Flight Simulator	145.00	turbo Toolbox	195.00
Diagram Master	1275.00	Master Type	99.95	Turbo Graphics Toolbox	195.00
In*a*Vision	1495.00	Disc Drive Analyser	450.00	Spelling Checker	159.95
Gem Draw	995.00	Practiword	345.00	Spreadsheet Auditor	460.00
Prokey	395.00	A.T.I. Training Packages	Call	Desk Organiser	295.00
Symphony	Call	SargonIII (chess)	149.95	Desq	1150.00

P C Power

To order or for further information on our several hundreds of products

1st Floor, Apex House, Cnr. Queens Drive & Laings Rd, P.O. Box 44-161, Lower Hutt, Phone (04) 693 050.

NAME ..... Please Send Product Price List.....
ADDRESS ..... Products Required: .....
..... Cheque/Money Order$ .....
COMPANY ..... VISA ☐ BANKCARD ☐
PHONE ..... ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
Type/Model of Computer .....

DEALER ENQUIRIES WELCOME

STOP PRESS

CHART-MASTER	*$ 945*
SIGN-MASTER	*$ 695*
DIAGRAM-MASTER	*$1295*
*IN*A*VISION*	*$1495*

— Rated No 1 charting Program in the States 1984-1985
— New version 5.1 includes new forms & symbols
— Totally new business graphics software
— Revolutionary CAD drawing & design Package

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 comands from within BASIC programs.

In Logo, different but equivalant 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
```

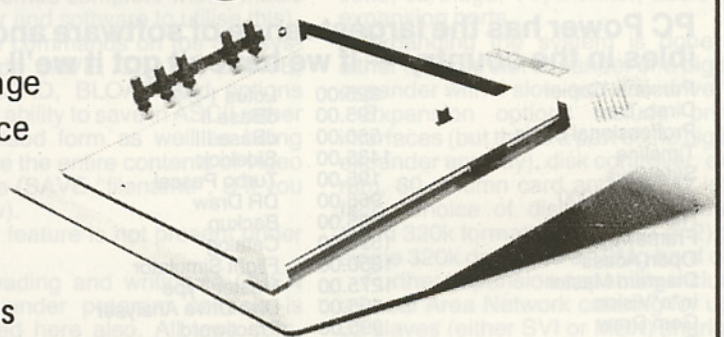
Notice the full stop or 'dot' in the first two commands. Pressing Control-Q cannot be used in the same way as it is in the BASIC immediate mode, as this character is intercepted by Logo and interpreted as a distinct command before it can reach the interface card. Notice also that the instructions given 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.

SEKONIC SPL-400 X·Y PLOTTER



- 6 colour automatic pen change
- On board Centronics interface
- 200mm/sec axial pen speed
- 0.1mm step size
- 8 directional position keys
- 24 stored plotting commands
- RS 232C & IEEE 488 interface adaptors available

SPL-400: an extremely competitively priced digital X-Y plotter for the home enthusiast, draughtsperson or the latest in C.A.D. systems.

SOLE NEW ZEALAND AGENT

DEALER ENQUIRIES WELCOME

E.C. Gough Ltd

Auckland:	Phone 763-174
Wellington:	Phone 686-675
Christchurch:	Phone 798-740
Dunedin:	Phone 775-823

E C GOUGH
ELECTRONICS & INSTRUMENTATION DIVISION

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
```

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.

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 Instituo De Technologico 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.

PRENTICE-HALL BOOKWARE

October Selection

FRAMEWORK —
An Introduction by Bill Harrison
This book is designed to show users how to take full advantage of the capabilities of Framework written with the novice computer user in mind. **$39.90**

FRAMEWORK MADE EASIER by McIntyre/Granoff/Bishop
This handbook picks up where the users manual leaves off: Now you can maximise the synergistic benefit of having FRAMEWORK'S spreadsheet, wordprocessing data management, telecommunications and graphics functions working together for you. **$37.40**

FRAMEWORK —
A Programmers Reference
This book shows you how to solve information problems at all levels of complexity. **$62.40**

UNDERSTANDING AND USING MULTIPLAN by Krumm
Complete self-study approach to using multiplan, one of the most powerful spreadsheets available. It explains the logic behind multiplan — the way it works and why. **$42.40**

PROGRAMMER'S GUIDE TO MS DOS FOR THE IBM PC by D.N. Jump
This book breaks through the complex technical descriptions of how microsoft MS-DOS operates and clearly explains and illustrates each concept as it is introduced. **$39.90**

ILLUSTRATED MS-DOS-WORDSTAR HANDBOOK — with Mailmerge and spellstar operations. by R.A. Stultz
The author translates jargon into plain English and includes a description of each function its application and a typical operation providing exact key strokes. **$37.40**

UNIX AND XENIX
A step by step guide by Topham/Van Troung
Written for those using 16 bit microcomputers, this text systematically covers the commands you'll need to know to operate in UNIX/XENIX. **$54.90**

Order through your local bookseller, computer shop or Bits and Bytes. Wholesale terms available to trade outlets.

DISTRIBUTED BY WHITEHALL BOOKS LIMITED
P.O. Box 38-694, PETONE.

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 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.

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.

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 represented.

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.

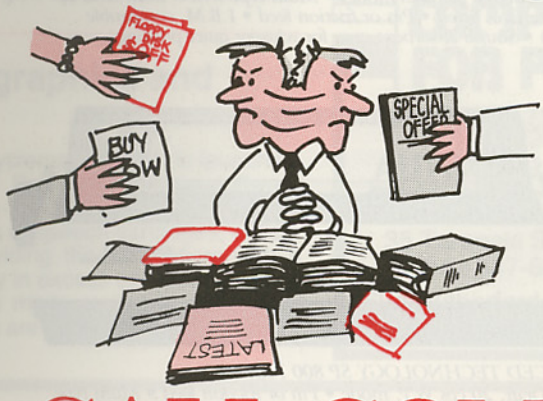
All this for only $659.00. No wonder Monaco are using the slogan "Atari — price busters".

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.

The confusion is over. You've made the 'right computer decision' Right?

Now, don't get confused all over again about the right computer supplies...



CALL COMPUMEDIA

Welcome to Compumedia, a company set up to take the hassles out of choosing computer supplies.

We source quality products from Japan, U.S.A., U.K., Germany, Australia and New Zealand ... products to help you maximise the potential of your computer ... products to help you take good care of your total computer investment.

• FLOPPY DISKS • DISK MINDERS • COMPUTER TAPE • PRINTER RIBBONS • CLEANING PRODUCTS • COMPUTER PAPER • ACOUSTIC PRINTER HOODS • VDU ANTI GLARE FILTERS • ATTRACTIVE, PRACTICAL COMPUTER FURNITURE.

CALL AUCKLAND: 444-6085, P.O. Box 3273 Tlx. Ak 60835
CALL WELLINGTON: 851-548, P.O.Box 11091 Tlx. Wgtn 31415 or send this coupon for our product brochure and price list

Compumedia Systems

We're No1. in Computer Supplies!

To Compumedia Systems Ltd, Freepost 1167, P.O. Box 3273 Auckland.
Please send me your free product brochure and price list.

