your computer

JULY 1988
$3.50
NZ$4.50

MAKING YOUR MICRO WORK

LAST CHANCE FOR $1200 SONY TV!

7th ANNUAL INDEX INSIDE

DATA-BASE DATA

THE PORTABLE OFFICE

Fit your own reset button

Inkjet Printers • The Ideal Terminal • Epson Trifecta

XtreePro • HyperCard Tutorial • Amstrad Portables

Registered by Australia Post – Publication No. NPU 4153 ISSN 0159-3943

The way to go...

BLUE SKY

INDUSTRIES Pty Ltd

2a Blakesley Street, Chatswood, NSW 2067

Telephone: (02) 419 5799. Fax: (02) 419 8445

When first introduced, the NEC MultiSync Colour Monitor established new standards in resolution and compatibility.

Features that quickly made it the world's No.1 selling monitor.

Now it's finally been surpassed. But it's taken three new monitors to beat it.

Not surprisingly all three happen to be new MultiSync models from NEC. Three different sizes, each one boasting even greater resolution and expanded compatibility.

The new MultiSync II with its 34cm diagonal screen and 800 x 560 resolution.

The MultiSync Plus with a 38cm diagonal screen and a resolution of 960 x 720.

And the MultiSync XL with 51cm diagonal screen and 1024 x 768 resolution.

It's taken a lot to better the world's top selling monitor. It'll take even more to beat these three new MultiSync models. But we're working on it.

For more information on the MultiSync range simply contact NEC Home Electronics on (02) 868 1811 or your local state office.

NEC

MultiSync

NEC815/88DDBNeedham

CONTENTS

Cover Photography
Helmut Mueller

Peripatetic Phil Tripp (see his article on page 16) is shown in his portable office at Boat Harbour Park, Kurnell, NSW.

Office Services
Allison Tait

Bulletin Board
(02) 669 1385

Subscription Enquiries
(02) 693 6666

Advertising Sales
National Advertising Manager:
Susan Earles
NSW Representative:
David Mitchell 180 Bourke Rd, Alexandria 2015.
Tel: (02) 693 6666, Tlx: AA74488
Fax: (02) 693 2842

Advertising Production
Patrice Wohlnick

OFFICES
Editorial:
180 Bourke Rd, Alexandria 2015.
Tel: (02) 693 6666, Tlx: AA74488
Fax: (02) 693 2842

Victoria
Virginia Salmon,
221A Bay St, Pt Melbourne 3207.
Tel: (03) 646 3111,
Fax: (03) 646 5494

Editor
Jake Kennedy

Features Editor
Robert Thirlwell

Production Editor
Allecia Khartu

Bulletin Board Sysop
Jake Kennedy

Art Director
Pamela Horsnell

Production
Kylie Prats

Consulting Editor
Matt Whelan

Managing Editor
Brad Boxall

Publisher
Michael Hannan

Western Australia
Des McDonald,
48 Clieveden St, North Perth 6006.
Tel: (09) 444 4426, Fax: (09) 381 3115

Queensland
Mark Lewis
180 Bourke Rd, Alexandria 2015.
Tel: (02) 693 6666, Tlx AA74488

South Australia
Michael Mullins
98 Jervois Street, Torrensville 5031
Tel: (08) 352 7937

New Zealand
Scott White
Rugby Press
3rd Floor, Communications House, Parnell, Auckland
Tel: (09) 796 648, Tlx: NZ 63112 SPORTBY

YOUR COMPUTER
is published monthly by
The Federal Publishing Co Pty Ltd,
180 Bourke Rd, Alexandria 2015.
Printed by Hannanprint,
140 Bourke Rd, Alexandria 2015.
Distributed Nationally by
Newsagents Direct Distribution Pty Ltd

*Recommended and maximum price only.
ISSN 0725-3931.

NEXT MONTH INCLUDES

Steve Keen will move upmarket with his Database Data series and review four of the more powerful (and more expensive) packages. We'll also include a survey of the 50-odd database management systems available in Australia. And, if you want to present your data with some *finesse*, don't miss the Tim Hartnell/Matt Whelan feature on ByLine, First Publisher, and GEM Desktop Publisher.

Want your data to look more impressive onscreen? Or, if you're thinking of replacing that old eye strainer, we've found four new monitors that are worth looking at! And if you want to take that data with you, Jan Roberts puts the new Zenith and Hewlett-Packard portables through their paces (just like we promised last month!).

Database Data

That electronic filing cabinet, the database, has to meet your storage needs. The problems start to arise *before* you even purchase a database management system – there are more than 50 available on the Australian market: which suits your needs? Or, is everyone waiting for dBase IV?

FEATURES

No one's far from anyone anymore 16

Our own electronic renaissance man, Phil Tripp, reveals all about the portable office . . . and sex, drugs and rock'n'roll.

Database Data 22

How do I store thee? Let me count the ways: In the first part of this new series, Steve Keen covers four products from the lower end of the market – Memory Mate, Q&A, Reflex and Dac easy Base.

Microcomputers, MIDI and music 37

The inbuilt flexibility of manufacturer specific code – SysEx – is a double-edged sword.

Inkjet printers 40

Look out lasers, here come the inkjets – Hewlett-Packard's DeskJet and PaintJet, Tektronix' 4696, and Kodak's Diconix 150 portable.

Fairlight Instruments 47

Fairlight's Computer Music Instrument (CMI) was a formidable beast when it was released – continuing developments ensure that it will remain the 'Rolls Royce' of sound synthesisers.

REVIEWS

The Ideal Terminal 53

ET for extraterrestrial communications and IT for communications in this world!

XtreePro 54

The second generation of this popular file management utility is even bigger on functionality and features (including a WordStar-like editor!).

Hangman 59
Is this is ultimate version of the ever-popular pen and paper game?

Amstrad's PPC 512 and PPC 640 Portables 62
Amstrad broke new ground with the with its MS-DOS machine – now they've released two genuine portables.

The Epson Trifecta 66
John Hepworth has taken to trifectas – Epson not Epsom – and reviewed their new LQ 500, 850 and 1050.

Turbo Basic 70
Peter Feldtmann couldn't wait to get his hands on a copy (and found it quick, but quirky!).

Microsoft Works 78
This could well be the answer to everyone's first question after buying a PC: What software should I buy?

T/Master 82
The idea of integrated packages is great – one package does all. But most such packages have one strong module and the rest are just 'adequate' – Jan Roberts has found a package that's all strength (especially if you word process statistics).

Hi-Tech C 86
Jonathon Scott discusses the benefits of C (even for beginners!) and reviews Hi-Tech's C compiler.

INSTRUCTION SET

Graphics Techniques 90
Now that we've covered the basic techniques of programming graphics and Cad procedures, let's draw our own three-dimensional maze.

Real and Protected modes 94
John Summerfield explains why the 80286 chip can't run Real mode software while in Protected mode.

Behind HyperCard – Part 1 96
HyperCard is undoubtedly revolutionary, but this extraordinary complex language is probably the easiest to program.

Hardware Hacking 101
A new series of articles by Tom Moffat aimed at making your computer easier to use, and giving insights into its operation.

Memory Muncher 104
A program that eats memory for breakfast (compliments of Andrew Larkin).

PUBLIC DOMAIN

New Products 107
110 programs for Amstrad CPC users, Lewis Pay Pack, NEC's latest portable, Amiga the Movie and Memory Lane are all part of this month's new releases.

The Prophet 119
SysOps beware!

First Australian Forth Symposium 125
Roy Hill reports

Your Amstrad 126
A free disk of Amstrad PC-specific software can be yours (but only if you supply some hints).

IBM Underground 128
PowerMenu – to bypass DOS

Your Apple 130
The flavour this month is CD-ROM format and MIDI.

Your IBM 132
The NetComm Program Version 3 and the new Athena BIOS.

Your Atari 134
The new Mega STs ('power without a price') put Atari right into the thick of the business market!

Your Amiga 136
So what has caused this neglected waif of a machine to become the success it is?

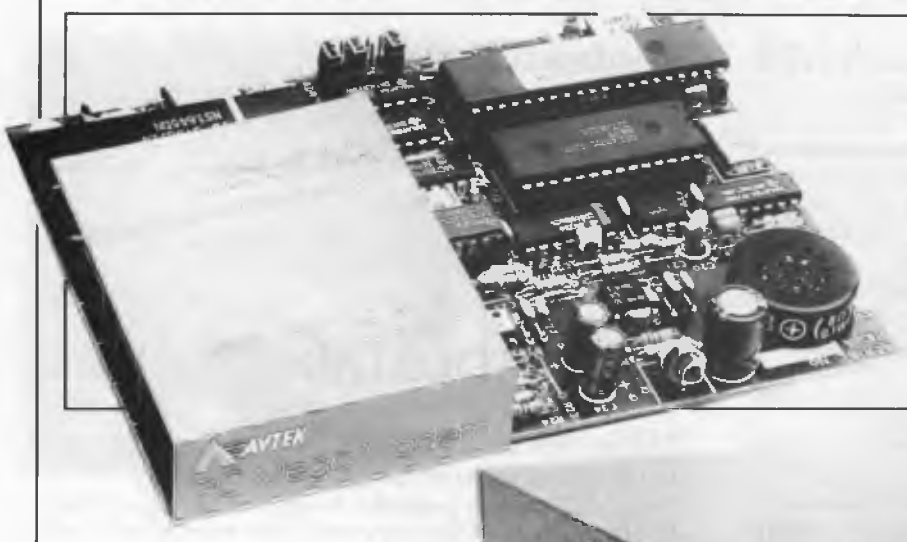
Your C64 140
A never ending story?

Microbee File 141
Nevermind the company, what about the software?

Cursory Glance 146
Simulators and stimulators

MODEMS

Direct from the manufacturer



2400 Baud Full Duplex Available July 88

MEGAMODEMS 12/123

The Avtek Megamodems provide Australia's best value communications products, with a range of fully automatic, autodialling modems. Megamodems are suitable for data transfer from personal computers, terminals, mainframes and mini host computers and for all videotex services such as Viatel. The use of the latest technology has enabled us to make the Megamodem more compact and reliable than any other modem. Price is very competitive and reflects efficiencies incorporated in the design. The Megamodems are locally designed and built. Service, support and specialist R&D for the Megamodem range is all based in Australia. Available either as a standalone RS232 model or as a plug in 1/2 card for IBM PCs and compatibles. The Megamodem range of modems are Telecom authorised.

Fully Hayes AT Smartmodem Compatible: The Megamodems are industry standard "HAYES SMARTMODEM "compatible which means they can take advantage of all the communications facilities of packages such as Crosstalk, Open Access, Symphony and Multicom. All communications parameters such as baud rate, parity and number of stop bits are set up automatically by the software and the Megamodem. Using appropriate software data can be sent and received while the Megamodem is unattended.

MAIL ORDER WELCOME

VISA

AVTEK

PO Box 651 Lane Cove 2066
Telephone (02) 427 2177
Facsimile (02) 428 2995

LEADERS IN MODEM COMMUNICATIONS

Specifications

Data Standards	CCITT V21, Bell 103, CCITT V22 Bell 212. (123 model only CCITT V23), CCITT V22bis (option)
Data Rates	300/300, 1200/1200 (123 model only 1200/75, 75/1200), 2400/2400 (option)

Model 12 & PC12

$375 inc tax

Model 123 & PC123

$449 inc tax

2400 Baud option

+ $149 inc tax

Note: we will not be undersold by imported products

Happy Birthday!

WELCOME to the 84th issue of *Your Computer* magazine! What's so special about 84? Well, if you divide it by 12, you get seven, which means we've racked up another birthday.

What does a seventh birthday mean to us? Someone in the office just volunteered it means we can all go home, having served our sentence for breaking that mirror . . . but they were only joking. I think.

No, a seventh birthday is significant in an industry where many don't reach their first. And those who go 'way back' with us will realise we're even older than that. For starters, we missed two issues in those hectic early days, not to mention the six months of planning and preparation that went into our launch issue.

We've been observing the micro industry for a long time, and a seventh birthday is excuse enough for a little reminiscing. What has changed in that time? And what hasn't . . .

The hardware has changed, certainly. Our early reviews were of such powerhouses as the Sinclair ZX80, with its 1 kilobyte of memory (quite surprising what it managed in that, too), and the 'big' Dick Smith System 80, which came with a whopping 16 Kbytes compared to the 4 Kbytes of the Tandy it was cloning.

Things really advanced when we installed our editorial department's Apple II, which we upgraded to a massive 64 Kbytes, and even got into the lightning fast world of 300 baud communications.

In 1982 we bought our first Compupro, and what we could fit on its monstrous 1.2 megabyte floppies was beyond belief. Fast, too! When the 20 Mbyte hard disk arrived the following year, we were in paradise.

These days I have 40 Mbytes in my 80386-based laptop, which I carry around the world for my seminars, and I'm always squeezed for space – I knew I should have bought the 100 Mbyte version. And the two Mbytes of main memory isn't nearly enough, is it? I have a further two megs on the way.

Yes, the software has changed too. You want to try WordStar version 0.96? I still have one of those around somewhere. Of course, its printer control is not quite as sophisticated as my current laser-wise version, and I only use that for jobs that are too simple to feed to PageMaker 3.0. I've been playing with Excel lately, and I can't seem to find too many similarities between it and the VisiCalc I used to run on the Apple. The software really has changed, and it's not finished yet.

The industry is the one thing that hasn't changed a lot. Oh, sure, companies have come and gone, little companies have become huge (we remember Jodee Rich's two-man startup, Imagineering, when it was hiding from the world in the Sydney suburb of Edgecliff), people have moved around, and so on But what is still the same is the industry's mental age. It hasn't really grown up, yet, and I'm starting to wonder if it ever will.

Can you think of any other industry where products are announced a year before they're ready, and shipped before they're ready as well. Who tests software, anyway? The customers, it seems, are the test team. They get to pay for the privilege of finding the bugs, and then get to pay for the upgrade to a version that works 'as advertised'.

When a car comes off the production line with a defect, you take it back to the dealer and say 'fix it'. There's no question of you waiting for the release of the 'bug-free' next model, and then paying to update to it. And, apart from the general incompetence of some service departments, there's usually an immediate, cost-free repair.

In many ways, we were better off in the early days. At least then, as part of a 'pioneer' industry, we knew we were being experimented upon. When the software companies were small – and they didn't have to earn a living convincing stockholders they were planning great things – they just got the products out the door instead of wasting their time talking about it.

At the Australian end, small distribution operations staffed by enthusiastic users of the products they sold could actually answer questions, rather than employing support people to look up the answers in a book provided by head office, and when that fails, send a telex or a fax to head office repeating your question inaccurately enough to elicit a worthless response.

So after seven or eight years of this, how do we feel? We love it! Despite all its faults, it's still the most exciting industry we know of. Who knows, maybe if they straightened it out it would become boring. Its certainly been anything but boring so far, and I guess we'll just put up with whatever we get as long as it stays that way . . .

MATT WHELAN

SUPER BIS Modem
2400/2400
1200/1200
1200/75
75/1200
300/300

2400

B.P.S. FULL DUPLEX MODEM

Money Back Guarantee
If Not Completely Satisfied
Within 14 Days

AVAILABLE NOW!

Model 2400ZXR

$399.00

Retail Incl. Tax

Introductory Offer Incredible Value

Amazing but TRUE

Uses the Latest Technology D.S.P. Chip-set with Performance Equal to or Better than Modems Costing ***$1600.00*** or **More!**

Automatic Everything

Auto-Answer, Auto-Dial, Call Progress Monitoring, Pulse / Tone Dialling, Line Condition Monitoring, Hayes Compatible.
Designed and Built in Australia by
MAESTRO Pty Ltd.

MODEL 2400XR

AVAILABLE NOW!

Features 2400/2400, 1200/1200 Full Duplex. Supports 27 "S" Registers, including Extensive Self-Testing and Non Volatile RAM, Call Progress Monitoring, Hayes Compatible, Same Chip-set as in the 2400ZXR.

$369.00 incl. Tax

Designed and Built in Australia by
MAESTRO Pty Ltd.
Calool Street, South Kincumber 2256
(043) 682 277, 682 278

PHONE YOUR ORDER NOW ... All Major Credit Cards Accepted

American Graffiti

IF YOU'RE thinking about getting your data organised into a more useable form by putting it into a database, this column is for you. But before you conclude that the shopping bag you're currently using is sufficient, or that you have no data to put into a database and therefore you're not interested in the topic, stop and think about it for a moment. What about your personal telephone directory? Or do you collect stamps, coins, or something else that could stand some organising? Or maybe is there some other data you've thought about analysing, or even collecting – such as examining more closely your pattern of credit card purchases, or maybe data related to some kind of scientific study? There is alot of data we all use that become more useful when put into a database; and, at least in my case, I've experienced unanticipated benefits as well, totally unrelated to databases, from spending time playing with a database. I also have some warnings about databases for the uninitiated.

PC-File+

A few months ago, I began using the Shareware database product PC-File+, written by Buttonware Incorporated; *the latest version available in Australia, File Express, was reviewed in IBM Underground, June '88*. Since this is the only database I've ever used, I can't compare it with any other databases. However, Ms Computer Writer assures me that it is very much like other databases. (She also says her brain will turn to Vegemite if she's required to sit through any more of my enthusiastic demos of PC-File+' capabilities.)

Some of the things I especially like about it are its simplicity, in design, as well as in ease of use; its straightforwardness; the design of its command structure, which makes learning and using PC-File+ a highly intuitive, easy-to-acquire skill; and its forgiving nature – it seems difficult to screw up really badly with this database, and even if you do do something dumb, it's easy to recover.

Some other very nice things about it are the fact that you need invest only a minimum of time to learn PC-File+, and several on-line services (for example, CompuServe and others) have forums devoted to PC-File+. And, of course, since it's Shareware, you can't beat the price.

The first database I created contains information about those who have bought articles from me in the past, and those I've failed to sell articles to. Until I got PC-File+, I used a more traditional method of filing data, but after a while, it became much more difficult to stuff all those papers into the shoebox.

I liked PC-File+ almost the moment I first fired it up. Like any sensible, methodical computer user these days, I was in too much of a hurry to read the documentation – all 250 plus pages of it – so I put the distribution disk in my machine, took a guess as to the name of the executable file for PC-File+, and typed that in. PC-File+ didn't find any databases, so it asked me if I wanted to create one.

I also have some warnings about databases for the uninitiated.

I replied YES, and it led me through defining a database – field names, lengths of each field, how and where each field should be displayed and so on. As a former programmer, I know what's involved in creating a database from a technical perspective, and at first, it looked to me like PC-File+ was not going to ask me for some information I thought it would need – whether a field was numeric or character data, for example. I need not have been so twitchy – in due course, it did ask for, and get, the additional information.

Since I wasn't entirely sure of several things – for instance, that I'd defined my database well, or that the data was getting in as I'd intended, I decided to enter only four records. I did that, and then proceeded to some obvious follow-ons, such as modifying data, deleting records, and so on. To my delight, PC-File+ handled each request rapidly, simply, and, most important, in a highly intuitive manner.

Next, I decided to try exporting data – getting it into a conventional ASCII file that could be imported into other software, such as word processors. Again, PC-File+ performed simply, admirably, intuitively, giving me a wide range of choices: export all fields or selected fields? All records or selected records? If selected records, what are the criteria for selecting? What format should the output file be in (choice of 13 widely used formats)?

By this point, I was excited at how easily I was steering this complex vehicle. One particularly interesting aspect of PC-File+ that never seems to get played up, let alone mentioned, is the clever way in which it encourages you by giving you all that nice reinforcement and good feedback. In fact, this response by PC-File+ kind of turned me into a big kid, pressing buttons and trying different functions to see what happened and how they worked.

I sorted the records in my database, selected, did FINDS, IMPORTed, and so on. In every case, it was easy to accomplish what I wanted to do and it required virtually no reading or learning. Moreover, PC-File+ turns out to be very forgiving. If you start something and change your mind, pressing Escape safely aborts the current action.

Earlier, I mentioned PC-File+'s simplicity. Here's an example. A PC-File+ database consists of three files. The actual data sits in one file, exactly as it was entered and without any additional control characters. A second file contains the names of all fields within your database, the length of each field and how many characters of data are to be displayed, and so on. This is a pure ASCII file, again with no special characters. The third part of a PC-File+ database is the index, which does contain special control information.

What this means is that if part of the database should become seemingly irretrievably clobbered, recovering may not be an impossible task. (I found this out one evening after I feared I'd clobbered my data and began examining things to see what I'd have to do to recover.)

YC Shareware?

On another note, *Your Computer* this month celebrates its seventh anniversary In some ways, YC is like Shareware: the value it delivers is worth many times its cost; and the more its used, the more valuable it becomes. Happy birthday, YC I'd proud to be part of you.

MICRO SALES

PERSONAL COMPUTING FOR BUSINESS

STAR
NX1000
W/CABLE
$449
INC TAX

VEGA
VGA
$639
INC TAX

SOFTWARE

INTEGRATED

Framework II	$960
Symphony	$959
Q&A	$485

DATABASES

Dbase III Plus	$935
Paradox II	$989
Fox Base	Call
Reflex	$225
Rbase System	$1149
Clipper	$869

MICROSOFT PRODUCTS

Mouse	$245
Windows 386	$339
Project	$675
Works	$335
Chart	$485
Excel	$845
Word	$739

UTILITIES

Norton Utilities	$130
Norton Advanced	$215
Norton Commander	$125
Xtree Pro	$195
DS Backup Plus	$175
TypeQuick	$99
Disk Technician +	$235

- All prices include sales tax
- All products sourced from official Australian distributors
- Come with full warranty & support
- Call for any products not listed

Prices correct at time of printing, subject to change and stock availability

WORD PROCESSORS

Word Perfect V.5	$599
Multimate Adv II	$690
WordStar Prof. 4	$499
WordStar 2000 + Rel 3	$499

SPREADSHEETS

Quattro	$320
Lotus 1-2-3	$649
Excel	$845
Silk	$215

QUATTRO
$320
INC. TAX

GRAPHICS

Freelance Plus	$699
Harvard Graphics	$599
Magician	$390

BORLAND

Quattro	$320
Turbo Pascal V.4	$135
Turbo ProLog	$135
Turbo Basic	$135
Turbo C	$135
Sidekick Plus	$280
Pascal Toolboxes	$135
Pascal Developers Library	$485

MICRO SALES
PERSONAL COMPUTING FOR BUSINESS

1ST FLR 579 HARRIS ST
(CNR MACARTHUR ST)
ULTIMO 2007

MICRO SALES

PERSONAL COMPUTING FOR BUSINESS

HARDWARE

NETCOMM MODEMS

Smart 1200 SA	$589
Smart 123 SA	$745
Smart 1234 SA	$885
In Modem 2400A	$545
In Modem 123A	$499
Automodem 12/12	$445
Automodem 123	$535
Automodem 1234	$670
Pocket Modem	$550

SEAGATE 138
30MB 28MS
$770
INC. TAX

PRINTERS including cable

Epson LX 800	$499
NEC P7	$1050
NEC P2200	$699
Toshiba P351 SX	$2199
Star NB 2415	$1215
Star NX 1000	$449
Ultra Laser	$3490

DISK DRIVES

Seagate 20Mb w/- Controller	$520
Seagate 30Mb w/- Controller	$575
Miniscribe 44Mb Voice Coil ½ height	$1185
Seagate 32Mb (28ms)	$770

MONITORS

NEC Multisync II	$1099
ADI 12'' Mono	$188
ADI 14'' Mono	$239
ADI PX 22 EGA	$859

TAPE UNITS

Archive 60Mb External	$1599
Archive 40Mb Internal	$750
Everex Excel Stream 60 Mb	$1579

CARDS & CHIPS

Hyperace 286 Plus 10MHz PC/XT	$649
Quad 386XT	$1799
Intel 80287/8	$599
Intel 80287/10	$679
EVA 480	$390
Paradise VGA Plus	$550
Quad VGA	Call
Vega Deluxe	$490
Vega VGA	$639

(02) 281 3377

FAX 281 3920

GATEWAY V3
$149
INC TAX

THE LATEST FROM CYBERSOFT EXCLUSIVE TO MICRO SALES RATED THE BEST COMMUNICATIONS PROGRAMME IN THE "HISTORY OF THE WORLD." SYDNEY MORNING HERALD.

WYSE 286

MODEL 2108
8 MHz
1MB RAM
UPGRADE PATH TO 386

MODEL 2112
12.5 MHz
1MB RAM
UPGRADE PATH TO 386

MODEL 2214
12.5 MHz
0 WAIT STATE
UPGRADE PATH TO 386

MELBOURNE:. (03) 329 2555
FAX..... (03) 329 2279
GEELONG:..... (052) 21 8566
TOWNSVILLE: .(077) 21 1743
FAX..... (077) 72 4459
NOWRA ..... (044) 21 6913

Head Office:
Melbourne: 279 Victoria St. W. Melbourne, 3003

Geelong: Shop 3, Belchers Arcade, 171-181 Moorabool St, Geelong, 3220

Townsville: Shop 3, 134 Charters Towers Rd, Hermit Park, Townsville, 4812

Nowra: Shop 3, 144 Junction St, Nowra, 2541

MICRO COMPUTERS AUSTRALIA

SOFTWARE, HARDWARE AND PERIPHERALS FOR BUSINESSES, OFFICES, HOMES, SCHOOLS AND FACTORIES

MPC-286[12]

Features:
* 80286 CPU
* 640Kb on board RAM
* 6-8-10-12mHz Switchable Clock Rate
* 20mb Hard Disk
* 8 Expansion Slots
* 1.2mb Floppy Disk Drive
* AT Keyboard
* Serial, Parallel and Games Ports.

$2499

Features:
- 8088-2 CPU
- Two 360Kb Floppy Disk Drives
- 4.77-10mHz Switchable Clock Rate
- 640Kb RAM
- 8 Expansion Slots
- 180W Power Supply
- Composite Monitor
- 0 Wait State
- Serial, Parallel and Games Ports

$1699

$3845

Features:
* 80286 CPU
* 1024K RAM (Expandable to 4mb)
* 6-8-12-16mHz Switchable Clock Speed
* 44 Meg Voice Coil Hard Disk
* Speed Display Case
* 1.2mb Floppy Disk Drive
* 360k Floppy Disk Drive
* Enhanced Keyboard
* Serial, Parallel and Games Ports
(All speeds rated at 1 Wait State)

MPC-88[5]

$1350

Features:
- 8088 CPU
- Two 360Kb Floppy Disk Drives
- 4.77mHz Clock Rate
- 640Kb RAM
- 8 Expansion Slots
- 180W Power Supply
- Composite Monitor
- Serial, Parallel and Games Ports

MPC-386[20]

Features:
- 32 BIT Motherboard
- 2mb RAM (Expandable to 10mb)
- 44mb Voice Coil Hard Disk
- EGA Monitor and Card
- 1.2mb Floppy Disk Drive
- 360K Floppy Disk Drive
- Speed Display Tower Case
* Enhanced Keyboard
* 4.77-8-10-12-16-20mHz Switchable clock Speed
* Serial, Parallel and Games Ports

$7495

LARGE RANGE OF PRINTERS – MONITORS – HARD DISKS ACCESSORIES AND FLOPPY DISKETTES AVAILABLE

12 Month Factory Warranty
Established in Electronics over 14 Years

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

CANBERRA COMMENT

Understanding the future

The Federal Government's Commission for the Future recently organised a seminar on technology for Federal MPs. Guest speaker at the seminar was Professor Bill Melody from the UK.

Professor Melody is Director of Information and Communications Technologies for the British Economic and Social Research Council.

His surprising message to the MPs at the seminar was that as communication improves, understanding declines Referring to last October's stock market crash as an example, he said it was a perfect case of computers having too much information. When the experts used that computer information they all came up with the correct economic decision. However the decision was correct only if no one else was making the same decision. Unfortunately, all the stockmarket analysts had the same information.

Professor Melody said the problem with the stock market crash was everyone made the same decision on the basis of the same information. They all went over the cliff like lemmings.

The trend now with information consultants is to tell their clients less is better. According to Professor Melody information consultants now tell managers 90 per cent of data can be ignored – it is the vital 10 per cent that counts. This is a switch from a few years ago when consultants kept saying that more information is better. Some organisations claim that a consultant is someone who borrows your watch to tell you the time then sends you a bill

Professor Melody was also critical of the marketing of new technology. He cited the British experience with fifth generation computers as an example.

Starting in 1982, Britain spent huge sums on research into fifth generation computers believing it was important for economic development. They then discovered there was more to it than simply coming up with new scientific information, Professor Melody said. Unless the economy can use new information in useful and efficient ways there is no real benefit.

Professor Melody quoted the *Economist* newspaper of 1983 which said about fifth generation computers – 'Invented in Europe, patented in America, sold by Japan.'

The craze over fifth generation computers was seen as a Japanese marketing device to get the British to invent computers that Japan could then sell back to England.

Referring to last October's stock market crash as an example, he said it was a perfect case of computers having too much information.

Professor Melody seriously questioned Japan's contribution to new technology. He said it was not new inventions in science and technology which had made Japan wealthy. Instead it was organisation of such things as the Just In Time Inventory System. Japan is the only nation that has closely studied the links between collaboration and competition. They know when to get their hi-tech industries working together on projects and when to make them compete. Western countries still needed to come to grips with that problem, Professor Melody concluded.

Australians like new technology

The Commission for the Future has released a study on Australian attitudes to computers and new technology The study shows generally we like new ideas with some of us keener than others.

The new survey shows 63.5 per cent of Australians in favour of technology advances Compared with a similar survey five years ago, this shows an increased approval for new technology of just under 10 per cent.

The biggest increase in support is from professional groups. Nearly 90 per cent now have faith in new technology, a rise of over 20 per cent in the last five years. Education has a bearing on approval ratings with 63 per cent of tertiary educated Australians supporting technology advances. This is up 18 per cent since the 1983 survey.

Richard Eckersley from the CSIRO analysed the latest survey for the Commission which had 1,000 Australians over 14 years taking part. All were asked to rate technology developments in Australia as either positive or negative. Eckersley found some big differences in attitudes to new technology according to sex, age and education.

Less than half those with Primary education only thought technology was a good thing. This group showed little change in attitude from five years ago. Similarly, although a majority of older Australians (60 per cent) supported technology, this percentage had also not increased since 1983.

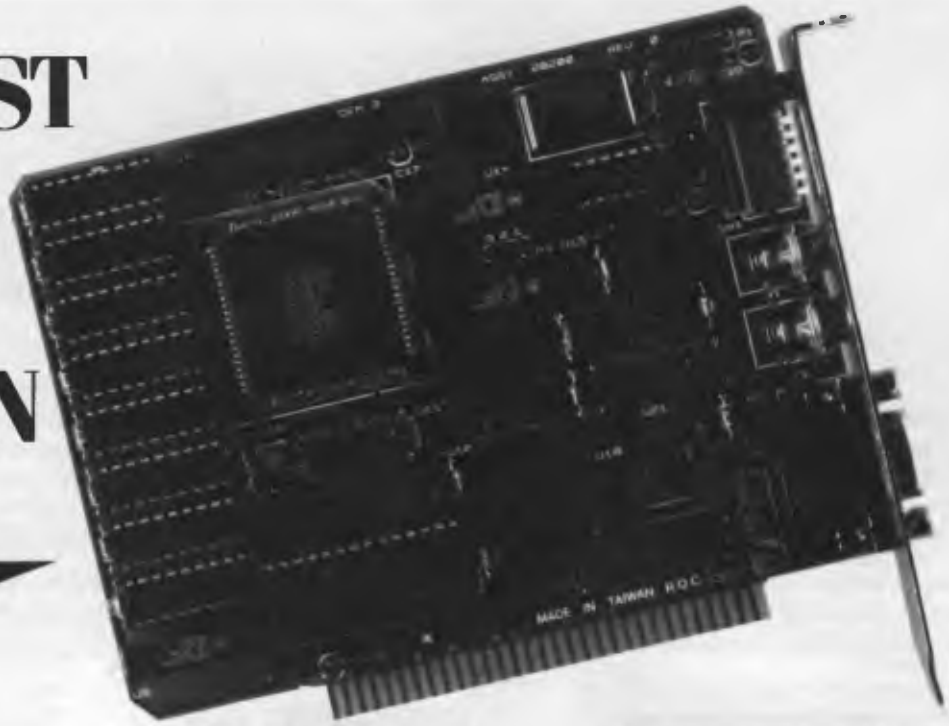
Australian teenagers, however, now showed greater interest in new technology. Since 1983 their support has risen 16 per cent to 65 per cent. The number of home PCs may have something to do with this.

Women remained less confident about new technology than men. Altogether 55 per cent of women surveyed expressed confidence in new technology compared with 72 per cent of men.

The biggest gap in technology approval was between primary and tertiary educated Australians. This gap has doubled since 1983 with tertiary educated Australians far more enthusiastic about new technology than those with primary education only.

The survey showed the biggest difference was between tertiary educated male managers and their primary educated counterparts. Primary educated managers expressed strong mistrust of new technologies while tertiary educated managers showed keen approval □

THE BEST EGA DEALS IN TOWN



ESM-5400 Ultra high resolution EGA monitor – only $845

This monitor must be the best value EGA in town, with a moderate price and resolution to burn!
For this month only, it is available for only $845, yet thrashes the pants off monitors costing over $1,000.

The amazing PEGA EGA card

normally $499 this month only $299

For this month only, Australia's highest performance EGA card is also the most affordable. Normally selling for a very moderate $499, the price has been slashed to under wholesale for this month only.

The amazing PEGA EGA card offers total software and monitor compatibilty at around half the price of other EGA cards.

NEW

NEC Multisync II – IBM PS/2 compatible and only $1249

If you want the finest monitor on the market, to go with your PEGA card, it will be the new NEC Multisync II. Totally compatible with all the video standards, including the IBM PS/2 VGA standard, the Multisync is a truly obsolesence proof monitor. The Multisync II now has automatic switching between TTL and analog. It is supplied complete with a comprehensive manual and data cable to allow connection to the IBM PS/2 or graphics adaptor with analog connector.

PEGA CARD – SPECIFICATIONS

The PEGA EGA card is a half size, high performance EGA card, compatible with the IBM PC/XT/AT and compatibles. It works with Monochrome, RGB colour and enhanced RGB colour monitors and supports all the current video standards, including monochrome, Hercules graphics, Colour Graphics and Enhanced Colour Graphics standards, as well as Plantronics mode

Facilities include
- Complete compatibility with software written for all the other video cards, including Colour Graphics (CGA), Hercules Graphics and Plantronics "ColourPlus" modes.
- External switches mean that the PEGA card can be configured from outside the system
- An easy to use software utility supplied with the card allows users to switch between modes
- Flicker free scrolling is performed in all modes. 256K of RAM installed
- The card fits straight into a "short slot"
- The PEGA card is fully compatible with monochrome, RGB and Enhanced RGB monitors
- The card can be configured to work in a "twin monitor" arrangement, in conjunction with another video card

PEGA card plus ESM-5400 monitor – a complete EGA system for only $995

We are offering the incredible PEGA EGA card plus the superb ESM-5400 EGA monitor for only $995.00. That's a $345.00 saving on our normal low prices. Stocks are strictly limited, so order now to avoid disappointment.

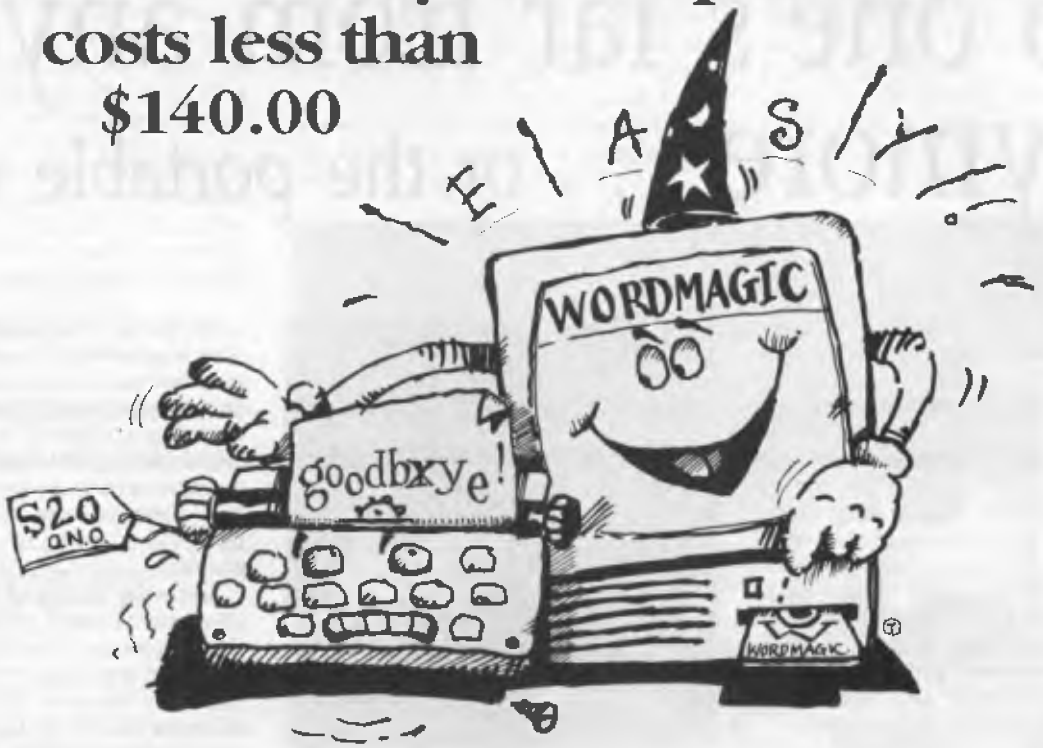
READER INFO No. 92

ELECTRONIC SOLUTIONS

PO Box 426 Gladesville NSW 2111
Phone (02) 427 4422 Fax 427 2542
We accept Bankcard, VISA and Mastercard.
Mail orders our specialty.

WordMagic

The only full featured wordprocessor that is easier to use than a typewriter, runs on nearly all computers and costs less than $140.00



Wordprocessing too difficult? Or too expensive? WordMagic outperforms all those expensive "high performance" word-processors, yet it's the only one that's easier to learn than your old typewriter.

WordMagic doesn't ask you to spend hours training. We've made the commands so simple and logical that you can start writing straight away.

And the manual assumes you are a beginner, not a computer whiz.

We've built-in things you really need. Like true "What you see is what you get". And a typewriter mode for all those little jobs, like typing forms and envelopes, that are nearly impossible on other wordprocessors.

WordMagic thinks ahead for you too. With an automatic save facility, that saves as you type, rather than letting you lose all your work if the plug falls out!

And we appreciate that the most important thing to you is the look of the final product, the printed output. So WordMagic has true microjustification and proportional spacing, even on dot matrix printers. It's the best you can get!

WordMagic is available for nearly all computers, including IBM PC and compatibles, MS-DOS computers (including the NEC APC III) and most CP/M computers, including MicroBee, Osborne and Apple CP/M.

HOW DOES WORDMAGIC STACK UP AGAINST THE OPPOSITION?

Feature	Word Star	Word	Word Magic
Full WYSIWYG	N	Y	Y
Simple mnemonic commands	N	N	Y
Automatic save	N	N	Y
Select printer from menu	N	Y	Y
Typewriter mode	N	Y	Y
Select draft/letter quality	N	Y	Y
Support DOS directories	N	Y	Y
Construct directories	N	N	Y
Instant word count	N	N	Y
True microjustification	N	Y	Y
Graphics	N	Y	Y
Upper/lower case conversion	N	Y	Y
Print multiple columns	N	Y	Y
Whole program in memory for fast response	N	N	Y
Available for CP/M	Y	N	Y
Price	$599	$980	$139

Yes! Send me WordMagic! I enclose money order/cheque/credit card details for $139 plus $5.50 P&P

Name _____
Address _____
_____
_____ Postcode _____
Computer: Make/Model _____
Operating System _____
Credit Card _____
☐Bankcard ☐VISA ☐Mastercard
Card No.
☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
Signature _____
Expiry Date _____

Send to:
ELECTRONIC SOLUTIONS
PO Box 426 Gladesville NSW 2111
Phone (02) 427 4422. Fax 427 2542

No one's far from anyone anymore . . . or the portable office!

SOON AFTER buying my first acoustic coupler, I was looking through the Yellow Pages for an organisation called Modems Anonymous which would help me curb my online fetishes and database addictions. Now, with the advent of the cellular phone system and advances in cellular and radio modems, I've gone one more step in my quest for the ultimate portable communications system. No matter where I am in the world (except underground or in an airplane) I can compute, logon to my electronic mailboxes, send and receive telexes or facsimile messages and hold analog conversations.

Like my contemporaries in the music industry, I lead an extremely portable lifestyle with at least four overseas trips and dozens of interstate jaunts each year. Our clients include both corporate entities in entertainment such as Disctronics, a compact disc manufacturer, Fairlight Instruments, who make the Computer Musical Instrument and Computer Video Instrument, the Pro-Image Group of video production houses and many more including artists like Midnight Oil and The Church

The portable computer not only serves as an electronic notebook and word processor but also as a diary and 28K phone directory. But most important, it's my communications link via electronic mail (email) with the office in Sydney, reps in Los Angeles, New York and London, a band in Nimbin and clients around the world. It gives me a telex capability through Keylink which allows me to send and receive telexes anywhere in the world. Mailgrams and telegrams can also be sent as well as telex world letters through the OTC/Keylink/Dialcom international E-mail system.

For the past four years, Phil Tripp has tried to be the electronic renaissance man – sort of a portable digital prima donna on the low rent side. After years of swearing at computers, he bought a simple, trusty Tandy Model 100 and started swearing by digital technology.
But that was only the start of Phil's story . . .

All this is now possible through the newest generation of computer and communications technology contained in one briefcase with an attached 'saddlebag' of electronic goodies. It's also totally wireless in that I don't have to be connected to any source of power due to rechargeable batteries, nor to any hard-wired phone lines owing to the new cellular phone.

And – the beauty of this new portable office environment is that it costs less than $10,000 and is totally portable, allowing me to work and communicate from a yacht, the beach, a bush house with no phone or power, the backseat of a cab or even in a hot air balloon (that's me on the front cover of this issue, incidentally).

Using a combination of home grown products and items gleaned from overseas catalogs, I've created a remarkable array of technology. But it's not the technology that thrills me – not the whirr of the disc drives, beeps of the computer, swish of the ink jets across the page nor the tones of 'No One's Far From Anyone Anymore' emanating from the briefcase phone as I fax America while sitting in the loo – it's the applications that show how computers and communications have attained the totally portable status. Take these recent examples –

At the Australasian Performing Right Association Music Awards held at the Regent Hotel, we used the portable cellular phone with a battery operated fax machine to send off a barrage of press releases to daily newspapers, radio and television contacts from the venue as the prestigious awards were being handed out to the country's top songwriters. As well, over 40 electronic mail messages were sent as press releases to overseas music

industry trade press through the Keylink system, making deadlines for publications in New York, Los Angeles, London, Amsterdam and Tokyo.

For the *Your Computer* Computer of the Year Awards, we sent out our invitations to computer industry trade writers to their electronic mail boxes provided by OTC and maintained a correspondence with a few of them before actually meeting for the first time on the night of the event. We also used electronic mail to message back and forth with Angry Anderson, the keynote speaker, and to review written material with him for his speech.

We use electronic mail to send and receive account details or entire spreadsheets, communicating with our accountant in this manner and saving a substantial sum by not having his staff duplicate data entry.

Most of our clients are on electronic mail so that we can send drafts of press releases for their correction and get them back quickly without again having to duplicate keystrokes. As well, they can format them differently or create new headers if they wish. Copies of all correspondence received from trade publications or request for more information are routed to the clients – wherever they may be in the world – with just a few keystrokes to append and forward items to their electronic mail boxes.

On an airplane . . .

While on a plane from Sydney to Los Angeles, the battery powered computer, disk drive and printer churned out multiple reports, letters and messages which were faxed globally from a pay phone in the customs hall while waiting for my baggage to come up the carousel. At the pay phone next to the one connected to the fax, the trusty Tandy portable was linked through an acoustic coupler to the local Telenet data access number for sending and receiving electronic mail and telex messages via a Netlink to the Australian email box.

A music industry mate who manages a top band has his house so far out in the bush that his only contact with the world for weeks is by radio. When he's in town, he lives on a yacht moored on the Hawkesbury. At his bush retreat, he has a Wagner radio modem attached to his Toshiba T1100 to send data back to the office which has a similar high band set-up to maintain contact with him. On the yacht, he's just inside the Sydney cellular telephone network so his NetComm Cellular Modem links him into the electronic mail network with telex capability.

On the loo . . .

And, of course, I had to do it as I hinted before . . . sending a fax to a friend in Los Angeles while sitting in the loo at a major hotel. That was the ultimate in totally portable communications.

There's both fun and vital work-related aspects to our use of computers and communications. The beauty of the portable system is that you can do work anywhere you want or need. No longer saddled with a bulky home unit with limited memory and the necessity of an AC power source, it's easy to be under the palm tree or in the airliner pounding out paperwork or, best of all, creative writing.

That's the essence of what portable computing has done for me. The lie that the salesman told me of the paperless office, was offset by the freedom to take my mind out for a stroll on the keyboard anytime and everywhere. With the properly designed portable system, you've got everything all the time, just waiting for a caress of the fingers to start the flow.

On the prowl . . .

Sound romantic? Well, let me tell you a story or two. I'm no Clark Gable – built more like a wrestler than a Romeo. But I found a surprising thing has happened over the past couple of years. Women are attracted to men who use portable computers. On a couple of overseas flights, I met several who just sort of came by my seat as I typed away, fascinated by the technology and compactness of such a full on portable office. It easily led to great conversations about communications at the expense of the workload, and on four occasions, led to further developments which we shouldn't go into because this is a family magazine.

One of these young ladies who lives on the island of Maui and is appropriately named Delilah, figured out how to hook up her portable computer to a friend's modem and the two of us exchanged rather passionate electronic mail items for months after our first meeting and this led to our catching up with each other in more exotic locales later . . . nuff' said.

There's another special woman in my life who is just as much of a globetrotter as I am but can't fly: my Mother, who's 73 and a confirmed cruise ship addict. A couple of years ago, I was supposed to meet her in London on a certain day but had to move my plans by a day. Trying to call her as she sailed around Africa on the Canberra would have cost a fortune and since I was zipping around the US and Europe at the time, she would have found it impossible to get back to me.

The solution to the problem was so simple. I merely sent her a telex from the airport in Los Angeles to the ship sailing around the Cape of Good Hope through OTC's Minerva email system and got to her with a confirmation coming into my email box upon delivery on the waves. She was then able to telex me back on my Aus-

NEW!

TOOLKITS FOR TURBO C & QUICK C from ZORTECH INC.

HOTKEY

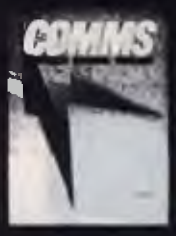
A complete set of Terminate Stay Resident (TSR) functions that help you to write reliable 'pop-up' programs.

Now you can make your programs 'Sidekickable'. Two example programs are included, a 'pop-up Calculator' and a pop-up 'Critical Error Handler'.

The Hotkey toolkit handles all floating point functions in resident mode.

The 32 page manual includes an interesting discussion of the origin and history of undocumented MS-DOS function calls, together with a full explanation of the theory and practical use of TSR's.

Only $99 (State Turbo C or Quick C version)



COMMS

Do you need to incorporate serial communications into your applications? Yes! Then get this inexpensive but highly professional COMMS toolkit from Zortech Inc.

Look at the list of features: Xmodem, Kermit and ASCII file transfer, Hayes modem control, VT52, VT100 and ANSI terminal emulation, supports up to 8 serial ports, speeds up to 19.2k baud rate and higher.

Two demonstration programs are included, MINICOM and MAXICOM (like Procomm) together with the 120 page manual and full source code FREE!

Only $99 (State Turbo C or Quick C version)

GAMES

Have you ever wondered how to write a chess program? Now we reveal the secret algorithms and techniques of the masters with this dynamic Games toolkit.

The package comes complete with the full source code to three ready to play games of strategy – Chess, Backgammon and Wari (an ancient African game).

A comprehensive 150 page manual is provided giving an in depth look at the history, structure and program design of such 'Strategy Games'.

Only $99

(State Turbo C or Quick C version)

SUPERTEXT

This is not simply an 'Editor' toolkit, but a full-blown, 'WordStar' compatible wordprocessor with the full source code.

As well as all the normal editing functions, you will also find 'dot' commands and full printer control. The SuperText toolkit handles files of any size and allows full on-screen configuration.

Do you need to incorporate a wordprocessor into your application? Yes! Then get the SuperText toolkit complete with full source code and 150 page manual now!

Only $99 (State Turbo C or Quick C version)

PROSCREEN

Generate high quality data entry screens with the Pro-Screen – Screen Designer and Code Generator.

You can draw the data entry screen, define the input fields, define the input criteria, set screen colors and attributes, draw single or double lines, make boxes – press a few buttons and 'hey presto' Pro-Screen generates the C source code for your application!

Professional applications programmers will find this versatile utility and it's associated functions invaluable.

Comes complete with a substantial 78 page manual and demo programs.

Only $99 (State Turbo C or Quick C version)

ONLY $99.00 each + Tax

WINDOWS

Add super-fast text screen handling to your applications with the WINDOWS library from Zortech Inc.

Give your applications the professional look – with instant zooming and exploding windows. Incorporate drop-down menus and Lotus style menus with our easy to use functions.

Automatically handles memory saving and buffering of window text. Use any number of overlapping windows in your applications. Write to any window, read from any window, close any window, pull any window to the top.

Over 55 functions together with a big 85 page manual and remember, you get the full source code.

Only $99 (State Turbo C or Quick C version)

Yes! Rush me these items!

- ☐ HOTKEY
- ☐ COMMS
- ☐ PRO-SCREEN
- ☐ WINDOWS
- ☐ GAMES
- ☐ SUPERTEXT
- ☐ C VIDEO

FREE SHIPPING — VISA/BC/MC/CHECK

Name .....

Address .....

..... Phone .....

VISA/BC/MC ..... Exp. Date .....

MULTIVIEW COMPUTERS PTY. LTD.

1st Floor, 565 Willoughby Road, Willoughby, NSW, 2068

Phone: (02) 958-2477. Fax: (02) 958-2539

ZORTECH

Turbo C is the trademark of Borland Inc. Quick C is the trademark of MicroSoft Inc.

tralian telex number through email the next day (while I was in Montreal). I picked it up when I logged in at the airport on the way to New York Sound complex? The travel, is but the communications aren't. Portables make access to a full range of communications so simple and convenient with the added capability of working anywhere.

Take this article as an example. It was started in a plane, slaved over at two desks in two different offices, worked on in a couple of taxis, altered at the beach, polished in bed, spell-checked on the patio and sent by modem to both the office of *Your Computer* and Editor Jake Kennedy's house as well as having a hardcopy faxed to Jake as backup

On the job . . .

There are dozens of applications that I could detail about how we combine portability with communications. Here are just a few of the more notable ones to spotlight how we overcome logistical problems with our technology –

One of our clients, video producer Steve Priest, is on location in Gunnedah shooting a video clip His production assistant emails us crew lists, shooting schedules and some anecdotes about the making of the clip so that we can construct a press release to send to a couple of key trade papers – all within one day so we can make their deadlines.

I'm in Los Angeles, get the info, reformat it within a few minutes, take a half hour to write the copy, email it back to Steve for approval and within a few hours, send it by email to my Sydney office for them to fax to *Encore* in Redfern, *Optic Music* in Los Angeles and *Billboard* in New York And, as soon as they get production stills from him, they send paper copies to a list of other trade and consumer video publications around the world from a list that I sent by email which is then printed directly onto labels.

When the Divinyls were going to tour in the US, we drafted a press release with tour dates and other information By formatting a series of 250 names and addresses of key print media or radio contacts around the States, we had a file prepared which we were able to upload into the electronic mail system of the US via a Netlink from here. In just under ten minutes of online time, we had sent 250 mailgrams through the US postal service to these contacts.

When we loaded the names and addresses, the message went to the post office nearest them, a letter was produced which arrived on their desks the next morning. It created a tremendous instant buzz for the band. We've also used the same tactic for Midnight Oil, The Church and Eurogliders in varying volumes of mailgram drops. The price is only $1.50 per item which is cheap considering the coverage and timing.

And the beauty of this new portable office environment is that it costs less than $10,000 and is totally portable.

There are several other examples of how we use portables to deliver the goods – linking directly into the newspapers to drop press releases to the VDU's of editors and journalists, sending faxes from concert venues or on location with film crews at Expo, chatting in real time by keyboard between me in New York and Sydney with the home office staff – all the typed conversation is printed out for later reference.

The real advances that have been made with portable computers, enhanced portable telephones and the new wave of fax and other data communications technology, is that the user now has a most direct and instant connection to the people and organisations with whom he wants to communicate. But more important, there is also the direct and instant connection to the mind and imagination

TRIPP'S TIPS TO THE PORTABLE COMPUTIST

PORTABLE computing is not without its pitfalls. The following tips are gleaned from personal experience –

1) Never hook up a computer and acoustic coupler to a pay phone in France or any other country targeted by terrorists. I once did this at the airport in Paris and was made to feel the steel of an UZI machine gun in the back when the local *gendarmes* thought I was putting an explosive device in the phone booth. Because I spoke fluent French, I was able to worm my way out of trouble, but that might not be the case in Seoul, Bahrain, Tel Aviv or Tripoli when you try to log on.

2) About buying computer goodies by mail order: make sure you are getting tried and tested goods from a reputable dealer if you do order from overseas while travelling Remember that mail order computer parts attract a hefty sales tax and duty when you collect them from Customs, negating any savings you might have made by circumventing the local distributor. And your warranty may not be applicable here either

It may appear that after exchange rates and postage, the overseas supplier offers substantial saving over buying locally. But remember that the Australian supplier has to pay duty, sales tax, freight and often has buy currency in advance or get hit with exchange rate fluctuations making their profit margin slim and their outlay prohibitive – so support them whenever possible.

3) Never *ever* take your computer or disks through or even near an airport metal detector And, if at all possible, have them manually checked rather than going through the x-ray machine The electromagnetic waves around a metal detector or pulses of the x-ray can wipe or corrupt disks and the delicate RAM of computers.

4) There's a great new market in used portable computers. Several of my friends have bought Tandy Model 100 units through *Trading Post* type of magazines, or through the classified columns of newspapers, for less than a third of the cost of a new machine. Check it out thoroughly, though, before laying out the money, especially the most heavily used keys like cursors and functions. Also, check out the recycled technology shops or computer traders as well as pawnshops for the occasional bargain Or put an ad in the computer classifieds under 'portable wanted'!

5) Always have a condom with you if travelling by commercial airplane and using your computer in the public view. And never have a cup of coffee, cocktail or soft drink within arm's reach of a computer Murphy's Law of Portables states that liquid always finds the path of least resistance to the most vulnerable and expensive part of a portable computer.

WENDIN-DOS Opperating System.
A self-bootable MS-DOS workalike that is multi-user & multi-tasking. Compatible with MS-DOS file structure, supporting same commands & switches that the user is accustomed to, extra commands to make it a more productive environment.
Will address extended memory. **$225.**
WENDIN-DOS developers kit now available includes libraries written in assembly and includes source code **$225.**

C86PLUS C Programers Compiler.
Based on a proprietry compiler design technology, applies artificial intelligence to produce highly optimised code. This version benchmarks 20% faster than Microsoft & 70% faster than C86 v2.3. Includes functional equivalent to most UNIX V libraries & implements the latest ANSI C library features. Over 250 library functions source level debugger support, optional assembly language output, 100% ROMABLE code. Optional assembly language output, shared file & network support. **$595.**

INTRODUCING C Learning Process for C.
An extremely useful educational tool or do-it-yourself C language package. Includes a 300 page manual with examples, references & tutorial, for fast learning, guides the user through the steps of programming C, teaching structured style, fundamental logic and techniques. **$325.**

FONTRIX WISIWIG Desktop Publisher.
For business, studies or fun graphics. Allows expression of ideas, larger than screen workspace uses the full resolution of printer, NOT just the screen. Eleven fonts supplied & over 160 more available. FONTRIX can typeset from keyboard or directly from ASCII textfiles and can handle text and graphics from other programs. **$395.**

PRINTRIX More Power To Your Printer.
Uses batch processing techniques to handle desktop publishing. Text files prepared by your favourite word processor can have commands embedded to tell PRINTRIX how to format each page in minute detail. It uses easily customised layout files to add fonts, page formatting & graphic insertions. Accepts both FONTRIX graphics and standard graphic files such as those "Bsaved" from basic.
Apple II version now available.

TGF COMPUTER SYSTEMS
214 HARBORD ROAD BROOKVALE 2100
Phone (02)938-2522 Fax (02)938-4287

THE LATEST IN PORTABLE PERIPHERALS

BECAUSE of Australia's relatively small market for speciality goods like 'portable peripherals', we most often don't see the latest applications of technology until they after they've become established overseas – particularly in the US.

There are a number of US-based mail order dealers in portable computing merchandise as well as catering to the Tandy Model 100 and 200 users' needs for upgrades and modifications. This is only a representative list of some of the better vendors –

Travelling Software, 19310 North Creek Parkway, Bothell WA 98011; phone 206-483-8088, fax 206-487-1284. They call themselves 'The definitive source for laptop computer software, hardware and related accessories' and they've got a selection of both Tandy 100/200 and IBM compatible goodies. Their service is excellent and technical support over the phone, superb. Their range of products is as broad as it is innovative. They have an illustrated and comprehensive catalog available and orders by credit card are simple. One of their hotter items is a Booster Pack which bumps up a Model 100 to two megabytes and can include a 1200 baud internal modem, nicad pack and lot of extras.

PG Design Electronics, 37560 Thirty-one Mile Rd, Richmond MI 48062; phone 313-727-2744. This company specialises in Model 100 and 200 upgrades with a 64K module available for US$300 and a 224K module for US$575. Peter Van Heusden runs the company and provides top notch service and support.

Portable Computer Support Group, 11035 Harry Hines Blvd, 206, Dallas TX 75229; phone 214-351-0564. They have a range of Tandy 100/200 products including a six ROM bank with nicad battery pack and a Super ROM with a number of applications programs.

Purple Computing, 420 Constitution Avenue, Camarillo CA 93010; Telex 888661, phone 805-987-4788. Their star items are cheap memory modules for the Model 100 and 200 and a US$99 one kilo portable printer that is battery operated but uses thermal paper only. They also have an Australian dealer of their products: Softech Ltd, (02) 419-8899.

A PORTABLE COMPUTING HORROR STORY

PORTABLE COMPUTERS and their peripherals parts are getting so small and light, it's hard to notice them sometimes.

I ordered a couple of TTXpress portable thermal printers and some Sardine ROM chips from a mail order house to be delivered to a Los Angeles hotel. Upon arrival, the box was waiting for me and I opened it and removed one printer to use in the room, leaving the rest in the box with a pile of wrapping and styro packing.

Later that morning, I went for drinks with a friend. Upon my return, I noticed the box was not next to the dresser where I had left it. Thinking that the maid had diligently put it in the closet, I started to search. Within a few minutes I was freaked – not a trace! I called housekeeping and the maid had gone for the day. I called security and they filled in a report and as I was finishing, the head of housekeeping called and told me that they had contacted the maid and she had indeed found the box in my room. Thinking it was trash, she chucked it down the chute which sent it into the huge hotel trash compactor.

Hoping to retrieve it before it was too late, I got security to take me down into the bowels of the hotel where I looked in as saw about 40 cases of empty wine bottles from a conference the night before. I gave up the idea of wading through them and the other debris. My tiny printer and other parts had no doubt become even more compact. The happy ending though was that the hotel paid for the equipment and had it shipped to me the next day.

THE PORTABLE TRIPP

Computers – Tandy Model 100 with memory upgraded from 32K to 256K with an eight bank PG Designs snap in RAM pack. Sardine ROM chip from Travelling Software contains T-Word enhanced word processing and printing programs as well as an on-board 8000 word dictionary/spell checker or a 40,000 word expanded dictionary accessible on disk.

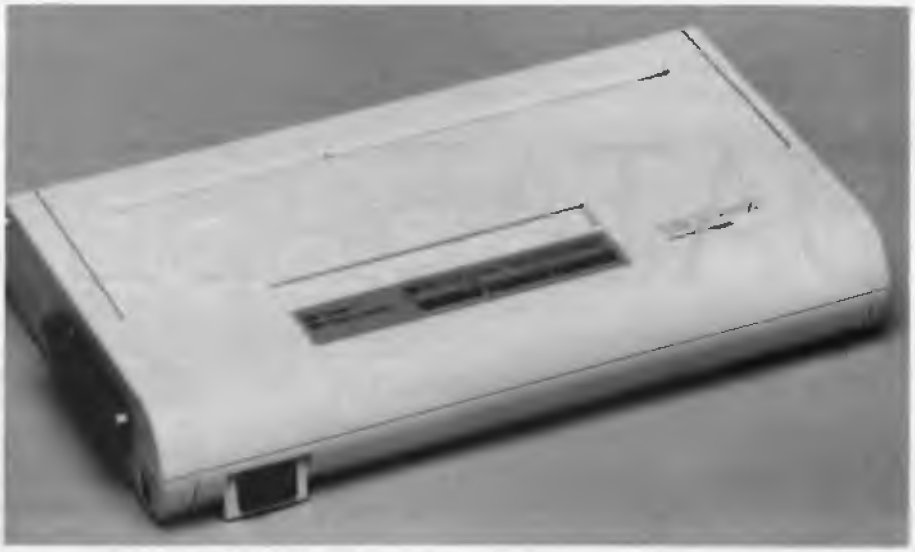
Tandy Model 200 with 72K memory and Sardine/T-Word ROM chip addition. Both computers run on rechargeable batteries internally as well as using an external 40 hour lead acid battery pack from American Micro Devices. ▽

Next step up is an as yet undecided portable (possibly a Tandy 1400LT, Toshiba 1200, Spark, NEC Multispeed or Zenith) with about a megabyte of RAM, and a 5 to 20 megabyte hard drive on-board with two floppy drives.

Mobile phone – Racal CDL440 Cellular Briefcase telephone with three watts of transmission power, builtin rechargable gel cell battery pack allowing 1 hour of conversation or seven hours on standby. It offers hands-free talking or direct plug connection for a cellular modem.

Worldport pocket modem – 300/1200 Bell/C-CITT compatible powered by 9 volt rechargeable battery. It has separate acoustic cups as well as an RJ11 direct connect cable △

Tandy multiple DC voltage switchable transformers in 110 volt and 220 volt AC models for different countries. Used for recharging American Micro devices lead acid batteries as well as powering computers and peripherals on the road in hotels.



Peripherals – Tandy Model 2 Disk Drive with 200K per 3½ inch disk. It also runs on rechargeable batteries. △

Diconix portable inkjet printer that uses plain paper rather than thermal It's battery-powered – and reviewed on its own in this issue

Portable fax – Portafax (available through NetComm) Model B battery operated Group 3 facsimile transceiver that doubles as a photocopier with 25 pages of faxes or 15 pages of copies per charge of batteries.

Sony Discman portable compact disc player with two Sony RSR 55 portable speakers – all powered by rechargeable batteries.

Sanyo battery recharger – one for AA and one for C cells.

Travelpak multi-standard voltage converter.

Netcomm Cellular 300/1200 Bell/CCITT Modem powered from the cellular telephone

Blackjack modem adapter for screwing onto phone handset to allow direct modem line connection to the mouthpiece. ▽

Sendata 700M acoustic coupler – 300 baud Bell/CCITT switchable. I use it as a backup

Solarcell 6 volt folding photovoltaic power source/recharger for running computer at the beach or recharging batteries from sun or room lights △

Itty Bitty Book Light – battery operated reading lamp for clamping onto computers in bed or on airplanes at night.

DATABASE DATA

How do I store thee? Let me count the ways . . . there are more than 50 microcomputer database products on the Australian market, ranging from single file systems through text specialists to relational multiuser and networked packages. Over the next few months, Steve Keen will assess a selection of the most interesting databases (and suggest the use for which each seems most-suited).

IN THIS series of articles, I'll be looking at a number of aspects of each program: price, the program's specialisation (if any), how relational it is, whether it's designed for multiuser environments, and how easy it is to drive. Clearly, those features will weigh differently in the minds of different purchasers.

For a business the key issues in databases, in descending order of importance, are likely to be the degree of relational capability, its multiuser capabilities, and ease of use. The order shifts somewhat for an individual purchaser. Multiuser capability is unimportant, the chief function to which you intend putting the program is vital (there's no sense in buying dBase III if you want to organise a textual database), and price becomes a major factor: you're going to have to sacrifice some power to get a product which fits within the purse-strings. I will try to provide guidance as to which products are the best buy for each category of buyer.

Generally, the offerings under the database heading are much richer now than they were three years ago, when dBase III first came out. At that stage the market broke down into two categories: single file and relational

Single file programs, such as PFS:File, Perfect Filer, and Cardbox, were excellent at organising mailing lists, card indexes, and so on, but they couldn't be the basis of a worthwhile business system. Taking a library as an example, it could maintain its catalog using a single file program, but it couldn't work out which borrowers had which books out using it.

That work was the province of relational databases, where the program was capable of locating a borrower's record, and using a key from that file to find out which books the borrower had on loan from the catalog file. Though it had some competitors, dBase was virtually the only worthy product on the street at that business end.

Nowadays the single file/relational division is blurred. Some ostensibly single file programs — such as Q&A — now have the ability to 'look up' other files while updating a main one. From the other perspective, the market definition of relational has broadened somewhat When dBase was the only Mack Truck on the block, relational simply meant that a dBase programmer could write a dBase program that linked files together

In rough terms, the dBase code to find out which books a borrower had out on loan would be as follows —

```
SELECT BORROWER
@ X,Y SAY "Enter borrower's name"
@ X,Y+30 GET name
SEEK name
STORE bcode to mbcode
SELECT CATALOG
SEEK mbcode
WHILE .NOT. EOF() .AND. bcode = mbcode
        @ X+1,Y SAY author
        @ X+1,Y+30 SAY title
        SKIP
ENDDO
```

Obviously, though dBase provides the multifiles, and the programmer has to provide the relations. Nowadays, there are programs where the commands —

```
FORM SELECT customer_inquiry INPUT
FIND ALL BOOKS BORROWED
 BY borrower SORTED BY AUTHOR, TITLE
REPORT outstanding
```

do all the work of the dBase code set out above, with a lot less effort and a lot more *panache*. In these programs, the multifiles, screen displays and the relationships are handled by the program. All the programmer has to do is tell the program what he or she wants done. Compared to this kind of program, dBase is still a Mack Truck, but it's a Mack Truck without gears.

Static relational power

One level below what dBase offers is could be called 'static' relational power. This is where you are able to link information stored in separate files, but you are not able to consult one file while another is being updated.

The newest kids on the block are the specialist databases, designed to handle particular kinds of information (especially text). There are numerous activities to which unspecialised databases used to be bent which are far better handled by this new breed.

Many of them overturn the old computer adage GIGO — 'garbage in garbage out' — by enabling you to make sense out of unstructured inputs.

This article looks at a spectrum of products towards the lower end of the price range: Memory Mate, a text specialist database; Q&A, a program which is run like a single file program but has the fundamentals of a relational database; Dac Easy Base (DEB), a clone (with some innovations) of the now obsolete dBase II; and Reflex, a single file database with an analytic bent

Memory Mate

The simplest measure of my regard for Memory Mate (its DOS name is Memo) is that it is the first program my computer loads after DOS. It does what most databases do very badly — handle textual information and time. It does both functions so well that I have become utterly dependent upon it.

Memo consists of a disk based database of up to 2 megabytes, with an EXE file which can be either memory resident (taking roughly 60 kilobytes of RAM) or invoked and executed from DOS, like conventional databases. Unlike most databases, it does not use fields to organise information: each record is simply free form text. The reason this results in order rather than chaos is because Memo indexes every word (except the 'logical' words 'and', 'or', 'not') in every record.

This frees you from having to know the structure of the database to retrieve information; to find what you want, you simply type in a search command. If you want to find information about computers and communications, you simply type in the search command Computers and Communications. Memo will locate all records which include the words 'computers' and 'communications', wherever they might occur in the records.

This facility encourages you to be as verbose as possible in describing every entry in your database, because every word becomes a keyword. The more you enter, the more cross references you have.

It also makes Memory Mate the first application I have seen which would actually be useful in that supposed key function of the home computer, keeping a list of recipes. Look in the 'fridge and pantry to see what you've got to cook, type all the ingredients in to a Find command, and see what recipes suit. Or think what you'd like to make, and find all the necessary ingredients.

The main commands are Find, Narrow, Reject, Cut and Paste. Find's function is obvious; what is not obvious is its speed. On an AT compatible, it takes under a second to find a second to find all the records with the word 'the' in them, out of a 500 record database.

Narrow acts as a logical filter on your current selection, while Reject individually removes unwanted records from those currently retrieved. Cut and Paste, whose functions are also obvious (ditto Copies), let you transfer information between records, as well as editing within one.

Ctrl-C sets up Memo's copy facility to copy a marked area of the screen; return to Memo via Ctrl-E(xit) and choose Paste, and the screen information is transferred to the current record.

There is a faster way to get a bulk of information into Memo from another database — the In command. This can either read in data using a set number of lines as record markers, or a special character (such as a tilde) as a delimiter. That's how I pulled my Kookaburra telephone book into Memo, transferring over 250 addresses in about 10 seconds (including indexing). Likewise, Out exports the current records as an ASCII file, with a tilde separating each record.

While its text management features alone are worth the $119 price tag, it wouldn't be half the program without its date stamping. When a record is first entered, you have to Save it from the menu (after that, any modifications are automatically saved whenever you move from one record to another). Then and when-

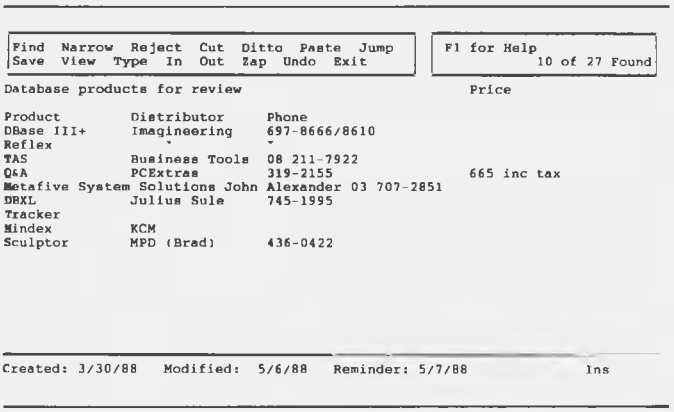


Figure 1. *Memory Mate's screen is divided into four areas: two top of screen boxes, which show the prompt F1 for Help and the number of records currently selected, and the 15 program commands; the record (with 19 of a potential 60 lines visible); and a status line.*

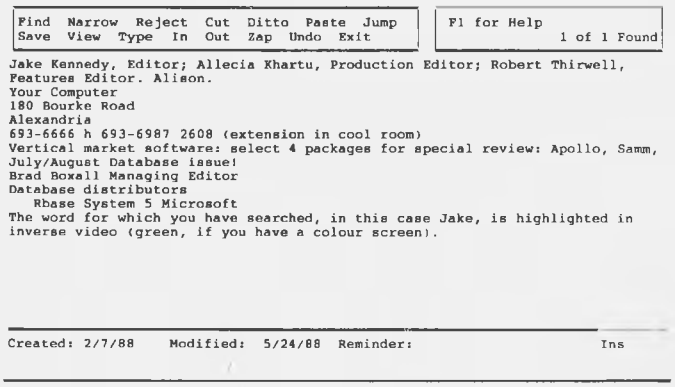


Figure 2. *Unlike most databases, Memory Mate doesn't use fields to organise information: each record is simply free form text and the program indexes every word (except the 'logical' words 'and', 'or', 'not') in every record.*

Figure 3. *Q&A's Main Menu — Version 3 includes the ability to combine database report output with PostScript files and menu choices can now be made with a single key.*

ever you save from the menu, Memo prompts you for a reminder date (in American format). When you load the program on or after that date, that and all other similarly dated records will be recalled for you. Once a task has been completed, you can save over the record without a date to remove the reminder.

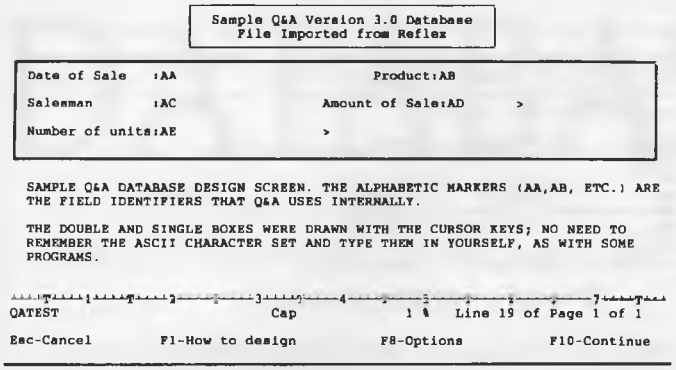


Figure 4. When Q&A is first accessed for any purpose apart from data entry, it displays the blank form and asks for retrieval specifications. The database is sorted by typing numbers in each field you wish to sort on, plus alphabetic commands to specify ascending or descending, case sensitive or otherwise. Reports are designed by specifying which fields are to go in which order, using numbers once more.

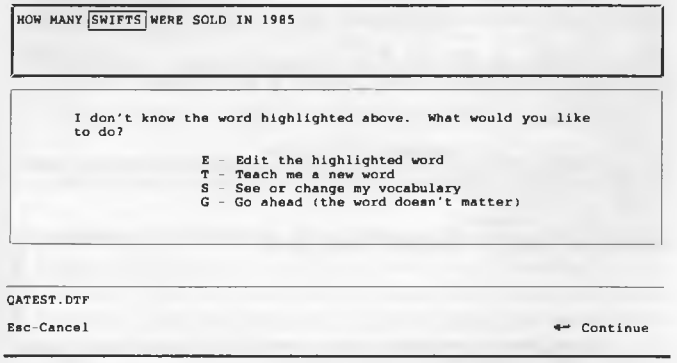


Figure 5. The Intelligent Assistant allows you to make English-language queries of Q&A after a preliminary definition of terms.

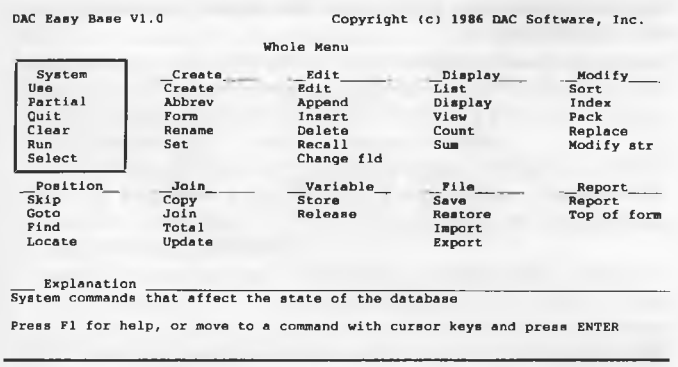


Figure 6. Dac Easy Base (DEB) is a dBase clone with a well designed menu system, superior in some ways to that supplied with dBase III+ — the Assistant. DEB's menu allows you to select up to three files at once (in primary, secondary and tertiary work areas) and there are more menu commands.

In one go, Memory Mate has overcome my previous reputation as an 'absent minded Professor'. Now my friends and work associates describe me as 'well organised'. If only they knew!

Q&A

This a disk-based database has an integrated word processor. It has cosmetic similarities to the old PFS:File and PFS:Write, but beneath the cosmetics are a host of features which give it much more power than its apparent competitors.

It is the only one of this month's crop to support multiuser operation, on a wide range of networks. The program has builtin file and record locking, and can allow you to assign passwords with different levels of database access.

I am inclined to adjudge Q&A the 'most improved' product in this collection of database data. I first used Q&A over two years ago, and while I was impressed, there were a number of rough edges which made the program less powerful and harder to drive than it had promised. These included such things as inconsistently implemented function key commands, the necessity for pressing Return to signify main menu choices, and the absence of any relational powers. All these have been overcome in the latest version: function keys are more consistent, and the major ones are labelled onscreen; menu choices can be made single key, and the program can link two or more files dynamically. Other improvements include the ability to combine database report output with PostScript files (which lets you print a report combined with a company logo, for example).

Creating a database

The similarities to PFS:File begin with form design. Fields are signified by a colon at the end of a group of words (field names can contain spaces). Fields will be as long as the space between the name and the next field name, unless you put in a > as a terminator. Multiline fields are available, defined by starting a rectangular area with < and ending it with >.

Headings are simply typed in. You can also put single or double line boxes around headings and groups of single line fields, which greatly improves form appearance. Fields and headings can be centred, though no additional embellishment (such as boldfacing or underlining) is possible, despite the display powers of Q&A's word processing companion.

Fields are moved simply by retyping them elsewhere on the screen. This includes retyping the two-character alphabetic marker which Q&A actually uses to keep track of fields; if they are omitted or corrupted, your data is likewise affected.

Data entry and retrieval

All aspects of the program use the form. When you first access the database for any purpose apart from data entry, Q&A displays the blank form and asks you to enter retrieval specifications. You sort the database by typing numbers in each field you wish to sort on, plus alphabetic commands to specify ascending or descending, case sensitive or otherwise. Reports are designed by specifying which fields are to go in which order, using numbers once more.

Q&A's editing includes both changing individual records, and mass updating. For the latter process you nominate the forms to be edited using the Retrieve specification (employing your standard form). Next you enter the changes you want in each field, using a number preceded by a hash sign to identify each field. The changes can involve formulas such as —

```
#1=#1*1.10
```

CHECK OUR PRICE TAGS ON WYSE

Very Wyse indeed the WYSEpc 286 Model 2108.

This 20Mb Mono monitor machine is AT-Compatible and designed to provide the best value in a PC AT-compatible system. A very wyse solution for the single user at the smart buyers price of

only **$3290** inc. Tax.

The WYSEpc 286 Model 2112 is a smart performer for the proficient office user.

Powerful, elegant super dependable and designed as a high performance AT compatible. This 20Mb Mono monitor machine provides a powerful solution for demanding single users requiring high performance desktop computer soulutions. Priced at a very WYSE

$4171 inc. Tax.

Super power, super choice the WYSEpc 386 Model 3216.

This desktop 40Mb, AT-compatible supermicrocomputer provides the computation power of a dedicated 32-bit supermicrocomputer, for the price of a personal computer. Obviously the Wysest choice when seeking solutions to the demands of extremely high performance at the smart price of

only **$6940** inc. Tax.

Market World Computers

Phone Now

Sydney 204-220 Sussex Street, Sydney.
Tel: (02) 261 4411 Fax: (02) 264 1718

Open Saturdays

Melbourne 161 Park Street, South Melbourne Vic. 3205.
Tel: (03) 699 2000 Fax: (03) 690 5810

Formerly Intown Computer Products, Sydney and The Computer House, Melbourne. Sextant/365

CSCAPE Screen Developer for C
A breakthrough in professional devel -opment tools for C programmers. Really fast & flexible WYSIWYG screen environment that will reduce your screen design times to a fraction of what they were. Import screen designs & automatically turn them into C code. **$595.**

db/LIB Database for QuickBASIC
db/LIB gives Microsoft QuickBASIC prog -rams Relational Database capability, by managing standard dBASE files. Three libraries of application routines access standard Database, Index, & Memo Text files & perform program control operations from programs in QuickBASIC. **$345.**

db_VISTA Database for C programmers
A high speed network model database. Develop application programs calling on db_Vista's C functions; edit and review using the Interactive Database Access utility; compile and link with db_Vista runtime library and your application is ready to run. No royalties! Also available multi-user, VAX & with source code. **$490.**

T/MASTER Best Totally Integrated Suite
NEW RELEASE! This version marks T/Master's entry into two new areas - business graphics & desktop publishing. This is on top of its brilliant ability in Wordprocessing, Proofreading, Dictionary Mailmerging, Spreadsheet, Listprocessing, File Sorting, Database, Communications Calculator. With Tmaster there is answers to almost every application problem. IT'S BRILLIANT !!!! **$595.**

XYZ CONSOLIDATE **$295.**
Summarize numerous spreadsheets.

3D GRAPHICS **$275**
3D graphics from 123 spreadsheets.

JETSET **$275.**
Laser print utility for Lotus 123.

T/MAKER **$350.**
Popular predecessor to T/Master CP/M.

C UTILITY LIBRARY **$349.**
300 Library Functions.

TCF GENERAL ACCOUNTS **$495.**
General and Statutory accounting.

MABEL **$1175.**
Point of Sale, Stockcontrol Bar Coding.

PCNX **$225.**
Unix enviroment in MSDOS shell.

WENDIN O.S.Toolbox **$225.**
System Developement

TCF COMPUTER SYSTEMS
214 HARBORD ROAD BROOKVALE 2100
Phone (02)938-2522 Fax (02)938-4287

WE HAVE MOVED TO:
150 BROADWAY, BROADWAY
NEW SHOWROOM – CUSTOMER PARKING

DISCWARE

Lotus 123	$625
Ultra Laser	$3590
Vega VGA	$679
Javelin	$299

Clipper	$825
NetComm Pocket Modem	call
Hyperace 286 Plus	$690
NEC Multisync 2	$call

Epson LX800	$465
Epson GQ3500 Laser	$2890
Intel 386/AT	$2190
Seagate 30MB & Controller	$550

IBM SOFTWARE

Coda	$490
Copywrite	$ 79
Crosstalk Mk4	$350
dBase III plus	$829
Eureka: The Solver	$155
Fox Base+ Multiuser	$760
Framework II	$960
Freelance Plus	$715
Harvard Total Project Manager	$720
Lotus HAL	$220
Sidekick Plus	$295
Magician	$325
Microsoft Excell	$750
Microsoft Word	$680
Mirror with Viatel	$125
Quattro	$325
MultiMate Advantage II	$680
Norton Advanced	$210
Norton Guides	$139
Norton Utilities ver. 4	$130
Novell Netware 286	$2990
Paradox 2 Multiuser	$950
PC Alien	$ 94
Ready	$ 59

IBM SOFTWARE

Silk	$220
Smart Notes	$150
Super Calc 4	$620
Symphony	$950
Timeline	$635
Turbo Basic	$155
Turbo C	$155
Brooklyn Bridge	$249
Print Q	$249
Desklink	$330
Ventura Publisher	$1350
Word Perfect	$570
Wordstar 4	$499

MODEMS

NetComm AutoModem 123	$520
NetComm AutoModem 1234	$650
NetComm AutoModem 2123	$370
NetComm AutoModem 2424	$565
NetComm In/Modem	$430
NetComm In/Modem 123	$510
NetComm In/Modem 1234	$650
NetComm In/Modem 1200	$425
NetComm Pocket Modem	$580
NetComm Smart 1200	$599
NetComm Smart 123	$699
NetComm Smart 1234	$920
NetComm Smart 2400	$790

PRINTERS

Brother M1709	$980
Epson LQ500	$690
Epson LQ1050	$1580
NEC P6 Parallel, B/D Tractor	$990
NEC P7 Parallel	$1100
Toshiba P321SL	call
Ultra Laser Printer	$3590

STORAGE SYSTEMS

Archive 45 MB	$1490
DSDD floppies (10)	$18
DSDD floppies (100)	$150
Microscience h/h 42 MB	$1200
Miniscribe 30 MB	$650
Miniscribe h/h 44 MB	$1250
Plus HardCard 20 MB	$1100
Plus HardCard 40 MB	$1750
Seagate 30 MB Kit	$550

IBM HARDWARE

Hyperformance 12.5	$1395
Hypertec Multifunction 512 KB	$399
Intel Above Board	$550
Intel Above Board 286	$830
Microsoft Mouse	$230
NEC Multisync 2	$call
External 1.44MB system	$750
Internal 1.44MB system	$625
Internal 720KB drive set	$360

DISCWARE (02) 212-6933

150 Broadway, Broadway, NSW 2007. FAX: 211-4065 TLX: AA23509

ALL PRICES INCLUDE SALES TAX. AVAILABILITY MAY BE LIMITED AT PRICES ADVERTISED. PRICES APPLY TO STOCK HELD AS AT 25/5/88

DISCWARE

Kaypro PC/XL 20MB $2380	Kaypro 386 40MB V/Coil $7090	AT 286 10MHz 20MB . $2300
Olivetti M28 20MB ..... $call	Kaypro AT 40MB V/Coil $3800	Wyse 2200/20MB AT $4050
AST Premium 286 40MB $6290	AST Premium 386 40MB $8900	Ultra AT 30MB EGA $4250

THE DISCWARE AT-286 – MADE IN USA $3095

CPU:	80286, 8/10 MHz
RAM:	640 KB
ROM:	IBM AT compatible
DISK STORAGE:	1.2 MB Floppy Drive, 40 MB Hard Disk.
EXPANSION:	6 x 16 bit slots, 2 x 8 bit slots.
INPUT/OUTPUT:	Parallel, Serial.
POWER:	225 watt power supply.
OPTIONS INC:	Mono or Colour Card, Key Lock 12 months warranty.

LIMITED QUANTITY AVAILABLE AT THIS PRICE

ULTRA PC

PRICE:	$1750	$2680
MODEL:	XT floppy	XT 30MB
CPU:	8088-2 10MHz	8088-2 10MHz
RAM:	640 KB	640 KB
DISK STORAGE:	1x360 KB	360 KB + 30 MB
INPUT/OUTPUT:	serial/parallel/game port/8 slots	
SCREEN:	mono	colour

OLIVETTI M280/M380

MODEL:	M280	M380C
CPU:	286 @ 10MHz	386 @ 16 MHz
RAM:	1MB	1MB-EXPAND > 4MB
DISK STORAGE:	1.2 MB + 20 MB	1.2 MB + 40 MB HD
SCREEN:	MONO	MONO
PRICE:	$4550	$8490

TOSHIBA T3200/T5100

MODEL:	T3200	T5100
CPU:	286 @ 12MHz	386 @ 16 MHz
RAM:	1 MB	2 MB
DISK STORAGE:	720KB + 40MB	1.44MB + 40MB
INPUT/OUTPUT:	Ser/Par/Exp/2 slots	Ser/Par/Exp

Zenith 14" Flat Technology Monitor

- Latest release in CRT Display technology
- Perfectly FLAT reflection-free video tube
- "Flat tension mask" development breakthrough
- Supports VGA & EGA, Hercules MDA/CGA Modes
  Modes displayed at 31.5KHz Scan frequency
- Resolution 640 (H) x 480 (V) - Up to 95% less glare than conventional CRTs.

PHONE NOW FOR DEMONSTRATION AND PRICE

ULTRA AT 80286

PRICE:	$4250	$5490
MODEL:	AT 30MB	AT 80MB
CPU:	80286 10MHZ	80286 10MHZ
RAM:	1 MB	1 MB
DISK STORAGE:	1.2 MB	1.2 MB
INPUT/OUTPUT:	serial/parallel/game port/HDD/FDD controller	
SCREEN:	EGA	MONO
KEYBOARD:	Enhanced 101	Enhanced 101

INTEL INBOARD 386/PC

Work faster & smarter: upgrade your 8088 based PC to a 386 based machine for a fraction of a price!
Single slot plug-in board with 16MHz 80386 CPU and 1 MB of 0 wait state RAM. 80387 socket. 5 year Intel warranty.
Multitask your PC with the Intel Inboard 386 now!

NEC MULTISYNC II

The latest high resolution monitor from NEC: compatible with PS/2, VGA, EGA, PGA, CGA
Automatically scans 15.5-35 kHz & 50-80Hz
Available now at Australia's lowest price!

DISCWARE (02) 212-6933

150 Broadway, Broadway, NSW 2007. FAX: 211-4065 TLX: AA23509

ALL PRICES INCLUDE SALES TAX. AVAILABILITY MAY BE LIMITED AT PRICES ADVERTISED. PRICES APPLY TO STOCK HELD AS AT 25/5/88.

which would increase all entries by 10 per cent. The actual update to records in the database can occur automatically, or can require confirmation for each record.

Q&A report design follows the same basic pattern as the rest of the program. A retrieve specification is first entered, then you number each of the fields you wish to have printed, in the order they will occur across the page, add headers and footers for each page and each column where desired, choose a print destination, and you are away.

The one drawback is that reports are always columnar, even if one of your fields is a box field. The program will perform word wrap where required to keep it within a specified column width (and start the next record down the required number of lines), but it won't let you position such a field beneath the others, which I think is the best way to handle these fields.

So far, most of the above was possible using PFS:File, or similar single-file programs. The real power in Q&A comes from its ability to program the forms.

Multifile capabilities

In addition, Q&A supplies the essentials for developing a standalone, multifile application. These are indexed fields, unique fields (each value must be unique), the automatic generation of serial numbers using the @number function, and the external file lookup function @Xlookup.

The last detail is a major advance for what was initially a single file database. The original version of Q&A included a Lookup table with each database, which could store standard information such as tax rates, bonus levels, which could be consulted when required by a programming statement on a form. For example, with tax rates stored on a lookup table, an employee database could calculate PAYE deductions automatically.

The new version of Q&A extends this feature to cover consulting multiple databases in a single application, using 'lookup' formulas which would be familiar to experienced spreadsheet users. The Lookup command now has three permutations, depending on whether you are accessing a single file's lookup table and updating one or several fields, or whether the point of reference is an external database.

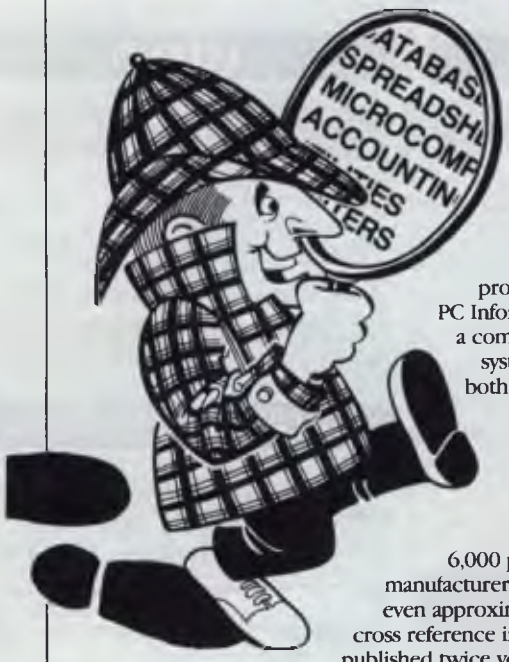
The external lookup formula tells Q&A to look at the value entered in one field in the main database and replace the contents of specified fields using values stored in another database.

Stop Searching!

FOR PRODUCT INFORMATION
ALL YOU'LL EVER NEED
IS IN THE NEW...

P.C. INFORM

THE COMPLETE REFERENCE TO HARDWARE AND SOFTWARE



PC Inform is the most comprehensive register of PC software and hardware ever published in Australia. Unlike previous attempts to produce such a reference work, PC Inform is not merely a book. It is a computerised product reference system which is updated daily - both by PC industry professionals AND by an independent organisation which monitors all Australian reference data. PC Inform is segmented by category, with descriptions of almost 6,000 products, including function, manufacturer, distributor, release date and even approximate price. A comprehensive cross reference index, too! PC Inform will be published twice yearly - and a monthly update service is available as well, to ensure that your copy of PC Inform is always current. PC Inform - the complete PC software and hardware register.

ORDER FORM

Please send me:

*4P member - no charge ☐ No. .....

August issue $25 ☐

OR One Issue PLUS Monthly update service for 6 months $50 ☐

Freight, handling add $2.50 ☐

August/March issues $40 ☐

OR Two Issues PLUS Monthly update service for 12 months $80 ☐

Freight, handling, add $5.00 ☐

Please cross cheques and make payable to: "PC Inform". *Mail your subscription to:*

CIRCULATION DEPARTMENT, PC INFORM
84 HODDLE ST., ABBOTSFORD 3067.

Enquiries: (03) 419 5300. • Prices for multiple copies available on application.

I enclose my cheque OR charge my ☐ Bankcard ☐ Visa ☐ Mastercard

for $ ..... ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

SIGNATURE: .....

DELIVERY ADDRESS: .....

*Note: PC Inform included with 4P membership - courtesy of The Computer Trader

KEY NO. ISPORM 01

This is 'dynamic' relational power, where the program is able to consult other files as data is entered, and not simply produce a collated database from information already entered into two source databases, as does the JOIN command in dBase or similar, limited functions in some of the other packages reviewed. It puts Q&A in the same category as Ability Plus as a low cost means of getting true relational power, and I think it would be easier for most users to run than Ability.

Predictably, a database which has an integrated word processor is pretty hot shakes when it comes to merge printing. You can design a form letter in the word processor and easily merge it with a database, something that takes a lot of shuffling with dBase and other file specialists. The program prompts you for the database with which you wish to merge the letter, lets you choose fields to insert by pointing, and handles most of the formatting details automatically. It also does mailing labels, and, incidentally, provides a way around the limitation of columnar reports. If you want a multiline report, simply create a label document and merge the database with it.

The Intelligent Assistant

The main claim to fame for Q&A used to be the Intelligent Assistant (IA), an artificial intelligence feature which enables you to make English language queries of your database, after a preliminary definition of terms.

This commences with the program analysing the database to find all unique words in it. The database I used, transferred from Reflex, contained sales data for a canoe company; at this stage Q&A 'knew' that the products field contained the names Swift, Paddles and so on.

Next, you are asked to tell Q&A what the database is about, which fields to use in its standard report, which fields contain names, titles and locations, units of measurement and adjectival indications of size (things like tall or short for height; the Intelligent Assistant already knows standard comparative words like big, small and so on, and it can analyse these to derive bigger, smallest and so on), and verbs such as Hire, Sack and so on.

You can have quite a bit of fun with synonyms, which allow complex definitions to be built. The word 'Boat' in my trial database was related to all the canoe names, but not the paddles The manual gives the example of defining Fat Cat as an employee whose income exceeds the average income by 50 per cent.

Using the IA is relatively straightforward. You type an English language request in a box. IA then interprets this as best it can to translate it into a report command. If words are struck which it can't interpret, you are asked to define them in relation to the current database. This can be as simple as adding a new adjective to describe size, or a new verb If the request can be successfully parsed, then the report is displayed.

A further request can assume the result of the previous request: the enquiry 'Show me the salaries in the sales department' followed by 'Sort them by employee age' would produce the same result as a composite single enquiry.

One limitation of IA which remains from earlier versions of the program is the inability to perform substring searches, even though that facility is built into the search features of the file manager itself. For example, Q&A comes with an example property database which includes a house in National Avenue. The request 'How many houses are there in National Avenue?' failed because the IA couldn't interpret the word 'National'. Yet the retrieve specification '.National.' from the file menu found the house with ease.

As yet it can't handle multiple databases, but I expect that in future the IA will be extended to this, in a fashion which will make

```
Entered on:19-MAY-1988      Customer Record      Changed on: 19-MAY-1988
        Record: 3         Current Page: 1
First Name  Andrew              Surname  Kreisler
Company     Bray Books          Industry Publishing
Discount    .100                Number:     3




Enter  Backup  Advance  Memo  Delete  Prev page  Next page  Goto  Quit
```

Figure 7. *Compared to the single file offerings at the same end of the price range, Dac Easy Base has a lot to recommend it. Though you have to work to get relational power out of DEB, it is nonetheless there.*

up a data dictionary for your application. Then the request 'Print overdue notices for all the customers who have movies worth more than $2 outstanding' will be a possibility. When that day arrives, Q&A will have few rivals for both ease of use and power. Considering that the program also includes a full featured word processor, Q&A stands out as one of the true bargains in software.

DAC Easy Base

In one sentence, Dac Easy Base (DEB) is a cheap but dated dBase clone, with most of its features, but lacking some of the speed. It is a clone of dBase II, not III, but it extends the old II in a number of ways.

For a start, it supports three open databases at once, versus two for the now defunct dBase II. This makes it possible to write an application which has databases for customers, products, and sales of products to customers — otherwise known as invoices. Obviously, three is the minimum number of databases for that very common application, and old dBase hands had to do considerable programming footwork to design an application with just two files.

It supports calculated fields, so when you create a database you can specify that a particular field (say, TotalPrice) is the product of other fields (Price*Quantity*{1-Discount}). It also supports memo fields, though they are not as long as the dBase variety. DEB can sort on all the fields in a database at once. The number of records is unlimited, compared to old dBase II's 65,000 limit (the new beast supports 10 billion, which is effectively unlimited).

DEB has a well designed menu system, superior in some ways to that supplied with dBase III+ — the Assistant. DEB's menu allows you to select up to three files at once (in primary, secondary and tertiary work areas), whereas the Assistant stops at the one file. There are more menu commands, and they are better structured than those in Assist.

User interface

There are two DEB menus: a Partial one covering the major file management commands, and generally taking just one keypress to run; and a Whole menu which includes facilities such as running a command file, joining databases, and managing memory variables, which takes two keypresses to run — the first letter of the menu category, then the first letter of the desired command This is significantly faster than dBase's Assist, which requires you to point at both the main menu option and the re-

quired command using the cursor keys (DEB also supports cursor pointing).

The menus are subdivided into ten categories: System, Create, Edit Display, Modify, Report (all of which are on the Partial menu), Position, Join, Variable, File. Each category has about six commands on the Whole menu; on the Partial, the average is three. They cover everything you would want to do with one file at a time, plus the dual file procedure of creating a joined database.

The Crosstab View is Reflex's most useful offering, which in some ways sidesteps its single file limitations.

Creating a database

Designing a database begins with supplying a file name, then entering the fields, one at a time. The name and attributes of each field being defined is displayed in the top half of the screen, while the previously defined fields are shown in the bottom half. The attributes are the standard dBase type, length and decimals, plus also a formula for calculated fields.

The entire process is menu controlled, with the bottom of screen menu accessed by pressing Escape. Options are chosen by pressing the first letter, or highlighting using the cursor key and pressing return. File creation options include entering the field as defined, renaming a field, deleting it and so on — things which are managed by Ctrl-key combinations in dBase III.

Data entry and retrieval

The same menu approach is applied throughout DEB. The options for editing, for example, are Enter (which records any changes), Backup, Advance, Memo, Delete and Goto. You can move about the database, globally change records, list them and design forms (only one per database, just like dBase itself), using the menu system.

DEB offers two types of reports from the menu system, a columnar report and a page based report. The former is limited to one line per record; the latter prints as many lines per record as you desire, putting fields wherever you want them on the page, but uses one page per record. Most of my reports use more than one line per record, but print as many records on a page as will fit. To get that sort of report from DEB, you have to write a dBase II program.

The dBase dot

Beyond the menus lie the familiar dBase dot prompt, and also the backslash key, which allows you to enter a one line dBase command while still at the menu. At this level there are some limitations compared to dBase II, and numerous omissions compared to III. It doesn't support nesting of macros (which is not something you should use in dBase programs anyway), and it can't insert records into an indexed file. (It can only append. However, this again isn't an important problem since there's normally no need to insert into records in an indexed database.)

There is also no builtin word processor (though Dac sells its own, equally cheap word processor). Compared to dBase III+, you lose the multiuser capability, the ability to access up to ten databases, the SET RELATION TO command (as limited as it is), and numerous other power-oriented features. But there have to be some sacrifices for price.

If you buy it to write your own programs, you'd be advised to track down a copy of Adam Green's (I think the name is right) book on programming in dBase II. The manual devotes 90 per cent of its 200 pages to the menu system, with the description of dBase programming commands in the remaining 20 pages being cursory in the extreme. dBase III's manuals would be of no use, since they are almost as cursory, and contain many commands that aren't in DEB.

DEB would have had more appeal during the reign of dBase II, as a cheap means for the non-business user to get dBase style power, or have a (legal) home 'copy' of dBase. Nowadays, at $99 it's 'just' a very reasonably priced relational database; if you actually want dBase compatibility, you'll have to go for DBXL, Foxbase, or VP Info.

It gets quite a high rating in the low end stakes, simply because it is relational and so cheap. But it isn't a menu-driven relational database, simply because the menu doesn't enable you to dynamically link two files, as you can with Ability Plus, for example;

if you want the relational power, you'll have to do the hard slog of writing a program to get it

Compared to the single file offerings at the same end of the price range, it has a lot to recommend it. Though you have to work to get relational power out of DEB, it is nonetheless there, and you can do things with a relational file that are simply impossible with a flat one.

Reflex

Before Reflex, Borland had been a programming language specialist; Reflex was its first, impressive step into the application program league in 1986.

In many ways, Reflex is a more impressive offering than its recent companion, the spreadsheet Quattro. Quattro's delivers what has always been Borland's main strength — speed — but apart from that and quality graphics it does little to extend the spreadsheet concept. Reflex, on the other hand, did advance the database paradigm a few cogs, within the single file limitations.

Most databases give you three ways to look at your data: through forms, lists and reports. Reflex added two other 'views' — graphs and cross-tabulation. Also, you can see three of the views at once on screen, with each one dynamically linked to the other ' as you move down the list view, the form view shows full details of the current record. Even more impressive is moving along a graph, and seeing the form and list view change to suit.

This isn't just cosmetic. Reflex's strength is in data analysis, and the linking of the three views helps to spot trends in your data. Setting the graph to count, for example, and graphing sales against Suburb, lets you see at a glance where most of your sales are made.

User interface

Reflex drives the PC in graphics mode, which has the advantage on EGA monitors of showing you 26 lines of data in the list view. The program is run by a combination of a top of screen menu with pop-down options (accessed by pressing the / key), and function keys which cover movement, swapping between views on screen, sorting, and filtering the database. F10 functions as a 'choices' key, which shows you available files in the file menu, fields when you are deciding what information to graph, statistical functions in the options menus for Graph and Crosstab, and so on.

Data entry and retrieval

You can enter data through either the list or form view, and the program makes no distinction between displaying and editing data (like dBase III+'s Browse command, but unlike its List command). Your first data entry sets the field type for each field — which speeds up data definition for most textual and numeric fields, but confuses Date fields which are first taken to be numeric. You overcome this using the Field and Sort Settings table, of which more later. Tables are a large part of Reflex's interface.

Reflex is a predominantly a RAM based program (which limits the number of records that can be stored), though half of a file can be read into RAM at a time, allowing a maximum disk filesize of 65,000 records. It also supports extended memory, so a suitably configured computer can hold up to 32,500 records in RAM.

In addition to the straight entry of data, Reflex offers the Vary tool, which enables you to generate a whole series of records, with the contents of one field changing each time according to a formula. This can be applied to simple tasks like creating a skeleton form containing needed dates and company divisions, through to creating hypothetical sales results as a prelude to What If? analysis.

Searching and selecting

Reflex uses the same system to search for data, and to apply a filter to the database so that only the records meeting the criteria are displayed, or used in analysis. Search/filter conditions are entered into a table, which lists field names down the left hand side. Once a condition is entered for a particular field (say, City = Sydney), a second column opens up; if you type City = Melbourne there, this amounts to a logical OR in dBase — 'City = Sydney OR City = Melbourne'. Entries in the same column are logical ANDs ' City = Sydney and Amount>10000 are combined to exclude any records not meeting both criteria.

This greatly simplifies one of the more complex database procedures for novice users. The only drawback is that you can save only one filter with the file, so if there are a number of subsets of your data that you look at frequently, you have to redefine each of them every time you use Reflex.

You can save the results of a filter as a separate file, but that means you then have multiple copies of your data, which may have out of date data.

Sorting, controlled from the Records menu, is easy and fast. As is usual with Reflex, you are presented with a table listing all field names, with columns also for field type, any formulas, a sort precedence and whether this is ascending or descending, a format for field types and Precision. Reflex can sort on up to five fields at once, and you indicate which ones to use by putting numbers from 1 to 5 in the sort column

Reports are a cinch to design with Reflex, though they are controlled by a separate EXE file. Using the Choices key, you point and select the fields you wish to include in your report, using as many lines per record as you desire. Headers, footers, column breaks and the like are controlled from the attributes menu, which as usual is accessed using the backslash key. This specifies whether a field is repeated in every record, in the header or footer, or whenever the value changes. As you work, a sample report layout (using either field names or the contents of your first record) is displayed on screen.

Graphs

Reflex's graphs were good when they first came out — I even used them for my presentations for a while — but that facet of the industry has moved a long way since then. Reflex only allows one graph type at a time — Bar, Line or Scatter — whereas Graphtime II, a graphics package in the same price range, offers multiple types at once. Print quality is okay on a dot matrix printer, but it certainly isn't the presentation quality that Graphtime or the Magician give. However, the summary statistics features built in to the Graph package (Sum, Count, Average, Min, Max and Standard Deviation) are useful, and the graph design interface is as good as anybody's.

Analysis with Crosstab

The Crosstab View is Reflex's most useful offering, which in some ways sidesteps its single file limitations. It enables you to see how one aspect of your data varies as a result of changes in two others — for example, how sales revenue varies with salesperson and product.

Crosstab view begins with a box, with the label 'ALL' on its left and top sides. You specify that a particular field is to go along the top, and another down the side, while the contents of the box display the results of a calculation on a third field, such as sales quantity, sales revenue and so on. For example, a company's sales revenue will vary depending on the product being sold and the region it is sold to. You can use the Crosstab view to see how the region and the product interact, or the product and the date of sale. The summary information presented about sales can be

VAPORWARE

A Division of Symantec Corporation Pty Ltd

18 Warnock Street Guildford, NSW 2161 - Fax (02) 632 5298

P.O. Box 286 Guildford, N.S.W. 2161

(02) 632 8841
OPEN 8 till 8 , 7 Days

(02) 214 7181
24 Hrs, 7 Days

THE BALER

1-2-3 Spreadsheet Compiler

PC MAGAZINE EDITOR'S CHOICE

- Distribute worksheets without 1-2-3
- Support for 1A & 2.01 Commands, Functions and Macros
- No royalties - Your customers don't need 1-2-3
- Keeps Formulas Proprietary
- Compiled Worksheets are tamperproof
- No Programming required
- Generates Customizable Source Code
- Automated "Menuizing" Option
- Includes *Audit 123* Interactive Spreadsheet Auditor
- Provides new print formats eg. double spacing & accounting notations
- Add your choice of colours to compiled worksheets
- Not Copy Protected
- PC, XT, AT, PS/2 & 80x87 Supported
- Supports Symphony, VP-Planner Plus, SuperCalc4 & others.

Call for further details & information kit.

The Worksheet Utilities

Five indispensable add-ins for Lotus 1-2-3.

Formula Editor lets you enter and edit formulas from a display that shows the whole formula. You can pick @ functions from a pull-down menu that explains what each function does and you can execute your formula one step at a time for easy debugging.
Print Settings takes the guesswork out of print formatting. Select any print style by name from a library of setup strings customized for your printer. Supports Dot Matrix & Laser Printers.
File Manager lets you save & retrieve, describe, catalog, archive and even compress worksheets from a point-and-shoot menu.
AutoSave perodically saves your work in a backup file and guards against power failures.
Search & Replace searches for values, functions, formulas and cell references just like a word processor and allows you to replace them.

Incredible Value for only **$149**

All Prices include Tax and are subject to change without notice.

NEW PRODUCTS

Athena BIOS — Only $99

Now you can run 100's of CGA programs on a Hercules system with this memory-resident software & plug-in card. Not Copy protected.
Simple to install. Can be switched on and off.

Black's Law® Dictionary — $149

The 83,000 word Random House Concise Dictionary word list along with Black's 16,000 legal terms and phrases including Latin, Old English and foreign law terms. Legal terms from civil, commercial, criminal, tax, real estate, federal, state, local law and more.
Works with Wordstar, WordPerfect, MS Word, MultiMate and others.
Also Available: **Stedman's® Medical Dictionary** **$149**

PROJECT CALC™ — $375

A project management add-in program for Lotus 1-2-3 that uses familiar Lotus menus and produces Gantt (timeline or stagger) & PERT charts. Offers full power scheduling, critical path analysis, flexible reports and high quality graphics compatible with Lotus Freelance.
Supports CGA, EGA, VGA, Hercules. Not copy protected.

SQZ!™ Plus — $149

Automatically compacts and expands 1-2-3 & Symphony spreadsheet files by up to 95% during file saving & retrieving. The Plus version provides spreadsheet backup and protection against exiting without saving. Also passwords, keystroke logging as well as damaged file recovery.
Included **FREE** in every **QUATTRO** you buy from Vaporware.

GENERIC CADD Level 3 — $350

Comprehensive and easy to use CADD tool for production drafting and design. Includes AutoDimensioning & Drafting Enhancements 1 and 2. Works with Extended Memory. Much faster than CADD 3.0
Requires 512k RAM. Symbol Libraries available from $60

MACE Utilities Version 4.1C — Only $147

Includes brand new MCACHE program.

3-2-1 BLASTOFF™ (Lotus Add-in) — $275

Converts your Lotus formulas into instructions for your 80x87 math coprocessor chip and links these to your spreadsheet via the BOOSTER add-in program. Spreadsheets recalculate 3 to 15 times faster !! Also provides Minimal Recalc and can strip out proprietary formulas.

JULY SPECIALS - More on Page 56

- **MS WORKS and Free "Using MS Works" Book** **$310**
- **QUATTRO including Free "SQZ!™ Plus" & Book** **$320**
- **PC EXCEL with Free "101 Macros for EXCEL"** **$720**
- **TIMELINE Version 3.0 (New Version)** **$895**
- **ABILITY PLUS (New Version 1.01)** **$299**
- **WordPerfect Executive** **only $199**
- **VENTURA Publisher Version 1.1** **$1195**

average sales, maximum, minimum, even the standard deviation.

This feature and the interaction between the Form, List and Graph views justifies giving Reflex a 'specialist' tag, while its price puts it in the 'bargain' category as well. However, it is less of a bargain than it was when it first came out. The program has been around for two years now, with little enhancement to its features, while in the meanwhile the features of many other packages — Q&A in particular — have been considerably beefed up.

Conclusion

Memory Mate, distributed by Imagineering, should be on every computer buyer's list, from home user to large business. It is the electronic equivalent of a personal secretary.

Q&A should be looked at seriously by home users who can afford its high price tag, since it includes a word processor in the price (there is an upgrade for owners of Version 2.0, which given the addition of relational capacity and is well worth the price). Small businesses who until now thought dBase was their only option should definitely give Q&A a workout. It should enable them to design a multifile system for such activities as customer invoicing with substantially less heartburn than writing a similar application in dBase III+.

Reflex is another product that both home buyers and businesses could consider. It is more useful for the user interested in numerical analysis than records management.

DAC Easy Base, the cheapest of the products reviewed to date, is quite acceptable as a single file manager for the novice user, and it offers the possibility of writing dBase style programs for a multifile system. While it is a clone of a now obsolete program, any home user who wants to learn about database programming could find it a worthwhile investment. For businesses trying to save money on program costs, I would recommend Q&A ahead of it. The time Q&A saves in database design will be more than worth the difference in the prices.

Product Details

Product: Memory Mate
Distributor: Imagineering, 77 Dunning Ave, Rosebery 2018 NSW (02) 697 8666
Price: $119

Product: Q&A
Distributor: PC Extras, G03 The Watertower, Redfern Hill 2016 NSW (02) 319 2155
Price: $665; upgrade $120

Product: Reflex
Distributor: Imagineering, 77 Dunning Ave, Rosebery 2018 NSW (02) 697 8666
Price: $209

Product: DAC Easy Base
Distributor: Mace Software, 22 Sylvan Road, Toowong 4066 Qld (07) 870 3600
Price: $99.95

ACCOUNTING PROBLEMS SOLVED!!

Accounting and Bookkeeping package for IBM XT/AT and Compatibles (MSDOS), and MICROBEE (CP/M) systems.

FEATURES:

* Double-entry Accounting.
* Profit and Loss Statement, with previous Year's figures.
* Cash Book Monthly report, transaction list.
* Balance Sheet with current and previous year.
* Up to 220 Chart-of-Accounts.
* USER decides when to close off an accounting period.
* Auto sense if Bank is overdrawn (alert given).
* Approx. 5000 transaction capacity on 13 cm disk.
* User friendly — manual supplied.
* Runs on MICROBEE BEENET and STARNET LANS.

Ideally suited for Small Businesses, Home Accounting, Schools, Clubs, etc. for everyday Financial Information. Reduce your accounting fees at tax time!

BOOKMATE ACCOUNTING SYSTEM
(Upgraded version of our popular Beekeeper System).
$105.00 (plus Sales Tax if applicable)

Further details and sample reports:
ANN COURT COMPUTER SERVICES
6 Ann Court, ASPENDALE, VIC. 3195
Tel.: (03) 580 6424. VIATEL 358064240

NEW **OKI**

390 SERIES

THE WORKHORSES FOR THE BUSY OFFICE
SUPERB QUALITY 24 PIN PRINTERS
Models 390 391 393

Exceptional LETTER QUALITY from 90cps
Fast DRAFT printing to 450cps
Bit Map GRAPHICS 360 x 360 dpi
Superb paper handling

FEATURES:
EPSON LQ compatible

* 80 col or 136 col
* Letter Quality 90.120cps
* Draft 270-400cps
* Menu selection
* Font cartridges
* Graphics 360 x 360
* Paper parking
* Original + 3 copies
* Rear & bottom feed
* CSF (Option)
* Noise <57db
* 393 Colour option

RIBBONS, ROLLS & PRINTERS PTY LTD
48 New Illawarra Road
BEXLEY NORTH, NSW 2207
Ph: (02) 507 663 **Fax (02) 502 1552**

MICRO-EDUCATIONAL PTY LTD

Unit 8, 235 Darby St, Cooks Hill NSW 2300 Phone (049) 264122 Fax (049) 262194

DISKS $1

5.25" DSDD. Prices slashed on lifetime warranty, US made by Wabash Datatech. Micro-Educational disks are the best quality disks available in Australia.

3.5" DSDD $2.75

Lifetime warranty, Wabash Datatech. Suit most 3.5 drives. Normally $4.75!

BULK PRICES: 5.25 100+: $0.95, 200+: $0.90, 500+: $0.85, 1000+: $0.80
3.5 100+: $2.70, 200+: $2.65

Buy Direct... with Confidence

Look at what we offer:

**** Australia's largest computer mailorder co.***
**** 10 years in business***
**** $5,000,000+ annual sales***
**** Lowest prices***
**** Reliable overnight delivery***
**** 10 day money back warranty***
**** 6 to 12 mths service warranties***
**** Nationally recognised brands***
**** Top quality products***
**** Phone, mail, Fax and Viatel ordering***
**** Intelligent advice and assistance***
**** And best of all:***
We treat you like a
Friend-of-the-Family!

If you have yet to experience our mail/phone order service why not give us a try. Our customers include most High Schools, all Universities and IAE's, Telecom, CSIRO, most of the big 8 accountancy firms, local councils, hospitals, libraries, Dept Agriculture, Dept Navy, PM's Dept as well as 30,000 private customers. This year we will ship in excess of 50,000 parcels and 250,000 newsletters.

Micro-Educational is Australia's largest direct-marketer of computer products with sales exceeding $5,000,000 and a customer base of 39,000 computer owners.

How to Order:

a) **By Mail**: Fill in the enclosed order form and post in the enclosed reply-paid envelope. Your order should arrive within 2 to 4 days.
b) **By FAX**: (049) 26 2194
c) **By Phone**: Credit card order hotline (008)025229. All other orders or enquiries on (049) 26 4122.
d) **By Viatel**: When on Viatel access node *49001#

Guarantee

If you are not completely happy with any product (except software which carries manufacturer's replacement warranty only) then **mail** it back within 10 days for a full **10 day money back refund**. Refund excludes freight either way. All hardware carries a minimum 6 mths full service & parts guarantee (exclusive of freight either way).

MICRO-EDUCATIONAL PTY LTD

Unit 8, 235 Darby St, Cooks Hill NSW 2300 Phone (049) 264122 Fax (049) 262194

NOW!

All other modems are obsolete.

Announcing Maestro 2400 ZXR

The first 2400 Baud intelligent modem under $800. Half that price in fact. This is a revolutionary modem with features unmatched by modems costing four times the price. The performance of the Maestro 2400 ZXR is superior to any 2400 Baud modem currently on the market.

Features:

* V21, V22, V23 and V22bis CCITT and BELL
* Auto-answer, auto-dial, auto-disconnect, auto baud rate sense
* Pulse and Tone dialling * Call progress monitoring
* Optional 8K battery backed RAM expandable to 32K with unlimited access (Superior to limited access non-volatile RAM) * Forth on board
* Local and/or remote test capability
* Full Hayes AT 2400 compatability with over 40 registers
* Australian designed and manufactured with 6 mths full warranty
* Uses lightning fast ZILOG 20 MHz Super 8 uP Z088020 which outperforms all existing 2400 Bd modem microprocessors
* And best of all is the price:

2400 Baud for $399.

Now you can halve your communications cost.

The Maestro 2400 ZXR has **EVERYTHING** you could want in a modem for home or small business use. It effectively renders obsolete all existing modems. Why would you buy any other modem?

Don't be fooled by the price. Maestro deliberately set about to create a modem that would capture the lion's share of the market and with their aggressive pricing and high volume production they should achieve their goal. Already, and the modem has been on the market for a fortnight, they have received orders for 1000 units from a government department, and 500 units from a corporate client. This is an unprecedented response and recognises the remarkable value for money and features of this modem.

If you would like to double your communications speed best ring now and order your modem. If you wait you may be joining a long queue!

ORDER FORM

Dear George,

Please rush me the following: _____

_____

_____

Enclosed please find cheque/ Purchase order/ Bankcard/ M/C / VISA # _____

for $ _____ (Remember to add $4 post or $8 courier.)

NAME: _____

ADDRESS: _____

If you're self-employed or run your own business, Lewis CROSS-CHEQUE will help keep your accounts in order.

Join the 800 other businesses who are using CROSS-CHEQUE to keep track of their income and expenditure.

To help in preparing your tax return, CROSS-CHEQUE prints reports detailing each income and expense category.

You simply enter details directly from cheque butts or deposit slips. Any cheque can be split across several expense accounts. Handles 120 categories of income and expenditure. Allows you to do bank reconciliation.

The latest version of this popular package has dozens of new features, including:

- A new report listing the month-by-month values of each income and expenditure category.
- Abbreviations for regular payees.
- Much more comment space for cheques and deposits.
- Summary reports can be written to a disk file.
- General Ledger Code number.
- Unpresented cheques automatically brought forward for new financial year.

"If ever there was a small software accounting system that could be described as ideal for the very small business, Lewis CROSS-CHEQUE would fit the bill." Dan Lawrence, Your Computer, August 1986.

CUSTOM-MADE SOFTWARE (SALES) PTY LTD

P.O. Box 507,
Randwick NSW 2031
Tel. (02) 399-8566

Dr Geoffrey Lewis. *In 1965 he was selected by IBM to demonstrate the new System 360. He was selected following a sensational score of 150 out of 120 in a university test for mathematical aptitude. He was awarded the extra points for exceptional problem solving ability and in the next ten years nobody else got more than 75 marks. He has applied his problem solving ability in producing four software packages written for Australian conditions.*

LETTER MAGIC

Most wordprocessors let you do all forms of word processing: letters, articles, books, price lists, footnotes and computer programs. They become top-heavy with features and hard to operate.

LETTER MAGIC concentrates on only one application, the very important one of writing letters. Your letter automatically starts with the date, name and address of the person you are writing to. Standard letters, paragraphs or phrases are easy to do. Sign-off your letter with one key-stroke.

LETTER MAGIC has a database for names, addresses and other information. You can send the same letter to many names. You can produce address labels, telephone lists, fees due notices.

"If your primary need for a wordprocessor is letter writing, then Letter Magic is worth your attention, regardless of the word processor you are currently using." Ewart Stronach, Your Computer, December 1987.

DEMO PACKS

Demo packs, which contain the manual and complete program are available at only a fraction of the price. Not just a fancy scrolling display with impressive graphics but the real program. Actually test it out on your own computer! If you like the program you pay the balance of the price.

The programs are available for MS/DOS. Available for Macintosh except LETTER MAGIC.

50,000 employees are now being paid using the Lewis PAY-PACK payroll package.

PAY-PACK does all aspects of your pay processing: pay slips, tax calculations, holiday and sick accruals, management reports, group certificates. PAY-PACK is used by over 550 firms, ranging in size from companies with three employees through to BHP.

Over fifty new features have been added to PAY-PACK in Version 4, including:

- Employer Superannuation Contributions;
- Holiday records in days or hours;
- Rostered Day Off accruals;
- Tax averaging for sales commissions.

There are also extra options for:

- Direct entry of bank deposits ($300);
- Labour Job Costing ($990).

HOT-LINE SERVICE

We offer telephone assistance daytime, evening and weekends. We know that a payroll question on pay day must be answered urgently.

Lewis CASH FLOW

For personal use or for business use.

You enter details of your future transactions for receipts and payments. Specify whether the transaction is one-off or recurs every so many weeks or months. Starting with your account balances, CASH FLOW gives your cash position at any point in the future. This helps you make financial decisions, e.g. when to shift funds between cheque and savings accounts.

Name: .....

Address: .....

.....

Phone: ..... Computer: .....

	Pay-Pack	Cross-Cheque	Cash Flow	Letter Magic
Send more info				
Send demo pack	$60 ☐	$36 ☐	$36 ☐	$36 ☐
Send full system	$990 ☐	$390 ☐	$150 ☐	$490 ☐

All prices include sales tax. If paying by Bankcard or Mastercard, include card name, number expiry date and signature.

Microcomputers, MIDI and Music

Now that we have covered system messages, Andrew Symaniz concentrates on a subject he briefly discussed last month – manufacturer specific SysEx.

In the previous article in this series, we reviewed several options for exchanging a variety of information between MIDI-connected devices using system exclusive (SysEx) code. Virtually the only rule in the original MIDI Specification about SysEx data is that it must start and stop with specified status bytes (F0 and F7 hex, respectively).

The format of intermediate data bytes contained within a SysEx message is not specifically defined within the MIDI Spec. This provides considerable flexibility for defining individual applications and for future MIDI extensions.

Manufacturer specific SysEx

In the case of manufacturer specific SysEx communication, each maker of MIDI equipment can reserve their own ID number – for example, 41 hex is used exclusively for addressing Roland equipment. When this ID byte is transmitted as the second byte of the SysEx header setup (in other words, immediately following the F0 'start sysex' byte) all subsequent data is intended only for that particular manufacturer's range of equipment.

Beyond these minimum requirements, however, manufacturer specific SysEx data and communication protocols can vary markedly from one manufacturer to the next. Formats may also be quite different for other types of equipment made by the same company.

So the inbuilt flexibility of SysEx communications is a double-edged sword. On the negative side, there are few general guidelines for developers to conform to when designing similar applications, or for presenting this information systematically in owners manuals.

Nevertheless, most instrument manufacturers have succeeded in equipping many of their products with a host of SysEx based features. These features include data dump, external parameter editing and a variety of other basic 'set-up' operations – many of which may be controlled remotely from standard MIDI programming devices.

On the other hand, librarian software has a potentially unlimited disk storage capacity and can offer the best compromise between speed, reliability, convenience and price.

More sophisticated sequencers, including Roland's MC-500, for instance, allows users to write their own SysEx code byte by byte – making it possible to insert short SysEx programs into a musical sequence, say, for the real time control of individual patch parameters. In effect, this kind of capability can add an entire set of new performance features to a synthesizer or other MIDI instrument.

In a following article we'll investigate specific SysEx programming examples that enable synthesiser owners to reach in and tweak a given parameter from a computer. For now, let's take a look at the range of commercially available software that relies on SysEx communication.

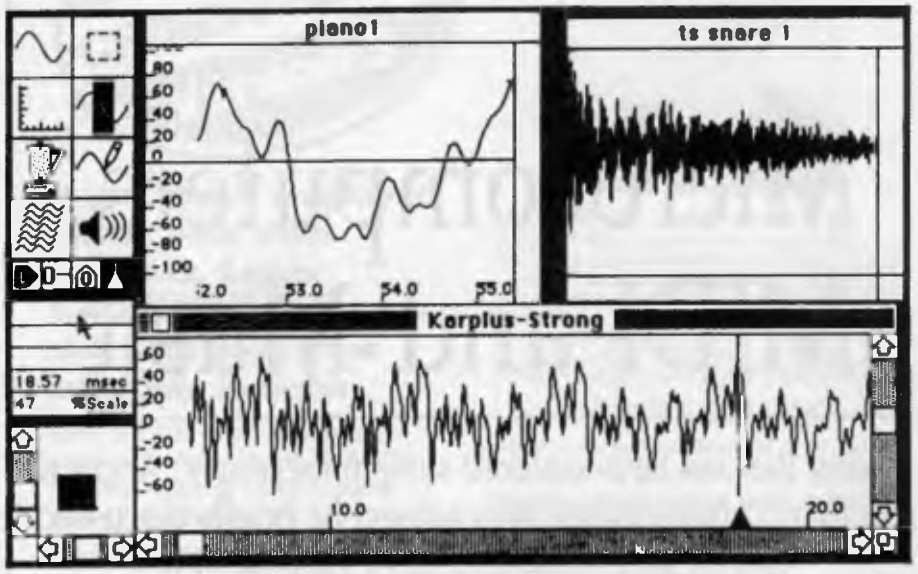


Figure 1. Using multiple windows in Sound Designer, you can look at three different sounds simultaneously. Their displays can be of any configuration.

Librarian software

Initially, the SysEx MIDI option was used mainly by synthesiser manufacturers to provide their instruments with an effective method for storing sound Patch Parameter data; an alternative to either the slow (and often unreliable) cassette dump facility, or the more expensive cartridge methods.

Instrument cartridge packs usually contain battery backed-up RAM or EEPROM to provide fast, non-volatile sound storage. The use of cartridges is certainly more convenient than having to save sounds to tape, however, the typical cost of these cartridges may be as much as $50 each; and this can work out to be over $1 per sound patch stored! Not a very economical solution.

On the other hand, librarian software has a potentially unlimited disk storage capacity and can offer the best compromise between speed, reliability, convenience and price. This software may also provide additional utilities for indexing instrument sound patches.

All that is required is a computer loaded with suitable software (usually specific to just a limited range of instruments) and a standard MIDI computer interface. Through this connection, the computer is able to receive, process, store and ultimately regurgitate SysEx data representing the various Parameters and settings of a MIDI-connected device.

Some librarian packages include facilities for the convenient management of stored data. For example, individual patches might be labelled with colourful names for later identification Patches might be reorganised into sound banks – grouped as percussive sounds, say, or sequentially ordered as banks of sounds that require an easy method for transferral to and from the instrument for live performance

Other librarian features might include the ability to store information not normally maintained within the patch locations of the instrument itself (for example, the 'function parameters' on the DX7 synthesiser). Some programs may even enable hard copy print-out of stored information such as bank directories, or all the parameter details of individual patches.

Voice editing software

Logical extensions of the original librarian variety of software are integrated voicing/editing packages that enable the musician to create new sounds on keyboard instruments (or modify existing ones) externally from the computer. These programs can process all the SysEx data derived from a patch dump, display individual synth parameter settings graphically on the computer screen, and provide some means for editing them using either the computer or musical keyboard, joystick, mouse or combinations of these techniques.

With older style synthesisers, each sound parameter (oscillator pitch, filter frequency, amplitude level, or whatever) typically had its own separate front panel switch or control. However, the luxury of having all the knobs simultaneously available for creative experimentation is rapidly becoming a convenience of the past. The reason is simply that each additional hardware control featured on a front panel adds proportionately to an instrument's manufacturing costs.

One major design innovation of synthesiser manufacturers in recent years has been the concept of single-key or numeric data entry. In this situation, a single knob, slider or button is assignable to a number of different functions of the instrument – and may be used in conjunction with an on board LCD to set almost every parameter of a sound patch.

While this approach does indeed cut production costs for today's increasingly powerful, multifeatured instruments, it makes sound programming a rather tedious, and sometimes incomprehensible, process.

One problem with single-potentiometer synthesiser design is that only one parameter at a time can be accessed for editing. Also, the front panel of the style of instrument generally bears no discernible relationship to the structure of a given sound patch. For example, despite having a reputation for being one of the most popular synthesisers of all time, Yamaha's DX7 is still considered 'impossible' to program.

Some of the first MIDI musicians to start dissecting SysEx data in order to get at the guts of their machines included the computer hacker's community. Their pioneering efforts reflected a growing need for 'soft instrument' user interfaces that related, more in graphic terms, to programmed sounds.

The subsequent spate of software-based voicing programs have serviced this need remarkably well. At their most basic level, these programs can provide tables of numbers that show the simultaneous display of all parameter values of a connected machine. These parameters maybe presented either all at once on a single screen, or grouped according to function on separate screen pages

Programs for Yamaha's FM range of synthesisers for example, usually include sub-pages for algorithms, envelope generator settings, and keyboard scaling.

Software written for graphics-intensive computers such as the Macintoshes, Atari STs and so on, can be even more impressive. A mouse-based personal computer makes parameter adjustment very easy – just click on the desired icon and increment or decrement the existing value accordingly.

Of course, the editing process itself will always be pretty much step-by-step, but values and levels can be displayed all at once to resemble the physical layout of a particular synthesiser, or perhaps arranged as rows of rotary pots or vertical sliders, similarly to an audio mixing console.

Moreover, envelope shapes can simply be drawn-in graphically rather than having to be displayed as numerical settings. The graphic presentation of envelope functions is particularly interesting, since in many sound programming situations a picture conveys useful information much more effectively than long lists of numbers. Some programs for the DX7, for instance, can display all eight DX7 envelopes simultaneously in three dimensions, to great effect.

And then there is the window-style approach – which integrates multi-page and single-screen methods.

Typically, sound parameters are presented on-screen as an alternate synthesiser 'front panel'. Usually there is a master 'overview' screen that includes special window areas – enabling the user to zoom in for more detailed information, or for accessing related areas of interest.

Mouse control and computer keyboard input is one convenient method for editing patch data.

Window-style voicing programs for the DX7 synthesiser, usually configure the main screen according to the current patch algorithm.

Values for frequency and level may be contained within boxes representing each operator. From here, the user can choose to view envelope data, feedback values and so on, separately for each one.

Mouse control and computer keyboard input is one convenient method for editing patch data. And real time interaction between instrument and computer enables knowledgeable musicians to change synthesiser parameters via the computer screen – very quickly.

Other methods for updating sound program data also include using the regular controls on the musical instrument. Conversely, some programs allow the musician to select various software functions (say, switching the voicing program to its algorithm page) in response to specified key depressions on the instrument's keyboard. In this situation, the Player's hands need never leave the instrument to alter a sound during a performance.

Already, there is an enormous variety of voicing and librarian software available for virtually every musical synthesiser on the market – Yamaha's DX/TX's, Casio's CZ series, Roland synthesisers, Oberheim's sequential Circuits . the list continues to increase each time a new model of instrument is introduced.

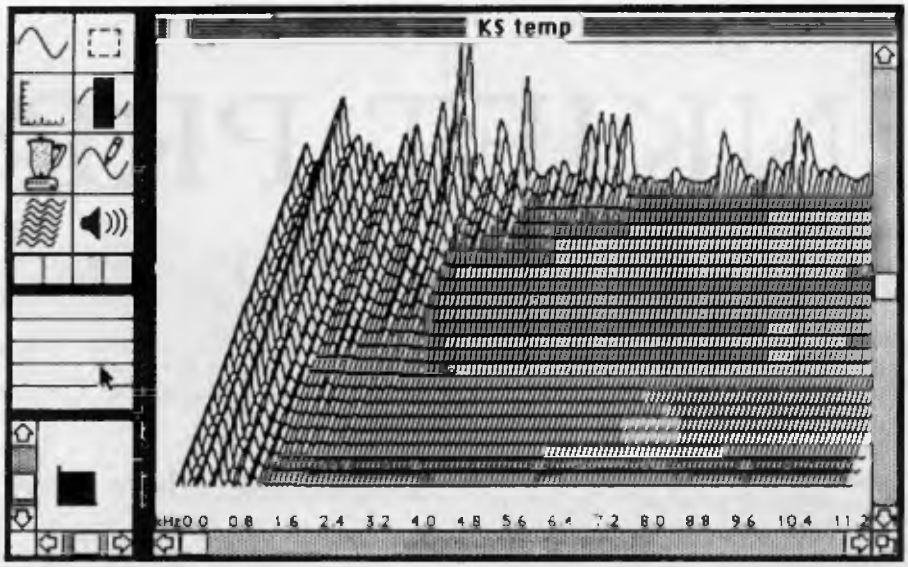


Figure 2. *The SDS genre of software enables externally sampled waveforms to be displayed on screen, manipulated in various ways, and then downloaded to other sampling instruments that observe the specific dump request and handshaking routines defined by the Sample Dump Standard.*

Editing software for samplers

But synthesiser parameter editors aside, there are some other amazing possibilities on the horizon for more 'generic' editing programs for sampling instruments – such as the E-mu Emulator II and E-mu SP-12 drum machine, Ensoniq Mirage, Prophet 2000 and others.

Enter the Sample Dump Standard (SDS) – one of the most recent and exciting of MIDI extensions. SDS is associated with the Universal Non Real Time SysEx format shell, which we briefly considered last time.

The original purpose of SDS was to enable the digital transfer of individual *sound samples* between different brands and styles of equipment. The current SDS specification is able to handle sounds with varying sampling frequency (actually measured as the period, in nanoseconds, between consecutive samples), and includes provisions for sustain loop-points, and anywhere from 8-bit to 28-bit sample resolution!

One of the first computer software packages to support on screen access to samples (and their composition) was Digidesign's Sound Designer Program for the Emulator II and Macintosh. The SDS genre of software enables externally sampled waveforms (and in some cases, even waveform data generated by digital synthesis algorithms on the computer) to be displayed on screen, manipulated in various ways, and then downloaded to other sampling instruments that observe the specific dump request and handshaking routines defined by the SDS.

In the next article, we'll 'get down' and inspect the SysEx data stream in more detail. □

INKJET PRINTERS

Hewlett-Packard's DeskJet and PaintJet, Tektronix' 4696, and Kodak's Diconix Portable.

INKJET PRINTERS have been in use for a number of years, but it is only recently that research and development has produced models that have cleaner print heads with fewer maintenance problems. The latest batch even includes a model that does not have to use special ink jet paper for optimum results.

Resolution and colour are two of the most significant factors in printer development. The increasing capabilities of dot matrix printers, and development of desktop laser printers in recent years has meant that printers have kept pace with PC development and software design. Desktop publishing, presentation software, Cad and graphics applications all require a high degree of sophistication when it comes to the final hard copy. Specialists can make use of expensive workstation hardware that produces photographic quality from images on screen. But for the rest of us, the options are more limited.

The resolution of printers is getting better all the time, with 24-pin dot matrix printers and 300 dots per inch (dpi) lasers setting the standards. Inkjet printers have been slower to develop, but with the DeskJet, Hewlett-Packard (H-P) seems to have broken the resolution barrier for these printers (at a reasonable price as well). At 200 dpi, it is not quite laser quality, but as an alternative to a 24-pin dot matrix printer it has no equal for letter quality output. With the advent of computers with colour options such as the Macintosh II, the IBM PS/2 range, the Amigas and the Ataris, there is a demand for good colour output. Colour printing can be achieved quite cheaply using a dot matrix printer that accepts a colour option. But quality of output is not high even with 24-pin models, because of the limits of dot matrix printing.

Look out lasers, here come the inkjets! Recent developments in inkjet technology have produced a new generation of affordable printers with innovative designs.

The advent of four-colour laser printers is something to look forward to, but the expense may make it prohibitive to all but the specialists. This is where inkjets can make headway – they have the advantage of being quiet and lightweight, even portable.

Hewlett-Packard DeskJet

This new printer is the result of substantial research into both inkjet technology and marketing strategy. For under $2000 you can have near laser quality 200 dpi printing that gives you true letter quality, and you do not even have to use special inkjet paper. The DeskJet is aimed at potential buyers of letter quality dot matrix printers who would rather have a laser but find them too expensive. With the added benefits of quiet operation and convenient design, this new generation inkjet is going to give the high end dot matrix and the laser market something to think about.

It is difficult to tell the difference between a page produced on the DeskJet and one from a laser printer. The only perceptible differences are that the laser prints a slightly denser black, and if you look very, very closely, a tiny amount of bleed can be seen with the naked eye from the page printed on the DeskJet, but it is small enough to be insignificant. Magnified, the amount of spatter surrounding letters is slightly more than that found in a laser output, and the edges of the letters are not quite as sharp. Compared to output from a 24-pin dot matrix, the DeskJet page looks like a page produced on a daisy wheel, with dense, well formed characters.

The DeskJet is a less expensive alternative to a laser printer and gives, to all intents and purposes, an identical output for printing straightforward text and graphics. It differs from lasers in that it is not a page printer, and a document is printed line by line in a similar way to a dot matrix printer, but if you do not need to access the special features of laser printing (such as landscape/portrait and font rotation) and are satisfied with the multiple options that are available with most dot matrix printers, the DeskJet is more than adequate. It is also fairly unobtrusive, being small enough to fit on a desk return and a quiet 44 dBA (rated) when printing.

There are two print modes: Draft at 240 characters per second (cps) and Letter Quality (LQ) at 120 cps. This is not as fast as laser output, but it is quite a respectable speed considering the quality. For comparison, 24-pin dot matrix printers in a similar price bracket print at up to 300 cps Draft, and 100 cps in Letter Quality mode. In Draft mode, the DeskJet prints at 300 *x* 150 dpi which produces a slightly fainter result whilst retaining the sharp and well formed characters produced in

Quality mode. Bold printing, italics, sub and superscripts, proportional spacing and underlining are all supported. In the printer's standard configuration, the Courier internal typeface is accessible in three sizes. Two slots on the printer's body allow cartridge fonts to be inserted, which provide extra typefaces.

The print cartridge unit consists of both the ink reservoir and the print head. The print head has 50 microscopic nozzles arranged in two rows of 25. This is a development of the 96 dpi, 9-nozzle head of the Thinkjet, and the 180 dpi, 30-nozzle head of the PaintJet. DeskJet cartridges have a life of 400 to 800 pages depending on the page content.

It is no longer necessary to purchase special inkjet paper to get high quality results – a wide range of plain office paper can be used. The print head needs only one 'prime' operation by pushing a button when it is first installed, and after that it is self cleaning and it parks itself in such a way as to avoid ink from drying up and clogging the nozzles. The self-cleaning, self-parking head is suspended vertically above the paper as it prints, so that the actual print head squirts the ink down onto the paper. H-P has achieved this with a revolutionary approach to printer design: the paper is fed in through the base of the printer from the 100-sheet feeder bin. It is moved around three large rollers through 180 degrees and after a few clunks and whirring sounds the top edge emerges on to the flat platen ready for printing to begin. The print head moves back and forth above the paper, printing the text 'upside down'.

Another new feature is the mechanism which suspends the freshly printed page on two rails above the output bin, thus preventing it from smearing the previously printed page. All of these improvements in inkjet printer design address directly the problems that faced users of these printers in the past. In fact, the printer behaved very well during the test period, with no smudges and no trouble with the print head. It only misbehaved a couple of times when it loaded two or three sheets instead of one. Apart from replacing the print cartridge when it runs out of ink, the only maintenance required is periodic cleaning of the platen, carriage guide and paper feed rollers with a soft cloth moistened with water.

Speaking of water, the printed page from the DeskJet is not immune from the effects of a dunking. This is a rather radical test, but in some cases it is so difficult to tell the difference between a laser output and the DeskJet's that we had to resort to drastic lab conditions The result of applying water is a smudging of the ink which is water soluble, whereas the laser printed page is more or less immune. But unless you plan on printing in the rain this should not be a problem.

The manual is laid out in a logical way, with step by step instructions that are easily followed. Details are provided for connecting the printer to H-P, IBM and Apple family computers, and further details are provided on setting up software, using control codes, and making use of the font cartridges. All things considered, the DeskJet is a new force to be reckoned with in the letter quality printer market, and a true alternative to 24 pin dot matrix and laser printers.

Figure 1. *The DeskJet gives true letter quality on plain paper.*

My father had a small e
of five sons. He sent m
fourteen years old, whe
myself close to my stud
(although I had a very
narrow fortune, I was b
eminent surgeon in Lond
my father now and then
them out in learning na
mathematics, useful to
believed it would be so

DeskJet

My father had a small e
of five sons. He sent m
fourteen years old, whe
myself close to my stud
(although I had a very
narrow fortune, I was b
eminent surgeon in Lond
my father now and then
them out in learning na
mathematics, useful to
believed it would be so

Laser printer

Figure 2. *It's difficult to tell the difference between a page produced on the DeskJet and one from a laser printer.*

Figure 3. *The Tektronix 4696 even includes a driver for the Amiga – this 4096-colour, digitized image printed in 4 minutes.*

Figure 4. *Kodak's Diconix 150 Portable – this innovative 12-jet machine runs from batteries stored in the platen.*

Diconix Portable 150

For anyone who has been used to using a dot matrix printer, with its noisy impact printing mechanism, the Diconix portable is a pleasant surprise. Even before it is taken from its carry bag, it is difficult to believe that something so small and convenient to cart around could print, let alone prove to be useful. But it does in fact perform very well and produces an output that is reasonably fast in draft mode with respectable printing in Near Letter Quality (NLQ) mode.

Much of this printer's appeal comes from its compact size and quality of design. Whoever thought of storing the five rechargeable, C-size batteries inside the platten deserves to be given full member-

Figure 5. The state-of-the art, $14,500 Tektronix 4693D uses thermal wax print technology and sets the standard for colour hard copy with 300 dpi resolution and 16 million colours.

ship to every journo's club in the world. This design means that the mass of the printer is concentrated in the right place, and it makes the unit similar in size and weight to early transistor radios. It can easily be teamed up with a portable laptop computer and carted around in true jet-setting fashion. It can also be conveniently set up on your desk if space is a problem (you can store it inside a desk drawer), and it will quietly and faithfully work as a personal printer.

The Model 150 comes complete with print head, AC adaptor and recharger, operator's manual and some sample paper. The print head is another piece of excellent design, with twelve jets and associated input circuitry occupying a thin rectangular slab in front of the ink reservoir. The disposable head prints 500 pages of text before it has to be replaced. The AC adaptor can be used where a powerpoint is at hand, otherwise the unit will operate on its batteries and will print for a minimum of fifty minutes, or 150 pages at full charge.

Output in Draft mode is 150 cps. There are two NLQ fonts, Quality and Script, which print at 50 cps. Superscript, subscript, condensed and double-strike are also supported. The printer can be configured to emulate either an Epson FX or an IBM Proprinter, which has the extended character set. As with most inkjets, the best quality is obtained by using special paper. Special paper is required because of the tendency of the ink to bleed into the long fibres of normal office bond paper. This makes printouts on bond paper look definitely hairy, and a bit faint. Using the inkjet paper, the print looks a little soft around the edges, but this is acceptable in a printer of this size.

Another simple design solution is the paper feed mechanism. It is simply a matter of lifting the bail arm, inserting the paper into the rear opening until it appears above the platen, and releasing the bail arm.

The 12-jet print head can be instructed via escape sequences to print enhancements such as double strike, super/subscript, underlining and graphics modes. For $950 you can buy a 24-pin dot matrix printer which would give Letter Quality output, but for portability and quiet operation, you can't go past the Diconix.

Hewlett-Packard PaintJet

The PaintJet is a colour inkjet printer that can print NLQ text at 167 cps and colour graphics with 180 dpi resolution. It takes around forty seconds to produce a page of text, and about four minutes to produce a full page of graphics. It is suited to PC Cad and graphics packages, and can print on special H-P PaintJet paper (either fanfold or cut sheet) and transparency material. Like the other inkjet printers, it is extremely quiet during operation, and technological developments have reduced any maintenance problems to a minimum.

Two disposable ink cartridges (one black, and one cyan, magenta and yellow) are mounted next to each other in a carriage which moves back and forth spraying ink onto the paper. The cartridges have thirty nozzles each, and last for around 1000 pages of black text, and 180 pages of colour graphics. The PaintJet is an earlier development than the DeskJet, and it needs special paper for best results. Its output is not really designed for Letter Quality text, but for presentation graphics that use NLQ text and colour, it does a rather good job. It can also be used in technical applications as a substitute for a colour plotter with Cad software.

Colour printers generally fall into three categories: dot matrix colour, inkjet colour

Figure 6. The self-cleaning, self-parking head of the DeskJet is suspended vertically above the paper as it prints. Note the two rails supporting the freshly printed page as it emerges.

Figure 7. The PaintJet is designed for colour presentation graphics and as a substitute for a plotter with Cad software.

and thermal wax colour. With dot matrix printers, the coloured ink is transferred from a ribbon onto the paper surface through impact of the print head Because there is a lot of dilution, the colours often have a washed out appearance.

Thermal wax colour is the best available, but it is expensive (around $14,500 for 300 dpi and 16 million shades of colour). The inkjet uses liquid or solid ink that is either physically squirted on to the page, or heated and forced through a tiny hole. The thermal wax type is the only one that can approach the quality associated with colour photography. Indeed, if you are looking for a means of transferring a colour image from your PC monitor to hard copy, the best way out is via some sort of photographic process, either using a special colour transparency capture, such as Polaroid Palette, or if your screen resolution is high enough, by photographing the image straight from the screen.

But for the occasional presentation the PaintJet is possibly all you would need. It prints on to a transparent film without too much bother (as long as you allow the ink to dry properly before you handle it) and on PaintJet paper, it is possible to print solid blocks of colour that do not show the print passes that are obvious from dot matrix printouts. At 180 dpi it is not possible to obtain really sharp edges, and the strongest colours are those that are squirted onto the paper without mixing (black, yellow, cyan, magenta). Optimum results can be obtained by choosing your palette carefully. We used a PaintJet to print out invitations for our Personal Computer of the Year Awards. We managed to go through two and a half colour cartridges printing 350 invitations. Mind you, it took 45 hours of continuous printing to do the job, but the PaintJet performed without a hiccup

The two ink cartridges are primed when they are first installed, and they are inserted next to each other in a carriage that runs back and forth along the length of the platen. If there is a pause in printing for any reason (for example when the printer is left waiting for information from the computer), the print carriage automatically slides over to the right hand side where it drops into a rest position. This prevents the ink from drying and clogging the jets. We left the PaintJet with the carriage in this rest position for several days to test this feature, and it printed perfectly when we fired it up again.

Paper feed is both friction and sprocket, and the special PaintJet paper is available in cut sheet or fanfold form in A4 size and foolscap. We tried several different papers, without much success, with even the higher quality coated papers showing some bleed. There is a single interface connection with a choice of Centronics parallel, RS 232C, or HP-IB (cables have to be purchased separately). Twelve international character sets can be selected, Courier and Gothic fonts are in residence, and the usual bold, underlining, superscript and subscript are supported.

As mentioned earlier, the technology of the PaintJet has been superseded by the DeskJet, at least as far as text output is concerned. Colour inkjets are still being developed, however, and if H-P manage to produce one with the same resolution and features as the DeskJet, we could see a laser quality colour image on plain paper that will cost a lot less than anything a future laser printer could produce. In the meantime, the PaintJet does a much better job than a colour dot matrix printer, although it is about three times the price of one.

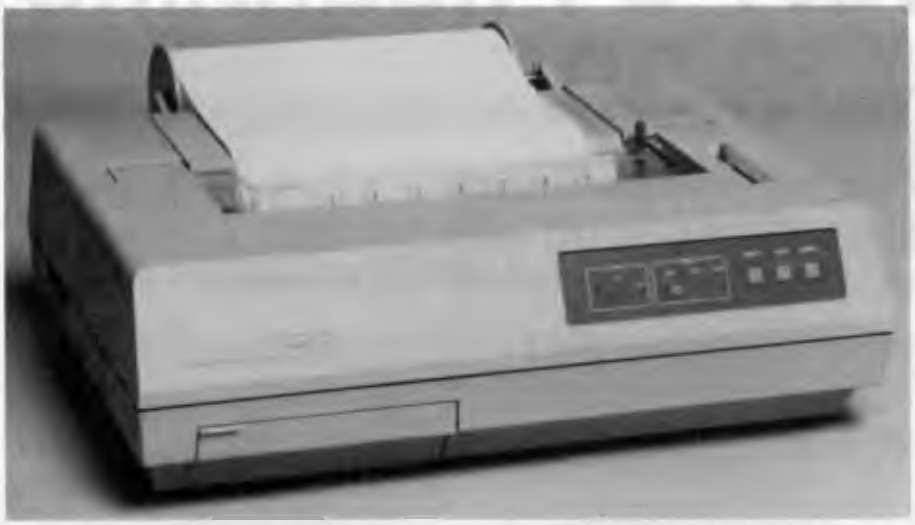


Figure 8. The Tektronix 4696 gives 120 dpi resolution and 125 colours.

Tektronix 4696

Tektronix has set the standard in colour hard copy that is printed (rather than photographed) with its 4693D series of printers and accessories. The standard is a high 300 *x* 300 dpi, which is laser resolution, and 16 million colours! The 4693D uses a thermal wax print technology with the print head making up to 4 passes to achieve dense blacks. With a page rate of one per minute, it is not fast, but with 16 million colours, who is complaining? Incidentally, with the Tektronix 4693DS colour rasterizer, it is possible to have the full colour spectrum for printing. This is where colour printing approaches the standards of colour photography, and it costs $14,500.

There is a less expensive version, the 4696, which is an inkjet printer suitable for use with PCs. It has a lower resolution, 120 dpi, and a range of 125 colours. The 4696 is similar to the PaintJet from H-P, being of a similar size, and with a similar market in mind. There are substantial differences, however, in the ways the two manufacturers have approached problems associated with inkjets. Ink is supplied to the printer in liquid form in transparent cartridges, and is transferred to the printer reservoirs by removing the lids and pressing the end over the cartridge over a corresponding valve. The level of ink in each reservoir is monitored with a status lamp, and when the level drops too far, the ink can be replenished. Each ink cartridge lasts for approximately 100 copies, and costs around $10

When the printer is powered down, the ink heads are automatically sealed and washed. During power up and periodically during printing, a small amount of ink is purged to prevent clogging and to ensure even print quality. Separate cartridges are used for black, cyan, yellow and magenta. While the printer is not printing, the ink carriage rests in a bay at the front left of the printer body. This is where the housekeeping is carried out automatically

Paper is supplied to the printer either manually or from a roll mounted behind the platen. Transparency material can also be used for overhead projection, and a selection switch is provided at the front control panel for transparency printing. We used Pizazz to print a screen dump of an EGA 640 *x* 350 screen from The Magician Pizazz has three density settings that can be chosen. High Density gives the most saturated results and the straightest lines. A high density dump takes under three minutes, and low density two minutes. In comparison with the PaintJet, the printed product looks slightly more vibrant, but the differences between the two really boil down to personal preference. Some people prefer a less saturated print because the stronger colours are less likely to dominate the blended colours.

The Tektronix did not perform faultlessly, however: Each print from the beginning was marred by small black dots at the same place on the page, as if the platen was marked with ink. We phoned Tektronix, who suggested purging the inks, which we did to no avail. The black ink reservoir light was flashing, so we attempted a refill, but the reservoir was not in fact empty This seemed to fix the black dots problem, and a print was finally produced in pristine condition.

The manual for the 4696 is quite adequate, giving lots of advice on troubleshooting and accessing the various features of the printer. There is a section on programming and a very useful section that deals with a colour theory, with advice on how to achieve the best results with colour in presentations and graphics. The controls are simple to use, with three buttons and indicators for ink, media, and a ready light to show when the printer can accept information from the host.

One problem with testing inkjets on IBM compatibles is the limitation on colour capabilities from the host We used an Amiga 1000 to test the Tektronix' capabilities with a 4096-colour digitized image, and it came out fine. Tektronix has provided a printer driver for the 4696 and 4695 to be used on the Amiga. Double buffering increases copy speed, and it can output a full screen dump in around four minutes. Version 1.3 of the AmigaDOS operating system will include much more efficient drivers for several of the inkjet printers, including the PaintJet.

The Tektronix may not be as advanced as the Hewlett-Packard inkjets, but it still produces a very colourful print. In some ways it is more flexible, as it has three graphics print modes selectable via programming commands, or via the front panel. Mode 3 extends the printer's resolution into 120 *x* 240 dots per inch giving a more dense output, but it takes twice as long to print. Maintenance has been well thought out, with the printer doing most of the work automatically. For situations requiring a dedicated color printer, the Tektronix 4696 should be adequate. □

Product Details

Product: DeskJet
From: Hewlett-Packard
(008) 033 821, (02) 888 4414
Price: Under $2000 taxed

Product: Diconix 150 Portable
From: Kodak
Distributor: AWA
(02) 888 9000
Price: $950 taxed

Product: PaintJet
From: Hewlett-Packard
(008) 033 821, (02) 888 4414
Price: $3271 taxed

Product: 4696
From: Tektronix
(02) 888 7066
Price: $2872 untaxed

CHOOSE ANY 3 PROGRAMS
FOR ONLY $9.00

Plus free membership to
CHOICE MARKETING SOFTWARE CLUB

TELEPHONE (09) 459 8894 FACSIMILE (09) 481 0074

CM100 Menu Generator — Creates a menu-driven system when you switch on your computer for easy access and operation

CM102 Forms Creator — Create new forms or modify existing ones to suit your needs.

CM104 DOS Help — You will never forget the right format for entering Dos Commands again.

CM105 Toolbox — Gives you access to an alarm clock, calculator, Dos Commands, notepad, phone dialer, printer controls, typewriter mode and more, without leaving the program you are working on.

CM106 Kid Writer — Word processing for children featuring easy to understand menus, automatic word wrap and extra large characters.

CM108 Arcade Games Collection — An assortment of the finest 'arcade type' games including Scramble and Donkey Kong.

CM109 Quality Print — Allows you to produce letter quality print on your Epson or compatible dot matrix printer.

CM110 Comm — Communications program that allows you to go to Dos without terminating. Plus word processing ability and programmable functions for automating your communication needs..

CM111 Landscape — If your report won't fit into a page, print it sideways with unlimited print width.

CM112 Thought Organizer — Helps you to think better, by organizing and rearranging your thoughts into different categories. It has auto-numbering and auto indent.

CM113 Writer's Tool — Helps you to write so others can understand. This program will analyze your writing and determine its readibility.

CM116 Disk Editor — Very handy for editing any part of any disk file using a handy windowed hex or ASCII dump of the file onto the screen.

CM117 Stock Trend — Helps you to analyze stock trends. Easy to use menu driven system.

CM118 Xanadu — A collection of very useful programs. Quickcrt speeds up your screen to turbo mode. Sort your directory, displaying different colour based on file extension. PCSTAT displays disk/ram statistics. Sfind finds files fast.

CM119 Basic Games — Various games in basic including Aardvark/Bowling/Keno/Spacewar and many more.

CM120 Desktop Publisher — Publishing programs for newsletters or simple applications.

CM121 Lotto Luck — Helps you pick Lotto numbers.

CM122 Bookkeeper — A complete financial tool for business and personal use where complex accounting software is not needed.

CM123 Poker Anyone? — Lets you play five-card poker against the computer.

CM124 Duke Language Toolkit — For creating foreign language fonts for the EGA. It is a great tool for creating alternative ordinary screen fonts.

CM125 Record Collector — You can catalogue and find songs by title, artist, label, producer or any of 19 other traits.

How the *CHOICE MARKETING SOFTWARE CLUB* works:

You'll receive your choice of any 3 programs on this page for only $9.00 (plus $3 shipping & handling) after your membership is accepted. We reserve the right to reject any application **However, once accepted as a member, you may examine the programs in your own home and, if not completely satisfied, return them within 10 days. Your membership will be cancelled and you'll owe nothing.** About every 4 weeks (14 times a year), we'll send you the Club's bulletin, **PD SOFT**, describing the month's selection and a variety of alternative choices. If you want the selection, you need do nothing; they'll be shipped automatically. If you don't want a selection, or prefer an alternative or no software at all, just fill out the convenient form always provided and return it to us by the date specified. We allow you at least 10 days for making the decision. If you do not receive the form in time to respond within 10 days, and receive an unwanted selection, you may return it at our expense. As a member you need buy only 4 programs at regular low Club prices during the coming year. You may resign any time thereafter or continue to enjoy club benefits as long as you wish Both selections will cost $10.00 each. The Club offers more than 800 public domain and shareware to choose from A shipping and handling charge of $3.00 is added to all shipments.

Send no money now, but ***do*** *mail the coupon today.*

Will it work on my computer?

These programs will work on IBM-PC and compatible machines with 5¼" disk drive. Other computers such as NEC APC III will require the Software Library Extension Card to use these programs. If you require programs in a 3½" diskette, a surcharge of $10.00 is required for this offer due to high cost of 3½" diskettes. Your monthly selections will then cost $13.00.

What is User Supported Software?

Some of the software is distributed under the user supported software concept. What this means is that you can obtain the software for a nominal fee, and if you like it you are encouraged to send a donation to the author, usually between twenty and one hundred dollars. It's a case of you pay if you like it. If it is not to your liking you may still keep the software. The instruction manual comes with the diskette and is printed out by the user.

Mail to: **FREE POST A13**
CHOICE MARKETING SOFTWARE CLUB
YC-788
PO Box 648, Gosnells WA 6110

Yes! Please accept my application for membership in the **Choice Marketing Software Club.** Send me the 3 programs whose numbers I have indicated in the boxes below plus my FREE membership, for only $9.00 plus $3.00 shipping and handling.* I agree to the Club Plan as described in this ad. I will take 4 more programs at regular low Club prices in the coming year and may resign at any time thereafter.

I wish to receive the 3 selections marked in the boxes provided:

☐ ☐ ☐ **Diskette Size:** ☐ 5¼" ☐ 3½"

MR
MS _____
(please print)

ADDRESS _____

SUBURB _____

STATE _____ POSTCODE _____

IF UNDER 18,
PARENT
MUST SIGN _ _____

* For 3½" format $19.00 + $3.00 shipping & handling

FAIRLIGHT INSTRUMENTS

NEW DEVELOPMENTS

Andrew Symaniz found Fairlight Instruments is not a company to rest on its laurels – co-founders Kim Ryrie and Peter Vogel tell of the audio (and visual!) future . . .

WHEN THE Fairlight Series III Computer Music Instrument (CMI) was completed some time ago, many musicians considered it a formidable beast, even alongside existing CMI machines. But Fairlight Instruments has never been a company to rest even briefly on its laurels.

Now, after almost two years of continuous research and development, a whole swag of new hardware and software upgrades for the Series III seems destined to further this Australian company's worldwide reputation for musical excellence. Not only is this instrument considered the Rolls Royce of sound synthesisers, but it continues to set new standards as the ultimate controlling centrepiece at the heart of any audio/visual production environment.

Recent hardware developments

One product of Fairlight's recent hardware developments is its new-style musical keyboard. Although currently still in prototype form, this multidimensional MIDI-keyboard controller is expected to see light of day mid-to-late '88. Essentially, it will enable musicians to control several different tone parameters, simultaneously, with each finger. Not only will individual keys on the musical keyboard be able to respond to traditional performance expressions such as note-attack and note-release velocity, they will also be capable of exhibiting various other real-time polyphonic options – including 'displacement' sensitivity and 'pressure' sensitivity.

Kim Ryrie (top) and Peter Vogel, co-founders of Fairlight Instruments.

For performing musicians, these expanded keyboard features will open up a host of new playing techniques. For example, a player will be able to directly control a variety of CMI parameters (such as filter, volume envelope, vibrato or even the 'mix' between two or more voices) not only according to how fast a particular key is initially hit or finally disengaged, but also in response to the intermediate displacement of a key, or according to how hard a key is 'squeezed down' at its end-of-travel (called polyphonic 'after-touch').

Kim Ryrie elaborates: 'The new keyboard incorporates a dedicated 68000 processor, which is sufficiently powerful to monitor the exact locations of each key, all the way down. In this way, the actual position of the key might be used to determine how several voices assigned to a single key might be mixed together, according to specified 'function curves'. So, by continuous movement of a key – up and down – you'll be able to produce some very complex variations in sound, perhaps derived from different sound samples.

'Of course, this approach would tend to gobble up voice channels and so limit your polyphony – though we never really know how people are going to use these kinds of things, once they're available. All we try to do is make the whole system as flexible as possible – and occasionally what ends up being popular is something we didn't even think of.'

Another enhancement Fairlight researchers have been investigating for some time now, is direct digital recording – made possible by the Series III's SCSI

hardware and potential for massive sound storage. This level of hardware sophistication can provide extremely fast Direct Memory Access (DMA) – or memory-to-memory transfer – between the computer and a variety of storage devices. However, Kim and Peter are not yet willing to commit themselves to any *one* digital recording medium.

At present, they are considering several options; these include high density floppies with data compression, hard disks, optical (WORM) disks, R-DATS or perhaps combinations of these systems.

However, each option has its own set of design problems; synchronised R-DAT drives, for example, are an exciting but very expensive exercise to implement at this stage. Fully erasable optical disks, although working to some degree of success 'in the labs', are not yet commercially available. And in any case, optical disk transfer rates still only run at about a quarter of the rate for hard disks, and require involved error detection and correction procedures – all of which currently limits optical recording to just two tracks at a time.

New software

The recently completed Digital Tape Recorder software which allows the recording/replaying of sounds both directly to and from hard disk, should become available 'very soon' According to Peter Vogel, this CMI option will be used mainly for extensive digital sound editing: 'Long duration program material (up to 2 hours in length, using the 600 megabyte disk) can be sampled continuously onto disk and any sections picked out and rearranged chronologically according to SMPTE time code.

'On screen there's a real time display where you can see the waveform running past like on an oscilloscope. Here you can slow down, reverse or stop replay, as on a conventional reel-to-reel tape recorder, but you're also able to cut/paste and so on

'This is a non-destructive process – it doesn't actually edit the sound file itself, but it creates a list of pointers for jumping through the file on playback. So if you change your mind about something you can always put it back the way it was, instead of having to make massive backup files.'

Like its predecessors, the Series III CMI continues to be more than just a digital synthesiser or sound recorder Fairlight has always provided a 'soft' screen-based user interface – in other words an interactive graphics control centre, as distinct from a pre-determined hardware control panel. Consequently, the (growing) collection of menu-driven graphic pages that control the system are virtually forever expandable.

Figure 1. *The Fairlight CMI (Computer Musical Instrument) was recognized as a formidable beast when it was released two years ago – the recent release of hardware and software upgrades ensure that it will continue to set standards in audio/visual production.*

The long-awaited 80-track/MIDI sequencing software for the Series III, called CAPS (Composer/Arranger/Performer/Sequencer) will be finally due for release this year. Its features represent several years of feedback and suggestions made by CMI users working in all aspects of the audio/-video/film industries.

Like many Fairlight innovations, CAPS is founded on unique philosophical principles – quite different from other sequencing designs, including Fairlight's own Page R. Most dedicated or PC-based sequencers (for Apples, Commodores, Ataris, IBMs and so on) use a very 'bottom up' kind of approach Typically, musical notes are entered one bar at a time, then duplicated or transposed across to other sections. In this situation, the musician rarely thinks beyond the bars being operated on. Some composers believe this approach curtails the spontaneity and dynamics fundamental to natural musical expression.

Although many musicians might not feel restricted by these limitations, most professional musos – who usually 'think out' their musical compositions in some detail before sitting down to compose –

CAN YOUR PC PLAY THE PIANO?

OURS CAN*

Find out how with any IBM compatible or Atari Computer

- TEACH YOURSELF PIANO AND KEYBOARDS
- BASIC AND ADVANCED INSTRUCTIONS
- ALL STYLES AND RUDIMENTS OF MUSIC
- PROFESSIONAL COMPOSITION

Phone now

(02) 939-2444

STROBEK MUSIC

SOFTWARE

DR T sequencer
DR T copyist
DR T recording studio
Mastertracks pro
Mesa Editor arranger
Texture live
Texture 24 track
Hybrid Arts DX Droid
Midi concepts one

HARDWARE

Interface cards
Plotters
Printers
Computers
Synthesisers
Home recording equipment

bringing computers and musicians together

505 PITTWATER RD., BROOKVALE, NSW 2100.

OUTSTANDING SOFTWARE

For IBM PC's and Compatibles

At last FREE-SOFT ® International is here! We have more than 900 programmes in our international library, you can get any disk for $12, and if you join FREE-SOFT NETWORK ® it will be $10 only per disk! plus getting our SOFT-LINE ® Newsletter.. full of tips to help you get the most out of your PC! plus receiving regularly our SUPER-SOFT ® sheet listing in details the best 10 software programmes available in our library! plus SPECIAL PRIVILEGED STATUS ® .. you will have advance access to the latest Public Domain and User-Supported software programmes before its release to the public! plus having 24 hours, 7 days hot line to order from! Membership in the NETWORK is $39 annually! So, may we say.. WELCOME to the world of FREE-SOFT.

 # 0125 PC-PROFESSOR — Your computer will teach you all about BASIC programming in colour!

 # 0180 PC-TUTOR — Tutor will teach you all what you need to know about Your PC and its DOS!

 # 1000 PC-WRITE + — Super word processor, comes in 2 diskettes, this is part 1, full-featured package with 55000 word dictionary in colour, even support a Laser printer.

 # 1001 PC-WRITE + — Part 2 as above.

 # 0054 SIDE-WRITER — It will allow your printer to print SIDEWAYS on paper! a must for lotus users!

 # 0051 EZ-FORMS — allows you to generate master forms tailored to your need. Super for business.

 # 0028 PC-MUSICIAN — Great programme, you can create and play songs on your PC!

 # 1003 PC-FILE + — Just when you thought PC-FILE couldn't get any better File+ create new standard in Database managers, comes in 2 diskettes, this is part 1, it is easier, faster and more. . . more powerful.

 # 1004 PC-FILE + — Part 2 as above.

 # 0130 PERSONAL FINANCE MANAGER — Good personal accounting system. You can keep track of all household money matters from Cheque account to Investments.

 # 0148 PC-TOUCH — Your Computer will be your typing tutor, let you go at your own pace and keep track of how well you are doing.

 # 0147 SLIDE — Images can be created, edited, saved, displayed and printed using the programme. Handy for Disktop Publisher.

SPECIAL ANY 5 DISKS PLUS 1 YEAR MEMBERSHIP ONLY $39

 # 0172 THE LIBRARY for lotus — 20 Super worksheets for lotus 123, from Cheque Book balancer. Cash Flow Manager to New Venture Budget!

 # 0197 HARD DISK UTILITIES — Super collection of Hard disk Utilities from a utility tells you which files have not been backed up to the one helps you create sub-directory no one knows about but you!

 # 0174 KID'S WORD PROCESSOR — Excellent word processor written for Children (and adult too!) in super colour and sound, features graphic menus and the lot!

 # 0175 PC-DRAW # 1 — A must as a part of your Desktop Publishing Library, it is a combination of programmes, providing keyboard, screen drawing, graphics printing and slide show capability.

 # 0176 PC-DRAW # 2 — A selection of drawings and pictures made by PC-Draw #1, plus a super slide show, you must have PC-DRAW #1 to be able to use it.

 # 0201 PROCOMM — The professional communications programme, if you have a Modem then you need Procomm.

 # 0046 PTROOPER — A game, in Super Colour, keep the invading paratroopers from landing in your country!

 # 0049 PC-CHESS — Very good Chess game, you can play against the computer or a friend!

 # 0065 AFGHAN-WAR — Good WAR GAME, in colour based on Afghanistan War.

 # 0157 LANDER — In excellent graphics and colour, can you land a space ship on a pad without crashing?

 # 0165 SPACEWAR — Arcade game in colour and graphics, combines the best features of Asteiods and Startrek with a few tricks of its own!

YES! I want the best! Send me my MEMBERSHIP KIT in FREE-SOFT NETWORK , plus the following diskettes. (write catalogue # of any FIVE of the above list)

At your SPECIAL OFFER for $39
Plus, postage & handling ..... $ 3
(if you want more than five diskettes, just add for each extra diskette $10)

As per ☐ My Cheque ☐ Bankcard ☐ Visa ☐ MasterCard ☐ Am. Express

Card No.....Exp. Date.....

Signature ..... Name .....

Address.....Sub.....

State.....Postcode.....Phone.....

Post to . . . (No stamps Needed) . . .
Or by using our 24 hrs,
7 days a week,
HOTLINE (03) 859 4697

FREE POST No. (1),
FREE-SOFT International,
P.O. Box 398,
NORTH BALWYN, VIC. 3104.

FREE-SOFT INTERNATIONAL LIBRARY

The Power of Choice

When you need to know, keep a PSION handy – $499

PSION, the world's smallest LOTUS 1-2-3 compatible, is a new dimension of personal computer. Packed with up to 320 K of memory the PSION easily carries an enormous capacity for information in the field. Built in programs for extensive diary database and a sophisticated calculator are complemented by plug-in peripherals including modem interface.

PC/XT – $995 including tax (Turbo option – $150)

256 K RAM 4.77 MHZ, 1-360 K FDD, AT Keyboard with Amber or Green composite monitor

PC/AT – $2995 including tax

1MB RAM 10 MHZ, 20 MB HDD Extended Keyboard, 1-1.2 MB Floppy Disk HI RES TTL, Green or Amber monitor

HITACHI HL-300 – $1695 – Exclusive to Blue Chip

HITACHI HL-300, the personal computer that's truly portable. 512 K memory, twin built-in disk drives, easy-to-view 11" STN (Super-Twisted Nematic) LCD screen, detachable keyboard, modem interface.

The go anywhere communicator from HITACHI

LOTUS 1-2-3 $595

Microsoft	
Word V.4	$675
Mouse PS2/Serial	$215
Windows 2 *(The Clayton's OS/2)*	$155
Excel *(Unleashes the power of your 286/386 computer)*	$755
Works *(The total solution)*	$295
Quick Basic	$139
Quick 'C'	$139
Others	
DBase III+ *(The market leader)*	$825
Word Perfect *(Need we say more?)*	$560
Ventura Publisher *(The last word in PC publishing)*	$1435
First Choice *(The perfect 'first' package)*	$225
Wordstar 2000+ V.2	$249
Wordstar 2000+ V.3 *(The new generation wordprocessor)*	$465
Q & A *(The plain English database)*	$495

Monitors	
OMT 5153 RGB	$550
OMT 5154 EGA	$750
OMT 5155 MULTISCAN	$995
Printers	
Epson LX 800 *(9 pin, 80 col)*	$449
Epson FX 1000 *(9 pin, 136 col)*	$1005
Brother 1109 *(9 pin, 80 col)*	$425
Brother 1709 *(9 pin, 136 col)*	$950
OMT VP1814 *(9 pin, 80 col)*	$480
OMT VP1821 *(24 pin, 136 col)*	$1185
Attache	
Look no further than Attache to solve your accounting problems. Attache from $995.	
Modems	
Interlink 12/75	$225
Interlink 12/12	$555
NetComm 123SA	$850
NetComm 1234SA	$995
NetComm Pocket	-Call-

Norton

The complete range of Norton guides and utilities are available from every Blue Chip store.

BLUE CHIP

TOLL FREE (008) 033 841

RINGWOOD: 8 Railway Pl. (03) 870 2243. **CARLTON:** 109 Drummond St. (03) 663 7764. **MOORABBIN:** 350 South Rd. (03) 553 4488. **WOLLONGONG:** Cnr. Crown St. & Railway Pde. (042) 26 3200. **CANBERRA:** 30 Lyell St. Fyshwick (062) 80 7833. **SURRY HILLS:** 90 Foveaux St. (02) 281 1044. **PARRAMATTA:** 463a Church St. (02) 683 1599. **CROWS NEST:** 272 Pacific Hwy. (02) 436 3655. **BRISBANE:** 55 Little Edward St., Spring Hill. (07) 832 0408. **ADELAIDE:** Cnr Wakefield & Poultney Sts. (08) 223 1962.

find these 'experimental inputting' techniques an impediment to their creativity. Furthermore, many traditional musicians have criticised synthesised music in general, claiming it sounds 'cold', 'mechanical' or has a notorious 'computer-like' character. In short, sequenced music, it is claimed, lacks *feeling*.

Whether universally accepted or not, arguments such as these led to the development of CAPS by Michael Carlos – co-designer of the original Page R sequencer. The CAPS system purports to work more in the way a musician thinks; where an entire musical piece can be structured from the 'top down' – like on a composer's score pad.

One important feature of CAPS allows the musician to record a virtually unlimited number of performance 'takes' as the composition evolves. Specified sections can be 'auditioned' and the 'best bits' selected out to be combined into a single error-free performance.

Musical editing procedures such as these closely resemble conventional 'drop-in' techniques traditionally done on analog multi-track tape recorders. However, analog machines always contain a finite number of tracks (usually 4, 8, 16 or 24 tracks), so once a section of music is corrected, the original recording is gone forever. With CAPS, the whole process is non-destructive – you can keep doing 'takes' again and again, and you can always go back and revise previous attempts.

Another CAPS convenience allows 'take' files to contain any number of instrumental tracks – so a whole band of MIDI-equipped musicians can 'jam' together (just like in the good ol' days!) and record the results; but there are other advantages to multi-instrumental recordings. For example, compositions composed on external sequencers can be downloaded into CAPS via MIDI – several tracks at a time, instead of singularly, as is the usual case.

The first version of CAPS is capable of all this, and more. Peter Vogel envisages several future enhancements for CAPS, though most of these are currently undergoing development.

'Having established a flexible sequencing arrangement, there's enormous potential there for doing artificial intelligence operations,' he claims.

'The first release of CAPS has all the 'hooks' to put in a variety of style-modifying parameters (involving, for example, variations in note timing, amplitude, attack, decay). In subsequent releases of CAPS, the musician will be able to superimpose their own styles onto any piece of recorded music.

'Some sequencers from other manufacturers have started to dabble around the edges of, say, making available variables which allow you to specify different 'feels' on the performance – syncopations, shuffles and so on. But we're intending to take these ideas much further – so that the musician will be able to actually *program in* a variety of their own individual styles – skeletal structures, if you like – that modify the performance of the notes in individual melodies

'In this way, musicians should be able to 'tell' their sequencer 'I've changed my mind about this style, syncopate it like the time before last', rather than having to go through and laboriously change all of the timings of all of the notes in every pattern,' he said.

Fairlight Instruments

IN DEC. '87, Andrew Symaniz told of the foundation of Fairlight Instruments and its first CMI. He followed that up in Jan. '88 with a look at the development of Fairlight's Series III CMI. If you'd like copies of these articles, refer to the Services page.

If you'd like to know more about Fairlight Instruments and its products, contact them at 15 Boundary Street, Rushcutters Bay 2011 NSW; (02) 331 6333.

'Of course, these effects will be reversible, so the composition could be played back again, using an entirely different stylistic set.

'The basic style-modifying parameters will be 'deviation from theoretical-ideal' characteristics. Some sequencers already put in 'slop' controls where you can provide a random 'looseness' on playback. But the problem with that is that human playing is never 'random'. It's certainly not accurate, but it's not random either. In other words, the 'deviation from theoretical-ideal' is by no means just a noise function. Its a real function, and that's what gives different people unique playing styles.

'Automated composition is another area that we're looking at, but those sorts of programs that automatically 'jam' – where you can select bits out and so on – are really more of novelty values. Great for hobbyists, but less interesting to musicians who want to express their own preconceived musical ideas. The whole process has to be controlled; and in particular, under the musician's control.'

The future: audio

In the longer term, Fairlight is hoping to do more integration of audio and video production equipment – new generation workstation systems – that promote the creative manipulation of both image and sound from a common user interface Some of the processing hardware that will be incorporated in Fairlight's future products will be things like DSP (Digital Signal Processing) chips and transputers.

'We've been hanging off the digital signal processing side of things until recently, because DSP chips really haven't been worth the trouble. In the past, they were pretty difficult to program, and limited in what they could do – and very expensive,' Peter said

'We did experiment about three to four years ago with the first Texas Instruments TMS320s and the successors of those. We were interested at the time, but not particularly excited – so we put them on the 'back burner' until recently, when Motorola announced the 56000 Series DSPs. Now, several other companies are bringing out a new generation of DSP which is quite a different ball game. The whole architecture, speed, number of bits they work with internally, parallel pipelining structure and so on, are quite different. Also, the programmability and the program space available is much larger, and now these are starting to look they'll be more useful

'We've got one of the first DSP 56000 development systems in the world here, which we are currently tinkering with. We are nowhere near a prototype of a product yet – we're just evaluating and trying out different algorithms – synthesis, reverb and processing algorithms – just to see how they perform.

'At the moment they're not really viable for a product anyhow, because the cost is so prohibitive – they're about 600 to 700 dollars apiece for the chips – and to do anything serious with them we'll need a large number You can't do the sorts of things that we're talking about doing, with just one chip. You'll need maybe 16, or 64, or 128 of them Once the chips come down to the $20 region, then it becomes viable – and no doubt within a couple of years they will. Of course, by that time, we'll have quite a bit of software under our belts,' he said.

'I don't think there's any question that in five years time DSPs will be used for almost everything in the audio field, and that we will finally be able to see the end of all the analog filters and analog electronics.

'Although, of course, that all relies on having the digital equipment to go with it – its no good having digital input and output equalisers if you've then got to go through A to Ds and back through D to As into conventional tape recorders, or whatever. By the time these products are an economic reality, R-Dats and other digital recording equipment will be commonplace, and everything will come together with digital interfacing rather than analog.'

The future: video

Work has already begun on the development of the Fairlight Computer Video Instrument (CVI) Series II – a (relatively) low cost broadcast quality video production unit.

According to Peter Vogel Fairlight is looking at using transputers for its video products.

'Animation, (as distinct form real time image processing) involves data-intensive computations that, by and large, would be non real time, no matter what you do. Using transputers, you can do animation a lot quicker. Instead of ten minutes of calculation per frame, it can be more like one minute a frame. They're very good for that sort thing, but they're of very little benefit in audio applications. In the CVI, the use of transputers will be purely to make the thing work faster,' he said.

'These interests (CMI and CVI) are all converging, in that people who were once musicians and didn't think much about video are now thinking visually. Similarly, people who were once video producers and didn't spend much time thinking about sound are now getting into music and sound effects. We're in a very fortunate position in that we have experience in both those markets, and our audio and video products are conceptually similar.

'I think that there's no lack of creativity in the users' mind – the audio or video artist already has the ideas, but if those ideas could be put into reality as fast as they can think of them, then there would be an abundant leap in creative output.

'As future technology changes, our products should approach more towards the real time end. Faster and easier – and, of course be able to do all of the things people will want to do. So, if the artist says 'I want this sound to do this, and I want the picture to do that, the system should be able to do whatever it is they can think of,' Peter said.

Kim believes that video will be given a huge boost in the near future by the new high-resolution VHS format. (400 line resolution on VHS – the present resolution of VHS is around 170 lines.)

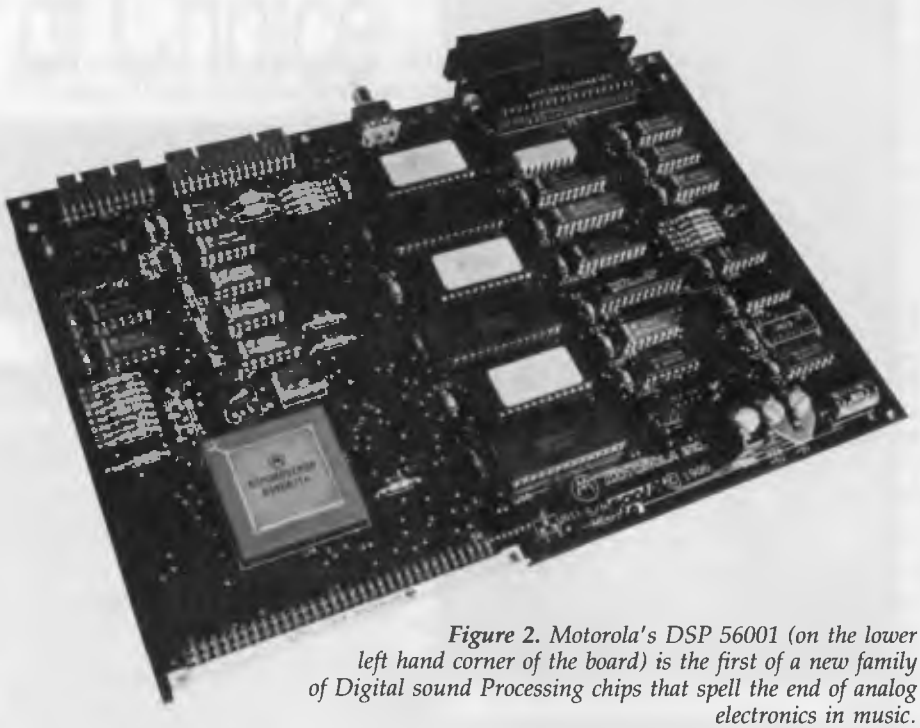


***Figure 2.** Motorola's DSP 56001 (on the lower left hand corner of the board) is the first of a new family of Digital sound Processing chips that spell the end of analog electronics in music.*

'That resolution is near broadcast quality on ½ inch tape. And these machines, available later this year, I'm told, cost only about three times more than existing hi fi VHS machines. So you'll have something which is better performance than U-Matic for a lot less price.

'Also, high density charged coupled lenses coming out in cameras will mean relatively inexpensive video cameras with much higher resolution. This, I think, is going to cause the video enthusiast/semi-professional market to boom. And that's really the market that our CVI is aimed at.

'I think what's going to happen is that we're going to have a similar situation to what's now happened already in the music industry. Ten years ago if you wanted to make an album, you had to find, say, $10,000 and go into EMI studios and make your album. Nowadays you can set up a reasonably professional home studio for under $10,000, and consequently produce a piece of music for much less than that,' he said.

'Of course, video is obviously going to take a little longer, because the technology is inherently more expensive and difficult. But this year and next year, I believe, is going to be the turning point – whereby it is going to become quite feasible to do high-quality video productions and music/videos, or video albums in a home type of environment.

'Once that market gets established, then you'll probably find organisations such as videotape libraries getting involved in distribution of video products; or alternatively, you might find the record shops getting more involved in music video. In the States, of course, what will happen is those sort of programs will go out on cable to a large degree. But all this, I think, is going to radically change our whole social situation.'

For the past ten years Fairlight Instruments has been aiming to reduce studio production time as much as possible – and this they have done very successfully with the CMI. They have taken a process which used to be enormously expensive and laborious to composers and arrangers with rooms full of sound synthesising/recording equipment, down to something quite manageable.

However, Fairlight's recent explorations and examination of 'stylistic' elements in music may well (possibly in retrospect, 10 years from now) mark the beginnings of a new generation of computer aided composition equipment. Soon, we may all bear witness to instruments that can quantify, and even *interpret* the more 'emotional' and 'human qualities' of musical communication.

Not long ago, studio recording engineers and record producers needed to remind their artists that there was no such thing as a 'feel' knob on the mixdown console. But in a way, now there can be. □

IT — Ideal Terminal

Steven Spielberg gave us ET for communication with extraterrestrials. Sid Morris, a director of AMSEC, describes IT for communications in this world.

IDEAL TERMINAL, or IT for short, is a Shareware product written by Don Harbaugh of California and available from PC-SIG's Australian Distributor, Manaccom. Before jumping into a description of this I want to describe a conversation I had with a colleague.

He had just got a program from a friend and asked for my help to get it running as he had no documentation for it. I told him that he had no right to use the program as it sold for $300 and what he had should be regarded as stolen property. He was surprised. He insisted that it wasn't stolen as it wasn't copyright. What he really meant was that it wasn't copy protected. He had confused the two I told him that he should regard all software as copyrighted. Aha... he was now certain that I was wrong. He went for the jugular with the question: what about Public Domain software? Wrong again I said (You may have guessed that I love being right!) Public Domain and user-supported (or Shareware) software is copyright too.

Enough of this... let's get down to business. IT is a terminal emulation program. Specifically it emulates Digital Equipment Corporation (DEC) VT-100 and VT-52 terminals. You can use it, as I do, on a PC which is directly connected to a mainframe or connected via a modem. You need an IBM PC, XT, or AT compatible with a monochrome or colour graphics display adapter and DOS 2.0 or later.

IT is a Shareware product and so is inexpensive. While it does not have all of the features of a commercial product such as SmarTerm 240, it is still a very nice product. From time to time I do use it in preference to a commercial product. Why? Because IT is a very small package. Sometimes I want to log onto a VAX, start a job and return to DOS to do another job there Often as not the job I want to do in DOS is run a typesetting package called TeX (a fantastic package... but that's another story) However, TeX is a very greedy program requiring about 500 kilobytes of RAM SmarTerm uses much more than 140 Kbyte of my 640 Kbyte of RAM, so I cannot run TeX on my PC at the same time. But IT uses only about 35 Kbyte, so I am free to use TeX or other RAM greedy packages Being small, IT is also very fast to load.

The IT disk comes with five files on it. IT.EXE is the program. IT.DOC is a 25 page user's guide. IT.HLP provides on-line help – a very welcome feature. IT.SET is the set-up file which tells IT.EXE what kind of terminal emulation you desire. IT.DIR is a file for phone numbers used for automatic dialling with a Hayes command modem. You are meant to edit the last two files with an ASCII output word processor.

The manual

The manual is well-written and set out. I had no trouble understanding it. It also easy to look up something you are uncertain about.

Of course, the keyboard of an IBM PC is not the same as that of a DEC VT-100. I don't mean just the layout, but also the range of keys themselves. Therefore I had to decide which IBM key will be used for each VT-100 key. Many of the choices are natural. For example, the IBM PC delete key is used for the VT-100 delete key The IBM PC Scroll Lock key, also labelled Break, is used to emulate the VT-100 break key. But some choices appear less obvious: the PrtSc key is used to emulate the keypad comma.

IT can be used to send or receive files using the error-checking protocols Kermit or Xmodem. If these are not available on the mainframe then files can be sent in ASCII form.

The baud rates available are 300, 1200, 2400, 4800, and 9600. The choice is, of course, made in the set-up file, IT.SET. The manual states that both tone and pulse dialling are supported, but I have not confirmed this myself.

Pressing the Alt key and typing H calls up the on-line help. Screen capture is done by pressing Alt and typing P (for 'Put'). Unfortunately only 3 screens can be saved. If you try to capture a fourth it overwrites the first one. Alt together with E allows you to execute a DOS command. Finally Alt-X is used to exit IT It is worth remembering that neither Ctrl-C nor Ctrl-Break can be used to exit IT.

You don't expect a small product like IT to come with macro capability, but it does You can assign a string of up to 80 characters to any or all of the ten keys Alt-0 to Alt-9. You can also define a string that IT will send to the modem each time you type Alt-D. These macros are included in your IT.SET file.

Do I like IT? When I got it, I put it in my computer's drive A, did a DIR A:, saw that the only EXE file was called IT, so I typed IT Within a few seconds I was logged onto a VAX 11/780. Without changing the set-up in the distributed disk I logged onto a VAX 8800 and then a Pyramid running Unix. Each operation was trouble-free At that time I decided IT was great. I haven't changed my mind since. It will never replace my SmarTerm 240, which is a sophisticated and refined product, but IT will remain on my hard disk and be used quite often. □

Product Details

Product: Ideal Terminal
From: Public Domain
Distributor: Manaccom, PO Box 381, Pennant Hills 2120 NSW
(02) 875 3538 or Viatel *49000#
Price: PC-SIG #79
$13 plus $5 postage and handling

AMSEC

THIS REVIEW was written by AMSEC director Sid Morris, who is Professor and Head of the Department of Mathematics, Statistics and Computing Science at the University of New England. AMSEC is a Melbourne based software evaluation group with consultants in the workplace, in primary and secondary schools and in various tertiary institutions around Australia. AMSEC may be contacted at PO Box 140, Hurstbridge 3099 Victoria

XTreePro

– a second generation file management utility

Chris Allen discovered that XTreePro is even bigger on functionality and has more to offer than its predecessor, XTree . . .

XTREE is one of the more popular disk utilities around. For several years people have been using XTree to manipulate the files on their disks (usually hard disks) without having to remember or bother with a variety of DOS commands. XTree made the task of organising your computer much easier Times change – the typical 'power user' of two years ago looks rather meek today. Now XTree has changed or rather a new version has appeared, XTreePro

As you would expect, XTreePro presents a higher degree of functionality than its forebear. Old features have been improved and new features have been added, all of which is exactly what one would expect in a new version. The question is, have the changes been implemented well and is the new version value for money?

The answer appears to be a good sized *yes* on both counts. The first thing you notice is that XTreePro is much faster to initiate, at least twice as fast as XTree Of course after using Pro for a while you forget the speed improvement and wonder why it couldn't be instantaneous. The next thing you notice is the subtle change in the command line. Some new goodies have appeared. These include commands to allow the logging of multiple drives, manipulation of files between drives and greater flexibility with files in different directories And at no extra cost, they include IWord which is not a single word but in fact a WordStar compatible editor (which is being used to write this article). So much for the headlines, now the fine print.

Unlike XTree, XTreePro requires installation before it can be effectively used. This is a straight forward procedure initiated by typing INSTALL at the A: prompt This starts a program which calls a program called XTPROCFG.EXE, which can be executed any time you wish to alter the initial setup or default parameters. This ability to customize the default settings is a feature of XTreePro. For most users the installation procedure is simply followed with no trick questions involved

To start XTreePro enter XTPRO – this brings up the opening screen which has hardly changed compared to XTree. Users of XTree will have no trouble adapting to XTreePro as it is in the most part the same The Return key still enables you to change between various file areas and, as before, it is the options on the command line which enable you to actually do something. The new commands –

Edit edits ASCII or WordStar files using IWord. Commands to move the cursor, mark and manipulate blocks of text and search and replace characters are all

```
Path: C:\UTIL\XTRPRO

C:\                                                    FILE: *.*
 ├─GALLERY
 ├─SCANGAL                                             DISK: C:
 ├─SER_DEMO                                             Available
 ├─TBASIC                                                Bytes:  8,052,736
 ├─TEMP
 ├─TMAST                                               DISK Statistics
 ├─UTIL                                                 Total
 │  └─XTRPRO                                             Files:          846
 ├─WORD                                                  Bytes: 12,283,042
 ├─WS2000                                               Matching
 └─WYSE                                                  Files:          846
                                                         Bytes: 12,283,042
                                                        Tagged
                                                         Files:            0
INSTALL .COM     XTPRO   .X01     XTPRO   .X30          Bytes:            0
README  .DOC     XTPRO   .X02     XTPRO   .X40         Current Directory
SNAPSHOT.COM     XTPRO   .X10     XTPRO   .X50          XTRPRO
XTPRO   .COM     XTPRO   .X20     XTPROCFG.EXE           Bytes:      220,004

        XTreePro (tm) Version 1.0   Serial # 105274
```

Figure 1. *While XTreePro's opening screen will be familiar to XTree users, there are new features which include commands to allow the logging of multiple drives, manipulation of files between drives and greater flexibility with files in different directories.*

WordStar compatible. File handling and some of the onscreen functions also appear very familiar. The menu layout is different but with the aid of some online help the whole process is quite straightforward. This is fortunate as the manual is particularly vague on this subject. While 1Word is functionally compatible with WordStar, it doesn't have all the features of WordStar (which is why it's described as an 'editor' rather than a 'word processor'.

As far as I can tell (using only the manual as a guide) 1Word has no provision for different types of printers and no equivalent of the dot commands in WordStar. Useful features are the ability to strip the high bits from the file (making a WordStar format into an ASCII format) and the ability to program the function keys with any 1Word command sequence or ASCII characters.

The first thing you notice is that XTreePro is much faster to initiate, at least twice as fast as XTree.

Global will show all files which match the filespec on all directories on all logged drives. Up to 26 logical drives may be logged at any one time. This is obviously useful on systems that have several drives or partitions. Most commands utilise this extra access in the expected way, the copy command in particular utilises the multiple logging of drives in a slightly different manner. When copying to another area the window for the target area may be viewed and switched to other areas.

View now supports three ways of looking at a file (instead of two ways in XTree). Normal is the straight ASCII perspective. Hex will show the hexadecimal values for every character in the file and Unformatted will provide an 80 column ASCII display. This is helpful as certain types of files don't reveal much in the normal view, Microsoft Word files being one example. There are also three options which work in conjunction with the view command. The M option is a toggle on the display of high bits in the file. WordStar files, for example, do not use the high bit and some characters will appear particularly strange when viewed (or TYPEd) as an ASCII file. The S option will set one of ten place markers for the current position in the file. By using the G option you can instantly view that section of text marked with the place markers.

These new commands enhance the usefulness of the utility but the changes don't stop there. The structure of XTree has been subtly reworked into a more consistent 'intuitive' interface. For example, instead of using F2, F1 will call up a series of context sensitive help screens (The help function is fast becoming the defacto standard use for F1). The Esc key will cancel any operation in progress (instead of F3). The F2 function key will display a destination directory window when doing a COPY or MOVE operation.

Bypassing DOS

XTreePro can also be more substantially and readily configured than XTree. The home directory, colour combination and display type can all be configured as defaults along with quite a few other features. As mentioned previously, XTreePro boots up much faster than its forebear. This is because XTreePro bypasses DOS function calls to do the job. This may not be desirable if you have some utility which intercepts access to DOS function calls, so XTreePro allows you to configure it either way.

The Sort Order parameter indicates the default order in which files will be displayed on the screen such as: Name, Ex-

```
                                                              Esc cancel
 1Word   Block  Delete  File  Help  Menu  Options  Search  Time
 Use the other 1Word menus (commands are grouped by keypress)

            ****  XTreePro VERSION 1.0 RELEASE NOTES ****

      This file contains the following information:

      o   Initial procedures
      o   A list of files on the distribution disk
      o   Notes about XTreePro customization
      o   Additions and corrections to the manual
      o   Notes to current XTREE users
      o   Tips on using XTreePro
      o   Procedures for reporting problems


                    **** BEFORE USING XtreePro ****

      Before you attempt to use XTreePro, you should do the following:
```

Figure 2. XTreePro includes a WordStar-like editor 1Word (shown 'editing' the program's release notes).

```
XTreePro Path                                   c:\XTPRO
File/Directory Limit                            18,000
Disk Logging Method                             QUICK
Display Type                                    RGB/MONOCHROME
Display is "flicker free"                       YES
Audible Error Indicator                         ON
Directory Display Highlight Bar                 SCROLLING
Keep Filespec                                   NO
File Display Format                             THREE COLUMNS
Filename Separator                              "."
Small File Window Access                        SELECTABLE
System and Hidden File Access                   YES
Sort Criteria                                   NAME
Sort Order                                      ASCENDING
Printer Redirection                             PRINTER
Print Form Length                               55

Return to Main Menu

  Set the path where XtreePro support files are stored.

  Select Item   ENTER Change Item
```

Figure 3. XTreePro's main configuration screen.

VAPORWARE

A Division of Symantec Corporation Pty Ltd

18 Warnock Street Guildford, NSW 2161 - Fax (02) 632 5298

P.O. Box 286 Guildford, N.S.W. 2161

(02) 632 8841
OPEN 8 till 8 , 7 Days

(02) 214 7181
24 Hrs, 7 Days

CAD PACKAGES

GENERIC CADD Level 3 ** NEW **	**$350**
GENERIC 3•D & Rendering	$475
GENERIC CADD 3.0 & Dot Plot	$245
Auto Convert or Auto Dimension	ea $ 75
Drafting Enhancements 1 or 2	ea $ 75
CADD Symbol Libraries available from	$65

COMMUNICATIONS

Brooklyn Bridge *(with Universal Cable)*	$189
Carbon Copy Plus *(NEW Ver. 5)*	**$299**
Mirror II *(Crosstalk Compatible)*	$ 95

DATABASE

DB Fast Compiler * NEW *****	**$260**
D B X L ** NEW Ver 1.2 ******	**$289**
Quicksilver Compiler Ver 1.2	$750
PARADOX 2.0 * SPECIAL *****	**$899**

DESKTOP PUBLISHING

VENTURA PUBLISHER 1.1	**$1195**
Gem Draw Plus	$440
Gem Presentation Team	$750
NewsMaster II *(NEW Version)*	**$130**
PageMaker 3.0 *(NEW Version)*	**$CALL**

MICROSOFT SPECIALS

QuickC or QuickBasic 4.0	**ea $130**
Microsoft MacroAssembler 5.1	$215
Microsoft C Compiler Ver. 5.10	**$645**
Microsoft Fortran Compiler V4.01	$645
Microsoft Windows Ver. 2.03	**$165**
Microsoft Works *(& FREE Book)*	$310

SPREADSHEET

P C E X C E L *(FREE 101 Macros)*	**$720**
QUATTRO *(FREE Using Quattro Book)*	**$320**
VP-Planner Plus *(Lotus 2.01 compatible)*	$260

SPREADSHEET Add-ons

101 Macros for EXCEL or LOTUS	ea $140
3-2-1 Blastoff *(Lotus Accelerator & Security)*	$275
Cambridge Spreadsheet Analyst	$159
ProjectCalc *(Project Manager Lotus Add-in)*	$375
SQZ! Plus *(NEW Version)*	**$149**
The Worksheet Utilities *(5 Lotus Add-ins)*	**$149**

NEW PRODUCTS

THE BALER
Compiles Lotus 2.01 Spreadsheets
$775

1 TO C Compiler
Compiles Lotus 2.01 Spreadsheets into Microsoft C Programs
$575

ATHENA BIOS
Runs CGA programs on Hercules
only $99

Microsoft WORD 4.0
**** $589 ****

NEW FROM BORLAND

Turbo Basic 1.1 or Toolboxes	$145
Turbo Prolog 2.0 *(New Version)*	$CALL
Turbo Prolog Toolbox	$145

SIDEKICK PLUS
Latest Version of Borland's BestSeller
$270

Turbo Pascal 4.0
Compiles at 27,000 lines per minute
$150

Pascal 4.0 Toolboxes
Database, Graphix, Editor, Numerical
$140 each

Turbo C Ver 1.5
Now with 3 Manuals & 5 Disks
$150

@ LIBERTY
LOTUS 1-2-3 Spreadsheet Compiler
$185

WORD PROCESSING

MICROSOFT WORD 4.0	**$589**
WORDPERFECT 5.0 *** NEW ***	$559
Gram•mat•ik II *(Style Checker)*	$125
Legal or Medical Spell Dictionary	ea $149

UTILITIES

Above Disc	$150
Copy II PC Ver. 4.01	$ 65
Copy II PC Deluxe Option Board	**$250**
DESQview 2.01	$199
Disk Technician Plus *(NEW Version)*	**$210**
D U E T *(Print Spooler & sideways printing)*	$130
Fastback 5.14 or 5.15 (N.C.P)	$195
Fastback Plus *(NEW Version)*	**$260**
FormTool with Free Greatest Hits	$197
Mace Utilities *(NEW Version 4.1C)*	$147
Norton Editor	**$180**
Norton Utilites 4.0	$125
Norton Utilities Advanced	$189
PC Tools Deluxe *(NEW Version 4.2)*	**$125**
Print Q	$179
X-Tree	$ 99
X-Tree Professional	**$180**

COMPUTER BOOKS

1-2-3: The Complete Reference	$42.50
TURBO C: The Complete Reference	$48.50
dBASE III +: The Complete Ref.	$42.50
DOS: The Complete Reference	$49.50
Turbo Pascal: The Complete Ref.	$49.50
Using Microsoft QuickBasic	$37.50
Using Turbo Basic	$37.50
Using Microsoft Quick C	$37.50
Using Turbo C	$37.50
Advanced Turbo C	$42.50
Using Turbo Prolog	$37.50
Advanced Turbo Prolog Ver 1.1	$40.50
Using Turbo Pascal Version 4	$37.50
Advanced Turbo Pascal Version 4	$41.50
Using EXCEL for the PC	$41.50
Advanced EXCEL for the PC	$41.50
Using QUATTRO: The Prof. S'sheet	$41.50
Microsoft Works for the PC	$38.50
Using PageMaker for the PC	$43.50
Mastering VENTURA 1.1	$44.50
Inside Xerox VENTURA Publisher	$41.50

Send orders to: VAPORWARE
P.O. BOX 286 GUILDFORD. N.S.W. 2161

Please Tick Payment Method:

MASTERCARD ☐ VISA ☐

BANKCARD ☐ Cheque ☐

Please call before sending purchase orders.

Signature: _____ Expiry Date: _____

NAME _____

ADDRESS _____

STATE _____

P/CODE _____ PHONE ( ) _____

Product Name	Qty	Price	Amount
Shipping			$7.50

All prices include SalesTax and are subject to change without notice

TOTAL _____

tension, Date, Size or Unsorted. The ability to change the sort order on the fly is still retained. When a directory is selected by pressing Return in the opening menu, a smaller intermediate window appears displaying the files within that directory. Pressing Return once more brings up the large file display window. If you don't like the small file display window you can configure XTreePro to bypass it.

A sensible option for new users is the optional limitation on hidden files. The system can be configured to allow the display but *not* the modification of these files. If you really need to alter or erase a hidden file it can be done through DOS or by reconfiguring XTreePro. Either way you're unlikely to erase the DOS system files on your system by accident. Several other options; from Audible Error Indicator to Printer Redirection may be configured as defaults. Most of these options can be overridden/defined with switches in conjunction with the Xtpro command; for example: XTPRO /P60/2 will call up XTreePro with a printer page definition of 60 lines to a page and a two column file display.

Help

If you do need assistance with any of these features there are two sources available to you, the online help and the manual. The manual is about three times the size of the XTree manual though it certainly doesn't contain three times the information. In general it is quite adequate except in the area dealing with the text editor 1Word. Some WordStar experience is helpful if you want to use 1Word to its limits.

XTreePro has all the functionality of XTree plus a number of useful additions. The program is straightforward in operation – XTree users will need only a glance at the manual to cover the new features.

XTree is still available; there is an upgrade path between the two products and considering the price difference between the two the upgrade charge seems quite reasonable If you are already an XTree user and could use the extra features, then it's not a bad way to go. □

Product Details

Product: XTreepro
From: Executive Systems USA
Distributor: Perfect Interface, 8 West St, Nth Sydney 2060 NSW
(02) 957 112
Price: $245 taxed,
$65 Upgrade

THE MUSIC MAGAZINE
SONICS
REGULAR TONICS
for musicians, home studio fanatics, road crews, recording engineers, lighting people, managers, promoters, producers . . .
interviews, reviews, techniques, news

DON'T MISS OUT!
ORDER YOUR COPY NOW FROM YOUR LOCAL NEWSAGENT OR MUSIC RETAILER — OR SUBSCRIBE.
Phone (02) 693-9517 or 693-9515
Available bi-monthly

AT LAST!
A COLOUR
MAGAZINE
FOR
DISCERNING
BEER
DRINKERS

The Greatest Australian

BEER GUIDE

ON SALE NOW!

Every Aussie Bar Should Have One!

HANGMAN

This may be the ultimate version of Hangman. As AMSEC consultant Sian Smith reports, if you're into word games this Public Domain program may well be the last word!

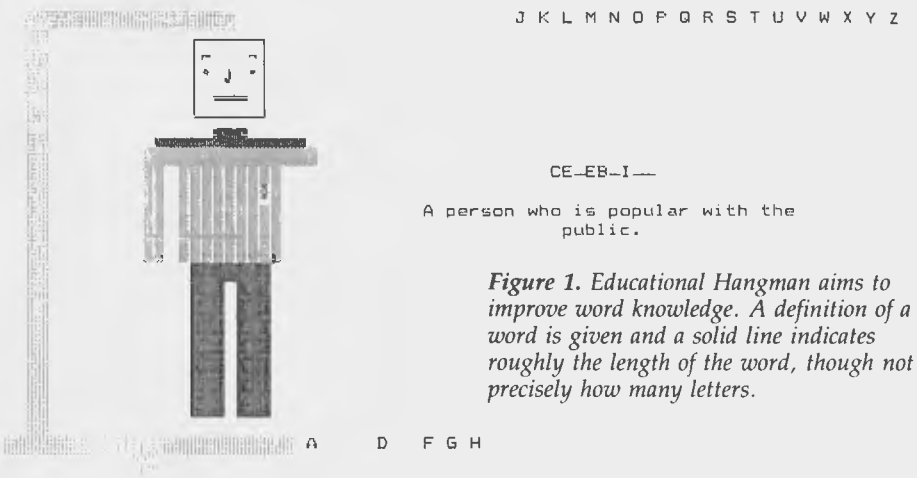


Figure 1. Educational Hangman aims to improve word knowledge. A definition of a word is given and a solid line indicates roughly the length of the word, though not precisely how many letters.

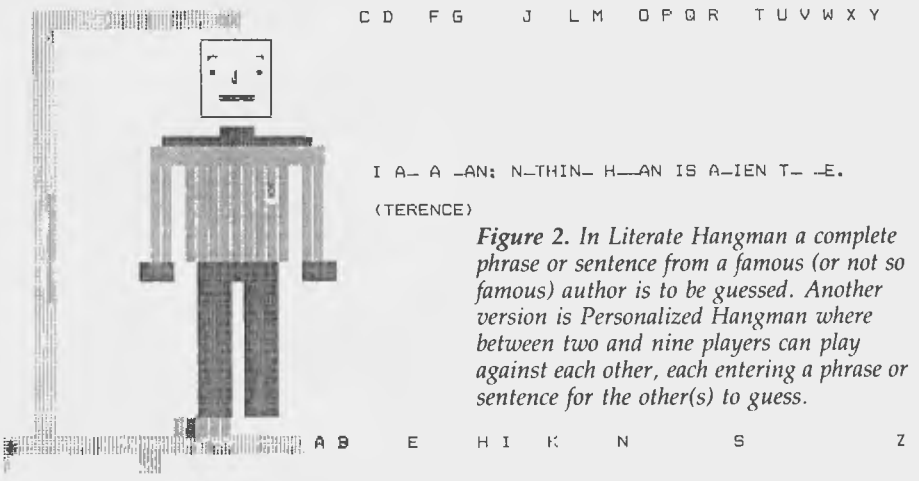


Figure 2. In Literate Hangman a complete phrase or sentence from a famous (or not so famous) author is to be guessed. Another version is Personalized Hangman where between two and nine players can play against each other, each entering a phrase or sentence for the other(s) to guess.

HANGMAN IS ONE OF the classic paper and pencil games. Any child above the age of seven or eight, and anyone who ever was a child, has doubtless whiled away rainy afternoons with it or surreptitiously played it under the desk in school As with most games that have survived over the years, this is a game that teaches while it entertains.

Now from Norland Software we have Hangman updated for the computer literate kids of today. It's still a great game, whether you play it the old cheap pencil and paper way or on the computer. This computer software offers you four different versions of the game: Basic, Educational, Literate and Personalized and two skill levels at which to play, that greatly enhances its ability to maintain your interest

In Basic Hangman the object is to guess a secret word, letter by letter, before you are hanged. Every wrong guess means another part of your body is added to the gallows. On the screen you will see the gallows (waiting for you), the alphabet above it and the word to be guessed indicated by a series of lines. When a letter is chosen, it will either be inserted into the mystery word or will cause a part of the body to be hanged Too many errors and the poor unfortunate swings again If you guess the word before this happens, the orchestra breaks out joyfully and a message such as 'Simply marvellous!' or 'Smashing job!' appears on the screen, guaranteeing a glow of pleasure from the person playing.

AMSEC

THIS REVIEW was written by AMSEC consultant Sian Smith. AMSEC is a Melbourne based software evaluation group with consultants in the workplace, in primary and secondary schools and in various tertiary institutions around Australia. AMSEC may be contacted at PO Box 140, Hurstbridge 3099 Vic

Educational Hangman aims to improve word knowledge and so the element of guesswork is removed. A definition of a word is given and a solid line indicates roughly the length of the word, though not precisely how many letters. The words are aimed at children of primary school age, varying from definitions as easy as 'The favorite food of the Giant Panda' or 'A small open container frequently found in the company of saucers' to 'A type of hawk with a sharp, hooked beak, and long claws' (buzzard) and 'The largest state in the United States', which I suspect not many Australian children would know is Alaska. There are about 300 words in

Educational Hangman but, importantly, the program chooses the starting point in the list of definitions randomly, so it should be some time before the list is known word perfect.

The next variation of the game is Literate Hangman where a complete phrase or sentence from a famous (or not so famous) author is to be guessed. When playing this version you have to press the key for each occurrence of that letter in the phrase. That is, if there are eight 'e's then 'e' must be pressed eight times. The program contains about 200 quotes ranging from nursery rhymes such as 'Little Miss Muffet sat on a tuffet' to Einstein, 'I never think of the future. It comes soon enough.', not to mention such 'famous' writers as Franklin P. Jones, 'Originality is the art of concealing your source' and Clement C. Moore, ''Twas the night before Christmas '. Very few of the quotes would be familiar to children, apart from the nursery rhymes.

The last version is Personalized Hangman where between two and nine players can play against each other, each entering a phrase or sentence for the other(s) to guess. This enables the player to escape from getting overly familiar with the phrases on the Literate Hangman program and also enables children to use phrases to suit their own ability level Any game which encourages interaction is preferable to solitary activities, especially if it's to be used in a family or school setting

Once a player starts to feel a bit *blase* about each of the different versions it is time to change the level of play from 'amateur' to 'expert'. This means that instead of being allowed nine errors before being hanged, only five errors are allowed. Alternatively, or if you're a real masochist, as well, you can play against the clock. The combination is fairly deadly. The time allowed for guessing a word seems to vary, from 35 seconds for a seven-letter word to 24 seconds for an eight-letter word or 22 seconds for a four-letter word. Guessing a word against the clock successfully seems to involve hitting as many keys as possible in the shortest possible time. If you try to stop to think, the clock will probably beat you.

The other variables in these games are the sounds and the orchestra, either or both of which can be switched off if you find that they irritate you The orchestra is entertaining – at first – but it does slow down the rate at which you can play, so in the long term you will probably find that you prefer to play with the orchestra 'on break'. The graphics are fine, with the hanged figure changing his expression in appropriate ways, and there is plenty of variety in the musical accompaniments, most of which children will recognize.

If you have an IBM JX, PC, XT or AT or compatible (colour or monochrome monitor) and children in the age range of about six to twelve, this is an excellent piece of Public Domain software Michael (aged seven) says 'It's a very good game.' An enhanced version called Hangman for the Super Intelligent is available directly from the author in the USA. □

Product Details

Product: Hangman
From: Norland Software
Distributor: Manaccom, PO Box 381, Pennant Hills 2120 NSW
(02) 875 3538
Viatel *49000
Price: PC-SIG Disk 153
$13 each plus $5 postage and handling for any number of disks

Like to know more about . . .

Database • Graphics • Forth • Portables • Printers • Networking • User Groups • MIDI and Music • Communications • Spreadsheets • Heuristics • Bulletin Boards • Word Processors • Educational Software • Desktop Publishing • Assembly Language • Home Education • Artificial Intelligence . . . in fact, anything to do with computers?

Then see our Annual Index, in this Issue! In the last 12 months we've covered almost every interesting topic related to computers (of course, if you subscribe, you won't miss any of our informative features and tutorials next year!)

Reproduced from Your Computer Magazine with permission of the publisher

New Standards!

The NEW Series II ACER 500+ by MULTITECH SYSTEMS INCLUDING MONITOR FROM $995

The new ACER 500+ by Multitech: setting new standards for power, performance . . . and value! For business or home use you won't find better than the IBM compatible ACER 500+ by Multitech. New models feature even more than before: you reap the benefit!

- **Real time clock — now standard!**
- **CGA and MGA graphics — now standard!**
- **Games Port — now standard!**
- **Fully expanded 640K memory on dual drive & hard drive systems — now standard!**
- **MS.DOS V3.3 — now standard!**
- **Mono Video Monitor — now standard!**

And, of course, the ACER 500+ benefits you'd expect:

- **Powerful NEC V20 processor**
- **Selectable 4.77MHz and 8MHz clock speeds**
- **Serial and Parallel ports built-in**

System 1: 256K memory, single disk drive, monitor and keyboard. Cat X-8060 **$995**

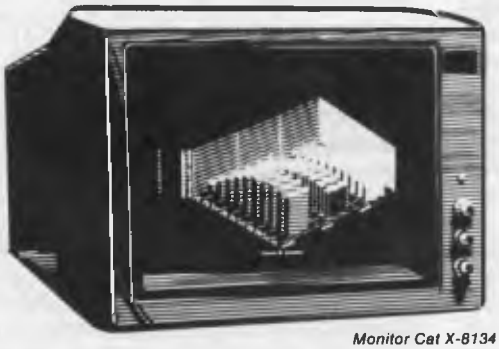
System 2: 640K memory, dual disk drives, monitor and keyboard. Cat X-8061 **$1395**

System 3: 640K memory, 20Mb hard disk and single floppy, monitor and keyboard. Cat X-8062 **$1995**

All prices include Mono Monitor. Cat X-2400 **Full Colour System: only $400 extra!**

ALL ACER 500+ COMPUTERS COME WITH 12 MONTH WARRANTY!

Highest Quality - Best Value! Multitech Colour Monitors



Monitor Cat X-8134 illustrated.

Budget 35cm RGB

Just the thing for home use or low end colour applications such as games, graphs, etc! The budget RGB (red-green-blue) monitor from Multitech that doesn't skimp on quality. With front mounted controls for ease of use and standard RGB input. Cat X-8133

ONLY **$599**

High Resolution 35cm RGB

Without doubt, the finest quality you'll get at a more than reasonable price! Highly legible colour reproduction for text modes, graphics, etc! Makes long hours of work much easier on the eyes. This is what you'll want for CAD applications and desktop publishing. Suits EGA boards. Cat X-8134

$899

DICK SMITH ELECTRONICS

• **NSW** • **Albury** 21 8399 • **Bankstown Square** 707 4888 • **Blacktown** 671 7722 • **Bondi Junction** 387 1444 • **Brookvale (Warringah Mall)** 93 0441 • **Campbelltown** (046)27 2199 • **Chatswood Chase** 411 1955 • **Chullora** 642 8922 • **Gore Hill** 439 5311 • **Gosford** 25 0235 • **Hornsby** 477 6633 • **Liverpool** 600 9886 • **Maitland** 33 7866 • **Miranda** 525 2722 • **Newcastle** 61 1896 • **North Ryde** 88 3855 • **Parramatta** 689 2188 • **Penrith** (047)32 3400 • **Railway Square** 211 3777 • **Sydney City** 267 9111 • **Tamworth** 66 1711 • **Wollongong** 28 3800 • **ACT** • **Fyshwick** 80 4944 • **VIC** • **Ballarat** 31 5433 • **Bendigo** 43 0388 • **Box Hill** 890 0699 • **Coburg** 383 4455 • **Dandenong** 794 9377 • **East Brighton** 592 2366 • **Essendon** 379 7444 • **Footscray** 689 2055 • **Frankston** 783 9144 • **Geelong** 43 8804 • **Melbourne City** 326 6088 • **Richmond** 428 1614 • **Ringwood** 879 5338 • **Springvale** 547 0522 • **QLD** • **Brisbane City** 229 9377 • **Buranda** 391 6233 • **Cairns** 311 515 • **Chermside** 359 6255 • **Redbank** 288 5599 • **Rockhampton** 27 9644 • **Southport** 32 9863 • **Toowoomba** 38 4300 • **Townsville** 72 5722 • **Underwood** 341 0844 • **SA** • **Adelaide City** 232 1200 • **Beverley** 347 1900 • **Darlington** 298 8977 • **Elizabeth** 255 6099 • **Enfield** 260 6088 • **WA** • **Cannington** 451 8666 • **Fremantle** 335 9733 • **North Perth** 328 6944 • **Perth City** 481 3261 • **TAS** • **Hobart** 31 0800 • **NT** • **Stuart Park** 81 1977

Amstrad's PPC 512 and PPC 640 Portables

Laptops are no longer a novelty – witness the latest offerings from Amstrad that impoverished hack Ewart Stronach tested at his Yacht Club!

IT'S NOT LONG ago when to have a lap big enough to hold an MS-DOS computer, complete with twin disk drives, built in modem, full size keyboard and LCD screen you would have to be at least two axe handles hip to hip. Laptop computers are no longer the novelty they used to be but suddenly they are cheap enough to be available to those who can use them best (students, impoverished hack journalists).

Amstrad broke new ground with the release of its MS-DOS capable computer some time ago and it was great value then. Its most recent additions to the range are two *genuine* portables, the PPC 512 and 640.

Both machines are about the size of a very thick keyboard with a carry handle protruding from the narrow end. The unit is placed flat down on your lap or desk and the top hinges open toward you. The top becomes the keyboard and reveals the LCD screen which hinges up to any required angle for viewing. There are two control knobs, one two-position switch and three LEDs visible on the base and the single or twin disks are three 1/2 inch units mounted above the carry handle.

Power is available from ten size C batteries, mains adapter (supplied) or from a car cigarette lighter (adapter supplied). The control knobs alter the brightness of the display and the volume of the speaker, the LCDs indicate which disk is active, which display is active and power on/off. The switch selects battery off/extension on.

The whole kit is supplied in an attractive nylon carry bag with pockets for all accessories and a robust shoulder strap. The unit weighs 5 4 kilograms, packed into its case with power supply and documents.

Figure 1. *The PPC 640 and 512 are identical in appearance (except for the badge). The unit is placed flat down on your lap or desk and the top hinges open toward you, becoming the keyboard. The supertwist LCD screen is 'infinitely adjustable' and quite easy to read outdoors.*

The keyboard

The unit supplied for the test was the 'full house' PPC 640 – the 640 kilobytes RAM, twin disk, inbuilt modem variant. The modem connection lives under a slip cover on the top of the open unit (the external appearance of both units is identical, but the 512 has, naturally enough, 512K of RAM). The keyboard is a standard AT style layout with separate cursor control keys, number pad and 12 function keys.

The only visible difference to a normal keyboard is the addition of the letters ALT GR on the right hand Alt key which is used in conjunction with the scroll lock key to switch between the LCD screen and an optionally connected video monitor. The keyboard is pleasant to use but I prefer a two tone beige keyboard to the two tone grey supplied. The black writing on the darker, non alphanumeric, keys is a little hard to read in adverse light conditions. The keys are firm with a barely audible click and nice tactile feedback.

So much for the looks, how does it work? Opening a flipdown panel along the back of the base reveals a full set of ports. There is a serial, parallel and video port, which require no explanation and two ex-

pansion ports, for connection to an external hard disk device. There is also a DIN plug which will accept the Amstrad monitor with its builtin power supply and a single socket for the mains adapter or cigarette lighter adapter A set of dip switches allow selection of internal monitor (LCD) or €GA or mono external monitor as default power on devices. The final port is for the connection of a telephone hand piece for use in conjunction with the modem. The test machine was fitted with a British Standard phone jack, but our friends at Amstrad had patched in an Australian jack as a temporary measure. So open your school bags, children, take out your Amstrads, open the lid, prop up the screen and on the count of three, I want you all to switch on and start computing

Up and running

The first message displayed on powerup is 'Please wait'. After POST (Power On Self Test) is completed, the Amstrad signs on with a description of the model, in this case Amstrad Portable PC 640K (V1.8) and a request to set time and date and fit new batteries. The system clock relies on the same batteries as the computer and in the absence of such batteries tends to forget which day it is. I would rather see a small self contained battery for this purpose as in many instances it would be possible to be without batteries in the machine for some time.

The batteries may be changed with the optional DC adapter in use without disturbing the system clock. If a system disk is not in drive A, you are prompted to fit one and press any key. From there on it's standard MS-DOS Version 3.3 with the additional opening message displayed informing you that the with the scroll lock key on, use of the right hand Alt key will toggle the LCD contrast, and use of the right hand Ctrl key will toggle between the LCD and any optional VDU connected. It is not possible to have both displays showing at the same time.

The disks are standard 3½ inch floppies, formatted to 720 Kbyte and I had no trouble reading disks made on other similar machines. This is good news, as Amstrad in the past has supplied machines with odd sized 3¼ inch disks which are rapidly becoming hard to get.

Screen test

As with most portable machines, the display is a limiting factor. Amstrad has chosen to stay with a supertwist LCD screen, no longer at the forefront of such technology but totally acceptable and obviously part of the overall economics of placing such a computer in the market at such a reasonable price. As with most such screens, the angle of viewing is critical and the background light affects the readability. I took the test unit to the Yacht Club, expecting the screen to be hard to read out of doors and was pleasantly surprised to find that it performed very well in those conditions. In my computer room at night, background light bulbs produce an 'halo' effect on the screen and care must be taken in selecting the viewing angle and intensity.

There is no doubt that whenever the unit is in use at its home base, most users would elect to use a standard monitor The display adapter in the Amstrad allows output to both a mono screen or CGA colour screen. I have connected it to all types of screen from a bottom line green screen to a Multisync EGA screen with excellent results.

The LCD screen has quite a long decay time which means that characters displayed on the screen tend to hang about a bit before fading away. A problem common to high intensity green screens and of no great importance in most applications I found no compatibility problems with any of the commercial software I tried. Amstrad supplied a copy of Lotus 1-2-3 and a copy of SuperCalc4, both of which worked just fine. The software supplied at the price includes DOS 3.3, a program called PPC Organizer and in the case of the PPC 640, a communications package called Mirror 'No Basic', I hear you cry, and you'd be right: no Basic!

The PPC Organizer comes with its own 30 page instruction booklet and describes

Figure 2. *Both machines are supplied with a robust nylon carry bag with pockets for all accessories and a robust shoulder strap. The unit weighs 5.4 kilograms, packed into its case with power supply and documents.*

Figure 3. The keyboard is a standard AT style layout with separate cursor control keys, numeric pad and 12 function keys. The right hand Alt key is used in conjunction with Scroll Lock to switch between the LCD screen and an external monitor.

itself as an 'Electronic Information File designed to increase your productivity'. It resembles SideKick in as much is it a TSR (Terminate but Stay Resident) style of program which disappears from your screen while you don't need it but may be recalled without disturbing your forefront task later.

The front screen displays the time and date on a top line and a boxed menu in the top right of your screen. The menu offers: Diary, Word Processor, New address and card file, Search for data, Calculator, Templates and Exit. A function key bar displays the appropriate function key activity along the bottom line. A respectable few seconds elapses after initiation before Organizer decides you are a dummy and provides an automatic Help menu. Items from the main menu may be selected by moving the highlight bar with the cursor keys or hitting the first letter of the desired subject. The first task is to personalise your program by telling it who you are and it will use this information later to automatically sign memos and letters.

Now is perhaps not the time to fully review a piece of software, so a brief description only of its functions will suffice. The pop-up calculator is recalled from anywhere within the Organizer by use of the F3 key. The Diary starts by displaying the month set by the system date with the current day in highlight The cursor keys allow movement of this highlight around the calendar. A very short note may be entered (up to six characters) simply by typing directly to the display at this time A further list of Diary options lurks behind the F10 key and offers: New entries, Show entries (for current date), Find entries, Go to current date and Month Detail.

Entries may be made into the notepad and automatically form part of the database which may be searched for linked entries. Any data in the database may be found with the Diary Notes Find function which allows a fairly quick search by limiting the range to a set period of time such as a week, fortnight, month, year or the entire database. If you remembered you had an appointment with Montmorency Fotherington-Smythe some time next month, a search on any of the names, for a one month period would display the appropriate calendar with the date in highlight, ready for your display of the associated notes. Repeat data may be cut and pasted through the diary to save typing time for regularly used entries.

The Cardfile offers Address Cards and General Cards and the data once entered may be cross referenced to any other category or rapidly searched on any word or phrase. The Address function follows the British postal formula, requesting Counties rather than States and Post rather than Post Code Fortunately it's not xenophobic and you may use these fields as you like. The card file could become quite large and I imagine search times would lengthen but it would be quite handy to have on board. The ability to search through all your suppliers for a product simply by typing in the type of product would be of great assistance to those of us with bad whatisnames.

A dialer capable of storing all the commands needed to originate a phone call may be set up with ease. This includes the ability to dial in-house sequences needed to get an outside line, pauses to wait for an old fashioned switchboard, and all possible STD/ISD combinations. The facility to set up communication parameters such as baud rates, parity and so on may also be included. With the telephone connected to your Amstrad, a call to Great Aunt Agatha in Tanganyika is a single command away.

The word processor is most basic, but totally adequate for most documents. A template may be set up using the @ symbol which will search an existing card file and replace the data it finds. For example, selecting an existing customer's card file and marrying it with a document is as simple as typing –

```
@contact
@position
@address

Dear @dear          @day @month @year
```

and finishing with –

```
@system.
```

The card file will be searched and the corresponding data replaced in your text and the letter signed with your name. The word processor is capable of importing ASCII or WordStar files and includes a find and replace function. It appears to be short in the cut and paste department and certainly won't replace your current main word processing program.

A directory called Services exists which allows you to set up the program for your needs. Here I found the answer to my main dislike of the word processor which appeared as a small window on the main screen. The window may be sized and moved with this utility, printer parameters set, the time allowed before help screens appear, the time between automatic saves determined, the audible alarm volume and tone adjusted and video output selected. An alarm function is also accessible from this menu and results in an audible alarm and display of your preselected message.

The other main piece of software supplied is the part of the *raison d'etre* of port-

able machines. It is called Mirror, I understand after a court case over its uncanny resemblance to another communications program, and is a menu driven package capable of setting up a communication link with just about anything. Its resemblance to Crosstalk would make it familiar to most bulletin board users, and the wide range of baud rates available from the in-built modem makes it very versatile.

Those of you who need this sort of communication package on a portable machine will already be familiar with the protocols demanded Those of you who have never been exposed to this wonder of the technical age, consider the ability to communicate with your office computer from any phone point in the world! Letters may be sent, order placed, uprisings organised and dismissals arranged from the safety of 1000 kilometers away.

The learning curve with any communication program is flat but most users lock into one style of contact and save all the parameters for quick, single key stroke operation Most bulletin boards operate on at least 1200 baud today and all your entry requirements such as identification and passwords can be preprogrammed into Mirror for simple use.

The innards

Dare we take a look inside without a Swiss watchmaker offering assistance? Indeed we might – indeed we had to. Whilst reaching over the back of the Amstrad to change a monitor plug, I accidentally knocked out the mains adapter plug which dropped across the RS232 plug. Smoke escaped, which is *not a good sign*. Disassembling the beast is fairly easy but not a job for the faint hearted. Six screws on the underside, two hidden in the battery compartment, allow you to release the base and with a certain amount of prying at little plastic lugs, the essential workin's are exposed. From there, things get a bit complicated; there's not a lot of room and all available space has been utilised

The main PC boards are stacked one above the other with the modem hanging out to the side of the top board. Connection between the boards is by way of an 80-pin connector with no flexible link. The base board is screwed to the chassis and the top board plugs into it directly. The keyboard has a short flexible cable as do the disk drives. The architecture is unlike any I have seen and certainly bears no resemblance to a 'normal' PC. There are significant numbers of VLSI chips and virtually no chips are socketed

Figure 4. Opening a flipdown panel along the back of the base reveals a serial, parallel and video port and two expansion ports for connection to an external hard disk device. There is also a DIN plug and a set of dip switches.

While stripped to this level, the SED (Smoke Emitting Diode) was located and replaced and I would be grateful if none of you would mention this to Mr Amstrad. There appears (and I may be wrong) to be no provision for hard disk control on the motherboard and I suspect that an add on hard disk would need external control from one of the expansion busses.

Documentation

Documentation is concise and plentiful It does not follow the convention of a user manual and separate DOS manual but rather leads gently through a description of the hardware, setting up the physical and then straight into an very well written description of what a disk is, how to handle it, how to load it then how to use DOS to organise it There is a completely indexed DOS manual inherent in the documentation with clear workable examples of the DOS commands.

A section of the manual deals specifically with setting up your modem and running the Mirror software. I said before that your first excursion into modem communication can be a little daunting but the examples in the manual will assist greatly. There are many references to British Prestel systems which operate to all intents and purposes the same as our Videotext

Appendices in the manual deal with installing third party software, what programs should be compatible and what you should do with those which don't appear to work. The indication from the manual is that anything written for MS-DOS, configured to either a mono screen or CGA screen should work on your Amstrad.

Transferring files from existing full size disks can be accomplished by tacking two computers together along the RS232 port and using the modem program to control the exchange of data. The manual is about the size of a paperback novel and as clearly written as I have ever seen.

Amstrad seem keen to fill whatever gap develops in the market and to this end I am assured by the local lads that upgrades in whatever form required should appear in short order. The modem card may be added to a basic machine; it is extremely good value as a stand alone modem with the same capability costs twice the price. The expansion box, not yet available in Australia, offers the hard disk control plus a row of normal expansion slots for practically anything you would add to a 'normal' PC. This would limit the portability but could be detached easily.

The roundup

Critical comments: very few. It would be nice to be able to detach the keyboard. Although designated a laptop, there would be occasions where it would be better to have unit on a desk in front of you and the keyboard only on your lap.

I 'ate the colour Mr Amstrad, it's 'orrible. Why not get right up to date and offer it in a range of fashion colours? Yes Sir, the pink goes wonderfully with your bloodshot eyes

The decision to run on normal C cells rather than nicad rechargeable batteries seems unwise as the battery life is expected to be only about six hours of disk extensive use. All in all, another price and practicality leader from Amstrad □

Product Details

Product: Amstrad PPC 512 and PPC 640
From: Amstrad Australia
19A Boundary St, Rushcutters Bay, Sydney 2011 NSW
(02) 360 3144
Price: PPC 512; 512 Kbyte RAM, single drive $1099, dual drive $1499,
PPC 640; 640 Kbyte RAM, single drive $1399, dual drive $1799;
Modem card; $499
All prices taxed.

THE EPSON TRIFECTA

- the LQ 850, LQ 1050 and LQ 500

John Hepworth has taken to betting on trifectas – Epson not Epsom . . .

THE HUMBLE dot matrix printer has come a long way in the last few years. The improvement was a response to user demands, but it has also created demands for output of higher and higher quality. The advent of 24-pin print heads made it possible to get genuine letter quality output from an economical printer, and can, at the same time, vary fonts and type size on the run.

One of the first of the 24-pin printers was Epson's LQ 1500, a good, middle of the road, wide carriage, 24-pin, dot matrix printer. It has now gone, but Epson continues to offer a range of 24-pin printers and accessories. The LQ 500 has a narrow carriage, and is aimed at the home and small business user with intermittent printing needs. The LQ 850 and LQ 1050 are high end printers, of greater performance and designed for heavier duty. The LQ 850 has a narrow carriage and the LQ 1050 a wide carriage, but they are otherwise the same.

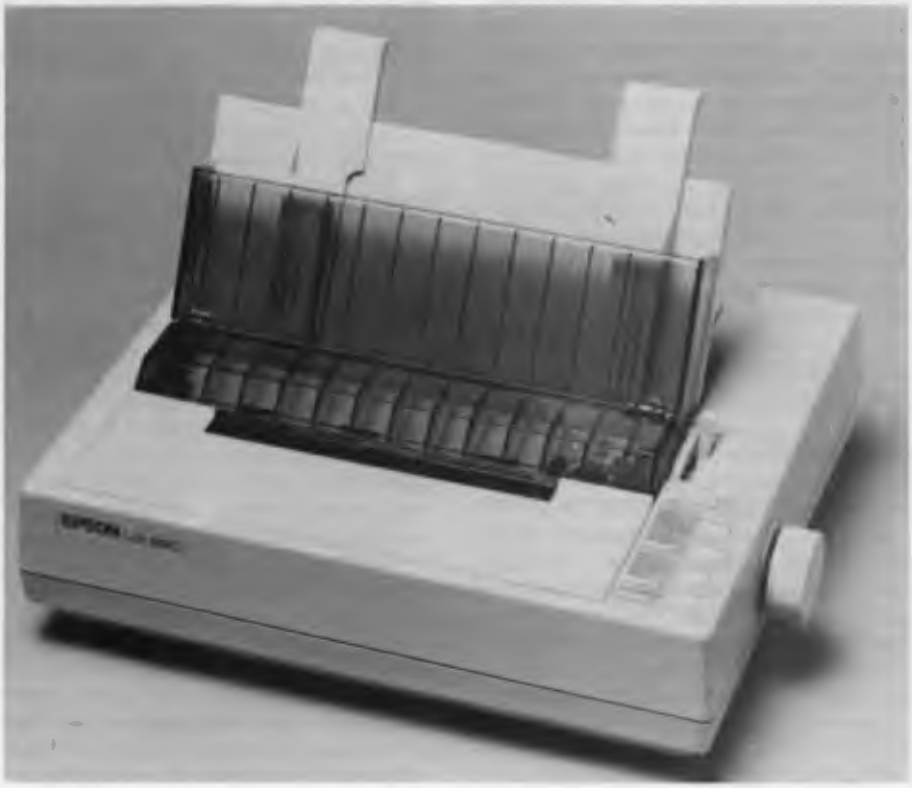


Figure 1. The LQ 850 (shown here) takes paper up to 250 mm wide, while the almost identical LQ 1050 takes paper up to 400 mm wide.

LQ 1050 and LQ 850

The LQ 850 and LQ 1050 are identical except for one thing – width. The LQ 850 takes paper up to about 250 mm, while the LQ 1050 can handle paper up to 400 mm wide. Both are as small as it is reasonably possible to make a machine handling such paper size, and still have speed and strength. They are 360 mm deep, 140 high and 430 (or 605) wide. The LQ 850 weighs 9 kg, and the LQ 1050 weighs 12 kg.

A welcome addition to the LQ 850 and LQ 1050 is Paper Parking. Both are fitted with a push tractor unit (a pull tractor is available as an option), and a manual single sheet feeder is also fitted. By pressing a button, the fanfold paper can be ejected and rolls back out of the printer to allow the feeding of envelopes or single sheets.

Pressing the same button again reloads the fanfold to the exact top of page every time. The position can be adjusted, and is remembered by the machine even when switched off. As paper feeds, the bail that holds it against the platen is automatically opened and closed as required, and

Erorr!

WITH subeditorial enthusiasm for Epson's LQ500 in our May issue, we declared 'this new 9-pin offering . . . gives 24-pin quality . . . '. As was clearly stated in the opening paragraph of Robert Thirlwell's review, what we meant was '24-pin quality, at a 9-pin price.' Our apologies to Epson, and to any readers who may have been confused by the misleading introduction to the article

an auxiliary set of pinch rollers above the bail maintains tension around the platen. When using multipart forms the optional pull tractor is used to ensure registration of the various layers.

The packages contained the main printer unit, well packed for safe transport, and a number of attachments. These included a paper guide for attachment to rear of machine when using fanfold paper, a manual single sheet feeder, platen knob, power cord, and three manuals.

At the front nothing can be seen except the nameplate. The left side has the power switch and the right side has the platen knob and the cover for the slots for the optional font cartridges. On the rear panel are the power inlet, the Centronics parallel input, and a round serial port connector. There is room for either a 25-pin or 9-pin D type connector, so the adoption of yet another connector seems unnecessary. The serial port is RS 232, and other optional interfaces are available. Also on the rear are DIP switches for configuring the system defaults, and the cooling fan.

On the top is the lever to engage or release the platen pinch rollers, and which also serves to select fanfold or single sheet feed. There is also a control panel with various indicator lights, and buttons for on-line/off-line, font selection, form feed, line feed, load/eject, pitch (10/12/15/ps) and condensed.

Both machines worked well, with good speed and relatively low noise. Print quality was very good, with well shaped letters and good density. One of my few dislikes with Epsons (and common to printers from many other makers) is that they use a ribbon in a case which spans the whole machine, and has a long length up unsupported ribbon across the long case opening. While this works satisfactorily, it is fiddly and can be dirty to replace.

Rated speed is 73 characters per second in draft mode at 10 pitch, and 220 characters per second in Near Letter Quality (NLQ) mode, again at 10 pitch. Line feed speed, according to the manual, is 60 milliseconds per line. I ran a 9000 odd character document through the printers as part of my testing, and calculated the time it should take if the above speeds were achieved. The actual times were around 10 per cent longer than calculated, and as rated speeds are 'burst' speeds and not continuous, this is not unreasonable.

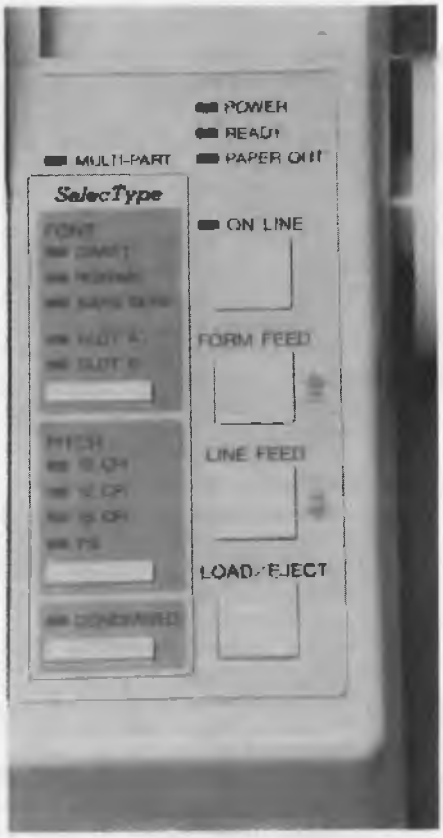


Figure 2. The control panel for the LQ 850 and LQ 1050 – note the three standard fonts and four pitches.

LQ500

The LQ 500 is an entry level machine, software compatible with the rest of the new LQ line. It has the same print quality at a slightly slower speed. It uses far more plastic in its construction, but is clearly strong enough for the typical home and small business. In the package are the main printer unit, manual single sheet feeder, a replacement front cover for use when the manual feeder is fitted, a paper rest for support of incoming fanfold and a spiral bound manual. The standard pull tractor unit is a pin wheel type and not the caterpillar tractor type. In use it fed reliably, but my experience in the past indicates that pin wheel tractors require more careful alignment of incoming fanfold, and less tension on the fanfold, than caterpillar tractor units can tolerate.

The main unit is 390 mm wide, 320 deep and 139 high, and weighs 7 kg. Across the front, nothing is seen bar the nameplate. The power switch is towards the rear on the left side. On the right side is the platen knob and the cover over a bin for the single slot for optional font cartridges. The two configuration DIP switches are also in this bin. The rear had only the Centronics socket for the parallel interface and a power inlet socket. A serial input is not on the standard unit.

On the top are the lever for the platen

Figure 3. The LQ 500 is an entry level machine with the same print quality as the rest of the range, but at a slightly slower speed.

HELP FOR ALL PROGRAMMERS

*You can now create sophisticated applications **FAST** with our compilers, database and windowing libraries, editors and tools.*

*Convert your dBASE programs to C with **dBx** and watch them run like lightning under MS-DOS, Unix, VMS etc. Use **c-tree** and **r-tree**, the **BEST** multiuser database and multi-file report generator. Faster than C-ISAM and Btrieve. With full C source.*

***DON'T** re-invent the wheel. You need **Blaise** general, comms and graphics libraries with full C source.*

***FULL RANGE** of products including Microsoft C, QuickC, Turbo C, DeSmet, Hitech, Turbo Pascal, MicroFocus COBOL, Microport Unix, Wendin DOS/XTC/OST, PC-Lint, c-terp, and more.*

*Mail this coupon to receive your **FREE** Programmer's Catalogue Disk MS-DOS 5.25"*

Name.....

.....

Address.....

.....

.....*p/c*.....

MICROMART PTY. LTD.
GPO Box 1579, Sydney 2001
Phone: 214-2853 24 hours

pinch rollers and three buttons These serve different purposes depending on whether the printer is on-line or off-line. The first button selects on/off line. The second button formfeeds when off-line and changes the font when on-line. The third button line feeds off-line and autoloads when on-line, allowing single sheets of paper to be fed to the same position relative to the print head every time.

Speed is rated at 50 characters per second in NLQ mode and 150 characters per second in draft mode, and my tests indicated that these are approximately achieved on real printing jobs. It uses a pull tractor only, and does not have paper parking. A cut sheet feeder is available as an option.

Cut sheet feeder

Cut sheet feeders are available for all three of the machines. I tested the feeder for the LQ 850, and observations on it are valid for the LQ 1050 which has a similar unit differing only in width. The LQ 500 cut sheet feeder is completely different and was not available for test at the time I had the review machines.

The LQ 850 cut sheet feeder is easy to install. First remove the paper tension unit from the printer by operating a latch at each side, and tipping it back. Tilting the cut sheet feeder slightly forward allows notches in its front legs to be engaged with pegs on the printer. All that remains is for the rear edge of the cut sheet feeder to be lowered and the job is done. If only installing optional devices was always so easy! Fanfold paper can remain installed with the cut sheet feeder fitted, but the cut sheet feeder must be removed to change fanfold

The cut sheet feeder fed reliably to the exact same position when form feed characters were used by software to advance to the top of the next page. When the software used repetitive line feeds to start a new page it became fiddly to configure the software when A4 paper was used. Most users will find that paper parking, using manual feed of preprinted letterhead for the first sheet, and fanfold for remaining sheets will do everything that they need, but there will be users for whom it is essential to use cut sheets and for them the feeder would be a boon.

DIP switches

DIP switches are used on all three printers to set a range of system defaults. The options available are a choice of eight national character sets, font, condensed mode on/off, character table (italics/graphics) and cut sheet feeder mode. Also able to be set by DIP switch are page length, cut sheet feeder, page length, skip-over-perforation, auto line feed, input buffer capacity, graphics print direction and character pitch The character table allows the hi-bit characters to be used as italics or as those IBM box drawing characters. Even when the IBM set is selected by DIP switch, italics are available by software control Page length can be set with DIP switches but only to 66 or 72 lines Setting page length to 70 lines for A4 paper can be done via software commands.

Fonts

Three standard type faces come with each of the three. These are draft, Roman (NLQ) and Sans Serif (again NLQ). Optional font cartridges are available. Draft is quite adequate for most listings, while the NLQ modes are excellent for correspondence Roman has an appearance familiar from older typewriters, while Sans Serif is reminiscent of Letter Gothic on IBM Selectric typewriters. 10, 12 and 15 pitch is available, as is expanded, condensed and double high.

The Choice

It's not difficult to choose between these three printers, despite their equal print quality and differing prices. If one needs the wide carriage, the LQ 1050 chooses itself. If a narrow carriage will suffice, and the budget is tight, the LQ 500 is the one. If a narrow carriage is needed and the features like two font slots, paper parking and design for heavier duty are necessary, then the LQ 850 is the one. All offer compatibility with almost any software on the market, as Epson effectively defines the printer market when used with IBM PCs and compatibles. □

Product Details

Product: LQ 500, LQ 850, LQ 1050
From: Epson, Unit 3, 17 Rodborough Rd, Frenchs Forest 2086
(02) 452 5222
Price: LQ 500 $850;
LQ 850 $1350;
LQ 1050 $1860;
Cut sheet feeder options.
LQ 500 $200;
LQ 850 $400;
LQ 1050 $485.
All prices taxed.

Bundles of Books

New Release . . .

LOGO For Beginners

This book is an introduction to the programming language LOGO, and also in an introduction to computing, as it assumes no previous knowledge of computers of programming. LOGO is a good language to learn programming, indeed, that was its original purpose. It teaches how to write programs in a structured form which makes them easy to follow and to understand. This book starts with the famous turtle graphics, and then goes on to explore the mathematical and logical aspects of LOGO, and finally to the interesting topic of list processing, on which many aspects of artificial intelligence are based. LOGO is more standardised than most languages, so it is possible to write a book of this sort to cover all the major versions. However, special attention has been given to Digital Research's DR LOGO, as this is perhaps the most widely known in the U.K. being supplied as standard with many Amstrad and Apricot computers, and also some Atari models. It is hoped this book will introduce the reader to the interest and fun that is to be had from writing your own programs — especially in LOGO.

GETTING THE MOST FROM YOUR MULTIMETER

R.A. Penfold **BP239**

This book is primarily aimed at beginners and those of limited experience of electronics. Chapter 1 covers the basics of analogue and digital multimeters — the merits and limitations of each. In Chapter 2 various methods of component checking such as transistors, thyristors and diodes are described. Circuit testing is covered in Chapter 3, with subjects such as voltage, current and continuity discussed.

102 pages **$11.00**

AN INTRODUCTION TO SATELLITE TELEVISION

F.A. Wilson **BP195**

A well written, comprehensive and easy to understand introduction to satellite TV, written for both enthusiast/technician and the interested lay person. Explains how satellite TV works, the equipment needed for reception, how to work out antenna orientation for your location, correct installation and so on. Lots of reference tables, formulas for calculations and a glossary of satellite TV jargon.

104 pages **$12.95**

MORE ADVANCED ELECTRONIC MUSIC PROJECTS

R.A. Penfold **BP0174**

Intended to complement the first book (BP74) by carrying on where it left off and providing a range of slightly more advanced and complex projects. Included are popular effects units such as flanger, phaser, mini-chorus and ring-modulator units. Some useful percussion synthesisers are also described and together these provide a comprehensive range of effects including drum, cymbal and gong-type sounds.

96 pages **$8.50**

MIDI PROJECTS

R.A. Penfold **BP0182**

Provides practical details of how to interface many popular home computers with MIDI systems. Also covers interfacing MIDI equipment to analogue and percussion synthesisers.

112 pages **$11.00**

AN INTRODUCTION TO Z80 MACHINE CODE

R.A. & J.W. Penfold **BP0152**

Takes the reader through the basics of microprocessors and machine code programming with no previous knowledge of these being assumed. The microprocessor dealt with is the Z80 which is used in many popular home computers and simple programming examples are given for Z80-based machines including the Sinclair ZX-81 and Spectrum, Memotech and the Amstrad CPC 464. Also applicable to the Amstrad CPC 664 and 6128.

114 pages **$10.00**

ELECTRONIC HOBBYISTS HANDBOOK

R.A. Penfold **BP233**

A handy data reference book, written especially for the newcomer to electronics. Provides data on component colour codes, IC families, basic power supply circuits, circuit symbols, op-amp connections, testing transistors and SCRs, basic computer interfaces, morse code and lots more.

$16.00

COIL DESIGN AND CONSTRUCTION MANUAL

B.B. Babani **BP0160**

A complete book for the home constructor on "how to make" RF, IF, audio and power coils, chokes and transformers. Practically every possible type is discussed and calculations necessary are given and explained in detail. All mathematical data is simplified for use by everyone.

96 pages **$9.50**

CHART OF RADIO, ELECTRONIC, SEMICONDUCTOR AND LOGIC SYMBOLS

M.H. Babani B.Sc (Eng) **BP0027**

Illustrates the common, and many of the non-so-common, radio, electronic, semiconductor and logic symbols that are used in books, magazines and instruction manuals, etc. in most countries throughout the world.

Chart **$4.00**

AUDIO AMPLIFIER FAULT-FINDING CHART

C.A. Miller **BP120**

A very useful fold-out chart which will guide almost anyone in tracking down faults in audio amplifiers, systematically and quickly. Includes detailed notes.

$4.00

IC 555 PROJECTS

E.A. Parr **BP0044**

Every so often a device appears that is so useful that one wonders how life went on before without it. The 555 timer is such a device. Included in this book are basic and general circuits, motorcar and model railway circuits, alarms and noise-makers as well as a section on 566, 568 and 569 timers.

$9.50

HOW TO DESIGN ELECTRONIC PROJECTS

R.A. Penfold **BP0127**

The aim of this book is to help the reader to put together projects from standard circuit books with a minimum of trial and error, but without resorting to any advanced mathematics. Hints on designing circuit blocks to meet your special requirements where no "stock" design is available are also provided.

128 pages **$9.00**

RADIO AND ELECTRONIC COLOUR CODES AND DATA CHART

B.B. Babani **BP0007**

Covers many colour codes in use throughout the world, for most radio and electronic components. Includes resistors, capacitors, transformers, field costs, fuses, battery leads, speakers, etc.

Chart **$4.00**

ELECTRONIC SYNTHESISER CONSTRUCTION

R.A. Penfold **BP0185**

Should enable a relative beginner to build, with the minimum of difficulty and at reasonably low cost a worthwhile monophonic synthesiser, and also learn a great deal about electronic music synthesis in the process. This is achieved by considering and building the various individual parts of the circuit that comprise the whole instrument as separate units, which can then be combined together to form the final synthesiser. Printed circuit designs are provided for these main modules. Later chapters deal with sequencing and some effects units.

112 pages **$11.00**

POWER SUPPLY PROJECTS

R.A. Penfold **BP0076**

The purpose of this book is to give a number of power supply designs, including simple unstabilised types, fixed-voltage types, and variable-voltage stabilised designs, the latter being primarily intended for use as bench supplies for the electronics workshop. The designs provided are all low-voltage types for semi-conductor circuits. This book should also help the reader to design his own power supplies.

96 pages **$7.50**

☐ Please send me the following Babani Books

TITLE	CODE	QTY	PRICE

Total book price | |

plus $1.50 per book P&H $ .....

TOTAL PRICE $ .....

Date: .....

Send to:

Freepost No. 4
Federal Publishing
PO Box 227
Waterloo 2017 (no stamp required)

Name: ..... Phone: .....

Address: ..... P/code: .....

☐ I enclose my cheque/money order for $ .....

☐ Charge my ☐ Bankcard ☐ Mastercard ☐ Visa

☐ Amex with $ .....

Credit Card No: | | | | | | | | | | | | | | | | |

Signature .....

Expiry Date...../...../.....

(Unsigned orders cannot be accepted)

As these books are imported, unavoidable delays may occur. Allow 4 weeks delivery. Y/C 7.88

BORLAND'S TURBO BASIC

integrated editor, compiler and linker

Peter Feldtmann couldn't wait to get his hands on a copy of Turbo Basic – and found it quick, but quirky!

ONE OF THE latest offerings from Borland International's stable of compilers is Turbo Basic. Pitted directly against Microsoft's QuickBasic version 2.00, this fully integrated editor, compiler and linker will compile, with minor exceptions, all programs written for Basica and GWBasic interpreters and also the QuickBasic 2.0 compiler.

Having read the press releases and seen the adverts, I couldn't wait to get my hands on a copy. After many phone calls and much disappointment, I finally found a distributor who actually had a copy of the much touted program in stock. 'Send it to me at once,' I said and he did.

The package arrived a few days later, was patiently opened (paper flung in every direction) and copies of the distribution disks were made with bandaged fingers. (Note: impatiently opening programs results in paper cuts and a messy office.)

Turbo Basic is supplied complete with a very large user's manual and two floppy disks – one with the program and the other containing several sample files to play with. The manual covers all aspects of Turbo Basic and includes hints on converting interpreted Basic programs for use in the Turbo Basic environment. It is by no means an introduction to Basic, although as a reference guide it is fairly complete.

More a complete programming environment than just a compiler, Turbo Basic provides an editor, compiler, debug and trace facility, in a little over 200,000 bytes, all glued together in a windowing environment similar to that of Turbo Pascal V4.

There are several major differences between Turbo Basic and QuickBasic 2.0, the most important of which is the implementation of the IEEE (Institute of Electronic and Electrical Engineers) standard for numeric data storage and operation. No version of Microsoft's Basic uses this standard and are therefore unable to use the 8087 co-processor which limits the precision and speed of numeric processing.

Turbo Basic will utilise an 8087 processor if one is installed, thereby gaining a tremendous speed advantage in all numeric processing tasks. If an 8087 is not available, all numeric processing is done through 8087 software emulation. This emulation sacrifices speed of execution for greater precision. Turbo Basic will automatically use the 8087 without the need to recompile the source code.

Compatible with Microsoft Basic is perhaps the best way to describe Turbo Basic. However, Turbo Basic offers many extensions and enhancements to the standard we have all had to live with. These enhancements and extensions in Turbo Basic fall into one of two categories: compile directives and run time functions.

The compile time directives and statements consist mainly of instructions permitting conditional compilation, event trapping, inline assembly instructions and specifying the size of run time buffers. These directives and statements are outlined in a separate box. Unless otherwise stated, these extensions are not available in Microsoft QuickBasic 2.0.

The run time functions are perhaps the area in which Turbo Basic excels. Not only does Turbo Basic provide additional control constructs usually found only in languages such as C and Pascal but also offers many other extensions which finally bring Basic into the twentieth century. These are also shown in the boxed item.

The user interface in Turbo Basic is based on a windowing environment similar to that of Turbo Pascal 4. This interface consists of edit, trace, message and run windows with pull down menus to select various options. The windows may be resized or moved at any time and may be stacked, tiled or laid out in any format. A window-zoom facility is also provided for screen editing or run time checking.

Like most products from Borland, the editor uses a subset of WordStar's editing commands. Context sensitive help is accessible from the F1 key, although scrolling backwards through the help is not possible. The help is also quite terse in places but should be adequate for most users. Help on Basic syntax is not available in Turbo Basic.

The Turbo Basic compiler automatically compiles and links the source code into a complete EXE file. No run time file is required to execute the completed file, as during compilation all necessary run time code is included. There is no provision for linking OBJ files produced by other languages or compilers. This simplifies the compile-link process but also necessitates the recompilation of reusable blocks of code every time they are needed. The inclusion of run time modules in completed EXE files makes individual files quite large. To overcome this problem Turbo Basic provides the option of compiling to a chain file. Chain files contain no run time modules, as they rely on a main EXE file (the calling program) to provide them.

Not being able to include relocatable

object files (.OBJ) from other languages such as Assembly is not quite as serious as it might seem, as Turbo Basic includes the $INLINE directive to allow the more advanced, daring or simply crazed programmer to utilise machine code wherever necessary. The inline code must be relocatable and would look something like that shown in Figure 2; an example of the equivalent code in assembler is also shown.

I would prefer to work with a real assembler, but the inline code facility is better than no access to machine language at all.

The editor

Okay. It all sounds great, doesn't it? What's it really like to use Turbo Basic? Using Turbo Basic's editor to create new programs has a few limitations. Code size is generally limited to 64 Kbyte source files, although source files can be split into several include files to overcome this. The editor uses a subset of WordStar's editing commands, yet all the command sequences can be altered by the user, to tailor them to personal preferences. The editor defaults to the predefined window, which is somewhat limiting as it only shows a small section of the underlying text. The window can, however, be expanded to use the entire screen or resized.

The compiler

Since Turbo Basic holds a few surprises for the unwary, I decided to compile a program I wrote several years ago. This program consists of some 1000 lines of Basic code and has compiled without error on every basic compiler I have tried – until now.

The program compiled within Turbo Basic after some minor modifications due to invalid variable names (loop, for example). This is quite a valid variable name in most versions of basic yet due to the extensions in Turbo Basic, namely the DO ... LOOP construct, this variable caused a problem.

The error messages generated by Turbo Basic are quite terse and sometimes quite cryptic, as shown in Figure 3. The cause of the error message after close examination appeared to be the line reading 'goto exit'. As Exit is a reserved word in Turbo Basic, the compiler had minor heart palpitations when it came across the line.

After some experience with Turbo Basic, errors like the one above would be less likely to occur, as one would very quickly become familiar with the added keywords and constructs available.

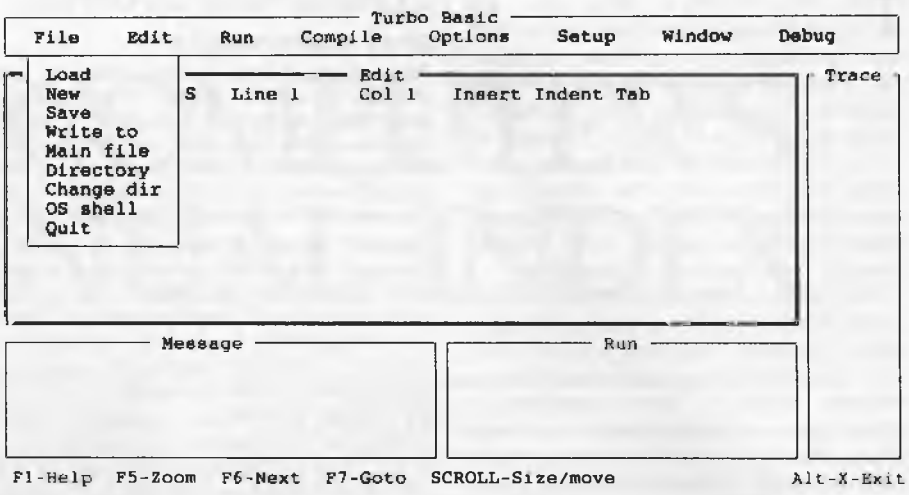


***Figure 1.** Turbo Basic's main editing screen (shown with the files menu) can be expanded to full screen size.*

The inline code must be relocatable and would look something like this –

```
SUB Shriek INLINE
      $INLINE &HBA, &H00, &H07, &HE4, &H61, &H24
      $INLINE &HFC, &H34, &H02, &HE6, &H61, &HB9
      $INLINE &H40, &H01, &HE2, &HFE, &H4A, &H74
      $INLINE &H02, &HE8, &HF2
END SUB
```

The equivalent code in assembler would be something like this –

```
shriek      proc near
            mov  dx, 0700
            in   al, 61
            and  al, 0fc
lab1:       xor  al, 02
            out  61, al
            mov  cx, 0140
lab2:       loop lab2
            dec  dx
            jz   exit
            jmp  lab1
exit:       ret
```

***Figure 2.** Turbo Basic includes the $INLINE directive to utilisation of machine code wherever necessary.*

This section of code –

```
    if number = 99 then
        goto exit       (I know, goto's are not to be
                         tolerated - smack wrist.)
exit:
      'do something here
```

generated this rather cryptic error message –

```
Error 417: Label / line number expected.
```

***Figure 3.** Exit is a reserved word in Turbo Basic; the compiler had minor palpitations when it came across the above section of code.*

The debugger

The debug facility in Turbo Basic will provide quite comprehensive run time error messages, yet even these messages can cause you to remove your hair in large handfuls. The strangest error message I came across was the 'invalid filename at PC 127654421', when compiling a set of eight programs using the 'Compile to chain file' option The first six programs (including the main menu which became the EXE file) compiled without fault.

The last two programs were compiled to chain files and behaved quite strangely. These programs compiled without error and ran faultlessly when compiled in memory. However, when compiled to chain files and called from the main menu, they both crashed, resulting in an error message. This error message stated the program counter value for the location of the error. In this case, however, there ain't no such address. How about that Borland – any answers? No matter what I changed in the two programs, similar run time errors occurred – yet all eight program files have been compiled with other Basic compilers without problems over the last three years.

Using a debug facility with any compiler is almost mandatory, yet it would be nice if the one built in to Turbo Basic actually worked in all cases. It works, but sometimes it's not to be believed.

Overall

Turbo Basic has some annoying little quirks, yet the benefits far outweigh the problems. With math co-processor support, high precision, speed (with the co-processor) and greatly enhanced Basic control constructs, Turbo Basic would make a nice addition to any programmer's tool box. The complete programming environment supplied by Turbo Basic takes a while to get used to, yet after several days of bouncing around within the various windows the whole process becomes second nature.

Turbo Basic is not designed purely for the professional programmer – it provides an almost ideal environment for the beginner as well, offering better control and more functionality for the more demanding user. □

Product Details

Product: Turbo Basic
From: Borland International, USA
Distributor: Tech Pacific, 119 Ferrars St, Sth Melbourne 3205 Vic.
(03) 690 9055
Price: $188 taxed

Compile time directives and statements

Turbo Basic's compile time directives and statements consist mainly of instructions permitting conditional compilation, event trapping, inline assembly instructions and specifying the size of run time buffers. Unless otherwise stated, these extensions are not available in Microsoft QuickBasic 2.0.

$INLINE allows the inclusion of machine language code. This code is entered in one-byte values, which is similar to the $inline implementation in Turbo Pascal and Turbo C. Microsoft Basic handles this with calls to machine language program segments created with a macro assembler.

$IF, $ELSE and **$ENDIF** statements allow conditional compilation of source code blocks. This is a handy facility usually found only in professional compilers.

$EVENT (ON/OFF) allows control over the generation of event trapping code in a program. If part of the program must run at full speed, event will interrupt the execution of that section of code

$COMn size is used to tailor the size of the communications buffer. The default size is 256 bytes and may be anything from 0 to 32,767 bytes.

$SEGMENT allows the program code to exceed the 64 kilobyte limit by specifying a new code segment. Without this, statement code size is limited to 64 Kbyte. This command may appear anywhere in the source code All code after this metastatement will reside in the new segment.

$SOUND size specifies the size of the sound buffer The default sound buffer size is 256 bytes or 32 notes, and may be any size from 1 to 4096 bytes.

$STACK size specifies the size of the run time stack. The default run time stack size is 1024 bytes, but can be anything from 1024 bytes to 32,767

Run time functions

The run time functions are perhaps the area in which Turbo Basic excels Not only does Turbo Basic provide additional control constructs usually found only in languages such as C and Pascal but also offers many other extensions.

BIN$ expression returns the binary string equivalent of a number. This expression is similar to the command HEX$ found in most versions of basic.

CIEL expression returns the smallest whole number greater than or equal to its argument.

CLNG expression converts a numeric expression to a long integer (4 byte).

CVMD var and **CVMS var** functions were included to enable Turbo Basic to access double and single precision numbers stored in Microsoft Basic random access disk files. These functions convert the values to the IEEE format used internally.

DECR var decrements a variable by one. This is faster than the equivalent statement var=-var-1

DEFLNG var declares the default type for the specified variable to be a long integer.

DELAY time function pauses for a number of seconds. This time is independent of machine clock rate.

DIM array() is used to dimension an array Upper and lower bounds may be specified – other versions of Basic are limited to lower bounds of 0 or 1).

DO .. LOOP is a loop control construct usually found only in structured languages like C, Pascal, and PLI. (Long awaited!)

ENDMEM returns a long integer indicating the end of available memory.

ERADR returns a long integer representing the memory address of the most recent error

EXIT is a more general form of the QuickBasic 2.0 EXIT statement; it allows a graceful exit from FOR/NEXT, DO/LOOP, WHILE/-WEND, IF/END IF, DEFFN and SUB/END SUB constructs prior to their natural completion

EXP2 var and **EXP10 var** raises 2 or 10 to the specified power. Most Basics provide only the EXP function.

GET$** and **PUTS$ read or write a string or string variable to or from a binary file.

INCR var adds 1 to the specified variable. It's faster than the more common var=var+1.

INSTAT returns a flag indicating whether or not the keyboard buffer contains characters. This is similar to a non-destructive keyboard read.

LCASE$** and **UCASE$ convert a string to upper or lower case. This can be done in other versions of Basic, although at the expense of defining a function or writing a subroutine.

LOCAL varlist allows variables to be re-initialized on entry of a procedure or function. This facility is necessary if the function is to be recursive.

MEMSET declares the upper bounds of memory with a long integer.

MKMD$** and **MKMS$ are another concession to Microsoft Basic. These functions convert single and double precision values to Microsoft random disk file format.

MTIMER, depending on usage, is both a statement and a function giving access to a microtimer facility accurate to within two microseconds.

OPEN BINARY opens a file in binary random access mode.

REG is a very handy statement/function giving access to the 8088 processor registers both before and after calling Assembly language routines or system interrupts.

SEEK is similar to fseek() in C; this function enables read/write positioning in binary files.

SELECT CASE is a another of the extended control constructs available in Turbo Basic.

YOUR COMPUTER'S 7th ANNUAL INDEX

FEATURES

(Format: Story title, author, issue)

1987 Software Roundup, Staff, January 1988
80286 Real and Protected Modes, John Summerfield, July 1988
Active Learning Systems, Staff, March 1988
AI — Checkmate by computer, Tim Hartnell, January 1988
AI — for medical diagnosis, Tim Hartnell, August 1987
AI — