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inside your computer

Vol. 3, No. 3, October, 1983

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departments

your BUSINESS computer MAGAZINE

If it's computers in the business world that interests you, our pull-out section, *Your Business Computer*, is full of information to keep you up-to-date. This month's articles discuss the growing use of microcomputers in conjunction with companies' existing mainframe systems and data processing departments, and problems of compatibility and inefficient usage that can occur if this growth isn't carefully managed.

Bits Missing

The reviews of IBM-PC software mentioned on this month's cover have unfortunately had to be held over till next month as they arrived too late to meet our deadline.
We also apologise for the absence of the next instalment of Les Bell's 'Logic For Literati' - it had to be abandoned this month due to lack of space, but will be back (Bell willing) next month.

Portables, Portables, And More Portables

The Dulmont Magnum is a portable computer designed and manufactured in Australia – and it's so new Les Bell had to review the prototype for his article. Portables are really hitting the market now, and he also looked at two other new releases in Australia – the Pied Piper and the Zorba.

editorial

Recently I had a phone call from a reader (at least, I think he was) on the vexing question of warranties. After seven months of shopping around, he had bought a computer to assist him with his work.

Now this was an up-market, quite expensive machine. I won't name it — that would be unjust — but I know it and can say it is a very well-designed unit with an equally high quality of manufacture. He also bought a daisywheel printer to handle correspondence and general listing work.

After six weeks, a disk drive fell over. Well, these things happen; the distributor fixed it, no problems. After 14 weeks, the switched mode power supply in the printer went wrong. So sorry, warranty is only ninety days.

My caller's question was simple: When so many manufacturers of consumer electronics offer a full year's warranty, and many industrial electronics manufacturers are doing the same, why are computer suppliers sticking at ninety days?

I have to agree. Computers are now consumer items, and consumers expect much longer warranty periods than they are now getting.

When I bought a TV recently, it came with a three-year warranty on parts and labour, a period which actually exceeds the MTBR (mean time between robberies) in the area where I live. So much for the theory that colour TVs were hopelessly complex devices that fell apart like a one-hoss shay after two years.

I have a computer in my office which is substantially unchanged from 1977 and has only broken down once in that period. So much for the theory that S100 clunkers are hopelessly complex and unreliable devices. Single-board machines like the Apple and IBM-PC should be able to do even better.

The component breakdown in that printer power supply was probably the kind of infant mortality that warranties are intended to cover; I gather that since the warranty period had so recently expired, the distributor in this case is likely to do the right thing.

The warranty terms have become an added value for many consumer electronic items; there's probably a suitable reward for the first computer company to start offering extended warranties. Who will be the first?

– Les Bell

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your computer news

The Atari 600XL and software selection.

New Computers From Atari

FUTURETRONICS AUSTRALIA is launching more than 35 new products from Atari, including the 600XL and 800XL home computers, which are expected to sell for $399 and $599 respectively.

Both computers come with 24K ROM, built-in Atari BASIC, 62-key full-stroke alphanumeric keyboard, full screen editing, deleting backspace key, program interrupt key, inverse video key to reverse background and type colours, tab keys and expansion ports.

The 600XL has 16K RAM expandable to 64K, while the 800XL comes with 64K RAM.

Other new products compatible with the computers include the 1027 80-column letter-quality printer, the 1020 colour printer, the 1050 disk drive, the 1010 program recorder, the Atari CP/M module, a touch tablet controller, remote control joysticks, a track-ball controller, a light pen, and a variety of new software. This includes Atari LOGO, 'Paint' (a graphics program), and many new games.

Atari has also announced the availability of more than 2000 software packages for the 800XL and over 1500 for the 600XL. The computers are expected to be in the shops before Christmas.

For more information contact Ron Ward at Futuretronics on (03) 579 2011, or David Richards of Weston Communications on (03) 819 1406. □

New Products From ADE

ANDERSON DIGITAL EQUIPMENT is releasing a big new range of plotters, terminals and digitisers from manufacturers such as Qume, Houston Instruments and Televideo.

The Qume CRT terminals include the QVT 102, which has a 30 cm 80-column display and can emulate various Lear Siegler, Televideo and Hazeltine terminals. There is also the QVT 108, which is said to combine the best features of other terminals plus 22 programmable function keys.

The Houston Instruments DMP42 professional drum plotter is designed to meet the needs of small and large architectural, consulting, research, engineering and development firms. It can use paper sizes up to A1, and costs less than $4000 excluding tax.

ADE has also announced a plan for dealers and volume users of personal computers, multi-user systems and VDUs. The Televideo model 910 conversational model ASCII VDU will be sold for $650 each in lots of six, and the new multi-mode printer from Mannesmann Tally, model MT160L, is available for $828 each in lots of six (these prices excluding tax).

The Complot Series 7000 digitiser caters for just about every imaginable size and configuration for any application, and its uses range from mining and construction to geology and medicine.

For more information on all these products, contact Anderson Digital Equipment on (03) 544 3444. □

The Houston Instruments DMP42 plotter (left) and the QVT 102 terminal from Qume, both now available from Anderson Digital Equipment.

16-bit Otrona

WE'VE MENTIONED the Otrona Attache in these pages before, and in fact it was a finalist for our Computer of the Year Award. The new, improved Attache is due for release on October 15th, and looks like a ripper.

The Attache 8:16 is exactly the same externally as its predecessor, and much of the innards are identical – but it also includes an 8 MHz 8086 16-bit processor with 256 Kbytes of RAM, together with the MS-DOS operating system. The Z-80A and 64K of RAM are still there, and function as an I/O controller for the 8086.

According to Joe Calabria, Otrona's vice-president of Marketing, the Attache is the only portable in the marketplace with the 8086 microprocessor. The MS-DOS operating system will read IBM-PC diskettes and run most IBM-PC software with little or no modification.

The machine will be supplied with the Valet software, which runs an integrated calculator and alarm system. Under MS-DOS, the graphics resolution doubles to 640 by 250. The 8 MHz 8086 will make it one of the fastest 16-bit computers currently available, and certainly faster than other portables.

The 8:16 is priced at $4995 including tax, a competitive price considering the processor speed and amount of memory. Options include a GPIB/hard disk interface, 8087 math co-processor chip, and synchronous communications interface.

The standard 8-bit Otrona Attache has been reduced in price by $1000 to $3995, and a 16-bit upgrade is available for existing Attache owners. For further details contact Elmeasco Instruments Pty Ltd, 15 McDonald Street, Mortlake NSW 2137, or telephone (02) 736 2888. □

DATA 83

AUSTRALIA'S BUSINESS COMPUTER EXHIBITION

VICTORIAN EXPO CENTRE
ROYAL MELBOURNE SHOWGROUND
Nov 8-10, 1983

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- DATABRIEF SEMINARS
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Since 1977 the "DATA" Exhibition has been the computer hardware and software showcase for Australian Business. "DATA" is geared to provide computer solutions for your business. Whether you are involved in big business, small business, retail, manufacturing or government business — your attendance at "DATA" is a must.
It's all under one roof, it's all about improving your business efficiency and profitability and it's on for three days at the Victorian Expo Centre, Royal Melbourne Showground, 9.00am-7.00pm, 8th-10th November, 1983.

FREE DATA COMPUTER BUYER'S GUIDE

Entry to the "DATA" Exhibition is free and so too is the new DATA 83 Computer Buyer's Guide, for those attending the show. It has pages of information on the latest business computer systems available to help you make the right computer decisions for your business. Collect your complimentary copy at the entrance to "DATA".

DATA SEMINARS

The one-day "DATA" education seminars also held at the Victorian Expo Centre, complement the "DATA" equipment Exhibition. If you want to find out how the new inexpensive business computers can improve your business profitability then "Choosing the Right Computer System" is a briefing you cannot afford to miss. For the latest developments and applications of Computers in Manufacturing and Office Automation, Seminars 2 and 3 are the answer.

Seminar 1 (Nov 8)
Choosing the Right Computer System

- ★ Computers — A Profitable Investment.
- ★ Selecting the Right Computer System.
- ★ Your Software Choice — A Vital Component.
- ★ Computers in Financial Planning.
- ★ Asking the Right Questions and Getting the Right Answers.

Seminar 2 (Nov 9)
Computers in Manufacturing

- ★ Scope of Computers in Manufacturing.
- ★ Computers and Production Control Systems.
- ★ Numerical Control — The Future.
- ★ CAD/CAM — A Case Study
- ★ Computerised Manufacturing Management Systems.

Seminar 3 (Nov 10)
The Automated Office

- ★ Impact of Automation on Business.
- ★ Implementing Office Automation.
- ★ Communications for the Integrated Office.
- ★ Office Automation — Case Study No. 1
- ★ Office Automation — Case Study No. 2.

Further information: Graphic Directions Pty Ltd — Phone: (02) 212 4199

Video Technology's 'High Res' monitor with tilt-and-swivel stand and amber screen — on special at the moment.

High-Res Amber For The Eyes

AMBER IS BECOMING the colour of the moment – at least for monitors. Health and safety tests in Europe have shown that amber monitors (amber text on a brown background) cause the least eyestrain and other discomforts associated with working with VDUs, and manufacturers and distributors in this country are taking note.

One of the first in the running is Video Technology, which has just released its 'High-Res' amber monitor here. This 30 cm (12 inch) monitor offers 1000 lines at-centre resolution and a non-glare screen, and is available with a stand to enable it to tilt and swivel to exactly the right position for each user. There is also an inverse video switch – flick it over if your eyes get tired and view the colours in reverse.

The Video Technology High-Res amber monitor can be used with just about any microcomputer – Apple, Atari, Commodore, IBM, Osborne, to name only a few. We plugged it into an Apple IIe and it was up and running with no trouble.

As a special offer the High-Res monitor is available at the moment for $230 including stand (normally $45). Contact Peter Wells at Video Technology, (02) 568 3423. □

Data '83 In Melbourne

PREPARATIONS ARE well under way for DATA '83, which will be held at the Victorian Expo Centre, Melbourne Showground, from November 8 to 10.

In conjunction with the exhibition, a three-day series of seminars will be run, which will look at the benefits and pitfalls of computerisation, with particular emphasis on computers in business.

As with DATA '83 in Sydney, the themes will be 'Choosing the Right Computer System', 'Computers in Manufacturing' and 'The Automated Office'.

Many new products aimed at increasing business productivity will be featured by exhibitors at DATA '83. For example, President Computers will have on display its prototype of the Dulmont Magnum, an Australian-designed portable computer with 256K that runs on batteries and can fit easily into a briefcase. (See page 21 for a Les Bell's impressions of the Magnum.)

Dick Smith Electronics is to unveil a new 'semi-professional' machine, which at present is cloaked heavily in secrecy, and Hewlett-Packard will be displaying a wide range of personal and portable computers and peripherals, especially plotters.

Other exhibitors cover a wide range including hardware and software, office furniture and communications.

For more information contact DATA '83 organiser Kevin Rebbechi on (02) 212 4199. □

Smart Peripheral Connections

NO MORE SOLDERING RS232C cables with this 'magic' box, known as the SC-821 and available from Computer Communications.

The Smart Cable is said to work with 98 per cent of RS23C-interfaced computer equipment. One cable from the SC-821 is plugged into the computer equipment, while a second is plugged into the terminal or printer or other RS232 equipment being interfaced.

The SC-821 takes its logic power from the RS232 lines using current-summoning junctions, and determines the correct connections for the equipment. Just plug it in and you're running!

Interested distributors can contact Computer Communications at 50 Wimbledon St, Cannington 6107, or on (09)458-8483. □

Tough Times for Osborne

A MAXIM of business is that a company that has been growing at the rate of 40 per cent will find it hard to cope at 20 per cent. This seems to have been just what happened to Osborne Computer Corporation, which last month laid off 200 workers at its Silicon Valley facilities.

The timing could not have been worse for the company, which at one time was the rising star of the computer industry. The company had only recently announced the Executive, a new up-market portable, and is soon to release the Executive II, a 16-bit machine which will support MS-DOS and CP/M-86, and is said to feature some degree of IBM compatibility.

Meanwhile, in Australia, four days later the Executive was officially launched with a sumptuous lunch for the press, at which OCC Australia MD Richard Graham made no reference to the recent events in the US. While it would be easy to make accusations of fiddling while Rome burns, the launch of such a product has to be an up-beat affair, and discussion of the US events would have cast a decided pallor over the proceedings.

The last year has been a tough one for Osborne, as a number of competitors entered the market, cutting their market share from 60 per cent to 30 per cent over the last year. Kaypro, in particular, followed a strict policy regarding dealer margins and credit while eating into Osborne's market share, and thus far seems to have avoided the cash flow squeeze which has forced Osborne to take such desperate measures.

On the other hand, one should bear in mind that US companies are much freer about hiring and firing than here in Australia, and electronics and aerospace companies regularly adjust employee levels to match the size of the defence budget. And the Australian operation seems to be coming good, after a spectacular start and a subsequent slump. □

Imagineering's Apple Software Spring Sale

IMAGINEERING is at present offering its dealers a spring software saving on Apple packages. If they select any three of Imagineering's 'red-labelled' products (one of which has to be an entertainment program), they only pay for two, getting the least expensive package free.

This offer will only last till October 31, or until stocks run out. For more information contact Lucy Hluchan on (02) 212 1411. □

How to get top-quality printing for your IBM PC.

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To get the most out of your IBM PC, you need a professional letter-quality printer. Not just somebody's converted typewriter. Why compromise your computer investment with a makeshift add-on? Especially when Qume's SPRINT 11 PLUS℠ – one of the world's best most reliable printers – is so affordable. It plugs right into your PC, turns out letter-perfect print at 40 characters per second, and works beautifully with your IBM PC business software. Including sophisticated word processing packages. So don't be fooled by low-price, low-performance printers. And don't spend more than you need to. Choose the dependable, premium-quality SPRINT 11 PLUS from Qume. It's the best printer you can buy for your IBM-PC. And the best buy in printers.

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Briefly . . .

■ Dick Smith Electronics has opened two new stores, at Penrith and Hornsby, NSW. The Penrith shop, located in the Gateway Shopping Centre, Cnr High and Henry Sts, is managed by Mark Hubert, while in Hornsby the location is 4 Florence St, and the manager is Mark Abicair.

■ 3M Australia is marketing the country's first 600 ft data cartridge, claimed to store one-third more data than any other cartridge available. For more information contact Brendan Donnelly on (02) 498 9333.

■ Data Base Manager II, available from SCA Software Corp of Australia, is a database program for the IBM-PC that integrates the most popular spreadsheet and word processing programs with database capabilities. It is said to be compatible with Visicalc, Lotus 1-2-3 and Multiplan, and with word processing packages such as Wordplus-PC and Wordstar. For details contact SCA Software on (03) 347 7011.

■ Two new packages which provide interactive training in the use of the IBM-PC have been released by Sourceware. 'The Instructor' is a self-teaching diskette-based tool for first-time users of the PC, while 'Professor DOS' gives diskette-based training for more advanced users. Contact Doug Ruttan on (02) 411 5711 for more information.

■ Video Technology has released an Apple-compatible daisywheel printer for the all-inclusive price of $699; this covers the printer, 20 per cent sales tax, interface card and connecting cable. When not in use as a printer, the Olivetti Praxis 35 can be used as a normal electronic typewriter. For more information contact Video Technology on (02) 568 3423.

■ Commodore 64 users will soon have Nevada COBOL and Nevada FORTRAN available for their machines. Ellis Computing Inc has signed an agreement with Commodore to produce these compilers for worldwide distribution, and production is already under way. Ellis Computing is located at 3917 Noriega St, San Francisco, CA 94122, USA.

■ The full product range from Davong Systems is now available through Imagineering. The Davong range includes high-reliability hard disk drives, multiple drive systems, and tape and disk back-up systems allowing IBM-PC, Apple II and Apple III users to expand their computers' on-line storage capacity to 60 Mbytes. For details contact Phil Woolley on (02) 358 3011.

Minicomp distributes the Modgraph GX-100 graphics terminal.

■ Minicomp, the distributor of Cromemco products, recently announced the release of the Smart Graphics GX-100 terminal from Modgraph Inc of the USA. Designed specifically for engineering, architectural and drafting applications, the Smart Graphics terminal is said to be suitable for any application requiring multi-page, high-resolution graphics. Contact Minicomp on (02) 570 7233 for more details.

■ The Australian importer of Anadex printers, Datascape International, has announced price reductions averaging 15 per cent for the range. The standard Anadex DP9500 will sell at below $2000, and the reductions will also apply to the 500 cps DP6500 and high-speed multi-mode WP6000 printers. Contact Datascape in Sydney for more information.

■ Lightning Software has released the IBM-PC version of Master-Type, a computer game that teaches touch-typing. In addition to improving keyboard skills, Master-Type also serves as a simple introduction to computers. It is available on the IBM-PC with 64K memory and one disk drive, and is written in a combination of Assembler and FORTH. The price is $64.95, including instructions. Master-Type is also available for the Atari 400 and 800 with 32K memory and one disk drive, and for a 48K Apple II or IIe. Master-Type is distributed in Australia by Imagineering; for more information contact Lucy Hluchan on (02) 212 1411. □

NEC's new book-sized PC8201 portable computer.

Handheld Computer From NEC

NEC INFORMATION SYSTEMS Australia (NECISA) recently announced a book-size portable personal computer as a low-end extension to its assault on the Australian personal computer market. Known as the PC8201, the basic computer will have a number of memory upgrades and other options available in PC8200 systems.

With a total size of only 30 cm by 21.5 cm by 6 cm and a weight of only 1.7 kg including batteries, it nevertheless features a full-size QWERTY keyboard, five dual-mode function keys, an 8-bit, 2.4 MHz processor, 16K of RAM, 32K of ROM, and a built-in eight line by 40-character liquid crystal display screen.

For further information contact Kate Castle on (02) 438 3544. □

STC's third-generation PABX, Starswitch, in operation.

Third-Generation PABX System

A NEW DIGITAL PABX, offering full third-generation integrated voice and data capabilities, has been released by Standard Telephone and Cables (STC). Called 'Starswitch', the system is the first third-generation PABX to meet Telecom's stringent approval standards.

Within days of receiving Telecom approval, STC had written orders from Melbourne, Sydney and Brisbane for the new equipment.

The key to Starswitch is claimed to be its flexibility. Software release 1 of Starswitch is said to offer more than 150 user and system management features and more than 1000 user ports for individual access to voice, data or text services. This means Starswitch can meet the changing demands for voice, data and text connections with ease.

A special telephone, tagged 'Action Station', is available with the system and has ten or twenty 'soft keys'. The user can program the keys for additional lines and for a wide variety of special features.

Action Stations contain their own microprocessors, but are also fully integrated with the PABX to offer the full spectrum of Starswitch features as well as the special local features.

For more information contact STC. □

New Book Information Service

AUSTRALIA'S LARGEST technical bookshop is offering a free information service for microcomputer and electronics enthusiasts.

There is now a bewildering array of literature available from local and overseas publishers. To help keep hobbyists up to date, Technical Book and Magazine Company is producing a regular mailing on the latest and bestselling books from all over the world.

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The BMC BX-80 dot matrix printer, now available from Dick Smith Electronics for $649.

Low-Cost Dot Matrix Printer

DICK SMITH ELECTRONICS has just released a dot matrix printer, manufactured by the Japanese company BMC, which will sell for only $649. Known as the BX-80, it is said to combine the most commonly required printer features with speed and silence.

The BX-80 is claimed to operate with virtually any computer using a standard Centronics parallel printer interface. It can produce printing in a variety of column widths and in both normal and italic fonts, as well as supporting dot image graphics.

The 7 by 8 dot matrix prints in bi-directional or uni-directional mode, and the printer allows super- and subscripting, proportional spacing and boldface print.

For more details contact Cary Laue on (02) 888 3200. □

The ColecoVision games system — it took America by storm, as they say.

New Games System From CBS/Coleco

CBS HAS SIGNED a contract with Coleco Industries of the US to market its TV games system under the name of CBS ColecoVision. Coleco only introduced its system in the USA a little over a year ago, and already has 20 per cent of the market.

The games system was designed as the first stage in a modular and expandable computer system for the family, and offers a range of add-on features, including the 80K Adam computer (not yet released in Australia), a word processing unit, a printer, a keyboard, and dual disk drive capability.

The Coleco games system is claimed to combine excellent graphics with a good choice of games, and accepts cartridges from other manufacturers. Its controls can be moved in eight directions for full field movement instead of the usual four, and a special attachment may be purchased which allows players to simulate sitting in the cockpit of a racing car, weaving it through a road race with a large arcade-style steering wheel, complete with gear lever and accelerator.

The Adam computer, which will be released here next year, is expected to sell for around $1200. It comes complete with 80K memory and attachments such as a printer and keyboard which usually have to be purchased separately.

The Adam expands its storage capacity by means of a 'digital storage pack', which is claimed to be as fast as a disk drive but closer in price to a cassette storage system. Each storage pack can hold up to 500K of memory.

For more information on CBS ColecoVision and the Adam computer, contact CBS Electronics on (02) 339 0255. □

System Improves Retailers' Profitability

TO COINCIDE with the Australian Retailers' Association Annual Convention, 25-27 September, Cromer Programming Services, the Australian distributors of Padmede microcomputer software, is releasing a new retail inventory management system aimed at improving the money-making performance of retailers.

Called Automatic Execumatic, the system is marketed to run on the IBM Personal Computer.

Retailers operating single or multi-store outlets with annual sales volumes of $250,000 to $100,000,000 will benefit from the system, which is said to be easily maintained by existing staff.

Computerised retail inventory systems have been notorious for drowning buyers and managers in unmanageable torrents ▶

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The Davong system includes all the software you need to start right away. And Davong's new Multi-OS™ supports all Apple and IBM PC operating systems.

The Davong Multi-OS operating system gives your computer full multitasking network capability. Complete software support includes back-up and restore programmes.

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Davong offers a choice of 18Mb cartridge tape backup or 5Mb removable cartridge disk backup, at extremely attractive prices.

MORE support

Additional 9 months warranty available.

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Better performance, higher reliability, the best value — hard disk storage from Davong.

The Davong Universal Hard Disk also supports most IBM PC- and Apple-compatible computers.

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of data. This system digests needed information and organises it for quick and easy decision-making.

Automatic Execumatic presents screen displays or printed copy of conventional merchandise information to enable buyers to track and act on unit sales and stock movements.

It is the first retail inventory management system available on a microcomputer that focuses on the money-making performance of individual lines, classes of merchandise, and suppliers, aimed at forcing inventories and inventory investment to produce the best possible arrays of stock and highest possible return on investment.

The system will be marketed and supported by Cromer Programming Services as part of a turnkey package. It requires an IBM Personal Computer with 192K memory, IBM PC-DOS operating system, suitable hard disk and a dot matrix printer. The complete package, including 12 months' software licence and hardware, will be fully installed for around $20,000.

For further information contact Frank McIntyre, Cromer Programing Services, on (02) 923 2899. □

New And Cheaper Supercalcs

ARCHIVE COMPUTERS of Brisbane has announced a reduction in the price of Supercalc to $278, and the introduction of Supercalc 2 at $417 including tax.

According to Archive, Supercalc 2 is an 'enhanced' product which will run under CP/M-86, and features improvements in the consolidation of spreadsheet information. It is available in 8-bit or 16-bit configurations.

The US manufacturer of Supercalc, Sorcim, has also released a word processing package, SuperWriter, which Archive has available.

Contact Archive Computers in Brisbane for more information. □

Microtrix Has Moved

MICROTRIX of Melbourne has moved to new premises at 24 Bridge St, Eltham 3095. The telephone number is still (03) 439 5257, plus a new number: 439 5155. □

Computerised Music

DYNASOUND of Melbourne has combined music and computers in such a way as to give a new dimension to both.

The 'Soundchaser' Computer Music System by Passport Designs, distributed by Dynasound, transforms an Apple II computer into a polyphonic synthesiser and multibank sequencer. The microcomputer controls the synthesiser circuitry and interacts with the user/musician, while the Soundchaser module produces and modifies the sound. The combination gives undreamed of flexibility in the production of music and sounds.

An addition to the Soundchaser system, 'Notewriter' turns it into a real-time music transcriber. With this software, the notes played on the keyboard will be written on the screen in standard musical notation.

Dynasound has a wide range of software for the Soundchaser system. You can contact the company on (03) 663 2093/ 663 2064. □

10 APPLES TO WIN!

in an Apple IIe system or a fabulous new Pioneer laser videodisc player by answering a few simple questions on Bacardi rum! There are ten of each to be won, and *Your Computer* readers also have the chance to win extra prizes – a complete Bacardi bar set (pictured below) and an Apple diskette container, which holds four dozen diskettes.

Winners of the Apples will receive a complete IIe system including CPU, keyboard, video monitor, disk drive and a bumper supply of software.

The ten lucky Laserdisc winners will be among the first in Australia to own a Pioneer videodisc unit, complete with five 'Laservision' discs whose quality will never deteriorate. Videodiscs are the latest advance in the video entertainment industry – 21st century technology in your home right now!

To enter, simply fill in the entry coupon on this page and answer the questions, and post it off to the special P.O. Box for *Your Computer* readers given on the coupon. Even if you don't win a new Apple system, you could still score the special *Your Computer* prizes and have your liquor cabinet stocked for months!

Above: The Apple IIe system and Pioneer videodisc player — ten of each are prizes in this competition.

Right: The Bacardi bar set — a special prize for readers of Your Computer. (No, you don't win the girl too.)

PLUS

The BACARDI rum SWEEPSTAKES

You could win one of 10 Apple //e Personal Computers complete with monitor, disk drive and a computing starter kit. Valued at over $3,000 each.
Or one of 10 Pioneer Laser Video Disc Players complete with 5 video discs. It adds to your current Hi-Fi system to give you the very latest in sound and video reproduction. Valued at over $1,500 each.
Simply answer the 2 easy questions (answers on 750ml bottles of Bacardi rum), fill in your name and address and mail to:

The BACARDI rum SWEEPSTAKES
P.O. Box N374, Grosvenor St, Sydney 2000

1. In what year did BACARDI rum win a Gold Medal for excellence in Madrid?.....
2. With what type of juice do you make a BACARDI rum Screwdriver?.....

NAME:.....

ADDRESS:.....

.....PDSTCODE:.....

Please send me more information on Apple Computers for Business/Professional use ☐ Home use ☐
Please send me more information on Pioneer Laser Video Disc Players ☐

CONDITIONS OF ENTRY

1. Final closing date is 30/11/83. The official draw will take place on 2/12/83. Winners will be notified by mail and announced in The Australian 5/12/83.
2. The first ten correct entries drawn will each win the Apple //e Personal Computer system. The next ten correct entries drawn will each win the Pioneer Laser Video Disc Player and 5 laser discs.
3. The judges decision is final and no correspondence will be entered into.
4. Employees and immediate relatives of BACARDI rum distributors and associated agencies are ineligible to enter.
5. Only one entry per envelope.
6. Entry to this competition is free, and entries may be made on this form or a plain piece of paper.
7. Residents of S.A., Qld., Tas., W.A. and A.C.T. need only send the entry form. NSW Permit No. TC 83/804, Vic. Permit No. 83/224 issued under the Lotteries and Art Unions Act, 1901, Lotteries, Gaming and Betting Act, 1966, respectively. Approved by the N.T. Racing and Gaming Board.

Two-Quart Bottler

This month is a very significant one for the Australian computer industry, such as it is. For this month will see the release of the first Australian designed and built microcomputer which has a chance of capturing a fair share of overseas markets. Les Bell reports.

SOMETIMES IT'S JUST so difficult to keep a secret. I've been keeping quiet about this one since last year, when I first stumbled across it, but my silence had a point to it. When we first mentioned the MicroBee the reaction was overwhelming, so I didn't want to talk about this one before the suppliers were good and ready for the resulting enthusiastic reception.

I first got word that something was brewing well over a year ago, when I heard from an acquaintance that an old associate of mine from the ETI days – Barry Wilkinson – was expressing interest in quantities of CMOS RAM chips for a portable, in fact hand-held, computer.

Some months later, Tom Cooper of President Office Machines showed me an artist's impression of a new computer for which he hoped to get the distribution and marketing rights. On seeing the low-profile case with its unfolding liquid crystal display, I was able to put two and two together. This was the machine!

Throughout the end of last year, Tom was obviously getting more and more excited by the new machine. It was still in the development stage, but the specs were sounding interesting. A 16-bit machine, with built-in 80 by 8 liquid crystal display, battery operation and 256 Kbytes of RAM is definitely an interesting proposition.

Then, in December, came my little contribution to the project. Over a Chinese lunch in Hornsby, Tom said he was having trouble coming up with a name for the new machine. We tossed a few ideas around, and then I said, "What you need is a name that expresses power – lots of power – in a small package. How about Magnum? You know, the big-barrelled handgun that makes one hell of a mess of its target?"

That struck a chord with Tom, and to tell the truth, I quite like it myself. So Magnum the computer became. In actual fact, a magnum is a bottle containing two quarts of wine or spirits. That expresses it pretty well too; the Magnum is two quarts of heady, powerful stuff, in a pint pot.

Throughout this year, and now with a name, the Magnum has been undergoing continuous development, and is now ready for commercial release.

What's It All About

So what is the Magnum? Well, it's a briefcase-sized – that means small enough to fit into a briefcase – portable with a fold-up eight-line by eighty-character liquid crystal screen. Weighing about 4 kg, it is a true portable, not just transportable.

In fact, the Magnum will work off internal rechargeable NiCad cells, which means it can be used on the move, in a car or train for example.

The design team at Dulmont, who will manufacture the machine, refer to it as a 'macro' computer – one with the power of a minicomputer, the price of a microcomputer, plus the portability to make it really useful.

I asked Terry Crews, Marketing Manager at Dulmont and a major force behind the design, just what he thought distinguished the Magnum. "There are several things," he said, "but these stand out: portability – it goes to work with field staff; personability – it really is user-friendly; price – it's a bargain; the in-built software; and the ability to switch instantly between application programs." ▶

Three views of the Magnum: closed up in its neat carrying case, folded out for use, and full-on, showing the keyboard clearly.

Best of all, the Magnum is based on the recently released Intel 80186 processor, which will give it a performance considerably higher than existing 8088-based machines. To back that up, the basic machine includes 256 Kbytes of CMOS (low-power) RAM memory, together with 128 Kbytes of ROM containing the operating system and applications.

The operating system is MS-DOS 2.0, implemented in ROM; the CMOS memory can be allocated as a memory disk drive and used to store files exactly as a conventional disk. Applications available for the machine include a built-in time alarm calendar/planner/diary and address book, a word processing program, spreadsheet calculator, and of course Microsoft BASIC, complete with graphics commands. Naturally, any MS-DOS programs can be ported onto the machine.

The keyboard is a full-sized compact layout QWERTY type with an additional set of 12 programmable function keys, plus HELP, On/Off and Reset keys. In fact, the whole keyboard is totally soft and reprogrammable – a major advantage for foreign markets and for those who absolutely must have a Dvorak keyboard. The keyboard has a good feel, and does not reflect the small size of the machine.

The Electronics

The internal circuitry of the machine includes an 80186 processor running at 8 MHz (with one wait state for the CMOS RAM), a 25 by 80 CRT controller which emulates an ANSI standard terminal, two RS-232C serial ports, a Centronics-style parallel port and a real-time clock circuit.

A particularly important part of the circuitry is the power-down circuitry designed specially for the Magnum. This monitors the processor and keyboard activity, and shuts the power down if it waits more than 30 microseconds for input; as soon as you touch a key again, it powers back up. This stretches the battery performance much further than would otherwise be possible.

The system displays a menu at power-up, showing the date and time, free memory and a selection of activities such as the time alarm calendar diary cum planner program, address and phone book, word processor, spreadsheet calculator, BASIC language and DOS.

The real-time clock circuit is essential to the operation of the integrated time alarm calendar program, which has incredible capabilities. The system can display the time in any of six different world time zones, display a calendar for any month from 1582 AD to 2990 AD, create diary entries for nominated dates, create alarms which will be triggered once at fully specified times or repeatedly for partially specified times, and allows defaults such as the date/time format, 12 or 24 hour time display, active time zone and so on to be altered.

The user can simply call up a screen defining, for example, an alarm, and can then edit it and store it away again. The editing commands are completely consistent and well thought out, making the system quick and easy to use. For example, the user can toggle field entries between standard values, increment or decrement numeric values or simply overtype with a new value.

The same basic scheme applies to the address and telephone book program. Here, the user can create screens as retrieval templates and then view the retrieved data sequentially. The name and address file is stored as a standard sequential file, suitable for use from BASIC or MailMerge, and a special command in the program can produce address labels.

Expansion Unit

While the Magnum is an excellent portable computer, many users will want to have a higher level of functionality in the office. For example, the Magnum itself has no disk drives; they are contrary to the portable concept. So Dulmont is releasing two expansion boxes for the machine, which will meet virtually all needs.

The simpler of the two boxes is a low-profile cabinet, about the same size as the Magnum itself, which contains two slimline double-sided disk drives and another 256 Kbytes of RAM, plus a power supply for the Magnum. The disk drives are, of course, IBM-PC compatible, and a 20 Mbyte half-height hard disk drive is also under development for this box

The other expansion box is intended to allow more general hardware expansion, and contains an eight-slot motherboard which accepts IBM-PC expansion cards. This will provide access to all the goodies such as multi-function cards, mice, high-resolution graphics cards, plug-in postage scales and Lord knows what else that is available for the IBM machine.

Optional software will include an accounting package and an engineering software package, and the system can also accept two 128 Kbyte ROM packs, which plug in just above the keyboard, on either side of the display arm.

For those corporate accountants who are concerned about mainframe communications, there will be communications software to emulate a standard asynchronous terminal as well as provide a connection to IBM Systems Network Architecture (SNA) systems.

Emma Chizzit?

By now you are probably asking the obvious question – how much is it? The answer is less than you might expect.

The Magnum itself, with all its standard software and a carrying case, is just $2495.00 including tax. The memory and disk drive expansion box will sell for around $1700 including tax, while the bus expander will be around $700. Those prices are extremely

reasonable, considering the power and nature of the beast.

The History

The Magnum originally started life as a 64K/Z-80A type of machine in a hand-held package, intended to compete with the Sharp PC-1500 and other machines midway between a calculator and a computer. The concept changed in November of last year when Terry Crews joined Dulmont as Engineering Manager.

Crews was adamant that the world did not need another eight-bit machine, and pushed strongly for 16 bits. Not a 16-bit machine dressed up in an eight-bit pin-out, either, as is the 8088 processor. A true 16-bit machine was required.

At this time, samples were starting to appear of the new Intel 80186 processor. This is a superset of the 8086 processor (new instructions added, plus the old ones work faster) integrated onto a chip with a DMA controller with two channels, three 16-bit timers, interrupt controller, bus controller and clock circuit.

It thus has the dual virtues of reducing chip count (and thus PC board area and assembly costs) while simultaneously improving performance. The design team decided to "take a punt on the 186". At the same time, the team decided to use a full-sized keyboard, which dictated the package size.

In fact, the package design was frozen in November last year, a decision which Crews says has assisted the development considerably. Seeing what the final package would look like encouraged those working on the project. It also helped with outside suppliers; the project was for real.

The 80186 offers considerable benefits to the user. For a start, it is object code compatible with the 8086 and 8088, so that existing MS-DOS programs can be ported across directly. However, in many cases, the microcode inside the chip which performs the calculations has been improved so that many instructions execute considerably faster.

In fact, by doing some arithmetic on published benchmarks and allowing for the 8 MHz clock rate on the Magnum, plus the fact that it uses a full 16-bit bus, I estimate that it will run programs somewhere between three and four times faster than the IBM-PC.

The 80186 also has several new instructions, including block input/output, enhancements to PUSH and POP, immediate addressing on multiplication, shifts and rotates, an array limit checking instruction and new instructions for manipulating stack frames for local or automatic storage of variables.

(Incidentally, if you think the 186 is hot, you should see the 80286, which is also object code compatible but on benchmarks shows up as being in the same league as a VAX 11/780!)

Once development was well under way, the project grew and grew to its present size of 17 hardware engineers and programmers, plus administrative and secretarial staff.

While hardware development got under way using early samples of the 186, the software team started work. In the absence of actual machines, the decision was made to use minicomputer-based cross-development tools, and a PDP-11/23 with a 96 Mbyte hard disk was used, running under Microsoft's Xenix. The software is written in C, cross-compiled using the Whitesmiths compiler and then down-loaded to the target Magnum board for testing.