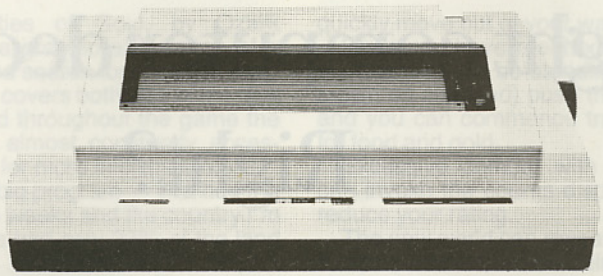
Name: .....

Company: .....

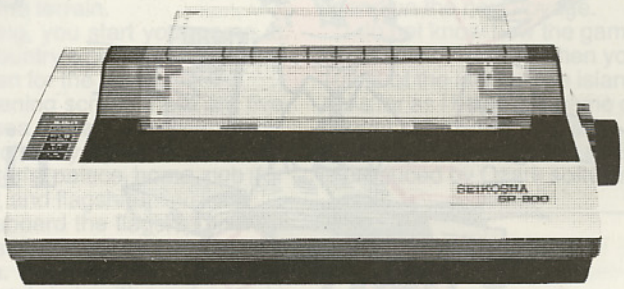
Address: .....

P2658

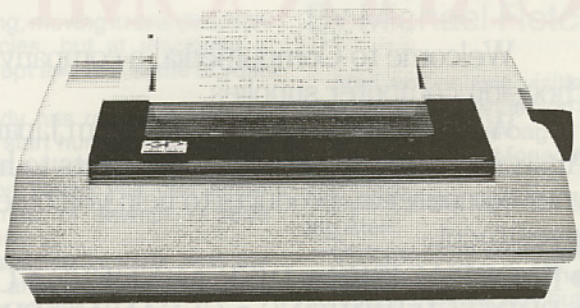
SEIKOSHA.
We get called some very nice names.



HIGH SPEED, HIGH PERFORMANCE SEIKOSHA BP 5420 A /I
• 420 cps Draft, 104 cps W.P. mode • 18 K print buffer (I version 4K) • A switch for easy user font/print style selection at draft, italic, correspondence or graphics modes • Multi type style • Both serial & parallel interfaces fitted • Pin or friction feed • I.B.M. compatible (I version) • Sound absorbent case, for whisper quiet printing



ADVANCED TECHNOLOGY SP 800 PRINTER
• 80 cps Draft, 20 cps W.P. mode • Pin or friction feed • Multi type style • Bi-directional seeking • Multiple copies • 10" carriage • 9-pin head



GP 50 FOR POINT OF SALE,VIDEOTEX OR HOME COMPUTING.
• 40 cps • Unihammer • 5 inch carriage • Graphics and type • Plain paper

SEIKOSHA

You've no doubt heard of badge engineering. It's no secret that like car companies, computer companies often source their hardware from other manufacturers. One of those manufacturers is Seikosha, the world's second largest producer of printers. Now you can buy a Seikosha printer with a Seikosha name on it. Not surprisingly, they're compatible with many of the more popular computer names available today. Seikosha. The benchmark for other printers when it comes to speed, quality and value.

MITSUI COMPUTER SYSTEMS LTD

MITSUI COMPUTER SYSTEMS LTD. 15-19 WIGAN STREET, WELLINGTON. P.O. BOX 9447, COURTENAY PLACE, TEL. 848-069, TELEX MITSUI NZ3555

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 useable 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.

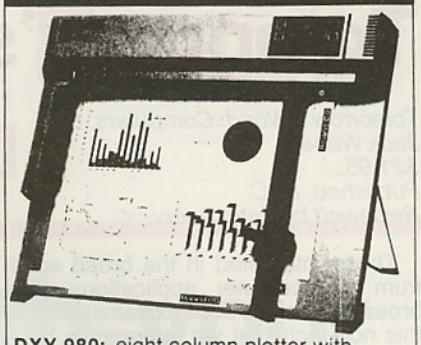
COMPUTERS FOR PEOPLE

AUTOCAD CAD/CAM SALES AND SUPPORT

35 Taranaki St, Wellington
Phone 847-668, 859-675

69a Rutherford St, Lower Hutt
Phone 664-069

XY PLOTTERS



DXY 980: eight column plotter with digitizing capability
DXY 880: with hi-level graphics
DXY 800: user-programmable or run Lotus, Symphony, etc.
DXY 101: Single-pen

FOR
★ Schools
★ Business Graphics
★ Advanced Hobbyist-Artist
★ CAD, CAM
★ Professional user

The Roland range covers them all.

Roland DG
ROLAND DG CORPORATION

N.Z. Distribution and Service
Concord Communications Ltd
1 Ngaire Ave, Epsom. Ph (09) 504-046. P.O. Box 36045, Northcote, Auckland 9.

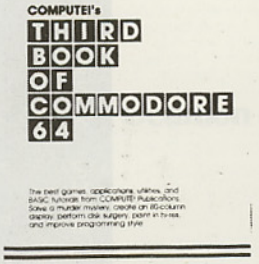
. . . NOW AVAILABLE . . . NOW AVAILABLE . . . NOW AVAILABLE

COMPUTE!'S SECOND BOOK OF COMMODORE 64 GAMES
ISBN 0-942386-64-7
$38.50

Sixteen outstanding games, from detailed simulations to fast-paced machine language arcade games. Run for president in "Campaign Manager", defend yourself against snakes and acid rain in "The Frantic Fisherman", or defend the world in "Astro-Panic!". Photograph the Loch Ness monster, battle in an arena, or establish trade routes to India. The best games from **COMPUTE!** and COMPUTE's Gazette, and some appearing here for the first time anywhere. Articles show you how to design a videogame and explain the intricacies of writing your own text adventure.

Get more out of your Commodore

COMPUTE!'S THIRD BOOK OF COMMODORE 64
ISBN 0-942386-72-8
$38.50



Gathered from the most recent issue of **COMPUTE!** magazine and **COMPUTE!'s Gazette**, this collection of outstanding games, applications, tutorials, and utilities also include several programs never before published. Commodore 64 users of all ages and experience will find this book informative, entertaining, educational. Create an 80 column display, play educational and arcade quality games, compose music, move sprites easily and quickly, and see how to program more efficiently and effectively.

with COMPUTE! Books

COMPUTE! Books are distributed exclusively in NEW ZEALAND by:
HOLT-SAUNDERS PTY. LIMITED
10 MOA STREET, OTAHUHU, AUCKLAND, NEW ZEALAND. 276 2087

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 computer 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".

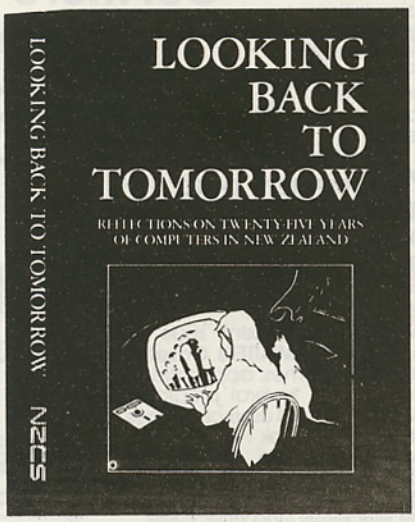
"Silicon cities" is a chapter which talks about the design of chips being very similar to townplanning — a single micro-processor has as much detail as the whole of London all squeezed into a few square milimetres.

