

NEW ZEALAND'S PERSONAL COMPUTER MAGAZINE

BITS & BYTES

July 1985: \$2.00

COMMODORE TAKES ON IBM: *THE PC10 REVIEWED*



More byte for Apple

Printer Roundup — Part II
A Star review for the SG10

Networking

Machine Language

Columns for popular micros

Wellington Computer Show Catalogue
inside this issue

The computer system that won't give you any arguments at home.

\$995

Computer complete with green screen VDU (GT64).

\$1395

Computer complete with colour monitor (CTM640).

CPC464
complete
with
monitor
and
datacorder



It's eight in the evening. The weekly soap is about to start on the box. And you're in the middle of a program.

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The new CPC464 gets round the problem very neatly.

It comes complete with its own colour monitor or green screen VDU. Yet it costs around half the price of a comparable home micro system.

That's not all. As well as the monitor, the CPC464 includes a built-in cassette data recorder, 64K of RAM (42K available), 32K of ROM, typewriter style keyboard and a very fast extended BASIC.

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64K RAM

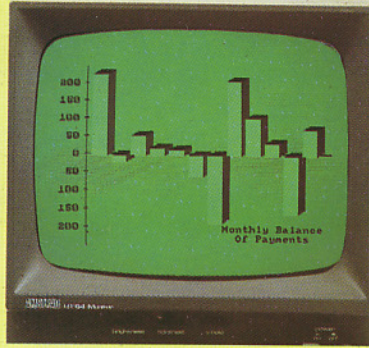
With 64K of RAM there's plenty of room for sophisticated and complex programs.

Over 42K is available to users, thanks to the implementation of ROM overlay techniques. Dollar for dollar, other micros simply can't match the CPC464's memory.

Green screen VDU

Perfect for data management, high resolution screen, 80 column display and up to 8 text windows.

An optional power supply modulator (MP-1) is available for use with a colour TV.



CPC464 green screen VDU (GT64)

Amsoft. Exciting software range.

Video games, educational programs and business applications are all designed to utilise the CPC464's impressive graphics, sound and processing abilities.

A rapidly expanding range of programs is already available. High quality software that takes advantage of the CPC464's high specification and speed-loading capability. Which means even complex programs can be loaded quickly.



YES

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* Trade mark Digital Research

GRANDSTAND AMSTRAD



When you bought your computer, was this what you had in mind?

A personal computer is a great idea . . . when you're out on your own.

It's an ideal time and money saving tool for a small business.

But if you want to broaden your horizon and expand to become a medium or large size operation, you're going to need a computer that can grow with you.

Years ago having a computer meant a massive investment in equipment that could take up to 3000 cubic feet of space and weigh anything up to 30 tonnes.

The introduction of the micro processor has certainly lightened that load.

Today a single micro chip contains the same amount of computing capacity as one of those monster powerhouses.

This is where the chip has made its greatest contribution. It has brought computing power within everyone's reach.

Information should be shared.

Information is made to go around. So the computer that cannot communicate with other computers is the break in the chain.

Networking is the missing link.

Since 1978 ICL has fully committed itself to the development of networked computer systems that talk and work together successfully.

Networking is an inexpensive method of improving office efficiency and productivity.

The ICL Personal Computer:

The ICL Personal Computer was designed from scratch, to be a professional business machine.

It is not a toy that has been stretched.

It has been given the power, so that

one person can run up to three tasks at the same time. This means you get the equivalent of three separate computer screens each handling different information, available on your screen at the push of a key.

Network (net'werk) a chain of interconnected persons or operations.

Talking to each other is as important for computers as it is for people.

For computers this sharing process is known as networking.

It allows information and brain power to be shared, so that a group can accomplish far more than an individual working alone.

Only ICL has committed itself to designing products that talk and work with each other, and with the products of other manufacturers.

But this is only the beginning of the story.

The ICL Personal Computer is so powerful that it can give this ability to four separate users, each with their own screen and keyboard.

And that's potentially twelve separate jobs running at the same time.

That's pretty amazing for a personal computer.

A great range of software.

Hardware, the actual computer and its accessories, is only half of a computer system.

To get it to do anything useful the computer must be given a set of instructions that tell it exactly what to do.

These instructions are called programs or software, and they are at least as important as the nuts and bolts of the system.

There is a wide range of quality software for every business need available for the ICL Personal Computer.

ICL Trader Point can help you.

Buying a computer is certainly not as straight-forward as buying a stereo, video or a car.

It's okay scanning computer ads and talking to friends about their machines.

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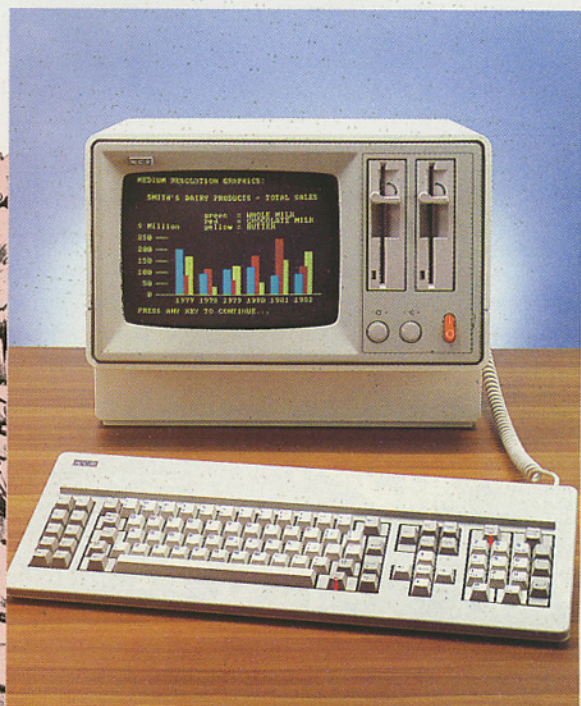
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BITS & BYTES

July, 1985 Vol. 3, No. 10

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FEATURES

Printer roundup

Shayne Doyle completes his printer roundup with a survey of more dot matrix and daisywheel printers.

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Hardware reviews

The fully IBM PC/XT-compatible PC10 is the latest in Commodore's new stable. Shayne Doyle sees how it fits into the team pattern.

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An Auckland company has come up with the Innova Drive which offers 800 Kbytes of storage for the Apple II-Plus and IIe. Alex and Fred Wong are enthusiastic about it. Read why.

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Shayne Doyle reckons the "SG" in the new Star SG10 printer stands for "Super Gemini". He puts his case.

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Communications

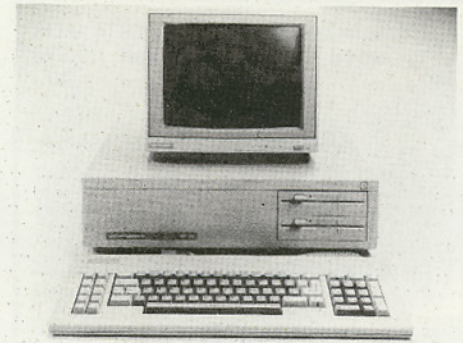
Daryll Roots concludes his introduction to networking by looking at layouts and the needs of the larger user.

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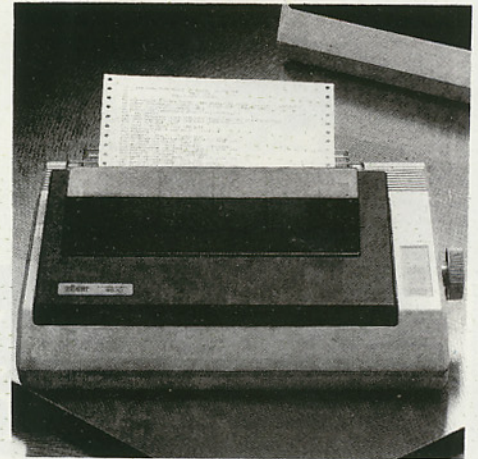
Osborne software message

Industry guru Adam Osborne as guest speaker at the first New Zealand microcomputer dinner and software awards at PC85 in Auckland. And he had a strong message for the software industry. Adam delivers.

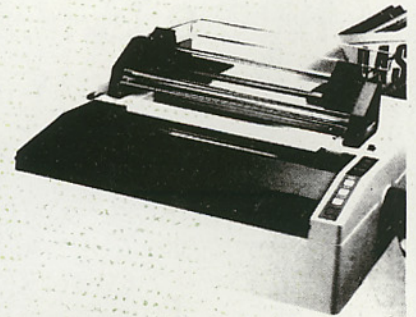
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Sega: The art of driving disks. Dick Williams shares his secrets.

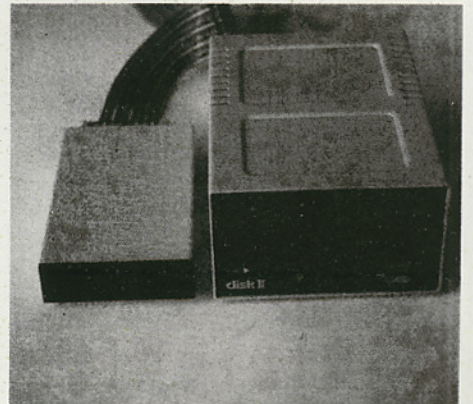
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New products at Wellington show

A number of new computers will receive their first New Zealand "airing" at a much enlarged Wellington Computer Show from July 11-13.

More than twice the size of last year's inaugural event, the show has attracted more than 30 exhibitors who will display a wide range of personal computers and related equipment, in the Overseas Passenger Terminal.

Among the new computers on display will be Commodore's IBM compatible PC-10 (also reviewed in this issue), Hewlett Packard's Touchscreen II, the Amstrad CPC 664, new Bondwell models and a new range from Einstein Scientific. Other exhibitor and show details can be found in the exhibition catalogue in the centre of the magazine.

New software will be launched at the show. Dispersal Data Network Consultants (DDNC) will introduce several packages, including Fabric

for clothing manufacturers and Jem for manufacturing jewellers.

And Microware NZ Ltd will reveal its ZX Spectrum upgrade series - Open Discovery 1 (a comprehensive single sided, 40 track disk system with 140 Kbyte capacity); Discovery Plus (a Spectrum upgrade) and Discovery 2 (with two 3.5in disk drives).

PC networking will also be demonstrated on at least two stands.

Every show visitor who fills out a registration form will automatically be in the draw for an Apple IIe Professional computer system valued at \$3995. Supplied by Andas Centres, the system includes dual disk drives, green screen monitor and the Appleworks integrated program.

A series of seminars will be run from 10am to 7pm daily

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Videotex on the move

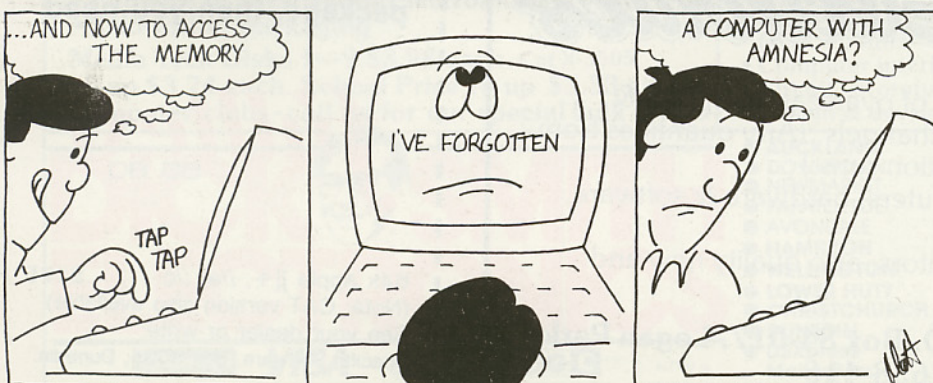
Progress has been made on the establishment of a *Bits & Bytes* videotex service aimed at microcomputer users.

We intend to announce details of a pilot service in next month's issue. Indeed, parts of the service may be on display on the Bits & Bytes stand at the Wellington Computer Show.

We want to ensure the service is as "user-friendly" as possible before going public and we are working on the technical aspects to achieve this.

MICRO MOMENTS

BY MATT KILLIP



A week of it

Information Technology Week, from August 17-25, will coincide with the silver jubilee celebrations of the New Zealand Computer Society.

The week is a joint activity organised by the society and the New Zealand Technology Advancement Trust which was launched last year by the prime minister, David

Lange.

According to society president Colin Boswell, both organisations recognise the vital part information technology will play in New Zealand's future.

"It is important our industries are made aware of the benefits of using

information technology in their business ventures," he said. "Unless we take advantage of its possibilities, New Zealand's position in the competitive world will be seriously eroded."

The week's programme includes public demonstrations, exhibitions of computers and open days where the public can see examples of advanced technology in use.

Leaders in the field of information technology will visit schools and business gatherings to develop awareness of the field.

Other major organisations supporting the project include the Computer and Office Products Industry Federation, the New Zealand Computing Services Association, the National Electronics Development Association, the Department of Education, the New Zealand Post Office and the Department of Scientific and Industrial Research.

Poly in a big way



Teacher Mrs L. Slater-Hayes introduces Brendan Ashton (seated), Dean James, Thomas Cox, Richard Stephens and Michael Hakaraia to the new Poly 2.

The Rotorua High Schools' Board is buying 24 Poly 2 micros and four Proteus network controllers from Progeni.

The board now has 70 Polys, 15 disk drives and an extensive range of software for its four schools.

The half million dollar investment in computers was funded from income derived from the board's Ngati Whakaue endowment - a large

block of commercial land in the centre of Rotorua endowed at the turn of the century by the Ngati Whakaue people for the benefit of secondary school education in Rotorua.

Board secretary Tony Bambery says the investment has given the board a unique opportunity to put teachers and pupils first in terms of education, personal development and administration.

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Faster loading for C64

A cartridge that loads disks two to five times faster has been released here for the Commodore 64 by Blackwood Gayle (P.O. Box 28-358, Auckland).

Called Fast Load, the cartridge will be a relief for those Commodore 64 owners rapidly losing patience with the slow 1541 disk drive.

The cartridge, plugged permanently into the C-64's cartridge slot, works with most (if not all) commercial software and also provides copying, editing and other disk-handling functions. Fast Load will retail here for \$84.95.

If you want the complete word-processing system for your Apple with Mail-merge and NZ Spelling Checker all in the one package, then you need

fulltext
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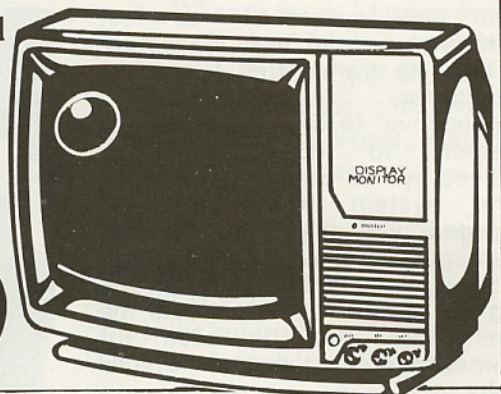
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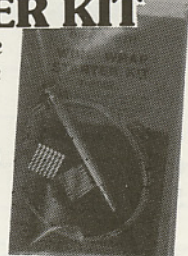
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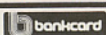
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TAB backs a winner

A network of computer printers round the country is making life easier for TAB patrons and employees.

The Centronics printers, installed by STC Data Products, allow instantaneous transmission of racing information from racing clubs to TAB headquarters in Wellington, then out to TAB offices round New Zealand.

The old manual system, which it replaces, used to take two days to complete race lists, according to TAB projects officer Richard Ellerington.

The new system is so fast scratchings can be included before the lists are transmitted from TAB headquarters.

Changeover to the new system is expected to be substantially achieved by mid-year.

The system which can be expanded, will eventually transmit information such as lists of jockeys or drivers, trainers, barrier draws and weights. Mr Ellerington expects the system will also be used for automatic production of official results.



Christine Patete, assistant manager of the TAB Lambton Quay branch Wellington, receives the racelist from the Centronics print station.

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Dick Spender (standing on your left) has just bought the IBM* PC for \$7,995.

Whereas Sandy MacKenzie (the gent on your right) has bought the new Commodore PC10 for just \$5,695.

Mr MacKenzie, a man known for not mincing his words, said "Yer Commodore PC does everythin' ya IBM* does."


He went on to say "Did ya not know they both use yer same operatin' system (MS/DOS). So they both run exactly the same software" (Lotus 1-2-3, Wordstar, Symphony, d Base III — in fact all the popular software).

"And did ya not know both can be networked, and interfaced with yer IBM* mainframes."

"So let's get one thing perfectly straight, sonny. \$2,300 is \$2,300."

If you agree with Sandy's thinking, return this coupon for full details on the new Commodore Business PC, and the name of the Commodore Dealer nearest you.

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CMP 28

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IBM-compatible Kaypro

Kaypro, one of the most successful portable computer manufacturers in the world, has joined the IBM PC compatibility bandwagon with its new Kaypro 16 Model.

The Kaypro 16 uses the Intel 8088 processor and comes with 256K of RAM, a 10 megabyte hard drive, 360K floppy drive and free software (WordStar, CalcStar, InfoStar,

communications software and three versions of BASIC) for \$8749.

A twin floppy disk drive version is also available for \$6495.

The New Zealand agent, Hitec Micro (P.O. Box 1978, Auckland) says Kaypro is continuing to manufacture and support its well established line of eight-bit CP/M models.

To emphasise this, Hitec has just

announced a "new" Kaypro 2 at the bottom of the CP/M line. What's new about it is the price tag — expected to be \$1995 for 64K of RAM, one 400K floppy disk drive and WordStar and Microsoft BASIC.

In the pipeline from Kaypro are the Kaypro 18 which uses the 8186 processor and the Kaypro 2000, a lap computer similar to the Data General One.

New Amstrad

A new Amstrad model, the CPC 664, with a built-in 3in disk drive is due for release in New Zealand this month.

With a green monitor, the CPC 664 will retail for \$1495, and with a colour monitor, for \$1895, according to the New Zealand agent, Grandstand Leisure (P.O. Box 2353, Auckland).

Also supplied with the CPC 664 are CP/M and LOGO on a disk. Ports for a Centronics parallel printer, second disk drive and cassette recorder are built in.

Grandstand says the CPC 664 has a "beefed up" BASIC but runs all the existing software for the Amstrad CPC 464.

A package of business programs, including GST, will shortly be released for the CPC 664.

Meanwhile, Grandstand reports that the Amstrad CPC 464 is selling extremely well with the initial shipment now sold out.

TANDY COMPUTERS DISCOUNTED!

MOLYMERX MAIL-ORDER PRICES and TANDY Computers
The best combination in New Zealand

| Model Computer | Retail Price | MOLYMERX COMPUTING MAIL-ORDER PRICE | DOLLARS SAVED |
|--|--|---|---|
| TANDY 1000 IBM PC Clone 128K RAM 1" 360K Disk Drive Expandable to 640K and Hard Disk Dr IBM "extras" such as parallel printer port, Colour graphics, mono. adapter, are supplied FREE as is MSDOS & GW BASIC MOLYMERX supplies FREE- a useful INTEGRATED SOFTWARE package | \$4195.00 | \$3580.00 | \$615.00 |
| Model 1000 — 2 Drives Green/Amber Mon | \$4610.00 \$380.00 | \$4195.00 \$ 279.00 | \$515.00 \$ 83.00 |
| TANDY 1200 IBM XT Clone 10 Meg Hard Disk + 1" 360K Fl. Disk | \$9085.00 | \$8290.00 | \$795.00 |
| TANDY 2000 The state of the art! 8Mhz 80186 MSDOS computer 2" Disk Dr 10 Meg Hard Disk Built-in | \$7690.00 \$12,810.00 | \$ 7080.00 \$11,473.00 | \$610.00 Save an astonishing \$1337.00 |
| TANDY 100 (Portable Perfection) 8K 24K | \$1690.00 \$2100.00 | \$1280.00 \$1690.00 | \$410.00 \$410.00 |

SOFTWARE AVAILABLE from MOLYMERX COMPUTING

OPEN ACCESS, LOTUS 123, MULTIPLAN, MULTIMATE, pls SERIES, DB II, DB III, HOME ACCOUNTANT, PC DRAW etc
SYBIZ ACCOUNTING, CHARTER ACCOUNTING, MODEL 100 ROM SOFTWARE
(You'll like our prices for these too)

HOW TO ORDER THESE BARGAINS

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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 eg Model 1000 to Wellington is about \$75. Any delay in dispatch order beyond 24 hours will be notified personally to allow you the option of cancelling your order.

AND WHO THE HELL IS MOLYMERX?

We have been selling Mail order software mainly for Tandy and System 80 computers in New Zealand for 3 years. We have an Australian subsidiary and thousands of well served and satisfied customers in both Australia and New Zealand.

We can offer their AMAZING hardware prices because we have excellent contacts in the USA and England who trust us to act well on their behalf and who can buy in the enormous numbers to allow them to sell to us at prices New Zealanders have only dreamed about until now.

1985 is the year when Sales Tax is down and the goods tax not yet introduced. Buy mail order NOW if you know what you want and demand the best prices. It will never be less expensive!



Tom Meyer (above) has been appointed sales executive for STC Data Products (NZ) Ltd.

His sales and marketing background includes six years with the Porsche organisation in Hong Kong where he first became involved with computers.

He will cover all of New Zealand for STC, offering support for ITT clients through the XTRA IBM compatible PC, Centronics printers and Qume peripheral products.



Carpe Software

"Probably the best value for money Accounting Package designed for NZ conditions, available today"

DEBTORS SYSTEM

MENU OF PROGRAMS

- | | |
|--------------------------------|--------------------------------|
| 1. Reference Entry | 16. Statement Print |
| 2. New Debtor | 17. Sales Analysis Print |
| 3. Modify Debtor | 18. Collection Letter Entry |
| 4. Delete Debtor | 19. Collection Letter Print |
| 5. Invoice Entry | 20. Debtors Listing |
| 6. Credit Note Entry | 21. Mailing Labels |
| 7. Cash Receipts | 22. Column Description Amend. |
| 8. Sales Analysis Entry | 23. Customer Sales Analysis |
| 9. Sales Analysis Update | 24. New Salesman Entry |
| 10. Account Enquiry | 25. Salesman Analysis Amend. |
| 11. Transaction Print Invoices | 26. Salesman Analysis Print |
| 12. Transaction Print Credit | 27. Commission Statement Print |
| 13. Transaction Print Receipts | 28. Journal Entry and Print |
| 14. Trial Balance | 29. Debtors Historical Listing |
| 15. Ageing | 30. Nonactive Debtors Listing |

CREDITORS SYSTEM

MENU OF PROGRAMS

- | | |
|-------------------------------|---------------------------------------|
| 1. Reference Entry | 13. Transaction Print Credit Notes |
| 2. New Creditor | 14. Transaction Print Payments |
| 3. Modify Creditor | 15. Trial Balance |
| 4. Delete Creditor | 16. Remittance Advice Print |
| 5. Invoice Entry | 17. Cheque Print |
| 6. Credit Note Entry | 18. Purchase Analysis Print |
| 7. Cash Payment Entry | 19. Creditors Purchase Analysis Print |
| 8. Auto Cash Payments | 20. Ageing |
| 9. Purchase Analysis Entry | 21. Creditor Listing |
| 10. Purchase Analysis Update | 22. Mailing Listing Labels |
| 11. Account Enquiry | 23. End |
| 12. Transaction Print Invoice | |

GENERAL LEDGER SYSTEM

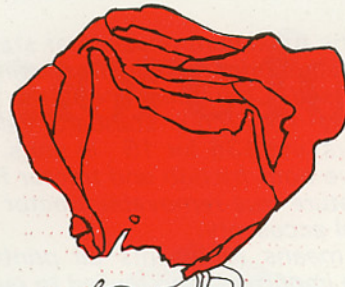
MENU OF PROGRAMS

- | | |
|---------------------------------------|----------------------------------|
| 1. New Chart Create | 11. Transaction Print — Journals |
| 2. Update Chart of Accounts | 12. Private Ledger Enquiry |
| 3. Print Chart of Accounts | 13. Private Ledger Print |
| 4. Budget Entry/Amend. | 14. Trial Balance Print |
| 5. Budget Print | 15. Profit & Loss Print |
| 6. Cash Payments Entry | 16. Balance Sheet |
| 7. Cash Receipts Entry | 17. Monthly Ageing |
| 8. Journal Entry | 18. Yearly Ageing |
| 9. Transaction Print — Cash Payments | 19. Dissection Transfer |
| 10. Transaction Print — Cash Receipts | 20. End |

INVOICING/STOCK SYSTEM

MENU OF PROGRAMS

- | | |
|--------------------------------|-------------------------------|
| 1. New Stock Entry | 13. Stock Variance Report |
| 2. Stock Record Amendment | 14. Stock Take Forms Print |
| 3. Delete/Recover Stock Record | 15. Price List Print |
| 4. Display Stock Record | 16. Re-order Report |
| 5. Order Entry/Invoice Print | 17. Stock Take Update |
| 6. Credit Note Entry/Print | 18. File Condense and Edit. |
| 7. Stock Received Entry | 19. End of Month Update |
| 8. Stock on Order Entry | 20. End of Year Update |
| 9. Stock Take Entry | 21. Sort Stock Records |
| 10. Stock Report | 22. Column Descriptions Amend |
| 11. Sales Analysis Report | 23. End |
| 12. Stock Performance Report | |



Now Available
in
MS-DOS
CP-M

This program
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GST

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Cnr. PARK AVE. and QUEEN ST., OTAHUHU.
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PRINTER ROUND-UP

By Shane Doyle

On re-reading my introduction to last year's printer roundup (June 1984), I realised little can be added to what I wrote then. There has not been much change in the technology, but the trend has been for previously up-market features to creep down the range - apparently by revamping the driving electronics - to give under \$1000 units such goodies as letter quality print mode and IBM PC graphics compatibility.

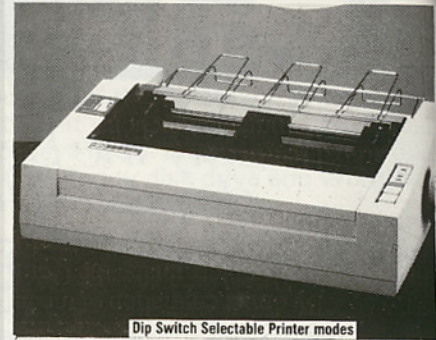
A few notes of clarification of some of the items in each entry may be useful.

Print speed is always the maximum possible at standard 10cpi pica font mode, and this reduces in other print modes, drastically when compressed or double strike modes are used. Characters/line is the maximum available in compressed mode (usually 15-17cpi), standard values at 10cpi are 80 characters for 10in printers and 136 for 15 in units.

While most printers have both friction and tractor feed capability, few of the lower priced units feature true removable tractor feeders, and in those cases, there is an optional accessory.

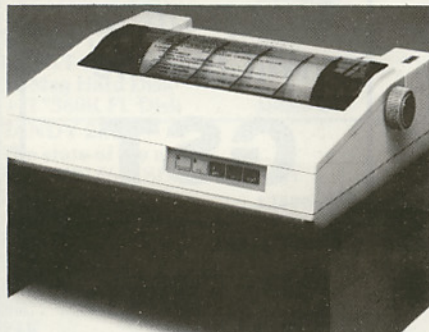
This round-up by no means represents all printers available in New Zealand, but covers those importers who replied to our questionnaire within the requested publication time frame.

Dot matrix — under \$1000



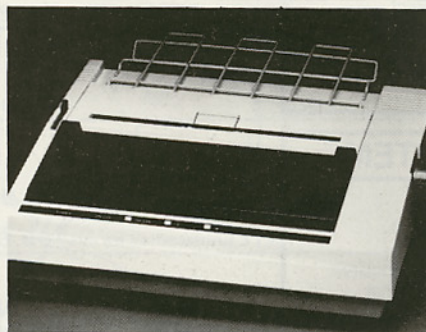
Logitech FT5002

Print speed: 120 cps
 Chars/line: 80 pica; 158 compressed elite
 Paper width: 10in
 Paper feed: Friction/tractor
 Buffer size: 1 Kb
 Ribbon type: Cartridge
 Graphics modes: Yes
 Interface: Parallel centronics
 Features: NLQ.
 IBM compatible.
 Options: RS232 serial interface.
 Retail price: \$945.
 Agent: Warburton Franki



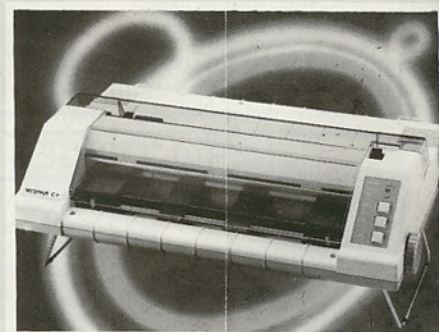
C.Itoh 7500 Series

Print speed: 105cps, 54lpm
 Max. chars/line: 136
 Paper width: 10in
 Paper feed: Friction/tractor
 Buffer size: 1 Kbyte
 Ribbon type: Cassette
 Graphics modes: 640 - 1280 dots/inch
 Interface: Parallel
 Features: Hex dump mode.
 Low cost printer featuring compatibility with the C.Itoh range
 Options: IBM PC (Epson) compatible
 RS232C interface
 Retail price: \$999.
 Agent: Control Micro-computers



Eaglet EP 100 EX

Print speed: 120cps
 Max. chars/line: 80 (pica) 136 (condensed)
 Paper width: 10in
 Paper feed: Adjustable sprocket friction
 Buffer size: 1 Kbyte
 Ribbon type: Cartridge (2,5 million char.)
 Graphics modes: 8 x 480, 8 x 720, 8 x 640 8 x 576, 8 x 960, 8 x 1290
 Interface: 8 bit parallel (Centronics)
 Features: IBM PC compatibility plus (Epson RX80 F/T)
 Options: RS232
 Retail price: \$795
 Agent: Andas Wholesale

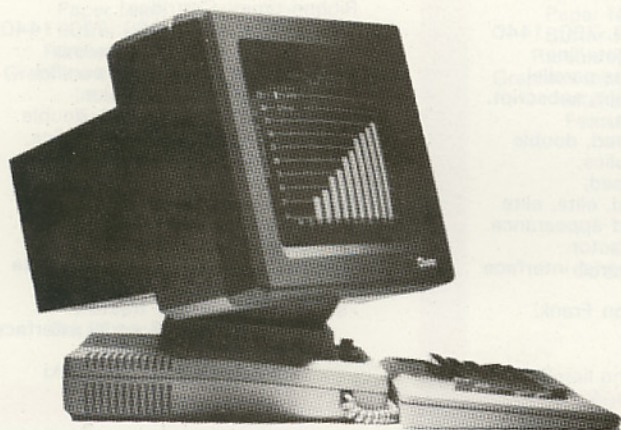


Riteman C+

Print speed: 105 cps
 Chars/line: Pica - 80; compressed - 132
 Paper width: 10in
 Paper feed: Friction/tractor
 Buffer size: 1 line
 Ribbon type: Cartridge
 Graphics modes: 480 or 960
 Interface: Commodore serial bus
 Features: Size, Commodore graphics. Built-in stand.
 Commodore cable supplied.
 Will print on card to 40g/m² because of straight-through paper path.
 Options: NLQ ROM upgrade (P.T.B.A.)
 Retail price: \$795.
 Agent: Warburton Franki

QUME

Quite simply, more for less



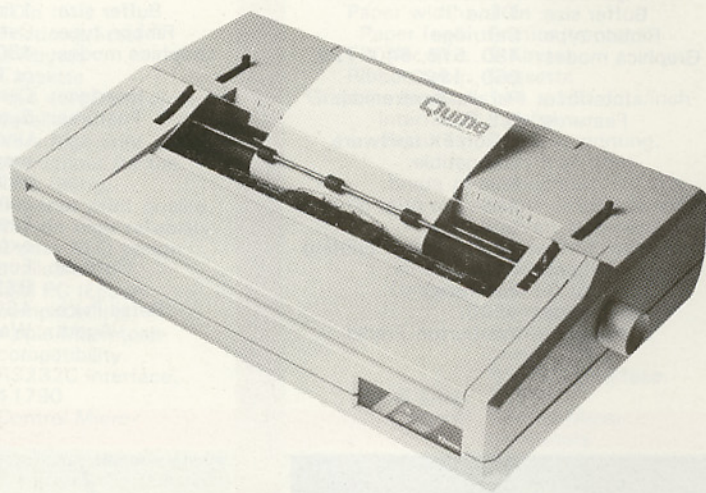
QUME ALPHANUMERIC TERMINALS

By direct emulation of the features of most leading brands of terminals, the Qume meets market requirements for conversational terminals or as part of a multi-user microcomputer system. In addition to direct emulation **the Qume terminals provide many extras as standard features** such as editing keys, user-programmable functions, and memory.

Models immediately available:

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QVT 103 emulation VT 100/, VT 131/
QVT 108 emulation Televideo 912, 920, 925,
QVT 109 Adds Viewpoint

Plus the QVT 211 and 311 mono-chrome graphics terminals, and the QVT 511 colour graphics terminal which meet every need of engineering and business professionals at most attractive prices.