The final artwork was of course handled by Printronics to ensure the highest quality on the production boards. I had a look at the board at the Dulmont factory, and it really is a nice job, using Printronics' latest techniques such as selective soldering.

The Magnum has the highest level of Australian content possible. All assembly is done locally, and while the semiconductors come from companies such as Intel and Hitachi, there's no way we'll see Australia manufacturing 186s for some time so there's no alternative.

The project was initially supported by a $350,000 research and development grant from the Department of Science and Technology.

Out In The World

Crews is taking the first production models on a world tour, showing them first at the PerComp Asia show in Singapore in mid-October, then to the Toronto Computer Faire in November and to the Las Vegas Comdex. However, the major Australian launch takes place at the 10th Australian Computer Conference.

The machine has had an encouraging reception already from software houses. From the very beginning, the machine will be able to run the Peachtree accounting and other applications software, the Perfect Software range, and Microsoft languages and Tools.

The reception from the public has been no less encouraging. Already, the production until Christmas has been sold, purely on the strength of some initial advertising. The first four months will see sales of 1200 units, and that will ramp up to 4000 at the end of the first six months. In fact, sales will be production-bound due to component shortages until Christmas, as the US economy recovers from the recession and production grows again.

President Distributes

The sole distributor for the Australia and New Zealand area will be President Office Machines. "We chose President as it had a track record of successfully launching three other computers onto the market," says Crews. Tom Cooper has greeted the whole project with tremendous enthusiasm – in fact, he's like a kid with a new toy.

He's determined that Australia can show the world how to design personal computers. As I write, we're about to show the New York Yacht Club what Australia can do; maybe it's jingoism (and me a Scotsman?), but I'd love to see the Magnum score in the US. It's time the world saw what an Australian macrocomputer can do. . . □

President Computers – Backing The Magnum

PRESIDENT COMPUTERS began 13 years ago when Tom Cooper started the company President Office NSW after considerable experience in the office equipment industry. By 1978 President was the only Australian-owned company assembling electric typewriters in this country.

The Concept computer was the first for which President held the licence to assemble and sell, and as soon as portable microcomputers came onto the market Tom Cooper managed to obtain the sole Australian distributorship (for the office equipment market) for the Osborne 1. President soon became the No.1 distributor in the world for the Osborne.

When the Osborne Corporation became established in Australia, President took on the sole distributorship for the Kaypro portable micro in order to stay at the top of the portable market. The company also gained the distributorship for the Columbia MPC.

President is now one of the largest privately owned Australian microcomputer-distributing companies, with a network of 187 dealers throughout the country. It backs its products with a service team, workshop facilities and a mobile service division, all headed by Dennis Donald, who has been with the company since it started.

Tom Cooper and other President executives frequently travel overseas to bring back the latest ideas for their dealers, and the Magnum will travel with them on their visits to important overseas computer exhibitions in the next few months. President is keen to reverse the trend – to export the Magnum instead of importing overseas products!

President is at present in the middle of an expansion programme, which includes opening a showroom at its Hornsby premises (100 George St, Hornsby 2077; (02) 476-2700) that is expected to be the largest computer showroom in Australia. It will be open seven days a week, and will cater for all areas of business computer applications. □

It's All Greek To Me!

In his quest for the perfect portable, Les Bell examines the new offering from Florida company Telcon Industries – Zorba.

I'D LOVE TO know whether this computer is sold in Greece. The name is intriguing – why call a computer Zorba?

If the idea of the Osborne intrigues you, the Zorba could well be even better. It's a fully integrated portable, packaged in a similar fashion to the original Osborne I – the same moulded plastic case – only this machine is noticeably smaller and more manageable.

Telcon evidently has a long history as a manufacturer of portable terminals, and so a portable computer was a smart move for them. They've reproduced the classic formula for portable success: a screen, a couple of disk drives, detachable keyboard and bundled software for the most popular applications.

The Zorba weighs in at just under 10 kg, a tad less than the Osborne, if my memory serves me right. It is definitely smaller – in particular it is narrower. One obvious mechanical feature of the machine is the pair of legs on the underside of the case, which prop it up above the keyboard (I have a nasty habit of knocking Osbornes off the edge of the keyboard they rest on).

The catches on the side of the case release the keyboard in exactly the same way as the Osborne, revealing the screen and drives. The keyboard itself is very neat: 95 keys in total, including cursor control keys, numeric pad, BREAK, HOME, screen dump key and 19 programmable function keys which, together with various shifts and the programmable keypad and cursor keys, can provide 55 functions. The keyboard has a very light touch which takes a bit of getting used to, but it can provide very high typing speeds, and has a nice standard layout.

The front of the machine itself is clean and uncluttered, except for cooling vents peppered all over it. At top left is the on/off and contrast control, and below that the reset button. Immediately to the right is a 178 mm non-glare green screen, and then further to the right, a pair of 400 Kbyte 133 mm floppies. (For those of us who were raised with metric units but recognise commercial realities, that's a 7 inch screen and 5.25 inch floppies). (*Come off it, Bell – you can't kid us you were at school recently enough to have been "raised with metric units" - MW.*)

The screen and floppies are not so remarkable for themselves as for the driving software. The screen, for a start, emulates a Heath/Zenith H19/Z19, which is a very popular terminal in the US. Leor Zolman and the other guys at the MIT Artificial Intelligence lab swear by theirs.

Unfortunately, it seems that if you want to use the full features of this emu-

lation, you'll have to have the Heath manual, as the Telcon manual just glosses over its operation with phrases like: "Use direct cursor addressing to access the 25th line, per H19 specifications". That's a cop-out; a manual should fully describe the operation of the product, not just refer you to the manual for somebody else's product you didn't buy.

The disks are quite neat. Firstly, they are 400 Kbytes each, which is more than your average portable; 200K is nice, but 400K is twice as nice. Secondly, they are able to read and write a number of foreign-order disk formats, including Xerox, Osborne, Kaypro, IBM-PC (CP/M-86), DEC VT-18X and others. The density selection is achieved by referring to drive B: by another name; for example, drive N: is b: in Kaypro format.

At the rear of the case, below the handle, is a row of three DB-25 connectors. These are for a serial or parallel printer (on the one connector), communications device such as a modem, and IEEE-488 bus respectively. The use of one connector for both serial and parallel printers means that the pinout is not standard RS-232C, but only a subset of it. The same port can be used as a general purpose eight-bit parallel port.

In fact, the communications port is not strictly RS-232C either, as it has 5 V and 12 V outputs in place of some of the signals, in order to power an external modem.

Defining Keys

The ports and function keys are backed up by a nice piece of software called SETUP.COM. This allows the user to assign text strings to the function keys, save the key definitions in a file, or load key definitions from a file.

The program offers impressive facilities for port handling. Not only does it allow set-up of standard parameters such as parity, word length, stop bits and baud rate, it also allows the user to select a protocol (Centronics parallel, none, XON/XOFF or ETX/ACK) and a translation table (Baudot, IBM Correspondence, EBCDIC or none) on the printer port. The availability of IBM Correspondence code allows the use of Selectric printers as low-cost output devices.

Inside the case, the electronics are not startling. The processor is a Z-80A (surprise, surprise!), and it has 64 Kbytes of RAM, together with a boot and terminal emulator ROM of 4 Kbytes in another bank (12K of this bank is free for user PROMs). Because the display is memory mapped and the BIOS is rather large, the system runs a 58K CP/M system.

The display is generated by an Intel 8275 CRT controller, which in turn is driven by a DMA controller chip.

Software

No portable computer would be complete without the bundled software which so often is the main attraction of such a system. The Zorba is no exception, and comes with a comprehensive range of software.

First, of course, there's CP/M 2.2 itself, plus the associated utilities, and

Continued on page 29

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THE EXECUTIVE™

OSBORNE™

Osborne Executive Productivity

In 1981, Osborne Computer Corporation created the concept of portable, low-cost personal business computing. Quite simply, it was a revolutionary change in the way people go to work.

Today, tens of thousands of business professionals who now use the Osborne 1 have found these tools easy to use and fun to learn. And literally indispensable.

The same innovative approach to business computing has created The Executive by Osborne.

The Executive was designed, built and priced with one objective: to increase your productivity. It is a tool to help you move ahead quickly in your business or profession **now.**

The Executive is delivered with the hardware and software tools you need to go to work right away on the jobs you do for hours every day. With enhanced hardware and software, the Executive is designed to make the Osborne concept of personal business computing even more attractive.

It's the next logical step.

The evolution of the Osborne revolution.

Your Osborne Executive is an investment in your business future

It's an investment in your own scarcest resource: thinking time. It lets you put the time you save on mundane chores into creative, "bottom line" tasks.

It's an investment in your personal growth, because The Executive gives you new tools to do new jobs, jobs you simply could not imagine doing before.

And it's an investment in your effectiveness, because the Executive handles all the details for accurate computations, error-free typing and organisation of dates, facts and lists.

Do you work with words?

With WordStar,™ The Executive becomes a simple and powerful portable word processor. It lets even two fingered typists get their ideas down faster than handwriting or dictation. Best of all, it is quick and painless to change your mind and improve what you've written, to change your strategy to meet market conditions.

At the same time, your secretary is freed to do more useful "assistant" work, while you achieve polished, finished text with total control and privacy.

Letters, memos, reports, articles, copy, ideas – will improve dramatically. They'll take less of your time and minimise interruptions. They'll go out faster. Your time becomes more effective, you become more efficient.

Do you work with numbers?

The Executive and SuperCalc™ replace your calculator, paper and pencil with the accuracy and unflagging attention of a speedy, dedicated machine.

Remember the last schedule, forecast or budget you did by hand? Now imagine laying it out without having to add any numbers across or down. Think how fast you could work if changes made in one month's allocation were reflected instantly across the entire spreadsheet.

That's what the Executive can do with SuperCalc.™ It works just as easily on a single column of figures, a complex budget forecast, trend analysis or research report.

Everything you do with numbers can be saved on a diskette for later review or revision. Or it can be run out on your office printer.

Do you want to get organised?

The Executive includes Personal Pearl,™ a powerful database manager. Using your Executive, you can now file, organise and find all sorts of information. Quickly. Easily. All you do is enter the quotes, name and address lists, market data, or whatever, by filling in simple forms on the screen. Forms you specify yourself.

The Executive will sort it all out and store it in a way that lets you find it the first time you look. Fingertip efficiency that is infallible.

It's a personal electronic filing system, address book and calendar pad all wrapped up in one. You can instantly get your hands on facts that used to be jumbled up in a file somewhere. And you need never again call a phone number that's been changed. Change it once and it's instantly changed everywhere in your own personal database.

Lots of memory to work with

The Executive has 128K of user memory, making it extremely quick, a useful attribute when you're working with number-oriented tasks or sorting through data files. Expanded memory also lets you add more rows and columns to your spreadsheets than ever before – extending the range and power of the SuperCalc™ program considerably. The two disk drives store 200K each, which means you can have about 60 typed pages of word and number information at your command on a single disk.

BY OSBORNE™

SAVE $1200
INTRODUCTORY OFFER
Each Executive Computer includes a MultiLedger™ accounting system at no extra charge. Please contact your nearest Executive Dealer for full details.

$3950.00
TAX INCLUDED

Say hello to the information age!

The most exciting development in personal business computing is the telephone. The Executive COMM-PAC™ option lets you plug your Executive right into the telephone.* To let you access and control information electronically.
Now you can enjoy instant access to an even wider world of information . . . latest stock listings, news reports, newspaper clipping files, commercial research services . . . the list grows daily.
And you can begin saving time and money with electronic mail. You can exchange files and information with other Osbornes – even other computers – over the telephone lines. Just imagine the advantage of sending a twenty page document anywhere in the world in a matter of minutes!
*Subject to Telecom approval

Newest and best operating systems

The systems that manage computer operations are continually being improved. The Executive includes two different operating systems: CP/M Plus, a new and easier-to-use version of CP/M; and the UCSD p-System, which has recently become an industry standard.

What this means to users is that a vast library of applications tools designed to run with CP/M or p-System computers is available to you. CP/M and p-System software from Osborne and a number of other sources can help you accomplish almost any business task you can imagine.

The bottom line

If quill pens were the state of the art and someone showed you a ballpoint, would you learn how to use one?
If letter-writing was the way business was done and someone told you about the telephone, would you investigate it?
If typists and filing cabinets and mounting postage bills are the bane of your bottom line and someone told you about an inexpensive investment that could set you free to do what you do best, would you check it out?

OSBORNE™

AUSTRALIA'S BEST VALUE

Osborne Computer Corporation Pty Ltd (Inc. in NSW)
2 Whiting Street, Artarmon 2065. (02) 438 1800

Do you know the BASICs . . .

Two powerful BASIC dialects – MBASIC™ and CBASIC™ come with the Executive. If you have studied a little programming, you'll know the power of these two languages. If you haven't, you may find them useful for business application software and a wide variety of learning programs that will introduce you or your children to the fundamental power of the computer.

Terminal Emulation (optional)

Most large companies have vast stores of information full of facts that would be useful to the executive . . . if you could only reach them.
The Osborne Executive lets you plug right into your company's computer system. In many cases your Executive can function with your main computer just like one of its own terminals.

Your Executive productivity investment goes where you go

Because the Executive is portable, you never need to work without it. And you'll quickly find you don't want to work without it.

The Executive by Osborne. One price includes:

Standard Hardware:

- Z80A™ 4 MHz CPU with 128K RAM.
- Real time clock inbuilt.
- Dual floppy disk drives with 200K bytes storage each. Ability to read/write with IBM PC, DEC VT180, Xerox 821, Cromemco, and UCSD p-System Universal Disk Format.
- 7" amber display CRT with reverse video, underscoring, blinking, two user-definable character sets, half intensity.
- 24 lines of 80 characters each. 8x10 dot character cell matrix.
- Business keyboard with numeric keypad and cursor control keys.
- Video brightness and contrast controls on front panel.
- 2 RS232 ports for modem and printer plus parallel printer port.
- Baud rates from 50 to 19,200, software selectable.
- Fully addressable IEEE488 port using a Motorola 6821 PIA
- Z80A SIO serial communications controller for synchronous and asynchronous communications.
- Weather-resistant, portable housing.
- Dual voltage 240/120V 50/60Hz 55W max.
- Self test diagnostics on power-up.
- DMA (Direct Memory Access) port (internal).
- Safety Certifications: IEC 380, UL, FCC, VDE, CSA.

Standard Software:

- CP/M Plus (3.0) and UCSD p-System Operating Systems.
- WordStar™ word processing with MailMerge™.
- SuperCalc™ electronic spreadsheet.
- Personal Pearl™ database system.
- CBASIC™ programming language.
- MBASIC™ programming language.
- Extensive range of operating system utilities. INCLUDES complete and simple instructions for all hardware and software.

MultiLedger™ Accounting System:

Made in Australia.

Multiledger is a comprehensive, full feature accounting system that incorporates full Debtors, Creditors and General Ledgers. The system is designed in Australia for Australian accounting practice and is all the small to medium business will ever need to computerise their accounts. The system is easily operated and fast. Full audit trails and a comprehensive range of reports are provided.
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(02) 331 6799

Computer Connection
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(02) 526 1404

Computers Galore
99 Military Road, NEUTRAL BAY
(02) 908 2355

Data Parts
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(060) 218 080

Delta
12 Featherstone Street, BANKSTOWN
(02) 705 6636

Direct Computer Sales
198 Forest Road, HURSTVILLE
(02) 570 8344

Foremost Office Equipment
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(02) 635 5477

Grace Bros. Computer Centre
Westfield Centre, PARRAMATTA
(02) 635 0366 xtn 533

Grace Bros Computer Centre
Grace Bros Sydney Store – Pitt Street, SYDNEY
(02) 238 9111

LST Electronics
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(067) 663 167

Orana Cash Registers
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Typewriter City Discounts
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(02) 267 8847

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Archive Computer Services
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(07) 262 2911

Complete Computer Centre
Cnr Gympie & Rode Roads CHERMSIDE
(07) 350 1255

Compsoft
537 Boundary Street SPRING HILL
(07) 229 0066

Computers & Peripherals
31 Kate Street, KEDRON
(07) 350 2611

Electronic Warehouse
172 Wickham Street FORTITUDE VALLEY
(07) 528 455

Myer Computer Centre
Myer Indooroopilly Store – Morgill Road, INDOOROOPILLY
(07) 378 5111

Town & Country Computers
CTI Centre, Anne Street, TOWNSVILLE
(077) 754 000

SOUTH AUSTRALIA

Micro-80 Computing Centre
433 Morphett Street ADELAIDE
(08) 211 7244

Myer Computer Centre
Myer Adelaide Store – Rundle Mall, ADELAIDE
(08) 217 0123

VICTORIA

Almer Distributors
43 Atherton Road, OAKLEIGH
(03) 569 0169 or 569 6911

ComputerLand Melbourne
123 Lonsdale Street MELBOURNE
(03) 662 2133

Data Parts Pty Ltd
11 Edward Street, SHEPPARTON
(058) 217 155

Geelong Computing Centre
39 Gheringhap Street, GEELONG
(052) 222 844

IMA Computer Centre
296A Canterbury Road, SURREY HILLS
(03) 560 2974

Myer Computer Centre
Myer Melbourne Store – Lonsdale Street, MELBOURNE
(03) 661 3342

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Albany Typewriters & Wordprocessing
197 York Street, ALBANY
(09) 41 6060

Boans Dept. Store
Cnr. Wellington & Murray Street, PERTH
(09) 325 0511

Computer Country
128 Hector Street, OSBORNE PARK
(09) 444 7431

Merton Scott Business Machines
248 Newcastle Street, PERTH
(09) 328 6522

Myer Computer Centre
Myer Perth Store – 246 Murray Street, PERTH
(09) 321 0151

Technical specifications subject to change without notice

Continued from page 24

The Zorba portable computer bears more than a faint resemblance to the Osborne, although it's a little smaller and lighter. At 10 kg, though, it's still a borderline 'portable' as opposed to 'transportable' computer.

Telcon's hardware-dependent code. Incidentally, one feature of which I very much approve, and which in fact could well be the major feature of the machine, is the openness of the company about the internal details of the computer.

Although the standard documentation does not seem to include a circuit diagram, there are complete details of the serial ports, the video hardware and other circuit details. In addition, and best of all, the system comes with the complete source code for the BIOS, disk format utility, the SETUP program, a patcher and a dumb terminal program. I heartily approve.

This openness even extends to revealing the contents of the keyboard ROM and how it works, so that you can design your own keyboard layout if you want. Similarly, there's a brief explanation of user-definable characters.

For those who want to get deeper into programming, the machine comes with the Microsoft MACRO-80 assembler and its matching linker, librarian and cross reference generator – essential for customising the BIOS. This will allow the user to generate Z-80 code.

BASIC programmers are catered for with the provision of CBASIC, the Digital Research semi-compiled BASIC. Though this program is starting to show its age, it's still a very nice implementation of BASIC with lots of available software. It's particularly good for commercial programming, as it uses floating point decimal arithmetic to avoid rounding errors.

For word processing, there's WordStar (what else?) complete with MailMerge. I'm particularly pleased that MailMerge is part of the package; a friend recently bought a low-cost machine which came with WordStar, and he's been keen to get hold of MailMerge, only the price rather frightened him off. As a single end-user, he has no pricing leverage compared to a manufacturer buying thousands of copies, so it's better to get software as part of the package.

Also from the MicroPro stable is CalcStar, a spreadsheet calculator with some good features for statistical analysis and the ability to create WordStar-compatible files.

So the software package covers just about everything you'll need to get going. A spelling checker might be a useful addition, and perhaps a database package like Personal Pearl or InfoStar, but basically you can be doing useful work within minutes of receiving the package.

The Words

The documentation supplied with the system is quite adequate. There's a large loose-leaf folder containing an abridged (and less intimidating) version of the DRI CP/M manuals, together with the Microsoft M80 and utilities manuals. The serious user will probably want to buy the full CP/M docs, even if he/she never reads them. ▶

NEW COMPUTER BOOKS FROM SYBEX

☐ **Apple II BASIC Programs in Minutes** Trost **$18.50**
A collection of ready-to-run programs to take full advantage of Apple II functions - instantly!

☐ **Introduction to Wordstar** 2nd ed Naiman **$22.50**
A clear, complete manual to this powerful word processing program - teaches beginners step-by-step, and provides an indispensable reference to experienced users.

☐ **IBM-PC DOS Handbook** King **$18.50**
A friendly introduction that helps you understand and enhance your IBM-PC's capabilities.

☐ **Programming the 8086/8088** Coffron **$27.95**
A guide to the basic concepts - plus lots of useful and interesting programming projects to satisfy even the seasoned programmer!

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Tired of bought software? Program your Atari yourself - this book teaches you the style and subtleties of Atari BASIC with interesting exercises in Maths, Games, Business and more.

☐ **Your T/S 1000 & ZX81** Hergert **$12.95**
All the ins and outs of programming and utilizing peripherals for graphics, games and many other applications.

☐ **The CP/M Handbook with MP/M** Zaks **$27.95**
All the beginner needs to know - step-by-step!

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Takes up where **The CP/M Handbook** leaves off - coverage includes the CCP, BIOS, BDOS and more!

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Each book contains over 40 practical business applications.

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An entertaining way to learn the structure and syntax of this powerful language.

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Over 50 interesting and useful experiments to perform . . . shows how to develop your own applications too!

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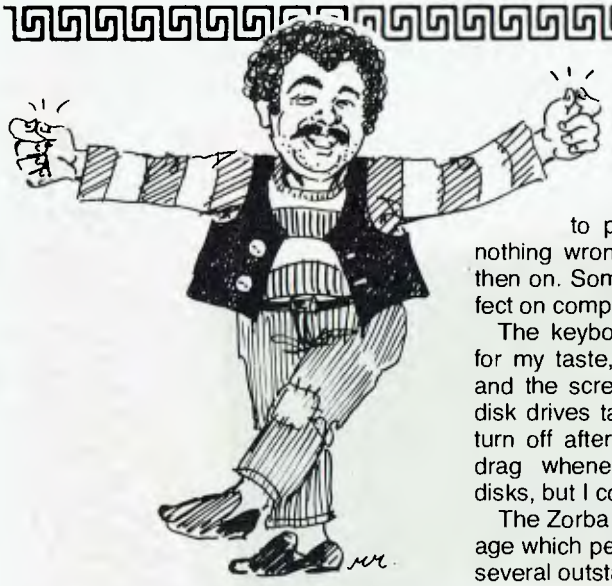


Another large 'paperback' contains the MicroPro manuals for WordStar, MailMerge and CalcStar. Unlike some WordStar manuals I've seen, this one hasn't been abridged; it's still the user-unfriendly original that so many people have got rich parodying. At least you know all the info you might ever need is in there somewhere. . .

I had some slight problems with the Zorba after I first got it. While trying to write a disk from WordStar in Kaypro format, the system fell over with a WordStar 'Insufficient Memory' message and nothing I could do would reboot it - even switching it off. By the time it got back to the supplier, Insystems, it had decided to play along, they could find nothing wrong, and it worked OK from then on. Some people just have that effect on computers.

The keyboard was a bit light at first for my taste, but I soon got used to it, and the screen is just fine. I found the disk drives taking about ten seconds to turn off after an access was a bit of a drag whenever I wanted to change disks, but I could live with that.

The Zorba is an impressive little package which performs well all round. It has several outstanding features, particularly the provision of plenty of I/O ports (which don't overhang the keyboard) and the ability to read and write foreign disk formats (by the way, the FORMAT utility copes with those formats too, making this a good choice for software manufacturers, typesetters and others).

The software supplied is a good selection, particularly oriented to those who have to do non-standard interfacing or other assembly language programming, and the business user who needs BASIC programming, word processing or spreadsheet capabilities.

Well worth a look, even if you're not specifically looking for a portable. ❑

Specifications and Report Card

Unit:	Zorba Portable Computer
Made by:	Telcon Industries Inc.
Processor:	Z-80A
Clock speed:	4 MHz
RAM:	64K
ROM:	4K
I/O:	Two serial, or one serial/one parallel plus GPIB
Languages:	Assembler, BASIC and other CP/M tongues
Keyboard:	95-key, software-redefinable
Display:	80 by 25, 5 by 7 dot matrix, green phosphor
Graphics:	User-definable characters
Peripherals:	Modem, printer, plotter, you name it
Expansion:	No expansion bus, if that's what you mean
Best points:	Openness of manufacturer, foreign formats
Worst points:	Industrial/WT No.19 styling

Ratings:	**excellent**	**very good**	**good**	**poor**
Documentation:		•		
Ease of use:		•		
Functionality:	•			
Support:		•		
Value for money:		•		

Options:	Soft cover, printer cables, 20 mA current loop adaptor
Price:	$2995 plus tax ($3465 inc. tax)
Review unit from:	Insystems, 337 Moray St, South Melbourne 3025, (03) 690-2899; or Suite 11, 84-86 Pacific Hwy, St Leonards 2065, (02) 439-3788.

Prince of Monitors

Portable computers such as the Osborne have built-in screens that often aren't as large as we'd like. A high-quality external monitor can be a great help – and Les Bell has the answer.

MANY PORTABLE and desktop computers either have no screen or only a small screen. These computers therefore require an external screen of some form on which to put a display, or for prolonged use.

In the bad old days, we used to obtain old portable TV sets and either use a VHF modulator to squirt the signal in through the antenna connection, or actually modify the TV set to accept direct video. Those were the days! Most RF modulator systems were fine at 40 characters per line, passable with 64 characters per line, but at 80 columns you'd had it. Even with direct video, most 80-character displays were pretty hopeless.

I remember when I first got a green screen. It cost something over $300, compared with the $10 teev it replaced. But my oath! was it good value for money. It was like fog lifting. Suddenly my computer became a pleasure to use; all kinds of graphics software became possible, and the computer was, well, less embarrassing to show to friends.

I've since replaced the memory-mapped video system of the old computer with a proper terminal, and wouldn't go back. But I must admit, the display quality of that monitor and the SSM VB3 video board was as good as any terminal I've seen.

Ergonomic Times

The rage now is not green screens, but amber. While green phosphors provide the combination of long persistence and high contrast that is needed, particularly in bright ambient light, there is no doubt that they can be a bit harsh on the eyes sometimes.

The amber screen, on the other hand, is less fierce. I've been told that amber is the only colour which does not leave a reverse image on the retina, and that may well be why the amber screen is more restful.

In any case, following union action and occupational health studies, amber screens are now the recommended standard in a couple of European countries, and they are starting to pop up on all kind of equipment. The Monroe OC8820, for example, has a very nice amber screen, and the new Osborne Executive is amber as well.

Now local company General Electronic Developments has released an amber monitor onto the market. The Prince monitor is a 30 cm (12 inch) amber CRT in a neat moulded plastic case, which incidentally is just about the right colour to match the IBM-PC and would also go quite well with an Apple!

The front of the enclosure slopes back slightly and the tube is tilted backwards at about ten degrees, which I would reckon to be about right for a monitor sitting on top of an Apple at a desk. There is a contrast-enhancing filter over the front of the display which I found fairly reflective, but at most common viewing angles should not cause any problems. I only had difficulty when using the Prince as a graphics terminal across the room.

The controls for the monitor are mounted under a flap on top of the case. There's a push button for power, and slide-type brightness and contrast controls. At the rear is a small pot for vertical hold, together with two RCA phono connectors for video input.

I played around with the Prince using my old (serial number 3 or so) DG/ETI 640 video board, which worked fine – although the 64 x 16 format of the display looked rather strange and skeletal, as though the characters were too thin. This is probably a reflection on the density of characters on the 80 x 24 display I'm used too, but the high resolution of the Prince monitor did seem to accentuate it.

With the 640 in graphics mode, the display seemed more natural, and here the monitor turned in an excellent performance. I deliberately have less illumination in the office around screens, to enhance contrast, and the Prince performed very well in these conditions. The resolution around the centre of the screen is 800 lines, and you can definitely see the difference.

With The Osborne

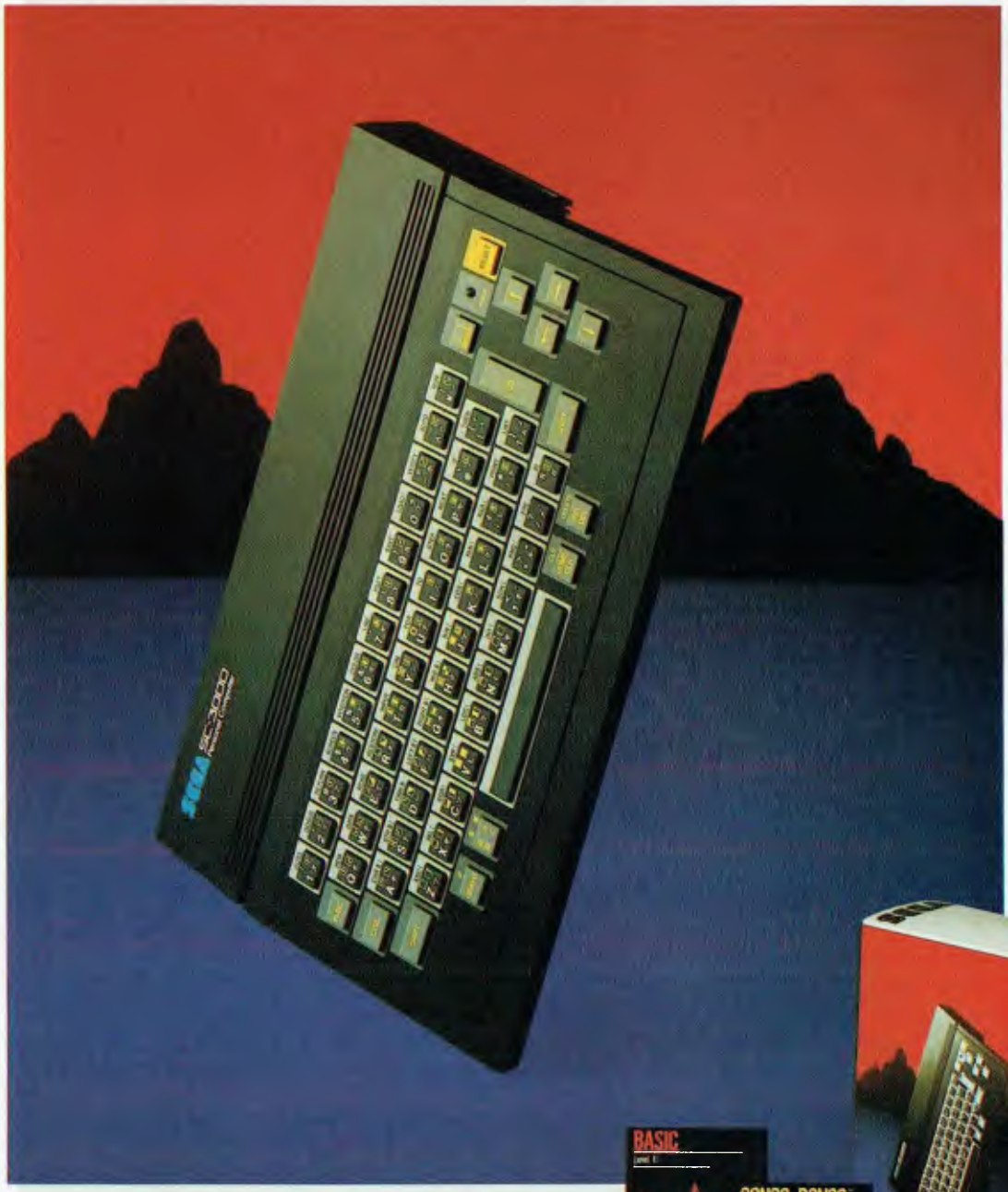
I briefly tried the Prince with the Osborne Executive, and there is no doubt the Prince gives a much better display than the Executive's internal monitor, but that's not really surprising; it's a much better display than my Televideo terminal and just about all the other gear that's been through the office in recent weeks.

So, in summary, the Prince monitor is an excellent display. If you're at all concerned about eyestrain, or if you just want to pamper yourself, you should check it out. It is distributed in Australia by General Electronic Developments, 396 Victoria Road, Gladesville 2111, (02) 816-2211, and the price is $295 including sales tax. □

THE CHIPS ARE DOWN!

JOHN SANDS ELECTRONICS INTRODUCES THE PERSONAL COMPUTER THAT OUTPOWERS, OUTFUNCTIONS, OUTCOLOURS, OUTCOMPUTES AND OUTSELLS EVERYTHING IN ITS CLASS

AND $329 SAYS WE'RE ABSOLUTELY RIGHT!



Now you don't have to wait until tomorrow to get your hands on tomorrow's technology!

The John Sands Sega SC3000 Personal Computer is so far ahead of anything else in its class, that waiting for something better or different to come along could see you waiting for many, many moons.

At just $329,* this computer makes anything in its price range appear totally inadequate. In terms of power (32K ROM and 32K RAM–expandable to 48K!), in terms of high resolution display (256x192 dot screen matrix and 5x7 character dot matrix), in terms of colour (16 separate colours and 225 colour hues), in terms of sound (3 sound voices over a range of 5 octaves), in terms of the ability to obey its BASIC Language (including 48 single keystroke functions), in terms of graphic display (32 graphic sprite planes), in terms of its capacity to interface with a wide range of peripherals including 2 Joystick Sockets, Games Cartridges, Printer, Floppy Disk, Modem Communication, Data Cassette (using any audio tape player), TV Monitor Port and switch for home TV connection, and in terms of ease of use, no other computer in its class can hope to match the John Sands Sega SC3000.

At this very moment, you have the choice of 14 Games Cartridges, a MUSIC Cartridge, GRAPHICS Cartridge, and a BASIC III Cartridge with additional memory. Others will be added at the rate of at least one a month.

With your John Sands Sega you enter new worlds of education, fun, music graphics, home budgeting, personal and business computer functions.

See the John Sands Sega SC3000 Personal Computer today–at selected retailers throughout Australia. Now there's no point in the world in waiting for tomorrow.

*Recommended retail price.

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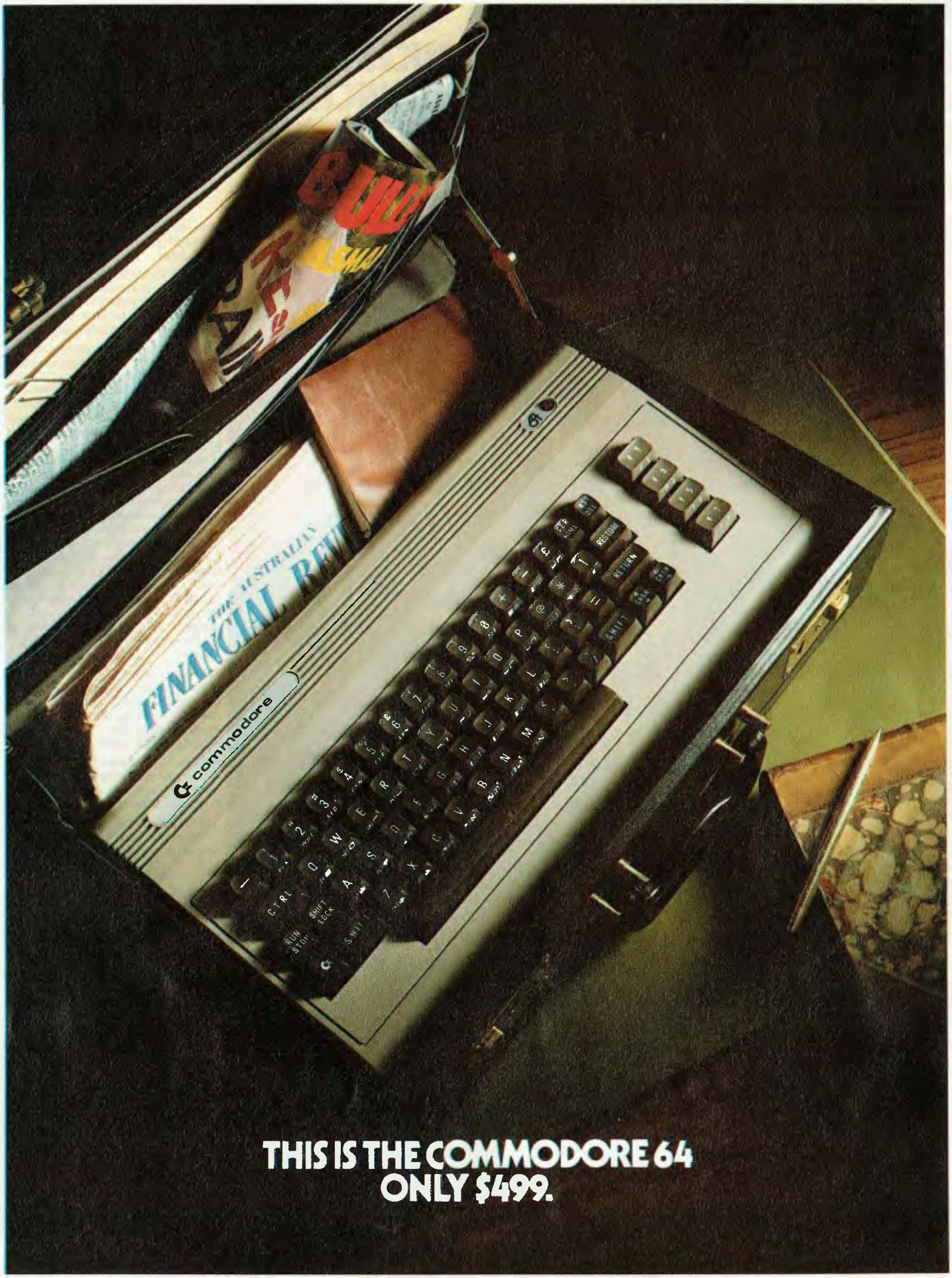
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"THE COMMODORE 64 COULD BE THE MICROCOMPUTER INDUSTRY'S OUTSTANDING NEW PRODUCT INTRODUCTION SINCE THE BIRTH OF THIS INDUSTRY."

–SHEARSON/AMERICAN EXPRESS

The Commodore 64,™ to judge from the above comment, is generating as much excitement among the people who invest in companies as it is among the people who run them.

The reason for this is that, for the first time, high-level computer power is limited only by the inclination to have it, rather than the means.

HALF THE COST – TWICE THE PRODUCTIVITY

This simple equation reflects the Commodore 64's most basic – and outstanding – qualifications.

Its standard memory is 64K. Which is unusual enough in a micro at any price.

At $499, it is astonishing.

Compared, for example, with the Apple II+,® the Commodore 64 offers 33% more power at considerably less than 50% of the price.

Compared with anything less, it's even more impressive.

And it can effectively double your computer-equipped work force.

PILE ON THE PERIPHERALS

Because the basic cost of the Commodore 64 is so low, you can afford more peripherals for it. Like disk drives, printers or even printer-plotters.

For about the price of an Apple II+ computer alone, you could equip your company with a Commodore 64, disk drive and printer.

HARD FACTS ABOUT SOFTWARE

The Commodore 64 will run virtually any program important to business and industry.

Commodore software will include an electronic spreadsheet; business graphics (including printout); a user-definable diary/calendar; word processing; mailing lists, and more.

Even programs that can teach operators how to program.

It is programmable in BASIC.

With the added CP/M® option, your company will have access to hundreds of existing software packages.

In short, its applications are virtually limitless.

THE FUN SIDE OF POWER

The Commodore 64 can become very playful at a moment's notice.

You can use it with Commodore's game cartridges or invent your own diversions.

All will be enhanced by brilliant video quality and high resolution graphics (320 × 200 pixels, 16 available colors, 3D Sprite graphics), plus a music synthesizer.

NOW'S YOUR CHANCE

If you've been waiting for the "computer revolution," consider it as having arrived.

Through its 25 years of existence, Commodore has been committed to delivering better products at lower prices.

Today, the company's vertical integration has resulted in the Commodore 64's price performance breakthrough heralded by Shearson/American Express.

So if you run a company, you couldn't make a more cost-efficient capital investment.

For more information, contact your local Commodore dealer, or send in this coupon.

CP/M® is a registered trademark of Digital Research, Inc.

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BMS/CC79R

'The Word', Punctuation and Style

Since our Les makes a substantial part of his beer money by putting finger to word processor, he is always interested in tools for writers. Here he looks at a couple of offerings from US company Oasis. . .

THE HUMBLE ART of word joining (I like that phrase!) has traditionally been one which requires little in the way of tools or equipment. A writer can get by with just paper and pencil, although a typewriter is usually considered mandatory for reasons of presentation.

When I first started writing professionally, I managed to score one of the company's manual portable typewriters, and noticed immediately that it made a difference to my style of writing. People tend to assume that words just form themselves in the writer's mind without any influence from the mechanical processes of getting them on paper, but this is not so.

When writing by hand on foolscap paper, I tended to just plough ahead, starting at the beginning and writing until I came to the end, without giving full consideration to the structure or layout of the article. The typewriter changed that; at first my typing was so slow that I had plenty of time to plan, but more importantly, I followed newspaper practice and typed on small pieces of paper, called copy paper, with just one paragraph per sheet.

This allows the writer to shuffle the paragraphs into the right order, insert paragraphs or rewrite them without messing up the whole article.

When I first got my hands on an electric typewriter, my typing was just about good enough to take advantage of the extra speed it afforded, and I realised that mechanisation really could make a writer's job easier and make his writing better. Not long after I encountered my first word processor, but it was not until I had WordStar running on my own computer that I appreciated just how effective these machines are. It makes using even a good electric typewriter feel like engraving stone tablets!

Using a word processor is like using a super-fast typewriter that places each letter on a separate piece of paper. Rather than shuffling complete paragraphs, you can shuffle sentences, words or even letters. For example, when writing a story, I now take care of the structure first by writing a series of topic headings into the file and then going back to fill in the actual 'meat' of the subject.

Plus there are all the other bonuses, such as automatic centring of headings, global search and replace, easy underlining, page numbering and other goodies. The only drawback is not having instant access to the material already written. Scrolling is not as fast as shuffling copy paper!

Spelling Checking

Perhaps the major advantage of using WordStar, however, is that once copy is stored in electronic form on diskette, it can be massaged by other programs which perform various functions.

— *The History of the*

Perhaps the most useful of these is spelling checking.

Now, I've written in these pages before about spelling checking, and we all know that it's nothing new. However, there are wide differences between spelling programs, so I'd like to tell you about the one I think is currently the best on the market.

The Word Plus, from Oasis Systems, was written by Wayne Holder, and offers more functions than any other spelling checker currently available. Not only does it check spelling, it will also hyphenate text or single words, suggest correct spellings, count the frequency with which words are used and solve anagrams!

In fact, The Word Plus is a group of programs, based on the Writer's WorkBench which was developed at Bell Labs. In the Bell Labs Unix tradition, each of the programs is a small filter which fit together along a pipeline to achieve the desired result, though this is transparent to the user.

The Word itself has a 50,000-word dictionary, MAINDICT.CMP, which occupies only 138 Kbytes of disk space, thanks to a simple compression technique. Since the words are arranged in alphabetical order, the first few letters of successive words are often the same, and they only differ at the end.

The Word exploits this; the first few characters of a word are replaced by a binary number which tells the 'decompressor' how many letters to pick up from the previous word. Up to 32 characters can be saved this way in theory; in practice, there isn't that much repetition in English, and anyway the longest word in the English language, floccinaucinihilipilification, has only 29 letters – at least, the way I spell it it does. (Incidentally, that word was first used by the President of the Oxford Union during a debate, and means the act of deeming something to be worthless. (*My, Bell, aren't you the clever one – MW.*)

The program is run by the command line 'TW filespec', and will first load a defaults file, which contains the operator's particular choice of operating alternatives, such as saving or not saving context information. The defaults are displayed for confirmation, and once the operator hits return or has changed them, the program proceeds to the next phase.

The first task is to read through the file being checked, looking for unique words (that is, it discards repetitions of the same word); a list of these is built into memory. Then the program reads through the dictionary, expanding the words, and checking off any matches from the list in memory. Once this has been done, the remaining unmatched words are prime candidates for having been misspelled, and are presented for review.

It is at this stage that The Word starts to shine above other spelling checkers. It has the usual options – Discard (ignore), Correct, Add to supplemental dictionaries – but it has a few others all its own. ▶

Software Report Card

Program:	The Word Plus, and Punctuation and Style
Made by:	Oasis Systems
Useful for:	Word joiners
Hardware required:	Any CP/M system

Ratings:	**excellent**	**very good**	**good**	**poor**
Documentation:		•		
Ease of use:	•			
Speed:	•			
Functionality:	•			
Support:	•			
Value for money:	•			

Price:	The Word Plus — $199; Punctuation and Style — $169 (incl. tax)
Review copy from:	Software Source, PO Box 364, Edgecliff 2027. (02) 389-6388

"Humble Art of Word-Joining" —

The major difficulty with spelling checkers is that sometimes you can't tell, just by looking at the word in isolation, what the correct spelling should be. One of The Word's options makes the program store away a few words before and after each misspelling, and the V(iew) option at the review stage will display the queried word in context. Marvellous!

Next, even if you know that a word is misspelled, you may still be unsure of the correct spelling. According to the manual, most misspellings arise from one of four mistakes:

a) Added an extra letter (accute instead of acute)

b) Dropped a needed letter (absess instead of abscess)

c) One letter wrong (accur instead of occur)

d) Two letters reversed (acer instead of acre)

Using these rules, the L(ookup) option will search the dictionary for the correct spelling of the word under review. When it completes its search, it will present a list of candidates from which the right one can be selected and automatically inserted into the correction line.

The program also allows the user to go back or forward through the list to re-evaluate and change earlier decisions. When the review phase is complete, the program re-reads the document, making the corrections.

This may change the lengths of some words, upsetting justification, so that the document will still need to be paragraph formed (if using WordStar). It may also remove soft hyphens in corrected words. Still, that's a small price to pay for such convenience.

The whole process is actually performed by three programs: SPELL.COM, REVIEW.COM and MARKFIX.COM. These can be used separately for a variety of purposes, but normally the TW.COM program automatically manages their chaining and 'pipelining'.

A separate program, LOOKUP.COM, can be used to look up the correct spelling of words, in the same way as the lookup option in REVIEW.COM.

FIND.COM is a general-purpose pattern-matching utility which will look through the dictionary, but matches any letter for a ? and any sequence of letters for a *. This is great for crossword puzzle enthusiasts. For example, FIND H?T?O?S will match the word hotdogs.

ANAGRAM.COM performs a similar function, except that it permutates the letters in the input string, some of which may be question marks. For example ANAGRAM AAS?? will find all five-letter words with two a's and an s.

Hyphenation Help

One of the most useful programs in The Word Plus is HYPHEN.COM. This uses an elaborate algorithm discovered by Donald Knuth (what do you mean, who?), combined with a list of words which are exceptions to the rules. Running a file through the program will result in all the long words (>13 characters) having soft hyphens inserted at the appropriate points. Then, when you use WordStar's paragraph reform command, the words will automatically break at the right points.

The scheme is not perfect; I was able to faze it with a few words which I tried just out of curiosity. But it's still better than hyphenating by hand or using WordStar's Hyphen-Help feature.

The Word also includes a couple of word counters: WC is a straight word counter of prodigious speed, and

WORDFREQ is a program which counts the frequency of appearance of each word in your text.

The whole package is very well designed. Not only is it a real tool for writers and typists of all skill levels, it is also fun to use. I'd imagine it could form the basis of some really good word games in schools, and no doubt crossword puzzle designers can make great use of it.

Incidentally, crossword puzzles depend on the redundancy of the English language (spellings of words contain redundant information and are quite recognisable when misspelled). Did you know that if English was just a few per cent more redundant we could have three-dimensional crossword puzzles? That's about all I remember from the Information Theory course. . .

Punctuation and Style

If you think spelling checking is good news, wait till you see Punctuation and Style!

P & S is really a pair of programs, CLEANUP.COM and PHRASE.COM. The first checks punctuation in a document and the second searches the file for tricky, objectionable, hackneyed or awkward phrases.

Both programs allow the user to set various options. For example, Cleanup looks for 25 different punctuation errors. The user may not agree with some of them – for example, two spaces at the end of every sentence is not my style - and they can be selectively disabled in the options file.

Cleanup looks for certain kinds of errors, such as incorrect, extra or missing punctuation, missing or extra space between punctuation symbols, incorrectly spaced ellipsis, incorrect abbreviation, missing capitalisation at the beginning of a sentence, incorrect capitalisation, unbalanced quotes, parentheses and WordStar print enhancements, doubled words – such as 'Paris in the the Spring' - and incorrect form for numbers, such as '$1,00.00'.

On finding these errors, Cleanup displays them on the screen, in context, and offers the user the choice of marking, ignoring or quitting. Errors that are marked are flagged with an '@' symbol and number, which refers to a comment line inserted at the end of the paragraph to explain the error.

Cleanup is particularly of use to the new word processor operator, who is temporarily upset from his/her normal typing style by the speed and feel of the keys and the strange things that are happening on the screen. Once one is used to the terminal, the error rate drops remarkably.

For example, I have recently had some students borrowing my systems to type in a report. They are not particularly good typists, and without Cleanup there would have been thousands of punctuation and capitalisation errors. The program caught them all.

Phrase is an interesting program, like The Word derived from the Writer's Workbench. It reads in a file of phrases and searches for pattern matches in the document being proofread.

The phrases, as supplied, fall into eight categories: awkward phrases, cliches, erroneous phrases, folksy phrases, muddy phrases, pompous phrases, redundant phrases and wordy phrases.

When Phrase finds a match, it displays the phrase, with a suggested replacement or a comment, and then the paragraph of text, with the offending phrases enclosed in square brackets. This allows the user to decide to mark the phrase, ignore it or suppress the

phrase so that it will not be shown again.

If a phrase is marked, it will be enclosed in square brackets in the updated file, with a comment at the end of either the sentence or paragraph, depending on the option file. For example:

This is a [kind of] funny [situation].
.. KIND OF : SOMEWHAT, RATHER
.. SITUATION : (REWRITE)

This will [involve the necessity of] doing it again.
.. INVOLVE THE NECESSITY OF : REQUIRE

Many of the phrases that Phrase shows up in other people's writing I quite agree are wrong. However, when it analyses my own writing, I find I disagree with it most of the time. Funny, that.

Phrase simply matches patterns; it has no knowledge of meaning. Thus it will bring up the word 'forward', for example, suggesting you replace it with 'send', when you really meant the opposite of backward. Most of the time, this is what Phrase does to me.

On the other hand, an interesting side effect of Phrase was that it made it obvious to me that I was using certain phrases repetitively. Another interesting capability of Phrase is the ability to use another phrase list to point out passive sentences, to make writing more direct and interesting.

However, I am a professional word joiner, and have a learnt a trick or two between beers. Many people who have to put together letters, press releases, catalogues, manuals and other text don't have the advantage of doing it full-time, and for these people, Phrase will be a great boon.

I've run Phrase over some of the student work mentioned above and it really rips into some of their material. The whole intention is to make the writing more straightforward, more direct and clearer.

Documentation

The documentation for both Punctuation and Style and The Word is excellent. It helps if you know a bit about computers, particularly when considering the subtleties of soft hyphenation schemes and the like.

Both manuals contain a lot of background information about the operation of the programs, conditions when they break down, operational limitations and the like. Just reading the P&S manual, in fact, will make you more conscious of good and bad writing.

These programs are great. I highly recommend them. □

Spellbinder on the IBM-PC Top Word Processing

SOFTWARE REVIEW

The CP/M version of Spellbinder has been around for some time, but a version has now been produced specifically for the IBM-PC. It joins a rapidly growing list of word processing software now becoming available for the PC; John Nicholls takes a look at it.

IBM ITSELF is promoting Easywriter, a product that was widely criticised in the US and has been supplanted there by the much-improved Easywriter II. The most popular word processing package, Wordstar, is also available here and in the US and has until recently been generally regarded as the standard by which other products should be judged.

In the past, personal computers were regarded as being inferior to dedicated word processors when it came to word processing. However, different standards were applied to both, particularly in considering ease of learning and ease of use. Now that the use of personal computers is becoming more common and they are being used by people who aren't hobbyists any more, I believe the double standard should be abolished.

Wordstar suffers in comparison with dedicated word processors in two areas: because it's a general-purpose product not designed to run on specific hardware it makes use of complex mnemonic codes instead of dedicated function keys; and because other products have added many enhancements recently it cannot be regarded as representing 'state-of-the-art' technology. By contrast, Spellbinder has always had an impressive list of features, which it has retained in its IBM-PC version, and has modified the program to make use of the PC's special function keys.

Softkeys

Spellbinder uses the same 'softkey' approach as Hewlett-Packard. Ten inverse-video rectangles appear at the bottom of the screen, corresponding to the PC's ten special function keys. The rectangles contain the key number (F1 to F10) and those operative also contain an explanation of what command will be invoked if that key is pressed. For example, when you switch on you have four choices:

F1 Edit; F2 Command; F3 File; and F4 Enter.

F4 is not implemented, but can be customised to lead into any frequently used application. In some instances depressing one of the function keys will lead you straight to the desired operation; in others the labels on the softkeys change, and you are given what is in effect a subsidiary menu.

If you wish, the softkey display can be switched off.

A similar approach using softkeys has been adopted by Sybiz Software of Adelaide in its Business Management software (in Sydney, Sybiz software is available from the Independent Microcomputer Supply Company).

The provision of softkeys makes the system much easier to learn than having to memorise a lot of codes, but there are a couple of snags. In its keyboards, Hewlett-Packard has a row of function keys at the *top* of the keyboard, and this makes it easy to see how each key relates to the corresponding softkey on the display, even if the keyboard is not directly in front of the screen. On the IBM-PC, the function keys are arranged in two vertical rows at the left-hand end of the keyboard, with the result that the softkey labels bear no relationship to the positioning of the keys. Having to look first at the screen and then at the keyboard does not make for quick operation.

An alternative is provided, however. Mnemonic codes can also be used, and would generally be quicker, especially with lengthy strings of functions.

Because Spellbinder is a fully-functioned word processor – one which will stand comparison with any dedicated WP system – the commands are numerous. Fortunately a detailed HELP feature is available. If the original screen of information you invoke is not sufficiently detailed, the screen tells you how to get progressively more detailed information until you find what you want to know. Then – and this is a most important feature – you return to the exact point in the text where you were when you called for HELP.

Spellbinder's formatting options are quite versatile. Word-wrap is mandatory but true proportional spacing – varying the space between words – is provided. Unfortunately the screen does not initially show such format changes. To see the text displayed as it will appear on the printed page, you need to 'print to screen'. Admittedly not many WP programs display text exactly as it will be printed (Wordstar doesn't either), but I think it a desirable feature to have.

Interesting Features

Printing is done from a text buffer, and you can select just part of the text file to print. Two default print tables are provided, and of course you can set other parameters at any time. Provision is made for what Spellbinder calls top and bottom titles, otherwise called headers and footers. This feature is unusually complete, allowing you to put the titles at either side or centred, or in different places for odd and even pages. Margins can also be set separately for odd and even pages.

The functions involving blocks of text

can be selected either by the cursor keys or by mode: word, sentence and paragraph. Sensibly, the system will allow you to delete a WORD without fuss; if you want to delete more it will ask for confirmation first ('Is this correct?'). If photographs or diagrams are to be inserted in the text, a block space can be left on the page to accommodate them.

Office Management

So far we have dealt only with word processing, but Spellbinder goes much deeper than that. In fact, its full title is 'Spellbinder Word Processing and Office Management System'. The Office Management part of the package includes some functions that are often available only as extras, and functions usually lumped under the heading of 'records processing'.

A menu lists the following applications:

Mail merge
Alphabetic/numeric sort
Two-column print
Multiple file batch print
Boiler plate
Forms fill-in

Most of these are self-explanatory, although Spellbinder's description of them in their brochure as 'Interactive Macros' is unnecessary jargon. However, a few notes may be helpful.

'Mail merge' allows you to merge items even if they are not in the same order they were entered, something you can't do with some systems. At the end of a day you can send all that day's work to a print file and have it all saved to disk, including the information reference file, date, name and subject.

A template can be set up for forms like invoices to include mathematical capabilities and also to take information where possible from a data file, and to prompt for the rest. The invoices can print headings in one style and unique text in another. Key phrases – one for each key – can be entered, although each is limited to 32 characters. All in all, this is quite a good range of useful functions.

The manual for Spellbinder has a table of contents, a tutorial which is the biggest part of the manual, but no index. This is an important omission, as I suspect many users may not have the patience to go through the whole tutorial. Another problem with the manual is that it has not been specifically revised for the IBM-PC; you get a 'general-purpose' manual with a couple of pages added listing changes for the IBM. With the amount of software now being produced for which the documentation has been rewritten especially for the IBM, I don't believe Spellbinder's current format of documentation is good enough.

Where From And How Much?

The Spellbinder system comes with a disk that is not copy-protected, but with the customary warning that it is licensed for use only on one computer. The cost is $695. Spellbinder is marketed in Australia by Software Source, (02) 389-6388, who will supply you with the name of your nearest dealer.

Although I have dealt only with the IBM version, Spellbinder is also available for most computers running CP/M, CP/M-86, MS-DOS or OASIS operating systems. Among others, it is available for the Apple II and III, Tandy's TRS-80 II, the NEC APC and DEC'S Rainbow.

Two additional products marketed through Software Source are 'The Word Plus', a spelling checker ($195), and 'Punctuation and Style', which can be described as – what else? – a punctuation and style checker. Both these programs are claimed to work with Spellbinder, and are reviewed by Les Bell in this issue.

My conclusion is that Spellbinder can take its place amongst the best dedicated word processor packages, and it offers many more features than most of the WP packages for micros. □

1983 PERTH ELE

The 38 metre long Atari stand — above, before the gates were opened (the lone player is the photographer's son), and below, a few minutes after the hordes arrived. Patrolling robots (bottom right) fascinated children.

Mike Oborn braved the crowds at the recent Perth Electronics Show to see what the latest computer contenders for his dollar will be. Computers there were, but it was games that swept the board again . . .

THIS YEAR'S show was the fifth Perth Electronics Show, and its success is now so established that it is starting to rival Hong Kong and Singapore as the leading South-East Asian/Pacific area electronics exhibition. Within 24 hours of the show dates being announced, all planned space was sold out, and the organisers had to incorporate more pavilions at the Claremont Showgrounds to cope with the demand for exhibition space.

Estimates of attendance at this year's show start at 100,000, with over 40,000 of these on the Saturday alone – which was the day I chose to brave the hordes. I arrived at the ground only 15 minutes after opening time and the queue was already 100 metres long! Well over half the queuers were boys under 18 (not many girls!), and by the time I reached the display halls within the showgrounds, every computer featuring a games display was already swamped. So much for arriving early!

Don't get the idea that the Perth Electronics Show is all computers – in fact it features everything from video games to microwave ovens, dishwashers to laser disc displays, and even a few robots wandering round 'chatting' to the crowds. (And there was one hi-fi stand which appeared to contain an audio system that made conversation, although

CTRONICS SHOW

the more technical amongst us had our eyes open for a radio mike concealed somewhere ...)

However, although I noticed the stands with the new digital Compact Disc players (whose operators must have come to some kind of truce over their demonstration times, as they managed not to drown each other out *all* the time) and also the video displays of the new laser videodisc technology, as a hack from way back I was there for the computers – and so seemed to end up fighting half of Perth for a look at them.

Atari By The Metre

It wasn't so bad trying to look at the more business-oriented computer displays, such as the Kaypro stand (or the computers with monochrome displays – MicroBee take note?). The computer kids didn't seem to feel the same magnetic attraction here as they did to the games-oriented exhibits, and it was possible for a potential buyer to talk to the personnel and get a good idea what the machine and its software were about.

As you'd expect, it was the computer and video games that drew the crowds. Atari (Futuretronics) obviously has a fair bit of experience by now of what to expect when you offer a free-for-all on games machines, and their TV screens/monitors were located in a 38 metre (125 ft) line well above the heads of the crowd, so that while you were waiting for your turn you could at least watch about fifty games being played.

Atari personnel 'policed' the row of games machines and ensured that no one person had the chance to hog a machine for hours on end, and if I'd been really determined it would probably only have taken me ten minutes or so to get my hands on a machine. But there was so much else to look at that I moved on ...

This year is the first time exhibitors have been allowed to sell direct to the public at the show, and Atari also had this well in hand at a second stand, where a staff member sat in front of each terminal to run demonstration programs for potential buyers. Other stands didn't seem to be quite as well organised in this respect.

Atari announced the release in Australia of two of the new home computers it is already marketing in the USA – the 600XL and the 800XL, which are to sell for $399 and $599 respectively. At present only demonstration models are in the country, but Atari expects to have supplies of the new computers ready for the Christmas market.

The Commodore stand featured remote VDUs displaying demonstration programs on the Commodore 64 (keeping all those sticky fingers away from the machines), and also the new CBM 8096-SK computer.

Microbase had a range of computers and printers, including a 'Show Special' printer selling for $450, and the Medfly was running a demonstration program. Tandy was displaying its new compact computer (see *Your Computer*, September 1983, for a review of the Tandy Model 100 portable computer), but unfortunately it wasn't running when I was there.

One surprise absentee from the show was Applied Technology with the MicroBee – perhaps the air fare to Perth was too much for them?

A few overseas companies such as Coleco and Spectravideo used the Perth show to announce their launch into the Australian market. Coleco, a company which in the US has a large share of the video games market and is making a strong bid in the home computer area as well, attracted big interest by installing its racing car game program in the console of a real racing car, and running a competition each day for the winning 'driver' - who won a Coleco games console (not the racing car, as many youngsters seemed to hope).

Home Arcade Machines

I saw but could not get close to the new Vectrex games console, which is a scaled-down version of a 'real' arcade machine. Now games freaks no longer have to vie with the more hide-bound TV viewers and video buffs for time on the set; the Vectrex has a built-in screen, and each game comes with its own screen overlay for individual graphics.

The sound effects are stunning (would your mother let you run them in the living room?), and the controls apparently child's play to operate, as the crowd round the machines was as enthusiastic as any I've seen round other computer games. (The Vectrex was also swamped with players – mainly under 12 – at its appearance at the Sydney Electronic Games and Toys Exhibition in August, where it was easily the most popular exhibit – *Ed.*)

All in all, the emphasis on games at the Perth show seemed to belie the many recent magazine articles claiming that the 'serious' uses of home computers will soon outweigh their attraction as games machines. As far as I could see, any stand featuring games had a crowd six-deep round it the whole time the exhibition was open, so maybe the corporate brainstormers had better think again and keep their feelers in touch with the market.

More Room Next Time?

If I'd gone to the Perth Electronics Show with the idea in mind of buying a games centre or home computer there, I think I'd have been disappointed – there were just too many people round the stands for the serious buyer to stand much chance. Maybe next year some of the exhibitors could think of taking more space, and setting some aside for buyer-oriented demonstrations.

If I'd been interested in any of the electronic exhibits other than computers, however, I'd have had ample opportunity to talk to personnel and see demonstrations; maybe I should change my hobby now computing has become fashionable!

My other (minor) criticism is that there was no real plan of the exhibition other than that published in a Sunday newspaper supplement, which made it almost impossible to locate a specific stand if you wanted to. Still, most of the crowd seemed to be just browsing contentedly, and with a few exceptions the exhibitors must have been happy with the number of people visiting their stalls.

By the time I left the show, I wasn't the only one thinking and talking about 'next year'. The basis is there for the Perth Electronics Show to be one of the biggest electronics events in the Southern Hemisphere; all it needs is for both organisers and exhibitors to tighten up on a few details and add a bit more space, and Perth could be a regular spot in the diary of electronics manufacturers worldwide. □

access - Portable Computer System

Do good things come in small packages? When it's the Access portable computer system with integrated software, John Nicholls decides that they do.

HOW MANY times have you seen computer demonstrations where nothing seems to work? I've seen some where they couldn't even load the system disk. So it was with some trepidation that I learnt that Access Data proposed to start the demonstration of its portable computer system with telecommunications, an area which has perhaps the greatest potential for something going wrong.

Most computers are sold with communications as an optional extra; the Access provides a modem and an acoustic coupler as standard features. They work, too – in the demonstration a lengthy message was sent via satellite to the United States without the slightest hitch.

The Access computer is made by Access Matrix Corporation of California, a company about whom we at the magazine know nothing. By a happy coincidence it is marketed by Access Data, an Australian company having no connection with the American one. Access's full title is Australian Access Data (Pty) Limited, so you'll find it in the phone book under Australian, not Access.

All In One Package

One of the most attractive features of the Access is that it has *everything* in the one package. A detachable keyboard folds down from the front, uncovering the screen, dual diskette drives and a storage compartment for holding up to ten diskettes. The printer is on the top, with the acoustic coupler behind it.

The complete unit measures 41 cm (W) by 25 cm (L) by 27 cm (H), comparable in size to most monitors. With other systems you have to find extra room on your desk for diskette drives and a printer, so obviously one of the Access's biggest advantages is the small amount of space it occupies – about the size of an 'in-tray'.

Less attractive are its 'portable' features. It certainly is self-contained in its own cabinet, *but* it weighs 15 kg (33 lb), which is my book is not portable. Transportable, yes, but I'd limit the use of the word 'portable' to 5 kg or less (the Osborne I and Kaypro II each weigh 12 kg).

One of the first things you notice about the Access is its screen. It's small (17 cm – seven inches – diagonal) and features an amber display, which is still unusual in this country, although more common in Europe. The screen uses a 7 by 9 character matrix in a 9 by 11 block with descenders, which compares favourably with most displays. The size is not a problem, especially with the keyboard flush up against the front of

the unit, although I found I had to look rather closely to distinguish between characters such as a and e. The display is 25 lines of 80 characters.

Should you wish to use a larger monitor, a composite video output jack is provided. In my demonstration the large monitor was suffering bad tearing to the picture, especially around the top-left corner, and was at times not really stable enough to use.

The number of keys on the keyboard has been kept to a minimum. Apart from a mainly standard typewriter keyboard (although the CLEAR SCREEN key is where I'd expect to find BACKSPACE), and a couple of extra function keys, there is only a fifteen-key cursor/numeric keypad at the right-hand side. The keyboard is marvellously flat, with a couple of retractable feet at the back to prop it up if you wish. Two red LEDs are provided to indicate CAPS and CONTROL LOCK.

A combined cursor control/numeric keyboard is something I have taken an intense dislike to ever since I encountered it on the IBM-PC. I always seem to want to enter a number then immediately move the cursor. Having to toggle between the two all the time is too unwieldy, and you finish up using the numeric keys at the top of the keyboard plus the cursor control keys on the pad.

The disk drives take standard 13 cm (5.25 inch) single-sided double-density disks, with a capacity of 169K each. This is rather low for data storage, and I'd be inclined to wait for the promised double-sided, double-density drives. An on-board controller/interface is provided (as a standard feature!) for 20 cm (8 inch) drives.

The printer is the 80 cps Epson MX-80 – an excellent unit – with all its normal features: standard, enlarged, condensed or condensed-enlarged characters, plus graphic and special characters. Access also provides a program, 'Fancy Font', which gives a wide range of fonts in all sizes. The fonts are well designed, and look most attractive. This is an outstanding package (Fancy Font is a trademark of Software, Inc.).

Integrated Software

The days are gone when you could put a computer on the market, announce it as running CP/M, and just leave the buyer to shop around for suitable software. To be competitive you have to be able to provide the software and hardware in an integrated package. Access has done this by providing the 'Perfect' range of software: Perfect Writer, Perfect Speller, Perfect Calc and Perfect Filer. Les Bell reviewed this software (running on the Kaypro) in the April 1983 issue of *Your Computer*, so I'll confine myself to a few comments.

The advantage of using programs like these is that once you learn how one program operates you will find the others work in much the same way. This reduces considerably the time required to learn their operation and reduces the chances of a blunder. On the other hand, the range of commands available in these programs is such that there's a lot to learn; the Perfect Calc manual runs to 354 pages (including the index)!

The operation that worried me most with Perfect Writer was the MOVE operation. If you were 'moving' a paragraph in a piece of paper, you'd cut it out, hold it somewhere else on your desk, and then paste it in where you want it to go. Many common word processors work the same way, temporarily storing the text being moved in a buffer, where it remains until you define where it is to go.

In Perfect Writer, your first move is to DELete the block, which actually stores it in a buffer, from where you retrieve it with a 'Yankback' command. As one of a word processing operator's worst fears is deleting a block of text accidentally, this way of moving text seems to go against everything you've ever learnt.

Each piece of the Perfect range of software comes with its own comprehensive manual, well written and pre- ▶

SPECIFICATIONS AND REPORT CARD

Unit:	Access Integrated System
Made by:	Access Matrix Corp, California
Distributed by:	Australian Access Data (Pty) Ltd, Suite 14, Norberry Tce, Cnr Pacific Hwy and Berry St, North Sydney 2060. (02) 922-2577.
RAM:	64K
ROM:	2 x 4K
I/O:	2 x RS232C, parallel Centronics, IEEE-488, composite video, 20 cm drive interface
Operating system:	CP/M 2.2
Languages:	M-BASIC, C-BASIC
Peripherals:	Integrated printer, two 13 cm double density disk drives, modem, acoustic coupler
Expansion:	20 cm disks, double-sided 13 cm drives
Best points:	Compact size, Fancy Font, 'Perfect' software
Worst points:	Some hardware and software not yet 'firm'

Ratings:	excellent	very good	good	poor
Documentation:		•		
Ease of use:		•		
Functionality:		•		
Support:			•	
Value for money:	•			

A User Reports . . .

MILLIE MILAN, a freelance writer based in Sydney, found that her normal writing plus the typescript of her soon-to-be-published novel was giving her a virtually impossible typing workload. Like most individuals, however, she found the cost of a dedicated word processing system to help her with her work too high to consider.

Millie decided to investigate the market further, and discovered the Access portable computer system, complete with its Perfect Writer software and built-in printer – just what she needed.

The computer/word processing system she obtained from Access consists of a 64K processing unit, screen, modem, acoustic coupler, printer and twin floppy diskette drives – all in one cabinet.

"What really impressed me," said Millie, "was that it is all fully integrated. No trailing wires, no bits and pieces to plug together."

From the economic viewpoint, the Access with its integrated peripherals and software packages is about half the cost of a comparable microcomputer/word processing system with add-on peripherals and software bought separately.

"I have a word processor, a computer for accounts – and even for games – and an electronic typewriter," said Millie. "The print quality is more than acceptable to all the magazines I work for, and I'm hoping the modem will allow me to submit work direct to some publications' typesetting computers."

Creating perfect presentation-standard copy on a normal typewriter is a very arduous exercise, and using the Access Millie has found that she can increase her output by up to 30 per cent□

The Access Integrated System comes complete with screen, two disk drives, printer, modem and acoustic coupler — plus a variety of software, including the 'Perfect' packages. Not bad for under $4000 for the lot.

sented, with a good range of examples and screen displays. An overview of the range is provided in an additional manual, which suffers from not having an index, although it does have a table of contents. Also provided are C-BASIC and M-BASIC, with their own manuals. At normal prices, the software provided with the Access is worth about $2000.

Access has been working with Padmede to provide accounting software for the computer. The software comes in five modules: sales/debtors ledger, sales invoicing, stock control, purchase/creditors and general ledger. As provided with the Access, Padmede states that it is suitable for a business with 500 products and 600 customers.

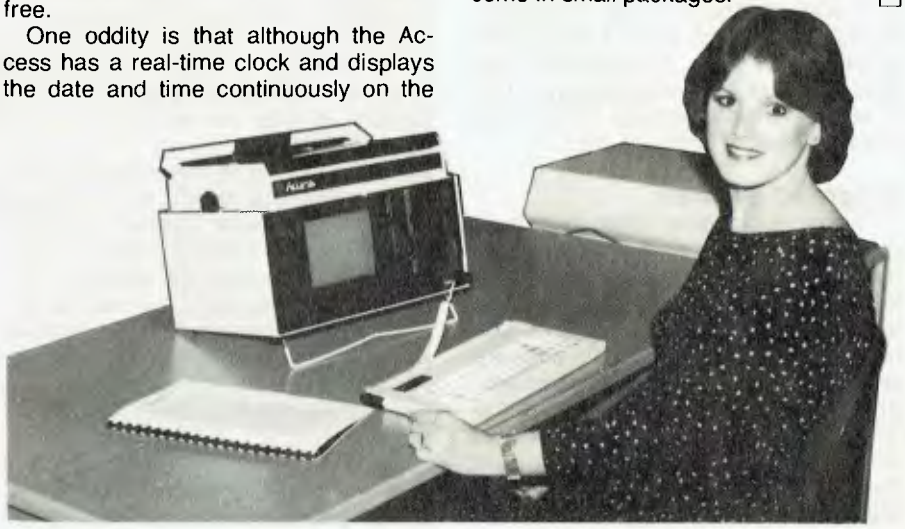
Using Padmede software is a snap. The form layout is displayed and you only have to fill in the blanks. In many systems as you enter information it appears on the screen like a typewriter, going from left to right. Here it appears stepping from right to left, in the same way as a pocket calculator. One way is as good as the other, although if you're not used to it, you could be thrown for a while. Each Padmede module costs $350, but if you buy all five, you get one free.