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.

Published by the New Zealand Computer Society, distributed by :

PITMAN PUBLISHING NEW ZEALAND
28 FITZHERBERT STREET
PETONE 683 623

The BITS & BYTES Computer Book Club

Have a word with your bank manager — and buy to save

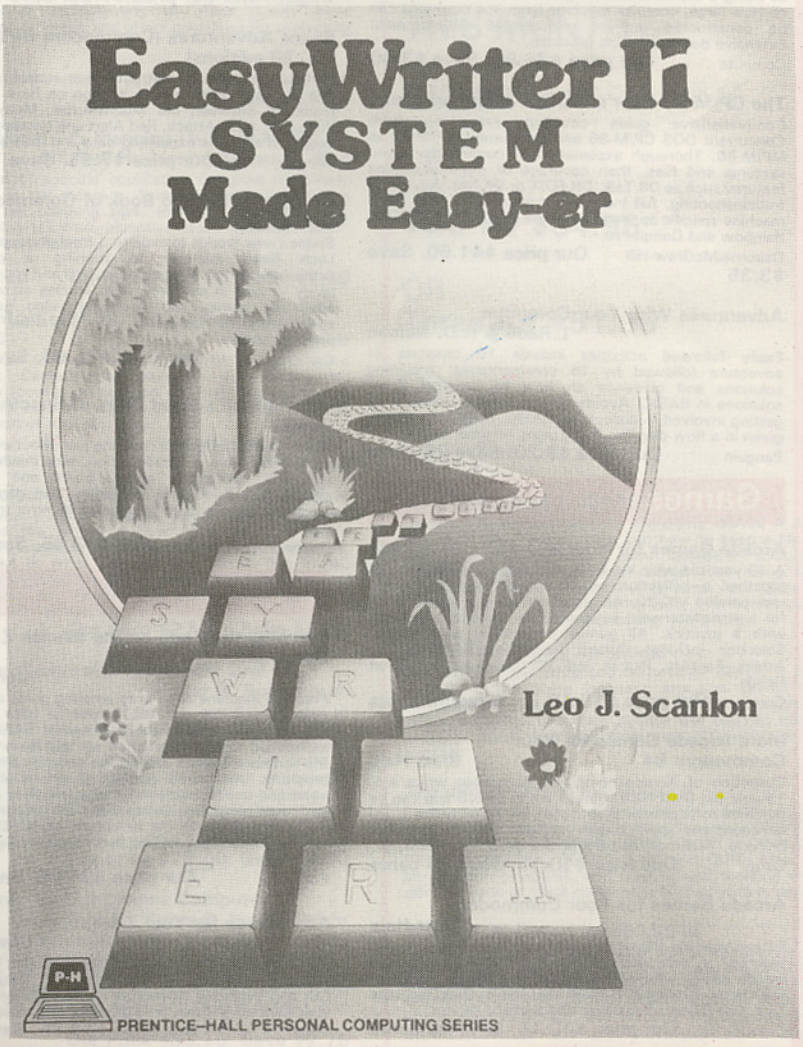
SAVE

$7.50 on any of these word processing books
$17.00 on any two
$28.50 on any three

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 **Our price $49.95**

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 (Disk included)**

Easy Writer II System Made Easy-er
Leo J. Scanlon
Pratical 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.
Prentice-Hall **Our price $44.25**



Language/programming

Structured Programs in BASIC — **Peter Bishop**

Opens with a discussion of program structure and design. The rest to the book comprises example programs, with the complete program design process (from initial specification to final listing) carried out. Excellent source of programming techniques, algorhythms, program modules, ready-to-run programs and ideas.

Nelson — **Our price $25.65. Save $2.10**

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 — **Our Price $41.61. Save $3.35**

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.

Osborne/McGraw-Hill — **Our price $40.75. Save $3.30**

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 — **Our price $36.95. Save $3.00**

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 whiz 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 — **Our price $10.10. Save 95 cents**

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.

Corgi — **Our price $10.15. Save 80 cents**

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.

Corgi — **Our price $10.15. Save 80 cents**

Virgin Computer Games Series — **Edited by Tim Hartnell**

Each book contains a selection of more than 20 games which allow you to hine programming skills as well as have plenty of fun. Contains brief dictionary of computer terms, bibliography and hints on how to improve and extend some of the programs.

Commodore 64 edition $11.05. save 90 cents Spectrum, ZX 81, TRS-80, VIC 20, Oric Dragon, Atari, BBC editions $8.30. Save 75 cents Atari 600XL edition $14.75. Save $1.20

Tim Hartnell's Giant Book of Computer Games

More than 40 games compatible with Microsoft BASIC able to run on most micros, including BBC, VIC 20, Oric, Apple II and IIe, Commodore 64, Dragon 32, Tandy Color, IBM PC, Laser, TRS-80, PET, MZ80K and Spectrum. Range covers board, dice, space, brain and adventure games, simulations, artificial intelligence, and some just for fun.

Collins — **Our price $13.80. Save $1.15**

40 Educational Games for the VIC-20 — **Vince Apps**

Programs designed to help younger family members handle the VIC-20 and increase their general knowledge. Uses variety of games aids such as the beat clock, stop the hangman, race the buzzer. Subjects include geography, languages, mathmatics and science. Hints included to show how programs can be changed as skills improve.

Granada — **Our price $20.30. Save $1.65**

Fantastic Games (Commodore 64 & VIC-20 editions)

Introduction provides instructions on running the games and the book ends with a section on how games are made. In between are Speedboat, Logger, Haze Maze, Getaway, Sub Attack and Snail's Trails.

Wingard-Hayes — **Our price $7.95. Save 70 cents**

Space Adventures (Commodore 64 & VIC-20 editions)

Introduction provides instructions on running the games and the book ends with a section on how games are made. In between are Moonshuttle, Metor Shower, Protector, Alien Attack, Red Alert and Invasion — with a couple of sections explaining data and read statements.

Wingard-Hayes — **Our price $7.95. Save 70 cents**

Compute's Second Book of Commodore 64 Games

Sixteen new worlds to explore... from photographing the Loch Ness monster to running a presidential campaign...to test your strategy, skill and knowledge. All ready to type in and play. Also articles on writing text adventure games and designing video games, and special-purpose programs to guarantee error-free program entry.

Compute — **Our price $35.60. Save $2.90**

Tim Hartnell's Giant Book of Spectrum Games

More than 80 programs covering just about every sort of game imaginable — arcade action, mind benders, chance and skill, adventure, space, board and card, fun, simulations. And there are utility and demonstration programs, games to convert notes on error trapping and a glossary.