SPRINT LETTER QUALITY PRINTERS

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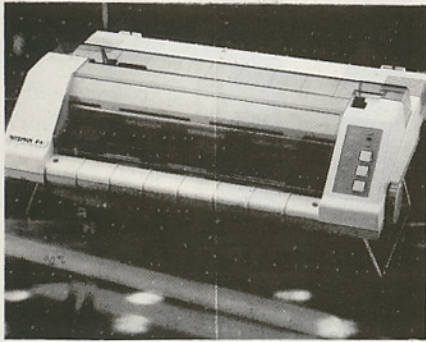
Printers & Terminals

Quite simply, more for less

ITT STC DATA PRODUCTS (NEW ZEALAND) LIMITED
AUCKLAND PH 500-019, WELLINGTON PH 857-985
P O Box 26-064 Auckland, P O Box 40-140 Wellington

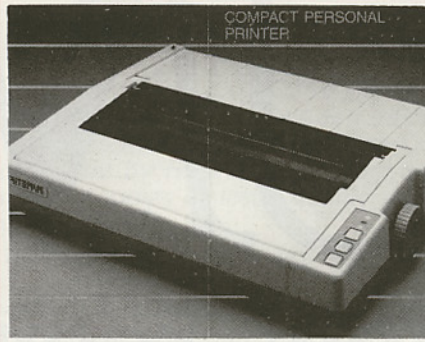
The best ideas are the ideas that help people. **ITT**

PRINTER ROUNDUP



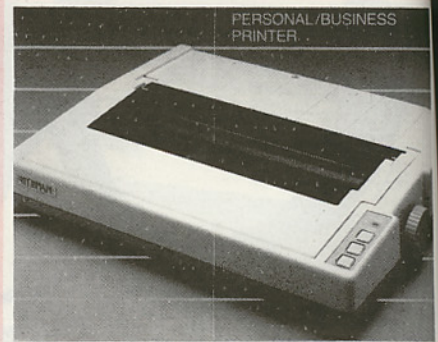
Riteman F+

Print speed: 105 cps
 Chars/line: Pica — 80;
 compressed — 132
 Paper width: 10in
 Paper feed: Friction/tractor
 Buffer size: 1 line
 Ribbon type: Cartridge
 Graphics modes: 480, 576, 640, 720,
 960, 1920
 Interface: Parallel centronics
 Features: N.L.Q.
 Epson FX software
 compatible.
 Built-in stand.
 Ability to print on card
 to 40g/m².
 Ideal for label printing.
 Options: RS232 serial
 interface.
 Retail price: \$895.
 Agent: Warburton Franki



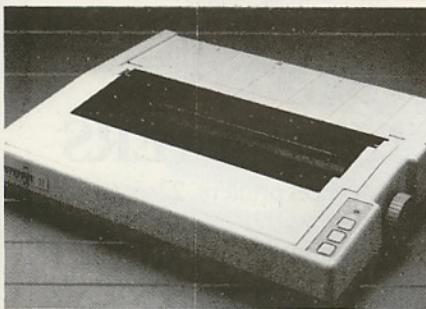
Riteman Plus

Print speed: 120 cps
 Chars/line: Pica — 80;
 compressed — 132
 Paper width: 10in
 Paper feed: Friction/pin/tractor
 Buffer size: 1 line
 Ribbon type: Cartridge
 Graphics modes: 480, 960, 720, 1440
 or 640 dots/line
 Interface: Centronics parallel
 Features: Superscript, subscript.
 Underline,
 emphasised, double
 strike, italics,
 compressed,
 Expanded, elite, elite
 expanded appearance
 Options: Forms tractor.
 RS232 serial interface
 Retail Price: \$695
 Agent: Warburton Franki



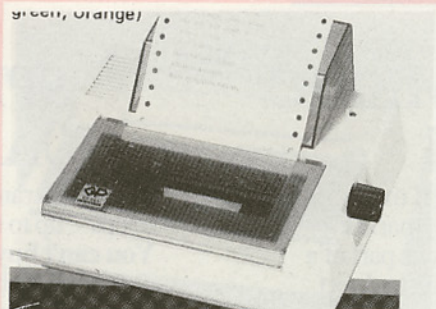
Riteman Blue Plus

Print speed: 140 cps
 Chars/line: Pica — 80;
 compressed — 132
 Paper width: 10in
 Paper feed: Friction/pin
 Buffer size: 1 line
 Ribbon type: Cartridge
 Graphics modes: 480, 960, 720, 1440
 or 640 dots/line
 Interface: Centronics parallel
 Features: Double strike.
 Emphasized, double
 emphasized, italics,
 super scripts and
 subscripts.
 Expanded,
 compressed,
 compressed
 expanded, elite, elite
 expanded.
 Options: Forms tractor.
 RS232 serial interface
 Retail Price: \$745
 Agent: Warburton Franki



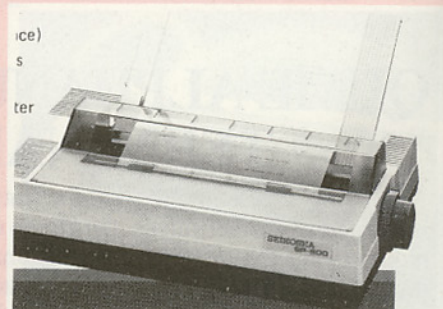
Riteman II

Print speed: 160 cps
 Chars/line: Pica — 80;
 compressed — 132
 Paper width: 10in
 Paper feed: Friction/pin
 Buffer size: 1 line
 Ribbon type: Cartridge
 Graphics modes: 480, 960, 576, 720,
 1440
 Interface: Centronics parallel
 Features: Standard double
 strike.
 Emphasized, double
 emphasized, italics,
 super scripts and
 subscripts.
 Expanded,
 compressed,
 compressed
 expanded, elite, elite
 expanded.
 Options: Forms tractor.
 RS232 serial interface
 NLQ ROM upgrade
 Retail Price: \$899



Seikoshia GP50

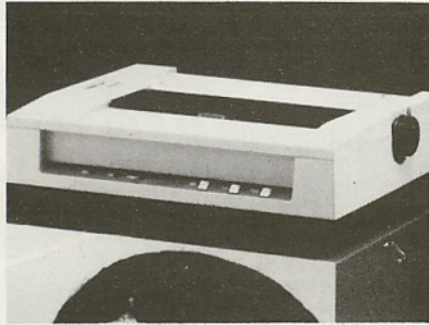
Print speed: 40cps
 Max. chars/Line: 50
 Paper width: 5in
 Paper feed: Friction
 Buffer size:
 Ribbon type: Cassette
 Graphics modes: Block graphics
 Interface: Parallel
 Features: Uses standard 5in roll
 paper.
 Portable — off 12
 volts
 Options: RS232C interface
 Retail price: \$299
 Agent: NZ Peripheral
 Distributors



Seikoshia SP800

Print speed: 92cps
 Max. chars/line: 80 at 10cpi
 Paper width: 10in
 Paper feed: Friction/Pin
 Buffer size: 2K
 Ribbon type: Cassette
 Graphics modes:
 Interface: Parallel
 Features: Bidirectional logic
 seeking.
 Automatic paper load.
 Options:
 Retail price: \$620
 Agent: NZ Peripheral
 Distributors

Dot matrix — \$1000-2000



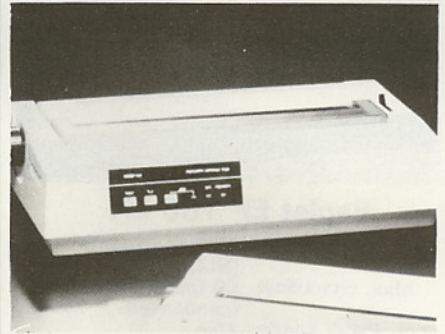
C. Itoh 1550B Series

Print speed: 120cps 45lpm
 Max. chars/line: 231
 Paper width: 15in
 Paper feed: Friction/tractor
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: 144 x 160 dots/inch
 Interface: Parallel
 Features: Very high print throughput for the CPS rating. Superior print quality. Proven high reliability.
 Options: IBM PC (Epson) compatibility
 Apple Macintosh compatibility
 RS232C Interface
 Retail price: \$1990
 Agent: Control Micro-computers



C. Itoh 8510S Series

Print speed: 180cps 106lpm
 Max. chars/Line: 136
 Paper width: 10in
 Paper feed: Friction/tractor
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: 144 x 160 dots/inch
 Interface: Parallel
 Features: Very high print throughput for the CPS rating. Superior print quality. Proven high reliability. 2 pass NLQ option available.
 Options: IBM PC (Epson) compatibility.
 Apple Macintosh compatibility.
 RS232C interface.
 Retail price: \$1790
 Agent: Control Micro-



C. Itoh 8510SC Series

Print speed: 180cps 106lpm
 Max. chars/line: 136
 Paper width: 10in
 Paper feed: Friction/tractor
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: 144 x 160 dots/inch
 Interface: Parallel
 Features: 7 colour printing. Very high print throughput. Superior print quality. Proven high reliability. 2 pass NLQ option available.
 Options: IBM PC (Epson) compatibility.
 Apple Macintosh compatibility.
 RS232C interface.
 Retail price: \$1995
 Agent: Control Micro-computers

C. Itoh M8510B Series

Print speed: 120cps, 73lpm
 Max. chars/line: 136
 Paper width: 10in
 Paper feed: Friction/tractor
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: 640 - 1280 dots/inch
 Interface: Parallel
 Features: Very high print throughput for the cps rating. Superior print quality. Proven high reliability.
 Options: IBM PC (Epson) compatible.
 RS232C interface.
 Apple Macintosh compatible.
 Retail price: \$1450
 Agent: Control Micro-computers

Centronics H80

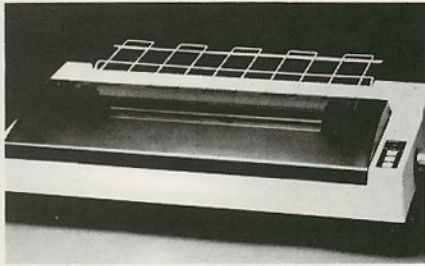
Print speed: 160cps
 Max. chars/line: 132
 Paper width: 10in
 Paper feed: Friction/tractor
 Buffer size: 3 Kbytes
 Ribbon type: Cassette
 Graphics modes: 60/72/80/90/120/240dpi
 Interface: Parallel
 Features: Near letter quality mode.
 32 horizontal tabs.
 16 vertical tabs.
 Options: RS232 hi speed interface \$360
 Retail price: \$1483
 Agent: STC Data Products



Centronics H136

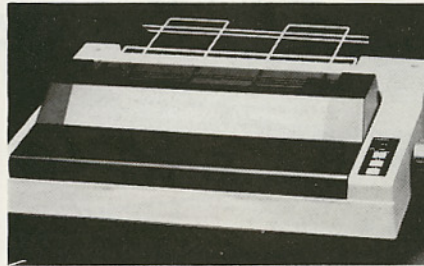
Print speed: 160cps
 Max. chars/line: 283
 Paper width: 17in
 Paper feed: Friction/tractor
 Buffer size: 3 Kbytes
 Ribbon type: Cassette
 Graphics modes: 60/72/80/90/120/240dpi
 Interface: Parallel
 Features: Near letter quality mode.
 32 horizontal tabs.
 16 vertical tabs.
 Options: RS232 hi speed interface \$360
 Retail price: \$1483.
 Agent: STC Data Products

PRINTER ROUNDUP



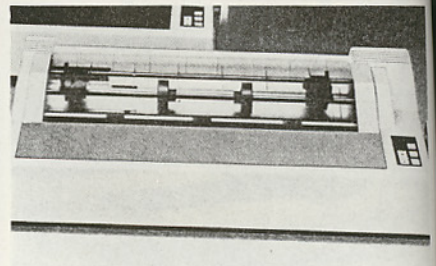
Eaglet EP 180 EX

Print speed: 180cps (pica) 36cps (NLQ)
 Max. chars/line: 80 (pica) 136 (condensed)
 Paper width: 10in
 Paper feed: Adjustable sprocket friction
 Buffer size: 3 Kbytes
 Ribbon type: Cartridge (2.5 million char.)
 Graphics modes: 8 x 480, 8 x 640, 8 x 960, 9 x 480, 8 x 576, 8 x 720, 8 x 1920, 9 x 960
 Interface: 8 bit parallel (Centronics)
 Features: (Epson FX 80) Compatibility plus. 256 down load characters. Near letter quality mode standard. Low noise (less than 58 dB).
 Options:
 Retail price: \$1095
 Agent: Andas Wholesale



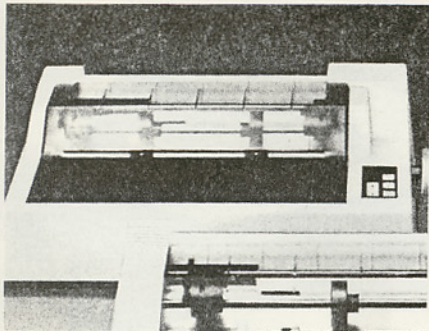
Eaglet EP 1800

Print speed: 180cps (pica) 36cps (NLQ)
 Max. chars/line: 136 (pica) 233 (condensed)
 Paper width: 16in
 Paper feed: Adjustable sprocket/friction
 Buffer size: Cartridge (2.5 million char.)
 Ribbon type: 8 x 816, 8 x 1088, 8 x 1632, 9 x 816, 8 x 979, 8 x 1224, 8 x 3264, 9 x 1632
 Graphics modes: 8 bit parallel (Centronics)
 Interface: (Epson FX 100)
 Features: (Epson FX 100) compatibility plus 256 down load characters. Near letter quality mode standard. Low noise (less than 58 dB).
 Options: RS23C \$132
 Retail price: Interface \$1485
 Agent: Andas Wholesale



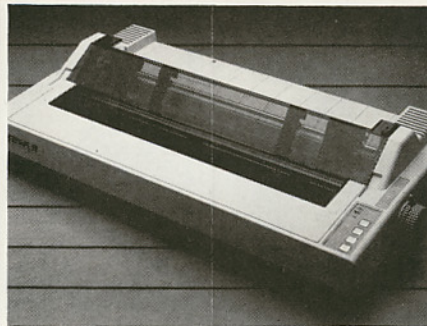
Mitsui 2200

Print speed: 180cps
 Max. chars/line: 80
 Paper width: 10in
 Paper feed: Friction/tractor
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: 240 dots/inch
 Interface: Parallel
 Features: 80cps NLQ mode.
 Options: RS232C interface. Buffer boards up to 128kb.
 Retail price: \$1415
 Agent: NZ Peripheral Distributors



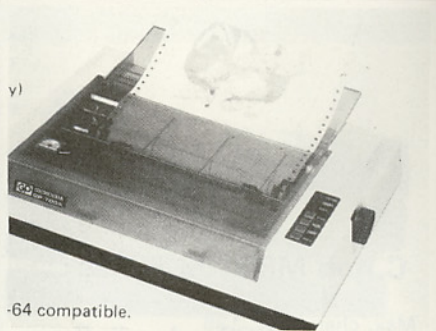
Mitsui 4200

Print speed: 180cps
 Max. chars/line: 80
 Paper width: 15in
 Paper feed: Friction/tractor
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: 240 dots/inch
 Interface: Parallel
 Features: 80cps NLQ mode. Proportional/underlining modes. Note: characters/line is at 10cpi.
 Options: RS232C interface. Buffer boards up to 128kb.
 Retail price: \$1782
 Agent: NZ Peripheral Distributors



Riteman 15

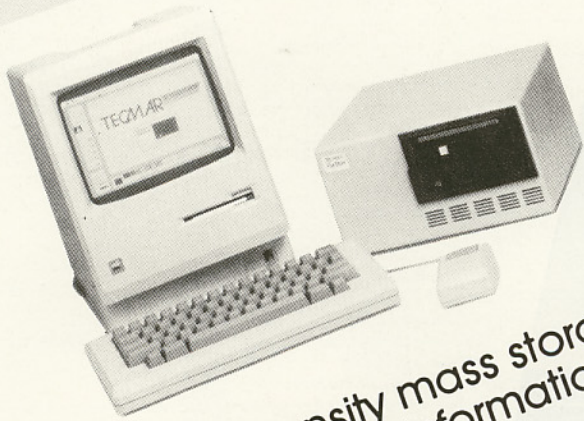
Print speed: 160 cps
 Chars/line: Pica — 136; compressed — 233
 Paper width: 15.5in
 Paper feed: Adjustable tractor, friction, back feed.
 Buffer size: 2K
 Ribbon type: Cartridge
 Graphics modes: 816, 1632, 979.
 Interface: Centronics parallel
 Features: Continuous underline. Pica, elite, compressed, expanded. Proportional. NLQ. Hex. Data dump print.
 Options: RS232 serial interface. 8K RAM.
 Retail price: \$1199.
 Agent: Warburton Franki



Seiksha GP700A

Print speed: 50cps
 Max. chars/line: 80
 Paper width: 10in
 Paper feed: Friction/pin
 Buffer size: Cassette
 Graphics modes: Parallel
 Interface: Parallel
 Features: 7 colour printing. Note: chars/line is at 10 cpi
 Options: Serial interface IBM PC interface Apple 2 & 2e interface
 Retail price: \$1074
 Agent: NZ Peripheral Distributors

MacDrive hard disk products for the Apple Macintosh



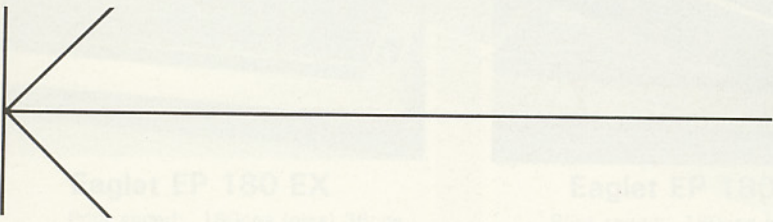
Provides high density mass storage
Stores 38 times more information than the
Macintosh microfloppy.
Allows information sharing between several
Macintosh computers
Transportable 5 MByte Removable Hard Disks
10 MByte Fixed Hard Disk
Four configurations available
Includes all cables and software needed to
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A MEMBER OF THE PAXUS GROUP OF COMPANIES



From here . . .

Eaglet EP 180 EX

Print speed: 180 cps (normal mode)
Max. character: 20 (normal)
Paper width: 136
Paper level: Auto-stable sprocket
Printer type: Dye transfer
Raster type: 1/2 dot
Raster size: 1/2 x 1/2 (normal)
Graphics modes: 8 x 480, 8 x 540,
8 x 810, 8 x 860,
8 x 970, 8 x 1020,
8 x 1070, 8 x 1120
Interface: 8 bit parallel
Features: Centronics
Expansion: 160K, 320K
Options: 256K, 512K, 1M

Eaglet EP 1800

Print speed: 180 cps (normal mode)
Max. character: 20 (normal)
Paper width: 136
Paper level: Auto-stable sprocket
Printer type: Dye transfer
Raster type: 1/2 dot
Raster size: 1/2 x 1/2 (normal)
Graphics modes: 8 x 480, 8 x 540,
8 x 810, 8 x 860,
8 x 970, 8 x 1020,
8 x 1070, 8 x 1120
Interface: 8 bit parallel
Features: Centronics
Expansion: 160K, 320K
Options: 256K, 512K, 1M

Provides high density mass storage
Stores 38 times more information than the
Eaglet EP 180 EX
Includes 38 channels of data
Four channels of data are available
Includes 38 channels of data
Includes 38 channels of data



Riteman 16

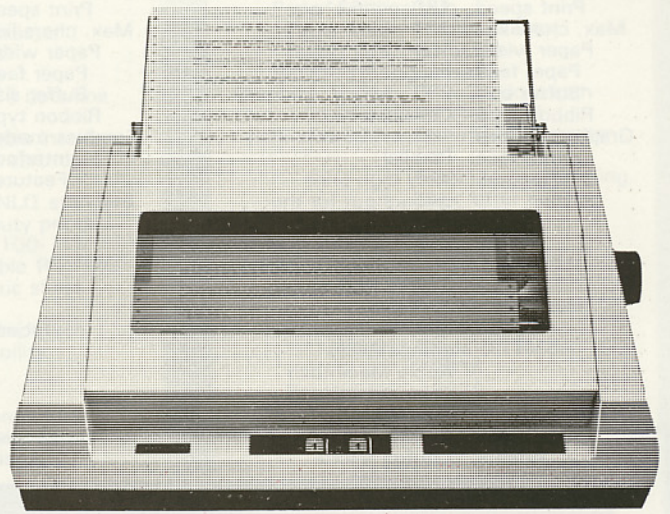
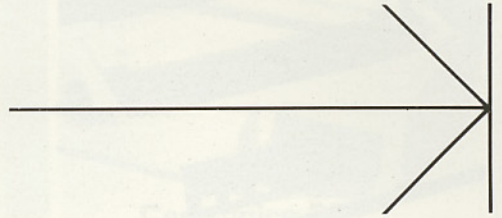
Print speed: 16 cps
Max. character: 16
Paper width: 136
Paper level: Auto-stable sprocket
Printer type: Dye transfer
Raster type: 1/2 dot
Raster size: 1/2 x 1/2 (normal)
Graphics modes: 8 x 480, 8 x 540,
8 x 810, 8 x 860,
8 x 970, 8 x 1020,
8 x 1070, 8 x 1120
Interface: 8 bit parallel
Features: Centronics
Expansion: 160K, 320K
Options: 256K, 512K, 1M

Print speed: 16 cps
Max. character: 16
Paper width: 136
Paper level: Auto-stable sprocket
Printer type: Dye transfer
Raster type: 1/2 dot
Raster size: 1/2 x 1/2 (normal)
Graphics modes: 8 x 480, 8 x 540,
8 x 810, 8 x 860,
8 x 970, 8 x 1020,
8 x 1070, 8 x 1120
Interface: 8 bit parallel
Features: Centronics
Expansion: 160K, 320K
Options: 256K, 512K, 1M

Print speed: 16 cps
Max. character: 16
Paper width: 136
Paper level: Auto-stable sprocket
Printer type: Dye transfer
Raster type: 1/2 dot
Raster size: 1/2 x 1/2 (normal)
Graphics modes: 8 x 480, 8 x 540,
8 x 810, 8 x 860,
8 x 970, 8 x 1020,
8 x 1070, 8 x 1120
Interface: 8 bit parallel
Features: Centronics
Expansion: 160K, 320K
Options: 256K, 512K, 1M

TECOMAR THE 3rd DIMENSION
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YOUTHMARK ELECTRONIC LTD
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HONG KONG

to here in 0.3 seconds.



SEIKOSHA

The amazing speed of the new Seikosh BP 5420 A/I heavy duty business printer can make a huge difference to the processing time of business data.

Besides the highest speed ever, this advanced 420cps printer delivers excellent print quality, is exceptionally quiet and has an 18K print buffer to let you enter new data.

Because it's from the world's second largest printer manufacturer, small wonder no other printer offers you all these features for such a competitive price of less than \$3500 including tax.

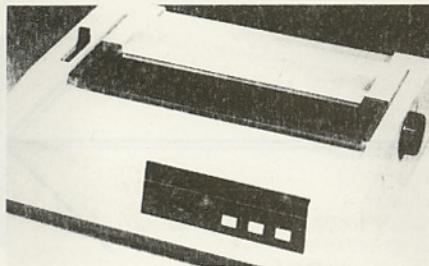
- Impact dot matrix, bi-directional print (graphics as well).
- Maximum print speed-420cps, high quality speed-140cps; at the lowest noise level.
- In addition to Pica, Elite, Proportional Elongated and Condensed, the character sets include Italics, Super/Subscripts, and Italic Super/Subscripts.
- Underlines, bold prints, double striking, and free line advance pitch control.
- Built-in 18K-byte buffer (A model - 4K I model) to accept new data while printing greatly reduces CPU load when transferring a large volume of data.
- Two built-in interfaces (parallel, serial)
- Pin feed and friction feed; paper width up to 15.5 inches.
- Eight language fonts with DIP switch selector.
- Heavy-duty handling.
- IBM PC compatible (I version).

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DMM 8713

Dot matrix — \$2000-4000



C. Itoh 1550S Series

Print speed: 180cps, 621pm
 Max. chars/line: 231
 Paper width: 15in
 Paper feed: Friction/tractor
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: 144 x 160 dots/inch
 Interface: Parallel
 Features: Very high print throughput for the CPS rating. Superior print quality. Proven high reliability. 2 pass NLQ option available.
 Option: IBM PC (Epson) compatibility
 Apple Macintosh compatibility
 RS232C Interface
 Retail price: \$2330
 Agents: Control Micro-computers



C. Itoh 1550SC Series

Print speed: 180cps, 621pm
 Max. chars/line: 231
 Paper width: 15in
 Paper feed: Friction/tractor
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: 144 x 160 dots/inch
 Interface: Parallel
 Features: 7 colour printing. Very high print throughput. Superior print quality. Proven high reliability. 2 pass NLQ option available.
 Options: IBM PC (Epson) compatibility.
 Apple Macintosh compatibility.
 RS232C interface.
 Retail price: \$2550.
 Agent: Control Micro-computers



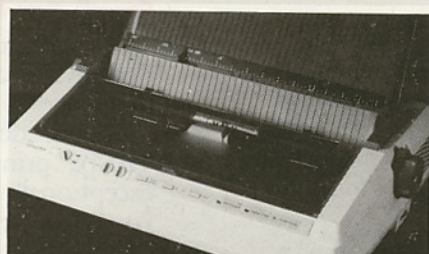
C. Itoh 1570SC Series

Print speed: 200cps
 Max. chars/line: 230
 Paper width: 15in
 Paper feed: Friction/tractor
 Buffer size: 16 Kbytes
 Ribbon type: Cassette
 Graphics modes: 2448-4896 dots/line
 Interface: Parallel
 Features: Very high quality high speed. 7 optional font cartridges. 7 colour printing. 24-pin multimode unit.
 Options: 133cps NLQ mode. 66cps LQ mode. Automatic sheet feeder. Apple Macintosh compatibility. RS232C interface.
 Retail price: \$3650
 Agent: Control Micro-computers



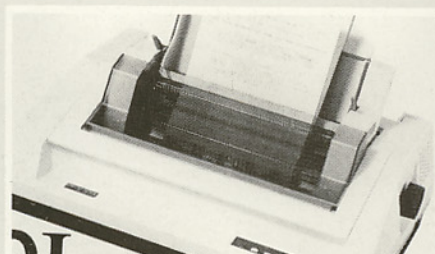
Fujitsu DPL24

Print speed: 300cps
 Max. chars/line: 136
 Paper width: 16in
 Paper feed: Friction/tractor
 Buffer size: 4 Kbytes
 Ribbon type: Cassette
 Graphics modes: 1/180in x 1/180in
 Interface: Parallel/serial
 Features: NLQ print mode. Exchangeable font cartridges.
 Options: 12-month warranty. IBM emulator version \$3920.
 Single bin sheet feeder \$790.
 Double bin sheet feeder \$2000.
 Retail price: \$3920
 Agent: Thorn EMI Technology



NEC Spinwriter 2000

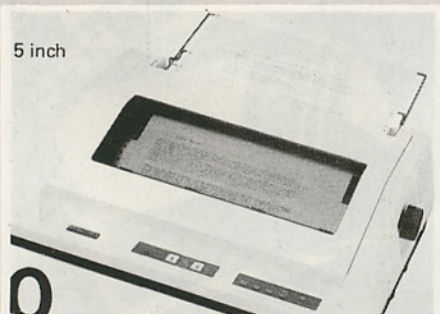
Print speed: 20cps
 Max. chars/line: 203
 Paper width: 16in
 Paper feed: Friction
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: Parallel interface:
 Features: Interchangeable thimble range. Programmable mode. Alternative plug-in interfaces. Compatible through range. Prices range up to \$2510 depending on interface module fitted.
 Options: Single bin sheet feeder \$1739. Bidirectional tractors \$433.
 Retail price: \$2183.
 Agent: Scollay Computers



Seikosh BP52001

Print speed: 206cps
 Max. chars/line: 132
 Paper width: 15in
 Paper feed: Friction/pin
 Buffer size: 4 Kbytes
 Ribbon type: Cassette
 Graphics modes: Parallel interface:
 Features: 103cps correspondence mode built to BST standards. Reduced noise level.
 Options: Cutsheet feeder \$620
 Retail price: \$2444
 Agent: NZ Peripheral Distributors

Dot matrix \$4000-plus



Seiksha BP5420

Print speed: 420cps
 Max. chars/line: 132
 Paper width: 15in
 Paper feed: Friction/pin
 Buffer size: 16 Kbytes
 Ribbon type: Cassette
 Graphics modes: 816-1632 dots/line
 Interface: Parallel/serial
 Features: Front mounted switches for print & pitch selection.
 Note - chars/line is at 10cpi.

Options:
 Retail price: \$3461
 Agent: NZ Peripheral Distributors

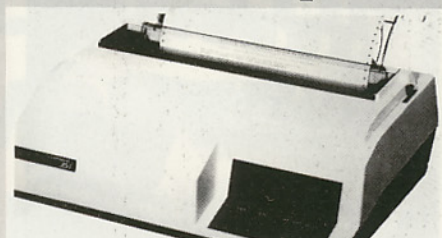


C.Itoh C13500 Series

Print speed: 350cps, 135lpm
 Max. chars/line: 224
 Paper width: 15in
 Paper feed: Friction/tractor
 Buffer size: 8 Kbytes
 Ribbon type: Cassette
 Graphics modes: 792-3168 dots/line
 Interface: Parallel
 Features: Changeable interface and font cartridges available.
 2 pass NLQ standard.
 Heavy duty printer.

Options:
 DEC LA100-compatible RS232C.
 Automatic sheet feeder.
 Apple Macintosh compatibility

Retail price: \$4490
 Agent: Control Microcomputers



Centronics 351

Print speed: 200cps
 Max. chars/line: 218
 Paper width: 15in
 Paper feed: Friction/tractor
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: 66 x 72 dots/inch
 Interface: Parallel/serial
 Features: Download character set.
 6 part forms handling.
 Near letter quality mode.
 Very rugged.

Options:
 Single bin feeder \$2052.
 Double bin feeder \$2791.
 Triple bin feeder \$3676.

Retail price: \$5976
 Agent: STC Data Products



FUJITSU

HIGH SPEED, LETTER QUALITY DOT MATRIX PRINTER

DPL24 LETTER QUALITY

We proudly present one of its newest family the DPL24 multi-purpose printer for data processing and graphics.

FEATURES

True letter quality (Actual reproduction)

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- Advanced Print Technology
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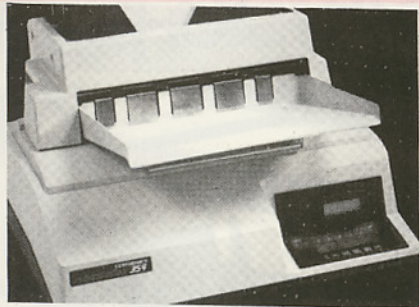


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PRINTER ROUND-UP



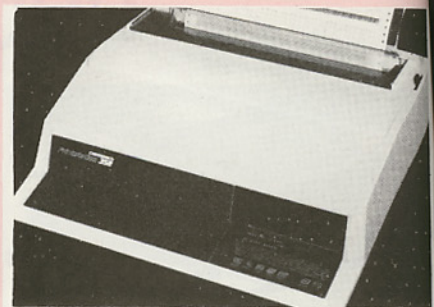
Centronics 354

Print speed: 220cps
 Max. chars/line: 218
 Paper width: 15in
 Paper feed: Friction/tractor
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: 72 x 72 or
 144 x 144dpi
 Interface: Parallel/serial
 Features: Download character
 set.
 6 part forms handling.
 Near letter quality
 mode.
 Auto centre & right
 justify.
 Options: Single bin feeder
 \$2052.
 Double bin feeder
 \$2791.
 Triple bin feeder
 \$3676.
 Retail price: \$6291.
 Agent: STC Data Products



Centronics 357

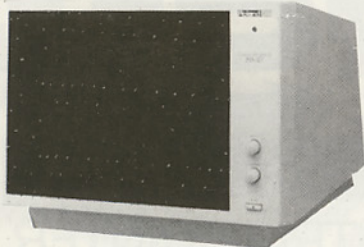
Print speed: 400cps
 Max. chars/line: 218
 Paper width: 15in
 Paper feed: Friction/tractor
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: 66 x 72 dots/inch
 Interface: Parallel/serial
 Features: Download character
 set.
 18 pin print head.
 6 part forms handling.
 Options: Single bin feeder
 \$2052.
 Double bin feeder
 \$2791.
 Triple bin feeder
 \$3676.
 Retail price: \$7398
 Agent: STC Data Products



Centronics 358

Print speed: 400cps
 Max. chars/line: 218
 Paper width: 15in
 Paper feed: Friction/tractor
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: 66 x 72 dots/inch
 Interface: Parallel/serial
 Features: Download character
 set.
 4 or 7 colour printing.
 LCD display of
 parameters.
 6 part forms handling.
 Options: Single bin feeder
 \$2052.
 Double bin feeder
 \$2791.
 Triple bin feeder
 \$3676.
 Retail price: \$8655
 Agent: STC Data Products

HI-RES MONITORS



You will enjoy the real magic of **Roland 80-Character green and amber screens**: The choice of professionals for the detailed, steady, restful image that beats fatigue.

Twelve models include composite or IBM-compatible screens, and Hi-res RGB with crisp brilliant colour, ideal for IBM, Tandy Canon, Apricot, BBC, Apple etc. **Roland prices are magic, too.**

ROLAND MONITORS & PLOTTERS:

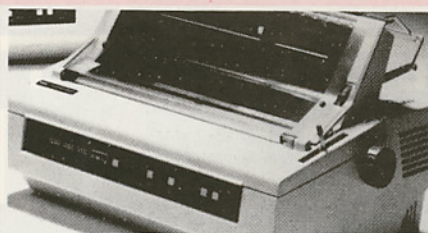
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 P.O. Box 36-045, Auckland, 9.



NEC Spinwriter 3500

Print speed: 35cps
 Max. chars/line: 203
 Paper width: 16in
 Paper feed: Friction
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes:
 Interface: Parallel
 Features: Interchangeable
 thimble range.
 Programmable mode.
 Alternative plug-in
 interfaces.
 Compatible through
 range.
 Prices range up to
 \$4501 depending on
 interface module
 fitted.
 Options: Single bin sheet
 feeder \$1739.
 Bidirectional tractors
 \$433.
 Envelope adaptor
 \$492.
 Retail price: \$4236.
 Agent: Scollay Computers Ltd



NEC Spinwriter 8800

Print speed: 55cps
 Max. chars/line: 203
 Paper width: 16in
 Paper feed: Friction
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes:
 Interface: Parallel
 Features: Interchangeable
 thimble range.
 Programmable mode.
 Alternative plug-in
 interfaces.
 Compatible through
 range.
 Prices range up to
 \$6236 depending on
 interface module
 fitted.
 Options: Single bin sheet
 feeder \$1739.
 Bidirectional tractors
 \$433.
 Envelope adaptor
 \$492.
 Retail price: \$6045
 Agent: Scollay Computers
 Ltd.

DON'T MISS



1985 WELLINGTON COMPUTER SHOW

OVERSEAS PASSENGER TERMINAL

Thursday, 11 July 9.30-7pm daily
Friday, 12 July No children
Saturday, 13 July until 3pm
Thursday & Friday

See the latest in Computing technology

ADMISSION: Adults \$3.00 Children (with an adult) \$1.00
Business Passes \$2.00

BE THERE — ALL VISITORS IN A DRAW

WIN an APPLE IIe Professional worth \$4000
from ANDAS — Apple Dealers Nationwide

SEMINARS

All Seminars are conducted by professionals.

Selecting your first business computer

Information about what a micro is, the software available, how to define computing requirements, the best computers and business software, how to choose a system.

Presented by Argos Systems and Lawrence Anderson & Buddle (Accountants).

Thursday, 10.00am-11.00am
Friday, 2.00pm-3.00pm

Guide to GST and business software

What business software is available, key features and differences between these packages, and how to select a package to meet your needs. GST— how to 'handle' it on a computer.

Presented by Lawrence Anderson & Buddle (Accountants).

Thursday, 11.15am-12.15pm
Friday, 3.00pm-4.00pm

Software for sales and marketing

SAMM is a new, unique software system which analyses and reports on leads, prospects, salespeople and budgets. Conducted by Findlay Herbert of I.A.L.

Thursday, 3.15pm-4.15pm

Software guide to spreadsheets

Spreadsheets like Lotus 123 and Multiplan are important tools. What are they, what do they do and how can they help you?

Sponsored and presented by I.A.L.

Friday, 12.30pm-1.30pm

Software guide to databases

Covering dBases II & III, Framework, Symphony and others. What are their features and how to get the best out of them.

Friday, 11.15am-12.15pm

Software guide to wordprocessing

What are the main wordprocessing systems, their features and how to select one.

Friday, 10.00am-11.00am

Networking PC's to PC's and to mainframes

Networks (LANS) will become increasingly important as their use as the key to accessing a broad range of relevant information in business and government is realized.

Sponsored by Imagineering.

Thursday, 12.30pm-1.30pm

Guide to computer-aided design systems

Use of PC's by designers, engineers and draftspeople is increasing. What are the differences between the systems and how do you evaluate them?

Sponsored by SORD. Presented by Ian McLuckie, Head of Engineering Department, Wellington Polytechnic.

Thursday, 2.00pm-3.00pm

Videotex-how can you use it?

Videotex offers some of the greatest potential as an information source to PC owners at work and in the home.

Presented by Lawrence Zwimpfer, Director, Telecom Marketing NZPO.

Friday, 4.30pm-5.30pm

Computers in education

Have the promises been fulfilled? Why isn't New Zealand making the most effective use of computers in schools and how could it be improved?

Presented by Mike Wall, Lecturer, Computer Education, Christchurch Teachers' College.

Thursday, 4.30pm-5.30pm

Selecting your first home computer

There are many home computers available. How do you decide which one, with what features, is best for you and your children?