One oddity is that although the Access has a real-time clock and displays the date and time continuously on the bottom line of the screen, in some parts of a program it picks this up while in others you have to retype it. However, the date does always appear in the format used in Australia – day/month/year – rather than the month/day/year format used in the US.

Software is also being developed for the so-called 'vertical' markets, that is for particular occupational classes, such as doctors and accountants. In addition, such items as carrying cases and battery back-up are promised for the future. I do not have any doubts about the sincerity of Access in promising these things, but with *all* manufacturers I'd recommend you exercise care and disregard anything you can't see working.

Service support is being arranged by STC – as many other companies have done – and should be in operation by the time you read this.

I've left till last what is perhaps the outstanding feature of the Access: its price. You could easily pay $10,000 and not get all the features it has. The Access, with its printer, M-BASIC and C-BASIC, the five Perfect packages and Fancy Font, is selling for $3969. The Access with its Perfect software is a prime example of the adage that good things come in small packages. □



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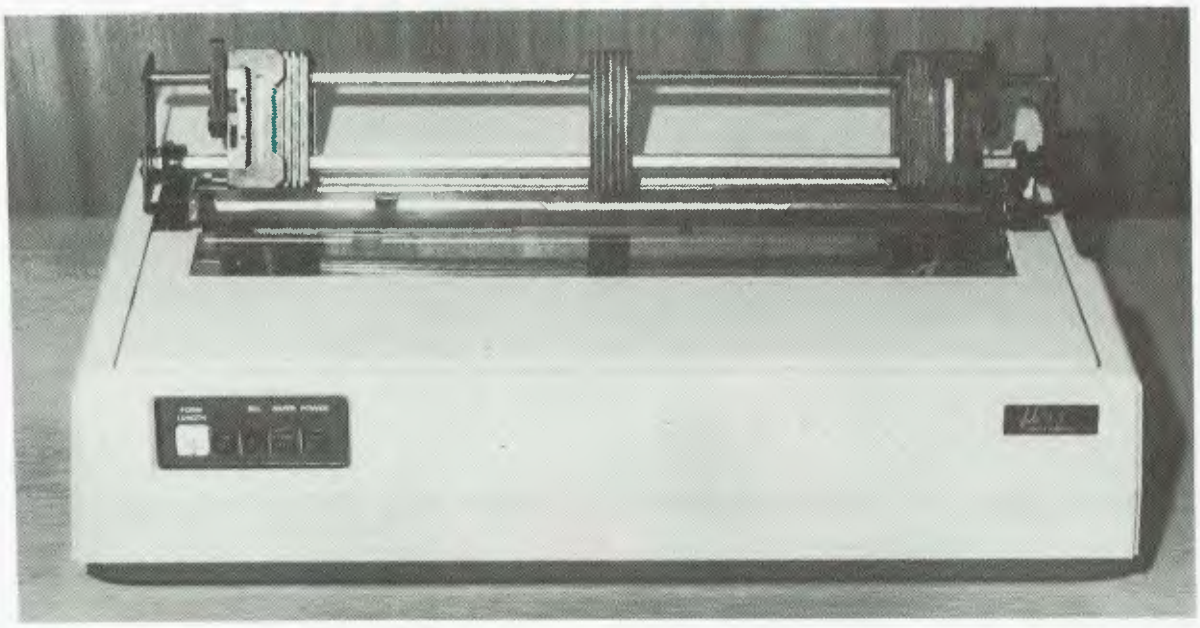

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In this two-part series, Frank Liebeskind defines the functions of a micro or personal computer within an existing large computer system, and suggests the best strategy for introducing these management tools into the present system.

Micros in a Mainframe World

PART ONE

BY FRANK LIEBESKIND

Managers and executives in many companies and large corporations have started to appreciate the value of personal computers as an aid to management, with the result that micros are often being installed as 'desktop' computers quite separate from the centralised data processing department. In order to take the greatest advantage of both the micros and the central computer system, however, and to avoid expensive errors in the purchase of equipment, the two approaches to computing should be considered together as part of a complete corporate strategy that integrates personal computers with the resources of the DP department.

Such a strategy should consider:

- The position of microcomputing in relation to the company's existing computers.
- Features for identifying suitable micro hardware.
- A programme to support and educate users.
- Criteria for justification and payback on microcomputer systems.
- Software and applications for micros.

These considerations will be discussed in the two parts of this article.

What is a PC?

A PC ('personal' or 'professional' computer) is a microcomputer capable of supporting various business functions; it assists managers in the execution and planning of their responsibilities.

A PC can therefore be defined in the following terms:

- A personal computer is used personally by the manager as a tool; emotionally it is 'my' computer not 'the' computer.
- A professional computer – a business tool or business resource.
- An executive desktop computer.
- A multi-functional workstation.

These terms are to a certain extent interchangeable when discussing a microcomputer used by managers as an aid to management, decision-making and problem-solving.

8-bit v 16-bit

In the commercial environment the 16-bit processor may be preferable, not simply because it is newer technology but because it enables the micro to perform more functions faster. In laymen's terms the 16-bit processor can:

- Support a larger, more complex instruction set, and thus perform more tasks and support more sophisticated operating systems to control the multiprocessing environment.
- The 16-bit processor supports a larger memory (at present 0.5M 16-bit micros are available, whereas the largest 8-bit micro supports only 64K memory).
- The 16-bit processor is faster. This, together with more memory, enables more functions and more complex tasks to be performed.

Levels of Microcomputers

There are three recognisable levels of microcomputers, although a fourth is beginning to evolve with the evaluation of the 32-bit chip and the move into the minicomputer market sector. However, for the purposes of professional microcomputing the first three levels are as follows:

Level 1: 8-bit home/hobby/educational devices mainly using cassette storage devices. Price range $200-$1000, for example Atari 400 and 800, VIC-20, Sinclair Spectrum, Tandy TRS-80 Model I and Colour Computer, low-end Apple II.

Level 2: 8-bit micros with more advanced CPU (central processing unit), supporting floppy disks, and with more advanced operating system software – the beginning of the 'personal computer' range we're discussing in this article. Price range $1000-$6000, for example Apple II, Tandy TRS-80 Model III, Commodore 64, Osborne I, IBM-PC.

Level 3: 8- and 16-bit small business systems with one to four users. Multiprocessing capabilities available as a result of more advanced operating systems, such as MP/M and Unix. Price range $5000-$10,000 for single-screen multiprocessing micro, for example highly-configured IBM-PC, DEC; $10,000-$20,000 for multi-user systems, such as Hewlett-Packard, Cromemco.

A common mistake is to compare computers from different levels – rather like comparing a four-cylinder Gemini with a V8 Ford LTD. One difficulty is that some manufacturers span several levels, for example Tandy and Apple in Levels 1 and 2, and now Apple in Level 3 with the Lisa.

PCs in Relation to Mainframes

The PC definitely has a role alongside the currently installed minis, superminis and mainframes in an organisation. The PC, with its own CPU and storage facilities, can process tasks that may otherwise utilise scarce CPU resources on the central mini or mainframe.

I will refer to the existing larger computer as the host computer, as it will provide the main processing power for transaction processing. A 'dumb' terminal is a terminal with little or no CPU memory of its own to enable it to do its own processing. The dumb terminal relies on the host CPU for all processing, ▶


Ali White 1983

and is effectively a video monitor with a keyboard; it does not have its own intelligence.

The micro or PC, on the other hand, may process in a complete stand-alone mode or may communicate with the host in transferring data files. Once a user understands this capacity of the PC to work both alone and with the host's data files, many new uses for the PC can be envisaged, particularly those which take some of the workload off the host.

It is typical for in-house computers of any type to experience significant growth in computing and processing workloads, for both batch and on-line applications. Requests for computer services typically continue to grow at a rate faster than the host computer can satisfy the increased loads. This inevitably results in the need for memory and disk add-ons at all the computer sites.

As the service requirements increase the response times experienced by the computer users will steadily degrade to the point that when some particular mixes of work (often involving modelling) are in process, user response degrades to virtually unacceptable levels.

This response will continue to get worse as users of the computer become more experienced and the types of requests for computer capacity change. Decision support models, computer graphics and the use of database management systems will all impose bigger demands on processors.

In such an environment, any type of shared resource (for example a mini with a network of dumb terminals) will find it increasingly difficult to give satisfactory response times to users. In these circumstances it is expected that existing work will not be off-loaded from the host, but instead new work will go onto the PCs.

Major Uses for a PC

We therefore see that the major use of PCs within an organisation which already has a central data processing department will involve processing:

- Decision support models (using Multiplan, Visicalc and so on).
- Graphics (for presenting business information).
- Database analysis to support the development of quick analysis-type reports to support decision-making functions.

Information Centre Concept

Several years ago IBM created the term 'information centre' which, broadly speaking, was to describe the environment where the main computer (host) would perform the key-transaction data processing; that is, processing of the large-volume transactions, maintaining and updating the master files and being the central distributor of information.

In a PC environment this concept is still valid. One scenario is an environment where the host is used for what it does best, namely number-crunching of large volumes of data and large master files, and the execution of complex tasks requiring the full capabilities of a large processor. In this sense the host is the information centre.

The PC user can, in this situation, down-load (transfer) data (sections of complete master files or transaction files) from the host (which has responsibility for maintaining that data) to the storage devices – disks or diskettes – on the PC. The user can then do data analysis tasks on the information, using the processor of the PC instead of that of the host. Multiple PCs may transfer the same data from the host for analysis purposes by various PC users.

If a user has a portable micro (such as an Osborne or Kaypro) it may be possible for him/her to down-load information from the host to the portable micro and then take the micro to, say, a client as part of a presentation.

While it is feasible for the micro to process the data and change the format of that data and then copy back the changed data to the host computer, thus updating the host's data files, this requirement would have to be very carefully considered, as security and controls can be affected. Under the information centre concept it is more typical for the data flow to be from host to micro, with the host having sole responsibility for updating files.

This kind of data analysis using the micro's processing power is in line with the concept of freeing the host's CPU resources and maintaining high standards of response time for users. It also means that the PC user can run as many data analysis programs as he or she requires using tools available for micros such as user friendly report generators and spreadsheet facilities. This type of data analysis using the PC's resources is particularly useful when the user has to experiment or re-run analyses on a trial and error basis until the solution is determined.

This use of a PC for analysis of information provided by the host may be useful to, for example, sales departments and finance departments, allowing them to analyse customer, product and financial information to meet special requirements. It may be used to perform forecasting functions or perhaps by middle managers to satisfy special requests for information from higher management or the company's directors.

This information centre plus PC satellites concept will also produce changes in the DP department. Its position will continue to be to develop and maintain large transaction-based systems and to support the host, but will change to include becoming a servicing and support centre for people who use PCs to do their own computing.

LEVELS		HARDWARE	PROGRAM TOOLS	DEVELOPED BY
Strategic Business Systems	'What if' modelling (decision support software); forecasting	Micros, (PCs)	Multiplan, dBase II, Visicalc, etc.	User
Planning and Control Systems	Marketing analysis, budgeting, etc.	Host and micros (PCs)	COBOL, Datatrieve	User and DP dept.
Transaction-Based Systems	Debtors, creditors, order entry, etc.	Host	COBOL, DIBOL	DP dept.

Figure 1. Table showing the various levels of use of a data processing system within a company. Now that microcomputers have a much higher capacity than a few years ago, plus a great deal of very useful software available for them, it may well be more efficient for managers to use this 'ready-made' support system than to ask the DP department to develop similar programs attached to the central mainframe system.

Supporting Decision-Making

Many new developments in decision support systems – colour graphics, computer-assisted learning, voice recognition, and new response and input methods such as the 'mouse' and touch-sensitive screens – are increasingly occurring in the micro area.

It is therefore becoming evident that a PC is being used as a tool to support the ad hoc decision-making functions required by business users. This involves the development of software in the strategic decision levels of data processing, which is highlighted diagrammatically in Figure 1.

Ad hoc decision-making, by definition, is not repetitive. The factors and variables involved in making the decision cannot be predicted. Because of the nature of decision support models, they ▶

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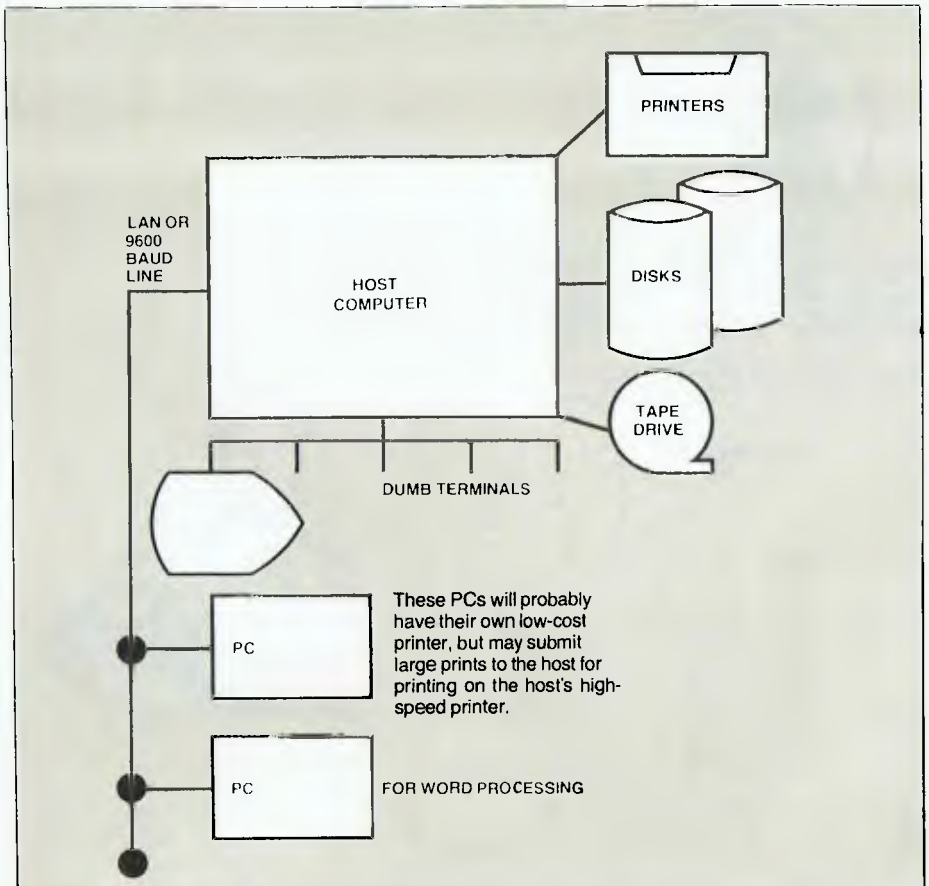


Figure 2. A simple computer network with one CPU, a network of dumb terminals and some attached microcomputers.

THE EVOLUTION OF 'PROFESSIONAL COMPUTERS'

1975	The micro industry began (self-assembly kits).
1977	Apple began in a garage.
to 1980	8-bit chip technology, primarily home and hobby computers using CP/M single-user operating system. Not user friendly.
1980-82	8-bit small business micros (64K memory, high-density floppy disks); growth of software such as VisiCalc, Microsoft BASIC, word processing and spreadsheets.
1981-83	Introduction of 16-bit multi-function micros, with multi-user/screen capabilities; MP/M, Unix and MS-DOS operating systems, among others, evolved.
1983	The 32-bit micro is announced; however, the 16-bit computer will probably remain dominant for the period through 1984.

cannot be finitely defined by the user to a DP programmer/analyst, as are traditional repetitive transaction data processing requirements.

The traditional development of software by DP staff for users will therefore not necessarily produce the results required for ad hoc decision-making functions. For this reason, as highlighted in Figure 1, the DP department's responsibility in this area will be to find the most suitable software tools for the user and to train these users — often managers — in the use of these tools on their PCs.

It is the manager who has the business knowledge, experience and skills to make ad hoc decisions; a PC will provide a tool to support those decisions. In many (if not most) situations it will be more effective for the manager to have the skills to use the PC and its software than for managers to define their requirements to DP personnel so that they can try to develop a satisfactory decision support system.

Networks with PCs

Figure 2 is a diagram of a simple computer environment with one CPU and a network of dumb terminals and micros (PCs). For those subsidiaries with more complex environments involving multiple hosts, the design of the network will of course differ.

Connection to the host may be by:

- Local Area Network (LAN) to aid high-speed transfer of data files between the PC and the host; or
- Direct hardware link to a port in the host, as for a dumb terminal; or
- A PC need not be connected to the network if there is no requirement for electronic messaging or for data transfer from files held on the host computer.

What is a LAN?

In simple terms, a LAN is a coaxial cable capable of transmitting data at high speed. At present, without a LAN any device (such as a terminal) has a wire connecting it directly to a port in the host computer. Thus if the computer is on the eighth floor and there is a need for ten terminals/printers on the third floor, cables must be laid from each terminal to the computer. When a terminal is to be relocated it creates real problems.

The LAN has two major advantages:

- The LAN (coax) can be laid between, say, the eighth floor and the third floor. Any terminal or PC that needs to be connected to the computer can do this by being wired to the coax. Thus the ten terminals need only be wired to the LAN on the third floor, not directly to the computer.
- The LAN, because of its high-speed data transmission, will enable files to be transferred between the host and a PC at a faster rate than the traditional 9600 baud line. Laser printers, for example, require the high data transfer speed of a coaxial cable for high-resolution image printing.

For an in-depth discussion of local area networks, see *Your Business Computer*, August 1983.

A Micro's Weaknesses

In considering the use of a micro to complement the existing mini or mainframe computer environment it is important to understand the weaknesses of the current state of micro technology. Without this ▷

FACTS

The following developments have taken place over the last year or so:

- CP/M (Control Program for Microprocessors) became the de facto industry standard micro operating system. (CP/M for 8-bit micros, CP/M-86 and MS-DOS for 16-bit micros.)
- Peripheral (disks, printers, etc) prices quartered when new technology cut costs and volume markets took hold.
- Software manufacturers and publishers sold packages in the tens of thousands, for example Visicorp, Lifeboat, Microsoft.
- Chip prices fell from $16 for 4K dynamic RAM to $2 for 16K dynamic RAM; from $80 for an 8080A processor to $50 for a Z80A processor.

understanding a user's expectations may not be satisfied because of the constraints of the micro.

At present there is a practical disk storage limitation (5M to 10M disks). Generally micros are not suited to large file handling and manipulation because of this.

Micros are not suited to the bigger multi-user applications, as the operating systems on the micros are not yet good enough to handle dozens of terminals with high transaction volumes.

However, the low cost of micros has led to a completely different solution to the multi-user need. The local area network (in practical terms still a new and expensive technology in 1983) provides a network where each user gets his or her own processor and shares central disks and line printers. At present if a company installs a LAN it is done in a somewhat pioneering spirit, but by the end of 1984 there may have been enough pioneers to make this technology a viable and stable technological enhancement to a company's communications needs.

The proliferation of micros is likely to lead to a 'liquorice allsorts' of machines and incompatible systems if there is no overall policy of buying PCs which are not only compatible with each other, but also with the central computer system. Without this compatibility the vital exchange of information files may just not be able to happen.

The tendency to put micros in the hands of undisciplined users can create difficult situations when a member of staff leaves a company and he or she is the only person who knows the system. The setting up of an effective training and support centre for micro users within the company can help to avoid this.

Cost

Minicomputers serving dumb terminals do not necessarily have a cost advantage over local networks of PCs.

A minicomputer (for example a VAX 780) with 4M memory, 40 terminals and 800M of disk storage costs roughly $400,000, depending on the mix of workload. Additional terminals can be added at a cost of around $2000 each; however, at some point, say 50 terminals, response time can begin to degrade noticeably, especially if many of the terminals are heavy memory users (for example using modelling or graphics programs). Extra memory may need to be added, which can cost up to $50,000 for another 4M, so that the average cost per workstation is in the range of $8000-$10,000, depending on workload mix.

A suitable micro with hard disk storage (5M-10M) will cost about $10,000 plus the cost of a local area network. Cheaper PCs with floppy diskettes can be obtained for around $5000 if mass data storage is not a major requirement for a particular task.

PCs can be added to a network with little or no effect on user response time, which would probably not be true of a mini or mainframe/terminals set-up.

This cost estimation is intended only to highlight that the host/terminal combination is not necessarily lower in price than networks of PCs. It must be emphasised, however, that these figures must be worked out in each situation, as the cost very much depends on the type of work to be processed.

Irrespective of costs of host/terminals vs. micros, many data processing tasks cannot yet be handled by a micro, even a 16-bit. Complex rating, as in the Australian Consolidated Press (ACP) advertising booking system or the comprehensive edit checking in some accounting systems, or the placement of spots in TV stations' traffic systems, is unlikely to be able to be processed by a micro-based network. However, many of the modelling and all the word processing requirements within a group could probably be more effectively and more cheaply processed on the latest 16-bit micros.

To be continued in the next Your Business Computer *issue, December 1983* □

Lotus 1-2-3, one of the new packages written to take advantage of the 16-bit machines' extra capabilities, is a financial modelling package that has the edge over most mainframe systems for management decision support uses. ▶

◀ Honeywell's new Micro 6 is a 16-bit microcomputer that is fully compatible with the instruction set of the company's 16- and 32-bit DPS 6 minicomputers. This allows the new micro system to run the same operating system and a wide range of the applications and communications software that runs on the larger systems, as well as giving users access to a wide range of personal computing software.

Les Bell looks at how organisations with existing DP departments can best make use of micro and personal computers:

PCs for Large Organisations

A subtle change is taking place in the microcomputer marketplace. It's not easy to pinpoint, but it has one fairly obvious facet, at least to those in the industry.

A couple of years ago, personal computers and microcomputers were not all that different from those now available, and there was a large amount of good software around. Yet, in those days, the only personal computers in large organisations were Apples which had been brought in 'through the back door' by enterprising individuals. The DP department would not tolerate these 'toys' and, indeed, viewed them with suspicion.

Today, the personal computer is being accepted with open arms by the DP department. Some DP managers seem to view the personal computer as the solution to all their problems, and are rushing out to buy them by the score.

Why is this happening?

Motivation for PCs

In the US, it is generally held that there is an 'applications backlog' of two years. In other words, if, say, the manager of the personnel department approaches the DP department with a worthwhile proposal to computerise personnel records, it will still be at least two years before the DP department can start work on the project; they are just so snowed under.

This is only the visible backlog; there is also an invisible backlog consisting of those applications which users have simply never bothered to mention because they know what the DP department's response will be. The end result of this is that there are a lot of frustrated users out there. They have plenty of potential applications, but no way of getting them implemented.

This is why personal computers have been brought into large organisations. Users realise that the PC offers a solution to this problem. It may not be ideal, but it is better than nothing. A personnel database implemented using 'pfs' on an Apple, for example, won't compare to a decent mainframe implementation, but at least it's better than nothing.

Users would normally be quite happy with a terminal to the company mainframe, if only the DP department could write the software they want.

Secondly, and perhaps equally important, mass market PC software is generally available at comparatively low cost for many applications. This means that the user is often able to choose from several packages, and that they are up and running now, with no wait.

PCs offer more bang for the buck. They are quite simply much more cost-effective computing engines than mainframes, and they deliver power where it is needed. If the power is not enough, simple solutions range from buying another micro and sharing files to upgrading to sixteen-bit processors or installing a LAN. Incremental costs are low.

PCs are user friendly. Mainframes are not. How could anyone be expected to write a user friendly program in COBOL? Micro hackers are quite used to dropping into assembler or C to write nice super-interactive user friendly screens like those of VisiCalc and similar popular packages. Why should you care as long as you're only paying a few hundred bucks for the privilege?

PC software requires no maintenance, not that it's possible anyway. Source code? You're kidding! Even IBM has given away giving away source. The realities of marketing software to end users means that it has to be extensively debugged before release, so that it is right first time. Suppliers of mass market micro software who try to sell you an expensive maintenance contract are ripping you off. Who's ever had to maintain VisiCalc?

Finally, IBM sells them, so they must be all right...

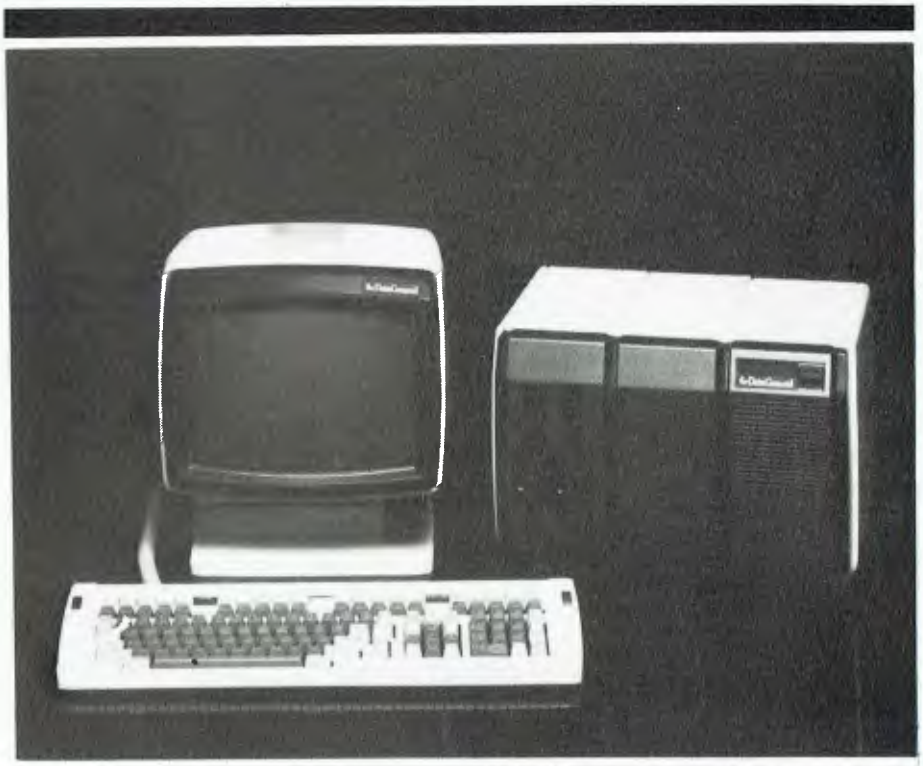
General Strategies

OK, given that background, what should DP departments do about and with personal computers? Here are a few ground rules.

Never write software ... over the life of a typical mainframe installation, software costs will exceed hardware by a factor of eight or ten to one, even allowing for frequent hardware upgrades and replacement. That's how expensive it is, and with a micro, the comparison is even worse.

The reason, of course, is that software is hand-crafted by people, and people are much more expensive than machines. With so much good off-the-shelf software out there, why roll your own?

On the other hand, it is impossible to avoid writing some code, but try to keep ▶



▲
Data General's new 'Desktop Generation' systems are claimed to offer users both individual computing power and integration within large organisations. With office automation, data processing and networking capabilites, users can range from small departments to branches of large multi-locational companies or institutions.

it down at the system level; tasks such as patching I/O drivers for specific peripherals such as plotters or printers. Avoid machines for which listings of the customised parts of the operating system (the BIOS) are not available. Sooner or later, this will have to be patched, and without this information, you are sunk.

In general, use machines from your existing mainframe supplier. There are a couple of advantages to this: firstly, they tend to be the only people who implement all those weird protocols that mainframe companies are so fond of, and secondly, they tend to do things the same way across the range. If you already know and love their mainframe screen editor, you'll probably find that old friend on the micro.

It seems, though, that the more the above two advantages apply, the more you'll be stuck with the disadvantage: your micro is not micro-like in philosophy. It probably won't run one of the industry-standard operating systems. You'll have only a single source for what applications software is available, and will often have to roll your own. Also mainframe designers seldom design good micros ...

Quantify benefits and costs before starting. It may seem hard to put a dollar value on intangible benefits like improved response times to customer enquiries, but it can be done, and you'll have to do it.

Beware the costs of writing software on PCs. Many of the sophisticated tools mainframe programmers are used to are not available for micros, or only just becoming available, and this will slow down development considerably. On the other hand, development and debugging are extremely interactive, which helps.

If you have to write software at a higher level, don't use BASIC. While it was OK for the pioneers to write massive accounting packages in BASIC, remember that they were pursuing a market and at that time there were no other languages. Now we are past the covered wagon stage, and we have COBOL compilers, modern structured languages like Pascal and PL/I Subset G, systems languages like C, and productivity aids like Display Manager and Access Manager.

Beware speed problems with COBOL, however. Most of the COBOL compilers on the market compile to intermediate-level code which has to be interpreted, causing the system to slow dramatically compared with a fully compiled language. This may be quite acceptable, however, if you have a shop full of COBOL programmers and an application that only needs to run infrequently. At least be aware of the problem. The same applies to some Pascal compilers, by the way.

Computerise one function first: start off with one specific objective, such as a budgeting system, and work on that one only. The solution of problems such as file transfers between machines will lead to the creation of a library of standard solutions for use on future tasks.

Support Centres

Set up a support centre for PC users. If, like many DP managers, you feel the poor dumb user is too stupid to be trusted with a complex and sophisticated piece of equipment like a personal computer, you'd better be prepared to help him out, either by forestalling problems or cleaning up messes after the fact.

Such a centre would provide a selection of resources. These would include quick telephone assistance with problems such as "How do I SYSGEN a disk?" or "I seem to have lost a WordStar file. What do I do?".

These problems can to some extent be avoided by training courses for users, run by the internal support centre. While there is no substitute for learning on the machine (Confucius he say, 'The ears hear, the eyes see, but the hands learn'), training courses have an important role in the dispersion of misapprehensions as well as the communication of company policies on PCs.

A support centre can also provide a focal point for the distribution and maintenance of internally generated software. Much as we'd all like to think programming is a special skill, it's not; almost anyone can do it, and non-technical users can come up with software which can be put to good use elsewhere in the organisation.

The support centre should also be the referral point for questions such as compatibility issues, and should maintain a central library of software catalogues, journals and magazines, particularly those containing software evaluations and articles outlining techniques or skills.

Beware 16-bit Traps

There are a number of pitfalls to beware in the 16-bit arena. While it is true that 16-bit machines are potentially more powerful than the previous generation 8-bit machines, that does not make them minicomputer equivalents.

First, as we've shown in these pages before, a lot of software for the 16-bit machines is merely warmed-over 8-bit assembler code which has been run through a translator program and performs less efficiently than the old 8-bit

versions. For example, the BASIC on the IBM-PC runs considerably slower than the same BASIC on an 8-bit machine of equivalent clock speed.

The same applies to other programs which have been converted. The 16-bit version of dBASE II, for example, runs at about the same speed, and has its own bugs which had been ironed out in the more mature 8-bit version.

The situation is starting to change in the case of some programs like Lotus 1-2-3, which were written from scratch to take advantage of the larger memory space and other features of the 16-bit machines.

Next, beware compatibility issues with the IBM-PC. While MS-DOS is pretty close to IBM's PC-DOS, there are differences, particularly in the BIOS code, which is in ROM in the IBM-PC. While some manufacturers of PC 'clones' have done a very good job of emulating the contents of the PC ROM, there are differences, and of course the hardware is substantially different.

Now, two problems have arisen because of this. First, because some software authors have a slavish obsession with speed (and it is true that productivity is directly related to response time) they have opted to bypass the operating system and BIOS ROM completely and perform direct I/O to the screen and printer. The result is completely non-portable code.

This is compounded by the fact that many programmers working on the PC only have previous experience with the Apple, where nobody used the operating system for I/O, generally because it didn't provide the required facilities anyway. They have therefore settled into what is one of the worst habits a programmer can have. What do they think the operating system is there for?

The result is that while a program may work on an IBM-PC under PC-DOS, often it is not using PC-DOS facilities for I/O and consequently will not work under MS-DOS on another machine. Lotus 1-2-3 is a typical example, and is totally non-portable.

Selecting Software

In general, it is wise to select only software which is mature, and which is offered by well-established companies. By now, for example, WordStar has had over fifty man-years of software development expended on it, and it would be very difficult for other software suppliers to provide this level of investment in a new product. Not that other packages aren't good; it's just that in the absence of other criteria, it's obvious which is a better proposition.

The other advantage to selecting established software is that there are a lot of people out in the marketplace who understand it, from the point of view of operation (less training of new employees) and maintenance (quite a few software suppliers and consultants know how to patch WordStar, for example).

This carries over to the existence of publications which can aid in training, such as books and magazine articles, or in customisation, such as patching a program to drive a particular printer so as to take advantage of its features.

In general, for personal information management applications, the programs which have come from the Apple environment are best in terms of user-friendliness. Such programs as VisiCalc, pfs, Time Manager and others are good examples of this.

In the area of managing corporate information, or bigger systems, the most successful packages are those which have come from the CP/M world: dBASE II, accounting packages such as Ascent, IAL, Padmede and others, word processors such as WordStar and The Final Word. These are more business-oriented.

For financial analysis, this rule breaks down, as most of the more recent modelling packages have been written or rewritten for the 16-bit machines: Lotus 1-2-3, Context MBA and others. They really are a new breed. □

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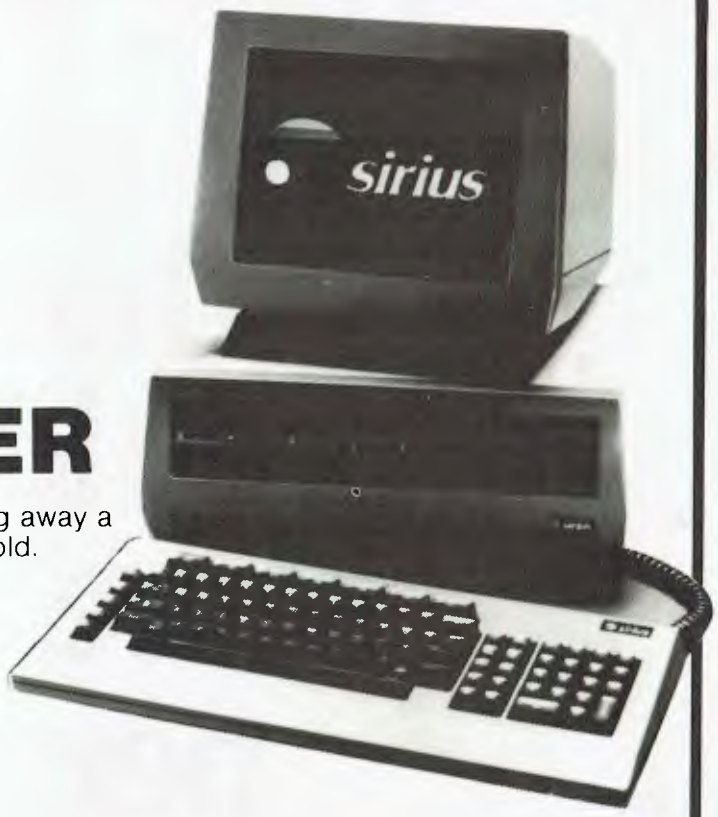

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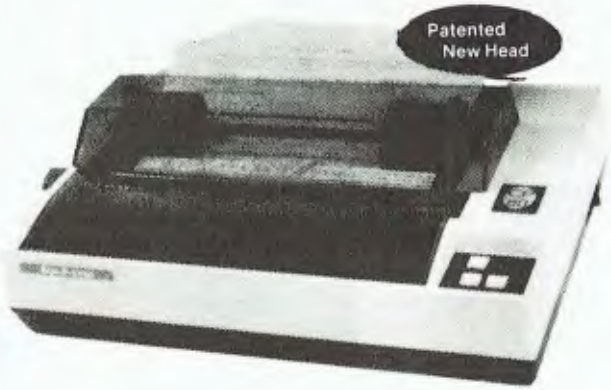

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When Stephen Wall's Sydney-based information service, Horan, Wall and Walker, began replacing typewriters with computers about a year ago, he entertained visions of working from Palm Beach with micros. Two Apple IIs and three Osbornes later, he says, "We're no longer blue-skyers. We don't think computers are the solution, we think they're part of the problem."

Blue Skies and Hot Computers

BY NATALIE FILATOFF

The skies aren't always grey over Surry Hills. While towering banks of cumulo-nimbus occasionally form on the horizon when problems with disk drives are encountered, Wall and his employees generally agree they have benefited from their first tussle with the computer environment, and are donning galoshes for the next stage.