Collins — **Our price $13.85. Save $1.10**

Spectrum

Cracking the Code on the Sinclair ZX Spectrum — **John Wilson**

Practical machine code programming guide allowing the user to harness the full power of the Spectrum's hardware and escape the confines of BASIC. You are introduced to Z80 instruction set and learn to combine the various elements of machine code in commercial-like programs. Annotated example programs allow you to enter and use fast screen handling routines and sorts in your own programs, debug them with the trace facility, and run them with the on-screen clock. Covers ROM routines, interrupt handling and programming principals.

Pan — **Our price $24.95. Save $2.00**

Adventures for Your ZX Spectrum — **Clive Gifford**

Six ready-to-run adventure games — Crash! Pearl Diver, The Ring of Power, The Seven Keys of Tarkus, School's Out and Everyday Adventure — plus advice on writing your own adventures on a glossary and bibliography.

Virgin — **Our price $13.85. Save $1.10**

An Expert Guide to Spectrum — **Mike James**

Practical introduction to the Spectrum's advanced hardware and software features. Aimed at the user seeking a deeper understanding of the machine and its capabilities. Starts with an inside view of the micro, then moves to a connoisseur's guide to ZX BASIC and an introduction to the machine operating system. Covers ZX video tape system, RS232 interface, microdrive and advanced programming techniques. Complete program listings and projects for further exploration.

Granada — **Our price $23.10. Save 1.85**

The Sinclair User Book of Games and Programs for the Spectrum

Sixty games and programs from the Spectrum magazine, Sinclair User; protect your castle from invading soldiers in Siege; test your three dimensional sense Labyrinth; improve your geography in Mapwork, face Mr Spec Trum on Wimbledon's centre court, run your own cricket test at Lords, jump a clear round in Olympia, play noughts and crosses against the computer, sink a submarine in Depth Charge, tackle a crash typing course in Touch Type.

Penguin — **Our price $12.90. save $1.05**

Practical Spectrum Machine Code Programming — **Steve Webb**

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.

Virgin — **Our price $18.05. Save $1.45**

The Spectrum Add-On Guide — **Allan Scott**

Non-technical language used to explain what various peripherals do, how they ork and how you can use them in programs ... games, programming, business word processing or whatever. Detailed program listings for "best buy" in each section, and a complete adventure game that can use up to seven add-ons, including two network Spectrums.

Granada — **Our price $20.35. Save $1.60**

Spectravideo

Games For Your Spectavideo — **Damon Pillinger & Danny Olesh**

More than 25 programs including Minefield, Road Race, Star Strike, Towers of Doom and High Fighter. Plus a series of graphic demonstrations and a chapter on making effective use of the Spectravideo's sound.

Virgin — **Our price $12.90. Save $1.05**

Keyboarding

Keyboarding for Information Processing — **Robert Hanson**

Enables a person to develop basic touch-keyboarding skill in a minimum time. The person who completes the book will be able to key in alphabetic, numeric and symbol information, input numbers on a separate 10-key pad; keyboard information quickly and accurately; understand some of the basic vocabulary used in keyboarding. Can be used for classroom or individual, self-instruction.

Osborne/McGraw-Hill — **Our price $12.30. Save $1.00**

Quick Keyboarding — **Vonnie Alexander**

Sub-titled "Component Keyboarding in 6 hours", this book by New Zealander Vonnie Alexander has a unique method for teach-yourself competent keyboarding. A wall chart of finger positions is included.

Methuen — **Our price $7.35. Save 60 cents**

General

Graphics Compendiums — editions for Spectrum & Commodore 64 — **David Durang**

Useful graphics designs and programs, including large library of pre-defined graphics characters, easy-to-use programs for designing and loading of your own graphics, special sections on graphic effects and animation techniques. Plus a selection of graphics games.

Pitman — **Our price $18.45. Save $1.50**

Computer Bits and Pieces — **Geoff Simons**

This compendium of curiosities is an informative, amusing and entertaining — and somewhat disturbing — account of the wide-ranging activities of computers...their uses in science and research, creativity, transport, industry, offices and administration, medicine and health, monitoring the environment, education and training, games and entertainment, the home, and the future.

Penguin — **Our price $11.95. Save $1.00**

Our new selection

Compute's Atari Collection: Volume 1

Thirty original games for the Atari — it claims to have something for all models. Includes applications, utilities, educational programs and tutorials, and just plain fun games.

Compute **Our Price $35.60. Save $2.90**

From BASIC to 8086/8088 Assembly Language

Harley Templeton

Designed for the computer owner with some understanding of BASIC, it presents assembly language in terms of familiar BASIC statements, specifically describing the 1086/1088 assembly language used on the IBM PC and Pc Jr. Accompanied by a program written to translate BASIC numeric expressions into assembly language routines. Hundreds of examples and a selection of debugging.

Prentice-Hall **Our price $55.35. Save $4.50**

Managing Money With Your VIC-20

Series of programs for simple home and business financial tasks. Aimed at users with intermediate needs and suitable for programming classes and business education. Standardised descriptions of all programs, including typical uses and practical examples and explanations.

Prentice-Hall **Our price $38.70. Save $3.15**

Information Management With BASIC for the IBM PC/XT

Tom Shoemaker

Pratical introduction which demonstrates how to program effectively and provides a versatile, generalised database program that can be used immediately for information processing. Working example of a successful application program serves as a programming guide, with each chapter describing a single component of the database program — explaining its function, how it fits into the overall design, and how to program it on the IBM PC.

Reston **Our price: Book — $47.00. Save $3.85 disk — 55.35. Save $4.50 book & disk — $96.95. Save $7.90**

Running MS-DOS — Van Wolventon

Written with an IBM PC but apart from a few commands, the contents apply to any machine using MS-DOS. Assumes you are not a programmer, nor an aspiring one. Covers all versions of DOS and includes many examples — based on the belief that the best way to learn how to put DOS to work is to use it.

Microsoft Press **Our price $46.25. Save $3.75.**

Home Accountant Plus: A Guide for IBM PC Users — Leslie Lauderdale

Presents information on equipment, keystroking and processing instructions to get you working. Solves common problems, and provides examples and practice activities to overcome bigger problems.

Reston **Our price $47.00. Save $3.85**

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 unsusal 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.

Prentice-Hall **Our price $22.05. Save $1.80.**

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 co-ordinates, animated and two-dimensional effects, and rearranging colours.

Reston **Our price $55.35. Save $4.50**

The Sirius & Victor 9000 Computer Book

Dennis Jarrett

Allround, comprehensive introduction bringing together a lot of information on the Sirius to help the untutored user understand the 16-bit business computer. Explains what you can do with a computer, and how to get it up and running with productive work, and how to stay up and running.

Hutchinson **Our price $64.70. Save $5.25**

LOGO and the IBM PC — Rachel R. Avery

Takes the reader through the educational LOGO process — from pre-school to advance problem solving. Material is organised, starting with simplicity of LOGO graphics and going on to the arithmetic and list capabilities. Author assumes no experience of computers and keeps mathmatics to an elementary level.

Prentice-Hall **Our price $47.00.Save $3.85**

Macintosh Program Factory — 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.