Friday, 6.00pm
Saturday, 9.30am, 12.30pm & 2.00pm

Computers and security

Security in software and database information. Preventing unauthorized access to databases.

Hosted by Wellington Apple Users group. Speaker Bruce Goldstone, Security Manager, Databank.

Saturday, 10.30am

For Business Passes Phone 858-589.

PRINTER ROUNDUP

Daisywheel — under \$1000



Juki 2200 Electronic

Print speed: 10cps
Chars line: 135
Paper width: 12in
Paper feed: Bi-directional, friction
Buffer size: 2K
Ribbon type: Cartridge (nylon/corr. carbon)
Graphics modes: No
Interface: Centronics (parallel) or RS232C
Features: Comes complete with a built-in interface (parallel or serial) turning this fully featured electronic typewriter into a bi-directional daisywheel printer.
Retail price: \$895.
Agent: Andas Actionline



Logitec WP-550

Print speed: 14 cps
Max. chars/line: 173/138/115
Paper width: 15in
Paper feed: Friction/tractor
Buffer size: 1 Kbyte
Ribbon type: Cartridge
Graphics modes: No
Interface: Parallel and serial.
Features: Reliability.
Options: Multi-strike or nylon ribbons.
Retail Price: \$947
Agent: Warburton Franki

SV3400

Print speed: 12cps
Max. chars/line: 96
Paper width: 10in
Paper feed: Friction
Buffer size: 256 bytes
Ribbon type: Cassette
Graphics modes:
Interface: Parallel
Features: Bold & shadow print modes
Bidirectional logic seeking
Self test
Pitch change DIP switches easily accessible
Options: Tractor feed unit \$140
Sheet feed unit \$675
Serial Interface \$295
Retail price: \$999
Agent: Computer Distributors Ltd

Daisywheel — \$1000-2000



C.Itoh A10 Series

Print speed: 30cps
Max. chars/line: 138
Paper width: 15in
Paper feed: Friction
Buffer size: 2 Kbytes
Ribbon type: Cassette
Graphics modes: N/A
Interface: Parallel
Features: Compatible with C.Itoh F10 daisywheel printers.
Options: Automatic sheet feeder
RS232C interface
Forms tractor \$674
Retail price: \$1995
Agent: Control Micro-computers

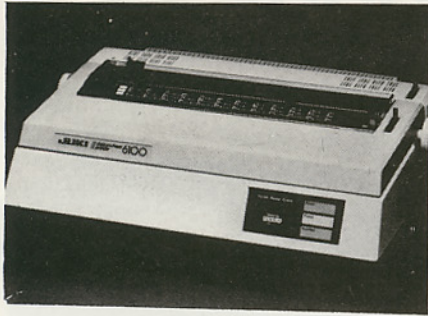


C.Itoh Y10 Series

Print speed: 22cps
Max. chars Line: 138
Paper width: 13in
Paper feed: Friction
Buffer size: 2 Kbytes
Ribbon type: Cassette
Graphics modes: N/A
Interface: Parallel
Features: Compatible with all C.Itoh daisywheel printers. Designed for computer use rather than typing.
Options: Automatic sheet feeder RS232C interface
Forms tractor \$674
Retail price: \$1620
Agent: Control Micro-computers

Commodore DPS1101

Print speed: 17cps
Max. chars/line: 165
Paper width: 13in
Paper feed: Friction
Buffer size: 1 Kbytes
Ribbon type: Cassette
Graphics Modes:
Interface: CBM serial
Features: 110/132/156 col. Proportional underlining/bold/shadow modes
Std. Triumph Adler daisywheels
Form Feed function
Std. IBM ribbons.
Options:
Retail price: \$1095
Agent: Commodore Computer NZ Ltd



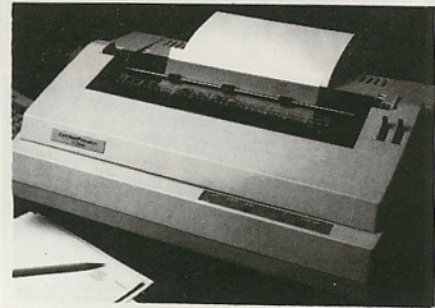
Juki Model 6100

Print speed: 18cps
 Chars./line: 82 to 220
 Paper width: 13in
 Paper feed: Bi-directional friction
 Buffer size: 2K
 Ribbon type: Cartridge (IBM Selectric II)
 Graphics modes: Horizontal resolution (1/120in); vertical resolution (1/96in).
 Interface: Centronics (parallel)
 Features: Diablo 630 compatible with all major micro-computers including IBM PC, Apple, BBC, Commodore, Kaypro
 Options: Bi-directional tractor feed \$338.
 RS232 interface \$170.
 Single cut sheet feed \$799.
 Retail Price: \$1520
 Agent: Andas Wholesale



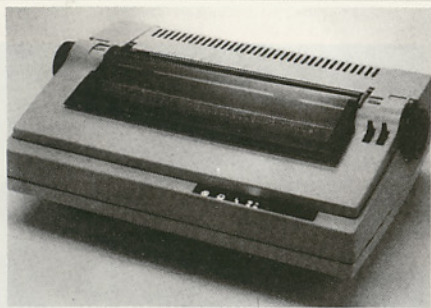
Olympia Electronic RO

Print speed: 14cps
 Max. chars/line: 172
 Paper width: 15in
 Paper feed: Friction/tractor
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics Modes:
 Interface: Parallel/serial
 Features: Bidirectional logic seeking 12-month guarantee
 Options:
 Retail price: \$1395
 Agent: Montek Equipment



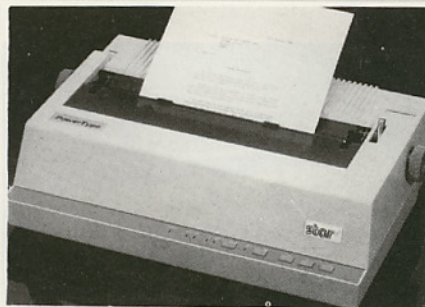
Qume Letterpro 20

Print speed: 22 cps
 Max. chars/line: 165
 Paper width: 13in
 Paper feed: Friction
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: N/A
 Interface: Parallel
 Features: Interchangeable interfaces — RS232C/13 bit parallel.
 Large range of print elements.
 Options: Letter guide \$74
 Forms tractor \$407
 Single bin sheet feeder \$1685
 Retail price: \$1687.
 Agent: STC Data Products



Ricoh RP1200

Print speed: 22cps
 Max. chars/line: 132
 Paper width: 13in
 Paper feed: Friction
 Buffer size:
 Ribbon type: Cassette
 Graphics modes: 120 dots/inch
 Interface: Serial
 Features: Low cost high quality
 Upward compatibility with RP1300 & RP1600
 Options: Tractor feed unit \$158
 Retail price: \$1972
 Agent: AWA NZ Ltd



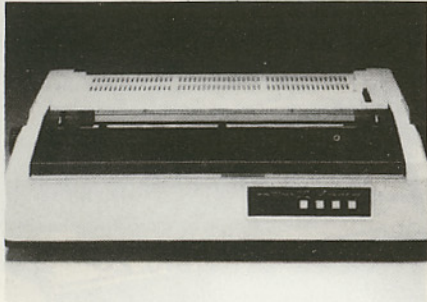
Star Powertype

Print speed: 18cps
 Max. chars/line: 165
 Paper width: 13in
 Paper feed: Friction
 Buffer size:
 Ribbon type: Cassette
 Graphics modes:
 Interface: Parallel/serial
 Features: 10/12/15 cpi and proportional spacing
 100 type fonts available
 WordStar compatible
 High speed white spacing
 Options: Tractor feed Unit \$98
 Retail price: \$1180
 Agents: Genisis Systems Ltd

SV3500

Print speed: 18cps
 Max. chars/line: 180
 Paper width: 15in
 Paper feed: Friction
 Buffer size: 256 bytes
 Ribbon type: Cassette
 Graphics modes:
 Interfaces: Parallel
 Features: Bold & shadow print modes
 Bidirectional logic seeking
 Self test
 Pitch change DIP switches easily accessible
 Options: Tractor feed unit \$325
 Serial interface \$295
 Retail price: \$1275
 Agent: Computer Distributors Ltd

Daisywheel — \$2000-4000



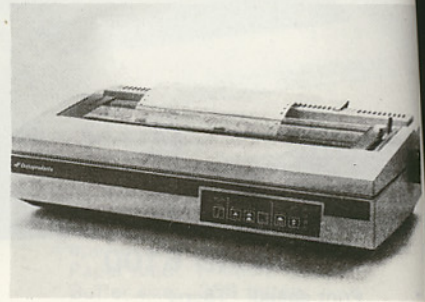
C. Itoh F10

Print speed: 40cps
 Max. chars/line: 272
 Paper width: 16in
 Paper feed: Friction
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: N/A
 Interface: Parallel
 Features: Heavy duty reliable unit.
 Options: 55cps version: \$4750
 Automatic sheet feeder
 RS232C interface
 Forms tractor \$674
 Retail price: \$3790.
 Agent: Control Micro-computers



Commodore 6400

Print speed: 40cps
 Max. chars/line: 163
 Paper width: 16in
 Paper feed: Friction
 Buffer size: Cassette
 Ribbon type: Cassette
 Graphics modes: N/A
 Interface: IEEE 488
 Features: Automatic self test
 Tractor feed unit
 Options: \$545
 Retail price: \$3395
 Agent: Commodore Computer NZ Ltd



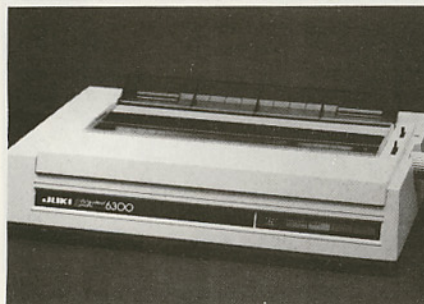
Dataproducts DP20

Print speed: 20cps
 Max. chars/line: 204
 Paper width: 15in
 Paper feed: Friction
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: 120 dots/inch
 Interfaces: Parallel/serial
 Features: Letters guide standard less than 55dBa noise level
 Options: Bidirectional tractors \$550
 Single bin sheet feeder \$1132
 Double bin sheet feeder \$1587
 Retail price: \$2332
 Agent: MEC Dealer Products



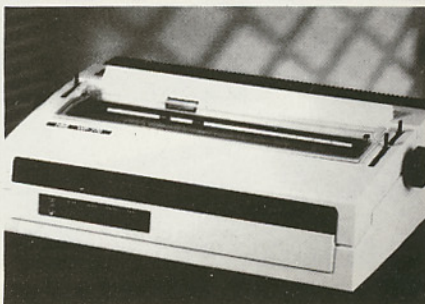
Fujitsu SP320

Print speed: 48cps
 Max. chars/line: 163
 Paper width: 16in
 Paper feed: Friction
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: Vector plotting ability
 Interface: Parallel/serial
 Features: Std 96 & 127 char print whee Diablo compatible WP functions
 Bidirectional printing
 Single sheet auto load
 Options: Single bin sheet feeder \$1307
 Double bin sheet feeder \$2948
 Tractor feed unit \$158
 Retail price: \$3726
 Agent: AWA NZ Ltd



Juki Model 6300

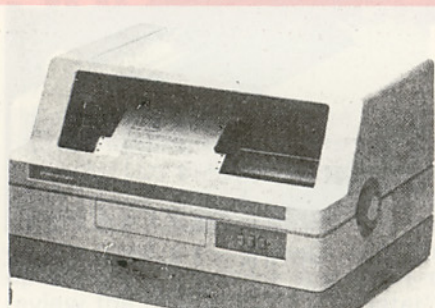
Print speed: 40cps
 Chars./line: 112 to 393
 Paper width: 16in
 Paper feed: Bi-directional
 Buffer size: 3K
 Ribbon type: Diablo Hytype II
 Graphics modes: Horizontal resolution (1/66in)
 Vertical resolution (1/48in)
 Interface: Centronics parallel cr RS232C
 Features: Diablo 630 API compatible
 Options: Bi-directional tractor feed \$390
 Single cut sheet feed \$799
 Retail price: \$3020
 Agent: Andas Wholesale



Logitech WP-770

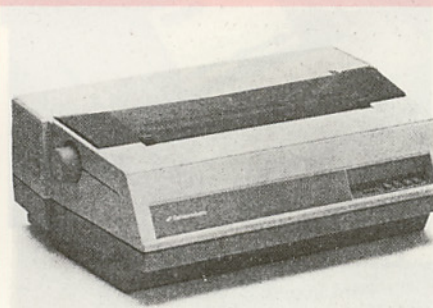
Print speed: 36cps
 Chars/line: 115/138/173
 Paper width: 17in
 Paper feed: Friction
 Buffer size: 2 Kbytes
 Ribbon type: Cartridge
 Graphics modes: No
 Interface: Parallel centronics
 Features: Speed Size
 Options: Forms tractor. Sheet feeder. Paper table. RS232 serial interface.
 Retail price: \$2359.
 Agent: Warburton Franki

Daisywheel \$4000-plus



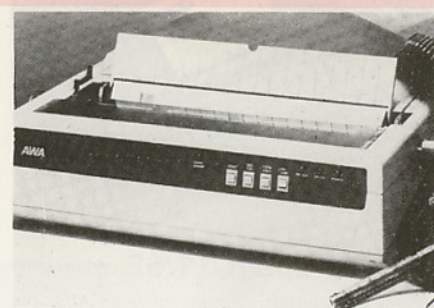
Dataproducts DP55Q

Print speed: 55cps
 Max. chars/line: 196
 Paper width: 15in
 Paper feed: Friction
 Buffer size: 1.7 Kbytes
 Ribbon type: Cassette
 Graphics modes: 120 dots/inch
 Interface: Parallel/serial
 Features: Very robust for heavy duty WP
 Less than 60 dBA noise level
 6000 hours MTBF
 Options: Bidirectional tractors \$732
 Single bin sheet feeder \$1355
 Double bin sheet feeder \$220
 Retail price: \$6348
 Agents: MEC Dealer Products



Dataproducts DP55SQ

Print speed: 55cps
 Max. chars/line: 196
 Paper width: 15in
 Paper feed: Friction
 Buffer size: 1.7 Kbytes
 Ribbon type: Cassette
 Graphics modes: 120 dots/inch
 Interface: Parallel/serial
 Features: Very robust for heavy duty WP
 Less than 55 dBA noise level
 6000 hours MTBF
 Options: Bidirectional tractors \$732
 Single bin sheet feeder \$1355
 Double bin sheet feeder \$2200
 Retail price: \$7030
 Agent: MEC Dealer Products



Fujitsu SP830

Print speed: 80cps
 Max. chars/line: 16
 Paper width: 16in
 Paper feed: Friction
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: Vector plotting ability
 Interface: Serial
 Features: Std. 96 & 127 char print wheel
 High speed heavy duty printer
 Daiblo 630 compatible
 Bidirectional printing
 Up to 6 copies
 Options: Single bin sheet feeder \$2022
 Double bin sheet feeder \$2948
 Tractor feed unit \$158
 Retail price: \$5826
 Agent: AWA NZ Ltd



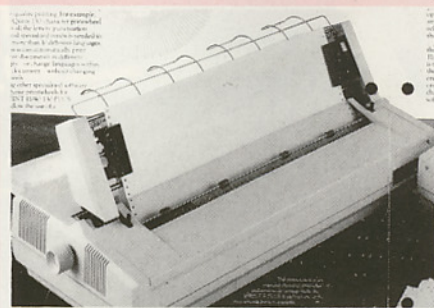
Olympia ESW3000

Print speed: 50cps
 Max. chars/line: 225
 Paper width: 17in
 Paper feed: Friction
 Buffer size: 4 Kbytes
 Ribbon type: Cassette
 Graphics modes:
 Interface: Parallel/serial
 Features: Bidirectional logic seeking
 Double/proportional spacing
 12 months guarantee
 Options: Single bin sheet feeder \$1095
 Double bin sheet feeder \$1350
 Retail price: \$4500
 Agent: Montek Equipment



Qume Sprint 11/40+

Print speed: 40cps
 Max. chars/line: 198
 Paper width: 15in
 Paper feed: Friction
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: N/A
 Interface: Parallel
 Features: Interchangeable interfaces modules — IBM PC/RS232/IEEE488
 Triple bin sheet feeder \$3798
 Options: Forms tractor \$574
 Single bin sheet feeder \$1685
 Double bin sheet feeder \$2124
 Retail price: \$5028.
 Agent: STC Data Products



Qume Sprint 11/40-130 +

Print speed: 40cps
 Max. chars/line: 198
 Paper width: 15in
 Paper feed: Friction
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: N/A
 Interface: Parallel
 Features: Interchangeable interfaces modules — IBM PC/RS232/IEEE488 130 character printwheel
 Triple bin sheet feeder \$3798
 Options: Forms tractor \$574
 Single bin sheet feeder \$1685
 Double bin sheet feeder \$2124
 Retail price: \$6526
 Agent: STC Data Products

PRINTER ROUND-UP



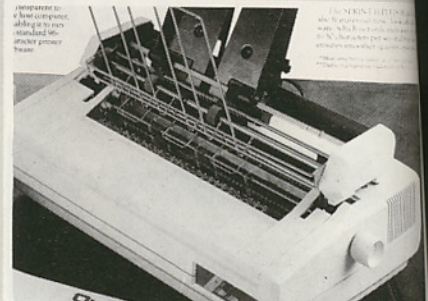
Qume Sprint 11/55 +

Print speed: 55cps
 Max. chars/line: 198
 Paper width: 15in
 Paper feed: Friction
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: N/A
 Interface: Parallel
 Features: Interchangeable interfaces modules — IBM PC/RS232 /IEEE488
 Triple bin sheet feeder \$3798
 Options: Forms tractor \$574
 Single bin sheet feeder \$1685
 Double bin sheet feeder \$2124
 Retail price: \$5624
 Agent: STC Data Products



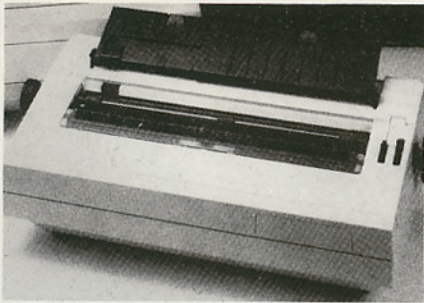
Qume Sprint 11/90 +

Print speed: 90cps
 Max. chars/line: 198
 Paper width: 15in
 Paper feed: Friction
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: N/A
 Interface: Parallel
 Features: Interchangeable interfaces modules — IBM PC/RS232 /IEEE488
 Triple bin sheet feeder \$3798
 Options: Forms tractor \$574
 Single bin sheet feeder \$1685
 Double bin sheet feeder \$2124
 Retail price: \$7548
 Agent: STC Data Products



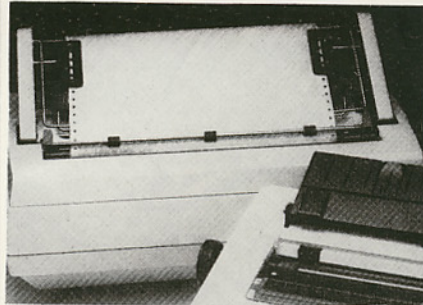
Qume Sprint 11+ Widetrack

Print speed: 55cps
 Max. chars/line: 293
 Paper width: 22in
 Paper feed: Friction
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes: N/A
 Interface: Parallel
 Features: Extra wide carriage
 Options: IBM PC/RS232/IEEE 488 interfaces as required
 Forms tractor \$674
 Retail price: \$8526
 Agent: STC Data Products



Ricoh RP1300

Print speed: 33cps
 Max. chars/line: 164
 Paper width: 16in
 Paper feed: Friction
 Buffer size: 2 Kbytes
 Ribbon type: Cassette
 Graphics modes:
 Interface: Serial
 Features: 124 char. double daisywheel
 Wide variety of typefaces
 Options: Tractor feed unit \$158
 Bin feeders
 Retail price: \$3379
 Agent: AWA NZ Ltd



Ricoh RP1600

Print speed: 60cps
 Max. chars/line: 164
 Paper width: 16in
 Paper feed: Friction
 Buffer size:
 Ribbon type: Cassette
 Graphics modes: 120 dots/inch
 Interface: Serial
 Features: High speed heavy duty printer
 124 char. double daisywheel
 Wide variety of typefaces
 Options: Tractor feed unit \$158
 Single bin sheet feeder \$824
 Retail price: \$5324
 Agent: AWA NZ Ltd

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STAR SG10

Super Gemini?

By Shane Doyle

For some time I have been a fan of Star printers, owning a Star Gemini 10X, and I try to keep up to date with what's new in the overseas magazines. I was therefore surprised when one of our local dealers phoned up to say: "I believe you want to review the new Star SG10 printer".

Well, how could I refuse? If there is one annoying aspect of buying micro hardware, it's that the features race overtakes whatever you own very rapidly, and one feature the Gemini lacked was a letter quality mode — the new machine had it! In all seriousness, the SG10 handle probably stands for Super Gemini.

Outwardly, the SG10 is very similar to the Gemini 10X, housed in what appears to be the same body moulding. The three control switches on the front right panel have changed to membrane covered microswitches, the plastic acoustic/dust cover has been redesigned with the addition of a useful tear-off edge at the rear, and the formatting DIP switches have moved around the corner to the left side.

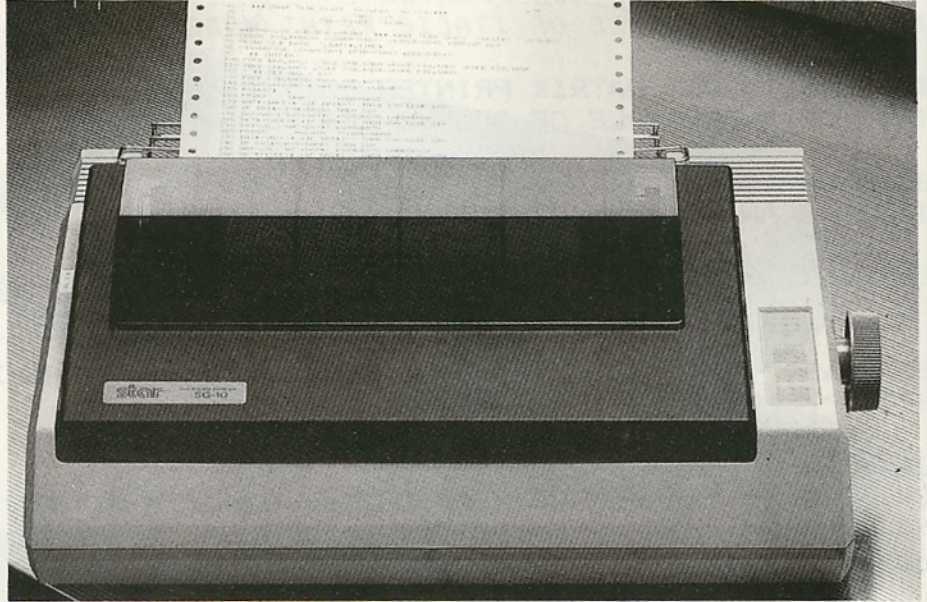
Identical

Lifting the lid reveals an identical printing mechanism to the Gemini, still using the cheap, easy to get, 2in Underwood spool ribbon. The relocation of the DIP switches and the additional features of the printer point to a software and electronics board redesign, but I cannot say whether the print head has been changed.

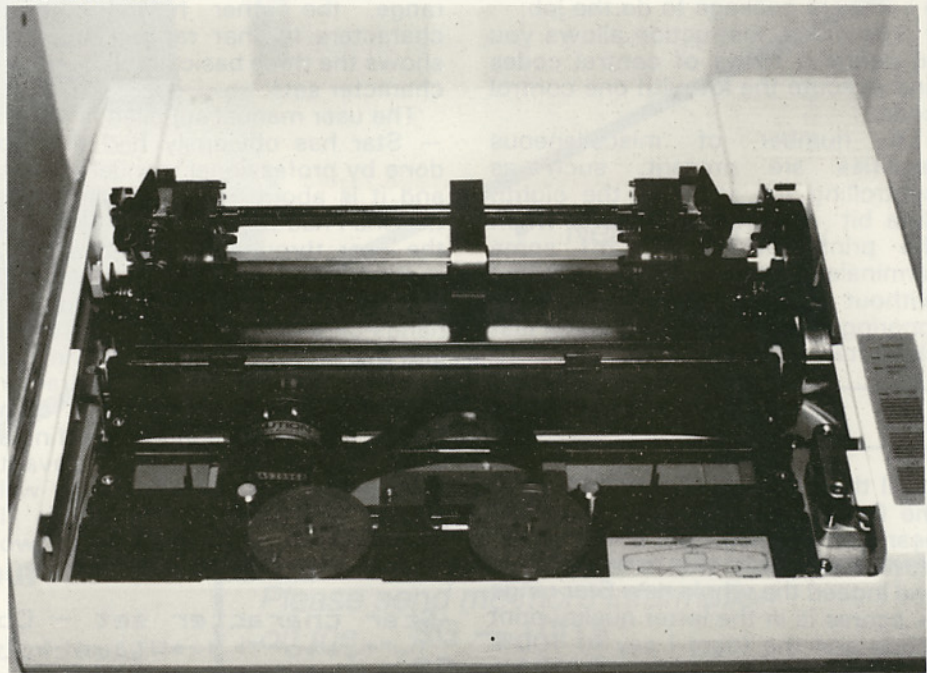
Paper feed is either friction or by removable tractor feed unit gear driven off the main platen roller. As the model number implies, the SG10 handles up to 10in paper, the SG15 taking 15in fanfold, both up to three copies.

To list every possible feature of this printer would take up a full page alone — there are around 96 control codes. As well as the features listed in the hardware summary, these facilities are available.

- pica, elite, condensed, expanded, proportional font pitches, plus some combinations of those.
- double-strike, emphasised, underlining, subscript & superscript print modes;



The Star SG10



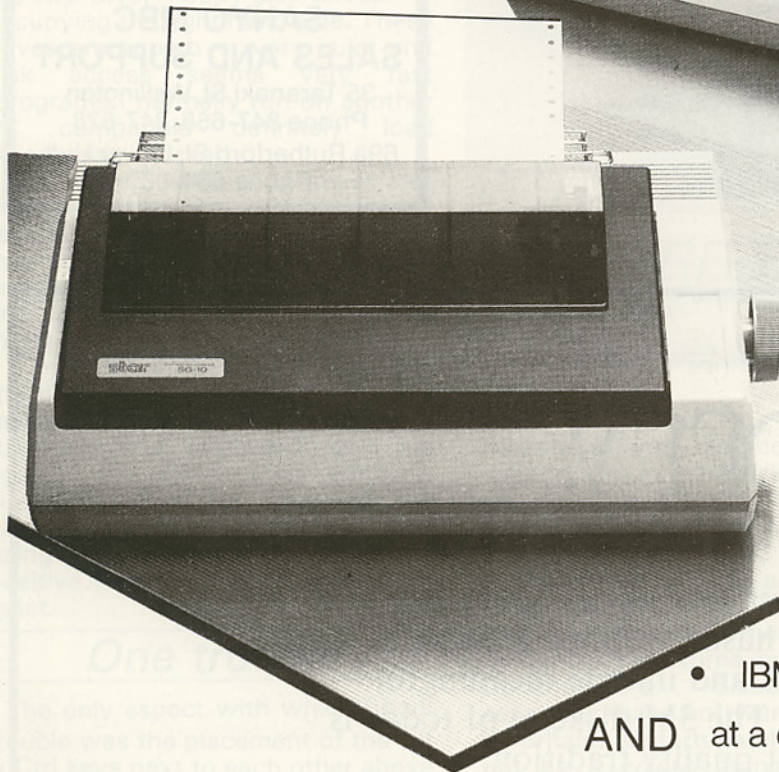
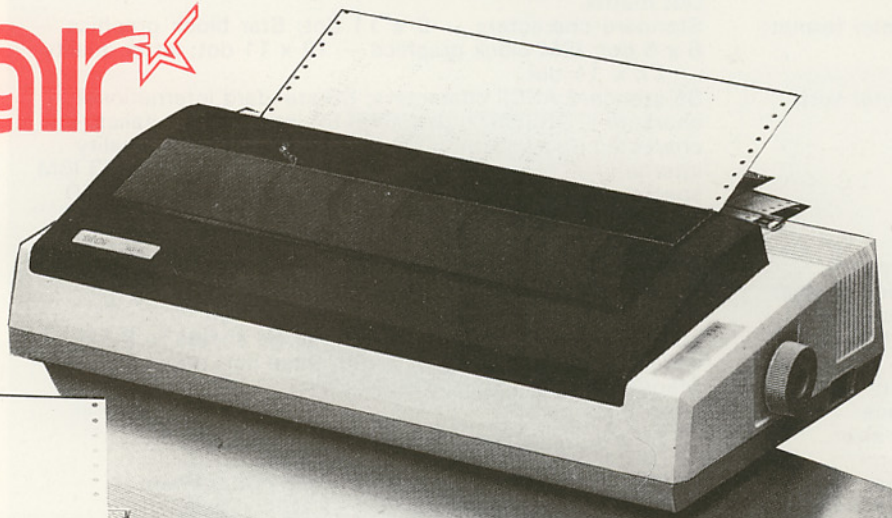
- complete control over line feed, page length, all margins, vertical/horizontal tabbing, backspacing;
- download character definition capability means you can create your own custom character sets on your computer, send them to the printer, and then switch between those or the standard character sets (as shown in the summary).
- full graphics ability, apart from the 32 preset graphics characters (50 in

IBM mode), with normal density, double density, double speed double density and quadruple density bit image graphics modes. (For those not familiar with bit image graphics, that's where each pin in the printhead can be individually controlled and, in conjunction with line feed adjustment, you can produce those stunning high resolution graphic printer pictures, albeit with a considerable amount of

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Printer summary

| | |
|--------------------------|---|
| Model: | Star SG10 |
| Type: | Dot matrix |
| Character format: | Standard characters — 9 x 11 dot; Star block graphics — 6 x 6 dot; IBM block graphics — 12 x 11 dot; letter quality — 17 x 11 dot. |
| Character sets: | 96 standard ASCII characters; 88 standard international characters; 96 italic characters; 88 international italics characters; 96 letter quality characters; 88 letter quality international characters; 64 Star special characters; 83 IBM special characters; 32 Star block graphics characters; 50 IBM block graphics characters; 240 user-defined characters. |
| Print speed: | 120 characters/second at 10cpi |
| Graphics modes: | 8 x 60,72,80,90,120,240 dots/inch |
| Columns/line: | 80 standard, 136 compressed, 40 expanded |
| Paper handling: | Friction or removable tractor unit; single sheets to 8.5in wide; fanfold to 10in wide; up to three-part paper |
| Ribbon: | Standard Underwood 2in spools |
| Interface: | Centronics parallel |
| Buffer size: | 2K bytes |
| Price: | \$1135 |
| Options: | RS232 serial interface \$120; 6K byte buffer board |

(Review unit supplied by Genesis Systems Ltd, Auckland.)



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COMMODORE PC 10

One of the Team

By Shane Doyle

This fully IBM PC/XT compatible computer is part of Commodore's new market penetration effort, along with the Commodore 128, Amiga, and the very powerful multi-user Commodore 900, about which we have been reading for the past few months.

Most attractively styled in a light oyster colour, the CPU unit has a fairly large 19.5in x 15.5in footprint, the two BASF floppy disk drives occupying the right hand side. These drives are superb — very quiet and disk access seems very fast (programs I normally run on another PC compatible definitely load measurably quicker).

The drives have a narrower slot than Shugart or Mitsubishi units, and require a more careful approach to inserting disks. A push button engages the hub, lowers the head, and locks the disk in place after insertion.

The very light keyboard plugs into the bottom of the front panel on a recessed section — it is still possible to place the keyboard hard up against the CPU. Two snap-out supports raise the back of the keyboard further if required. I liked using this keyboard — it has a positive feel, and the keys are fairly quiet.

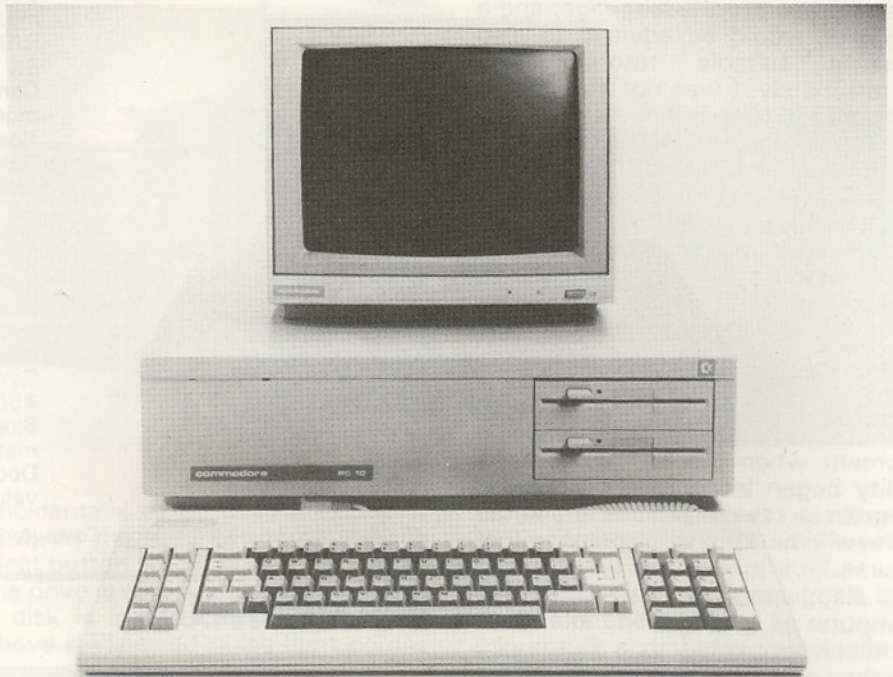
One trouble

The only aspect with which I had trouble was the placement of the Alt & Ctrl keys next to each other above the left Shift key — I'm used to these two being vertically placed, and kept hitting Shift instead of Alt.

The Taiwanese manufactured green screen monochrome monitor gives a very high quality display with a most visually appealing 9 x 14 pixel character set, and it has a facility to raise the front of the unit about 2in.

Internally, the CPU cabinet seems almost empty, the CPU board occupying the right half, the I/O board the left side. A very compact power supply with integral whisper-quiet fan is suspended at the right rear above the memory banks, and the two disk drives are mounted on a platform that will also support the internal hard disk in the PC20 version.

One of the machine's plus points is



that the internal disk controller can support two external Winchester's of up to 70 Mbytes each. Five expansion slots are provided, taking standard-length IBM PC cards.

The review unit had a basic video board, and another small board labelled "IBM PC Software Security System". This turns out to be for Commodore's "Silicon Office" series database software, marketed in Britain. Unfortunately there will not be a colour graphics adaptor board fitted, although the purchaser has a choice of third party boards to choose from.

On switch-on, the computer does a 12-second initialisation and test cycle and announces its readiness with a loud warble from the speaker. After the first half dozen re-boots, this gets a bit annoying. It would be so easy to fit a volume control, I can never understand why PCs do not have one.

Software supplied

The software supplied is a full set of MS-DOS utilities, including a very useful SIZE program that can quickly tell you if there will be enough room on a target disk for copying a batch of files. A graphics utility extends

MS-DOS to allow dumping colour graphics adaptor displays onto a graphics printer.