In a converted warehouse in Surry Hills, the staff of Horan, Wall and Walker gather information. The office doesn't fit a computerised formula. Eight full-time and two part-time employees work at an assortment of trestle tables and old wooden desks, sea-green matting lies casually on the cement floor, events posters and notices litter the walls, and, in the absence of air conditioning, panting computers are cooled from behind in summer with tiny portable fans.

Sporting events, rock and roll venues, gallery exhibitions, classical music concerts, cabaret, films, theatre and neighbourhood fetes; Horan, Wall and Walker knows when and where they're happening and how much an outing will cost.

If the snippets of information all came in by mail, Wall would almost have to open the office's main entrance – a blue garage 'Roll-a-door' - to get them in each day. As it happens, most of the data is phoned in, some arrives via the post and some is chased. Every item is checked and arranged to a standard format (such as: gallery name; description of exhibitions; date of showing; times; address).

Says Wall, "We package information on a regular basis for the special broadcasting service of the ABC, for Packer, Fairfax, Murdoch and other publishing firms. The actual organs in which our work appears include the *Daily Mirror*, the *Sunday Telegraph*, the *Sydney Morning Herald, Billy Blue, POL*, the *Women's Weekly, Playboy* magazine, Radio 2JJJ and Radio 2EA. We've also done a whole lot of one-off projects for many other magazines, like *Good Housekeeping* and *Slimming*."

The company also produces its own publications which include, to date, *Cheap Eats in Sydney, Bargain Shoppers' Guides* to Sydney, Melbourne, Brisbane and Adelaide, and *Sydney for Kids*.

One can only nod and glance again at the 'Roll-a-door' when Wall says, "We've got a lot of product to get through one door, one way or another."

Why Computerise?

Wall's decision to computerise was influenced by many factors. Among these, the realisation that his paper-based system was highly inefficient was probably most important.

"For example," he says, "three years ago I rang the Australian Centre for Photography to find out what they had on the next week. They said, 'But we've told you that four times today.' I was disbelieving, but they replied, 'Yeah, this is the fifth time.' We just had a mass of paper and what we *thought* were systems, but weren't."

A complete novice as far as computer technology was concerned, Wall, together with his staff, first established definite criteria on which to base his selection of machine.

"There were a number of requirements," he says. "One was that we wanted to be sure whatever we learnt from these machines could be taken with us to the next level of equipment. That meant they had to be CP/M computers.

"The second thing we knew we had to do was to buy known brands so we could sell them later if we wanted to. You try and sell a Zirkcese 109 – no-one knows what you're talking about and they all say 'urgh?'. People are familiar with Apples and Osbornes.

"The third factor was that we knew we needed more than one terminal. In the early days, people like Rank Xerox and IBM all said we would have to have a sort of data entry person, and that the rest of us would give all the collected information to her – it always had to be 'her'. We didn't want to do that. We all wanted to learn how to use computers."

First Steps

The company's first purchase was an Apple II. It was bought, says Wall quaintly, from the local newsagent, which somehow reduces the status of the computer to that of an HB lead pencil, a copy of *Your Computer*, or ten cents worth of musk sticks. The shopkeeper was, in fact, not a retailer of computers, but had bought the Apple for business applications and found it unsuited to his purpose.

Once it was behind the blue 'Roll-a-

door', Wall upgraded the Apple to CP/M. Then, he says, "To function properly, we needed two in case one went down."

The cost of the Apples and their upgrading precluded the company extending its computer system with more of the same machines. Says Wall, "By the time you've added all the CP/M gear, two disk drives and all the other stuff you need, the Apples are about $5000 each. You don't get much change out of five and a half. It was a bit expensive."

Osbornes seemed more viable, at about $2500 for a CP/M machine with two disk drives, and offered an additional advantage in that they were portable.

(As a publisher, Horan, Wall and Walker often hires authors to write its books. Wall hoped to be able to lend the writers a computer to take home, where their work would be recorded on floppy disks. He could then edit the material on-screen and send the disks straight to the typesetter – the company has, so far, produced three books in this manner.)

"We spent a fair bit of time," says Wall, "ensuring that Apple CP/M was compatible with Osborne CP/M. In theory it should be easy, and in practice it wasn't very hard to get them communicating with one another.

"The day we 'communicated'," he recalls, "we took one Osborne to a house down at Bungan Beach and kept the Apple here. Matthew O'Donnell, the guy who handles our systems, was on the phone to the other guy, trying to get the computers to communicate, and I was writing an article. It took him three hours and I did three hours of writing. As soon as he communicated, I pushed the wrong button and copied a blank back-up file over my article. So, instead of it being a fantastic day, I was horrified."

Before the company began using computers, Matthew O'Donnell was the only employee with any knowledge of them. Initially hired as a part-time bookkeeper while he studied for a Bachelor of Arts degree, O'Donnell had earlier done two years of a computer course.

When the decision was made to convert to computer-based information storage, O'Donnell did the preparatory work of, as he explained, "Putting the paper-based system into some sort of logical order, so the switch-over would be easier.

"What I did was chart an information flow so that we could see exactly what happens to the data we collate."

O'Donnell, who dropped out of his computer course because he wasn't looking forward to working with the more impersonal mainframe machines, is a strong advocate of "taking things easy" when introducing new technologies to established businesses.

"An important factor at Horan, Wall

Right: A Horan, Wall and Walker employee operates an Osborne with the addition of a large-screen monitor. Opposite: Stephen Wall surrounded by information in various stages of processing; in the background Matthew O'Donnell operates an Apple.

"Picture yourself in the sand by the seaside, with computer beside you and azure blue skies – at the beach with an Osborne..."

and Walker," he says, "is that we've got information manipulators and writers who do their job very well. We were concerned not to take things out of their hands by computerising everything at once.

"To avoid that, and also because we were limited in the money we had to spend, we started at the lower end of the market with the Apples and Osbornes, using mainly Wordstar word processing."

How the System Works

Information is keyed into the computers under a modified local community information service classification system. "It's pretty well the same as what all community information centres use around the state," says Wall by way of explanation.

O'Donnell is more specific. "It's a system that splits the information into a series of levels. Our first level tells us whether it's administration or data, the second level says which state it concerns, the third whether it's entertainment, publishing or whatever. For example, music would be: data; New South Wales; leisure; music and so on.

"What the computers have done up to this point," he adds, "is to educate the people here in how to use them."

Moving into Databases

The company's next step is to begin using dBase II, a database software package. This will enable them to create a filing system in which they can specify the information they want to save, make inquiries on it, sort it, index it and print it out.

"The problem with changing to dBase," says O'Donnell, "is that the floppy disks don't have enough space. dBase assumes a great deal of space for manipulation of information; and we handle a hell of a lot of information. We're suspicious of how the Osbornes will handle it, since they don't seem to like changing disk drives all the time."

Says Wall, "We don't want to rubbish Osbornes completely, because they have given us some worth, but we've had a hell of a lot of trouble when using them as portable computers. A certain percentage of the time, when you carry them around, the disk drive appears to go out of alignment."

"This," explains O'Donnell, "leads to problems with accessing text. When we send a computer out to an author, we expect him or her to be able to type in a manuscript with a minimum of fuss, because they're not usually machine-literate people. When they keep having problems it undermines their confidence in using computers – which is sad."

Recurring difficulties with BDOS (Basic Disk Operating System) error and pinpointing its causes don't bring Wall any closer to a happy 'beach' frame of mind either. He is, however, quite wil-

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particularly when it's the basis of a major business decision, like the purchase
of a new computer system. Talking to one company, one man or
one user may fill you with information that can have its short-comings.
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you should seek out someone who knows all the systems.

...talk to somebody who's bought hundreds.

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"Two Apples and three Osbornes later, we're no longer 'blue skyers'. We don't think computers are the solution, we think they're part of the problem."

ling to outline how the computers have proved an advantage to the business.

The Good Points

"We've been waiting to find out what level of productivity gain we've achieved. I can say without any ambiguity that we have got some. Part of the reason for that is the little beasts are so unforgiving. They really make you work more logically and in a more structured way.

"The other good result is that we're now all semi-computer-literate, which is a gain in these times. A lot of people are saying they'd really like to do a computer course at tech, because culture has declared that if you don't know about computers you're dead. Well, we pretty well taught ourselves, with the help of people around town."

There are, of course, still a few kinks in the human side of the operation. "We can tell you how to get lost in a floppy disk labelling system," says Wall. "We've got about 200 disks spread all over the place in little blue boxes."

O'Donnell elaborates. "We started off with a simple labelling system, detailing what machine they belonged to, what locom (local community) category and on what date they were raised.

"That didn't quite work, so we're now starting a registry-type system. When you raise a disk, you raise a sheet of paper for it, you give the disk a number, and give the sheet of paper the same number. When you raise a file on the disk, you write a description of it on the piece of paper, and when you delete it, you write the date it was deleted.

"Really," he adds, "dealing with floppy disks is very irritating and very inefficient. What we need is hard disks."

The Future

Wall agrees. The next step will be towards hard disks and multi-user terminals. "The computers we have are really a precursor to some other larger and more integrated machine. We don't know what it will be yet, but it'll be CP/M, so we can use the same programs we've developed in dBase and Wordstar.

"We'll probably buy some sort of multi-user computer with a whole lot of terminals that we just hang off it, and much more memory. We may even use the Apples and Osbornes as smart terminals for the new CPU."

The company intends to keep developing essentially on its own. Says O'Donnell, "To have a system created for us, specifically for the work we do in here, would cost thousands of dollars. If we develop it ourselves, in-house, the advantage is that we can change it in-house, we can update it in-house. We have more control over what we're doing – which is pretty important in this business.

"I doubt if we'll ever get into the very large systems; I think we'll be building up on micros. It's important to us, if part of the system goes down, still to have three or four computers that will keep running. Even now we keep all our scraps of paper with information on them in case something goes wrong. We work on pretty heavy deadlines, and if everything went down, it would throw us into all sorts of turmoil."

The whole staff of Horan, Wall and Walker mentally puts up its umbrella at the thought.

Says O'Donnell, "The people here have handled the changeover really well. Their approach to computers has altered a great deal over the past year. At first they were scared to death of the bloody things and now they're swearing at them. It's good. They also know now, when things go wrong with the machines, the likely areas to look for the problem.

"I've seen places," he adds, "where the technological impact has been really harsh. We're doing it in fits and starts and bits and pieces so the shock is a lot less."

The staff of Horan, Wall and Walker say jokingly that the computers have made them quieter. "We don't hate each other any more, we hate the computers."

"Oh, we can still hate each other," comes the flippant reply.

Wall lets himself go, under the influence of the afternoon sun poking its light through the warehouse window. "We can tell you about how to get your knickers in a knot over a floppy disk labelling system, how to fantasise about 'sexy' ten megabyte disks and how you have to balance the desire for more computing with the ability to convince yourself that the stuff you've bought is making money for you.

"The power of it is terrific, but we're not blue skyers any more. We don't think computers are sacred." □

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PNT0009B

The Burroughs B20 has not received much publicity, which is a pity, as in many ways it is an innovative and technically advanced product, available in many configurations to serve different business needs.

Versatile

Burroughs B20

BY JOHN NICHOLLS

Originally designed by Convergent Technologies in California, the Burroughs B20 line is notable for its unusual physical arrangement. The 38 cm (15 inch) green display screen is larger than most, and is flanked by a matching cabinet serving two purposes: as a lectern for holding copy to be entered, and as a housing for disk and diskette drives. If a diskette drive is used, it is loaded through a slot in the top of the cabinet, somewhat like an electric pop-up toaster.

In broad terms, there are two models, B21 and B22. Both can be used as stand-alone workstations or as clusters in a network, although the designs lean towards using the B21 as a stand-alone or in a small network (up to three workstations sharing a hard disk) and the B22 being used in a larger cluster.

The B21 is available in many models, all of which have as a minimum 256K RAM, which contrasts with the much smaller memory in the basic models of most of their competitors. The variations between models lie in the drives. You can have a workstation with no drives (an intelligent terminal), one or two 13 cm (5.25 inch) diskette drives, or Winchester hard disk drives ranging from 5M to 15M capacity. If you have enough memory, multi-tasking can be performed.

An Intel 8088 microprocessor is used in the B21. This is a 16-bit processor, although it transfers data in 8-bit pieces. Various combinations of RS-422 (the successor to the RS-232 standard), RS-232C and Centronics interfaces are provided in the different models.

The Burroughs B22 uses the 16-bit Intel 8086 microprocessor and has a floor-standing disk drive of 10M – expandable to 20M – and an 800K 20 cm (8 inch) diskette drive. Extra hard disks can be added. Burroughs' glossy brochures contain a mass of technical information – definitely not for the newcomer – amongst which is this interesting comparison between formatted and unformatted capacity on its drives:

	Unformatted	Formatted
Floppy	0.8M	0.5M
10M Winchester	10.5M	8.4M
20M Winchester	21M	16.8M

It is not unknown for manufacturers to quote only the unformatted capacity, especially if formatting and stored programs dramatically reduce the capacity available to the user.

The keyboard is reasonably low and has a palm rest, and the keys are well laid-out with the function keys on the left and above picked out in blue. On the right is a numeric keypad and a cursor pad using the now popular inverted-T layout.

As mentioned, the 38 cm screen is larger than most, and consequently is used to display 28 lines (B21) or 34 lines (B22) instead of the more usual 24 or 25. The display can be tilted and rotated, and is sharp, clear and flicker-free.

I found networking arrangements with the B22 to be quite feasible. Up to 20 systems can be attached, and some or all could share printers and Winchester disks. Sixteen workstations can be connected and any number of these can be other B20s.

Programming support is provided for Microsoft BASIC and for FORTRAN, COBOL and Pascal. A unique operating system is used, although it is expected that by the time this article appears MS-DOS and CP/M emulation will be available.

Either 80 or 132 characters can be displayed per line on the B22, selectable by the operator. Files can be password-protected, 'HELP' screens can be tailored to different uses by each workstation, and an 'UNDO' feature is available to correct mistakes. Unfortunately, the HELP function provides only a list of available commands, without consideration of what the operator is doing at the time.

Multiplan is provided, and has been modified to allow the use of the function keys. The zoom feature (80 or 132 characters) is available with Multiplan. ▶

REPORT CARD: BURROUGHS B20

Manufacturer:	Convergent Technologies (USA)
Distributor:	Burroughs Ltd
Market:	Personal computer update/mainframe communication/'hard work' micro
Operating system:	Special
Ease of learning:	4
Ease of operation:	4
Programs from manufacturer/distributor:	4
Word processing capabilities:	4
Screen image:	5
Ergonomic considerations:	4
Best features:	Display, networking, forms-fill
Worst features:	Help, directory

Numbers shown represent scores on a scale from 0 to 5, with 5 being the best.

▼ The Burroughs B22, showing its compact vertical disk drive.

More than they asked for....

"The B20 is a full data processing computer which is giving us a lot more for our money than one would normally have asked for." This reaction comes from Mr Alan Brooks, EDP supervisor of the Gold Coast City Council, after more than seven months' experience using the Burroughs B20 system.

The versatility of the B20 was a principal reason Mr Brooks recommended that the Council buy the equipment. "I believe we have even surprised Burroughs with some of the activities we have got the system doing."

By delving into the system's commands, the council has saved an enormous amount of time and labour which would normally be spent in typing repetitive material.

Mr Brooks said that another saving created by the B20 word processor was in the time spent typing standard letters, of which the council uses 18 different types, and standard envelope formats. These include letters about revoking town planning permits, approving a development with or without objections, and replies to every signatory of a petition objecting to a proposed development.

Mr Brooks said the Multiplan software which is part of the B20 system was helping the council in short-term investment projects and assisting in the preparation of budgets by council departments.

Another software attachment, the Data Manager, will be used for many applications which are not suitable for the council's mainframe because they are too small.

The B20 word processor has prepared rates, charges, fees and permits – aspects of annual budget preparation – and has assisted in the compilation of a directory of Gold Coast industries, cross-referenced under several headings.

The total cost of the installation was $66,158. □

Word Processing

The word processing software goes under the name of WriteOne. Burroughs describes it as a "state-of-the-art word processing package". It *is* better than most of the packages provided for microcomputers, particularly as it has been integrated to make use of the B20's special function keys (a key label strip above the function keys lists the WP commands). Comparison with some of the dedicated word processors does reveal some shortcomings, however – as is usual when talking of word processing on a general purpose microcomputer.

But first the good things: functions such as OVERTYPE, CAPS LOCK and INDENT are indicated by LEDs (light-emitting diodes) which light up when the function is in use (the IBM-PC, for example, provides no indication of whether CAPS LOCK is in use).

Two documents can be displayed at the one time in different 'windows' and text in either can be changed or moved to the other. At any time a prompt showing all choices available at that point can be made to appear on the bottom of the screen. Defaults are displayed in normal brightness and other choices in low intensity.

A versatile forms-fill application is provided, whereby data can be entered in free form and is then converted to logical sequence by the machine. Recovery after a power failure is featured.

The directory is comprehensive, showing length of document in pages and characters, dates created, revised, assessed and printed, and time to print in minutes. However, it appears in random order, which is unfortunate with high storage capabilities. Headers and footers can be used, although there is no provision for positioning footnotes on the same page as their reference, and there is also no provision for paragraph numbering. While most people will never use such facilities, it is normal to see them in 'state-of-the-art' word processors.

Peripherals and Prices

The manuals provided with the Burroughs B20 are well written and comprehensive. Their only blemish is that print on the back of the page is unpleasantly intrusive (paper too thin?).

Printers that can be used cover a wide range: Diablo, Qume and the NEC Spinwriter. You can print material once, or spool it and ask it to be printed at a specific time of day.

Pressing the NEXT PAGE or PREV PAGE key causes the whole page to be displayed almost at once, but scrolling up or down is somewhat jerky.

With such a wide range of configurations available, I can only quote some typical prices. A B21 with a 5M Winchester disk, 384K RAM, a 630K floppy, two RS-232 interfaces, one Centronics and one RS-422 interface sells for $12,700 including tax. This includes the operating system, Multiplan and WriteOne. A workstation is an additional $5040, and printers range from $2120 to $3980. Quantity discounts apply; B22s are somewhat higher in price.

Who will use the B20?

Burroughs sees three markets for the B20:

- As an update for Apple or Tandy users, providing more storage, including individual storage, but allowing different people to share common company data;
- Individual units allowing communication with a mainframe computer;
- A micro for a situation where it will have to do a lot of hard work.

The Burroughs B20 is a good example of a multiple-use system. I wasn't able to see a demonstration of its graphics capability (which will interface with Multiplan), but I'm looking forward to it with interest. The advance material on it looks good. □

In the United States and overseas, a large number of manufacturers has been licensed to buy or produce the system designed by Convergent Technologies. Those best known in Australia are Burroughs Corporation and NCR Corporation.

In March, Sigma Data announced the release of its Convergent Technologies' system, called the Sigma Convergent. We have not had the opportunity to examine this machine in detail, but prospective customers should note that the Burroughs and Sigma versions are not necessarily the same. Some of Convergent Technologies' customers have specified changes in their particular versions, particularly in keytop labelling or other aspects of keyboard design. In addition, of course, dealers may well vary in pricing and in quality of service.

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Toshiba T100

BY JOHN NICHOLLS

Above: The Toshiba T100 with its compact diskette drives, keyboard containing the CPU and printer. ▲

Below: The T100 keyboard/CPU unit ready to travel in its custom-made carrying case. ▼

REPORT CARD: TOSHIBA T100 PERSONAL COMPUTER

Manufacturer:	Toshiba
Distributor:	Toshiba (Aust) Pty Ltd
Market:	Small businesses; self-employed professionals; professionals in large organisations
Operating system:	CP/M
Ease of learning:	3
Ease of operation:	3
Programs from manufacturer/distributor:	3
Word processing capabilities:	Not tested
Screen image:	5
Ergonomic considerations:	3
Best features:	Portability, LCD, colour screen display, 'Computers Made Easy'
Worst features:	Keyboard height

Numbers shown represent a score on a scale from 0 to 5, with 5 being the best.

When so many companies are introducing 16-bit microcomputers, why would Toshiba introduce a new 8-bit model, the T100? Has it fallen behind in the technological race?

No, Toshiba has not fallen behind – in fact it is also introducing a 16-bit computer, the T300. Toshiba's reasoning is that the 16-bit machines are more suited to larger applications, but if you don't need their speed and memory capacity, an 8-bit machine can meet your needs at a significantly lower cost. Thus the 8-bit and 16-bit machines complement each other and together span a wider section of the market.

Outwardly the T100 does not differ from most other computers – separate units for a display screen, a typewriter-like keyboard, a disk drive unit and a printer. Toshiba makes the claim that it has minimised the dimensions of each unit, and certainly the disk drive unit, housing two 13 cm (5.25") drives, is unusually compact.

The keyboard is not very wide, but it is deep and rather tall – rather than place the CPU, the other electronics and the power supply in with the disk drives, Toshiba has chosen to put the electronics in with the keyboard. This arrangement has benefits, as we shall see later, but an unfortunate consequence is the thickness of the keyboard, raising the row of home keys to about 72 mm. To put this into perspective, the home row on the IBM-PC keyboard and on Toshiba's own T300 is only about 37 mm high, which is a much more acceptable figure.

I originally took the display screen on the sample model to be a standard 30 cm green monitor, but was surprised to find that it was in fact a 35 cm colour monitor. This perhaps indicates that the monitor looks smaller than it actually is. It uses a mount which brings it up to a usable height and also tilts and swivels with ease. Definition in both colour and monochrome is very good (in graphics mode resolution is 640 by 200 dots).

Most people would probably consider the colour display only if they intended to use graphics, although you might find it advantageous to use colour in some other applications: for example, filling in a form on the screen by using different colours for standard and unique information. I was impressed by the colour display, and if you're prepared to pay the rather steep differential between the green and colour monitors (around $750), the larger colour display could prove to be a good investment.

It's perhaps a small point, but one thing that is illustrative of Toshiba's care in design is that the indicators used on the keyboard, the disk drive and the display screen are all *green*. The warning lights indicating the disk drives are in operation are appropriately *red*. Such a use of colours may seem self-evident, but some of the largest manufacturers continue to use red lights to indicate normal operation.

The keyboard has the standard alphanumeric keys (with the SHIFT and RETURN keys in their expected places) plus a row of eight function keys on the top and a numeric keypad on the right. Four cursor keys are on two sides of the numeric pad in a layout showing no particular logic (the keyboard on the T300 uses the old conventional star layout).

Who Will Use It?

Toshiba sees the market for the T100 as being small businesses, self-employed professionals, and professionals working inside a larger organisation. It is not being marketed direct, but through dealers, one in each area, who also supply software packages with the hardware.

Toshiba obtains software from Australia and all over the world and tests it for operation with and suitability for the T100. If necessary the software is modified to meet Australian practice or Toshiba's standards. The software approved by Toshiba is then provided to its dealers.

One of the range of software packages available is the Padmede, which includes the following packages: creditors; sales/debtors; stock/inventory control; sales/invoicing; and general ledger. At the time of writing many other packages were being developed – amongst others education, a joystick control for games, and an interface for the PAL colour television system used in Australia. To find out what is available now, try asking your local Toshiba dealer.

An innovative feature of the T100 is its ability to be used as a portable. The system unit comprising keyboard and CPU can be fitted into a vinyl or leather case rather like a thick attache case. The disk drives, monitor and printer can be left at the office and you take the rest home.

Once there, you can plug into your TV set, using the interface just mentioned, or you can use a special LCD (liquid crystal display), similar to the display used on most calculators and battery-operated digital watches. It plugs in easily to the back of the keyboard and shows eight lines of forty characters each. As with all LCD devices, the display may be difficult to read in very bright light, but under normal conditions it is excellent.

When used at home, the memory required for programs and data can be provided by using an audio cassette or additional RAM or ROM packs (maximum 32K each) in addition to the standard 64K RAM and 32K ROM. (TBASIC – an enhanced version of Microsoft BASIC – is in ROM). Calculator batteries are used to power the memory and are claimed to have a twelve-month life.

Unnamed Genius

Useful documentation is provided with the system and with each software package, but the highlight is a forty-page booklet prepared by an unnamed genius at Toshiba. The booklet is entitled 'Computers Made Easy' and without doubt it is the best introduction to computing I have ever seen. It explains the technical terms used by computer people in a way that would be intelligible to anyone who doesn't know the first thing about computers. The T100 is used as an example, but the selling is low-key and not obtrusive. It is an object lesson on how to write in non-technical language on a technical subject. If you are hazy about the basics of computing, get hold of a copy!

A configuration offering the T100 with the colour monitor, a printer and BASIC is about $5300. With the green monitor the price drops to about $4600, and without the printer, this comes down to about $3500. The carrying case is less than $100 for vinyl and around $200 for leather. The LCD display is under $400, and the RAM packs about $350. All these extras fit quite easily inside the carry case.

Toshiba is perhaps best known here for its wide range of electric and electronic home appliances. The factory showroom has everything from air conditioners to dishwashers, from pocket tape players and radios to large hi-fi systems, television sets and video recorders.

The company has drawn on its experience in these diverse fields to produce a microcomputer which in its price range offers a great deal. If you can find the software you need, and especially if the portability appeals to you, the Toshiba T100 is worth looking at. And if someone tells you that you must have a sixteen-bit machine, ask them why. The answer might be instructive. □

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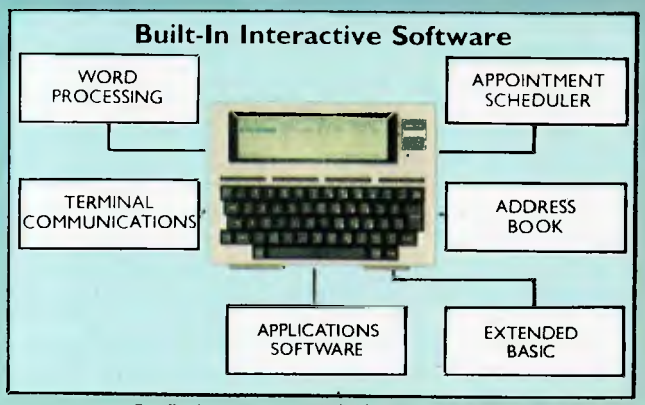

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An Update On the IBM PC

Since the release of the IBM-PC early this year, John Nicholls has worked with one every day. He looks at the good points – and some drawbacks – which have become apparent with extended use.

FIRST OF all, my IBM-PC has worked flawlessly: I haven't had the slightest trouble with the equipment. By following the installation manual I was able to hook up all the cables correctly, although inserting the plugs the right way up and working out how they plugged in could have been explained more explicitly.

The diskette drives I have are double-sided, giving a capacity of 320K on each double-density double-sided diskette (360K with the new operating system, DOS 2.0). To those whose background has been with small computers, this sounds a lot, and in comparison it is. But for those used to larger systems, or those who are going to make extensive use of the PC, the swapping over of diskettes is tedious.

An example of this is in the use of Visicalc and Visiplot, two excellent products. Visicalc uses a single diskette, which is inserted before the system is switched on or before performing a system reset. If after entering your data and saving it to diskette you want to graph the information you have entered, you then have to replace the Visicalc diskette with the Visiplot diskette number 1, followed by the Visiplot diskette number 2.

Although in either Visicalc or Visiplot you can scroll through a list of documents on the diskette, this reveals only Visicalc documents when you're in Visicalc, and only Visiplot documents when you're in Visiplot. The scrolling process, using the right arrow key, can take a long time if you have a lot of documents on the diskette.

You can get a complete listing of documents on a diskette by using the directory command (DIR) in DOS or the 'files' command in BASIC, but again this requires switching diskettes to get back to your program. Although it is possible to go from DOS to Visicalc and back without performing a system reset, the procedure is not clearly set out in the manuals.

To avoid having to change diskettes, a hard disk would be useful, and is in fact available in the new PC XT, which has a 10 megabyte disk. This enables you to store all your *data* on the hard disk, but not programs such as Visicalc or Visiplot, which are copy-protected. Thus you lose one of the biggest advantages of a hard disk. ▶

This situation will change with co-operation between hardware and software manufacturers. As far as Visicorp is concerned, the answer appears to lie in VisiOn, which requires 256K RAM minimum and a hard disk. Hopefully VisiOn will integrate the various Visicorp programs so that the days of diskette swapping will be over – admittedly at a price.

We believe anyone in the market for an IBM-PC should give careful consideration to the XT. Even if copy-protected software means you can't take full advantage of the hard disk, you will have taken a step away from early obsolescence. Moreover, it is an acknowledged fact that applications quickly expand to the size of memory available.

Printing Options

The standard IBM-PC printer is an Epson MX-80. The Epson printers are fine units, which in their normal typestyles give results that are little inferior to daisywheel printers at their best (many daisywheel printers are not maintained in first-class condition). In addition to their normal print they will also produce enlarged and condensed styles and emphasised (bold) and double (shadow) printing. The MX-80 prints on paper up to 25 cm wide, whereas Epson's MX-100 printer can use standard 38 cm wide computer forms.

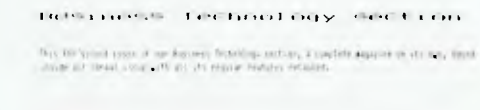
The print options are selected by appropriate settings of the printer DIP switches (you would do this only once, at installation time) or by software (in a program), or by inputting printer control codes (which is what you'd do when printing a Visicalc spreadsheet).

For normal printing you don't need to use any printer control codes, but their use does greatly enhance the appearance of the printed page. I found, though, that the codes take a great deal of time and experimentation to use properly. An example is shown below.

To print the two headings in enlarged, emphasised mode, and the rest of the worksheet in condensed mode, you need to enter the following keystrokes:

```
(↖ home)
/PP "^HØE^EE (enter) L1 (enter)
(↓) (↓) /PP "^R^R^HØE^EE (enter) L3 (enter)
(↓) /PP "^R^R^HØF (enter) L94 (enter)
```

The result looks like this:

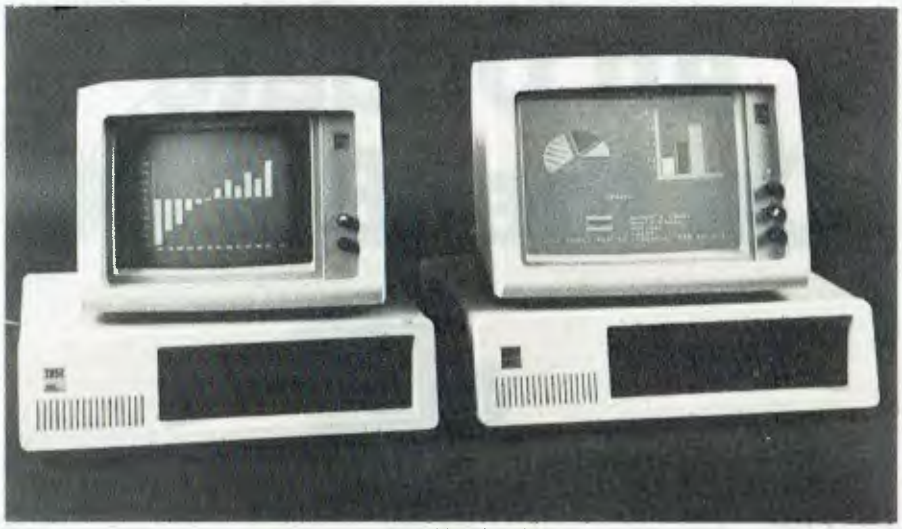


The Keyboard

To me, the best and at the same time the most frustrating part of the IBM-PC is the keyboard. Its operation is such that it is difficult to make a mistake; usually when you press a key that is invalid at that time the computer beeps as a warning, but does nothing until you press the correct keys. This is a very useful feature, especially as some peculiarities of the keyboard make it quite likely that you will sometimes make mistakes in using it.

The problem areas are:

1. The left SHIFT key is separated by an extra symbol key from its customary position alongside Z.



The normal monochrome IBM monitor (left), with the new colour display, which is now available for a recommended retail price of $1157.

Goodies for the IBM-PC

Late in August IBM Australia announced the release of a range of add-ons for the IBM-PC and for the PC XT – the hard disk version of the original PC.

The most interesting new arrival is probably the IBM colour display, a high-resolution, direct-drive monitor that business users will find valuable for displays of business data, graphics, charts and so on.

While still displaying the usual 25 lines of 40 or 80 characters, in addition the colour monitor can display 256 characters in 16 foreground colours on any one of eight background colours. In graphics mode there is the option of high-res black-and-white or so-called 'medium' resolution colour, which allows you to use one of two sets of colours at a time (each set includes three colours used against a fourth background colour).

The character matrix is 8 by 8 dots on a 318 mm screen, and highlighting choices are underlining, blinking, reverse image and high intensity.

The colour display requires the IBM colour/graphics monitor adaptor to be fitted in one of the system unit's expansion slots.

A second new release, a binary synchronous communications (BSC) adaptor, allows the IBM-PC to be attached to host systems or other IBM-PCs via switched or leased line networks using BSC protocols. The adaptor is installed as an option in one of the system expansion slots and operates at 9600 bps. An external modem has to be connected between the BSC adaptor and the telephone line.

The 8087 math co-processor is a specialised chip which significantly increases the speed and precision with which floating point arithmetic, logarithmic and trigonometric functions are processed. To take advantage of the 8087's capabilities, programs designed specifically for this co-processor are required.

APL (A Programming Language) is a general purpose language that takes advantage of the 8087's capabilities. APL is used by many corporations for commercial data processing, by systems designers, and by educational institutions for teaching or researching mathematical and scientific computing or related subjects.

As well as working on the IBM-PC, APL can exchange workspaces and data files with an APL system running on IBM Virtual Machine/370 via asynchronous communications. This requires an asynchronous communications adaptor on the PC, an asynchronous ASCII port on the host system, and the necessary software support.

Recommended retail prices for the new goodies are:
Colour display: $1157
8087 math co-processor option: $401
BSC adaptor: $467
BSC 3270 emulation: $1156
APL: $340. □

2. The two 'lock' keys, CAPS LOCK and NUM LOCK, do not have indicators to show which mode they are in. (CAPS LOCK reverts to lower case when the system is switched off).
3. The RETURN key is separated by an extra symbol key from its customary position alongside the home row. (My hand is too small to reach the RETURN key without moving from its normal 'home' position on the keyboard).
4. The proximity of the CONTROL and ALTERNATE keys to the left shift key is prone to lead to mistakes, particularly as the shift key is not where you would expect it to be.
5. Combining the cursor control pad with the numeric pad makes it impractical to use the numeric pad when entering a row or column of figures and also need the cursor keys.
6. The colon (:) requires shifting, which is unfortunate in view of the use that has to be made of this symbol.
7. The keyboard cable attaches close to the centre of the rear of the system unit. Unless you have the keyboard directly in front of the systems unit, the cable is likely to be too short. It is coiled, but if you move the keyboard away, the tension on it causes the keyboard to be dragged back. (The keyboard cable uses a standard audio five-pin DIN connector. An extension cable with a five-pin plug on one end and a five-pin DIN socket on the other end is not a standard item, but any audio or video firm should be able to make one up readily; provided they remember that as in a 240 V extension cord, connections are reversed. I had one made up for $3.40; in the US computer dealers advertise them for $37.00 and $39.95!).

A Californian firm, Qubic Distributing, is marketing an alternative keyboard which overcomes at least the first three of these problems. It is selling for $US199.

One clever part of the keyboard is a shelf behind the top row of keys. This can be used to prop up the IBM manuals when reference to them is required.

The monochrome display unit from IBM produces a very clear image, with only one degrading feature. Even after a lot of experience, it is still extremely difficult to distinguish between the numerals 0 and 8. I'd be prepared to risk confusion between zero and the letter O, as this would be preferable to the existing confusion.

Finally, I must mention the documentation supplied with the PC. All the manuals are of a uniform size and layout, assume *no* previous knowledge, and have numerous drawings, diagrams and examples. Occasionally I have had to search through the manuals to find what I wanted, and once a point arose that the manuals didn't cover, but with these minor reservations they are models of good documentation.

Would I Buy Another One?

After using the IBM-PC for five months, I could expect to be asked: would you buy another one? The answer is undoubtedly yes. I would probably look at the PC XT to get a hard disk, and I'd examine the availability of alternative keyboards (non-IBM); I'd also consider buying the new IBM colour display which recently became available here.

The PC may not be the latest state-of-the-art technology, but it is a good, reliable unit. I expect soon there'll be as much software for it as we now have for CP/M-based systems and for Apple and Tandy. Everyone in the software business — even the drover's dog — seems to be writing software for the IBM-PC. So the combination of good hardware and a wide range of software will be hard to beat. □

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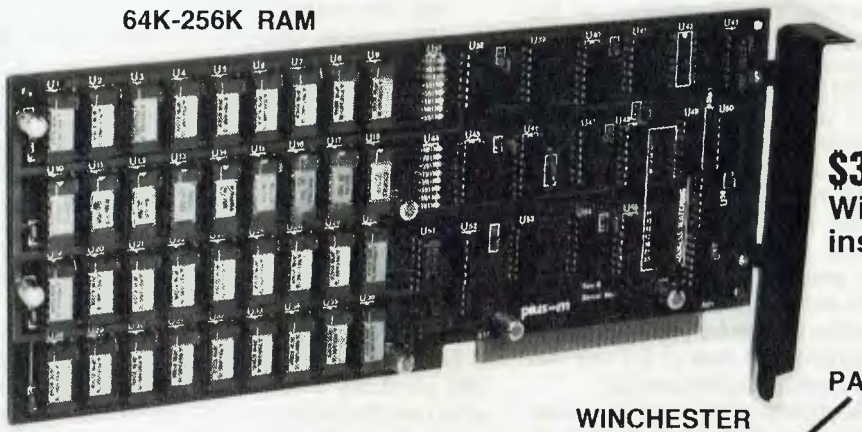

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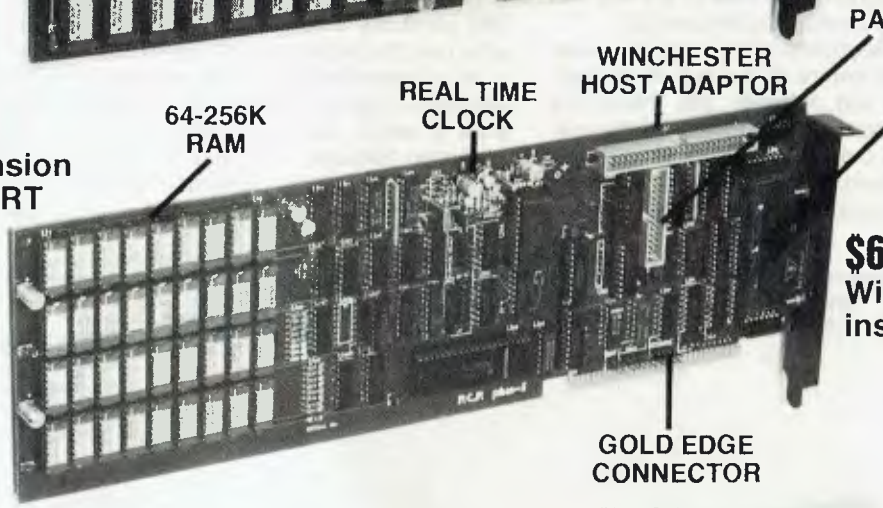

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Understanding Assembler

Part XIII

We've heard a lot about word counters in recent issues, so with an eye to the main chance, Les Bell encourages his followers to try out that kind of program in assembler in the latest chapter of his exciting series ...

THE LAST COMMAND I used on my computer before starting to write this article was a word-counting program. I'd just finished writing an article, checked the spelling and wanted to check whether the article was about the right length (it was).

Word counting is a task the professional writer has to perform from time to time. In general, counting pages is good enough, but just occasionally you have to know exactly how long a piece is. Having the computer do the hack work makes life easier all round; where before you would never bother checking the length of many stories, now you can check them all.

It also happens that a word counting program would make an interesting project in assembly language, for several reasons. First, I've already written such a program in a couple of high-level languages, so I've got the overall design down pat. This is important; often it's easier to design a program in a high-level language first, and then re-write it in assembler.

This dovetails neatly with the concept of structured program design. The thinking here is that the program should be designed using a pseudo-language, in fairly vague terms at first, but with successive refinements until one has a detailed model on which to base the program proper.

Thus, for a word counting program, our program design might start out as:

```
count words
```

which is not really very helpful, but at least we've written down some kind of objective to get started. A journey of a thousand miles begins with one step.

A first refinement might be:

```
initialise counter
open input file
do while not end-of-file
get a word
add 1 to the counter
end-while
print value of counter
```

Now we're getting somewhere. We've split the program up into a number of elements, some of which we have probably written before. The whole project is a little less daunting. Successive refinements will deal with each line of this version. In particular, we must deal with error conditions: what do we do if the input file does not exist? What do we do if the user does not specify an input file?

We must also figure out how we are going to get a word from the input file. In assembly language, we don't have the facilities provided by higher-level languages for breaking up input. In fact, just processing the input will turn out to be one of the trickiest areas of this program.

The CP/M operating system, which we will use, reads data from a disk file in 128-byte records. So when we 'get' from the file, we don't get a word, we get 128 characters. Furthermore, the 8080/Z-80 microprocessor will only deal with one character at a time in the accumulator, so at this level we're dealing with characters, and not words.

The answer in this case is to examine the file character by character using some rule to decide when to count a word. The answer lies not in figuring out what constitutes a word, but in what doesn't make a word. In ASCII text, words are separated by only a few distinct characters: spaces, tabs, carriage returns and line feeds. You could optionally include hyphens, to count hyphenated words as two; all other punctuation – for our purposes – simply makes words longer.

Thus, while we are reading a file, we start off outside a word, and as we read, as long as we see any of those four characters, we are still outside a word. If we see anything else, we make the transition from outside a word to inside, and it is these transitions that we count. When next we see a space, or other non-word character, we are back outside the word again.

I first saw this technique in Kernighan and Ritchie's excellent book, *The C Programming Language*, and when I got the BDS C compiler, it was the first really useful program I got up and running. BDS C has somewhat non-standard file input/output, and so it was an exercise in mastering those features of the language.

Advantages of 'C'

The advantage of writing the program in C is that you have all the benefits of structured design using a pseudo-language, but the program can in fact be compiled and run in order to test the logic of the design. Now, sometimes you will find that the high-level language version of the program is adequate, in which case there is no need to rewrite it in assembler.

However, other times you will find the program is too slow, but that there is an innermost loop, doing most of the work, which can be rewritten in assembler and linked to the remainder in the high-level language. This is the approach I took with the fog index calculator (another writer's tool) in *YC* December 1982.

If the worst comes to the worst, a complete rewrite is necessary – but at least you have completely proved the logic of your design and can code directly from the HLL version. This leads naturally to the best way to write assembler – as little as possible!

For those who want to relate the assembler design to the C version, here is the original. For those who find C rather cryptic (most of us) I've tried to annotate it extensively. Everything in /*...*/ is a comment.

Hopefully it's not too cryptic, and you should be able to see a relationship to the early pseudo-code design. The ▶

```
#include        <bdscio.h>

#define YES     1
#define NO      0
#define EOF     0x1a      /* CP/M end of file character */
#define ERROR   -1
#define MASK    0x7f      /* Used to strip out high bit of
                             WordStar files */

main(argc,argv) /* count lines, words, chars in input file */
char    **argv;
{
        int c, inword, fd;      /* current character, word flag,
                                   file descriptor */
        unsigned nl, nw, nc;  /* number of lines, words, chars */
        char    buf[BUFSIZ];  /* file buffer */

        if(argc != 2) {       /* User probably just typed 'WC' */
                printf("Usage: wc filename\n");
                exit();
        }

                              /* If file doesn't exist */
        if((fd = fopen(argv[1],buf)) == ERROR) {
                printf("cannot open: %s\n",argv[1]);
                exit();
        }
                              /* Initialise counters */
        inword = NO;
        nl = nw = nc = 0;
          /* Get a char, check for end of file, strip high bit */
        while ((c = (getc(buf) & MASK)) != EOF)
        {
                ++nc;         /* count a char */
                if (c == '\n') /* if a line feed, count a line */
                        ++nl;
                              /* If space, tab, CR or LF */
                if (c == ' ' || c == '\n' || c == '\t' || c == 0x0d)
                        inword = NO;
                else if (inword == NO) {
                        inword = YES;
                        ++nw; /* count a word */
                }
        }
                              /* print results */
        printf("number of lines = %u\n",nl);
        printf("number of words = %u\n",nw);
        printf("number of chars = %u\n",nc);
}
```

Original listing in 'C'.

BDOS Function Summary

Func	Function Name	Input Parameters	Output Results
0	System Reset	none	none
1	Console Input	none	A = char
2	Console Output	E = char	none
3	Reader Input	none	A = char
4	Punch Output	E = char	none
5	List Output	E = char	none
6	Direct Console I/O	see def	see def
7	Get I/O Byte	none	A = iobyte
8	Set I/O Byte	E = iobyte	none
9	Print String	DE = &buffer	none
10	Read Console Buffer	DE = &buffer	see def
11	Get Console Status	none	A = 00/ff
12	Return Version Number	none	A = version
13	Reset Disk System	none	see def
14	Select Disk	E = disk number	see def
15	Open File	DE = &fcb	A = dir code
16	Close File	DE = &fcb	A = dir code
17	Search for First	DE = &fcb	A = dir code
18	Search for Next	DE = &fcb	A = dir code
19	Delete File	DE = &fcb	A = dir code
20	Read Sequential	DE = &fcb	A = err code
21	Write Sequential	DE = &fcb	A = err code
22	Make File	DE = &fcb	A = dir code
23	Rename file	DE = &fcb	A = dir code
24	Return Login Vector	none	HL = login vect
25	Return Current Disk	none	A = disk no
26	Set DMA Address	DE = &dma	none
27	Get &alloc_vec	none	HL = &alloc_vec
28	Write Protect Disk	none	see def
29	Get R/O Vector	none	HL = R/O vector
30	Set File Attributes	DE = &fcb	see def
31	Get &dpb	none	HL = &dpb
32	Set/Get User Code	see def	see def
33	Read Random	DE = &fcb	A = err code
34	Write Random	DE = &fcb	A = err code
35	Compute File Size	DE = &fcb	fcb.ranrec, fcb.ovflow
36	Set Random Record	DE = &fcb	fcb.ranrec, fcb.ovflow

Table 1. BDOS functions. Notes: 'see def' means that the reader is referred to the Digital Research manual 'CP/M 2.0 Interface Guide' for full details. The '&' symbol means 'address of'; 'fcb' = 'file control block'; 'dbp' = disk parameter block'; 'alloc vec' = 'allocation vector'; 'fcb.ranrec' and 'fcb.ovflow' refer to the random record number of a file control block.

job now is to translate this into assembler. Fortunately it's not too difficult, except for those areas where the C compiler or function library does something for us automatically, like file buffering or printing a decimal number.

CP/M File Access

So far in this series, we haven't had to interface anything to CP/M, so before we start coding up this example it seems appropriate to provide a short tutorial on the CP/M file system.

CP/M is split up into three major parts: the BIOS (Basic Input/Output System), which is the hardware-dependent part; the BDOS (Basic Disk Operating System), which is the logical part of the disk operating system proper; and the CCP (Console Command Processor) which is the program that puts up the A› prompt, contains the TYPE, ERA and other commands, and will load and run your programs.

The BIOS does not concern us here. We are primarily concerned with the BDOS functions for opening and reading files and writing to the console, as well as with a couple of services the CCP performs for us.

The BDOS is entered via a single jump, located at 0005H, down at the bottom of memory. The user tells the BDOS which function he/she wants performed by passing the function number in the C register, and where necessary passing any data in the DE register pair. If the BDOS returns a result it will be in the HL register pair, in the case of a 16-bit value or address, or in the accumulator for characters, error codes or other single-byte values.

What are these functions? Table 1 lists the BDOS functions, together with values passed and returned. The '&' symbol, by the way, indicates 'address of', as in the C programming language.

The functions of most interest to us are numbers 2 (console write), 9 (print string), 15 (open file) and 20 (read next record). The program will use these functions to print results and to read the text input from a disk file.

The operation of the CCP is also very important, as it will do some useful work for us. When you type 'WS *filename*' at the CCP command line in order to edit a file, the CCP does a number of things.

First it locates WS.COM on the current disk and loads it. That much is obvious. It also examines the filename typed after 'WS', and translates it into the standard CP/M form, with eight characters before the point and three after, with spaces padding out empty character positions. It then places this filename into a special area of memory called a file control block, which will be used by CP/M to keep track of the file. The FCB is always located at address 005CH (there's another at 006CH which is also initialised by the CCP if necessary).

The CCP will also set up the BDOS to transfer from files into a default buffer area at location 0080H, which is the 128 bytes just below where our program resides, at 0100H. This is the buffer we shall use for this program; it saves us having to tell the BDOS we shall be using another.

Finally, the CCP copies the command line tail (the filename in this case) into the first few bytes of that buffer, so that we can examine it to see if any options have been specified by the user or whatever. All this is done by the CCP before it hands control over to our program.

Next month, the program itself. □

Getting dBest From dBase

Part III

Now all that information is in the database, how do you get it out again? Les Bell answers that question in this month's installment.

NOW THAT we've constructed a database file – in this case BKINV.DBF, containing a bookshop inventory (see previous issues) – we need to obtain information from it. There are a number of different commands to do this, and these will be the subject of this article.

Last month we covered the DISPLAY command; there are several others we can use to examine the database. DISPLAY defaults to just displaying the current record, and to examine others we must position the database using the GOTO command. For example, GOTO 4 will position the system to record number 4 – in this case, a software design book. (Just typing the record number will do the same thing.)

Remember that DISPLAY will accept a scope value – in other words, expressions like DISPLAY NEXT 5, or DISPLAY ALL. Notice that DISPLAY NEXT n will set the system to point to the last record displayed, so the next DISPLAY NEXT will continue from there. This can be useful for quickly paging through a database.

An alternative to DISPLAY ALL is LIST. It will accept similar conditions and field specifications to DISPLAY, so that LIST TITLE, PUBLISHER OFF FOR STOCK ‹ 15 is perfectly valid.

Another useful command when manually examining a database is COUNT. For example, we need to know how many titles are out of stock. This is achieved by the command COUNT FOR STOCK <= 0. (In some stock systems, stock could conceivably go below zero to indicate back orders).

Similarly we need to know how many titles are below the re-order quantity. The command COUNT FOR STOCK < REORDER will do this. Are there any books which have gone below the reorder level for which we have not placed a new order? The command to find this out is more complex, but just as logical: COUNT FOR STOCK <REORDER .AND. BACKORDER = 0. Notice the FORTRAN-style stops around the logical AND.

Suppose we need to find out how much money we are committed to pay for books we currently have on order. How would this be done? This is really very easy with dBASE, and shows why the program is so popular.

The SUM command will sum an expression over a group of database records. In other words, it runs through a specified section of the database, repeatedly performing a calculation on each record, and sums the results and displays the answer.

your computer tutorial

So, to work out how much money we'll need for stock in the next month or so, the command is SUM BACKORDER * BUY:PRICE. That's all.

For those books which aren't on order, the BACKORDER quantity is zero, so they won't affect the total. If you want a belt and braces approach to the problem, try SUM BACKORDER * BUY:PRICE FOR STOCK ‹ REORDER; that's perfectly valid dBASE too.

How much profit are we going to make on those books once we've sold them? That's almost as easy: SUM BACKORDER * (SELL:PRICE – BUY:PRICE).

Simple Reports

Often we need the stock situation printed out and summarised – say, once a week – so we can take it away for reference. It's not always convenient to enquire directly with the computer to find out whether something is in stock, particularly when the stock turns over fairly slowly.

dBASE allows us to prepare a report of the stock situation (or indeed of any other database). These reports are quite simple, and are easy to knock up in just a few minutes with no programming knowledge.

The REPORT command asks the user for the name of the report. If the report has been run before, then dBASE will have stored away the report specifications and will immediately produce it. Otherwise, it starts asking the user questions. Here's a typical session with the report generator, with some comments interspersed:

```
. REPORT
ENTER REPORT FORM NAME: GENERAL
ENTER OPTIONS, M=LEFT MARGIN, L=LINES/PAGE, W=PAGE WIDTH L=60,W=80
PAGE HEADING? (Y/N) Y     (This heading is centred at top of page)
ENTER PAGE HEADING: General Stock Report
DOUBLE SPACE REPORT? (Y/N) Y
ARE TOTALS REQUIRED? (Y/N) Y(These are at the end of the report)
SUBTOTALS IN REPORT? (Y/N) N(These are printed whenever a
                             control field changes)
COL     WIDTH,CONTENTS
001     30,TITLE
ENTER HEADING: Title;=====   (The ;== indicates underscoring
002     15,AUTHOR            on the next line)
ENTER HEADING: Author;======
003      5,STOCK
ENTER HEADING: Stock;=====
ARE TOTALS REQUIRED? (Y/N) y
004      5,BACKORDER
ENTER HEADING: Backs;=====
ARE TOTALS REQUIRED? (Y/N) y
005     10,BUY:PRICE * STOCK   (Here we're printing an
ENTER HEADING: Value;=====     expression)
ARE TOTALS REQUIRED? (Y/N) y
006
```

Now here's the report that was produced by dBASE:

General Stock Report

Title	Author	Stock	Backs	Value
Your IBM-PC. Use Applications and BASIC	David E Cortesi	47	0	634.50
Mastering CP/M	Alan R. Miller	23	25	402.50
Inside CP/M, A Guide for Users and Programmers	David E Cortesi	33	0	808.50
8080/8085 Software Design Book 2	Titus, Larsen & Titus	8	0	90.80
8080/Z80 Assembly Language	Alan R. Miller	12	0	[illegible]
Programming the IBM Personal Computer BASIC	Neil Graham	27	0	[illegible]
BASIC Computer Programs for Business	Charles D Steinberg	18	0	171.00
Economics	Samuelson	20	0	480.00
The Greatest Thinkers	Edward de Bono	7	0	129.50
Doing Business With Pascal	Hergert & Hergert	15	[illegible]	[illegible]
Management of the Sales Force	Stanton & Buskirk	[illegible]	[illegible]	[illegible]
TOTAL		222	45	3580.83

Notice that when a column is too narrow to fit a database field, dBASE will automatically split the contents over two lines. Also notice the use of an expression to calculate the value of the stock. The result shows how much we have spent on stock, for each title, and then total stock at the bottom of the report.

The report command, just like most dBASE commands, will accept a scope value and a FOR expression. Thus the command REPORT FORM GENERAL FOR STOCK < 20 will produce a report for those titles with under 20 copies in stock, while REPORT FORM GENERAL FOR PUBLISHER = 'HRW' will show our stock situation for books published by Holt, Rhinehart and Winston.

The report will naturally be directed to the screen, as many reports will have to be debugged before use. In general, 80 columns is not a lot, and so reports sent to the screen can be rendered illegible by wrapping around the screen or disappearing off the edge. A 132-column printer is a much better device for business reports.

To send the report to the printer, exactly the same command is used, with the words 'TO PRINT' at the end. It's as simple as that.

These simple reports have a number of limitations. First, with the exception of dBASE's wrapping words round to fit into columns, each record of a database must be printed on a single line. Thus, when a complex database is used, with many fields, and a report which shows them all is required, this simple report cannot be used.

To get around this, the user will need to write a program, but as we'll see, this is not difficult, particularly since dBASE provides some very powerful formatting commands.

One facility the report generator provides which we did not use is subtotalling. This facility provides subtotals on the page whenever a specified field changes value. For example, we might want a report broken down by publisher, with subtotals for stock on hand and value for each publisher.

Now, if you LIST PUBLISHER, you'll notice that although several publishers appear more than once, they are scattered throughout the file, so that each subtotal will appear after only one book; in other words, we'll have lots of useless subtotals for each publisher. We need to organise the file into publisher order, so that the publisher field only changes once all the books from a particular publisher have appeared.

That particular subject is next month's topic, so for now, you needn't follow the details. Just type INDEX ON PUBLISHER TO PUBIND, and dBASE will create an index file which will let it retrieve records in publisher order. Now, if you run REPORT FORM GENERAL, you'll find that the report appears in a different order from last time (although the report does not contain the publisher field, so it's not obvious that it is actually in publisher order).

Now, try this report:

```
. REPORT FORM BYPUBS
ENTER OPTIONS, [illegible]
PAGE HEADING? (Y/N) Y
ENTER PAGE HEADING: Report [illegible]
DOUBLE SPACE REPORT? (Y/N) Y
ARE TOTALS REQUIRED? (Y/N) Y
SUBTOTALS IN REPORT? (Y/N) Y
ENTER SUBTOTALS FIELD: PUBLISHER
SUMMARY REPORT ONLY? (Y/N) N
EJECT PAGE AFTER SUBTOTALS? (Y/N) N
ENTER SUBTOTAL HEADING: Publisher
COL     WIDTH,CONTENTS
001     30,TITLE
ENTER HEADING: Title
002     15,AUTHOR
ENTER HEADING: Author;
003     5,STOCK
ENTER HEADING: Stock;
ARE TOTALS REQUIRED? (Y/N) Y
004     10,STOCK*PRICE * STOCK
ENTER HEADING: Value;
ARE TOTALS REQUIRED? (Y/N) Y
005
```

Here's the report:

Report by Publisher

Title	Author	Stock	Value
*Publisher HAY			
BASIC Computer Programs for Business	Charles D Sternberg	18	171 00
SUBTOTAL		18	171.00
*Publisher HRW			
Your IBM-PC: Use, Applications and BASIC	David E Cortesi	47	634 50
Inside CP/M, A Guide for Users and Programmers	David E. Cortesi	33	808 50
Programming the IBM Personal Computer. BASIC	Neill Graham	27	302 40
SUBTOTAL		107	1745 40
*Publisher IRW			
Management of the Sales Force	Stanton & Buskirk	12	182 88
SUBTOTAL		12	182 88
*Publisher JWS			
8080/Z80 Assembly Language	Alan R. Miller	12	126 00
SUBTOTAL		12	126 00
*Publisher MGH			
Economics	Samuelson	20	480 00
SUBTOTAL		20	480 00
*Publisher SAMS			
8080/8085 Software Design Book 2	Titus, Larsen & Titus	8	90 80
SUBTOTAL		8	90 80
*Publisher SYB			
Mastering CP/M	Alan R. Miller	23	402 50
Doing Business With Pascal	Hergert & Hergert	15	252 75
SUBTOTAL		38	655.25
*Publisher W&N			
The Greatest Thinkers	Edward de Bono	7	129 50
SUBTOTAL		7	129 50
TOTAL		222	3580 83

You'll see that dBASE has separated the publishers on the report and provided subtotals for each. The summary report is a variation of this one, where the individual records are not printed, only the subtotals and totals.

Next month, we'll turn our attention to indexing, sorting and the various commands for moving around in a file. □

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"She's Apples, Mate"
The All-Australian Program

Jim Rennie looks at two new software products from Computer Cognition, 'The Music-Learning Fun Disk' and 'BASIC For Beginners', for Apple users.

COMPUTER Cognition's latest offerings, 'The Music-Learning Fun Disk' and 'BASIC For Beginners', have both been written by Australians and are aimed at teachers who are looking for suitable Apple software.

The Music-Learning Fun Disk is billed as a new approach to the teaching of music, using sound, colour and encouragement messages.

The disk boots using Wytand's FDOS, bringing up an advertising screen and playing a cheerful tune. From this point, a menu selection allows access to eight different programs, including tutorial and test programs for piano keyboard and bass and treble clef.

The first three programs are tests which present a well-designed visual of the keyboard, bass and treble clefs, and then proceed to ask up to 100 questions related to each area. The student may exit at any time by pressing the escape key, at which point the number of questions attempted, plus the number right and wrong, is displayed.

After each question is attempted, some visual and audio feedback is given to guide the student, but only one attempt at each question is allowed. A wrong answer elicits a negative sound and visual response plus an indication of the correct answer.

The visual design was well thought-out, and the programs are executed quickly, excluding time for disk access to load a hi-res picture. Only one bug was evident: if you select one of the tests, let the program load, then decide to exit before answering any questions, a 'division by zero' error occurs and the program crashes.

Erratic Program Flow

Attempts to restart at this point cause erratic program flow resulting in a mix-up in screen information. The only way out is to re-boot the disk again.

The next three programs, labelled Tutorials for Keyboard, Bass Clef and Treble Clef, are a disappointment if you're expecting some form of computer-assisted instruction, as they are merely two or three pages of hi-res information presented in sequence.

The graphics are, once again, well designed and executed, but from a teaching viewpoint the technique is poor, for it is no more complex than a series of pages from a book.

In the case of the bass and treble clef mnemonics, the second page, which shows the full mnemonic, is inverted when compared to page one (the clef and notes only). If visual information is not displayed consistently, and in a logically correct relationship, then much of the learning benefit that visual information can provide will be lost.

There are two more programs on the disk; the first, Apple Paddle Player, allows control of the Apple speaker output by use of the game controller. Rotating the game controller knob raises or lowers the frequency of the output sound, and pressing the fire button dictates the duration of each note. I found the output sound fascinating at first; some interesting effects can be created if you keep the fire button depressed and keep moving the paddle pot.

The other program is a guitar tuning utility which produces short bursts of sound at the fundamental frequency of each of the six guitar strings. I am not a guitar player so I can't testify to the usefulness of this program, but I was impressed with the thought put into it.

The overall impression I gained from all the programs on this disk was one of undeveloped but potentially excellent teaching programs. They certainly do represent a new approach to teaching music, but the material as presented lacks any information to encourage a teacher to use the programs and has no guidance on how they could be used.

The programs have some minor bugs, and I consider the inverted mnemonics to be unforgivable, but for the teacher with access to an Apple and an interest in teaching music I would suggest considering this as a potentially interesting resource.

CAI BASIC Tutorial

BASIC for Beginners is a course of seven tutorial lessons designed to introduce the Apple II keyboard and Applesoft BASIC to novice programmers, although many of the commands and functions used are common to other versions of BASIC.

The tutorials are supplied on a disk with the lessons on one side and tests for each lesson on the other. Additional documentation is supplied in the form of a 14-page booklet which contains notes on how to conduct the course, the objectives for each lesson and practice examples. Completion of these examples is not mandatory to complete the lessons.

Objectives stated for each of the lessons are:

1. To familiarise the student with the Apple II keyboard and special function keys.
2. To use RUN, CONT and PRINT (for strings) and to teach the modes of operation of the computer – IMMEDIATE and PROGRAM modes.
3. To use FLASH, NORMAL, INVERSE and SPC with PRINT statements, and to show the effects of using a semi-colon or a comma after PRINTing a string. Line numbers and the symbols used for mathematical operations are also introduced.
4. To show the correct order of operation of the mathematical operators, REM and HOME command usage, output of string and numeric variables and the use of variables as counters.

5. To use LIST, GOTO, GOSUB and RETURN. Loops are introduced here.
6. Use of INPUT, INT and NEW.
7. Use of RND.

On loading the program a series of advertising screens is produced, ending with a lesson menu. Any of the seven lessons or a demonstration lesson may be selected. Choosing a lesson produces more advertising screens, an indication of which lesson has been selected and a request for your name, this being used in feedback messages throughout the lesson.

Each lesson consists of an explanatory text, examples and questions on each command or operation instructed. These are mainly multi-choice and if an incorrect answer is given three times then the explanatory text is repeated for that section. Positive feedback in the

form of congratulatory messages is given for correct answers.

How To Top-Score

Unfortunately, the test questions on the 'flip side' of the disk are duplicated for the examples, so the student's retention would have to be very low to get the wrong answer in the tests. At the end of the lesson, a series of questions is given as a revision test – again the same ones. Finally, a score is given as to how many questions were attempted and how many were answered incorrectly – by this stage surely not many!

This form of instruction was shown to be effective, however, when a ten-year-old with no programming experience or knowledge of the Apple keyboard was given the first two lessons to complete. Both lessons took an hour, and all tests were passed without error. Retesting the following day again gave a 100 per cent score.

Several programming errors were evident throughout the course; although not serious, they detracted from the presentation. The most annoying of these involves using the space bar to move on to the next part of the lesson. Often, pressing the bar only results in the message 'PRESS SPACE BAR TO CONTINUE', meaning that a second input is required to continue the lesson. One tends to press the bar twice out of habit, only to find that for once one input is required, thereby causing a page of the lesson to be missed.

Bad output formatting causes messages such as '2SQUARED IS 4' . Although only minor errors, they should have been detected during program development. Another example is in test 3, where every time 'CORRECT' is output in reply to an input answer, it is followed by 'COPYRIGHT C' - again minor, but annoying.

It is difficult to see where this product could be used to best effect, as all the information contained in the tutorials is available from handbooks supplied with the Apple II. For those who are prepared to read these and try each command as suggested, this disk is unnecessary, as the commands and functions will be learnt just as easily in this way.

It might be useful as a resource disk in the library of a person who regularly teaches BASIC to groups with no computer experience. It could also be useful to someone who needs some direct instruction in BASIC before trying to grapple with the sometimes convoluted explanations in most computer handbooks.

Reasonable Products

Despite my criticisms, both the products reviewed could be useful in appropriate situations. There is, however, no need to force the user to sit through the same opening sequence every time a program is booted, as it quickly becomes boring and eventually annoying. Perhaps a fast-boot sequence would make it possible to eliminate the advertising screens and music sequences, after you have seen them once, if you choose.

The other annoyance I found was the copy-protection techniques used – these effectively prevent any alteration to the present programs to make them more usable to a specific teaching situation.

As a teacher, I'm fully aware of the need for some device to preserve the rights of the software author, but I will always prefer software that I can change to suit my particular needs. □

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Documentation:			✓	
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Program:	CAI BASIC Tutorial			
Distributed by:	Computer Cognition			
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	and first time computer users			
Hardware Reqd:	Apple II 48k, DOS3.3			
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Getting Friendly, Part Four

Accessing Indexed Files

Continuing his series on getting the best out of BASIC, Jeff Richards looks at four procedures involved with retrieving records from an indexed data file via the index – simple list, search, wildcard matching and building an alternative index.

HAVING CONSTRUCTED a data file with a memory-resident sorted array index (see *Your Computer*, September 1983), we can turn our attention to the means by which we can use the index to extract the information from the file. All the necessary procedures to use the index have been covered in the ADD and DEL procedures, so it is only necessary to put the procedures to use in the file access routines.

The simplest way to access the file is in sequential order, or a simple list; the technique for this should be obvious from the discussion of the sorted index in previous parts of this series of articles. All we have to do is to work through the array of pointers from one to the number of items on file, and read the records from the master file at the location pointed to by the array entry.

We do not even have to consult the array of keys, as the way the index has been maintained has ensured that the pointer array is in the sequence of keys in the key array. A program to produce a simple listing of the items on file is presented in listing 1. Notice at this stage that the data items are just strings of characters – a result of the shortcut we took in generating the data for the file in order to keep the ADD routine simple.

The simple routine listed here just prints out the first 20 bytes of the record. In practice, the data in the record would be formatted, with headings and so on. In addition, extra selection criteria might be applied, depending on the nature of the report involved. For example, if we are printing a report on overdue debtors' accounts, we might want to ignore records which indicate that no amount is overdue.

This is a decision that is made after the data record is retrieved and examined, and is therefore not really a part of the present discussion. That is, the LIST routine is simply concerned with retrieving the data records in sequence – it does not concern itself with what the program then does with the data.

The next task for which the index can be used is to retrieve a particular nominated record from the master file. The record will be nominated by entering its key. The same search routine as used in the ADD and DEL routines will be used to search for the key in the key array, and to return either a 'not found' message, or the item as read from the master file. Listing 2 is the relevant part of this routine. Add lines 10 to 140 from LIST to make a complete program.

Note that in the FIND routine (as in ADD and DEL) the key that the operator enters is extended with spaces up to a length of ten bytes before the key array is searched. This means the comparison with the key array is simplified – allowance does not have to be made for the differing lengths of keys. It also means that the key can have embedded spaces, if desired. The result is that all the keys the system deals with are exactly ten bytes long, regardless of how long the operator regards them as being.

Lost Your Key?

What can be done if we do not know the precise key of the item for which we are searching? There are many different forms in which assistance could be provided to find the correct item, but the usual method is known as wildcard matching. It is not difficult to extend the FIND procedure to include wildcard matching. The example presented here includes two forms of wildcard. The key to be searched for can include '?', which is taken to mean any one character, and in addition all keys which include at least the specified characters will be returned.

For example, in the case of the wildcard character '?', an operator entry of AB?D would return keys ABCD, ABDD, ABED and so on. In the case of the 'at least' matching, it would also return ABCDE, ABCDEF, ABCDEFG ... The routine listed here would return all the above keys.

Listing 3 is the relevant part of the MATCH procedure – add lines 10 to 140 from Listing 1 to make a complete program. The matching works by first truncating the array item (X$) to the same length as the search key, which means that additional characters in the array item are ignored – the 'at least' part of the matching. Secondly, wildcard characters ('?') that were in the search key are copied into the array item, so as to force a match if the other characters fit the pattern.

This routine scans the whole of the array index in its attempts at a match. It would be possible to make it a little more intelligent by starting the scan at the first array item that could possibly fit the search key and terminating it as soon as the possible items were exhausted.

This would involve building a dummy key that consisted of the left-most unambiguous characters of the search key (in this case AB) and doing a search for this key. The point in the array at which the search ended (successfully or not) would be the starting point for the scan. Then the ASCII value of the right-most digit of this dummy key is incremented (creating AC) and again searched for. The result of the search now marks the end point of the scan.

In practice, the searching of memory-resident arrays is so fast that the extra sophistication is not needed; however, in the case of disk-resident arrays it could well be worthwhile.

Constructing Different Array Indexes

Finally, why do we have to restrict ourselves to searching the file by the master indexing array? There is no reason we can't construct a different ▶

array index and use it in the same way as the master index – to list or search the file.

For example, a name and address file might normally be indexed on a reference number as key. By creating a special sorted index of postcodes we could use the index to work through the file in postcode sequence, discarding the index when the printout is complete.

A procedure to do this would be similar to the REBUILD procedure previously discussed, except that the field that was to constitute the key would be nominated by the operator.

Note that with Microsoft BASIC-80 it is perfectly valid to treat integers in random access records as alphanumeric items for such purposes as sequencing, providing any peculiarities of the storage method are taken into account. Thus the key to be specified for a temporary index could well be defined simply as a sequence of locations within the data record. Whether such locations actually contain numeric or alpha information need be of no concern to the array-building procedure.

For an example of this technique see listing 4. The procedure works by accessing the file through the primary pointer array, and replacing the keys in the key array with data from the nominated area of the file. The two arrays are then sorted into the sequence of the new keys, and the sorted pointer array is used to print the file in its new sequence.

Try it for the existing file with a key of (2,9) to get the file sequenced on the second character of the master key. Note, of course, that the data items have not altered their storage locations in the data file – we have simply altered the sequence in which we extract the items from the file.

An alternative approach would have been simply to read the data in the master file sequentially, building up the two arrays and then sorting them. This has the disadvantage that allowance has to be made for empty records in the data file – an allowance that has not been provided for in these examples. (Remember that empty records can occur because we do not 'pack' the data file after deletions – we simply put the record number of the deleted item back into the free list.) However, this approach would be very suitable for creating a sorted index for a data file that was not originally created as an indexed file.

Although this example selects the new key from a single region of the data file, there would be no difficulty in extending the procedure to build compound keys. Such a key might consist of four characters of postcode followed by twelve characters of suburb, to give a suburb-within-postcode sequence. The limit of ten characters that was imposed for the master key was simply to permit its region in the data record to be defined – the limitation does not apply to alternative keys.

Because the new array is not written back to disk, the master index is unaltered. Whether or not the new array was written to disk would depend on the reason for constructing it in the first place. If it was only built for a particular report, then it could be discarded when the report was completed. If it was required for a series of reports then it could be written away.

Then, when the alternative key index was no longer needed, the master index would be created by running the resequence routine again and nominating the region to be indexed as the region in the data file that contains the master key – in our case bytes 1 to 10 of the record. This is the main reason the master key was written away as part of the data record in the first place.

Similarly, there is no reason the master index and one or more alternative indexes cannot be maintained at the same time. The routines presented in this series have all assumed there is a single index in a file called INDX, but if this was made variable then the operator could indicate at the start of each routine which index was desired – INDX1, INDX2, and so on. Since we have stored the status information with the data records rather than in the index file, the routines are indifferent as to which index file is actually in use.

Constructing the alternative indexes from the master index is perhaps easier than dealing with multiple indexes during the ADD and EDIT procedure, as long as the regimen of reconstructing the alternative index after any alteration to the master index is strictly enforced. This would mean that access for ADD and DELete (and perhaps EDIT) routines would have to be by the master index, but access for enquiry and listing could be by any index.

The routines presented here cover the full range of file access methods applicable to indexed files. The two basic methods – list and find – cover most of the requirements of ordinary data processing, but can be easily extended to include more complex requirements. The routines are still relatively compact and will run quite quickly. Despite this simplicity, powerful and efficient data maintenance systems can be built out of such routines. □

Listing 1 - Sequential LIST

```
10  DEFINT A-Z
20  OPEN "R",#1,"MAST",80
30  OPEN "R",#2,"INDX",12
40  FIELD #1,2 AS NXT$,2 AS MAX$,2 AS CNT$
50  FIELD #1,80 AS REC$
60  FIELD #2,10 AS KEY$,2 AS POINTER$
70  GET #1,1
80  COUNT=CVI(CNT$)
90  DIM K$(COUNT),P(COUNT)
100 FOR I=1 TO COUNT
110  GET #2,I
120  K$(I)=KEY$
130  P(I)=CVI(POINTER$)
140 NEXT I
150 PRINT "LISTING RECORDS"
160 FOR I=1 TO COUNT
170  GET #1,P(I)
180  PRINT I,P(I),K$(I),LEFT$(REC$,20)
190 NEXT I
200 STOP
```

Listing 2 - FIND routine

```
150 PRINT "FINDING RECORDS"
160 INPUT "Key = ",I$
170 IF I$="END" GOTO 320
180 IF LEN(I$)>10 GOTO 170
190 J$=STRING$(10,32):LSET J$=I$:I$=J$
200 LO=1:HI=COUNT
210 NOW=0
220 PREV=NOW
230 NOW=(LO+HI)/2
240 IF K$(NOW)=I$ GOTO 290
250 IF K$(NOW)<I$ THEN LO=NOW+1
    ELSE HI=NOW-1
260 IF PREV<>NOW GOTO 220
270 PRINT "NOT FOUND
280 GOTO 160
290 GET #1,P(NOW)
300 PRINT NOW,P(NOW),I$,LEFT$(REC$,20)
310 GOTO 160
320 STOP
```

Listing 3 - MATCH routine

```
150 PRINT "KEY MATCH"
160 INPUT "Key = ",I$
170 IF LEN(I$)>10 GOTO 160
180 L=LEN(I$)
190 FOR I=1 TO COUNT
200  X$=K$(I)
210  X$=LEFT$(X$,L)
220  FOR J=1 TO L
230   IF MID$(I$,J,1)="?"
      THEN MID$(X$,J,1)="?"
240  NEXT J
250  IF X$<>I$ GOTO 280
260  GET #1,P(I)
270  PRINT I,P(I),X$,LEFT$(REC$,20)
280 NEXT I
290 GOTO 160
```

Listing 4 - Temporary Sorted Array.

```
150 PRINT "FILE RESEQUENCE"
160 INPUT "KEY LOCATION =(START,LENGTH)",S,L
170 FOR I=1 TO COUNT
180  GET #1,P(I)
190  K$(I)=MID$(REC$,S,L)
200 NEXT I
210 N=COUNT
220 GOSUB 280
230 FOR I=1 TO COUNT
240  GET #1,P(I)
250  PRINT I,K$(I),P(I),LEFT$(REC$,20)
260 NEXT I
270 STOP
280 BM = N:ST = N
290 BM = INT (BM/2): IF BM = 0 THEN RETURN
300 BK = ST - BM: BJ = 1
310 BI = BJ
320 BL = BI + BM
330 IF K$(BI) < K$(BL) GOTO 370
340 SWAP K$(BI),K$(BL):SWAP P(BI),P(BL)
350 BI = BI - BM
360 IF BI >= 1 GOTO 320
370 BJ = BJ + 1: IF BJ > BK GOTO 290
380 GOTO 310
```

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Archives Personal Computer

Since the biggest single part of a portable computer is the screen, the easiest way to make it smaller is to get rid of the screen, says Les Bell. If the idea of a briefcase-sized portable appeals, then check out the Archives personal computer.

THERE ARE now lots of portables on the market, and more appearing every day. Generally, they subscribe to the 'screen and two disk drives with the keyboard on the bottom' school of computer design, though a few more recent models follow the 'LCD or plasma display and 16-bit processor' theory.

One that neatly leaps outside these patterns is the Archives PC, from Archives in Melbourne. If it looks vaguely familiar, you may have seen adverts for it in US publications, under the name of Pied Piper. However, there's already a Pied Piper in production in Melbourne, so that name had to go, and Archives PC it became.

This machine is one of the most compact and light yet released, mainly because it does not have a built-in video monitor. Basically, it consists of a moderately low-profile keyboard with an integrated processor and memory, and at one end of the package, a slimline 5.25 inch floppy disk.

The keyboard is a little high in comparison with the real low'n'fast models that have appeared recently, but I found it quite easy to use. It has all the usual keys, except there's no numeric pad, and there are only two cursor control keys: the up and down functions are left and right, shifted.

Above the keyboard are three indicators: a green one for power, and two red ones to indicate whether drive A or B is the current drive. The disk drive itself sits at one end of the keyboard, where its activity light is not always clearly visible, so the duplicate is useful.

The rear of the machine sports a standard IEC power connector and switch, a printer output port, video outputs and a reset switch. Also at the rear is a recessed handle which pulls out, making the machine a true 'briefcase' portable. True, you'll still have to carry a monitor in the other hand, but that's manageable. The box of disks and the cables will need a second trip to the car, though.

Inside, I presume there is a fairly standard 64 Kbytes of RAM and a Z-80 of some sort; I say I presume, because this brings me to the major failing of the Archives PC: it is supplied with no technical information at all.

Damn it, we don't need the circuit diagram, but at least some description of the innards is awfully helpful on occasions, just so we know what kind of beast we've got by the tail. Descriptions of input/output ports, a memory map so we can tell what size CP/M system we're running, stuff like that.

But the documentation supplied with the Archives PC contains none of that arcane lore; it seems to assume that the average user will will be scared half to death by it. The most technical thing in the manual is the FCC notice inside the front cover. I get the impression that the manual was prepared by a journalism graduate from some trendy State U; pretty much a case of the blind leading the blind.

Pity, because the machine itself isn't half bad, and the manual certainly looks good: the trouble is it only tells 10 per cent of the story.

I mentioned above the B drive. So where is it, you're asking. Drive B is an optional extra (at around $700) which is connected at the rear of the machine where a couple of blanks pull off to reveal the appropriate connectors.

If the thought of working with only one drive bothers you, be aware that the disk capacity of the bare machine is 784 Kbytes, formatted under CP/M (not that the manual shares this little titbit of information with you – I had to find out for myself!).

With this kind of capacity, working with a single disk drive is much more acceptable. You can put your word processor and utilities on the same disk as the documents, and it's not at all a hassle. The system is supplied with a single- ▶

SOME COMPUTERS ARE BETTER THAN OTHERS

	SPECTRAVIDEO SV 328	SPECTRAVIDEO SV 318	APPLE II E	ATARI 800	COMMODORE 64	BBC MODEL B	DRAGON 32	SPECTRUM
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BUILT-IN ROM	48K	32K	16K	10K	20K	16K	16K	16K
EXPANDABLE TO	96K	96K	N/A	42K	N/A	64K	N/A	N/A
BUILT-IN EXTENDED MICROSOFT® BASIC	YES	YES	YES	ADDITIONAL COST	NO	NO	YES	NO
BUILT-IN RAM	80K*	32K***	64K	48K	64K	32K	32K	16K
EXPANDABLE TO	256K**	256K**	64K	NO	N/A	32K	64K	48K
KEYBOARD FEATURES								
NUMBER OF KEYS	87	71	63	61	66	73	53	40
USER DEFINE FUNCTIONS	10	NO	N/A	4	8	10	N/A	N/A
SPECIAL WORD PROCESSING	YES	YES	NO	NO	NO	NO	NO	NO
GENERATED GRAPHICS (FROM KEYBOARD)	YES	YES	NO	YES	YES	YES	YES	YES
UPPER/LOWER CASE	YES	YES	YES	YES	YES	YES	YES	YES
GAME/AUDIO FEATURES								
SEPARATE CARTRIDGE SLOTS	YES	YES	NO	YES	NO	NO	YES	NO
BUILT-IN JOYSTICK	NO	YES	NO	NO	NO	NO	NO	NO
COLORS	16	16	15	128	16	16	9	8
RESOLUTION (PIXELS)	256x192	256x192	280x160	320x192	320x200	256x640	256x192	256x192
SPRITES	32	32	N/A	4	8	?	16	?
SOUND CHANNELS	3	3	1	4	3	1	3	?
OCTAVES PER CHANNEL	8	8	4	4	9	3	5	3
A.D.S.R. ENVELOPE	YES	YES	NO	NO	YES	YES	NO	NO
PERIPHERAL SPECIFICATIONS								
CASSETTE	2 CHANNEL	2 CHANNEL	1 CHANNEL	2 CHANNEL	1 CHANNEL	2 CHANNEL	?	?
AUDIO I/O	YES	YES	NO	YES	NO	?	?	?
BUILT IN MIC	YES	YES	NO	NO	NO	NO	NO	NO
DISK DRIVE CAPACITY	256K	256K	143K	92K	170K	100K	?	?
(LOW PROFILE)	YES	YES	NO	NO	NO	NO	NO	NO
CP/M® COMPATIBILITY (Standard 80 column								
CP/M® 2.2 programs)	YES	YES	NO****	NO	NO*****	YES	NO	NO
CP/M I*	YES	YES	NO	NO	NO	NO	NO	NO

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* 64K user addressable plus 16K graphic support
** 240K user addressable plus 16K graphic support
*** 16K user addressable plus 16K graphic support
**** Apple II can accept modified 40 or 80 Column CP/M
***** Commodore 64 accepts 40 column CP/M
? Data not available

OURS IS MUCH BETTER

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drive copy utility, which makes the one-drive system more bearable.

However, for serious use, a second disk drive really would be a must. No problem; leave the second drive in the office, and just use a single drive when portable. To run the accounting package in the office, just attach the second drive.

Software

The system comes with a complete suite of Perfect Software: Perfect Writer and Speller, Perfect Filer and Perfect Calc. Perfect Writer and Speller, in particular, chew up disk space with their various swap files and 'virtual memory' operation, not to mention the dictionary, so at first I was a little hesitant about single-drive operation; however, with 784 Kbytes to play with, there's no problem.

I've written on these pages before about the Perfect Software (April 1983), so I won't go into any depth on this occasion. It certainly seems to work and does all that is claimed for it, and it has the virtue that all the software uses the same (or similar) commands for cursor movement and so on. It's not to my personal taste, as I find the commands and meta commands confusing and poorly organised, but others swear by it.

The screen display is very nice; I used the PC with my Sanyo monitor and it came up just lovely. The display is crisp and clear, with a solid block cursor which is ideal for word processing work. Archives will have selected a matching monitor to go with the PC by the time you read this, but really almost any decent monitor will do. There isn't room to sit the monitor on top of the computer, though.

Other options for the Archives PC include a communications kit, which comprises two RS232C ports, or alternatively one RS232C port and a modem, plus communications software. The comms kit will probably cost around $300. A TV modulator will also be available.

The documentation for the software is fine; it's the standard Perfect manuals which are nicely laid out in a tutorial style and contain plenty of information.

As for the manual for the computer itself, there's a 78-page booklet which covers all of CP/M, plus the format and copy utilities supplied by the manufacturer. The chapter on CP/M is titled 'Communication Languages' - and would you believe just one page on STAT?

So, to sum up, the Archives PC is a nice little machine with heaps of disk storage, enough software to get the new owner off to a flying start, and lots of potential from then on. But please, please, Archives, do something about that manual!

At the price of just $2394 including tax, the Archives PC will be deservedly popular. ❑

Specifications and Report Card

Unit:	Archives PC
Made by:	Semi-Tech Microelectronics Corporation
Processor:	Z-80A
Clock speed:	??
RAM:	64K
ROM:	??
I/O:	??
Languages:	Assembler, though CP/M languages will be available
Keyboard:	QWERTY, slightly restricted
Display:	80 by 24, external monitor
Graphics:	Could be(?)
Peripherals:	Printer
Expansion:	Serial ports
Best points:	High-capacity disk drive
Worst points:	That manual!!

Ratings:	**excellent**	**very good**	**good**	**poor**
Documentation:				• (and worse)
Ease of use:		•		
Functionality:		•		
Support:		•		
Value for money:		•		

Options:	Extra disk drive, serial comms
Price:	$2394 inc. tax
Review unit from:	Archives Computers (Australia), 163 Clarendon St, South Melbourne 3205, (03) 699-8377; or 16th Floor, 55 Lavender St, Milsons Point 2061, (02) 922-3188.

your CP/M computer

By Bill Bolton

ETI Modem Update

SOME TIME AGO I sent Trevor Marshall a long collection of messages from my RCPM system about problems with the ETI modem that Trevor designed. While I was in Los Angeles on my recent trip to the US, I visited Trevor and collected his reply.

In case you're wondering why this is appearing in *Your Computer* and not in ETI where the project appeared ... well, eventually it will appear in ETI. The quickest way for me to get it into print (to beat the various magazine deadlines) and for you to be able to use the information is for me run it in this column. This information has been available on line on my RCPM system since mid-August, but I was anxious to get a broader distribution of it. Enough chitchat, over to Trevor.

Thousand Oaks RBBS, 3423 Hill Canyon Ave, Thousand Oaks, CA 91360. 24 July 1983.

From: Trevor Marshall
To: All ETI modem users (via Bill Bolton)

Re: Operating experience with ETI modem on Bell 103

Since April 1982 the ETI modem (prototype) which I have adapted to the BELL 103 system frequencies (by changing only the diode array) has been performing well at 300 and 600 baud across the USA.

In January 1983 I added an APPLECAT 212 add-on card to give my RCPM Bell 212 1200 baud PSK full duplex capability, but left the ETI to handle the 300 and 600 baud FSK operation. The values that I currently have in my circuitry differ slightly in some cases from those published in ETI, mostly due to optimisation under operating conditions.

Several months ago Bill Bolton showed me messages from some of you who seemed perplexed by the complexity of the design. To the best of my knowledge there are no serious design flaws, and those who have suggested changes to the filter component values obviously missed the whole point of the diode/variable-filter design.

Unfortunately I can't help much in CCITT filter optimisation, but the settings I use for BELL 103 originate are FC in answer mode (F=lowpass, C=Highpass) and 73 in originate. I use 0110 for the digital (data smoothing) filter. All these settings offer equally good performance for both 300 and 600 baud and I don't reprogram them.

Bruce Orr rightly pointed out that operation at 75 baud is marginal. The design was executed to give optimum performance with 300/600 baud, and the 1200/75 mode was given very much less attention. I hoped that once the modem was made available to the hobbyist, its performance would be maximised by the combined efforts of many, not just my own.

In my defence, however, the 4528B (IC4) was originally specified to be a Motorola part. In addition I specified C5 and C9 to be 5 per cent polystyrene capacitors. I tested many of these for balance and found few problems. As I left for the USA long before the article was published, communication was difficult, and I was unable to exercise as complete a control over the project quality as I had hoped.

The errata Matt Whelan gave refer to faults on the PCB, which I had diagnosed well before the article was published but which never quite got fixed. I never designed or drew a circuit in which C31 went to the junction of D14 and D4. This was a PCB error which should have been fixed (by ETI). You should all know by now that R48 goes to ground, not –6 V.

All in all, however, it appears ETI did a good job with the project (and they even paid me for my efforts!).

One of the first things I found desirable to change was the arrangement for the line hybrid balancer. I changed R93 to 10 ohms. This promptly blew up RL2, so I put a heavier-duty relay in there. It is not involved with the keying speeds and does not need to be a reed relay. I changed IC18 to a TL081. I made RV2 a pot on the front panel, and found a value for C45 and C46 that gave me maximum attenuation of the transmitted carrier from the incoming signal. These changes combined to make the largest single improvement I ever effected in the design.

I changed R91 to 2k7 to give the system more gain, as the phone lines here in California are the worst I have ever come across (they make Sydney look quite good by comparison).

In closing, I often wonder why I have no callers from Australia. There are several who call my 'Thousand Oaks' RBBS system from Britain every week. Surely some of you who work for OTC (I didn't really say that...) could arrange to keep Bill more up to date with what's happening over here. Transfers at Bell 212 1200 baud PSK are really very fast. The ETI modem works on BELL 103, 300 baud FSK. On originate you receive on 2025/2225 and xmit on 1070/1270. Program your lowpass filters as high as possible (1111) and the highpass to about 1650 Hz.

The system currently is on-line 24 hours (least activity is from 2 am to 4 am PST and 4.30 pm to 6.30 pm PST). There are 30 megabytes (some 3500 files) up at last count, with 8086 and 68K and Z8K software just starting to make a showing.

Keep up the good work ... Trevor Marshall

SIG/M and CP/M User Groups

I met up with Bob Todd, the SIG/M distribution co-ordinator, in Philadelphia. SIG/M is really going ahead in leaps and bounds now and has effectively taken over from the CP/M User Group as the major distribution point for CP/M public domain software. The SIG/M collection is now up to 125 volumes. I gave Bob another ten volumes of software I have collected and catalogued from the RCPM system and others, and I know they have other new material coming from other sources.

Strangely enough, while SIG/M is prospering, the general computer clubs in New Jersey and New York, for which it is the 'Special Interest Group, CP/M' (that's where the SIG/M initials originate), are facing falling interest in their activities!

Meanwhile the CP/M User Group is said to have gone 'commercial'. It's a bit hard to interpret what this means but I'm told that Jim Mills, Ward Christensen and the others from CACHE (Chicago Area Computer Hobbyists' Exchange), who have done all the collecting and cataloguing work for CP/M UG, have ceased to support Lifeboat Associates in their distribution of CP/M UG material. I believe Lifeboat is going to continue to distribute CP/M UG material on a purely 'commercial' basis – in other words on the present copying charge basis.

It is now quite a while since CP/M UG issued any new volumes and it seems that most of the major 'names' in the public domain software field who used to contribute material to CP/M UG are now channelling their programs into the SIG/M collection.

Continued on Page 109 ▶

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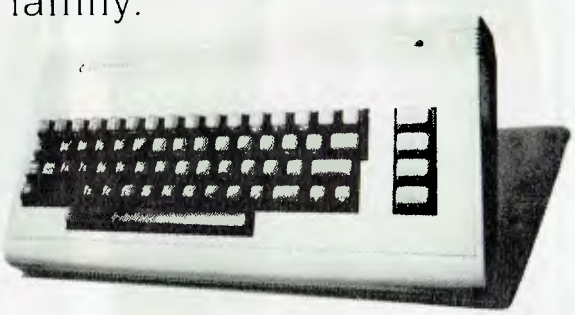

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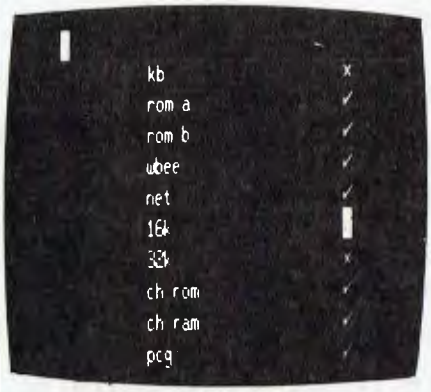

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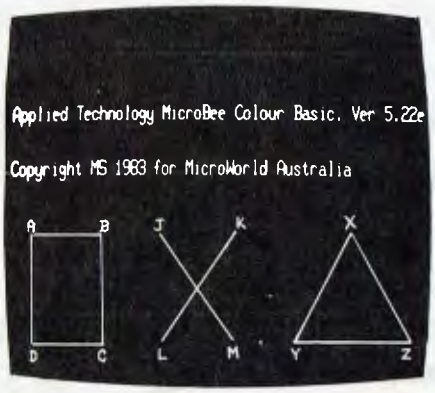
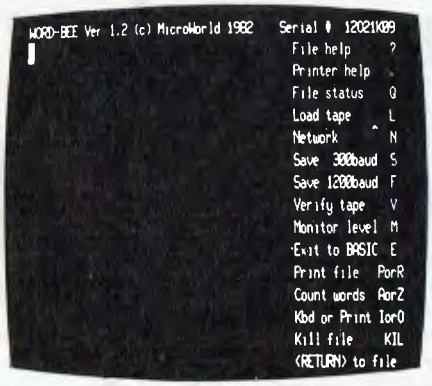


BASIC WITH GRAPHICS

MONITOR

NETWORK



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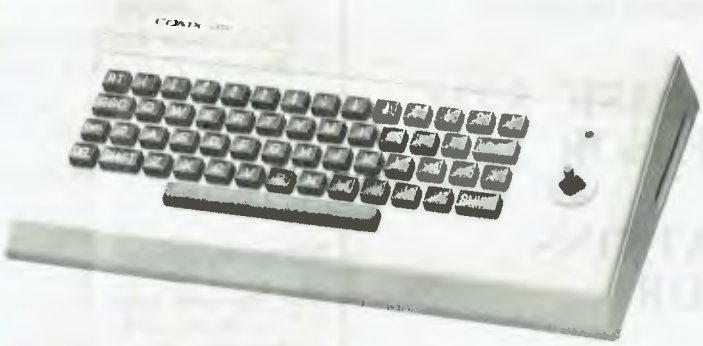

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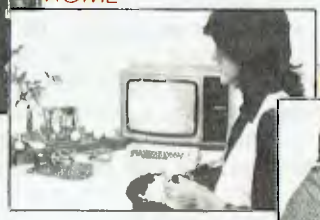

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Continued from Page 104

C User Group

The former 'BDS C User Group' has now changed its name to the 'C User Group' and is now supporting all C users. It recently issued another five volumes of public domain C software. Somehow or other I have ended up with seven new volumes from the CUG and still haven't been able to figure out clearly where the extra ones fit in. The crazy mixture of named volumes and numbered volumes that CUG uses on its software releases doesn't help either! As users of my RCPM will know, I have instituted a consistent number scheme for the CUG volumes and they are now up to volume 35 by my numbering.

SIG/GRAPH

While in the US I attended the SIG/GRAPH computer graphics conference/show in Detroit. Detroit as a city was a real shock! Apart from the convention centre area downtown, the rest of the city seems to be literally falling to pieces. I had to stay way out in the suburbs and had a long trip into the convention each day. The infrastructure of the city is falling to pieces. I had read about urban decay but never dreamed it could be so complete as in Detroit!

SIG/GRAPH was both exciting and disappointing. The artistic quality of the computer-generated images on display was stunning. Having worked on very high-resolution broadcast TV graphics systems, it takes a lot to impress me in terms of computer graphics – but the artistic displays at the SIG/GRAPH computer images exhibition were very impressive!

In contrast, there was little in the way of new hardware or software technology at the SIG/GRAPH show. I didn't really see much I wasn't already aware of. Sure, there were several new manufacturers of graphics hardware and software products, but they seemed to be using existing technology.

The only product I felt was really exciting was from Kodak. That stand had an inexpensive graphics camera set up that sold for under US$200 and produced good-quality 'instant' pictures from almost any CRT screen. The quality wasn't as good as the dedicated flat CRT camera systems (such as from Celtic Technology) but for anyone with only a casual need for hard-copy pictures from a CRT graphics display, the package is incredible value.

That US$200 price included a couple of film packs too. The Kodak hood could also be used with 35 mm cameras using a low-cost adapter. I borrowed a unit from Kodak at the show and had acceptable-quality instant pictures of an APC screen after just a couple of tries, so it was easy to use. Unfortunately, at the time of writing, I can't seem to get anyone at Kodak Australia to even talk to me about the unit (it's called an 'Instagraphic 12', by the way), so I can't tell you when it might be available here.

New From Microsoft

First, Microsoft has bought 'Wiser-Microsoft' and is now running it as an affiliate. The company has a policy which includes holding larger stocks of software in Australia, so it should be easier get hold of Microsoft products.

Microsoft has introduced a 'MS Business BASIC Compiler' for MS-DOS. This is an enhanced version of the standard MS BASIC compiler, with many extensions to give it similar capabilities to Digital Research's CBASIC compiler (CB86). There are some syntactical differences between MS Business BASIC compiler and both the standard MS BASIC compiler and CBASIC compiler, but they are well documented. A utility which will ease the conversion from CBASIC to MS Business BASIC is supplied with the new Microsoft product. MS Business BASIC does support multiple line functions like CB86 but doesn't support local variables within multiple line functions, which CB86 does.

The documentation consists of the standard Microsoft MS BASIC documentation plus an MS Business BASIC Compiler User's Guide, which details the use of the new compiler and the differences from the standard product. Like the standard MS BASIC compiler, two run-time libraries are provided. One requires no further royalty payments for distribution of compiled code, but does not support CHAIN with COMMON and the use of the resident run-time executive. The other does support these features but gets you involved in further royalty payments.

Also new from Microsoft are some support products for MultiPlan. These 'MultiTools' are designed to get common MultiPlan applications such as financial statements and budgets running quickly. Microsoft's US ads claim to get you going in 5.2 minutes. That's a bit of an exaggeration, but these new MultiTools do appear to be very good, from my first quick look at them, and should get MultiPlan applications going very quickly. While I sometimes have harsh things to say about other products from Microsoft, I think their 'Multi' software product line is first class and is certainly setting new standards.

While I think of it, there is a minor problem with the MS-DOS installation package for Multiplan which did cause me some grief while I was doing the APC installation of Multiplan. The installation package would accept some function key definitions (which generated multiple characters) at entry time, but when the installation test package was run, it would not recognise those function keys! After several tries I just gave up trying to get the test routines to work and just completed the installation and went on to test the installed MultiPlan. The function keys all worked correctly when running MultiPlan so the problem is only in the installation package.

APC users will get a pre-installed MultiPlan, as I guess will most others buying it from a machine supplier, so installation shouldn't be an issue to many users, but knowing of a potential trap may save someone else some time.

Continued on Page 111 ▶

8 and 16 bit software

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Continued from Page 109

By the way, does anyone know what the SCROLL functions of Multiplan are supposed to do? The installation program accepts key definitions for four scroll functions and tests them correctly, but Multiplan ignores them completely. The current MultiPlan manual doesn't even mention their existence, referring only to scrolling as an adjunct to the cursor movement function (which is something quite different). Microsoft Australia doesn't know the answer, do any of you?

Despite those two problems with MultiPlan installation, I still think it's a very good product!

DRI C Compiler

The good news about the Digital Research C compiler for 8086 systems is that it does indeed support a memory model larger than just 64K of code space and 64K of data space. The *big* memory model allows a very large data space. I will have more details about DRI C next month.

Legalities

It's about time for the annual reminder that 'CP/M' is a registered trademark of Digital Research and that most programs and products mentioned in this column in a commercial context are registered names and trademarks of the software vendors concerned.

PAMS News

The Sorcerer Users' Group of Australia in Melbourne has put a CBBS system with file transfer capabilities on-line for its members. Limited visitor access is available if you want to have a look around their system. The number is in the list at the end of this column.

Meanwhile in Perth, Paul Taylor has surfaced again with an RMPM system on-line. Paul has only one remote line going into his MP/M system and it is only available for a limited period of time each evening, but it's a start!

Wrong Number

The telephone number given in the August and September issues for the Melbourne CBBS (MICOM-CBBS) was wrong – the number should be (03) 762-5088. We apologise to the long-suffering company which has been fielding all these PAMS calls for the last two months.

PAMS Numbers

Mi Computer Club BBS (MiCC-BBS): (02) 662-1686 24 hours EST
Software Tools RCPM (ST-RCPM): (02) 997-1836 24 hours EST
Micro Design Lab RCPM (MDL-RCPM): (02) 663-0151 24 hours EST
Sydney Public Access RCPM (SPA-RCPM): (02) 808-3536 24 hours EST
Melbourne CBBS (MICOM-CBBS): (03) 762-5088 24 hours EST
Sorcerer CBBS (SUGA-CBBS): (03) 836-4616 ?? EST
Gippsland RCPM (GL-RCPM): (051) 34-1563 24 hours EST
Perth RMPM (WA-RMPM): (09) 367-6068 6 pm-9 pm WST □

your MICROBEE computer

By Richard Pakalnis

JUST A SHORT column this month – I'm always the first to go when we're short of room! It's a review of a great game for the 'Bee, and in following columns I'll have more reviews of various good programs for you.

Okay, Fun Time

Yes folks, no more wondering why there's no A,B or Z in your regs. It's game time!

In June a contribution from Sam Arnold from Mawson, ACT, earned him a 'Merlin' adventure game on the condition he reviewed it for this column. He did, so take it away, Sam....

Merlin – A 32K Adventure For The Microbee

The introduction to the game starts like this: "It is the year 510. Uther Pendragon, High King of England, lies dead from a Saxon sword, and you, Arthur, are the rightful heir to his throne.

"Your country is ravaged by war, but the Council of Nobles does not want a mere boy to lead them in battle. At last it is decided that you will be cast out into the wilds. If you die, it will be of no concern to anyone, but if you survive it will be a sign that you are the rightful king.

"Merlin, the greatest magician in all the world, leads you to the town gate to begin your journey . . . and as the gate is closed behind you, whispers, 'Bring back the sword Excalibur, as only by its magic shalt thou be King. 'Tis said to lie in stone, ringed by fire and water. Beware of these for they can be crossed only by the wise. Thy weapons are a shield and dagger and thy wits. Respect the ancient gods and these shall be enough. If thou art uncertain then a cry of "help" may serve, but in the moment of direst need thou canst call my name. I shall heed thee once, so use care'."

First Impressions

Dreamcards supplies a 54-page booklet with the optional game cassette. The booklet has been divided into four main sections of documentation.

1. Introduction and background information.
2. Documentation about the game includes:
   a) List of variables used in the game.
   b) Flowchart and logic diagrams.
   c) Description of game routines.
3. Conversion of game to other BASICs.
4. Commented program listing.

Don't read sections two through four until you have mastered the game, as these sections are dedicated to the analysis of 'Merlin' and would ruin the main objective of the game; namely to be an adventure.

To load the game takes approximately five minutes, even at 1200 baud, and back-up copies should be made before a single game is played. The program is written in Microworld BASIC Version 5.0 and uses all but 957 bytes of memory of a 32K Microbee, and with little doubt the remaining space would be used for variables and so on.

Playing The Game

Without going into too much detail, the game is easy to play. There are no 'trick situations' to frustrate the adventurer, as the game relies on its subtle, well-written storyline. The aim of the game is simple: return the sword Excalibur to 'Londinium'. There are many strange things and places to encounter and explore during the quest (you know, a quest – not for the 'Holy Grail', but for 'Excalibur'!), so a dictionary of terms used throughout the game is included with the documentation.

After playing the game for several hours, the amateur adventurer should be able to handle difficult situations without assistance, but don't forget that 'help' is available if the need arises, either from the game, from Dreamcards or from a 'Master of Merlin' adventurer.

For those adventurers who use maps, every game of 'Merlin' is different. The aim is still the same, but the layout of the kingdom and the combat strategies will not be.

Conclusions

The documentation provided is excellent, and should be 'standard equipment' for any piece of software, be it a game or otherwise.

The random map generation and combat strategies should hold the adventurer's interest even after the game has been mastered.

'Merlin' is logical and easy to play, well structured (for a BASIC program) and highly recommended – for those adventurers with a 16K Microbee Upgrade!

Thank you very much for your contribution, Sam; the quality of your review is no less than I expected. You'll be getting some more software to review shortly. (Sounds like 'New Faces', doesn't it?) □

GAMES SOFTWARE REPORT CARD

Program:	Merlin
Made by:	Dreamcards; author — Lindsay Ford
Available for:	MicroBee (minimum 32K)

Ratings:	excellent	good	OK	well maybe
Ease of use:	•			
Speed:		•		
Entertainment:	•			
Educational:				•
Documentation:	•			
Value for money:		•		

Holds interest:	For many days, for kids over ten years old
Price:	Book with all documentation: $20.00 Optional cassette tape: $5.00 Total price for book and program tape: $25.00
Review copy from:	Dreamcards, 8 Highland Court, Eltham North 3095.

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your TRS80 computer

By Rod Stevenson

WITH THE RAPIDLY growing numbers of people becoming interested in computing as a hobby (and of course for many other reasons), more and more peripherals are coming onto the market to be added to a growing range of microcomputers. By sticking to Tandy equipment one retains the ultimate hope of compatibility: but at a cost! Not always in money; unfortunately Tandy is too often among the last to offer what other manufacturers have had in the market place for years.

Of course, as with most things, this situation is part good, part bad. It seems to me that lately this problem of incompatibility has been increasing, and newcomers to the hobby are often victims of it, quickly becoming disillusioned. Sometimes the incompatibility is not obvious at once; all may go well until another 'foreign' item is added.

I haven't a real answer. I mention it as just something to keep in mind when straying from Tandy equipment; not because I advocate buying from only one source but because such buyers need to be aware they could well be on their own when the dreaded incompatibility strikes! A prime example is printers that will not perform the specialist functions that made them so attractive unless the program can be patched to support them.

EDTASM

A few months ago I advised those with a problem running EDTASM from Tandy or EDTASM+ from Microsoft on a System 80 to contact John Ross if they have a problem loading back the assembled object tapes. It now seems there is a small number of Model 1 owners who have a similar problem with both of these programs.

The fault is one of timing, and although brought about by hardware (slight variations in clock speed), it is most easily fixed by altering the programs. So far there have been no other programs showing the effect of this fault: it is evident only because of the gaps (sections of blank tape) left on the recorded tape as EDTASM is assembling the code.

I've even seen the same fault described in American magazines – but without a solution! So if you are one of the few affected, send $5 with your tape copy of EDTASM to John Ross, 12 Lindley Road, Greenacres 5086. If you don't include the $5 you won't even get your tape back; but if you do, it's well worth it. The reason for sending your copy of EDTASM or EDTASM+ is that there are so many original versions, and so many patches to do various things, that John prefers to patch yours direct rather than supply the patches for you to do it.

Intercept

Most users will be aware that the keyboard is scanned every 25 milliseconds. What is not easily realised from the various ROM manuals around (I recommend the one from Micro 80 in Adelaide) is that the pointer to the actual address to scan is contained in fixed RAM, as are a large number of other pointers.

Being in RAM means the address can be changed, so the keyboard scan can be intercepted and made to act on whatever it finds in a way different from its normal nature. This is one way of using control keys to interrupt a program – intercept the normal keyboard scan, check to see if it was the control key that was pressed and act on it or ignore it.

Of course this needs to be done in machine code, but you'll not find it difficult if you know enough assembly to understand the following:

```
ORG   4Ø16H
DEFW  7ØØØH
ORG   7ØØØH
CALL  3E3H for Model 1 & System 8Ø, 3Ø24H for Model 3
rest of program here, followed by
RET
```

The first line merely loads the new routine into the pointer to the keyboard scan, then the actual program starts by calling the normal scan routine that was pointed to by 4016-7H. When all is finished a RETurn is used to carry on as normal.

This means that a normally running program can continue until a control key is pressed, when it will go and do its thing, then return to the original program and continue running it from where it was interrupted.

There are such pointers to the printer and screen, both of which can be handled in a similar way. An obvious example is to slash the zeros before they are printed if your printer doesn't normally do this and they happen to look like the letter O.

NOT With AND

A number of times I've pointed out that our version of Microsoft BASIC has very powerful string handling routines, which have to be used to be appreciated. The obviously powerful ones are LEFT$, MID$, and RIGHT$. But have you considered the use of logical operators with strings?

IF IN$ › "Z" OR IN$ < "0" AND NOT (IN$=" ") AND NOT (IN$="+") will test whether IN$ (which I commonly use to mean input) is in the range of zero to Z or is a space or a + sign (which is not in that range). Quite simple on the face of it, but not possible in some versions of BASIC.

Often extra brackets (parentheses) can be used to make the logic clearer to the programmer or reader. The computer will disregard those it doesn't need, and so long as you think clearly about your meaning, a few extra will probably promote readability.

Repeating Memory Protection

I said in an earlier column that memory can (and should) be protected from within a BASIC program by using the pointer in 16561-2.

This pointer can also be used to determine how much memory the computer has free to use; either total memory size or what is left after previous protections.

HI = PEEK(16561) + PEEK(16562)* 256 will set HI (remember my penchant for using meaningful variable names?) equal to the current top of memory.

A simple subtraction of the size required to be additionally protected will provide the new value for HI. But remember that when done in this way you must calculate the highest memory BASIC can use, which must of course be below the start of the program you want to protect – when you answer Mem Size, the actual space protected is two bytes greater.

Then to set the memory protection to the new HI, POKE 16561, HIAND255: POKE 16562, INT(HI/256).

This seems a far better way than depending on the user of your program to set the correct memory size, if he/she remembers to set it at all!

System 80 Colour Board

I recently had the opportunity to see the System 80 colour board demonstrated. It was a prime example of how such add-ons often leave a lot to be desired.

Even allowing for the loss of quality by being used through an RF modulator (some of the current TV sets won't ac- ▶

cept direct video without extensive modification because their input is handled all on the one chip), the definition was unbelievably poor; the blue in particular had an enormous halo around it, changing the surrounding colours as well.

Being a non-standard modification, there is also a distinct lack of software for the colour board. The smallest pixel available is the size of four normal pixels, so the oft-quoted use of colour to draw graphs has been negated in this case. Certainly big bands of colour are possible, but I imagine the use of these is rather limited.

More Than 16K Memory

Recently I've had a number of phone calls and letters from people who've added memory to take them above 16K and want to know how to remove the syntax errors when they try to address it directly.

Without going into the full explanation of signed and unsigned numbers, I think the best way is to think of the full 64K memory as being numbered not 0 to 65535, but 0 to 32767, then –32768 to –1. This is calculated by subtracting 65536 from the address you want to find, so a line such as: IF AD›32767 THEN AD=AD-65536 will serve in all cases. The top of memory is therefore –1; to expect it to be –0 would clearly be silly!

Magazines

I'm told there is some difficulty in getting copies of *80micro* and *80US* (the two American magazines I recommended as specific to TRS-80) from the local newsagents. In Adelaide we've found Gordon & Gotch to be very helpful in sorting out the problem.

Of course, approach your local newsagent first, but if there's no success try Gordon & Gotch. Both these magazines are well worth the trouble. As yet there's no local distributor I know of for *The Alternate Source*, so a direct subscription seems the only answer.

Incidentally, a direct subscription to *80micro* is not as good and reliable as one might think – it comes in such flimsy wrappers that Australia Post usually has to repair them. It also doesn't take much for the wrapper to come apart from the magazine, thereby losing your issue forever. Adding a couple of locally bought replacement copies to your subscription price pushes up an already expensive outlay to a somewhat unrealistic level.

Review – Horace, A Horse Racing Program

This program was written by J Norris, and the sole distributor is Molymerx Ltd, Gosford. $25-50, tape only.

Before getting on with the reporting of this program, which is sold to aid punters, an explanation may be in order. I received a catalogue from Molymerx with an invitation to suggest a program I might like to review. I did, and in due course this program arrived, together with two others. The others I've passed on to other members of our User's Group who specialise in the particular areas of games and Model 3.

The Molymerx catalogue is quite impressive in the range of software it covers, but I consider a major oversight is the omission (in most cases) of the author or original publisher. Of course one would know the details of the 'major' programs (the operating systems such as LDOS), but the descriptions of the 'usual' programs give no information to allow one to determine if they're the same ones seen advertised elsewhere. In particular it would be helpful to know the country of origin. I understand the reason is that Molymerx, although it is an Australian company, imports software under licence from Britain (even that originating from America), and the licensing agreement prohibits the listing of such details – difficult to understand why. There is another catalogue in production with more detail.

The substantial instruction manual provided with 'Horace' is of real value. It doesn't waste pages telling me in detail how to load the program, but goes quite deeply into a discussion of the ways of betting on horse races, and the merits of the various methods. Indeed it shows the author really knows his subject; while it would have been perfect if the writer had also been an expert programmer, I much prefer this manual to a highly technical (in the computing sense) one telling me what I already know about my computer.

My reason for choosing this particular program, and I suspect I'm not alone in this motive, is that while I consider I'm adequately knowledgeable about computing, I do not carry the same confidence to my knowledge of horse racing. So I wanted a program to do it all without a lot of 'inside information' from me.

One great failing with 'Horace' is that it's heavily based in the British racing scene. Apart from miles, furlongs, stones, pounds, all of which can easily be converted, there is a table of racetracks with their ratings which needs to be converted to cover ours if the benefit is to be gained from the program's use of them. The 'state of the going' is not one of our terms, but can also fairly easily be changed. Mr. Campion of Molymerx told me that as soon as he found this unsuitability for the Australian market he wrote to all previous purchasers (they're registered on a database) offering a cash refund or replacement when an Australian version he's commissioned is released. Shows commendable honesty!

There is provision for hurdle, steeplechase or National Hunt races, as well as 'normal'. A graphics routine moves a horse across the screen on the title page; it also makes changing the program to run from disk and/or in more than 16K difficult. With the level of programming techniques today I really expect a program to do its own tests and the necessary modifications for both of these.

The idea that the programmer is more familiar with horses than computers is reinforced by such simple things as the lack of CLS; you have to scroll the lines off the top of the screen when a clear screen is wanted. The printer routine doesn't work on my printer – having said I wanted a hard copy of the results, after they are on the screen the printer routine simply attempts to PEEK each screen address and send it to the printer. With the three-ROM Model 1 this is a disaster if a lower-case modification is installed, since 40H must be added to each value less than 20H to give it its 'true' value as an ASCII character (I explained this fully in one of my earlier columns).

To me it looks very much as though this program was written for another computer and transferred by someone not familiar with the TRS. There are even spelling mistakes in the screen wording! Some inputs are INKEY$ while some are a simple INPUT; long horse names are truncated; the variable names are far from meaningful (for example, 'ZZ'), so conversion is not as simple as it might have been; the line numbers are by no means orderly – while this doesn't matter, a simple renumber would have taken away some of the amateur appearance.

Esoteric Data

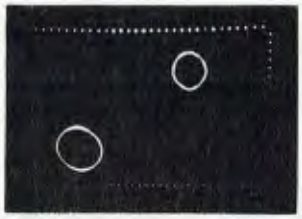
The power of the program can be seen from the data it requires (not all of which is applicable or easily obtainable from our daily press): date; time; location; state of the going; prize value; distance (five furlongs to five miles); handicap; number of horses (1-10). Then for each horse it requires: name; how many previous races; was the last race a National Hunt; where was last race; was the last race within ten days; state of the going for the last race; distance of the last race; was the last race a handicap; weight carried last race (6-8 to 12-13); form figures from last three races; prize values from last three races; weight carried today; odds today; rated in first three odds today?

The screen output is in tabular form of : form rating; name; chance; value at the price; betting chance; forecast price; cash class. It is for the first three places, or optionally for the whole field.

To test the accuracy of the forecasts, I typed in the information from Friday's paper, with Sunday's at hand to check the outcome. The best result was all three places (but the wrong order), the worst was no placings. The other two tries gave one and two places. So of four trials I achieved all possible variations!

I truly feel the poor performance of this program can be put down to its British base. An Australian conversion will be very welcome, particularly considering the lack of such programs, but of course one will need to know both racing and computing to make the changes successfully. Or perhaps people with successful programs make more money using them than by selling them?

On speaking to Mr. Campion, what comes across strongly is his concern for Molymerx's reputation in the mail order software business. The unfortunate reports one reads from overseas may be less likely to be repeated here in Australia with our consumer laws, but it seems to be from real concern for its reputation that Molymerx has set up a register of all purchasers – the company has made good use of this in that they've been able to write to the purchasers of 'Horace' as mentioned above, and to send an updated manual of their 'Jumbo' simulation program. So when Molymerx advertises the new manual, I suggest writing for it. □



CIRCLE x,y,r,c

DRAW x1,y1,x2,y2,c

FILL x,y,c,a

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your VIC 20/C64 computer

By Andrew Farrell

ALL THE FUSS about Bulletin Boards, communication protocols and RCPM may have still left many of us in the dark as to how you can use these systems on a VIC-20 or C64 – and better still, why you should bother.

Recently I purchased a Dick Smith Dataphone (direct connect modem) to find out what it was all about. To use a modem you also need an RS232 interface cartridge, which provides the necessary buffer and voltage levels not present on the user port.

The total cost of the entire set-up with other necessary items (cable, plugs, and bribe to Telecom – joke, fellas) came to just under $300. It is possible to do it cheaper if you're willing to compromise in some areas or do a little shopping around.

Once you've got all the bits'n'pieces it's just a matter of plugging it all in and ... well, almost.

First you'll need to do some soldering to make a cable from the RS232 cartridge to the modem. Usually this involves around five or six wires (try pins 1, 2, 3, 7 and 8), although it's often a good idea to connect all the active pins so that you can use your cable for other things (a daisywheel printer?).

Now all you need is a short terminal program to display input from the modem and send output to it. A more advanced system might allow you to save and retrieve text from disk or cassette. I'm working on a program now which will allow you to download software from the MICC BBS (Mi-Computer Club Bulletin Board System) and others, such as the Australian Beginning.

Each month most of the programs appearing for the VIC-20 or the C64 will be put on the Board to allow them to be retrieved by users. Certainly a great saver of large amounts of typing, only to discover you've made an error somewhere!

Terminal Software (Just The Beginning)

The main problem in writing the terminal software is the conversion from CBM ASCII to the standard used everywhere else, and back again. A couple of simple IF statements will be able to handle the bulk of necessary conversions, but provision will also have to be made for special control characters.

For example, the DELETE function must be changed to produce an ASCII value of 127 when sent, and converted back to an ASCII of 20 when received. There will be others as well, depending on how sophisticated your program needs to be. Don't forget the more IFs and BUTs you have the slower it will be, and the need for a full machine code version will grow.

Next month, if all goes well, a finished version of my terminal program, incorporating C's protocol, should be appearing in this column or in the Pocket Programs liftout.

What's New

Commodore dealers across Australia are already beginning to feel the Christmas rush as more and more people join the number of Commodore owners – the obvious side-effect being that stocks are limited, and if you're looking to buy you may find it hard to get what you're looking for.

New software is continuing to appear from several sources. Ozi Soft will shortly be releasing a large number of new titles from the US, along with some great new pieces of hardware.

The most impressive I managed to have a go on was the Koala Graphics Tablet, which is compatible with the VIC-20, Commodore 64, Apple II and Atari computers. It comes complete with a brilliant software package which allows you to edit full colour pictures and save or retrieve them. With options such as zoom, fill, swap, mirror, varying brush types, rays, lines, circles and discs you can really do some great-looking drawings. Watch for a full review in *Your Computer* soon.

Commodore has also released several new cassettes for the 64 which sell for around $13-$15 each. The games I had a quick look at were quite good, several of them in full machine code, and included a nice Sub Hunter which made use of more than eight sprites on the screen at once. Excellent value for the price.

Where's All That Easy Stuff?

Many of you have been waiting for several of the yet-to-be-released Easy Programs to arrive. The news is – there is still no news. Personally I think that's a bit slack on Commodore's part, since many 64s have been sold on the basis of the supposed availability of programs such as Easy File in the near future. Let's hope we see them soon. I must admit what is available (EasyScript and ▶

EasySpell) is very good – hopefully a sign of what's to come.

Music Tutorial

Any budding young musicians out there with a VIC-20 will be pleased to know they can now learn all about music using the Music Tutorial program written by Phil Campbell. The program consists of over 24K of separate programs, which use graphics segments and machine code music routines to teach the fundamentals of music.

Each part is automatically loaded from the previous program or may be loaded from the main menu using a fast forward search technique. Available from most dealers at around $24.95.

VIC-20/Commodore 64 Tips

To be honest with you, I've almost run out of VIC tips ... so why not send some in if you know any?. From now on any I do mention, unless it specifically states otherwise, will work on both the VIC-20 and Commodore 64.

POKE 19,255. . . this little one turns off the PIR (pain in the rear) question mark that appears at the start of an input statement. Be sure to POKE it back when you've finished as it has some funny effects on the screen editor. Normal value of location 19 is 0.

Disk '@:' hassles – Yet Another Bug. You may not be aware of a nasty bug which is thriving in the 1540/41 disk operating system and has caused me much frustration over the past months. The problem is in the Save and Replace option, which looks like this:

SAVE"@:filename",8

Unfortunately, sometimes that command has strange side-effects – anything from wrecking your entire disk to just slightly mixing around a few files enough to cause total havoc and chaos! The best solution to this problem is simply to steer clear of that command, unless you enjoy rewriting entire programs!

Development Kit – A Must!

Commodore has released an almost indispensable folder full of documentation and software, along with three disks for developing software on the C64. The kit includes a full macro assembler editor, two versions of a machine code monitor (which look remotely like Hes-Mon for some strange reason) several graphics editors, development tools, a multi-sprite processor, and heaps more. The whole lot retails for $112 and is classed in the public domain area so that it may be freely distributed.

Sydcom 64 User Group

A Sydney user group for the Commodore 64 has been formed and is now looking for members. It offers a large library of public domain software, including the above-mentioned development kit, on disk free to new members. Various other benefits such as shop discounts and a newsletter will also be announced shortly. Interested persons should write to: Sydcom 64, PO Box 173, Miller 2168. □

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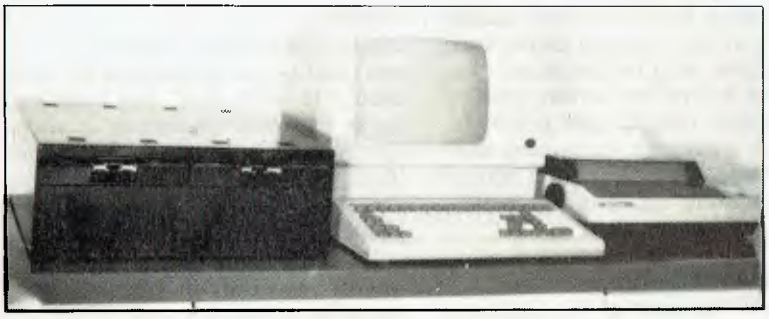

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your KAYPRO computer

By Jeff Richards

THE KAYPRO screen display is memory-mapped, which means that the screen displays the contents of an area of memory, and is updated by changing the contents of this memory. However, this screen display RAM does not use any of the 64K address space in which programs are run. It is in a second bank of memory, and is only accessible to user programs via a calling routine. This month we will look at how to use direct screen RAM access for fast screen updating and special effects.

Screen RAM shares the second memory bank with the monitor ROM. The ROM is at addresses from 0 to 7FFh, while screen RAM extends from 3000h to 3BFFh. Within this range the screen is organised as 24 lines of 80 characters each, with each line staring on a 128-byte boundary. Thus the top left-hand corner of the screen is 3000h and the position immediately below it is 3080h. Line 3 starts at 3100h, line 4 at 3180h, and so on.

The screen RAM is arranged in a format that matches the 24-line by 80-column layout of the screen. This means that memory addresses beyond the 80th byte in each 128-byte block do not exist. In fact, they are mapped back into the displayable region; that is, memory address 3050h will refer to location 3030h. It is therefore important that addresses outside the legal range are not accessed.

In order to use the second memory bank, a bit in the system port has to be set. This has the effect of removing the bottom 16K of memory out of the system, and replacing it with the monitor ROM and the screen RAM. Obviously the instructions to do this must be executed from some memory location outside this 16K block! It is therefore not possible for BASIC programs to POKE directly to screen RAM.

Normal screen updating is handled by routines in the monitor ROM. A user program that needs to display a character calls a routine in high memory (of course, if the program is running under CP/M it is actually the CP/M BIOS that calls the routine in high memory). This routine maps user memory out and maps the ROM and screen RAM in, and then passes the character to the routine in ROM.

The ROM routine next works out the location on the screen at which to put the character, or the work that is needed to execute the command, and updates the screen RAM accordingly. It then returns control to the calling routine in high memory, which maps the second memory bank out and returns control to the user program.

Although this whole procedure is extremely quick, it can be made somewhat faster. The reason for this lies in the amount of work that the screen update routine has to do, including determining if the character is to be displayed or is a command, finding the current position of the cursor, placing the character, checking if a carriage return and linefeed are needed, or perhaps a screen scroll, and finally resetting the cursor and storing its new location.

High Memory Routines

If we know that none of this additional work is needed then the screen update can be made much quicker. This would be the case where we simply want to place a string of characters at a known location on the screen; the cursor can stay where it is, and there will be no screen scrolling. All that is needed to do this is a small routine in high memory that will place the character into the nominated position in screen RAM. This technique has the added advantage that any character at all can be placed – we can now get access to the flashing characters that the monitor traps.

All this routine in high memory has to do is map the screen RAM in, place the character in the nominated position, and map the RAM back out. Listing 1 is a program that will do this for Microsoft BASIC. Most of the program is involved with getting the character and the location from where BASIC has stored them; actually placing the character onto the screen only requires a few instructions.

The listing is presented in Z80 assembler, to take advantage of the SET and RES instructions. It is fully relocatable and can be run at any memory location.

The routine is accessed with a CALL instruction from BASIC. The CALL will use two parameters, and these parameters must be set up correctly for the procedure to work. First, and most importantly, they must be defined as integers. Secondly they must be in sequence (ASCII value, screen position), and thirdly they must be variable, not constants.

The parameters must be integers because the machine language routine has been written to expect integers. This

determines how the routine finds the values of the parameters from the information that BASIC passes in the CALL statement.

Similarly, they must be passed in the correct sequence, or the machine language routine will not extract the correct information. The third requirement is a result of the way MBASIC passes parameters in CALLs. It actually passes the addresses of the variables, not their values. Constants don't have addresses, so the arguments to a CALL statement must be variables. This third requirement does not apply to SBASIC.

Listing 2 is a small program that demonstrates the procedure. It accepts a row number, a column number and a character. It converts the character to its flashing equivalent by adding 128 to its ASCII value, then calculates the memory location relative to the base of screen memory, and calls the machine language routine to update the screen. The address of FA57h has been chosen to avoid having to set aside memory for the routine when BASIC is started – it is a small part of the BIOS that is not used.

To display Greek characters this program could be altered to accept an ASCII character number as input. Similarly, lines 20 to 70 could be included at the start of a program, and the statement CALL SCRPUT (char, posn) used any time a character is to be placed on the screen. This procedure is invaluable for graphics, as it is not only fast, but avoids the flashing that occurs when the cursor moves around the screen if characters are displayed in the normal manner.

Listing 3 is the same program for SBASIC. The utility routine is a little shorter in this case, as SBASIC has a simpler protocol for the CALL statement parameters. □

```
Listing 1 Character at (HL) to screen at
          relative position (DE).

7E          LD   A,(HL)     ;GET CHARACTER
F5          PUSH AF         ;SAVE IT AWAY
EB          EX   DE,HL      ;GET
5E          LD   E,(HL)     ; SCREEN POSN
23          INC  HL         ;  INTO DE
56          LD   D,(HL)
21 00 30    LD   HL,3000H   ;AND ADD
19          ADD  HL,DE      ; 3000H
DB 1C       IN   A,(1CH)    ;READ SYSTEM PORT
CB FF       SET  7,A        ;SET BANK SWITCH
D3 1C       OUT  (1CH),A
```

```
F1          POP  AF         ;RETRIEVE CHAR
77          LD   (HL),A     ;PLACE IT
DB 1C       IN   A,(1CH)    ;SWITCH SCREEN RAM
CB BF       RES  7,A        ; OUT
D3 1C       OUT  (1CH),A
C9          RET             ;AND RETURN
```

```
Listing 2 - MBasic program for
        Direct Screen Updating.

10 DEFINT A-Z
20 DATA &H7E,&HF5,&HEB,&H5E,&H23,&H56,&H21,
      &H00,&H30,&H19,&HDB,&H1C,&HCB,&HFF
30 DATA &HD3,&H1C,&HF1,&H77,&HDB,&H1C,&HCB,
      &HBF,&HD3,&H1C,&HC9
40 SCRPUT=&HFA57
50 FOR I=0 TO 24
60 READ J:POKE I+SCRPUT,J
70 NEXT I
80 PRINT CHR$(26);
100 INPUT "Row,Col,Char = ",R,C,A$
110 P=R*128+C
120 A=ASC(A$)+128
130 CALL SCRPUT (A,P)
140 GOTO 100
```

```
Listing 3 - S-Basic program for
        Direct Screen Updating.

10 VAR SCRPUT,I,J,R,C,P,A =INTEGER
   VAR A$=STRING
20 DATA 7EH,F5H,21H,0H,30H,19H,DBH,1CH,CBH
30 DATA FFH,D3H,1CH,F1H,77H,DBH,1CH,CBH
   DATA BFH,D3H,1CH,C9H
   RESTORE
40 SCRPUT=0FA57H
50 FOR I=0 TO 20
60 READ J
   POKE I+SCRPUT,J
70 NEXT I
80 PRINT CHR$(26);
100 INPUT "Row,Col,Char = ",R,C,A$
110 P=R*128+C
120 A=ASCII(A$)+128
130 CALL (SCRPUT,A,P,A,P)
140 GOTO 100
```

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MYTEK WORDPROCESSOR OVERVIEW

The MYTEK Wordprocessor is loaded into a 16K or 32K MicroBee. Text is then typed or loaded from cassette. It may then be modified and saved back on cassette. Common portions of letters or documents may be saved on cassette for later use. Blocks of text may be moved or duplicated. The text may easily be manipulated and then printed exactly as it appears on the screen. Part of a document may be printed or a number of copies of the document. Whatever your need, whatever your printer, whatever your age, background or needs, the MYTEK wordprocessor will amaze and satisfy.

DOCUMENTATION

The MYTEK Wordprocessor comes with a full set of professional quality documentation, including:

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- Full table of contents
- Simple and concise explanation of all functions and commands

FEATURES

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SPEED

The MYTEK Wordprocessor is written in compact Z80 machine code making it very fast and efficient. A two thousand word document can be realigned in one or two seconds! All search and replace commands are effectively instantaneous. You will not find a faster Wordprocessor.

COMPACTNESS

The MYTEK Wordprocessor stores text in memory in the most compact form. No space is wasted with end-of-line spaces. This allows you to maximise use of memory and minimise cassette saving and loading time. The MYTEK Wordprocessor occupies about 8K of RAM.

RELIABILITY

The MYTEK Wordprocessor is a solid and reliable product. In-built protection routines check if a command is legal or possible and if there is enough RAM available. If a catastrophic command is requested, the MYTEK Wordprocessor will ask if the user is sure before carrying out the command.

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SUPPORT

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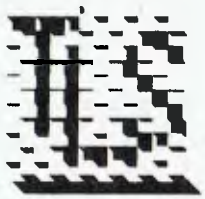

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WORD ADVENTURE. A program with very good graphics using little characters to entice the user to think what word is either a synonym, antonym or homonym of the word they are showing. Every time you get it wrong you are given more clues. After the clues run out you must face the dragon where you must spell the word he is holding correctly before you can proceed.

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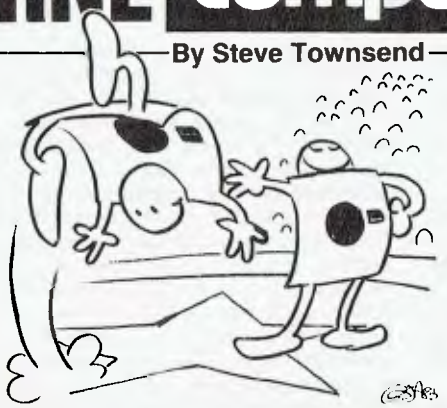
your OSBORNE computer

By Steve Townsend



THE ONLY TIME I curse my 52-column screen is when I'm trying to read a Wordstar file that's 65 columns wide. In some cases I'll ↑QQ↑B the file so it all comes within a right-hand margin of 52. When I'm finished, I can reform it again so it returns to its 65-column width, but if I have some fancy indented paragraphs or tables in the file they will be badly messed up by this procedure.

Someone showed me a superb way of overcoming the problem. It's perfectly simple and so obvious that I'm sure quite a few people have discovered it themselves.

All you do is move your cursor to the beginning of a line in the middle of a paragraph. Read along the line until you're almost at the point of running out of screen then simply hit your left arrow.

This jumps the cursor to the end of the previous line and displays the right-hand side of the text. When you finish the line you're reading, simply hit the right arrow and, presto, the left-hand side is displayed.

You just keep hitting left-arrow then right-arrow until you've read a full screen of text. Then you hit ↑C to bring up another screenful and carry on hitting the arrows alternately.

No More Upgrades

With the advent of the Executive models, Osborne Australia will not be carrying out any more double density or 80-column upgrades except for those people who have already booked.

Learning Supercalc

It's been my experience that most Osborne owners use their machines for Wordstar and/or BASIC. There don't seem to be all that many using Supercalc. Most seem to have tried learning it but given up very quickly.

That's a shame because once you learn to use Supercalc it's quite easy and enormously helpful. I think the trouble is that people try to learn it from the User's Reference Guide; you would need to be strongly motivated to learn Supercalc from the Guide.

A much better way to learn is to get a copy of 'The Power of SuperCalc' by Williams and Taylor, published by Management Information Source. It costs around $14 and is excellent value. (Try to get the second edition, which has the errors corrected and is properly typeset.)

The book is broken up into seven exercises, each of which is self-contained. Work through two or three of the ones which look most applicable to your needs. By then you'll be a Supercalc expert.

There is also a book called 'Doing Business with Supercalc' by S. Trost, published by Sybex. It has some good examples and models you could use but it isn't so good as a teaching manual. For some reason it makes absolutely no mention of COPY, one of Supercalc's most useful commands.

Flippies – no problems

A lot of users are halving the number of disks they need to buy by making 'flippy-floppies'. This is achieved by simply punching mirror-image index holes and write-protect notches in the disk jacket. The disks can then be flipped over and used as though they were entirely separate disks.

Disk manufacturers issue dire warnings against this practice but I've never had any problems with any of my flippies. I asked a meeting of the Ausborne Users' Group in Sydney recently whether anyone had experienced any problems. The meeting must have represented a total of hundreds if not thousands of flippies but no one reported the slightest problem.

User Group Directory

Anyone who is not yet a member of a user group is missing out on a lot of free advice, good ideas, friendly smiles, discount equipment and free software. For details on joining your local group here are contacts for all the groups operating at present.

Sydney: Iain McCulloch (02) 660 8560 – after hours.
Adelaide: Russell Barter (08) 269 5953 – business hours.
Perth: Ron Nainby (09) 364 2000 – business hours. □

market directory

DEALERS, distributors, mail-order houses and other commercial organisations or individuals who have a message to spread but don't want to outlay the sums required for full-scale advertising can take advantage of our Market Directory — small ads to help those searching for outlets, services and equipment. For details contact *Your Computer* on (02) 662-8888 or write to PO Box 21, Waterloo 2017.

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Tapes: Temple of Apshai (Dungeons and Dragons). Original copy. Used once, I now own a floppy disk. $35. Doncaster (03) 848 5979.

Vic-20: Super Expander, Vicmon, Chess cartridges. Reference manuals, cassette and joystick. Normally $650, only $500. Phone (02) 48 6445.

For Sale: Atari video game set with eight popular cartridges – excellent condition – $350. Phone (08) 276 8408 ah.

IBM-PC S.A. User's Group: All 8088 Users welcome. Contact Don Richards on (08) 261 9590. P.O. Box 68, Walkerville 5081.

MicroBee Software: Educational program – comparison of fractions. Choose whether larger, smaller or equal. Suit Yr 5 to Yr 9. $5. J. Cummins, 24 Myrene Ave, Calala, Tamworth 2340.

BBC Micro Owners: Software exchange wanted. Ring (02) 798 3379 (evenings) or contact K. Low, 9 Beatrice St. Ashfield 2131.

Tandy Printer VII: dot matrix, tractor feed, serial/parallel, $400. Jeff Archie, Box 19, Colac 3250. (055) 94 5267.

User Group: NSW Compucolor Users' Group. Contact Tony Lee at 52 Cowan Rd, St. Ives 2075. (02) 449 8824 (H). Meeting – first Tuesday of the month, 8.00 pm.

Replay II Cards: Apple Direct Memory Copies. $170.00. D. Pugh, 17 Irvine, Peppermint Grove 6011. (09) 384 9043.

Introstat: A statistical package for students and researchers in the behavioural sciences. Available for Apple, IBM, or Atari 800 micros. Includes 45-page user manual. Cost: $185 (plus tax). Write to Soft Option, P.O. Box 99, Aitkenvale 4814.

Vic-20: Two games, joystick, two manuals. Seven months old, excellent condition. Sell for $420 ono. Ph (02) 661 5554.

MicroBee Software: Home Finance Package, calculates interest on current and fixed investments, also interest on flat and compound rate loans, plus the cost of each instalment. $8 for tape, $6 for listing. Available from Brett Kelly, 18 Maxworthy St, Kambah ACT 2902.

Free: A games catalogue for Vic-20, VZ2000, ZX81, Spectrum. SSAE to Stuart Pope, 119 Iola Ave, Farmborough Heights 2526.

Dick Smith Wizzard: Near new. Includes – keyboard, cassette interface, BASIC cartridge, computer book, three cassettes, value $500. Sell $410 ono. Ph (042) 84 8912.

ZX81 Software: Pearl Harbour and Jackpot, excellent graphics, $12. Write to 673 Albany Creek Rd. Albany Creek 4035.

Wanted: Sorcerer MK II in good condition. (03) 578 8056, or write to Ian Thomas, 4 Russell St, South Caulfield.

MicroBee Memory Map: Essential information if you want to understand and make full use of your MicroBee. Over 300 jump addresses and other important locations used by BASIC, WordBee and NET contained in 17 pages. The most comprehensive map yet available. Also includes parallel port and 50-way port pinouts plus RS232 connections. Only $3.50 postage paid. Mail order to B. Proctor, 27 Roberts Ave, Mortdale 2223. Prompt return guaranteed.

MicroBee Owners: You need Printer's Mate to make full use of a dot matrix printer. Machine language utilities provide page formatting, graphic screen dump, text screen dump, memory dump. Now available for Itoh 8510; Epson MX, RX, FX; Amust; FAX80 printers; all either serial or parallel. Enquiries invited for other printers. $16.50 includes instructions, examples, packing and postage. Icarus Software, 8 Maplin Place, Rossmoyne 6155.

For Sale: Vic-20, datasette, expansion motherboard, Super Expander, Programmer's Aid, joystick, books, cassette games, and cartridges. Sell $650, will separate. Ph (07) 391 4839.

Swaps: Anyone with the PCG-80 installed in their computer and wants to swap character sets etc, call me on (03) 579 5748. (Robert).

For Sale: TRS80 games. Penetrator, Asylum, Labyrinth, Pyramid 2000, Adventure Sampler and Invaders. $70 or ono. Ph (054) 84 1030 after 6 pm.

TRS-80: 16K LII, manuals, green screen, cassette player and controller, joystick with interface, amplifier, carry case, $1000 of software. Ph (03) 387 3332.

Wanted: Exidy FDS floppy disk drive with controller. Phone Mark (02) 661 8674.

Brisbane PC1500/PC2 Owners: The PC1500 Bit Fiddlers Club has been formed. Phone Chris, (07) 395 1952 ah for details.

NEC 8000: Any persons interested in forming users' group, particularly Northern NSW, contact Robert Duck, 6 Calala Lane, Tamworth 2340.

TRS-80 System 80 Users' Group: Monthly meeting held first Sunday of month at Lindum Hall commencing at 1.30 pm. Phone enquiries – (07) 396 2998. All users of the above equipment are most welcome.

Hitachi Peach: 32K RAM, SSSD 5" disk drive, new green screen monitor, all manuals, loads of software. Perfect condition. $1650. Ph (060) 26 2322. Fantastic value!

VZ200 Owners: Victorian User Group, subscriptions $10 – mail to Luigi Chiodo, 24 Don St, Reservoir 3073.

Sigma-Oki 20: business computer, word processing, mailing, spreadsheet software, matrix printer, two disk drives, colour screen, three months old. Ph (02) 327 4348 ah.

Wanted: Back issues of Compute! 1980/82. Dr. E. Plunkett, 7 Hill St. Eugowra 2806. Ph (068) 59 2472.

For Sale: For Apple II, Echo Speech Synthesiser, $150. Zapple effects, music board, $150. Quantity software cheap. Phone Allan, (02) 649 4904.

Sinclair ZX Spectrum: 48K RAM colour computer with printer. Only two months old. $525 (save $100). Phone Steve, (02) 428 3930.

Apple II Compatible: 48K computer, made in Japan. New with warranty and manuals. $699. Phone after 5 pm, 661 8128 (no area code given).

MicroBee: New 5 x 7 character set in ROM. More space between letters makes listings more readable. $10 to 1/18 Westbury St. Balaclava 3183.

Synchronous Packet Radio Software Approach, Volume I, by Robert Richardson. 220 pages. $28.00 plus p&p $3.00. Northern Digital, PO Box 333, Charlestown 2290.

Sell or Swap: Vic-20 database program for ham radio enthusiasts, requires extra 16K. (004) 27 9104, ask for Gordon.

Vic-20: Internal memory. Plugs inside the keyboard with three soldered joints and one hole. Eliminates need for an expansion unit, remains unobtrusive and safe. Fully expandable on board later. Switchable in 8K blocks for 0K, 8K, 16K, 24K. Full instructions included. 8K – $50, 16K – $80, 24K – $140. Expansion: 8K-16K – $30, 16K-24K – $60. Free fitting if computer sent with return PO stage. M. Panther, 1 Kingsley Grove, Mt. Waverley 3149. Phone (03) 543 3217.

Anyone interested: In forming a Jupiter Ace User Group, please contact – Helge Nome, P.O. Box 183, Ravenshoe 4872.

Vic-20: $200, expansion module $130, 8K $50. Software – eight cartridges $20-$50; tapes, five at $6, one at $20 each. Five books, $10-$20. All ono. Phone (02) 868 3427 ah.

Large Shop/Office: Located on main road, Rozelle, suitable for computer outlet, will lease or business venture, phone 399 7924 ah.

MicroBee: Citybomber and Zulu programs. Both are real-time, high-res and require great skill. Both on cassette plus listing for $6. Send to D. Jockson, 1 Sanderson Cl, Flynn ACT 2615.

Must Sell: ZX81 16K – adaptor, leads, manual, heaps of programs on tapes. Value $320, sell $240. 40 Suvla St, Lithgow 2790.

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MicroBee User's Group of SA: GPO Box 767, Adelaide 5001. Contact Brian Uren (Secretary) (08) 260 5038 (6-8 pm) for membership, meetings, newsletters.

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All Contributions: should include your name, address, and home and office phone numbers (in case we need to check details). Each page of your submission, and any material sent with it, should also carry your name.

Contributions on disk: Contributions can be accepted in a wide variety of disk formats, although some we have converted outside our offices, which will add to the (often lengthy) delay between receipt and acknowledgement. The preferred medium is IBM standard format single-sided, single-density 20cm CP/M disks. We can also handle, in-office, Kaypro II and Osborne 13cm disks, MicroBee tapes and 13cm Apple DOS or Apple CP/M disks. If you have one of the formats listed by Archive Computer Services in Brisbane (usually advertised in this magazine), we can accept that too. Please pack them extremely carefully if posting and label all disks with your name, address and phone number.

Contributions By Telephone: Contributors who have modems and suitable software (in the MODEM7/YAM mould – see our stories on Christensen Protocols in the May and June 1983 issues) can arrange direct transfer to our computers, or obtain special contributor access to the Mi-Computer Club Bulletin Board system, which is on-line 24 hours a day, seven days a week.

Style: All items should be typed (or printed) and double-spaced on plain white paper. We will only accept original copies – no photostats. Include your name, address, telephone number and the date on the first page of your manuscript (all manuscript pages should have your surname and page number in the top right-hand corner). Be clear and concise, and keep jargon and adjectives to a minimum.

Listings: Unless it is absolutely impossible, we want listings produced on the computer. This reduces the risk of error – if the computer typed it, the computer probably accepted it. Print listings with a dark ribbon on white paper, and try to format the output to a narrow (40-characters) width. If they can't be produced on a printer, borrow a good typewriter – hand-written material is likely to sit around the office for a year before someone can find time to type it all out for you! Please provide an account of what the program does, how it works and so on. Any comments on the program should refer to the address, line number or label rather than to a page number. Any comments on modifying the program to work on other machines will be appreciated. Try to include a printout of at least part of a sample run if possible.

*Although the greatest care will be exercised with contributions, no responsibility can be accepted for the safety or return of any letters, manuscripts, photographs or other materials supplied to *Your Computer* magazine. If return is desired, you should include a stamped, self-addressed envelope. If return is critical – say it's something you can't afford to lose – then don't send it; we are careful, but we're not perfect, and Murphy's Law guarantees yours is the one item we'll lose this year.

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