Osborne/McGraw-Hill **Our price $46.20. Save $3.75**

Word for Word: A Comparative Guide to Word Processing — Janet Crider

Overview of word processing features, then takes you through individual packages and sets them against the checklist. Information supplied on popular programs.

Osborne/McGraw-Hill **Our Price 38.80. Save $3.15**

Word Processing Software for the IBM PC

Ronni T. Marshak

Discusses the significance of the IBM PC, the need for professional word processing and the increasing use of word processors by managers and professionals. Covers problems of implementing an office quality word processing program, and offers guidelines for evaluating software.

Osborne/McGraw-Hill **Our price $41.60. Save $3.35**

Professional Tax Planning Using Multiplan

Mitchell H. Jacobs/Robert G. Rice

Collection of specific application designed for people involved in tax planning. Each application contains a specific tax planning task, including alternative tax, determining tax from incentive stock options, "joint" rates," "net capital".

Prentice-Hall **Our price $85.85. Save $7.00**

Accountant's BASIC Programming for the IBM PC — Alan J. Parker

Introduction to BASIC programming for accounting and business. Demonstrates value in daily accounting problems focuses on creation and maintenance of disk files as the core of business data processing. Thorough explanation of VisiCalc.

Reston **Our price $37.35. Save $3.00**

Your Colour Computer — Doug Mosher

Shows what a colour computer can do and how to do it. Discusses the why and how of buying the colour computer, examines hardware and the modus operandi, then looks at what you can do. Twenty-five BASIC programs illustrate the sound, graphics and home control capabilities, and another 80 commercially available programs are reviewed.

Sybex **Our price $27.70. Save $2.25**

Personal Computers handbook: 2nd ed.

Walter H. Buchsbaum

Explains what personal computers can do; provides an insight into the microprocessor's key functions; discusses computer memory and its use; covers information storage; describes how the computer is connected to the outside world; covers peripherals, modems, printers etc; explains the principals of programming and BASIC language; details the highlights of 12 typical personal computers; discusses trouble-shooting of hardware and software.

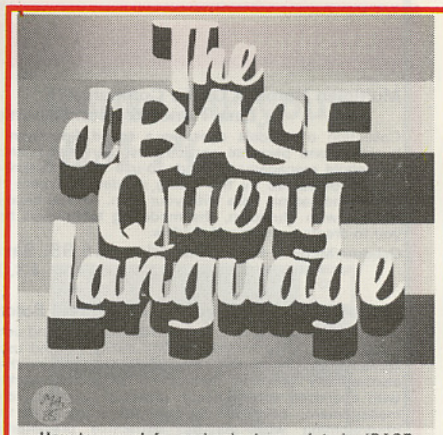
Sams **Our price $29.00. Save $2.40**

Choosing the Right Home Computer

Timothy Bates & Judith Wright

More than 20 worksheets provide the answers to making sense out of computer jargon; deciding if you need a computer at all; making sure you've got enough computer power; planning for software before you spend anything on hardware; when and how to expand your system.

Hayden **Our Price $33.75. Save $2.75**



How to search for and select your data in dBASE

It pays to query

Normally $20.85 each

THIS MONTH

$17.85 each

OR

Two for $34.95

OR

Three for $51.95

OR

Four for $67.95

Advanced Level 1 dBASE

Covers selected concepts in managing dBASE II and dBASE III files. Major topics are: how to keep a file in sequence automatically with dBASE's indexing capability; how to combine related files using the relational JOIN command; how to keep your place in more than one file at the same time; how to set up a command file for batch processing operations.

The dBASE Query Language

One of the most advanced features of dBASE II and dBASE III, the query language lets you search for database for any combination of conditions existing within the data. This book defines and teaches query language alone, supplying more than 100 examples of queries.

The dBASE Dozen for dBASE II

Examines the 12 most essential dBASE commands for creating and managing dBASE files. These are CREATE, USE, APPEND, DELETE, EDIT, SORT, DISPLAY, BROWSE, REPORT, COUNT, SUM and QUIT. After an introduction to dBASE, and creating and working with dBASEII each of these commands is dealt with in detail.

The dBASE Dozen for dBASE III

Examines the 12 most essential dBASE commands for creating and managing dBASE files. These are CREATE, USE, APPEND, DELETE, EDIT, SORT, DISPLAY, BROWSE, REPORT, COUNT, SUM and QUIT. After an introduction to dBASE, and creating and working with dBASE III, each of these commands is dealt with in detail.

Business

Multiplan Home & Office Companion
Elna Tymes & Peter Antoniak

Collection of models covering a broad Spectrum of business and personal applications, personal finance, household management Ready-to-use model described and accompanied by the listing needed to create the model and sample data with your own. As you become familiar with Multiplan, the modelling techniques help you to create customised models.

Osborne/McGraw-Hill **Our price $36.95. Save $3.00**

Lotus 1-2-3 Simplified — David Bolcan

Designed for all levels, it starts with installing and using Lotus 1-2-3, then moves through designing and using spreadsheets; formatting spreadsheets and making them aesthetically pleasing; generating printouts; working with oversized spreadsheets; graphics functions, data management; advanced spreadsheet applications and programming with macros. Attractive presentation includes many diagrams and graphs.

TAB: **Our price $31.70. Save $2.55**

Guide to using Lotus 1-2-3 Edward M. Baras

Detailed comprehensive guide to help you make full sense of Lotus 1-2-3's integration of spreadsheet, database and graphic functions. Includes step-by-step instruction on implementing practical application models for financial forecasting consolidating business statements, simulating dynamic processes, electronic forms management. Equally useful to beginners and experienced users.

Osborne/McGraw-Hill **Our price $38.80. Save $3.15**

Business Program Portfolio for your Apple IIe; An Integrated Office System
George H. Hildebrand

Collection of 61 BASIC programs covering such office tasks as interest calculation, financial analysis, depreciation, property management and real estate, cash receipts and disbursements, job cost, payroll. All programs documented for implementation and modification. There is also a guide to printing out business forms, creating a menu system, and securing business records with password programs.

Hayden **Our price $51.75. Save $4.20**

On-Line Computing for Small Businesses - Silver's Wall
Maurice A. Silver, John Jeacocke & Ray Welland

Sets out to provide managers of small businesses with a clear, concise but non-technical instruction in the use of on-line computing based on the pratical experience of the authors. No prior knowledge of computing assumed and only essential technical definitions are included.

Pitman **Our price $9.70. Save 70 cents**

The ABCs of 1-2-3
Chris Gilbert & Laurie Williams

Hands-on approach using detailed step-by-step instructions. Lessons involve tackling projects such as building a worksheet, displaying the worksheet as a graph, building a database, simplifying several operations using micros, performing calculations and printing graphs and reports. Remains a handy reference once you are familiar with 1-2-3.

Sybex **Our price $37.85. Save $3.05**

Taking care of Business with your Commodore 64 — David P. Dautenhahn

More than 100 brief BASIC and financial programs, each documented with a short explanation of what the computer will do and a BASIC listing. A real-life scenario follows, with a sample run and more instructions on how to combine two or more applications. Programs include: interest, depreciation, retailing, real estate, loan analysis, savings, lease analysis, time value for money, stocks and bonds analysis, sinking fund analysis, forecasting inventory needs, payroll, insurance, metric conversion.

Hayden **Our price $35.60. Save $2.90**

1-2-3 Run: 41 ready-to-use Ltous 1-2-3 Models — Robert & Lauren Flast

Collection of models that run on Lotus 1-2-3. Each model presented with a step-by-step description, complete listing, an illustration with sample data (you simply replace this with your own), and where applicable, instructions to produce bar and line charts. Designed to simply work, the models include applications for sales, accounting, real estate and the classroom.

Osborne/McGraw-Hill **Our price $38.80. Save $3.15**

Database for Fun and Profit — Nigel Freestone

For users wanting to do their own programming. Provides straight forward introduction to data processing, with explanations of routines in BASIC. Examples of system designs for home and business, which can combine and expand. Systems for names and addresses, catalogue index; diary; stock control; bank account/budgeting; debtors list/sale/purchase ledger; payroll.

Granada **Our price $18.45. Save $1.50**

Electron

Getting the Most From Your Acorn Electron
Clive Williamson

Comprehensive introduction to the Electron, exploring its potential and possibilities to suit each owner's needs. Intended to complement the user guide, and contains many tips on programming, software and the general use of the computer. Some features and accessories not documented in the user guide are investigated.

Penguin **Our price $14.75. Save $1.20**

The Electron Gamemaster
Kay Ewbank, Mike James & S.M. Gee

Programs structured so that each procedure, or module, performs a distinct task, allowing variations on the "core" program to be substituted. You also learn how to customise your own programs, improving your programming skills along the way.

Granada **Our price $20.30. Save $1.65**

Adventure Games for the Electron
A.J. Bradbury

Numerous examples and ready-to-run program modules in a book which lets you in on the secrets of professional games programming. Takes you through the whole process of writing an adventure, with a chapter on the type of instructions you are most likely to need. All programs in MODE 6 unless otherwise stated.

Granada **Our price $25.85. Save $2.10**

Apple

Getting Started With ProDos
B.M. Peake & D. Rorke

Aimed at Apple II and IIe users, this is needed for someone familiar with the existing Apple DOS 3 3 systems. Comprehensive guide to ProDos, with exercises for practice. Reference section goes over commands and comments on their use, and there is a discussion on the advantages and disadvantages of the system. A list for further references is included.

Bluewater Press **Our price $6.45. Save 50 cents**

Applesoft BASIC: A Teach-Yourself Introduction — B.M. Peake

Second edition revised to cover the Apple II Plus and IIe. A manual for New Zealanders to learn BASIC with the Apple, instead of picking information from two or three sources includes model answers. Enquiries for class sets welcome.

McIndoe **Our price $12.90. Save $1.05**

Fun, Games & Graphics for the Apple II, IIe & IIc. — Paul Garrison

Collection of more than 75 ready-to-run programs which you can use, study, modify, combine and experiment with. Complete listings written in standard Applesoft BASIC and CP M-Supported BASIC-80, and explanations. More than 20 financial and record keeping programs, and a wealth of graphics and education programs, a word processing organ and some small-scale database programs.

TAB **Our price $39.75. Save $3.20**

Ken Uston's Illustrated Guide to the Apple IIe

No-nonsense illustrations which allow the reader to master any application without reading the whole book. Self defined chapters deal with buying a computer, which Apple IIe components to buy, how to create a database, word process and perform spreadsheet calculations, how to tap into electronic information services, how to do fundamental BASIC programming, video games.

Prentice-Hall **Our price $35.95. Save $2.95**

Applied Apple Graphics — Pip Forer

Step-by-step introduction to graphics and their applications using BASIC. Suitable for Apple II, IIe and II-Plus. Covers hardware and software enhancements as solutions to graphic problems, in particular, reviewing the software utilities that can make BASIC programming pointless in some cases. Special disk, with 30 programs and 24 other files, is needed to understand many parts of the book.

Prentice-hall **Our price $66.75 (includes disk) Save $5.40**

The Apple House — John Blankenship

Explains how to compose your Apple to control your house security, lights, heat, telephone etc. This system allows the house to accept verbal commands and respond with its own voice. Shows how to build some items from scratch, and how to use some of the equipment you already own.

Prentice-Hall **Our price $41.50. Save $3.35**

Commodore 64

Cracking the Code on the Commodore 64
John P. Gibbons

Introduction to 6510 instruction set and how to combine the elements of machine code into commercial-style speed. Full machine code monitor with 14 commands gives you the tools to interface with the 64's architecture. Learn good programming practice and trade tricks while using the sprite, sound and hi-res graphics, and get to grips with the interrupt handling for multiple sprites and smooth screen scrolls.

Pan **Our price $24.95. Save $2.00**

Getting the Most From Your Commodore 64
Simon Potter

Uses diagrams, colour photographs, programs and examples to introduce you to the machine. Moves from starting through writing programs to graphics and sound, printers, disks, and extras and troubleshooting.

Penguin **Our price $12.90. Save$1.05**

First Steps in Machine Code on Your C64
Ross Symons

Clear concise explanation of machine code — introduction to the disassembler and its use; instructions for the 6510 chip with the aid of a demonstration program; discussion of the kernal operating system and its applications such as printing, input/output devices and scanning the keyboard. Two complete machine code games show you how to create your own high speed, animated arcade-like games.

Corgi **Our price $12.00. Save 95 cents**

Data handling on the Commodore 64 Made easy
James Gatenby

Data processing — sorting raw facts to produce useful information — can be just as rewarding as playing games. Explains how to use the Commodore 64 to process information for the home and small business. Uses straightforward examples to demonstrate storage of large quantities of data, attractive and readable on-screen display, and searching and print-outs.

Granada **Our price $20.30. Save $1.65**

Commodore 64: Basic Programs in Minutes
Stanley R. Trost

Collection of versatile, ready-to-enter programs for more than 65 home and business tasks on the Commodore 64. Programs for home finances, business calculations, real estate, data analysis record keeping and education. No knowledge of BASIC programming needed to use programs which can be entered and ready to run in less than 10 minutes.

Sybex **Our price $37.30. Save $3.05**

The Commodore 64 Experience
Mike Dean Klein

The many and varied uses of a home computer .. programs for the home (recipes, shopping, phone books, kitchen metrics, budgeting); education programs (maths, geography, spelling, languages, graphics); entertainment programs, business programs (appointments, cash flow, interest, cheque books, inventory); utility programs (sprite creation, charater design, memory loader, saver and clear, disk menu ideas). All programs can be modified.

Reston **Our price $31.80. Save $2.60**

The BASIC Explorer for the Commodore 64
Lee Berman & Ken Leonard

Combination of suspense novel and instructional text, it teaches introductory programming in BASIC. Elements of Commodore 64 BASIC and the thought processes that go into designing a computer program to solve a problem are introduced through the adventures of three modern-day explorers.