The GW-BASIC supplied includes a few extra commands to the version I normally use: ENVIRON(\$\$) allows modification and retrieval of parameters in MS-DOS's environment string table; ERDEV(\$\$) obtains device status information; ON PLAY branches when the music note buffer is nearly empty; ON TIMER branches on the internal timer value; CHDIR/MKDIR/RMDIR permit manipulation of disk directories; and the SHELL command is also present allowing MS-DOS utilities to be run from BASIC.

This version offers windowing capabilities, and a number of commands control this: VIEW defines a graphics window; VIEW PRINT sets a text window; WINDOW allows lines/graphs/objects to be drawn in space not bounded by the physical screen dimensions; PMAP maps world co-ordinate expressions to physical locations and vice versa. All the usual GW-BASIC graphics extensions are present, and this is a very full implementation of the language.

The two manuals through which I had a brief look were for MS-DOS

HARDWARE REVIEW

Two manuals

and GW-BASIC. The former is excellent, giving a good measure of tutorial advice on using MS-DOS, and explaining the commands and utilities very well. The BASIC manual is a reference to the language, and a beginner would be advised to also buy a suitable tutorial text. Unfortunately, I was not able to see a hardware or operational manual.

I ran a number of programs — Multimate, Sidekick, dBASE II & III, IBM PC Flight Simulator, Norton Utilities, C Compiler, some arcade games requiring a colour graphics card (which I had on loan for this evaluation), and many GW-BASIC programs. All ran with no problems at all.

This particular evaluation/demo machine was of West German manufacture, and I had an amusing moment when the MS-DOS MODE utility began interactive dialogue in German — the machines marketed here will be English "speaking" of course.

I also spent a day using the computer as a multi-mode intelligent terminal connected to a Burroughs medium systems mainframe, using a product called Intercom 101, written for IBM PC — again no problems.

Summing up, a good machine, bound to attract a lot of Commodore-sympathetic buyers and maybe stealing somebody else's prospects as well.

Microcomputer summary

| | |
|--|--|
| Name: | Commodore PC 10 |
| Manufacturer: | Commodore Computer |
| Microprocessor: | Intel 8088 |
| Clock speed: | 4.77Mhz |
| RAM: | 256K bytes, on-board expansion to 512K; 640K maximum with add-on memory card; 32K video RAM. |
| ROM: | 8K or 16K |
| Input/output: | Centronics parallel port; RS232 Serial port; monochrome composite video; five expansion slots for PC-compatible cards. |
| Keyboard: | Detachable, standard layout, 10 function keys, numeric/cursor keypad. |
| Display: | 25 lines by 40 characters or 25 lines by 80 characters |
| Graphics: | 640 x 200 pixels or 640 x 352 |
| Sound: | Internal speaker |
| Disk: | Dual 360K byte floppies, IBM compatible, 40 track, 9 sector. |
| Operating system: | MS-DOS |
| Languages: | GW-BASIC supplied |
| Cost: | \$5695 (dual floppy version) |
| Options: | Single floppy/10 Mbyte hard disk version; 8087 math coprocessor (socket on-board) |
| Reviewer's ratings (5 the highest): | Documentation 4; language 5; expansion 5; value for money 4; support 5 |

(Review unit from Commodore Computer (NZ) Ltd).

MICRO NEWS

Todd Motors, at Porirua, is an example of a company using different networks for different tasks.

More than 75 of its independent car-dealers nationwide are linked to Porirua and its Burroughs A9 mainframe through Reynolds and

Reynolds TC1000 micros acting as terminals. It is a dial-up service running overnight with dealers sending accounting and parts inventory information at the end of each day, and receiving updates each morning.

In-house, there is an extensive network of more than 80 terminals in offices and on the factory floor. Most of the terminals are at the main Porirua building, but a few are based in the spare parts warehouse at Wingate in the Hutt Valley. This line spare parts service, with the spare parts business being a major user. At Porirua, Burroughs MT1500 terminals have been installed on the factory floor as part of a vehicle production and control system.

The terminals in the network are using basic software, but most applications are developed in-house with some using APL for planning, forecasting and budgeting models, and costing.

A third network of six Burroughs B25 micros is clustered with the ability to link with the A9 mainframe. Using standard software, this network is used for data entry for spare parts, production control, payroll, market research, general ledger and debtors' accounts.

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INNOVA DRIVE

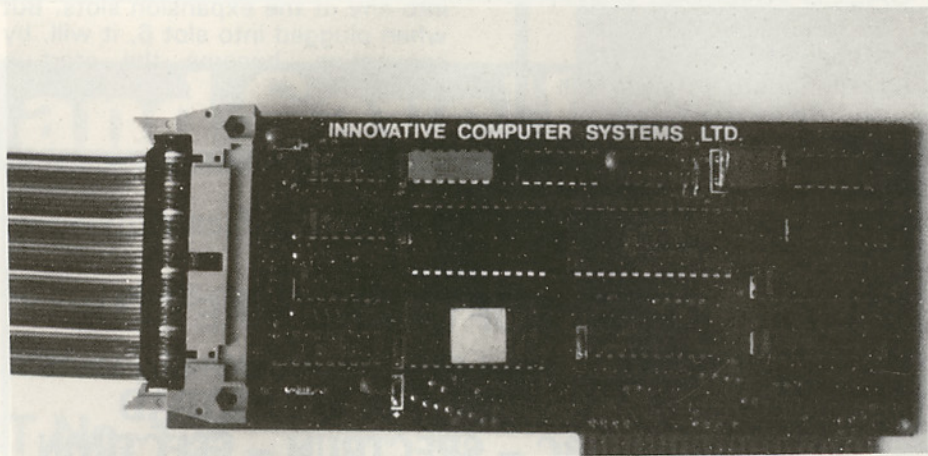
Little big floppy

By Alex & Fred Wong

Since the introduction of the Macintosh, with its high-capacity 3.5in disk format, I have wanted a micro-drive. Until recently, I thought this would necessitate the mortgage of my soul to buy a Macintosh, but not any more. The Innova-Drive offers a massive 800 kilobytes of storage for the Apple II Plus the IIe on a standard, double-sided 3.5in disk.

It is designed and manufactured by Innovative Computer Systems Ltd, an Auckland-based firm headed by Tony Unkovich, formerly service manager at CED, where he was responsible for the design of the Computer Shop range of peripheral cards for the Apple II.

The Innova-Drive is amazingly small. With a footprint of 7in by 4in, and only 1.5in high, it is almost small enough to overlook. Inside the matching Apple cream colour metal case with a black plastic front is a Matsushita-made drive mechanism



(incidentally to be used in the new IBM). In the front of the drive is an eject button which is recessed when the drive is empty and pops up when a disk is inserted through the slot above it. The red pulse light comes

on only when the drive is reading or writing information. The unit is solid, professional and understated.

Two drives may be plugged into each controller card (giving 1.6 megabytes on line) via a single, large

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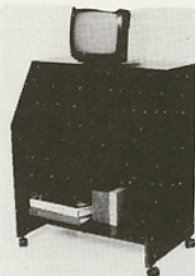
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HARDWARE REVIEW

40-pin ribbon cable that Fred manages to fit through one of the IIe's rear slots. It has three connectors, one for the card and one for each disk drive. The controller card, well built and somewhat larger than a Disk II card, can be plugged into any of the expansion slots. But when plugged into slot 6, it will, by convention, become the start-up drive.

At work

The Innova-Drive works with ProDOS. Apple's operating system written especially for use with high capacity drives, and to test the Innova-Drive, we determine to run a ProDOS application off it. Not surprisingly, we pick AppleWorks, ours (and probably everyone else's) workhorse program for the IIe.

Fred boots the ProDOS Users Disk and goes to the Filer. When he tries the Copy A Volume command, we find that this, like the Compare Volumes command, does not work for disks of different sizes. Never fear! He first formats the 800K Innova-Drive and then, using the File commands, copies over all the files on the boot in program sides of AppleWorks onto a double sided 3.5in microdisk. It's done, and there is still more than 620K of space we can use for data storage!

Fred boots the Innova-Drive, and boy, is it good! Instead of having to insert the program disk (which means flipping the boot disk) and typing return, he just presses the space bar. Instead of having to type in the date, he just presses the space bar, because we have a time-piece clock/calendar card . . . but that will be another story, another time.

ProDOS, and AppleWorks, can subdivide space on a disk so that each portion may be treated like a different disk, hence the name subdirectories. Now, from the 620K of free space on the AppleWorks microdisk, Fred creates a subdirectory that has four and a half times normal size (143K) data diskettes.

That's one way to do it. Another way is to create a few different subdirectories, for example, one to hold all the word processor files, one for the database files and another for spreadsheet files.

The Innova-Drive works like a mini-profile hard disk. It speeds up program boot and execution time immensely, makes it better to use and turns AppleWorks into a viable one-drive program. To speed the backing up of an entire microdisk using ProDOS' copy utility, which requires about 50 disk swaps for such a high capacity disk, a program like Volumecopy (written by Stuart Johns), which needs only eight disk swaps, is most useful.

The Innova-Drive also works with CP/M 2.2 (which will make dBASE II



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COMPUTER CENTER PH 64-900
Dreghorn Place
HAWKES BAY
COMPUTER CONNECTION PH 51-965
18 Dalton St., Napier

☆☆ Trade enquiries welcome ☆☆

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

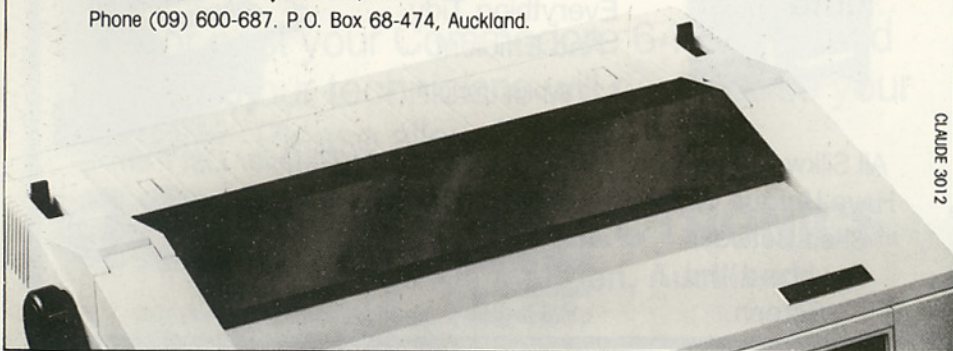
A GREAT SET OF WHEELS FOR YOUR PC

C.ltoh's new Y10 daisywheel printer will get the word-processing ability of your PC "up and running" at a sensible price. Crisp, clean type from carbon ribbons. 180 words per minute - error free! Drop-in printwheel loading changes typefaces in seconds. Best of all the compact, economical Y10 has all the features and flexibility of the proven C.ltoh F10.

They're both designed and built as computer printers - not hopeful extensions of typewriter technology. For a dealer near you contact -

CONTROL

Phone (09) 600-687. P.O. Box 68-474, Auckland.



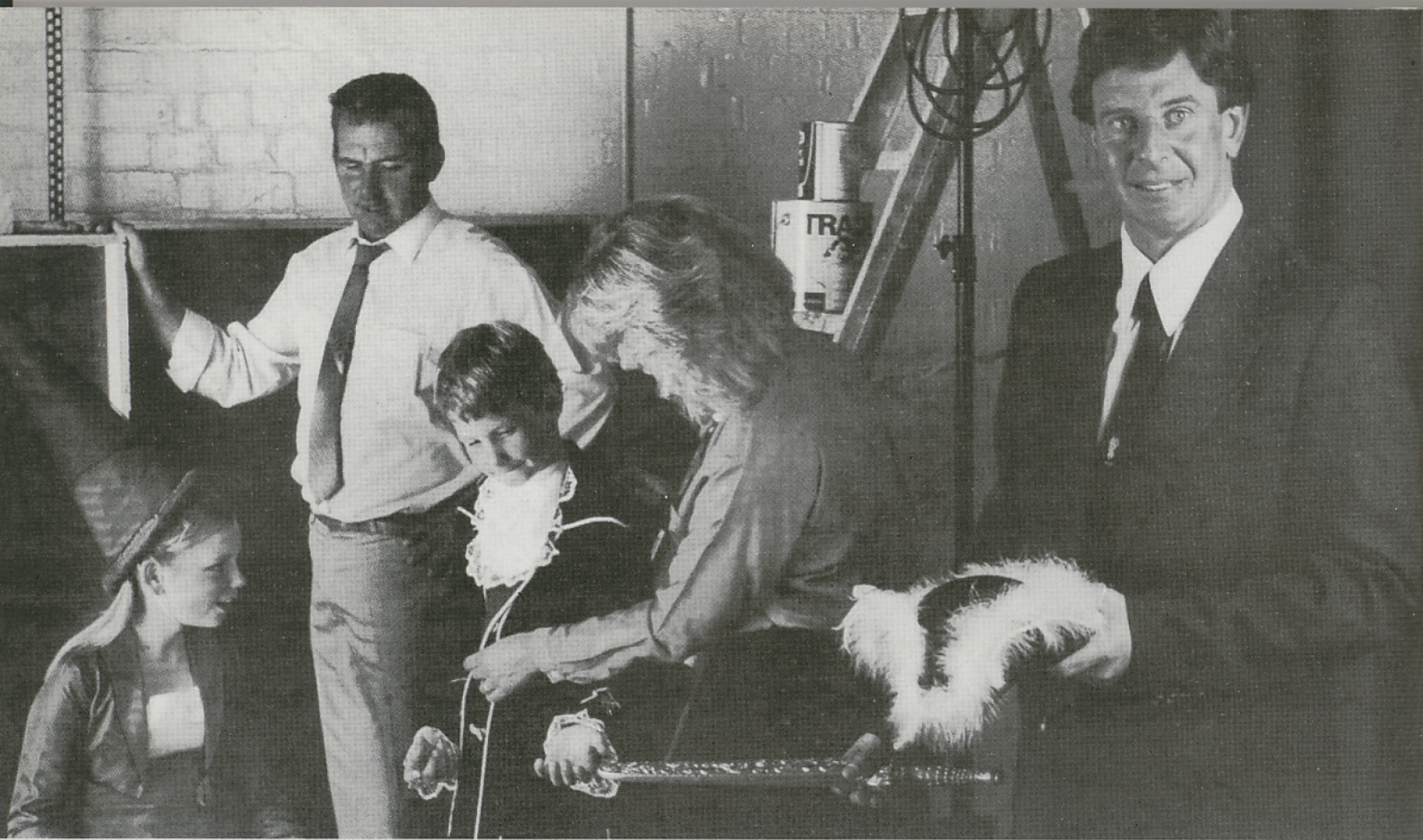
CLAUDE 3012

Turn to page 76

Exhibition Catalogue

**Wellington
Computer
Show**

July 11, 12, 13
10am — 7.30pm
Daily
Overseas Terminal



I'm a lucky man. I was smart enough to delegate my computer hassles to Powercorp.

Last year I was faced with a dilemma. Whether I liked it or not, I knew there were plenty of good reasons for my company to enter the computer age.

But to make an informed decision, one has to become informed. In the computer business that's a tough task to tackle alone.

I now know that it makes good business sense to delegate.

And the Powercorp team won my confidence from the start.

Their team of computer specialists handle all facets of the business: hardware, software, training, and service back-up. I've got

access to the same expertise that large corporations, banks and Government Departments rely on, and the experience that comes from working in a wide range of industries, often in companies smaller than mine.

Experience and expertise I could never hope to match alone.

They appraised my needs and gave me options tailored to my current business and my future growth.

After I had chosen, they bedded the system in and I've got guaranteed back-up and with Powerline, their customer service telephone link, you're never left on your own.

So you see I can be here today with my family because I know my company's performing to plan, with all the advantages of the computer age and the support of my Powercorp team.

Enter the computer age gracefully. Delegate Powercorp as your team.



POWERCORP
CENTRES

The force that means business.

Authorised IBM dealer Authorised Wang dealer

Head Office 6th Floor, NatWest House, 128-132 The Terrace, P.O. Box 690, Wellington. Phone: 729-792.
Auckland Powercorp House, New North Road, Auckland. Phone: (09) 798-384.
Hamilton Cnr Victoria & Princes Sts, P.O. Box 9349, Hamilton. Phone: (071) 82-679.
Rotorua Cnr Eruera & Amohia Sts, P.O. Box 1259, Rotorua. Phone: (073) 479-172.
Tauranga 87 1st Avenue, P.O. Box 365, Tauranga. Phone: (075) 81-009.
Napier Dickens St, P.O. Box 361, Napier. Phone: (070) 57-275, 54-444.
New Plymouth 71 Brougham Street, P.O. Box 370, New Plymouth. Phone: (067) 87-425, 88-526, 82-038.
Palmerston North 100-114 Queen Street, P.O. Box 902, Palmerston North. Phone: (063) 70-845, 70-849.
Wellington Branch 6th Floor, NatWest House, 128-132 The Terrace, P.O. Box 690, Wellington. Phone: 729-792.

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Organisers

Wellington Computer Shows Ltd and *Bits & Bytes*, New Zealand's personal computer magazine.

**COMPUTER
WORKS**

Supply and support of computer systems for Business, Trades and Professionals.

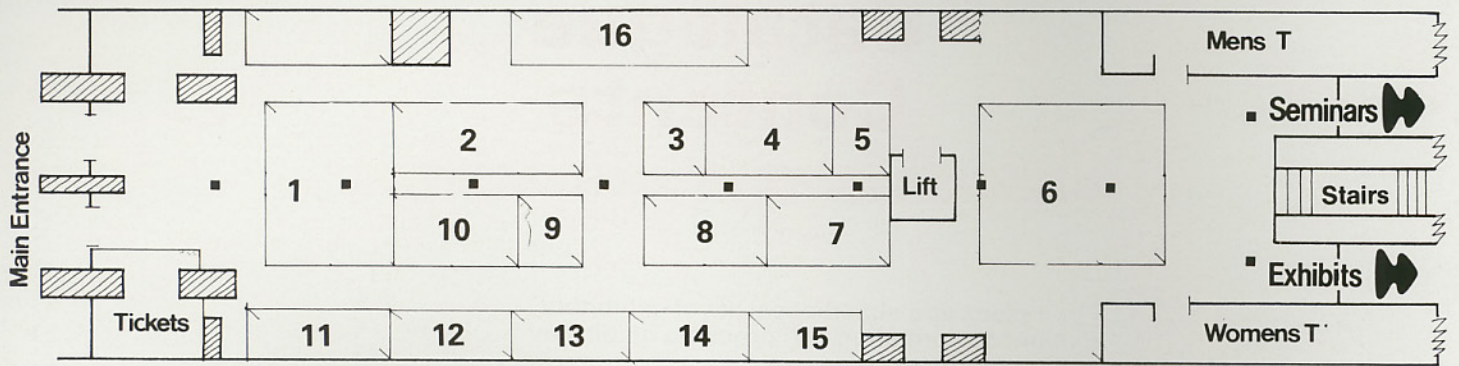
stair printers
dot matrix & daisy wheel

SANYO and other top computers, printers and software.

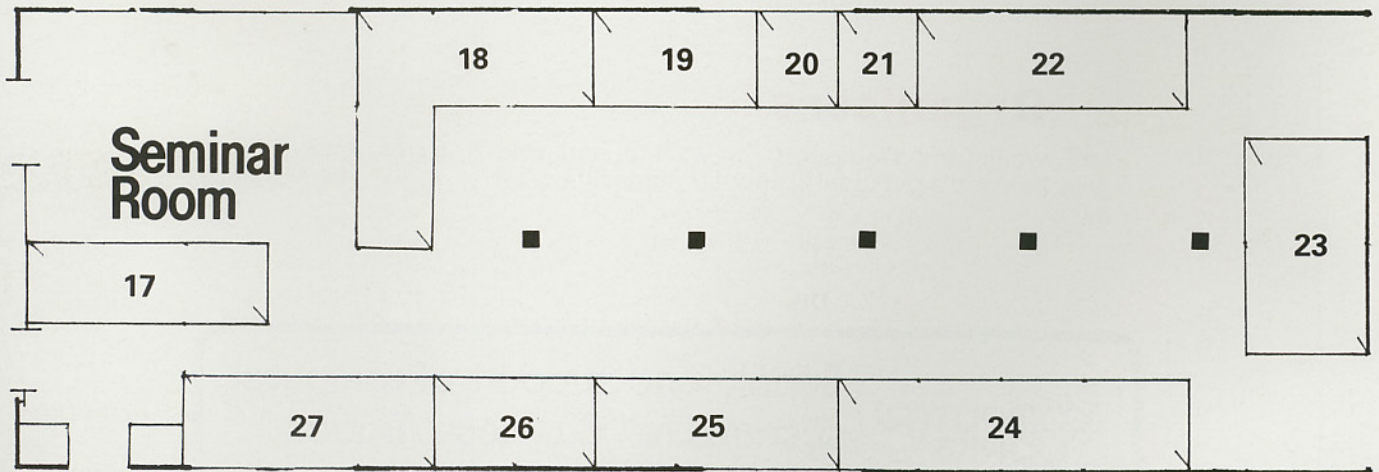
**COMPUTER
WORKS** *Microcomputers that mean business*

First floor, Queens Arcade, Queens Drive, Lower Hutt • Phone 664 944 • Box 30-669

FLOOR PLANS — Ground Floor

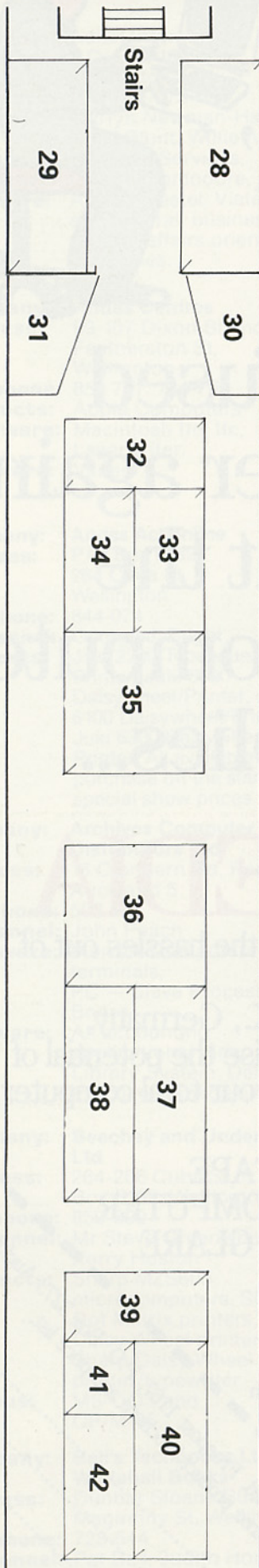


| Stand Number | Exhibitor(s) |
|--------------|---|
| 1 | Commodore Computers |
| 2 | Scollay (NEC) Computers |
| 3 | Nashua Disks |
| 4 | Microware |
| 5 | Tolley Agencies |
| 6 | The Computer Experience Blackwood Gayle Monaco Distributors |
| 7 | New Zealand Post Office |
| 8 | Computer Works Genisis Systems |
| 9 | Verbatim |
| 10 | Capital Business Systems |
| 11 | Silkwood Manufacturing |
| 12 | Bits & Bytes |
| 13 | Microbee Systems |
| 14 | Archives Computers |
| 15 | Aditel Information |
| 16 | Compumedia Systems |



| Stand Number | Exhibitor(s) |
|--------------|---|
| 17 | D.D.N.C. Cudby and Meade Magix Computer Systems |
| 18 | Grandstand Computers Ice Clear |
| 19 | L. V. Martin and Sons |
| 20 | Computer Cabling |
| 21 | Computer Broking |
| 23 | Check-Point Computers |
| 25 | Orchid Trading (Bondwell) Microstyle Computers |
| 26 | Professional Computer Supplies Malam Equipment |
| 27 | Computer Distributors Ltd |

FLOOR PLANS — First Floor



| Stand Number | Exhibitor(s) |
|--------------|--------------------------|
| 28 | Andas |
| 29 | Andas Actionline |
| 30 | NCR |
| 31 | STC Data Products |
| 32 | Sord Computers |
| 33 | Beechy and Underwood |
| 34 | Bell Tech Books |
| 35 | Computers for People |
| 36 | Sperry Computers |
| 37 | Powercorp |
| 38 | Hewlett Packard |
| 39 | Interactive Applications |
| 40 | Data General |
| 41 | Micropost |
| 42 | Businessworld Computers |

MICROWARE (NZ)

IMPORTERS & DISTRIBUTORS
P.O. BOX 6309 WELLINGTON
PH (0553) 88940 : TELEX NZ31255 INTCOM

ON DISPLAY AT WELLINGTON COMPUTER SHOW:

ZX SPECTRUM HARDWARE

DISK DRIVE EXPANSION 'OPUS DISCOVERY I'

Featuring: 3.5in Disk Drive, Centronic Printer Port, Joystick Port (Kempston), Monitor socket, Free Blank Disk

* All this for only \$995.00 *

SHOW SPECIAL - Trans Express copier program (on disk) worth \$60, free with each show purchase of an OPUS DISCOVERY I

FULL SIZE KEYBOARDS 'SAGA EMPEROR I'

Featuring: 67 Full Travel Keys, giving you the ability to speed type - for business or pleasure. \$199.00

MODEM 'VTX 5000'

(Currently seeking NZPO approval). This direct connect modem will give you access to all Videotex services and bulletin boards.

BBC HARDWARE

SIDWAYS RAM EXPANSIONS 'SOLIDISKS'

Sold with free software. Available in 32K or 128K units. Upgrade available from 32 to 128K.

DISK DRIVES

5.25in 80/40 track switchable. Cased with all leads and utility disk.

MEGA MOUSE

Complete with sophisticated drawing software. Real time colour movement facility.

QL HARDWARE & SOFTWARE

DISC INTERFACES

Compatible with most BBC disc drives. Software in ROM. Supports 40 or 80 track, 3.5 or 5.25in drives. Adds extra commands to Superbasic. Comes with machine-code program to convert programs with 'advl' in their listings to 'flpl'.

DISC DRIVES

5.25in 40/80 track switchable. Single drive in dual case with power supply.

CENTRONIC PRINTER INTERFACES

Plug into SERI port to drive all Centronic type printers.

RAM EXPANSION

256K unit which can be upgraded to 512K at a later date.

SOFTWARE

Chess - Backgammon - West - Kingdom of Zkul - Super Monitor - Sprite Generator.

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You've made the
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all over again
about the
right computer
supplies...



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Please send me your free product brochure and price list.
Name:
Company:
Address:

Exhibitors and products on display ...

Company: Aditel Information
Address: P.O. Box 10099, Wellington
Telephone: (04) 720-773
Personnel: Martyn Newman-Hall, Nicki Blunt, Willie Allen
Products: Videotex Services.
Hardware: BBC, Commodore, Apple.
Software: Aditel, Prestel, Viatel, agricultural, business and current affairs orientated databases.

Company: Andas Centres
Address: 99-107 Dixon St and 153 Featherston St, Wellington.
Telephone: 850 777, 731 791
Products: Apple Computers
Hardware: Macintosh IIe, IIc, Laserwriter.
Software: Varied.

Company: Andas Actionline
Address: P.O. Box 6139, 264 Cuba St, Wellington
Telephone: 844-074
Personnel: George J. Bright
Products: Juki 2200 Typewriter/Printer, Juki 6000 Daisywheel/Printer, Juki 6100 Daisywheel/Printer, Juki 6300 Daisywheel/Printer. All available for purchase off the stand at special show prices.

Company: Archives Computer Distributors Ltd
Address: 16 Clonbern Rd, Remuera Auckland 5
Telephone: 503 548
Personnel: John Peach
Hardware: Morrow Computers and terminals, PC — Slave Processor Board.
Software: All accounting applications, Video Library System, Dental Practice Management.

Company: Beechey and Underwood Ltd
Address: 264-266 Cuba St, P.O. Box 6139, Wellington
Telephone: 859-699
Personnel: Mr Steve Greenwood, Mr Kerry Huston
Products: Sharp MZS600 microcomputers, SOLAR Dot Matrix printers, JUKI Daisy Wheel printers. Sharp Daisy Wheel printer/typewriter.
Various: MS-DOS and CP/M-86.

Company: Bell's Techbooks Ltd and Whitehall Books
Address: Dunbar Sloane Building, Maginnity St, Wellington
Telephone: 728-544
Personnel: Pat Bell, Judith Hore, Dianna Williams
Products: Books.

Company: BITS & BYTES
Address: P.O. Box 9870, Auckland (Advertising), P.O. Box 827, Christchurch (Subscriptions)
Telephone: AK 549-028, CHCH 66-566
Personnel: Dion Gooks, Jocelyn Howard, Paul Gooks, Gaie Ellis
Products: Magazines. BITS & BYTES is by far the largest selling computer magazine in New Zealand. The latest issue and a range of back copies with independent reviews of computers and software will be on sale. New subscriptions and subscription renewals will be available.

Company: Blackwood Gayle Distributors Ltd
Address: 178 Marua Rd, Auckland.
Telephone: 591 503
Personnel: Mr Toni Cassin
Products: Computer software and books.
Software: CBS, Avalon Hill, Spinnaker, Fisherprice, EPYX, Ssi, Tellarium Games workshop.

Company: Businessworld Computers Ltd.
Address: 11 Johnston St. Wellington P.O. Box 3351.
Telephone: 731 152
Personnel: Mike Amer and others.
Products: IBM, HP, D.G. Sanyo Computers.
Hardware: Printers, Software, etc. IBM PC, XT, AT, Local Area Networking, Data General One, Hewlett Pakard Portable.
Software: HP Laser Printer, Open Access, Framework, Samna Word, Sidekick, Lotus 1, 2, 3, dBASE III.
Other: Computer workstation furniture.

Company: Capital Business Systems Ltd
Address: 424 Cuba St, Lower Hutt
Telephone: 663-475
Personnel: Chris Ashman, Lindsay Williams, Rex Kershaw, Christine Robertson
Hardware: Televideo Multi-user "Personal Mini", Bundwell Portable Computers, Tallgrass Tape Drives/Hard Disks.
Software: Full range MSDOS and CP/M systems, 'Pride' commercial printers accounting and estimating package, 'Cashlink' small business integrated package with GST.
Other: Professional advice

Company: Check Point Computers Ltd
Address: 36 Main Road, Private Bag, Tawa, Wellington.
Telephone: (04) 326 999, (04) 326 988
Personnel: Tony Pointon, John Davies, Murray Wright.
Products: Sanyo 555 series, Sanyo 775 portable.
Hardware: Panasonic Snr Partner; IBM compatible cards. Panasonic 120 CPS printer; Daisy jr (low cost Daisy printer with 7K buffer), hard disks for Sanyo 550 series. 20 meg hard disks and controllers for IBM PC's and XT's.
Software: Cashlink (a comprehensive accounting package), Thoughtware and Authoring System, Doctor's surgery package, property management system. Computer Assurance (accounting and sales aid for insurance agents). CAD Draught. (Mechanical & Engineering.)

Company: Commodore Computer (N.Z.) Ltd
Address: 250 Forest Hill Rd, Forrest Hill, P.O. Box 33847, Auckland 9
Telephone: 410-9182
Personnel: Graham Truman, Mike Cooch, Peter Sinke and Richard Thornton
Products on display: Commodore Computers. New Zealand launch of Commodore PC. C64, C16, Plus 4, SX64, CBM 700 series.
Hardware: Full range of software for home, education, business and videotex.

Company: Compumedia Systems Limited
Address: 16 Woodson Place, Glenfield. P.O. Box 3273, Auckland and Ground Floor, P.S.A. House, 11 Aurora Tce, P.O. Box 11091, Wellington
Telephone: 444-6085 (AK) 851-548 (WGTN)
Personnel: Judith Ward, Leeanne Wardell, Peter Corkery
Products: Maxell Flexible Disk, BASF Computer Tape, Precision Computer Ribbons, Precision Computer Paper, Disk Minder Storage Units, AFL Computer Cleaning Products, Acoustic Printer Hoods, Anti-Glare Filter, Computer Furniture.

Exhibitors and products on display ...

Computer: Computer Broking Services Ltd
Address: Control Data House, 53 Boulcott St, P.O. Box 934, Wellington.
Telephone: (04) 723 481
Personnel: Mr John Story
Products: Corvus LAN, Onyx, Tab, PFE.
Hardware: Corvus Omni Net Local Area Network including IBM workstations, hard disks, 200 mb bank, printer spooler, diskette — less PC etc will be operating. In addition Corvus products for Appletalk will be on display using Apple Macintosh. Information on Onyx multi-user micros operating under MP/M, Oasis, Concurrent DOS and Unix will be on hand. Bursters and maintenance service available nationwide.

Company: Computer Cable Services Ltd
Address: 104-108 Dixon St, P.O. Box 11-086, Wellington.
Telephone: 759 135, 859 605
Personnel: Doug Walklin, Owen Pearson, Mike McHugh, Peter Thornton, Warren Good.
Products: Cables, Connectors, Test Equipment.

Company: Computer Distributors Ltd
Address: 46B Taharoto Road, Takapuna, Auckland. P.O. Box 31-355, Milford
Telephone: (09) 495-809/495-624

Personnel: Mr L. Jerkovich, Mr P. M. de Zwart
Products: Spectravideo computers and peripherals. SV series of printers.
Hardware: SV132S Business Systems, SV172S MSX home computer.
Software: Full range of educational, entertainment and business software for both Spectravideo and MSX computers.
Other: SV3000 series dot matrix and daisy wheel printers. Literature for Spectravideo and MSX computers.

Company: Computers For People
Address: 35 Taranaki St, Wellington, 69A Rutherford St, Lower Hutt.
Telephone: 847 668, 664 069
Personnel: John Foot, John Duncan, Peter Ivin, David Hebbend, Michael Duncan.

Products: Hardware, Software, CAD, POSDATA Retail System.
Hardware: Wang, Sanyo, Kaypro.
Software: Auto CAD, POSDATA, Charter, Timber Systems, Lotus, Open Access, Cashlink, Paramour.

Company: Computer Works
Address: First Floor, Queens Arcade, Queens Drive, Lower Hutt (03) 664-944
Personnel: Ralph Wilkinson, Delwyn Nuttall, Angela Aberhart

Hardware: Sanyo MBC 550 Desk Top 16 bit Computers, Sanyo MBC 775 Colour Portable Computer, Televideo Personal Mini Networking System, 'Star' Printers.
Software: 'Businessware' accounting package, 'Cashlink' fully integrated accounting system, 'Open Access' and 'Framework' integrated software.

Company: Cudby & Meade
Address: 69 Pharazyn St, P.O. Box 44-096, Lower Hutt
Telephone: 666-962
Personnel: John Callam, Mike Cudby, N. Adams
Hardware: Computer furniture, Workstations.

Company: Data General New Zealand Limited
Address: P.O. Box 9735, Wellington.
Telephone: (04) 723 900
Personnel: Peter Uffindell, Kelvyn Flavall, Myles Gustofson, Jill Horsley
Products: Data General/One Personal Computer
Software: GEO Connection, Lotus 1,2,3, dBase II, popular business applications such as IAL, IMS, Sybiz.

Company: Data Link Ltd.
Address: P.O. Box 1483, 87-93 The Terrace, Fletcher Challenge House, Wellington.

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SPECIALISED ADVICE IN COMPLETE BUSINESS SYSTEMS, SALES, INSTALLATION & SUPPORT SERVICE

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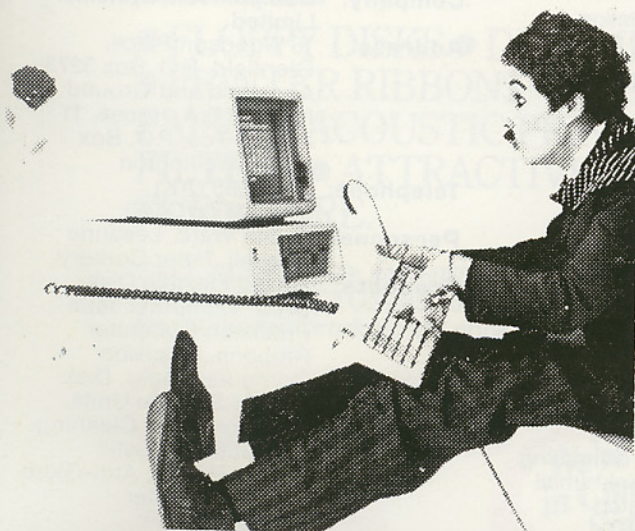
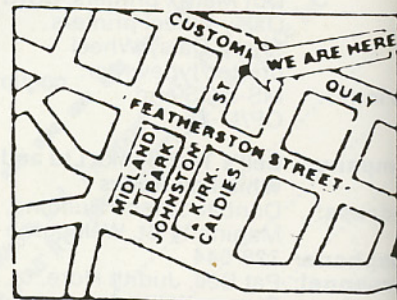
- IBM PC's: PC1, XT, AT and Portable
- Peripherals
- Software

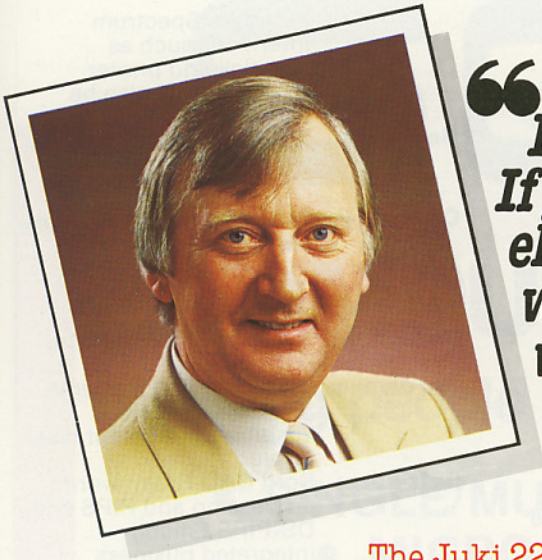
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“I’ve said it before, and I’ll say it again... If you can buy any other new electronic Daisywheel typewriter, with all these features, at a lower price, we’ll give you double the difference!”

eyBright.

George Bright
General Manager Andas Action Line

The Juki 2200, described internationally as the “first Electronic Daisywheel Typewriter to smash the price barrier” is now available again in New Zealand after completely selling out at its first introduction.

Feature-for-feature, no other electronic typewriter in its class can match it.

Only \$895!



Also a Daisywheel Printer

The Juki 2200 comes complete with a “built-in” interface (Parallel or Serial RS232) to connect to your home or small business computer. This turns the Juki 2200 into a true bi-directional “letter quality” Daisywheel Printer. With other machines you can pay nearly as much as the Juki 2200 for an optional interface attachment alone!!

JUKI WORLDWIDE SALES EXCEED \$630 MILLION A YEAR!

In the highly-competitive world of Japanese technology, Juki was recently awarded the coveted ‘Deming Prize’ for quality control.

Juki has been internationally recognised for the quality of its products for over 40 years.

Why are we doing this?

We’re making you this offer as a genuine introduction to our direct selling service — **Andas Action Line**. Andas Action Line is backed by New Zealand’s largest and best known customer service network — Andas Engineering — 200 engineers in 17 key locations — **NATIONWIDE!** Andas delivers direct to your home, business or club within two weeks of banking your order! All machines carry a 12 month guarantee, and the Andas ‘Customer Satisfaction’ card. All supplies for the Juki 2200 are available through Andas Action Line at special low prices.

PH844-074
Or send now for the Juki 2200 14 day ‘Money-back’ trial

Feature Chart

Take it shopping with you and prove our offer. “No other machine can match it . . .”

| | | | |
|---|---|--|--|
| <input type="checkbox"/> Daisywheel — 100 characters | <input type="checkbox"/> Shift & Shift Lock Key | <input type="checkbox"/> Margin Release | <input type="checkbox"/> Automatic Carriage Return |
| <input type="checkbox"/> Printing Speed — 10 CPM | <input type="checkbox"/> Tabulation | <input type="checkbox"/> Page end indicator | <input type="checkbox"/> Automatic Under Line |
| <input type="checkbox"/> Printing Pitch — 10, 12, 15 | <input type="checkbox"/> Carriage Return | <input type="checkbox"/> Tab Set | <input type="checkbox"/> Automatic Centering |
| <input type="checkbox"/> Paper Width — 12 inches | <input type="checkbox"/> Space | <input type="checkbox"/> Repeat Key (all keys) | <input type="checkbox"/> Second Key Board |
| <input type="checkbox"/> Printing Width — 9 inches | <input type="checkbox"/> Back Space | <input type="checkbox"/> Index Key | <input type="checkbox"/> “Built-in” Interface — Parallel or Serial |
| <input type="checkbox"/> Interline Space — 1, 1.5, 2 | <input type="checkbox"/> Correction Key | <input type="checkbox"/> Release | <input type="checkbox"/> Print Buffer — 2K |
| <input type="checkbox"/> Keybuffer Memory — 12 characters | <input type="checkbox"/> Half Space | <input type="checkbox"/> Scientific signs and symbols Superscript and Subscript | <input type="checkbox"/> Bi-directional |
| <input type="checkbox"/> Correction Memory — 20 characters | <input type="checkbox"/> Express Back Space | <input type="checkbox"/> High Yield Ribbon Saver operation. | <input type="checkbox"/> Weight — 6.1kg (6.8kg with hood) |
| <input type="checkbox"/> Impression Control — 2 steps | <input type="checkbox"/> Right Margin | <input type="checkbox"/> Reverse Index | |
| <input type="checkbox"/> Number of Copy — 1 + 3 | <input type="checkbox"/> Left Margin | <input type="checkbox"/> Paragraph Indent | |
| | | <input type="checkbox"/> Decimal Tab | |

ANDAS
Action Line
The Direct Way to Save

**WIN A JUKI 2200
ON THE ANDAS ACTION LINE STAND
AT THE SHOW!**

Exhibitors and products on display ...

Telephone: 729 709
Personnel: Merv Lomax
Products: ITT/XTRA.

Company: Dispersed Data Network Consultants Ltd
Address: P.O. Box 31-030, Lower Hutt
Telephone: 697-548
Personnel: Phil Jones
Hardware: IBM, PC-AT, ICL Personal Computer.
Software: JEMS, Jewellers Manufacturing System, Fabric, Garment Manufacturing System, all manufacturing systems.
Other: Seams, Charter, Ascent.

Company: Framework Information Systems
Address: P.O. Box 8698 Symonds St, Auckland
Telephone: 792 557
Products: Data General One portable computer

Company: Grandstand Computers Ltd
Address: 21 Great South Rd, P.O.Box 2353, Auckland 504 035
Telephone: 504 035
Products on display: Amstrad computers and peripherals
Hardware: New Zealand launch of Amstrad CPC 664. Also on display Amstrad CPC 464. All peripherals.
Software: Wide range of software from business to home applications.

Company: Hewlett Packard (N.Z.) Ltd
Address: P.O. Box 9443, Wellington
Telephone: 877-199
Hardware: HP Touchscreen II, Laser Jet printer, HP Portable, Inkjet printer.
Software: Graphics Gallery.

Company: Ice Clear
Address: 205 Main St. Upper Hutt.
Telephone: 283 630
Personnel: Warwick Brown
Products: Amstrad Computers
Hardware: Amstrad CPC 464, CPC 664, Disk Drives, Printers.
Software: Educational Software, Recreation and Games, Business Software: Micro Pen, Micro Spread, Micro Script, Project Planner.

Company: Interactive Applications Ltd
Address: P.O. Box 3612, Wellington
Telephone: 736-657
Personnel: S. Seath, K. Stephens.
Products: Charter Software, SAMM.

Software: Charter Series, Microsoft Range, other micro-Computer software products. SAMM (Sales and Marketing software).

Company: L. V. Martin & Son
Address: Ngauranga Gorge, Wellington
Telephone: 738-750
Personnel: Murray Trickett
Products: Commodore, Amstrad, Sega Computers.

Company: Magix Computers
Address: 65 Dudley St, P.O. Box 30681 Lower Hutt
Telephone: 698 506
Personnel: Lex Wallace
Products: Magix Relational Database
Software: Magix is a mainframe applicaiton running on IBM PC and ATs. It is a fully relational database and includes a network controller and enhancements to PC-DOS.

Company: Microbee Systems
Address: P.O. Box 6863 Auckland.
Personnel: Shayne McKeown
Hardware: Microbee computers, for home, educational and business use.
Software: Microbee software.

Company: Microstyle Computers Ltd.
Address: High St, Lower Hutt
Telephone: 686 963
Personnel: Kevin Rowell. (On Bondwell stand.)
Products: Bondwell computers.

Company: Microware (N.Z.)
Address: P.O. Box 6309, Wellington.
Telephone: (0553) 88 940
Personnel: Chris Penman, Murray Palmer, Allan Dewsnap, Michael Penman.
Products: ZX Spectrum; Q.L.; BBC.
Hardware: Our stand will feature the new Opus "Discovery 1" Disc upgrade for the ZX Spectrum. Monitors for the Spectrum, BBC and Q.L. will be shown. Saga "Emperor 1" full-size spectrum keyboards. A Spectrum modem type VTX5000 will be shown but is waiting for NZPO type approval.

BBC RAM expansions (solidiscs) and disk drives along with the new MEGA MOUSE will be available for inspection. For the Q.L. we have disc interfaces, printer interfaces, RAM expansion and an excellent colour monitor.

Standard Spectrum interfaces such as Joystick and printer interfaces will also be displayed.
Software: The latest in Q.L. software.

Company: Mitsui Computer Systems Ltd
Address: 15-19 Wigan St, Wellington
Telephone: (04) 848 069
Personnel: V. Dimock, T. Eastwood, R. South
Hardware: Sord computer systems, Seikosha printers, Toshiba/Sord colour laser printer.
Software: Sord CAD Brain; word processing and PIPS and DS-PIPS Emcon integrated business management systems.

Company: Monaco Distributors Limited
Address: 2 Poland Road, Glenfield Auckland.
Telephone: 444 9144
Products: Atari Computers

Company: Nashua Disks Limited
Address: P.O. Box 76-020, Manukau City, Auckland.
Telephone: 278-4299
Personnel: Judy Shields, Greg Laird
Products: Floppy Disks, Removable Hard Disk Packs.

Company: New Zealand Post Office Telecoms Division
Address: Post Office Headquarters 7-27 Waterloo Quay, Wellington.
Telephone: 738 444
Products: Range of telecommunications equipment.

Company: NCR (NZ) Ltd
Address: 46 Wakefield St, P.O. Box 5945, Auckland
Telephone: 796 920
Personnel: Bruce Hickman, Paul Sutherland, Ian Howard, John Karl.
Products: Microcomputers
Hardware: NCR PC4i
Software: Industry standard.

Company: Orchid Trading Co. Ltd
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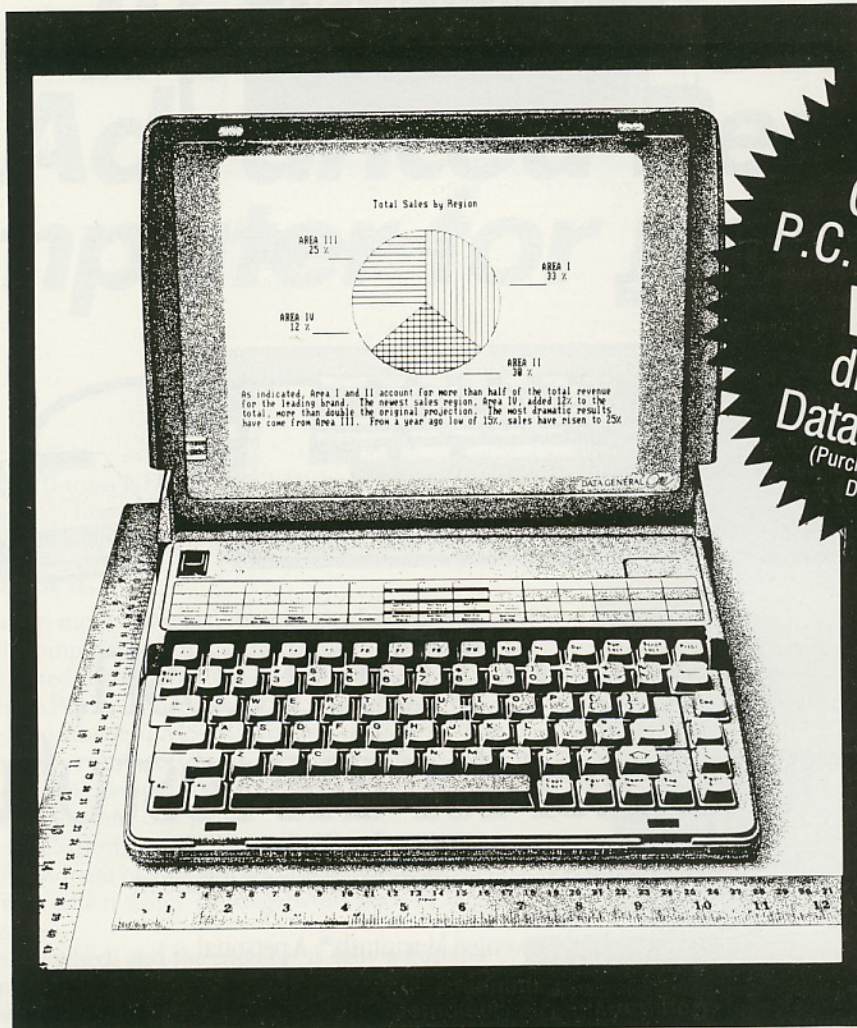
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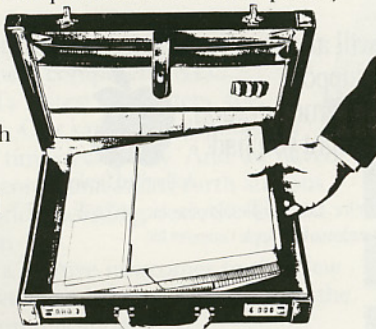


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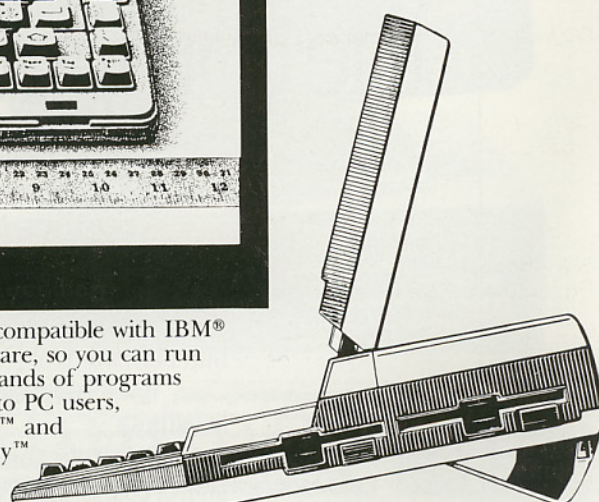
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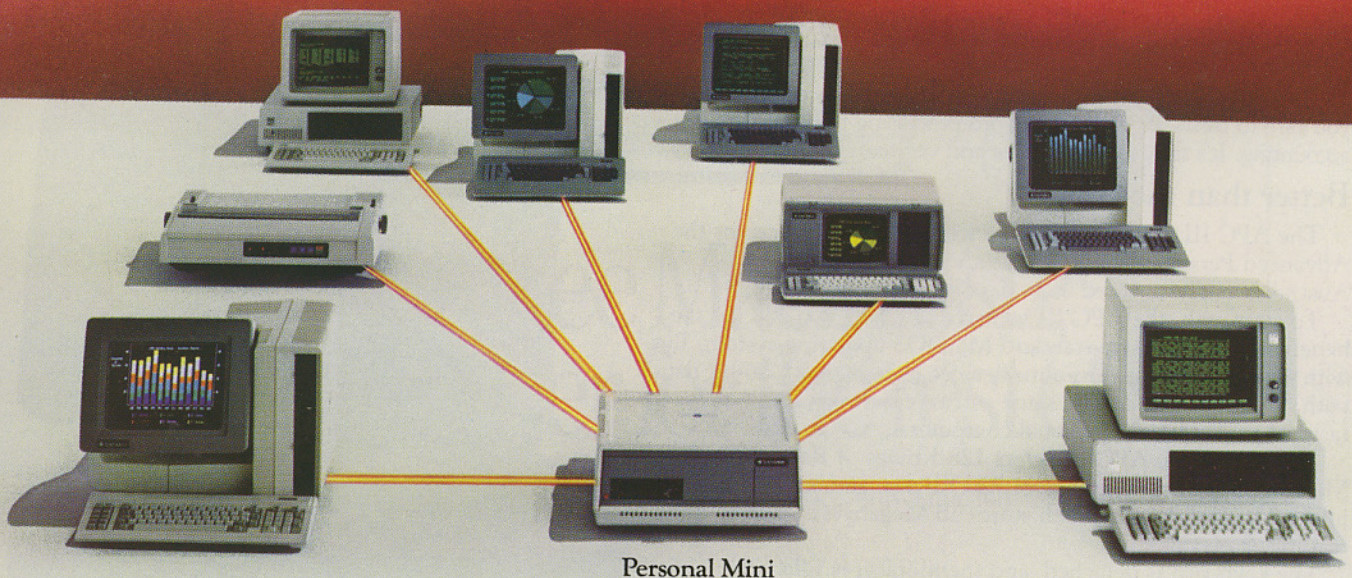
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We have been receiving many enquiries about problems that have been encountered when loading software from cassette or disc. Many of these can be solved with a few general operational rules.

★ The placing of the disc drive and/or datasette in relation to the screen can radically alter the performance of these items and drastically affect loading. It is good practice to ensure that these items are not close to the screen (i.e. not directly beside the television).

★ The use of the computer on the carpet cannot be too strongly discouraged. I would imagine that there are not many among us that have not felt the "bite" from a car or STATIC ELECTRICITY. Think what a jolt like that could do to the delicate piece of electronic engineering that is your computer. For this reason we strongly discourage the practice of using computers on the carpet. It is quite amazing the damage that this can cause.

★ It is also a good idea to use a power socket that is only for your computer, or that does not have any other electrical appliances plugged in at the time you are using your computer. Also the building up of a stack of "piggy-back" plugs is to be discouraged. These are so easily dislodged.

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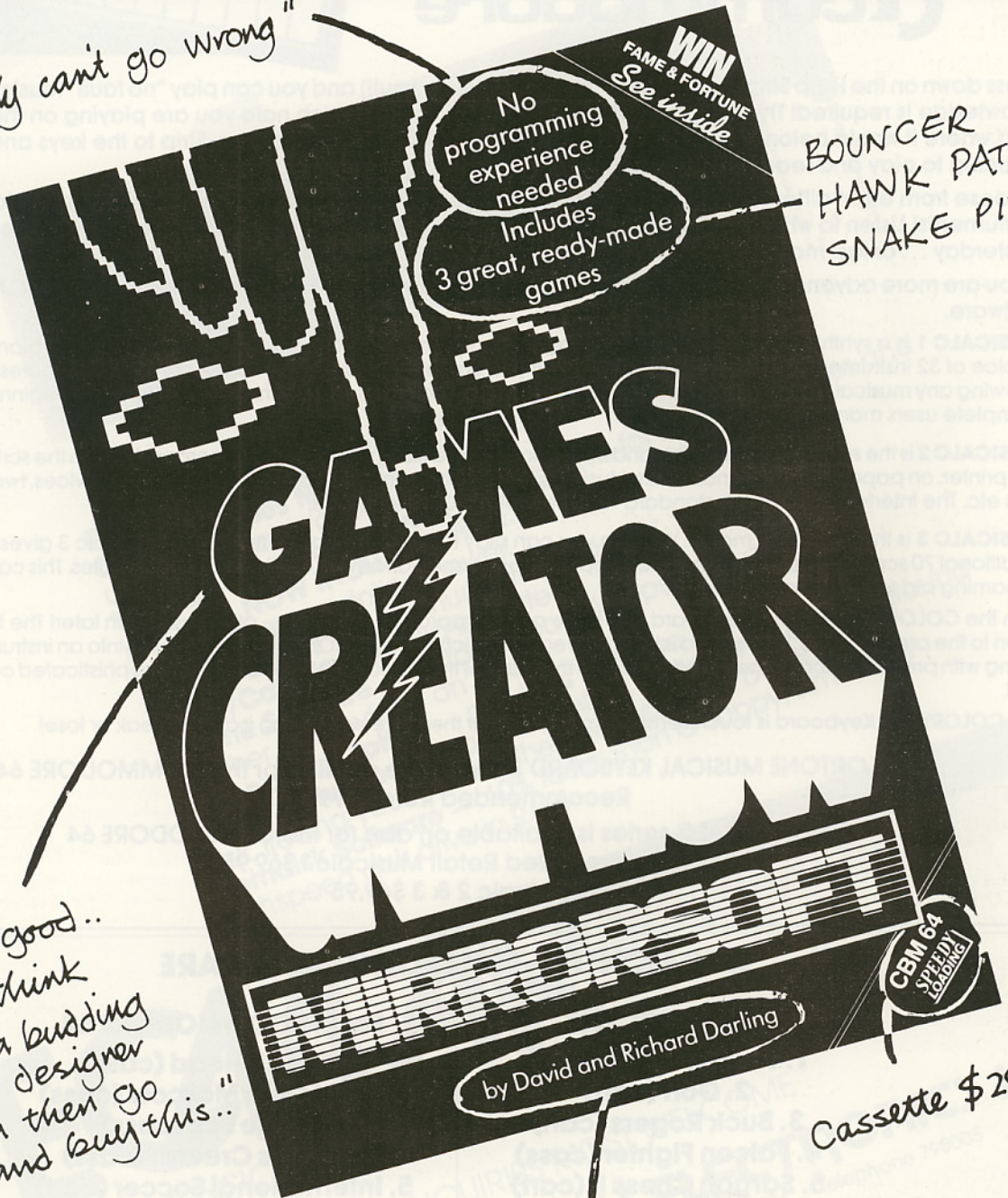
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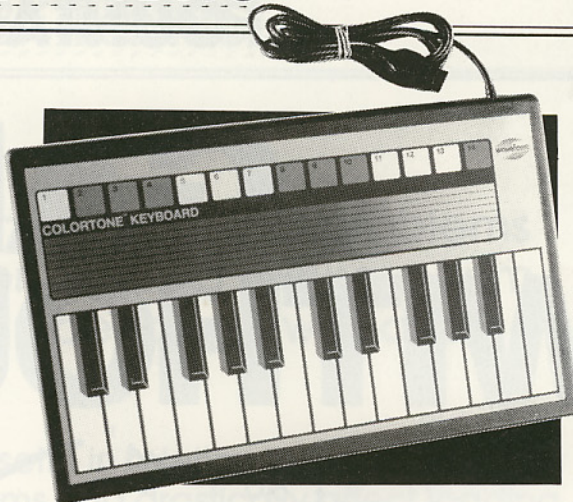
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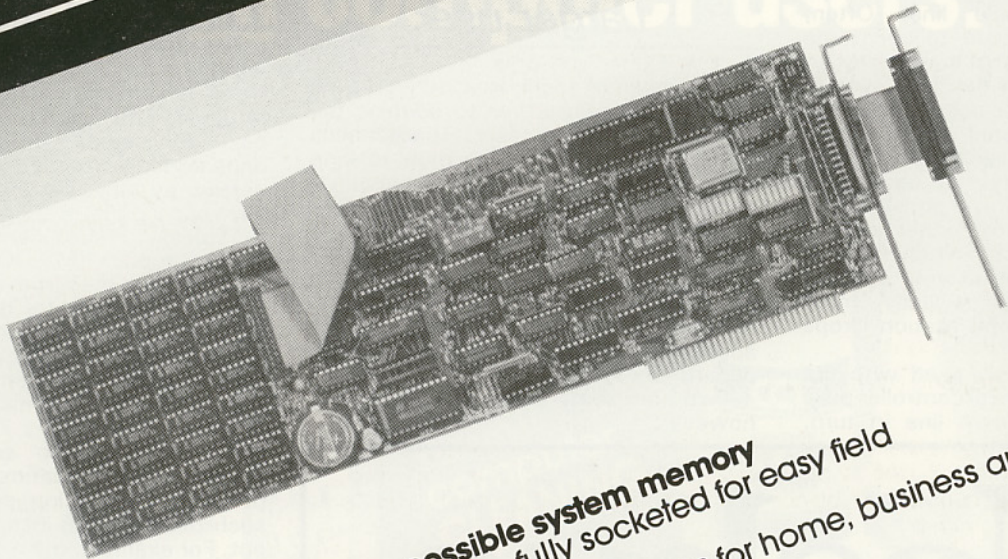
That's all for this issue!

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Introduction to networking: part 2

By Daryll Roots

Networks can be arranged in many different physical layouts, but the three most common are Bus, Slotted Ring and Star.

The bus layout is normally used with the CSMA protocol where stations are dropped off a single line. Often, repeaters must be added to boost the signal and there may be a master station to control access to the bus. This system is usually easy to install and reconfigure, and will not be affected if one of the stations becomes unavailable.

The slotted ring style is used with token passing protocol and consists of a number of work stations connected on a closed loop of cable. Each work station is involved in passing the token to the next station. The network usually must reconfigure itself if one station drops out.

The star is commonly used with the polling protocol. A central controller polls each station on its own line in turn,

asking for messages. This type of network provides a common point of access to share peripherals and allows easier management of the available resources.

Larger user

A number of local area networks on the market today strive to address the needs of the larger user. These needs include multi-user, multi-tasking capability, true data sharing, communication gateways to other systems and networks, and the automatic sharing of peripherals. These systems provide users with the benefits of microcomputing and in addition, remove from the larger system applications better handled at the department level.

Two problems are left to solve, however:

- Both the larger system and the micro probably have only limited access to common data.
- The company may have a number of local area networks in different locations wanting to share information.

The connection of micro to mainframe will allow access to corporate databases from which data can be used and returned, if desired. Information need not be duplicated on any system unnecessarily, as access to it can be gained by any host or micro in the network.

Typically, micros need not leave their native mode (MS-DOS, etc) while accessing mainframe information, making it possible for the micro user to retrieve data from such functions as spreadsheets or word processing as if that data was stored on its local disk, or the disks of other micros in the local network.

Micros may also emulate terminal devices of the larger host system and, as part of this emulation, perform functions such terminals are incapable of carrying out. For example, the micro may act as a number of terminal devices at one time. The host need not know it is addressing only one device, and a number of host application systems may be run simultaneously, with the possibility of moving data between these applications as desired. The benefits in storing duplicate information just to make information retrieval simpler are negated.

Sharing info

Sharing of information between groups or clusters of work stations necessitates the flattening out of hierarchical structures within the local network. Each work station must be a node fully in control of its own processing. It must be able to address nodes in other networks and exchange information across transmission media which could include the use of public networks and X.25.

But it would appear an organisation using a variety of equipment could solve most of its information processing and communication problems.

In future, communication software will continue to reflect trends in hardware architecture.

International standards for data transmission will continue to force communications compatibility between different types of systems and networks.

Computer designers and manufacturers must be prepared to meet this challenge.

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Storage & variables

By Joe Colquitt

Most people using computers will be familiar with the concepts of POKE, the action of storing a number, and PEEK, the action of retrieving a number. The equivalents of these keywords exist in ML.

POKE requires two instructions:

LDA\$(NUMBER), STA\$(ADDRESS)

This could be seen as putting a number in a box (the accumulator), then sending that box to an address.

Eg, POKE1024,65 becomes LDA#\$41 STA\$0400

remembering that addresses and values in ML are usually in hexadecimal.

The accumulator is used here in the "immediate" mode. Although STA (store accumulator) is really the instruction which performs the POKE, it is necessary to have the argument in the accumulator first.

PEEK requires only one instruction (which also uses the accumulator, though in a slightly different way). This is the "absolute" mode:

LDA\$(ADDRESS)

This is read as "load the accumulator with the contents of location (address)"
Eg, PEEK(1024) becomes LDA\$0400

A BASIC statement such as:

POKE53280,PEEK(53281)

becomes:

LDA\$D021 ;LOAD ACCUMULATOR WITH
CONTENTS OF \$D021 (53281)

STA\$D020 ;STORE THE ACCUMULATOR
AT \$D020 (53280)

RTS ;RETURN TO CALL

Locations 53281,53280 and the accumulator now all contain the value in location 53281.

A basic loader which does this:

10 FORI=0TO6:READML:POKE49152+I,ML:

NEXT:REM 49152 = \$C000

20 DATA173,33,208,141,32,208,96

30 SYS49152

53280 and 53281 are the C64 screen colour registers.

Remember that numbers/addresses greater than 255 are stored as low byte,

10 FORI=0TO19:READML:POKE49152+I,ML:NEXT

20 DATA169,0,162,0,157,0,216,157,0,217,157,0,218,157,0,219

25 DATA232,208,241,96

30 INPUT"COLOUR 0-15":CO

40 POKE49153,CO:\$SYS49152:GOTO30

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.

high byte. The "173" in the data is the code for LDA\$(absolute),33+208*256=53281;"141" is STA\$(absolute),32+208*256=53280; and "96" is the RETURN. As more programming is dealt with, the various types of addressing modes will be explained.

A convenient feature of BASIC is its ability to handle variables. Unfortunately, ML is unstructured in that respect, even when a monitor is used. The programmer must make all arrangements for variable storage.

A running BASIC program stores variable names and values in the free space above the program, and recalls variables by means of pointers. The interpreter does all that. ML doesn't have an interpreter, therefore ML variables, or "temporary values" must be manually stored, either from a basic program using ML, or by the ML program itself.

Take this line for example:

100 HP=PEEK(53248):REM VARIABLE 'HP' = SPRITE 0 HORIZONTAL POSITION

To put that statement into ML, it is necessary to store "PEEK(53248)" in a free memory byte, like this:

LDA\$D000 ;LOAD ACCUMULATOR WITH
CONTENTS OF \$D000 (53248)

STA\$C100 ;STORE ACCUMULATOR AT
\$C100 (49408)

RTS ;RETURN

This basic loader will demonstrate:

10 FORI=0TO6:READML:POKE49152+I,

ML:NEXT

20 DATA173,0,208,141,0,193,96

30 PRINTPEEK(49408):REM 49408

= \$C100, at present a free memory byte

40 POKE53248,100

50 SYS49152

60 PRINTPEEK(49408)

Notice that if you run it more than once, the "100" is stuck in 49408.

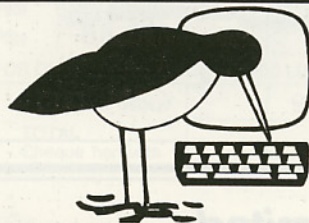
This process can work the other way

around. A value POKEd into memory from BASIC can be used by an ML program. This example, a loop, shows an interesting merge of BASIC and ML.

The ML routine is equivalent to "FORI=0TO999:POKE55296+I,CO:NEXT", which fills colour RAM. A disassembly of this loop next time.

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Buck's a winner

By Michael Fletcher

The first game I have received from the newly formed Stargate Enterprises is loosely based around the once popular Buck Rogers TV series. There are no Wilma Deerings or cute robots with speech impediments to help you out; it's solely you, as Buck Rogers and a high tech space ship to battle the evil force of the Planet Zoom.

The object is to battle your way past zapping electron posts, space hoppers, and alien saucers without running out of your precious fuel, and finally emerge into space to do combat with your most powerful enemy, the Alien Mothership.

The first screen on Buck Rogers is a scrolling playfield with your ship in the centre. You can move your ship left and right to increase speed, and up and down to reduce speed. Ahead of your ship are two electron posts which you have to move through the centre 10 times before you can progress to the next level. A good tip for this screen is to gain speed by pushing the joystick upwards and you will move through the posts a lot faster. If your ship touches one of the posts you will be destroyed.

First Enemy

The next stage introduces the first enemy — the flying saucers. They move in groups of three and are unable to fire at you. They can, however, smash into you and destroy your space ship. Pushing the action button will send missile fire rocketing from your craft at them. A hit has the same effect as passing through an electron post. You receive 200 points for each saucer you destroy.

The third screen has all the elements of screen one and two, with a deadly extra. The new challenge is the devious little space ships called space hoppers which move extremely quickly and are very hard to hit with your photon cannon.

Again, if a space hopper hits you, you are destroyed; if you manage to hit a space hopper, you receive 300 points.

The fourth and final screen of this level takes place in outer space where there are no electron posts to contend with, only alien saucers and . . . the Alien Mothership. The object is to destroy as many alien saucers as possible to draw out the Mothership which will emerge from the bottom of the screen. To destroy it, you have to hit it dead centre. Any other shots will simply rebound off the defence shield and could hit and destroy you. The reward for hitting the Mothership is a full tank of fuel and 20000 points.

Speeded up

Each level after this is a speeded up version of the first, with additional difficulties such as closer electron posts, space hoppers that fire at you, and electron posts that fire randomly outwards.

The graphics are incredible and use the full potential of a computer with high resolution graphics and a fast clock speed. The graphics for the alien saucers are exceptionally good, the 3D image they give to the landscape enhances the game tenfold, and the fast colourful scrolling playfield adds to the realism.

Overall, Buck Rogers Planet of Zoom is a good old fashioned 3D shoot 'em up, combined with clever graphics and vibrant colour. I would recommend it for any Atari games player; its smooth graphics and exciting games play would make it appealing to almost anybody. The relatively cheap price tag of \$49.95 for a 16K cartridge makes it worth serious consideration for your software library. Buck Rogers Planet of Zoom is available from Stargate Enterprises, P.O. Box 2240, Tauranga South, Tauranga.

Exciting News

Some of the more exciting news on the Atari scene involves the new Tauranga-based company, Stargate Enterprises, which is offering a whole new outlet of Atari hardware and software, most at relatively modest prices. The software companies from which Stargate is importing include First Star Software, Infocom (Zork fame), S.S.I. (the strategic war games people), Sega (arcade games, such as Buck Rogers and Congo Bongo), Artwork, Broderbund, Big 5, and Activision. Prices range from \$37.95 to \$89.95, and most should now be available.

Stargate enterprises is the sole

importer of the Indus GT disk drive which costs \$895, plus courier costs of \$10. This disk drive has received a lot of praise from American reviewers and is said to have a baud rate 400% faster than the Atari. The Indus GT also consists of three free software packages, DOS XL, GT word processor, and a spreadsheet program.

Stargate is also offering a full stroke, hard keyed replacement keyboard for the Atari 400. It costs \$159 and can be fitted permanently on to your existing keyboard in four minutes. This too is available only from Stargate. I hope to review this and other items from Stargate in the next few months.

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ASCII Organ

By Stephen Duncan

This program turns the Apple into a musical organ. Sound is produced by a machine code routine, and is dependent on the ASCII code of the key pressed. Every key (and every key combined with SHIFT and suchlike) produces a different note. The only key combination to avoid is CTRL-F which blanks the display.

Enter the run the BASIC listing, and the machine code will be read from a DATA statement and POKEd into memory, ready for you to play.

```

10 FOR SD = 770 TO 790: READ P: POKE
   SD,P: NEXT SD
20 DATA 173,48,192,136,208,5,20
   6,1,3,240,9,202,208,245,174,
   0,3,76,2,3,96
30 HOME
40 PRINT "WHAT KIND OF APPLE DO
   YOU HAVE....."
50 INPUT "II or II+ or IIe ";C#
60 IF C# = "II" THEN TA = 94: GOTO
   100
70 IF C# = "II+" THEN TA = 93: GOTO
   100
80 IF C# = "IIe" THEN TA = 127: GOTO
   100
90 GOTO 30

```

```

100 SD = INT (255 / TA)
110 POKE - 16368,0
120 HOME
130 PP = PEEK ( - 16384) - 128
140 IF PP = 0 THEN PP = 1
150 IF PP > 0 THEN POKE 768,SD *
   PP: POKE 769,90: CALL 770: GOTO
   170
160 GOTO 130
170 HOME : PRINT "ASC CODE ";PP
180 PRINT : PRINT
190 PRINT "KEYPRESSED "; CHR# (P
   P)
200 PRINT : PRINT : PRINT
210 PRINT "NOTE CODE ";SD * PP
220 POKE - 16368,0
230 GOTO 130

```

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Paper Feed: Friction — single sheet or forms. Tractor option
Page Length: 11" or DIN A4
Paper Thickness: .022" maximum
Impression Control: Operator selectable 5 level
Interface: Serial and Parallel included
 Parallel: Centronics compatible 7 bit ASCII data, 3 control lines (Data Strobe, Busy, Acknowledge)
 Serial: EIA RS232C-DTR; EXT/ACK; X-ON/X-OFF; Baud Rate (50-19,200), Parity, Character Bit Length, and Busy Polarity, are DIP switch selectable by operator.

ZX81

Mini Frogger

By Dennis Clark

This is a fast Frogger game for the 1K ZX81. You have to cross a busy highway, and reach home without getting eaten by an alligator. You use keys 5,6,7,8 to move.

Enter the program as listed, except that line 1 can be a REM containing seven Xs. Then you have to make some POKEs and initialise some variables with direct commands. To initiate the variables enter this listing (without line numbers):

```

LET A$=""
LET B$=""
LET C$=""
LET D$=""
LET S$=""
LET Z$=""

```

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When you ran Listing 2, it initialised Supertext for you. Normally, you will have to LOAD the code and initialise Supertext yourself. To do this you'll have to clear the computer, lower RAMTOP to accommodate the code, and LOAD it. Enter these lines:
RANDOMISE USR 0
CLEAR 63999
LOAD"" CODE

When it has loaded, enter RANDOMISE USR 64897. This will make LPRINT cause text to appear on the screen in 64cpl format (not on a ZX printer which is where LPRINT would normally act). PRINT still works as normal, and you can mix 32cpl and 64cpl text on the screen by using PRINT and

LPRINT. You can also make PRINT and LIST work in 64 cpl mode by entering: OPEN #2, "p"

If you have a ZX printer, Supertext can be turned off with:
LPRINT CHR\$ 5;: OPEN #2, "s"

As it is, Supertext allows you to use the block graphic characters, but the user-defined characters appear as garbage. If you want to use the user-defined characters, type in and RUN Listing 3. Save this new version of Supertext with:
SAVE "ST UDG" CODE 63832, 1704

When defining graphic characters, the last four digits in the BIN statements must be zeros, since graphic characters are now four pixels across by eight pixels down.

Supertext also allows you to PRINT on the bottom two lines of the screen, which are normally inaccessible from BASIC. Try this:

PRINT AT 23,0; "Line 23!": PAUSE 0 (the PAUSE 0 is to prevent the report overwriting the bottom two lines until you press a key).

If you don't feel up to typing in 1.5K of machine code, you can obtain a copy of Supertext on a C10 tape if you send a cheque for \$5 to:

R.M. Daniell,
301 Gascoigne St,
Hastings.

Supertext was written using the DEVPAC GENS 3M assembler program from Hisoft. The assembly listing can be supplied on the tape as well, if you have GENS and wish to be able to alter Supertext.

1 REM Listing 2
SUPERTEXT
by R.M.Daniell

5 CLEAR 63999

10 LET a=64000: FOR n=100 TO 1
050 STEP 10: RESTORE n: LET cs=0
: FOR i=0 TO 15: READ b: POKE a,
b: LET cs=cs+b: LET a=a+1: PRINT
AT 0,0;a: NEXT i: READ c: IF c<
>cs THEN PRINT "ERROR in line "
;n: STOP

15 NEXT n

20 INPUT "Save ? (y/n) ";a\$: I
F a\$="y" OR a\$="Y" THEN SAVE "S
T 64cpl"CODE 64000,1536

30 RANDOMIZE USR 64897: OPEN #
2, "p"

40 LIST

50 STOP

100 DATA 0,0,0,0,0,0,0,0,0,32,3
2,32,32,0,32,0,160

110 DATA 0,80,80,0,0,0,0,0,0,80
,112,80,112,80,0,0,624

120 DATA 32,112,64,112,16,112,3
2,0,0,80,16,32,64,80,0,0,752

130 DATA 0,32,80,32,96,176,240,
0,0,32,64,0,0,0,0,752

140 DATA 0,32,64,64,64,64,32,0,
0,64,32,32,32,64,0,576

150 DATA 0,0,80,32,112,32,80,0,
0,0,32,32,112,32,32,0,576

160 DATA 0,0,0,0,0,32,32,64,0,0
,0,0,112,0,0,0,240

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170 DATA 0,0,0,0,0,96,96,0,0,16,16,32,32,64,64,0,416
 180 DATA 0,112,80,80,80,80,112,0,0,32,96,32,32,32,112,0,880
 190 DATA 0,32,80,16,32,64,112,0,0,96,16,96,16,16,96,0,672
 200 DATA 0,16,48,80,80,112,16,0,0,112,64,96,16,16,96,0,752
 210 DATA 0,48,64,96,80,80,32,0,0,112,16,16,32,32,32,0,640
 220 DATA 0,112,80,32,80,80,112,0,0,32,80,80,48,16,96,0,848
 230 DATA 0,0,0,32,0,0,32,0,0,0,32,0,0,32,32,64,224
 240 DATA 0,0,16,32,64,32,16,0,0,0,0,112,0,112,0,0,384
 250 DATA 0,0,64,32,16,32,64,0,0,32,80,16,32,0,32,0,400
 260 DATA 0,96,240,208,160,128,12,0,0,32,80,80,112,80,80,0,1408
 270 DATA 0,96,80,96,80,80,96,0,0,32,80,64,64,80,32,0,880
 280 DATA 0,96,80,80,80,80,96,0,0,112,64,96,64,64,112,0,1024
 290 DATA 0,112,64,112,64,64,64,0,0,32,80,64,112,80,32,0,880
 300 DATA 0,80,80,112,80,80,80,0,0,112,32,32,32,32,112,0,864
 310 DATA 0,16,16,16,80,80,32,0,0,80,80,96,96,80,80,0,752
 320 DATA 0,64,64,64,64,64,112,0,0,80,112,112,112,80,80,0,1008
 330 DATA 0,112,80,80,80,80,0,0,32,80,80,80,80,32,0,896
 340 DATA 0,96,80,80,96,64,64,0,0,112,80,80,80,112,112,16,1072
 350 DATA 0,112,80,80,96,96,80,0,0,48,64,32,16,16,96,0,816
 360 DATA 0,112,32,32,32,32,0,0,80,80,80,80,112,0,784
 370 DATA 0,80,80,80,80,80,32,0,0,80,112,112,112,112,32,0,992
 380 DATA 0,80,80,32,32,80,80,0,0,80,80,80,32,32,0,720
 390 DATA 0,112,16,32,32,64,112,0,0,112,96,96,96,96,112,0,976
 400 DATA 0,64,64,32,32,16,16,0,0,112,48,48,48,112,0,640
 410 DATA 0,32,112,32,32,32,0,0,0,0,0,0,0,240,512
 420 DATA 0,32,80,64,240,64,240,0,0,0,96,16,112,80,112,0,1136
 430 DATA 0,64,64,96,80,80,96,0,0,0,48,64,64,64,48,0,768
 440 DATA 0,16,16,48,80,80,48,0,0,0,32,80,96,64,48,0,608
 450 DATA 0,48,64,96,64,64,64,0,0,0,48,80,80,48,16,96,768
 460 DATA 0,64,64,96,80,80,80,0,0,32,0,96,32,32,112,0,768
 470 DATA 0,16,0,16,16,16,80,32,0,64,80,96,96,80,80,0,672
 480 DATA 0,64,64,64,64,64,48,0,0,0,80,112,112,112,80,0,864
 490 DATA 0,0,96,80,80,80,80,0,0,32,80,80,80,32,0,720
 500 DATA 0,0,96,80,80,96,64,64,0,0,48,80,80,48,16,16,768
 510 DATA 0,0,48,64,64,64,64,0,0,48,64,32,16,96,0,560
 520 DATA 0,32,112,32,32,32,16,0,0,0,80,80,80,112,0,688
 530 DATA 0,0,80,80,80,80,32,0,0,0,80,112,112,112,32,0,800
 540 DATA 0,0,80,80,32,80,80,0,0,0,80,80,80,48,16,96,752
 550 DATA 0,0,112,16,32,64,112,0,0,48,32,64,32,32,48,0,592
 560 DATA 0,32,32,32,32,32,0,0,96,32,16,32,32,96,0,496
 570 DATA 0,80,160,0,0,0,0,96,144,240,208,208,240,144,96,1616
 580 DATA 240,144,144,144,14,4,144,240,48,48,48,0,0,0,1536
 590 DATA 192,192,192,192,0,0,0,0,240,240,240,0,0,0,1728
 600 DATA 0,0,0,48,48,48,48,48,48,48,48,48,48,48,576
 610 DATA 192,192,192,192,48,48,48,48,240,240,240,240,48,48,48,48,2112
 620 DATA 0,0,0,0,192,192,192,19



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2,48,48,48,48,192,192,192,192,17
28
630 DATA 192,192,192,192,192,19
2,192,192,240,240,240,192,19
2,192,192,3264
640 DATA 0,0,0,0,240,240,240,24
0,48,48,48,48,240,240,240,240,21
12
650 DATA 192,192,192,192,240,24
0,240,240,240,240,240,240,240,24
0,240,240,3648
660 DATA 8,42,79,92,17,15,0,25,
17,143,253,115,35,114,201,50,120
6
670 DATA 129,92,58,248,255,254,
0,40,95,33,250,255,95,22,0,25,18
51
680 DATA 58,129,92,119,58,248,2
55,61,50,248,255,254,0,192,58,24
9,2326
690 DATA 255,254,22,32,22,175,5
0,255,255,126,254,64,48,56,50,12
5,2043
700 DATA 92,35,126,254,24,48,47
50,126,92,201,254,23,32,25,126,
1555
710 DATA 254,64,48,34,71,197,62
32,50,129,92,205,36,255,193,58,
1780
720 DATA 125,92,184,32,240,201,
48,14,254,16,56,9,254,22,48,5,16
00
730 DATA 86,205,17,34,201,201,2
07,10,58,129,92,254,32,210,26,25
5,2017
740 DATA 254,8,32,18,58,125,92,
61,50,125,92,254,255,192,62,63,1

741
750 DATA 50,125,92,195,175,254,
254,9,32,17,58,125,92,60,50,125,
1713
760 DATA 92,254,64,192,175,50,1
25,92,195,47,254,254,10,32,124,5
8,2018
770 DATA 126,92,60,50,126,92,25
4,24,32,5,175,50,126,92,201,254,
1759
780 DATA 22,192,62,1,50,255,255
58,126,92,61,50,126,92,201,33,1
676
790 DATA 140,92,126,254,1,32,49
54,23,33,59,92,175,50,8,92,1280
800 DATA 213,229,205,195,254,22
5,209,1,255,255,58,8,92,203,174,
254,2830
810 DATA 0,32,7,11,120,177,32,2
42,24,230,254,32,40,32,254,226,1
713
820 DATA 40,28,246,32,254,110,4
0,22,205,254,13,62,21,50,126,92,
1595
830 DATA 62,0,50,125,92,33,140,
92.53,175.50.8.92.201.62.21.1256
840 DATA 50,126,92,42,246,255,3
4,54,92,207,12,254,11,32,16,58,1
581
850 DATA 126,92,61,50,126,92,25
4,255,192,62,21,50,126,92,201,25
4,2054
860 DATA 7,32,13,58,57,92,95,22
0,33,200,0,205,181,3,201,1199
870 DATA 254,13,32,7,175,50,125
92,195,47,254,254,6,32,13,205,1
754

880 DATA 26,254,58,125,92,230,1
5,254,0,32,244,201,254,16,56,24,
1881
890 DATA 254,24,48,20,50,249,25
5,62,1,50,248,255,58,249,255,254
,2332
900 DATA 22,192,62,2,50,248,255
,201,254,5,32,13,42,79,92,17,156
6
910 DATA 15,0,25,17,244,9,115,3
5,114,201,254,165,56,6,214,165,1
635
920 DATA 205,16,12,201,42,54,92
,34,246,255,33,0,249,34,54,92,16
19
930 DATA 58,126,92,254,21,40,4,
175,50,255,255,58,255,255,254,0,
2152
940 DATA 40,7,205,79,254,175,50
,255,255,205,85,255,42,246,255,3
4,2442
950 DATA 54,92,195,26,254,58,12
6,92,33,0,64,17,0,8,254,8,1281
960 DATA 56,5,214,8,25,24,247,2
54,0,40,7,71,17,32,0,25,1025
970 DATA 16,253,58,125,92,203,4
7,6,1,56,2,6,0,95,22,0,982
980 DATA 120,50,245,255,25,84,9
3,58,129,92,111,38,0,41,41,41,14
23
990 DATA 237,75,54,92,9,6,8,26,
79,58,245,255,254,0,40,8,1446
1000 DATA 203,1,203,1,203,1,203,
1,121,229,33,145,92,203,70,32,17
41
1010 DATA 2,230,15,203,86,40,2,2
38,240,225,78,169,79,58,245,255,
2165
1020 DATA 254,0,40,8,203,1,203,1
,203,1,203,1,121,18,35,20,1312
1030 DATA 16,197,58,126,92,111,3
8,0,41,41,41,41,41,17,0,88,948
1040 DATA 25,58,125,92,203,47,95
,22,0,25,58,144,92,166,71,58,128
1
1050 DATA 143,92,176,119,201,0,0
,60,0,0,0,0,0,0,0,791

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1 REM Listing 3
SUPERTEXT
by R.M.Daniells
2 REM (modify SUPERTEXT to
allow use of UDGs, and adjust
the system variable UDG so that
they can be defined as usual)
5 CLEAR 63831
10 FOR n=64000 TO 64895: POKE
n-168,PEEK n: NEXT n
20 FOR n=64096 TO 64096+167: P
OKE n+632,PEEK n: NEXT n
30 POKE 65323,88: POKE 65324,2
48
40 POKE 23675,216: POKE 23676,
252

Driving disks

By Dick Williams

Let's go over some aspects of the Sega disk drive. The disk drive uses the Hitachi 3in disk system, electronics by Sega and the disk mechanism by Matsushita.

The disk unit (model SF7000) is the same length as the Sega computer and fits neatly under it. Connection from disk to computer is via a multicore cable plugging into the computer cartridge socket.

When connected, the disk should be turned on first, then the computer. If there is a disk in the drive, the computer will examine it, and if it is not the system disk, will ask for the system disk to be inserted. With power applied, the disk motor continues spinning until the correct disk is put in.

After the power is on and the system IPL has Cloaded, the screen says 18669 bytes free, and is ready for use.

In the discussion on files, reference will be made to sequential files and random files without comment about random file records. After preliminary investigation, random file records will be introduced.

New commands

There are new commands and statements with the disk drive in addition to the previous computer instruction set. These are explained in the disk manual, along with brief examples to show the usage more clearly.

Most of the new commands and statements are straightforward and after studying the manual for a while, you should have sorted them into easy and hard. I found the section on sequential and random files difficult to understand at first and the following information may be helpful to other disk users.

What is a sequential file? It's like a book where if you want to read page 100 you have to read pages 1 to 99 first. Random files, on the other hand, let you go straight to page 100 and read the

contents. All you have to do is say to the computer, "Read page 100", and it does it.

If that was the whole story, everybody would use random files and not worry about sequential files. The trouble is that each individual random file has a fixed length of 256 bytes which limits the total number of individual files to about 600 on one side of a 156K disk. (156000/256=609).

This would be like a book with 600 blank pages. For some applications, a lot of these pages may be almost empty and disk storage space is not used efficiently.

The difference

Sequential files differ from random files in that each item of data is placed right after the last piece so that there are no gaps between. This allows a great quantity of variable length pieces of data to be stored.

Random files and sequential files are the two methods of storing data on the disks. Which to use for a particular application is an interesting exercise in planning and learning.

To give you an idea of the fundamental difference between random and sequential files, before having a look at the actual coding for each, I will describe two extreme examples of saving to each type of file.

Let's assume you want to save 50 bytes of data on the disk. This is your customer's name and address. The customer is your first so you have chosen the designation, number one customer.

Saving this data to a sequential file will consume 50 bytes of storage; saving the same data to random file number one will consume 256 bytes of storage. You are using two disks, one for sequential and one for random.

Now let's assume you have had more customers and are up to customer

number 600. How much information is on each disk and how much free space is left on each disk? There is, of course, the same information on each disk, 600 customers' names and addresses.

The sequential file disk will have 30000 bytes (600*50) of the disk used up, and will have 126000 bytes of storage left. The random file disk will have 600 files activated, each file 256 bytes long. So the amount of disk space used is 600*256, a total of 153600 bytes. This leaves the disk with only 2400 bytes of free space. You can see the random file is greedy for disk space.

No difference

It doesn't make any difference whether you put 10 or 50 bytes of data into a random file. It still sets aside 256 bytes of disk space for each file. As well as that, if you open up one high number random file, say #600, and put 20 bytes of data in it, the disk manager will assume you require all the lower numbered random files set aside as well.

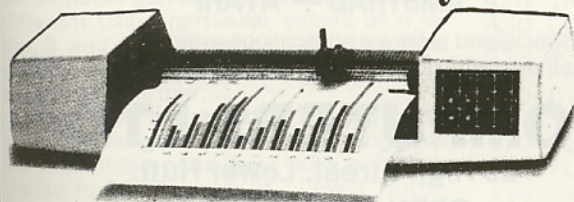
You end up with 20 bytes of data stored on a disk and examination of the disk with files would show there is none or very little disk space left. You may even get a disk full error message. It's as though you have reached the end of a book and written 20 bytes on the last page, even though all the lower numbered pages may be completely empty.

Each random file is capable of storing up to 256 bytes of data. You can specify where in each particular file, your data is to be stored. For example, you can store a few bytes at the beginning of a file, a few more at the end of a file and, if you wish to, some in the middle.

This facility means that even though you can open up only a maximum of about 600 random files, by placing some data in the first half (128 bytes capacity) and some data in the second half, you

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could effectively double the number of records.

This involves putting your record number one in the first half of random file number one and your record number two in the second half of random file number one and so on until your record number 1200 has been placed in the second half of file number 600.

The coding to do this gets a little complicated but it can help if you need 1200 random file records and have only 600 places to put them. Any data stored within a random file must have an address to specify exactly where the data will be placed.

Say you want to place 20 bytes of A\$ in random file number 15 and you require the data to occupy the first 20 bytes of the file the code would be
`PUT #1,15;A$,0,19`

The first portion, `PUT #1,` is the command to write to a random file. (Just for the moment, ignore the meaning of #1). `15` specifies which particular random file, and the data to be stored is A\$.

Starting point

Next comes the starting point for the data and the number of storage positions allocated for its storage. The first number is 0 indicating the data is to be stored starting at the very start of the file and 20 indicates that 20 positions have been set aside for the data. Starting at 0, 20 positions ends at position number 19 (0-19), therefore further data would be placed in that file beginning at position 20.

Numeric variables can be written to random files in the same manner as data, and the disk sets the number of storage positions for numeric variables as 8. It is important to realise this, otherwise you may incorrectly specify a position for a variable followed by further data only to find the disk has used eight positions for the variable, and the rest of your addressing is no longer correct. As an example:

```
PUT #1,15;A$,0,20;W,20,7;B$,27,10
PUT #1,15;A$,0,20;W,20,8;B$,28,10
```

The first is incorrect because I have specified the variable, W, starting at

position 20 for seven more positions. This means the following data B\$ starts one position too soon and is corrupted. It's hard to find a fault like that in a hurry.

The second line is correct. Sometimes, I deliberately leave a position between data and variables unused

```
PUT#1,15;A$,0,20;W,20,8;B$,30,10
```

This shows B\$ starting at position 30 instead of where it could start — at position 28. Up to now, I have been incorrectly referring to files rather than the correct name, records. This is the #1 I asked you to ignore.

The example I have been using is:
`PUT #1,15` etc.

This means put to file #1 (from a choice of #0-#8) record number 15. On power-up, the disk defaults to three, files that can be open at any one time for writing to — or reading from.

The unknown

The manual states that up to nine files (#0-#8) may be processed but there are computer memory restrictions to be considered. (Refer page 69). Now it quite often happens that the need arises to store data in file records and the exact length of the data is not known.

This would make it hard to specify the storage positions. The way to handle this is to set positions which will enable the longest piece of data to fit and then to add a code to tell the disk the story
`PUT#1,15;A$,1,L;B$,40,K`

In this example, I have set the position for A\$ to start as 1 and the position for B\$ to start as 40. It follows that A\$ can be any length up to where B\$ starts.

It is important to determine beforehand the length of A\$ because somehow we must tell the disk the number to put in after the 1. This is easily done with `L=LEN(A$)`. Now the code (in part) reads A\$,1,L

This solves the problem. The starting position for A\$ in file #1 record 15 is position 1, and its finishing position is 1+L. The computer already knows the value of L. Similarly with B\$, except here I have used K to indicate the length of B\$ so that the length of the two strings is clearly identified.

Notice also that I have started A\$ from

position 1 and not from the very beginning of the record, position 0. The reason for doing this is clarity. It is fundamentally important to write data on the disk so that on being read back into the computer, it is exactly the same as the original.

In this instance, L is not being stored on the disk as a variable; it is being used as an end of string marker. It is therefore necessary to save L (and K) as variables so that when the disk is being read, the values of L and K can be determined first so that the disk will know how long the string is.

Fun thing

Another fun thing to know is that even though I have shown A\$ in the GET code, there is no reason why it has to be called A\$. Sound a little strange?

If you write data on the disk, you would naturally think it should be called the same when being read from the disk. When the disk is being written, the data is known by a specific name such as A\$. However, when that same piece of data is being read back, perhaps at a later stage in your program or next day, it represents only some un-named data at a certain position on the disk. It's only your mind which thinks it is A\$. It could be called G\$ or F\$(1) or any valid string name.

The GET code could be:

```
GET#1,15;L,0,8;EE$,8,L
and the computer would make EE$ equal to the data at file#1, record 15, starting position 8 to end position 8+L. However, let's assume the data is to be named A$. The GET code is:
GET#1,15;L,0,8;A$,8,L
```

The first information to come from the disk is the variable L (length of A\$). This pops into the computer, followed by the data at start position 8 and finish position 8+L which we have decided to call A\$.

To recap on the storage of data and variables in random file records. Variables need eight store positions, data can be stored in one of two ways — either with the start and finish positions specified exactly by numbers or start

Turn to page 62

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Spectravideo plays: part 2

By Barbara Bridger

The final two parameters of the PLAY command are Sn and Mn.

Sn controls the sound envelope shape — the way the volume of sound changes during a note. Some instruments, such as the strings, can produce a steady level of sound throughout the playing of a note. The piano is different. Once a key is struck, the level of sound builds up rapidly and then slowly drops away. Therefore, having control of the envelope shape gives some scope for trying to imitate the sound of various instruments.

The default option is n=1, and while n may range from 0 to 15, the sound effects produced fall into four groups. With the default option, M SO, S1, S2, S3 or S9 give a clipped tone, S4, S5, S6, S7 or S15 give a slightly more drawn out tone, S8, S10, S12 or S14 give a vibrating tone, and S11 or S13 give a note of constant volume after the initial fluctuation.

Each of the three channels can have a different envelope shape controlling the sound produced by that channel, as long as the channels do not sound a note simultaneously. But the Sn and Vn commands cannot both be in force at the same time. When the PSG (programmable sound generator) encounters a Vn command, it will override any previous Sn commands and vice versa.

Changing n

The Mn parameter controls the length of the envelope period. The value of n may range from 1 to 65535. When using small values of n, there can be quite significant changes in the type of sound produced with small changes in n. But for higher values of n, a larger change in n is needed to produce a detectable alteration in sound — for n greater than 5000 a change of about 1000 is needed; for n less than 10 a change of 1 may alter the sound. If n is greater than 10000, the sound produced by envelope shapes 4, 5, 6, 7, 12, 13, and 14 becomes rather faint. The three channels are controlled by the one Mn command.

The great number of possible combinations of Sn and Mn gives rise to a wide variety of sounds so it requires quite a bit of experimentation to get your music to PLAY just the way you want it.

This program demonstrates how one set of notes can be made to sound quite different using particular values of n in the S and M commands, and also lets you input values of n for S and M to experiment further.

I would be interested in hearing from anyone who gets close to imitating any instrument but particularly violin or brass. (Write to 11 Mawson St., Lower Hutt.)

```

10 A1$="b4d3f#3a3o5d1e1c#3o4
b6a2b2o5c#6o4b3a1"
20 B1$="r3r3r3o2d3o4a3a3o2e3
o4b3b3o2a3o4e3e3o2g3o4g3g3o3
d3o4f#3f#3"
30 C1$="r3r3r3r3o4f#3f#3r3g3
g3r3o4c#3c#3r3o4d3d3r3o4d3d3
40 BEEP
50 CLS:LOCATE 5,5:PRINT"defa
ult options"
60 PLAY A1$,B1$,C1$
70 FOR K= 1 TO 6500:NEXT K
80 D1$="s"+STR$(1)+"m"+STR$(
150)
90 CLS:LOCATE 5,5:PRINT"s=1
m=150"
100 LOCATE 5,10:PRINT"drumbe
ats ???"
110 PLAY D1$,D1$,D1$
120 PLAY A1$,B1$,C1$
130 FOR K= 1 TO 6000:NEXT K
140 D1$="s"+STR$(1)+"m"+STR$(
5000)
150 CLS:LOCATE 5,5:PRINT"s=1
m=5000"
160 LOCATE 5,10:PRINT"bouncy
piano ???"
170 PLAY D1$,D1$,D1$
180 PLAY A1$,B1$,C1$
190 FOR K= 1 TO 6000:NEXT K
200 CLS:LOCATE 5,5:PRINT"s=1
m=40"
210 LOCATE 5,10:PRINT"organ
with beat ???"
220 D1$="s"+STR$(11)+"m"+STR
$(40)
230 PLAY D1$,D1$,D1$
240 PLAY A1$,B1$,C1$
250 FOR K= 1 TO 6000:NEXT K
260 CLS:LOCATE 5,5:PRINT"s=4
m=2500"
270 LOCATE 5,10:PRINT"accord
ion ??????"
280 D1$="s"+STR$(4)+"m"+STR$(
2500)
290 PLAY D1$,D1$,D1$
300 PLAY A1$,B1$,C1$
310 FOR K= 1 TO 6000:NEXT K
320 CLS:LOCATE 5,5:PRINT"s=1
m=40000"
330 LOCATE 5,10:PRINT"organ
???"
340 D1$="s"+STR$(1)+"m"+STR$(
40000)
350 PLAY D1$,D1$,D1$
360 PLAY A1$,B1$,C1$
370 FOR K= 1 TO 6000:NEXT K
380 FOR I= 1 TO 50
390 BEEP
400 CLS
410 PRINT "input s,m"
420 INPUT S,M
430 CLS
440 LOCATE 5,5
450 PRINT "S=";S;" M=";M
460 D1$="s"+STR$(S)+"m"+STR$(
M)
470 PLAY D1$,D1$,D1$
480 PLAY A1$,B1$,C1$
490 FOR K= 1 TO 6000:NEXT K
500 NEXT I

```

Two points about the PLAY command became apparent while I was in the process of experimenting with S and M commands.

- both
PLAY 's=l;m=J;', 's=l;m=J;', 's=l;m=J;'
and
D1\$='s=l;m=J;'
PLAY D1\$,D1\$,D1\$
gave an error message for values of J above 32767
but
D1\$='s'+STR\$(I)+'m'+STR\$(J)
PLAY D1\$,D1\$,D1\$
was acceptable for all values of J.
- If the program comes to a BEEP while a set of notes is being played, the BEEP does not wait its turn in the queue for the PSG. The music is stopped immediately.

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Moving Pictures: continuing saga of sprites

By Joe Colquitt

So far, we have dealt with sprites in their normal size. But they can be made to expand or contract by the use of the registers located at 53271 (V+23) for vertical, and 53277 (V+29) for horizontal.

```
10 V=53248:POKEV+32,0:POKEV+33,0:POKEV+21,255
20 FOR I=12288 TO 12352:POKE I,170:NEXT
30 FOR C=0 TO 7:POKE 2040+C,192:POKEV+39+C,C+1:NEXT
40 FOR P=0 TO 15:READ CO:POKEV+P,CO:NEXT
50 FOREX=0 TO 7
60 POKEV+23,2+EX:POKEV+29,2+EX
70 PRINT " "2+EX
80 FOR D=0 TO 300:NEXT
90 NEXT
100 DATA 60,50,120,50,180,50,240,50,60,100,120,100,180,100,240,100
```

Line 10 . . . Set screen to black, turn all the sprites on

Line 20 . . . Draw the 'shape'

Line 30 . . . Set all sprites to the same shape and colour them

Line 40 . . . Read the positions into the registers

Line 50 . . . Perform a loop that turns the register bits on in sequence. Of course any combination of bits can be on at any time.

The computer has the ability to detect

```
10 V=53248:POKEV+21,1+2+4:REM TURN ON SPRITES 0,1 & 2 (2+0,2+1,2+2)
20 FOR I=12288 TO 12352:POKE I,255:NEXT
25 POKE 2040,192:POKE 2041,192:POKE 2042,192
30 POKEV+39,11:POKEV+40,12:POKEV+41,15
40 POKEV,100:POKEV+1,200:POKEV+2,150:POKEV+3,200:POKEV+4,46:POKEV+5,150
50 PRINT " "PEEK (V+30)
60 FOR I=150 TO 50 STEP -1:POKEV+2,I:NEXT
70 PRINTPEEK (V+30)
80 FOR I=150 TO 230:POKEV+5,I:NEXT
90 PRINTPEEK (V+30)
```

As explained before, these two bytes have bits 0-7 assigned to sprites 0-7, so control of individual sprites is through control of the corresponding bit in the register. This program will show this in effect:

whether a sprite has collided with a character or another sprite, and for this purpose has two collision registers. Location 53278 (V+30) is the sprite/sprite detect, and works like this. The bits 0-7 in V+30 are assigned to sprites 0-7. When two sprites collide, their corresponding bits in V+30 are set to 1, and stay set until the register is read. It is a good idea to transfer the value to a variable if it is to be used later, as the register is automatically cleared. Here is an example.

Note that the value after the collision is the same as the value of the two sprites. The first PEEK gives 0 - no collision; the next gives 3 - a collision between sprites 0 and 1 (2+0+2+1); The final is 6 - a collision between sprites 1 and 2 (2+1+2+2). Change the 255 in line 20 to 136 to see the effect.

Also noteworthy is that multicolour data '.' is considered transparent to collisions, so care should be taken when drawing. Sprite to character collisions work in exactly the same way, except that (V+31) is the collision register. For example:

```
10 V=53248:POKEV+21,32:PRINT " "
20 POKE 2045,200:POKEV+44,10
30 POKEV+10,100:POKEV+11,80
40 PRINTPEEK (V+31)
50 POKE 1200,160:POKE 55472,1
60 FOR I=200 TO 100 STEP -1:POKEV+10,I:NEXT
70 PRINTPEEK (V+31)
```

Priority

If you typed in the first collision program, you will have seen the effect of priority. A sprite with a lower sprite number will pass over a sprite with a higher number. These relationships cannot be changed, but priority between sprites and characters can. These two programs will demonstrate. The white sprite is sprite 0, and the orange sprite is sprite 7. The second program prints a binary representation of PEEK(V+27). If a bit is 1, its corresponding sprite is behind characters.

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```

10 V=53248:POKEV+32,0:POKEV+33,0
15 POKEV+21,255:POKEV+23,255:POKEV+29,255
20 FORI=12288TO12352:POKEI,247:NEXT
25 FORI=0TO7:POKE2040+I,192:POKEV+39+I,I+1:NEXT
30 FORP=0TO10
35 FORI=0TO14STEP2:POKEV+I,24+I*P:POKEV+I+1,50+I*P:NEXT
40 NEXT
    
```

LINES 10-25 UNCHANGED

```

30 FORI=0TO14STEP2:POKEV+I,30+I*16:POKEV+I+1,100:NEXT
35 PRINT"XXXXXXXXXX"
40 FORI=0TO2
45 PRINT" [35 SPACES]"
50 PRINT"_____":NEXT
55 POKEV+27,RND(1)*255:REM PRIORITY REGISTER
60 FORI=0TO7:PR=PEEK(V+27)
70 IFPRAND2+1THEN?"SPC(I)"1":GOTO80
75 PRINT"SPC(I)"0"
80 NEXT
85 GETA$:IFA$=""THEN85
90 GOTO55
    
```

Sometimes, it may be necessary to load sprites as a block of shapes. This could arise if you wished to save space in basic programs (by omitting a lot of data statements) or if a program had a choice

of shapes to use from disk. The convention for saving any block of memory is to use the program pointers (43-46) as start and end markers for the block. Here's how it works:

```

PAGE TO SAVE : 192
START ADDRESS: 64*192=12288
END ADDRESS : 12288+63=12351
NOW TRANSLATE THOSE ADDRESSES TO NUMBERS TO PUT IN THE MARKERS.
POKE43,12288-(12288/256)=POKE43,0
POKE44,12288/256=POKE44,48
POKE45,12352-(12351/256)=POKE45,64
POKE46,12352/256=POKE46,48
THEN SAVE"NAME",1,1 OR "NAME",8 IF TO DISK
    
```

Note that if you have a program in memory, the computer won't recognise it because you are using the program pointers to save the sprite shape. It is advisable to note the end of the program with PEEK(45), PEEK(46) before changing it. If you wish to use the program after saving the block, restore the original pointer values — POKE43,1:POKE44,8 and whatever was in 45 and 46. To load the block(s) into a program, use something like:

```

0 C=C+1:IFC=1THENLOAD"NAME1",1,1:REM OR ,8,1
1 IFC=2THENLOAD"NAME2",1,1
2 REST OF PROGRAM
    
```

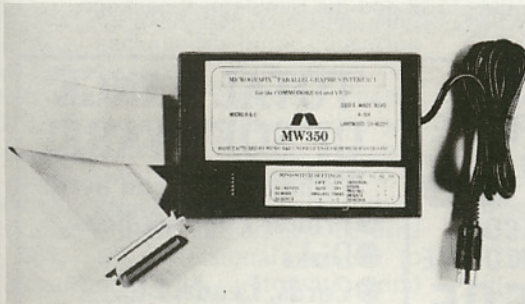
Another method

Another method to incorporate sprites into the body of a program is to set the "end of program" pointers past the sprite shape(s). Say you had a program that ended at 3500 (172/13 in 45/46) and you wanted four sprite shapes in the program. The first could start at 3520 (55*64) and the last would end at 3775 (58*64+63). To get them there, use another program to draw the shapes. Save the block from 3520 to 3776. Switch off, then type
 OC=C+1:IFC=1THENLOAD"NAME",-1,1 (OR ,8,1)
 1 NEW

This puts the shapes in the required location. Now load the program you want to contain them, and POKE45,192:POKE46,14 (3776). Save the program, and you have a complete program that needs no sprite data statements or loading routine. Be aware that editing may disrupt the shapes.

That's about all for sprite handling in

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COMMODORE 64

BASIC. As a parting shot, try this joystick interrupt routine which allows

you to move a sprite in ML without slowing a basic program down at all.

```

2000 FOR I=0 TO 119:READ D:X=X+D:POKE 49152+I,D:NEXT
2005 IF X<>13310 THEN PRINT "ERROR"
2008 SYS 49253:RETURN
2010 DATA 173,1,220,74,176,3,206,1,208,74,176,3
2015 DATA 238,1,208,74,176,38,173,0,208,208,15,173
2020 DATA 16,208,41,1,240,12,173,16,208,41,254,141
2025 DATA 16,208,206,0,208,96,173,16,208,9,1,162
2030 DATA 63,141,16,208,142,0,208,96,74,176,32,238
2035 DATA 0,208,240,28,173,16,208,41,1,240,20,169
2040 DATA 64,205,0,208,208,13,173,16,208,41,254,162
2045 DATA 0,141,16,208,142,0
2050 DATA 208,96,173,16,208,9,1,141,16,208,96,120
2055 DATA 169,114,141,20,3,169,192,141,21,3,88,96
2060 DATA 32,0,192,76,49,234
    
```

Set up the sprite as usual — size, colour shape etc — then run line 2000. use port one (or ,1,2,ctrl,space) to make the sprite move. For example:

```

10 V=53248:POKE V+21,1:POKE V+39,1:POKE 2040,192
15 POKE V+23,1:POKE V+29,1:POKE ,100:POKE V+1,100
20 GOSUB 2000
30 REST OF PROGRAM...
    
```

If you would like a copy of Alpine Computing's sprite/character editor with full instructions, sample files, programs and printouts, send \$24.95, stating cassette or disk, to:

Joe Colquitt,
6 Martin Ave.,
Mt Albert,
Auckland.

A winning battle

*Spitfire 40 (Mirrorsoft)
Fountain Marketing \$27.95
Reviewed by A. R. Mitchell*

Pilot a Spitfire in the Battle of Britain — that's one of the options of this newly released simulation from Mirrorsoft. It's multi-screen and well supported with a handbook.

You have three basic options: practice, combat and combat practice. The last option is really the game part of the program in that you are put in the air with the enemy about you, then it's up to you to shoot or be shot. The other two options are a little more serious.

The first allows you to take off, fly around practising your flying skills and then come back to the runway to land. If successful, you can save your "experience" to your own log for later reference.

The second option is the "real thing". You are scrambled, given the number of enemy bandits and their location by distance, bearing and height. It's up to you to find them and try and protect the skies of south-east England. Having successfully completed your mission, you return to base and record your "kills"

in your log. This log can be loaded when the program starts, and your rank and medal tally grows with your experience.

Three screens are available: the internal view of the Spitfire's instrument panel, the view through the cockpit window, and a series of maps for location reference. Documentation says the cockpit layout is exactly that of a Spitfire, plus a couple of extra indicators to help fly straight and level.

The graphics are very good, the instruments all move with acceptable precision, and the view through the cockpit, although generalised, is also acceptable for pinpointing landmarks. (The landmarks disappear above 3000ft). The maps are in three gradually increasing magnifications and show the landmarks you can see through the cockpit window, in relation to the Spitfire.

I've been impressed with all the Mirrorsoft programs I've seen and this is no exception. I learnt to take and fly with just one cursory look through the

handbook, but landing is another matter. I'm yet to achieve a successful touchdown although I'll certainly keep trying.

Just a couple of notes of concern. The sound is like the real thing I guess, but luckily we can reach for the volume control. The pitch changes according to engine revs and is a good indication of how your engine is doing. But it is monotonous. I have now even more respect for those original pilots.

While the joystick is as good as it could be made, don't expect anything like the same sort of control I imagine can be attained with the real thing. After all, the joystick is just a series of switches, and there is no way it can be held in one place to fly level. This has to be achieved by a series of little touches in the desired direction.

Certainly good value for money and a program that will appeal to the game player and the person looking for a flight simulator somewhere between Flight 737 and the Simulator II package.

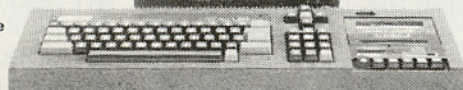
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Commodore News

This month's column features a few of the new products from Commodore.

New Printer

Commodore now has a new dot matrix printer in its range — the **SG10C**. This offers a host of new features which, coupled with a fast print speed, means a top line printer at a very good price.

The **SG10C** has a print speed of 120 characters per second, expanded and condensed print, includes the full Commodore graphic set and for correspondence has an NLQ (Near Letter Quality) mode.

It also features many other print styles and full dot addressable graphics. The **SG10C** connects directly to the Commodore serial port so no additional interfaces are needed. Price is **\$995.00** and the **SG10C** is available from your local dealer now.

B-Graph

One of the newest software packages for the Commodore 64 is **B-Graph**. This is a graphics charting and analytical package for home education and business needs. With just a few keystrokes, you can create Pie Charts, 3D BAR graphs, histograms, line and area graphs, in fact virtually any style of graph. Statistical analysis helps with standard deviation, linear regression and others. **B-Graph** can also be used to add a professional touch to presentations with automatic and manual labelling, total screen colour control and overlays. All of those who have seen it here, and at recent shows, have been extremely impressed by **B-Graph**. It will be a very popular package — Price is **\$39.95**. (Disk).

Music Made Easy

The **Music Maker Keyboard** has created a lot of interest since its recent arrival and addition to our range of products. It is a keyboard which clips on top of your Commodore 64 and lets you play a whole range of instruments and voices, along with preprogrammed rhythms and bass accompaniments. Now the days are gone when music was looked on as a difficult and complex foreign language. With the music maker you will see how simple and exciting music can be.

Music Maker allows you to save and load tunes on disk or tape and is priced at **\$79.95**.

The Computer Mark Book — Education

The program to assist teachers in maintaining lists of students' marks is soon to be released. Called **The Computer Mark Book**, it is written by John Creek of Kihikihi who until recently taught at Te Awamutu College.

The number of lists of marks able to be stored depends on the number of students' names entered. For example, over 400 students can have 20 lists of marks entered against their name. These lists can be entered progressively as results from tests come to hand.

The feature of the program which will delight teachers is the way the marks can be so quickly analysed. From the 'Analyse' menu one can calculate the mean, median and standard deviation; plot a histogram; scale the marks; calculate the stanines and rank the marks.

The Computer Mark Book has been field tested and found to be extremely easy to use. It will become a necessary addition to any school's library of administration programs.

Howzat Cricket

Even though the outdoor cricket season is well past us now, one of the newest arrivals here at Commodore will let you play all year round. **Howzat Cricket** is a game for two players and lets you pit your skills against your opponent in your choice of Limited Over, One Day or Test matches.

The skill comes in with the careful placing of the fieldsmen and the accuracy of the batmen's shots to get the ball past the fieldsmen and then score the runs.

The rules of cricket apply and may the best player win — be careful though it is very addictive.

Howzat Cricket is on cartridge for easy loading and is priced at **\$59.95**.

Last month I looked at the developments within the field of Education and this month a few new products. This 'newsletter' will become a regular feature from Commodore and is an attempt to keep people fully informed.

If you own a Commodore Computer, and want to make rapid progress, have you joined your local Commodore User Group? A list of groups and meeting times appears regularly in Bits & Bytes.

We are also currently running a survey of Commodore User Groups to gain feedback on the type of support that they may require to keep them fully informed also.

RICHARD THORNTON
BSc., Dip.Tchg., Dip. Ed
Commodore (NZ) Ltd

This column will introduce you to new products from and for Commodore computers. Subjects to be broached will include: light pens, graphics tablets, robots, music, applications for Superbase 64, telecommunications. If you know of something interesting someone is doing with their Commodore or of software or peripherals you feel are worth knowing about, write to me at Bits & Bytes?

What's new in Commodore

By Jeff Whiteside

The C128 was shown publicly for the first time at the Winter Consumer Electronics Show (CES) in USA and released there at the beginning of May. Why has it attracted such huge attention when it is still only an eight-bit machine?

For the first time in its 25 years, Commodore has a machine which is truly upwards compatible, and at the same time embraces CP/M compatibility — another first for a Commodore-produced product. (CPM on the C64 didn't really count.)

Commodore has finally recognised that users want to take advantage of software availability for other machines. The C64 owner doesn't want to sell all his programs and start again on upgrading, and there are thousands of CP/M programs available. The critics will say that having CP/M capability is archaic, but the large existing library of software is a telling factor in favour of Commodore's choice.

Three modes

Its three operating modes — C64, C128, and CP/M — make the C128 really three machines in one.

The C64 mode gives total compatibility with the C64, to the extent of locking out the numeric keypad available in C128 mode, entered from C128 mode by the command "GO 64". A spokesman was quoted as saying Commodore wanted compatibility so complete that it would not even change enough ROM to allow a "GO 128" command.

The C128 mode has an 85xx microprocessor (actual processor not stated yet), 6581 SID chip, VIC II chip (40 columns and sprites), 8653 chip (80 columns and RGB output), 128K RAM (expansion to 512K), 122K BASIC RAM available, 48K ROM and 16K DOS ROM. BASIC version 7.0 is included.

The CP/M mode has a Z80A microprocessor, CP/M plus version 3.0, and memory and expansion as per C128 mode. It is still able to have access to the SID chip, colour and sprites (!). Commodore has announced it will be marketing CP/M software under licence, beginning with the PERFECT series.

At this stage, the speed of the unit is not known, but it appears that in C128 mode, clock speed may be 2Mb and in CP/M mode 4Mb.

The 1571 disk drive scheduled for release within 30 days of the C128's release makes the prospect even more exciting.

Exciting prospect

In real terms, this drive means that disks prepared for CP/M on Kaypro and Osborne computers can be loaded into the 1571 and used. Even in C64 mode, a user will have twice the capacity of the existing 1541 drive.

Prices are estimated at \$NZ1600-1800 for the C128 and \$NZ1800-2000 for the 1571!

Commodore (NZ) has yet to announce prices but has indicated the units may be here in September or October. The future looks bright for the C128 with an immediate impact on the New Zealand market likely.

Commodore's release of the C128 saw it emerge from the CES as one of two companies dominating the small computer market. Atari is the other and rumour has it that its new computer releases are held up by legal wrangles.

The 64 in tune

By Jeff Whiteside

Music on the C64 has so far been looked on as incidental. A pity, really, as the computer has sophisticated sound capabilities for a small micro. As BASIC doesn't have commands to control the SID chip, many people have been put off creating their own music.

Some of the best examples of music can be heard in commercial games like "Ghostbusters" and "Frantic Freddie" or in public domain programs like "Synth". These have been written by professionals or computer buffs. About the only piece of software to allow the non-musician to write music has been "Music Construction Set". But all that should change with upcoming releases in software and hardware.

Fountain has released the "Colourtone" keyboard, a touch keyboard which plugs into the joystick port and comes with easy-to-use software.

The keys are piano-sized but are like playing a touch tablet. You can set up a variety of rhythms and the software allows you to play only notes which sound good musically. A slider section in the middle of the keyboard can be played just by sliding your fingers along it. The keyboard interfaces with "Musical" (a sophisticated music creator) and its templates. It sells for \$99.

I have used the "Musicmate" keyboard, a two-and-a-half octave keyboard with proper piano-sized keys. I am not a musician but was able to have a lot of fun with it.

Sound is easily controlled from the

computer function keys, and up to 10 minutes of music can be stored and played back — a rather embarrassing feature if you can't play well!! However, for the student, this is quite an advantage. It will cost \$299 and additional software is available to store music/preset sounds, edit on-screen played music and print out a pre-saved song.

Don't want to play music? Did I hear you say you want to compose or transpose instead? "Macmusic" is for you. Yes, it is for the C64, but behaves like a Macintosh program with pull-down menus and the like. This is the non-musician's friend! You don't even have to know music theory and it is all joystick controlled.

Not interested in composing? A series of low-cost programs will be released next month featuring songs from popular record albums, along with printed lyric sheets and full colour photos of the artist(s). The first is a Duran Duran album and this will be followed by such artists as the Police and Bruce Springsteen ("Born in the USA" no less!).

Many times in the past, major uses of computers have been researched and, at least for the home user, music has not featured as a major use. With products such as those already mentioned coming available, the situation is likely to change. Music is an important part of our society and if computers are to become integrated with society, their abilities in this area are very important.

Take a look at this one

Graphics made easy for the IBM PC and XT by Gabriel Cuellar. Reston Publishing Co. Ltd. \$39.80. Reviewed by Shayne Doyle.

Although the title would probably cause a non-IBM PC user to skip over this book when browsing for a teach-yourself-graphics book, I advise you to pause and take a look at this one. Most home computers now feature similar graphics commands to the IBM PC BASICs, and I have yet to find a better book to serve as a graphics tutorial.

It is not a book for the complete beginner, but rather those who have mastered the "basics" of their BASIC and wish to explore more advanced graphics programming.

The book is well structured, each chapter dealing with an aspect of graphic display. It begins with the basic graphics primitive, presents an outline of the technique to produce it, then gives code examples and a picture of the resulting display.

The chapter goes on to explain and illustrate increasingly complex variations of the basic graphic concept under discussion. For example, the chapter on circular shapes starts with the basic circle,

and progresses through arcs, spirals, pie charts, ellipses, arcs of ellipses, polar equation plotting, polygons and boundary conditions. Each chapter ends with several exercises designed to test your understanding of the material.

The book covers basic graphics concepts, straight lines and rectangles, circular shapes, colouring, high resolution, the DRAW sublanguage, text in graphics, transformations, transferring parts of the screen, animation, three-dimensional graphics, and business graphics.

Obviously, the example, as coded, will not work on a lot of machines, but the theory can be easily applied to other BASIC dialects with the required graphics commands. The book is liberally sprinkled with do-it-yourself examples, some of them producing impressive results, and all the accompanying output illustrations were dumped onto an Epson FX-80 printer, using a program for which the code is provided.

An excellent graphics tutorial and reference work, I recommend you have a look for it.

Expensive interest

"Fundamental BASIC on the Spectravideo" by John Palmgren and "Graphic, Sound, Sprites on the Spectravideo" by John

Palmgren. Reviewed by Barbara Bridger.

These two Swedish books develop topics from a very elementary level but cover them quite thoroughly. There are rather more spelling errors than one would expect but this presumably, is a consequence of the books being translated from the original Swedish versions (I like soft wear but found JOY stick irritating).

The first book covers initial setting-up of the computer, using it in direct mode, writing programs, and explanation of the standard BASIC statements. There is an index and also appendices which cover use of a disk drive and list BASIC commands, statements, and string functions.

The second book covers the graphic possibilities of the three screens (text, graphic 1, graphic 2), designing and moving sprites, the SOUND and PLAY commands (with a good diagram of the inter-relationship of the PSG registers), the disk drive and CP/M, peripherals,

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and the Spectravideo operating system.

Both books have questions (and answers at the back) to test your understanding of the material covered. The graphics book builds up a complete game program using appropriate information as it is covered in each chapter. This is an interesting way to increase understanding of the topics and the technique of programming.

While these books contain a lot of information they are rather expensive.



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SEGA

From page 54

position specified and data finish position determined by use of length of data variable.

Bad fit

If you specify a start and finish position for data, and the data is longer than the space allowed, the data that will fit in is stored and the bit on the end that won't fit is lost.

Hence, the data stored is not a true copy of the original.

If you specify start and finish positions that allow more space than the length of the data, the data will be recorded intact. But on being read back from disk it will be longer than it was originally so is not a true copy of the original.

In one record, you can have several different starting positions for several pieces of data for example starting 0 for A\$, 50 for B\$, 100 for C\$, 150 for D\$ etc. The finish position for each piece of data must be the exact number that allows the data to fit exactly or else the end position must be determined with a length of data pointer, and that length of data pointer must be saved as well (as a variable).

Here is a short disk program to experiment with. The program is not complete but will work and will show you that leaving information out (lines 30 and 60) gives an incorrect result.

```
THIS IS TO SAVE TO RANDOM FILE
10 A$="JIM"
20 OPEN "DATA" AS #1
30 PUT#1,1;A$
40 CLOSE
```

```
THIS IS TO READ FROM RANDOM FILE
50 INPUT "PRESS CR ";K$
60 OPEN "DATA" AS #1
70 GET#1,1;A$
80 CLOSE:PRINT A$
90 L=LEN(A$):PRINT L
```

When you run this, it will save A\$ to disk and prompt for the CR key. Then it will read the disk, print A\$ and print the length of A\$. You should get a surprise at the length printed.

Bear in mind with your experimentation that data printed to disk stays where it has been printed (unless overwritten) so that you can quite easily read some previously saved material totally unrelated to your current efforts.

The way to get over this possible problem is to save your program on one side of a disk and format the other side which will give you a completely clean disk to work with.

If you have a printer connected to the centronics outlet, POKE & HAF6E,1 will ensure this outlet is active and not the printer/plotter one on the computer.

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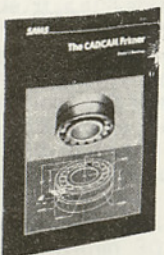
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Book: 240 pages, 8x9 1/4, softbound
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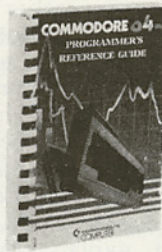
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COMMODORE 64 PROGRAMMER'S REFERENCE GUIDE



A Top 10 best-seller since its introduction, this programmer's working tool and reference source is packed with professional tips and information on exploring your C-64. Includes a complete, detailed dictionary of all Commodore BASIC commands, statements and functions. BASIC program samples then show you how each item works. Mix machine language with BASIC and use hi-res effectively with this easy-to-use guide. Commodore Computer. 486 pages, 5 1/2 x 8 1/2 comb-bound,
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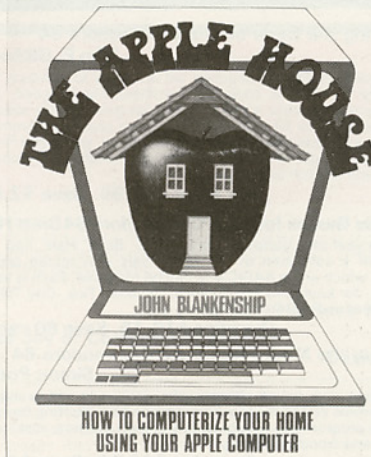
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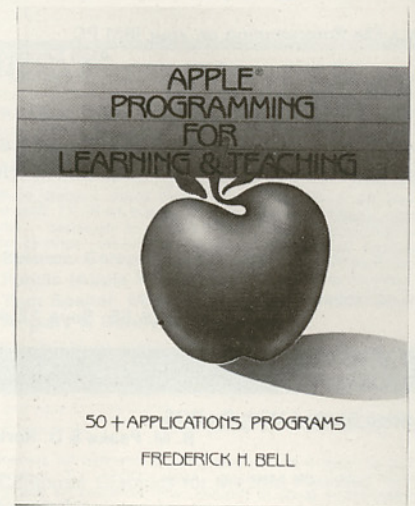
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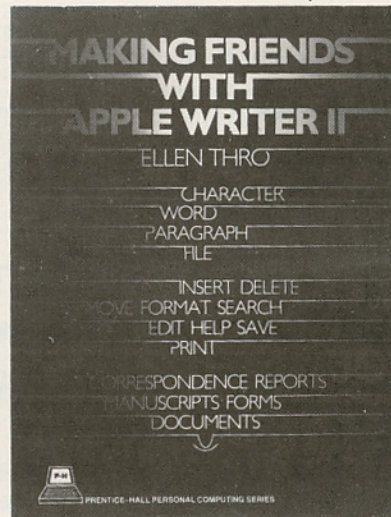
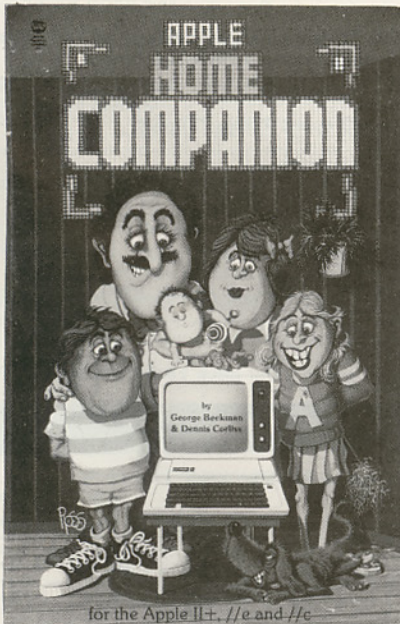
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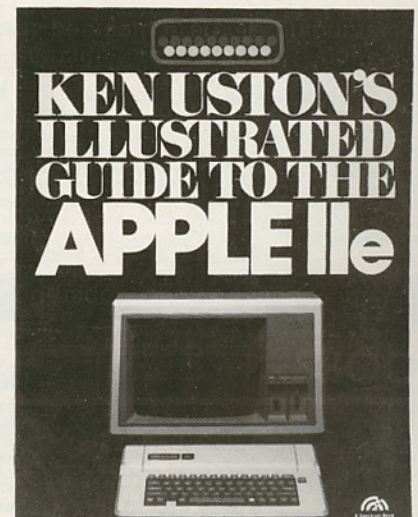
Apple Programming for Learning & Teaching
Frederick H. Bell
Contains more than 50 applications programs focussing on teaching and learning skills. While learning BASIC through a building-block approach, you can also teach the children arithmetic, spelling, capital letters, random numbers, square roots, geometry and graphics. Programs provide quizzes, games and fun.
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The Apple House
John Blankenship
Explains how to customise 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.
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Making Friends with Apple Writer II
Ellen Thro
Easily followed, friendly guide to this Apple II and IIe word processing program. Examples drawn from actual applications used in step-by-step teaching, and new commands put in context. Each chapter contains goals, examples, hints and warnings based on practical experience, and a key point summary.
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Ken Uston's Illustrated Guide to the Apple IIe
No-nonsense instructions which allow the reader to master any application without reading the whole book. Self-defined chapters deal with:
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Apple Home Companion for the Apple II, IIe & IIc
George Beekman & Dennis Corliss
Three books in one — instruction manual for the computer as a home appliance; learning BASIC; learning about hardware; software and programming. Includes reviews of popular Apple software, "hands-on" lessons on using the Apple, how to buy, hook up and care for your Apple, Applesoft BASIC programming, word processing, education, games, databases, telecommunications, graphics, music and peripherals.
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IBM**IBM PC Programming****Richard Heskell & Glenn A. Jackson**

Hands-on, step-by-step approach for beginning and advanced programmers. Uses actual photographs taken from the computer screen in graphic examples to develop many fundamental programming concepts. Includes information on string variables and functions; IBM PC DOS: numerical variables and arithmetic; expressions; sound effects; medium resolution graphics; loops and subroutines; bar graphs, animated graphics. Prentice-Hall

Our price \$27.10. Save \$2.20**Handbook for Your IBM PC (includes XT version)****Louis E. Frenzel & Louis E. Frenzel, Jr.**

Experienced users will find it a handy reference, with a concise summary of key operational information and as a source book of information about non-IBM accessories. Beginners will find it step-by-guide to using the computer and a source for "what to do and how to do it"

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From the author of the popular Apple Connection, VIC-20 Connection and Z80 Applications, this book shows how easy it is to use your computer with common household devices. Explains techniques for setting up your IBM to control a home security system, home temperature control system, voice synthesizer to make your computer talk, as well as other home appliances.

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Our price \$6.45. Save 50 cents**Applesoft Basic: A Teach-Yourself Introduction****B. M. Peake**

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A 15-year-old whizz kid from Victoria, Australia has put together a collection of 20 arcade games for the unexpanded VIC-20. All programs listed twice — once for straightforward keyboard play, and once for use with a joystick. All games extensively play tested. Selection includes Galaxy Robbers, Yackman, Sub Attack, Fantasy, Pnball, Indi 2000, Leaper and Bullet Heads.

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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.

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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 interrupt handling for multiple sprites and smooth screen scrolls.

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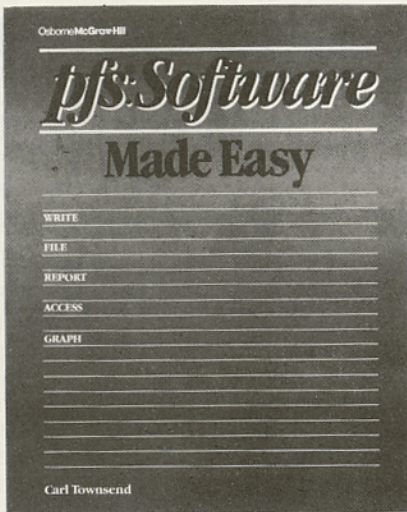
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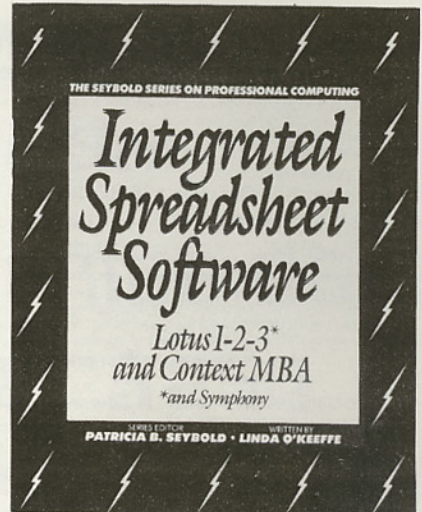
Step-by-step tutorial to the pfs series — pfs Write, pfs File, pfs Report, pfs Access and pfs Graph. Programs will work on the IBM PC and XT, Apple IIe IIc and III, and the TI Professional—and you will need at least one disk drive, preferably two, or a hard disk system. Book includes tips for integrating programs and working with advanced applications.

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Integrated Spreadsheet Software: Lotus 1-2-3, Context MBA and Symphony Linda O'Keefe

Examines all three programs, with emphasis on Lotus 1-2-3 and Context MBA. Describes them from the point of view of the business person wanting to increase efficiency without becoming a computer "techie". Compares strengths and weaknesses, and discusses suitability for different types of user, and provides a framework for evaluating integrated programs.

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More Arcade Games for Your Commodore 64 Brett Hale

Collection of arcade games by Australian whizz kid, 15-year-old Brett Hale. Games are in BASIC and can be modified to your wants. And they are listed twice — for keyboard and joystick use. Includes Speedy Boulders, Encircle, Yackman, and Barrel Jumper.

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Shows how to create cartoon characters, maps, calendars, geometrical forms, game boards and game pieces on the C64. Series of working programs charts your progress and a turtle graphics program and two editors provide the tools for drawing pictures and demonstrating the features of advanced graphics systems. Assumes no special mathematical or programming background, and you learn by doing.

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Professional musician starts with the essentials of programming sound and music, harnesses bytes and beat to show the way to the harmony of clefs and chips of electronic music. BBC can be a drum machine or synthesiser, instrument or interface, component or composer. Introduces music notation and theory of chords and harmony.

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Adventure Games for the Electron A. J. Bradbury

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Applied Apple Graphics Pip Forer

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Computer Graphics for the IBM Personal Computer Donald Hearn & M. Pauline Baker

Discusses basic concepts and techniques of graphics, and explores IBM PC's capabilities for these applications. Examines methods for creating two and three-dimensional pictures and graphs, and shows how to manipulate and animate displays. Also analyses make-up of PC and its graphics features.

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Commodore 64 Logo Primer Gary G. Bitter & Nancy Ralph Watson

Divided into three distinct sections — a gradual development of Logo with no user prerequisites except access to a Commodore computer with Commodore Logo; Quick-Start Logo for the person who has some familiarity with the language; and a broad overview of Logo, including its historical development along with useful applications. Together, they give comprehensive cover useful for the both and advanced and novice user.

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Whole Earth Software Catalog Stewart Brand

A comparative guide and recommendations on software, hardware, magazines, books, accessories, suppliers and on-line services for personal computers. Lots of tips on buying and shopping around, and warnings on what to beware of.

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Expanding Your Commodore 64 Capabilities David D. Busch

A "how-to, what-to, where-to" guide with a concise compendium of possible expansion options and how to enjoy them. Tells what to look for and what to avoid, covering the range of computerware with special relevance to the 64.

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BASIC Basics for the Timex Sinclair 1500/1000 Michael P. & Simon J. Barnett

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Business

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Elna Tymes & Peter Antoniak

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Edward M. Baras

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George H. Hildebrand

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Hayden

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Maurice A. Silver, John Jeacocke & Ray Welland

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Pitman

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Walter A. Ettl

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Osborne/McGraw-Hill

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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 macros, performing calculations and printing graphs and reports. Remains a handy reference once you are familiar with 1-2-3.

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Sybox

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Haydon

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Nigel Freestone

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

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Paul Hoffman

Spells out what the business person needs to know to get the most from Microsoft Word which runs on many personal computers, including the IBM PC, AT and T6300PC and 3B Series, and the Tandy 2000. Covers all basic functions and describes each option, with instructions on glossaries, style sheets and windows, tips on the mouse, and using mail-merge. Practical examples include screen shots and illustrations.

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Language/programming

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Rod S. Burgess

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Hutchinson

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Nelson

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Paul Hoffman & Tamara Nicoloff

Sets out to familiarise you with MS-DOS in all its versions — IBM PC-DOS, and Versions 1.0, 1.1, 1.25, 2.0 and 2.1. Covers each computer running MS-DOS, gives the version it runs and lists any improvements the manufacturer has made to the system. Complete information on IBM PC-DOS. Information on software that runs under MS-DOS and products available to enhance the system.

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LOGO

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Annie & David Fox

Easily-followed introduction — you don't need a computer to learn. Blends numerous examples and illustrations in a good-humoured explanation of programming concepts. Guides you through BASIC programming fundamentals, shows how a computer can use your input to produce useful results, and presents a glimpse into the computer future.

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Walter A. Ettl
& 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 operators; works with loops, strings, arrays and subroutines, sequential and random access files; debugging and documenting programs. Includes five fully documented business programs which can be customised.

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John Cunliffe

Anyone who can operate a television set and a typewriter keyboard should enjoy this book written for the young learner and the interested adult. Tells how to choose a computer for LOGO, how to write your own programs, and suggests projects and puzzles. Attractive format and easy to follow.

Andre Deutsh

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Tim Field

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Audrey & Owen Bishop

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Granada

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Kevin Jones

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Clive Williamson

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Practical Spectrum Machine Code Programming

Steve Webb

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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.

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The Sinclair User Book of Games & 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 in 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.

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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 principles.

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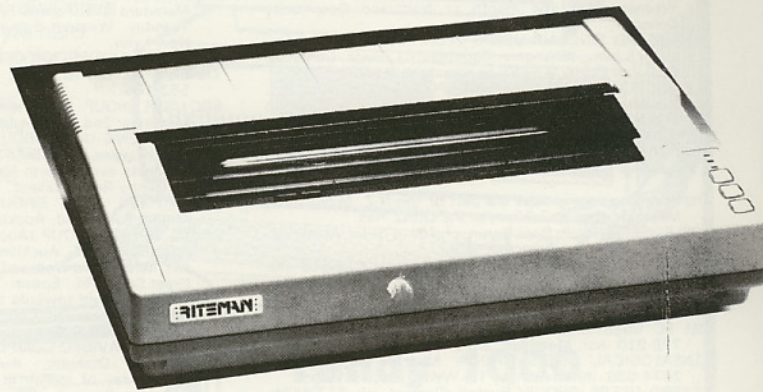
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USER GROUPS

BBC MICROCOMPUTER USERS' GROUP OF NZ, Local meetings - Auckland: 2nd Wednesday of month at VHF Clubrooms, Hazel Ave, Mt Roskill. Ph. Dave Fielder, 770-630, ext 518 (b). Wellington - meets last Thursday of each month in staffroom, first floor, Correspondence School, Portland Cres, Thorndon. Local contact, Anton, 286-789, Hamilton - Waikato Tech B-block staffroom; last Wednesday of the month 5 p.m. Local contacts Peter (Ham) 393-990 or Alison (Morrinsville) 6695. Hawke's Bay - Hastings and Napier alternate months. Local contacts: Kendall (Napier) 435-624, Bob (Taradale) 446-955; Mitch (Hastings) 778-235. Christchurch - fortnightly, Tuesdays, 7 pm, Hagley High School. Local contact Michael, 582-267.

SANYO USER GROUPS have been set up in Auckland, Wellington and Christchurch. Contact P.O. Box 6810, Auckland for further information.

SHARP PC1500 USER GROUP - Contact: Allan Thomas, P.O. Box 155, Napier. Newsletter.

BAY OF ISLANDS COMMODORE 64 USER GROUP: Contacts - Mrs B. McLeish, P.O. Box 119, Okaihau (secretary), or Mr H. Perry, 143 Church Street, Onerahi.

KERIKERI COMMODORE 64 USER GROUP: Contact: Brett Snow, Skudders Beach, Kerikeri. Ph 78-888.

WHANGAREI COMPUTER GROUP: 15 James Street, Whangarei. Phone 84-416. Meets every second Wednesday of the month at Northland Community College.

WHANGAREI SINCLAIR USERS CLUB: Meets 1st Sunday, 1 p.m. - 5 p.m., Whangarei Community College. Contacts: B.M. van Gelder 83-886 or president, 81-733.

N.Z. MICROCOMPUTER CLUB INC, PO Box 6210, Auckland. A meeting is held on the first Wednesday of each month at the OSNZ Hall, 107 Hillsborough Rd, Mt Roskill, from 7.30 pm. Visitors are also welcome at 10am - 5pm, at the same hall on the Saturday following the above meeting.

The following user groups are part of the N.Z. Micro Club. Meetings start at 7.30pm at the OSNZ Hall.

APPLE USER GROUP: Ross Bryon, ph 761-670 (h). Meetings: 3rd Tuesday.

BUSINESS USER GROUP: Sam Chan, phone 678-518 (h). Meetings: 3rd Thursday.

CP/M USER GROUP: Peter Morrin, ph 592-452 (h). Meeting: 4th Monday.

IBM PC USER GROUP: Terry Bowden, ph 452-639 (h). 778-910 (w). Meetings: 3rd Thursday.

GENEALOGICAL USERS GROUP: Maartin de Vries, ph 2674-886 (h). Meetings, 1st Wednesday, 9.15 pm.

KAYPRO USERS GROUP: Russell Clement, ph 817-8525. Meetings, 4th Monday.

POCKET COMPUTER USER GROUP: Peter Taylor, 14 Gollan Rd, Mt Wellington 6, phone 576-618 (h).

SINCLAIR USERS GROUP: Doug Farmer, phone 567-589 (h). Meetings: 4th Wednesday.

SORCERER USER GROUP (INZ): Selwyn Arrow, ph 491-012 (h). Meets at Micro Workshop.

SORD USER GROUP: Graeme Hall, 5 Brouder Pl, Manurewa, ph 266-8133 (h).

TI 99/4A USER GROUP: Ray Tucker, ph 568-155 (h).

TOMORROW USERS GROUP: Chris Cotton, Phone 789-153. Meetings: 3rd Thursday, 7.30pm, 20 Kingsley Street, Grey Lynn.

WIZZARD USER GROUP: Richard McFadgen, 11 Hilling St, Titirangi, ph 8178-219 (h).

1802 USER GROUP: Brian Conquer, ph 695-669 (h).

2650 USER GROUP: Trevor Sheffield, phone 676-591 (h).

68XX (X) USER GROUP: John Kucernak, ph 606-935 (h).

The above contacts can usually be found at N.Z. Microcomputer Club meetings and micro workshops, or via P.O. Box 6210, Auckland.

Other Auckland-based groups:

ACES (Auckland Computer Education Society): C/- Director, Computer Centre, Secondary Teachers' College, Private Bag, Symonds Street, Auckland. Meetings, third Thursday of month, at the College.

ATARI MICROCOMPUTER USER GROUP: Ian Mason, 25 Manutara Ave, Forrest Hill, ph 467-347 (h). Meets 2nd Tuesday, Western Suburbs Radio Club, Gt North Rd, New Lynn.

THE AUCKLAND VZ-200 USERS GROUP: President, Julian Bish, 22 Ussher Place, Pakuranga. Phone, Auckland 562-166.

BBC USER GROUP: Dave Fielder, ph 770-630, Ext 518 (w). Meetings: 2nd Wednesday.

COLOUR GENIE USER GROUP, (Auckland): Secretary: Mrs Nola Huggins, Ph 655-7518, P.O. Box 27-387, Auckland 4. Meets every fourth Monday, All Saints Church Hall, Ponsonby Rd, Auckland.

EPSON HX20 USERS' GROUP: Contact: C.W. Nighy, 231 Khyber Pass Road, Auckland, (Ansaphone, 774-268).

HP41C USERS' GROUP (Auckland): C/- Calculator Centre, P.O. Box 6044, Auckland: Grant Buchanan, 790-328 (w). Meets third Wednesday, 7pm, at Centre Computers, Great South Rd., Epsom.

LXIV N.Z.: Aligned towards those using Commodore 64's, mainly in education. Contact Brother Bosco Camden, 52 Onslow Avenue, Epsom, Auckland.

MSX/SPECTRAVIDEO COMPUTER CLUB: Contact: P.O. Box 22-620, Otahuhu, Auckland, 6. Meetings, 3rd Wednesday of month at IHC Hall, 56 Ranfurly Road, Epsom. Contact Bill Ferguson (Secretary). Ph. 276-1966, ext 803 (w).

NZ COMMODORE USER GROUP (AK) INC: John Walker, ph 8339-589 (h). PO Box 5223, Auckland. Meetings: 3rd Wednesday, Remuera Primary School Hall, Dromorne Rd, Remuera.

NZ OSBORNE USERS GROUP (NZOG): c/- P.O. Box 43-182 Auckland. Meetings: 1st Thursday. Auckland University, Human Sciences Building, Auckland. 7.30 pm.

NZ QL USERS GROUP: Write to Peter Avery, 20 Stokes Rd, Epsom, Auckland.

NZ TRS-80 MICROCOMPUTER CLUB: Olaf Skarsholt, 203A Godley Rd., Titirangi. Phone 817-8698 (h). Meets first Tuesday OSNZ Hall, 107 Hillsborough Rd, Mt Roskill.

OSI/BBC USERS' GROUP (Ak): Secretary: Ken Hartley, 77 Boundary Road, Auckland 7. Meets third Wednesday, VHF Clubrooms, Hazel Ave, Mt Roskill. 7.30 pm.

SYMPOOL (N.Z. SYM user group): John Robertson, PO Box 580, Manurewa, ph 2675-188 (h).

TARILAND COMPUTER CLUB INC: A club for Atari enthusiasts living in Auckland. Meeting 2nd Wednesday each month at Remuera Primary School Hall. Contact Allan Clark 8368-922(h) 50-5409(b).

A.Z.T.E.C.: Brian Mayo, Church Street, Katikati. Phone 490-326. Members use all micros.

BAY MICROCOMPUTER CLUB (Tauranga): G.L. McKenzie, Secretary, Snodgrass Road, Tauranga. Phone: 25-569.

BAY OF PLENTY TAURANGA COMMODORE USERS GROUP: Contacts - phone 62-083, 65-311, and 83-610. Meets first and third Monday of month, 7 p.m.

BAY SHARP USERS GROUP: Contact - Phone 86132. Meeting 2nd and 4th Monday. 417 Cameron Road, Tauranga.

BEACH COMPUTING CLUB (Waihi): Jamie Clarke, Box 132, Waihi (Ph: 45-364 Waihi Beach).

TAURANGA MAC GROUP: Contact, Clive Bolton, 81-779 (w) 62-811 (h).

WAIHI COMPUTER ENTHUSIASTS: Contact: G.C. Jenkins, 10 Smith St, Waihi (h) WAH 8478. Workshops every Tuesday. Meetings last Tuesday of month.

THE ATARI CONNECTION: Contact: Paul Cormack, 29 McDiarmid Cres, Huntly. Ph (h) 88-695.

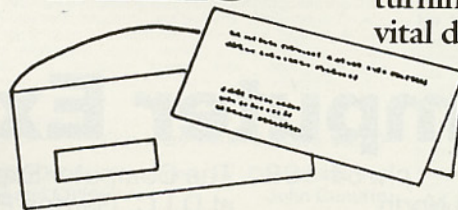
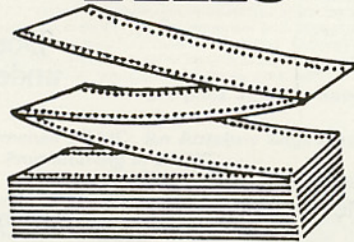
HAMILTON SUPER 80 USERS': P.O. Box 16113, Glenview, Hamilton.

WAIKATO ATARI USERS' CLUB: P.O. Box 6087, Heaphy Terrace, Hamilton. Ph Dave (071) 73-888, Bob (071) 78-434.

WAIKATO COMMODORE USERS' GROUP: Secretary, Mrs Eileen Woodhouse, 32 Kenny Crescent, Hamilton.

WAIKATO COMPUTERS IN EDUCATION SOCIETY: Secretary, Geoff Franks, Fraser High School, 72 Elliott Road, Hamilton. Phone (h) 81-050.

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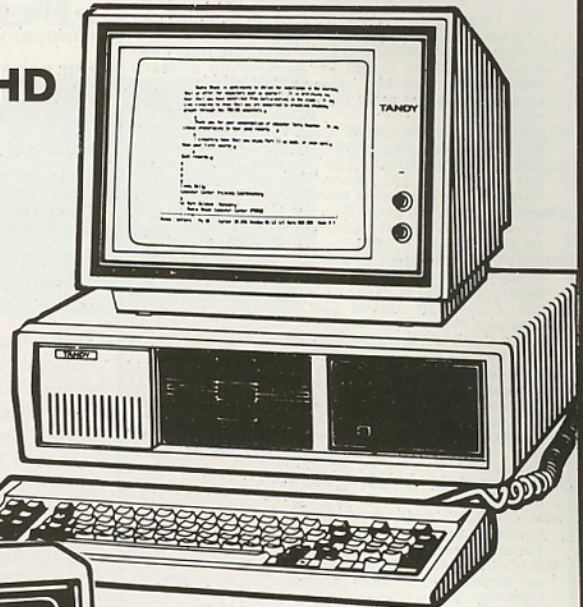
USER GROUPS

- WAIKATO SPECTRUM USERS' GROUP: Secretary: Roger, Loveless, 18 Heath St, Hamilton. Phone 492-080. Meetings: First Tuesday of the month.
- WAIKATO SPECTRAVIDEO USERS' GROUP: P.O. Box 16113, Glenview, Hamilton.
- MORRINSVILLE COMPUTER SOCIETY: Contact: Alison Stonyer, 49 Coronation Road, Morrinsville. Phone 6695 (h). Meets 1st and 3rd Wednesdays.
- GLOWWORM COMPUTER ENTHUSIASTS: Meets every second Sunday of the month in the Otorohanga District Council's board room. Contacts: president, Colin Wilkins, Oto 8331; vice-president, Hugh Button, Oto 7228; secretary, Laurence Bevan, Oto 7066.
- GISBORNE MICROPROCESSOR USERS' GROUP: Stuart Mullett-Merrick, P.O. Box 486, Gisborne. Phone 88-828.
- GISBORNE SPECTRAVIDEO COMPUTER GROUP: Contact - Wes Baillie, P.O. Box 1392, Gisborne.
- ROTORUA COMPUTER CLUB: Contact: Ken Blackman, 6 Urauhart Place, Rotorua. Third Tuesday of each month at 7pm, Waiariki Community College, Rotorua.
- ELECTRIC APPLE USERS' GROUP: Noel Bridgeman, P.O. Box 3105, Fitzroy, New Plymouth. Phone 80-216.
- TARANAKI MICRO COMPUTER SOCIETY: P.O. Box 7003, Bell Block, New Plymouth: Mr K. Smith. Phone 8556, Waitara.
- SOUTH TARANAKI MICROCOMPUTER SOCIETY: Contacts: Apple, Jim Callaghan, 86-667 Hawera; Commodore, Allen Goodhue, 86-194 Hawera; S80, TRS80, John Roberts-Thomson, 84-495 Hawera; Sega, Dave Beale, 85-108 Hawera; Spectrum, Guy Oakly, 8060 Manaia. Sub groups meet on the third Wednesday of the month. The whole society meets periodically in the Hawera High School computer room. Written inquiries to Allen Goodhue, 21 Princes Street, Hawera.
- NAPIER VZ-200 USERS GROUP - Contact: Peter Cox, Ph 435-126 after 4pm or write to Peter Cox, 9 Cranby St, Otekawa, Napier.
- HAWKE'S BAY APPLE COMPUTER CLUB: Meets 1st and 3rd Mondays, 7 p.m. Napier Boys' High School. Contacts: Bert Tripp 700-412; Charlie Lum 438-005.
- HAWKE'S BAY MICROCOMPUTER USERS' GROUP: Bob Brady, Pirimai Pharmacy, Pirimai Plaza, Napier. Phone 439-016.
- HAWKE'S BAY COMMODORE USER GROUP: Contacts: Mike Phillips, 401 Lascelles Street, Hastings (president); Mark Hodgson, 1108 Oliphant Road, Hastings (secretary). Meetings: first Tuesday of month at H.B. Community College.
- HAWKE'S BAY SPECTRAVIDEO USER GROUP: Meets first Tuesday of month at Hawke's Bay Community College. Contact P. Lawrence, P.O. Box 799, Napier.
- INTERACT USERS GROUP: for more information write to Denis Clark, 43 Charles Street, Westshore, Napier.
- WANGANUI COMMODORE 64 USER GROUP: Contact - P. Northway, Phone (h) 42-916. 7 Broadhead Avenue, Wanganui. Meets first and third Thursdays of month at Wanganui Community College.
- HBCS (Hawke's Bay Computers in Education Society): Contact - Grant Barnett, 89 King Street, Taradale, Napier. Ph: 446-992.
- MOTOROLA USER GROUP: Harry Wiggins, (ZL2BFR), P.O. Box 1718, Palmerston North. Phone (063) 82-527 (h).
- MANAWATU COMMODORE USERS GROUP: Contact Roy Ph: (063) 82-695 or Wayne Ph: (063) 89-888. P.O. Box 6019, Awapuni, Palmerston North. Meetings: 1st Tuesday each month.
- MANAWATU MICROCOMPUTER CLUB: Contact: Richard Anger, 64-108 (W) or 63-808 (H). Meets twice a month at PDC Social Club rooms.
- HOROWHENUA MICROCOMPUTER CLUB: Meets on second and fourth Thursday of month. Meeting, Wally Withell, P.O. Box 405, Levin; secretary, Dennis Cole, 28 Edinburgh Street, Levin. Ph (069) 83-904.
- WAIRARAPA MICROCOMPUTER USERS' GROUP: Geoffrey Petersen, 27 Cornwall St, Masterton. Ph(h) 87-439.
- CENTRAL DISTRICTS COMPUTERS IN EDUCATION SOCIETY: Rory Butler, 4 John Street, Levin (069) 84-466 or Margaret Morgan, 18 Standen Street, Karori, Wellington, (04) 767-167.
- UPPER HUTT COMPUTER CLUB: Shane Doyle, 18 Holdsworth Avenue, Upper Hutt. Phone 278-545. An all-machine club.
- BBC USER GROUP: Users of other machines welcome too. See entry head of list.
- CROG (Central Region Osborne Group): For Osborne, Amust, Kaypro & other CP/M computer users. Contact: Bruce Stevenson, 5 Dundee Pl, Chartwell, Wellington 4; ph 791-172. Meetings: 1st Wednesday, 7.30 p.m., at Compusales.
- MICROBEE USERS' CLUB: P.O. Box 871, Wellington, 2nd Sunday of month.
- NEC COMPUTER USERS' GROUP: C/- P.O. Box 3820, Wellington.
- NZ SUPER 80 USERS' GROUP: C/- Peanut Computers, 5 Dundee Pl., Chartwell, Wellington 4. Phone 791-172.
- OHIO USERS' GROUP: Wellington. Secretary/Treasurer: R.N. Hislop, 65B Awatea Street, Porirua.
- POLY USERS GROUP, Wellington: Contact - Christine Greenbank, Computer Studies, Wellington Teachers' College, Private Bag, Karori, Wellington.
- ATARI USERS' GROUP, Wellington: Eddie Nickless. Phone 731-024 (w), P.O. Box 16011. Meetings: first Wednesday of month.
- WELLINGTON APPLE USERS GROUP: Inquiries to secretary, Grant Collison, 58 Lonsdale Cres, Wellington 3. Ph 872-537, evenings. Meets last Saturday of month.
- WELLINGTON COMMODORE USERS' GROUP: P.O. Box 2828, Wellington. Contacts: Peter March (h) 86-701, Robert Keegan (h) 789-157.
- WELLINGTON MICROCOMPUTING SOCIETY INC.: P.O. Box 1581, Wellington, or Bill Parkin (h) 725-086. Meetings are held in the Fellowship Room, St Johns Church, 176 Willis Street, on the 2nd Tuesday each month at 7.30pm.
- WELLINGTON SEGA USER GROUP: Meets first Thursday of month at Paparangi School Hall. Contact Shaun Parsons, P.O. Box 1871, Wellington. Phone: 897-095 after 6pm.

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USER GROUPS

SEGA OWNERS CLUB: Lower Hutt. Meets 1st Monday each month. Contact: Murray Trickett. (w) 724-356, (h) 662-747.

WELLINGTON SPECTRAVIDEO CLUB: Contact - Don Stanley, C/- Box 7057 Wellington South. Ph. 746-906 (w). Meets on one Monday a month at Staff Common Room (Level D), Wellington Clinical School, Mein Street, Newtown.

WELLINGTON SYSTEM 80 USERS' GROUP: Contact: W.G. (Bill) Lapsley, day 286-175; evenings, 268-939; or Andrew Vincent 780-371 (evenings).

HUTT VALLEY COMMODORE USER GROUP: Contact - Ken Alexander, C/- 16 Enfield St, Wainuiomata or phone Wainuiomata, 645-830. Meetings, first and third Mondays of month at St. Bernard's College, from 7.30 pm.

NELSON COMMODORE USERS' GROUP: Peter Archer, P.O. Box 860, Nelson. Phone (054) 79-362 (h).

NELSON HOME COMPUTER CLUB: Contact - Mike Jenkins, Box 571. Ph 87-930. Meets, 7 p.m., first and third Tuesdays of the month at Nelson Intermediate.

BLLENHEIM COMPUTER CLUB: Club night second Wednesday of month. Ivan Meynell, Secretary, P.O. Box 668. Phone (h) 85-207 or (w) 87-834.

MARLBOROUGH COMMODORE USERS GROUP: Secretary, Robin Vercoe, 42 Rogers Street, Blenheim. Meetings: Second Thursday of month, 7.30 p.m., IHC rooms.

BULLER COMPUTER USERS' GROUP: P.O. Box 310, Westport. Phone: 7956 Wpt. R.J. Moroney (secretary).

HOKITIKA COMPUTER USERS' GROUP: Contact - Adrian Mehrtens, 185 Sewell Street, Ph: 943.

CANTERBURY COMPUTER EDUCATION SOCIETY: Contact - Graeme Sauer (secretary), P.O. Box 31-065, Ilam, Christchurch 4.

CHRISTCHURCH APPLE USERS' GROUP - Contact: Peter Fitchett, ph 328-189. Meets first Wednesday of month, third floor, Tower Building, Christchurch Teachers' College.

CHRISTCHURCH ATARI USERS' GROUP: Contact Ron van Lindt, 10 Silverdale Place, Christchurch 6. Ph 891-374.

CHRISTCHURCH SPECTRAVIDEO USERS' GROUP - Contact: Lester Reilly, ph (h) 428-686. Meets third Tuesday of month.

CHRISTCHURCH TRS-80 COLOUR USER GROUP: Meetings: last Wednesday of month. Contact: Dennis Rogers, 21 Frankleigh Street, Christchurch 2. Phone 34-731.

CHRISTCHURCH '80 USERS' GROUP: Brendan Thompson. Phone (h) 370-381. P.O. 4118, Christchurch.

OSI USERS' GROUP (CH): Tony Martin, 9 Innes Rd. Phone 555-048.

SINCLAIR USERS' GROUP CANTERBURY, INC: Contact: Gary Parker (president). Phone 894-820, P.O. Box 4063. Meets 7.30 p.m. last Monday of month. Phone for latest meeting place.

CHRISTCHURCH COMMODORE USERS GROUP: John Kramer, 885-533 and John Sparrow, Phone 896-099.

CHRISTCHURCH BBC and ELECTRON USERS GROUP. Meets alternate Monday nights at 6.30 except Saturday or Secondary-School holidays, at Hagley High School. Secretary, Mrs R.D. Nolan, 87 Palmers Road, Christchurch, 9.

PANASONIC (JB-3000) USERS' GROUP: Contact: Prof B.J. Clarke, Dept of Accountancy, University of Canterbury, Private Bag, Christchurch, 1.

CHRISTCHURCH COLOUR GENIE USERS' GROUP: Meets 2nd Wednesday, 7.00p.m., Abacus Shop, Shades Arcade. Secretary, Robert Wilson, 17 Warblington Street, Christchurch, 7. Ph: 881-456.

CHRISTCHURCH SEGA CLUB: Contact: Laurie Kiesanowski. Ph: 856-618.

CHRISTCHURCH SORD MS USERS GROUP: Meets first Thursday of month, 7pm.

DICK SMITH WIZZARD COMPUTER CLUB, Christchurch: Contact - Tony Dodd, 34 Mayfield Ave. Ph: 557-327.

CHRISTCHURCH VZ-200 USERS GROUP: Meets second Tuesday of month. Contact Ian Birse, Ph 523-915, Graham Dillon, Ph 324-117, or P.O. Box 22-094, Christchurch 1.

ASHBURTON COMPUTER SOCIETY: Meets first Monday of month, 7.30 pm. Enquiries to Pete Boyce, 4 Willow St, Ashburton. Ph 83-664.

SOUTH CANTERBURY COMPUTER GROUP: Caters for all machines from ZX81 to IBM34, Geoff McCaughan. Phone Timaru 60-756 or P.O. Box 73.

NORTH OTAGO COMPUTER CLUB: Contact: Peter George, P.O. Box 281, Oamaru. Phone 29-106 (b) 70-646 (h).

LEADING EDGE HOME COMPUTER CLUB: Elaine Orr, Leading Edge Computers, P.O. Box 2260, Dunedin. Phone 55-268 (w).

OTAGO COMMODORE 64 CLUB: Meets first Tuesday of month, 7.30pm. Contact: Geoff Gray, 41 Eglinton Road. Ph 53-986.

DUNEDIN SORD USERS' GROUP: Terry Shand. Phone (024) 771-295 (w), 881-432 (h).

CENTRAL CITY COMPUTER INTEREST GROUP: Contact: Terry Stevens, Box 5260, Dunedin. Phone 882-603. Meetings every second Tuesday.

OTAGO COMPUTER EDUCATION SOCIETY: Jim Ferguson, Arthur Street School, 26 Arthur Street, Dunedin. Ph. 776-524.

ATARI USER GROUP, Dunedin: Meets fortnightly on Thursday. Phone Graeme Wheeler 737-907 for the date, time and place of next meeting, or write to 38 Calder Avenue, North East Valley, Dunedin.

SPECTRUM AND QL COMPUTER CLUB - Contact: James Palmer, 37 Sunbury St, Dunedin. Phone, 44-787, Monday to Friday after 4pm.

SOUTHERN MICRO USERS GROUP (Invercargill) - Contact: R.J. Edgeler, ph 82-764, P.O. Box 612, Invercargill. Meets every second Monday, St Pauls Church Hall, 7.15 pm.

SOUTHLAND COMMODORE USER GROUP: (VIC 20 and 64s). Address: C/- Office Equipment Southland, Box 1079, Invercargill.

SOUTHLAND COMPUTER EDUCATION SOCIETY: Secretary, Bob Evans, Southland Boys' High School, Herbert Street, Invercargill, Ph (h), 73-050 or ZL4LX.

GORE COMPUTER CLUB: Meets first and thirs Tuesdays of month, 7pm. Contacts: Allan Rodgers, ph 7488, Dave Clarke, ph 5836.

N.Z. SOFTWARE EXCHANGE ASSOCIATION: Non-profit group for exchange of software written by programmer members. Contact: Ian Thain, Box 333, Tokoroa.

APOLOGY

By **Whitcoulls Limited**

to **Messrs Thomas Corbett Ellis and Phillip George Ellis**, both of Auckland, Company Directors

On pages 11-13 of the volume 2 no. 3 summer 1984 issue of the magazine "New Zealand Computer Reviews", published by **Printed Matter Associates Limited**, Auckland, there was an article entitled "The Last Days of Access Data". **Whitcoulls Limited** was the printer of this issue of the magazine.

Messrs T.C. and P.G. Ellis, who were at all material times directors of **Access Data Corporation Limited** (in receivership), have complained that this article contains statements defamatory of them. They have issued proceedings claiming damages for defamation in the High Court at Auckland against the editor, and publisher of the magazine and the author of the article in question and, also, against **Whitcoulls Limited**, as the printer.

Whitcoulls Limited claims that as the printer only of the magazine, it neither had nor reasonably could have had any knowledge of the truth or falsity of the statements in the article in question; it acted innocently; it exercised all reasonable care in the printing of the magazine and, in particular, it had no effective means of acquiring knowledge of or controlling its contents and had no reasonable opportunity of checking the same; the material to be printed came to it "pasted-up" and "camera-ready" for the production of printing plates and printing by an offset process; it did not do the typesetting; it did not and was not expected or paid by the publisher to proof-read the material; it did not know or could not reasonably have known that this issue of the magazine contained any defamatory material.

Nevertheless, if, as alleged, this article did contain statements which are defamatory of **Messrs T.C. and P.G. Ellis**, **Whitcoulls Limited** retracts the statements and apologises to them.

This apology is made without prejudice to any defence to the proceedings issued which **Whitcoulls Limited** may have.

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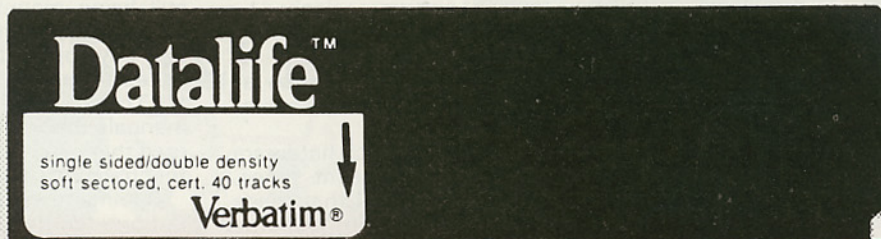
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Osborne: software ripoff

By Gaie Ellis

There is no justifying high prices for software – that was the message from entrepreneur Adam Osborne when he spoke to microcomputer industry representatives and their guests at the first microcomputer dinner and software awards during PC85 in Auckland.

Osborne raised a few eyebrows when he said consumers here were being ripped off when they had to pay \$1000 or more for a standard word processing package.

Questioned by guests to justify his statement, Osborne promised there would be a range of software released by his company which would "knock the socks" off existing packages and he warned stockists of packages such as Lotus that they should clear their shelves fast!

Pointing to the way in which hardware prices had fallen and in recent times, been forced down to a level that made them a mass consumer item, Osborne

said software should already have gone the same way. It had not because it was still being manufactured and marketed by small companies, often those which had developed it and did not have the necessary marketing expertise.

"Throw away the linen boxes and manuals that require a training course to read them and get down to retailing user friendly software," he said.

Commenting on the cost of support, Osborne contended that good software would not require a lot of support; his own company's software has a telephone support line.

"The need for support does arise where there are daily changes being made to programs," he said. "It is, however, also used as a rip-off; there are manuals and diskettes being produced way beyond what the average user requires.

Of New Zealand's capability in producing software for the export market, Osborne said while there could well be the ability to produce the best software in the world, in the final analysis it would come down to marketing, distribution, publicity and promotion. These factors would mark the success or otherwise of software written here.

First, New Zealand needs companies with the technology to take a lead in the frontiers of technology, he said.

And then, perhaps for overseas trade minister Mike Moore's benefit, Osborne suggested the deal could become a little less sweet as the company started reeling in the benefits.

For New Zealand to succeed, he warned, it was important to get rid of the British attitude that it is not nice to be better than your neighbour and of the desire to tax the hell out of those who are doing better.

At the same time, workers in an operation needed to be included in the company's growth and success.

"If there are problems with unions there, it's because you have problem management. Get the money for stock options to the janitors and secretaries in your organisations. And when you have a successful project three years down the line, make sure they get a large bonus."

While some of Osborne's statements were strong and straight shooting, many of those at the dinner felt he had taken a close look at the activities of the New Zealand microcomputer industry here, and his comments echoed the feelings of many involved in the high tech industry here in recent years.

Government support would not be of use in the form of handouts but positive incentives which would strengthen the capability and use the talent and innovative characteristics which seemed the most practical way of developing a burgeoning industry.

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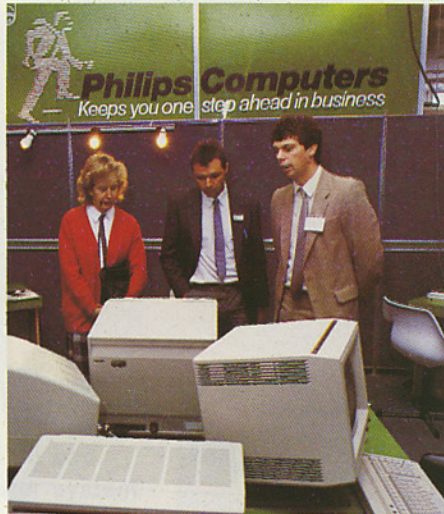
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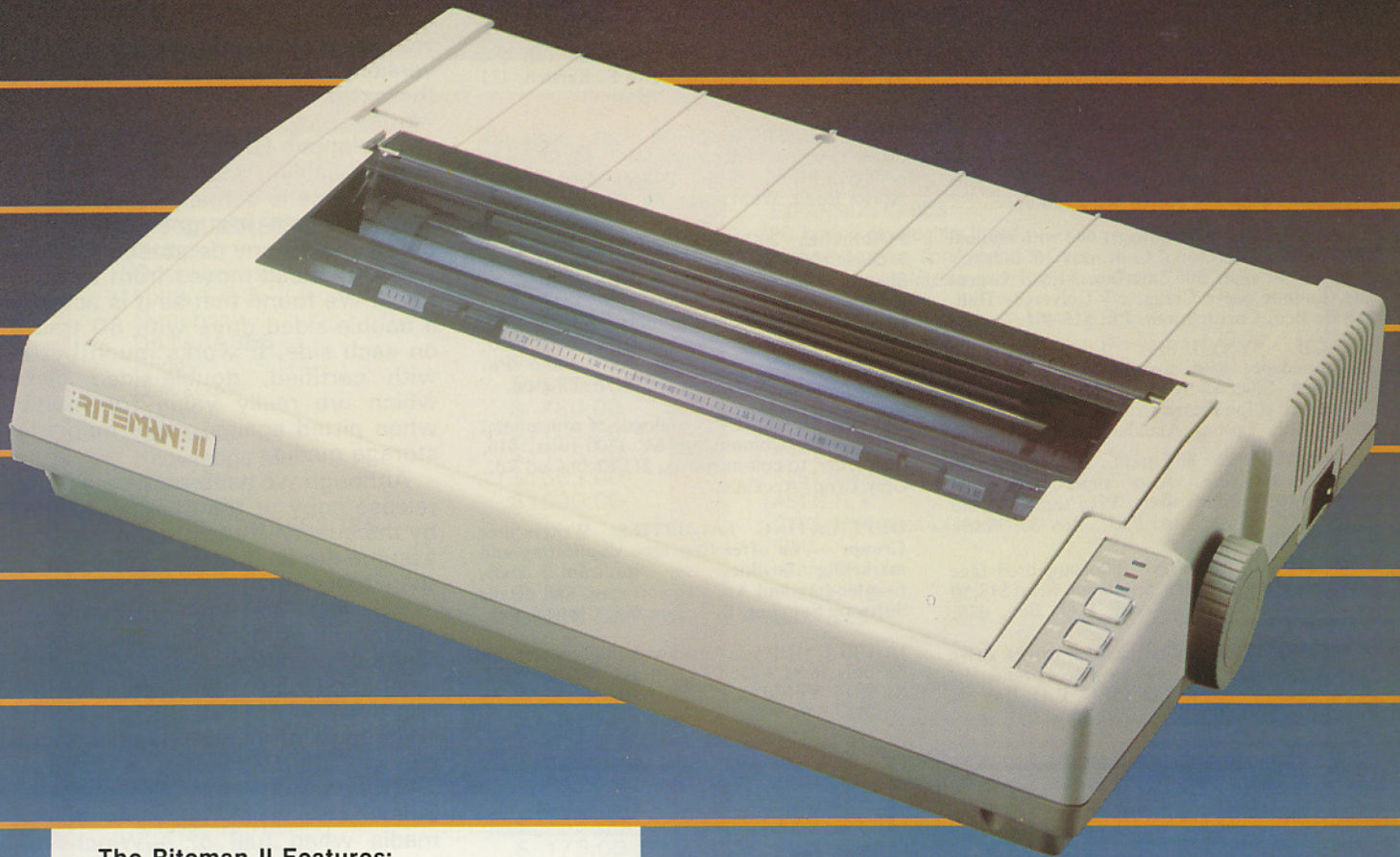


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HARDWARE REVIEW

From page 38

on an Apple practical without a hard disk), Pascal, and in sight on the horizon, DOS 3.3. Although standard DOS 3.3 is not compatible with the Innova-Drive, a patched version, which will take into account the extra storage capacity, is being written.

The Innova-Drive reads and writes data reliably, accurately and its access time is actually faster than a 5.25in. When it's going, the only time it makes any detectable noise is when the head moves from track to track. We found that as it is actually a double-sided drive with 80 tracks on each side, it works much better with certified, double-sided disks which are really value for money when pitted against other magnetic storage media.

Although we have seen only a pre-release copy of the manual, judging by the quality of the product, we can assume the final version will be more than adequate.

We feel the Innova-Drive is a significant product for the Apple II range of computers. It is not just an aesthetic (3.5in over 5.25in format) improvement but actually has the advantage of high, on-line storage capacity (800K versus a floppy's 143K) without the expense and inflexibility (not being able to change media when full) of a Winchester hard disk. Although a 5.25in drive is still necessary for the Apple, the increasing numbers of ProDOS based programs (for which it is not suited) will see the Innova-Drive come into its own.

These reasons, as well as the many operating systems it supports combined with the ruggedness and convenience of 3.5in disks, make it ideal for business in which cost effectiveness per byte and reliability is at a premium.

At \$1224 for one drive with the controller card, and an extra \$660 for the second drive, the Innova-Drive ensures no one goes In Over their heads in storage costs. Further information: Innovative Computer Systems Ltd, P.O. Box 78-053, Auckland. Ph: 766-487.

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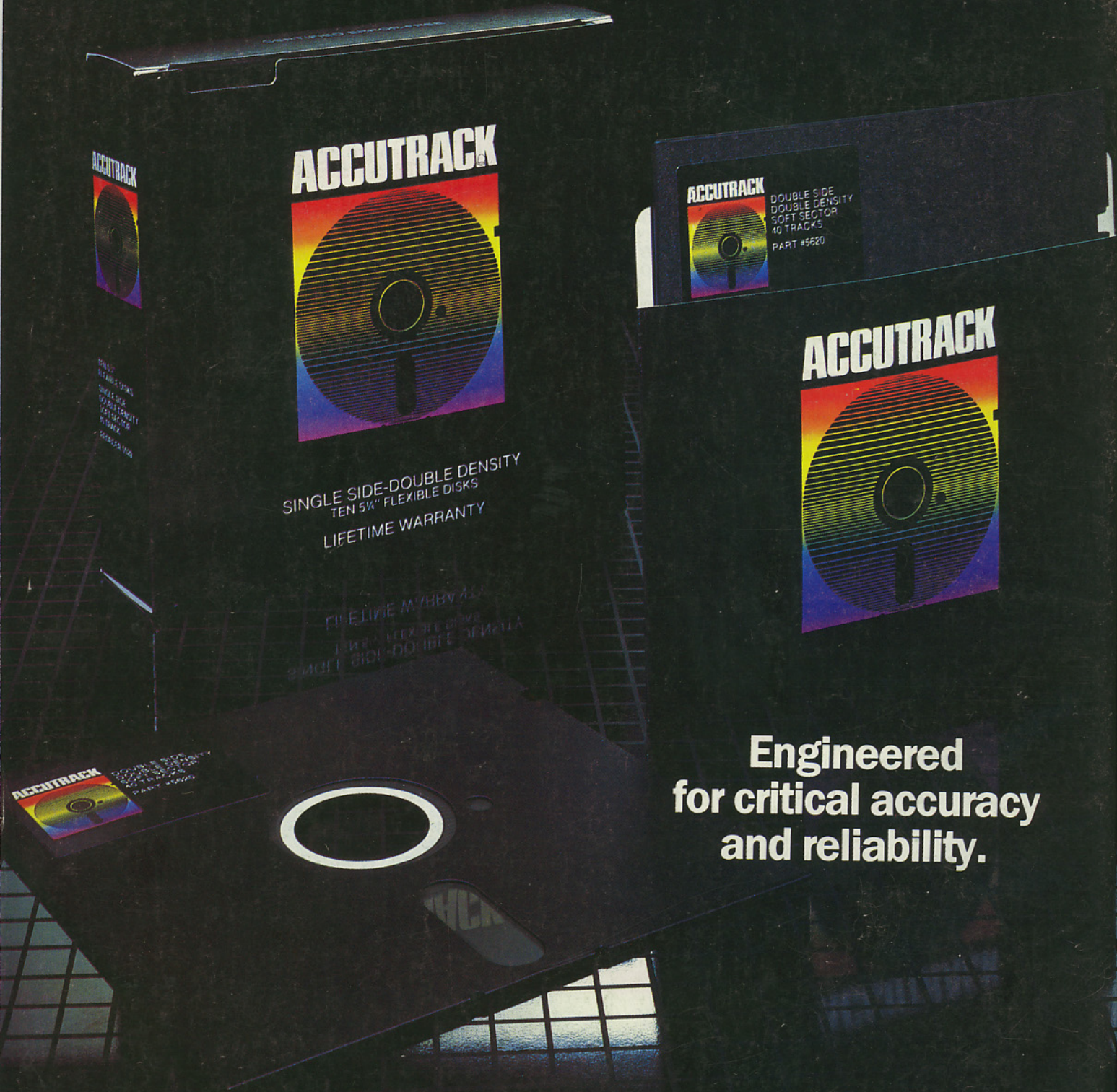
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