Osborne/McGraw-Hill **Our price $29.95. Save $2.40**

Commodore 64 Machine Language Tutorial
Paul Blair

Gets to grips with the intricacies of machine language programming, helping to overcome the demanding exacting and sometimes exasperating requirements. But master it and tasks such as sorting, searching and some graphics become much quicker. Judicious use of machine language also allows you to use larger and more complex programs. Demonstration program provided, with examples of short machine language routines.

Holt-Saunders **Our price: Book & disk $53.20. Save $4.30 Book & cassette $50.85. Save $4.10**

(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 $e[7m$n1g$e[m

(HINT — ANSI escape sequences can also be used.)

The MBC 550/555 uses a Standard Apple Compatible Joystick although be wary, 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.

For Sale Macintosh software. The latest available! All with original manuals & disks. Private sale. Once only offer, only one of each available:

Microsoft Word — Latest version! Mac's No. 1 Utility program. Backs up protected disks. Disk & File utilities. Transfers protected software to hard disk. $123.00 retail. Only $79.00

Click Art Effects — New, enhanced set of graphic tools to use while in Macpaint. Lets you rotate, slant, distort, add perspective to any graphic. Installs on Macpaint tools menu. $125.00 retail. Only $59.00

Mac the Knife V.2 — Disk full of superb fonts for installing into any Mac program — Word, Paint etc. 26 new fonts. $99.00 retail. Only $49.00

Sargon II — Ultimate chess program for the Mac. Considered the best computer chess program yet! $189.00 retail. Only $89.00

Mind Prober — Allows you to obtain personality report on someone you know. Answer personality questions & Prober prints out detailed analysis to let you see person as they really are! $275.00 retail. Only $139.00

Management Edge — Business personality software. Gives you, the Manager, an insight on any employee. Advises how best to handle person, where problem areas may occur. Covers motivation, communication, performance, discipline methods best used on subject. So indepth that you have to enter your own personality traits also. $575.00 retail. Only $289.00

The Desk Organiser — Turns Mac into complete desk management system. Files, writes & prints, dials telephone, alarms to remind appointments. Much more. $495.00 retail. Only $279.00

Megaform — For 512k Mac. Powerful database management with graphics. Allows on screen design of high quality business forms (invoices, orders etc). Once form made, can be filled in by staff, on screen to calculate & print. $595.00 retail. Only $289.00

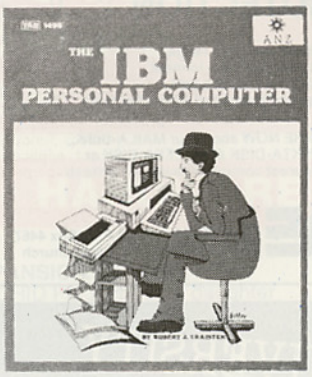
Contact:
Neville Chun
P.O. Box 44-014 V.I.C., Lower Hutt
92 Epuni St, Lower Hutt, Wgtn.
Phone (04) 699-803 Bus. Hours only.

Four channel statistical multiplexors (4). Micom M824. 12 months old. $2,200 each or $8,000 for the lot. Offers welcome. Contact: Rob McCorkindale. Ph: (09) 395-561 Ext. 824.

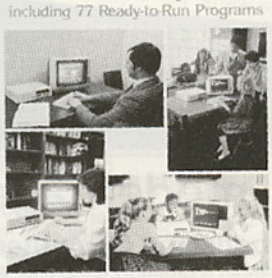
Business people -
Get professional sales and support from Kapiti Coast's Computer Specialists.
Authorised SANYO and commodore Dealer

KAPITI
Independent Business Machines Limited
Beach Chambers, Seaview Rd,
Paraparaumu Beach. Tel: 88-277
Open Mon. to Sat. -9am 5pm

Books for your *IBM PC.*



THE *IBM PC*
$37.50
★ background information on development
★ practical data on all applications, peripheral equipment and programming techniques
★ detailed instructions
★ reviews and previews of software

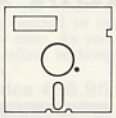


USING AND PROGRAMMING THE *IBM PCjnr.*
$37.75
★ a wealth of invaluable information on the new *PCjnr*
★ step by step programming
★ programming insights and technical background
★ valuable subroutines

Distributed by REED METHUEN

Classified Advertisements

COMPUTER DISK PROTECTION



We offer a complete range of low cost products to meet all your needs for the safe storage and mailing of computer disks.

ENQUIRE NOW about our MAILA-DISK, PROTEKTA-DISK and KEEPA-DISK at your nearest computer dealer, or write to . . .

QUANTUM ENTERPRISES P.O. Box 4467 Christchurch

WANTED: System-80 Expansion Unit. Write "Expansion", P.O. Box 9080, Wellington.

SYSTEM 80 48k with B/W Monitor, Manuals, Books & Software. $400 ono. Dennis (09) 8367583.

WANTED: To swap or sell C64 software. Many titles!— Blue Max, Zork III, Easy Script etc. (Disc Only). Write: Nigel Keenan, 22RD Peel Forest, Geraldine.

Apple IIe for sale, disk drive, screen. Phone 741-245 or write to 65 Russell Street Dunedin. Price $3,400 negotiable.

WANTED: Information on building RS232 interface for 2X81: Listings etc for terminal progs for C-64 comp. All disks/cassettes will be returned. Pete Boyce, 4 Willow Street, Ashburton. Phone: 83664.

Sinclair Zx81 16k ram keyboard overlay books manual cords & tapes. Only $90 ono. R. Meiklejohn: (09) 2766235.

TRS80/SYSTEM 80: Cassette users. Fed up with slow loading & can't afford disc? Stringy-floppy available plus manuals wafers & utilities. $400 ono. Dennis (09) 8367583.

PUNTERS: Take the guesswork out of betting with the 'Unfair Advantage" thoroughbred race selection program for 16/48k Spectrum. Print-out option. Send cheque or P. Order for $14.95 to G. Kearney, Coulter Road, R.D.1., Henderson, Auckland.

UNIVERSITY BOOK SHOP

Specialists in COMPUTER BOOKS

Over 1000 titles in stock

PHONE OR WRITE VISA BANKCARD

STUDENT UNION BUILDING
34 PRINCES ST AND 19 HIGH ST
AUCKLAND 1
TELEPHONE 771 869

AMSTRAD and SEGA
from
The Home Mail Shop
PO Box 134, 40 Harris Street, Waimate.
Send three 25cent stamps for catalogue.

modernage **instruments limited**

Robotic and Computer Interfacing Specialists

We stock a range of robot kits, arm mechanisms, interfaces for data acquisition and control, transducers, vision cameras, and speech recognition systems for many computers.

UNILAB® COMMOTION COMPUTER OPERATED MOTION fischertechnik

For further information write to:
modernage **instruments limited** P.O. Box 31-096 Christchurch

VALUE FOR MONEY

If that's what you're after (and who isn't?), then call us — **ANYTIME!** (24hr phone)
We only stock those computers which offer you the best value your dollars can buy, backed up by many years of experience in this specialised market.

OUR RANGE CURRENTLY INCLUDES:

AMSTRAD ATARI CAT CORONA

KANE AGENCIES LTD 304A HARDY ST. Ph (054) 84-066 P.O. BOX 710 NELSON

Orders supplied nationwide – FREIGHT FREE. Visa, Bankcard Accepted.

Advertisers

	Page
Amstrad/Grandstand	2,3
Ashby Computer Centre	35
AVM	62
AWA	61
Barsons Computers	20,21
Barsons jComputers	27
Business Electronics	9
CDL	4
Christchurch Show	20
Commodore Computer	16
Commodore Computer	63
Compumedia (maxell)	47
Compumedia (supplies)	77
Computer Experience	48
Computer Games Rentals	9
Computers for people	9,79
Computex	46
Concord Communication	79
Corvus	36
Dean Graw	24
Dick Smith	18
Fountain News	28,29
Grandstand Leisure	15
Genisis Systems	34
EC Gough	74
Hi Tech Micro	Back Cover
Holt Saunders	79
Home Mail	86
IBM	6
James Electronics	8
Kane Agencies	86
Kapiti Business Systems	85
SD Mandeno	68
MCP Applications	87
MEC	30
MEC	58
Melco Sales	11
Microbee	66
Micro Software Hire Club	70
Micro Style	17
Micro Ware	36
Mitsui	18
ML Systems	33
Modenage	86
Molymerx	14
Monaco/Atari	42
NCR	41
NZ Post Office	Front cover
Office Electronics	55
Parsonage Electronics	54
P C Power	13
Pitmans	80
Quantum Enterprises	86
Racal Milgo	56
Reed Methuen	85
Sanyo	57
Silkwood Furniture	32
Southmark Electronics	22
Supatech	71
University Book Club	86
Verbatim	12
Warburton Franki	52
Warburton Franki	53
Whitehall Books	76
Xidex Flexible Disks	37
3M	13

"WHY PAY MORE"
COMPARE THESE PRICES
MC-P APPLICATIONS
Brings Software & Hardware At Unbeatable Prices

SOFTWARE

SPREADSHEETS

Multiplan	$ 526
Open Access	$1244
Lotus 1-2-3	$ 995
Symphony	$1732

DATABASES

Friday	$ 495
Quickcode	$ 575
dBase II	$ 870
Condor 3	$1165
Knowledge Man	$1175
dBase III	$ *
Revelation	$1600

WORD PROCESSORS

P.F.S. Write	$ 355
Wordstar	$ 561
Microsoft Word	$ 933
MultiMate	$1227

UTILITY

Peter Norton Utility	$ 280
Sideways	$ 155

COMMUNICATIONS

PC Intercom	$ 371
Crosstalk	$ 419
HP VDte 2	$ 524

TRAINING

MultiMate Training	$ 195
dBase II Training	$ 175
Advanced Lotus 1-2-3	$ 191

Monthly Specials

LOTUS 1-2-3 with CDex Training $1026

***dBASE III $1107**

Value Paks

IBM PCG	CALL
IBM PC XT	CALL
IBM PC AT	CALL

Fully configured 10Mb 704K System with Graphics and Database $11,135

Call for Hardware & Software Prices Not Listed in this Ad

Dealer Inquiries Welcomed

HARDWARE

EXPANSION CARDS

ORCHID PC Turbo incl. daughter board – gives 640K in one slot	$2463.00
ORCHID Blossom Multifunction card	$ 937.00
AST 6PakPlus Multifunction card	$ 966.00
512K Memory Card	$ 480.00
Comway Piggy back Plus	$ 520.00
Comway Serial Plus	$ 115.00

MEMORY

64K Memory Upgrades	$ 55.00
256K Memory Upgrades	$ 260.00
8087-3 Co Processor	$ 610.00
80 287 Co Processor (For AT)	$ 975.00

COMMUNICATIONS

AST 5251/11 Local	$2975.00
AST S.N.A.	$2195.00
CXI 3278/79 Coaxial Modem	$2842.00
IRMA	$3166.00
IRMAPRINT	$3300.00

GRAPHICS

Comway Mono Graphics	$ 955.00
Hercules Mono Graphics	$1200.00
Col-Mon Colour Graphics Adapter	$ 171.00
Comtronics Mono/Colour Combo Card	$ 957.00
Comway Colour Graphics	$ 664.00
Short Colour Card	$ 714.00

DISK DRIVES

Tandon Disk Drive 360K	$ 529.00
10Mb Internal Drive	$2723.00
20Mb External incl. back-up	$7357.00

NETWORKING

Santa Clara PC Terminal 256K	$4263.00
Diskless Boot Prom	$ 259.00
Blossom Network Expansion	$ 937.00
PC-Net Starter Kit	$2943.00
PC-Terminal Starter Kit	$1352.00
Novell Netware Operating System	$3445.00

SCREENS

Taxan Colour with graphics board	$2754.00
Microvitec High Resolution Colour graphics	$2279.00

MC-P Applications

First Floor 10 O'Connell Street
P.O. Box 5056 Wellesley Street
AUCKLAND
Telephone (09) 34-545

PRICES: Subject to Change
TERMS: Nett Cash 7 days from receipt of goods
DELIVERY COSTS: Extra

Compatible Kaypro.
So easy to get along with.

KAYPRO 16

Compatibility. It's half the secret of business success. Getting along with people, getting on with the job. Kaypro 16 gets right into it, using a powerful 16 bit CPU to run the vast IBM software library. Which is more than enough to get on with for most people.

The rugged Kaypro 16 features a 10MB hard disk drive, storing nearly 5000 pages of text, plus a fully compatible 360K floppy disk drive. So you've got a back-up for the hard disk or a way to run additional software.

The Kaypro 16 also features a detachable keyboard with numeric keypad for easy entry of statistical data.

Kaypro 16 is ready now. Complete with business and personal software packages already on hard disk. All for only $8749. Getting on with the price is easy too!

KAYPRO 10

Powerful 8 Bit business computer with 64K RAM running CP/M. With 10MB hard disk drive and 400K floppy. Priced at $6395 including free software.

KAYPRO 2X

Specifications as for Kaypro 10 but using dual 400K floppy disk drives. Priced at $4560 including free software.

KAYPRO®

ALL KAYPRO PRODUCTS ARE BACKED BY OUR NATIONWIDE DEALER AND SERVICE NETWORK.

HITEC MICRO LTD.
91 Customs St E.
Auckland
Phone (09) 399-183

BRIDGEMAN COMPUTING LTD
P.O. Box 3105
New Plymouth
Phone (067) 82-770

COMPUTER CONNECTION
18 Dalton Street
Napier
Phone (070) 51-965

COMPUTERS FOR PEOPLE
35 Taranaki Street
Wellington
Phone (04) 847-668

KNIGHT SYSTEMS LTD
510 Grey Street
Hamilton
Phone (071) 80-666

POWER CORP CENTRES LTD
P.O. Box 365
Tauranga
Phone (075) 81-009

PROFESSIONAL ENGINEERING LTD
P.O. Box 19
Rarotonga

ABACUS THE MICROSHOP
Shades Arcade
P.O. Box 346
Christchurch
Phone (03) 794-339

VAN MELLAERTS COMPUTERS
Box 632
Palmerston North
Phone (063) 258-662

MACH 0392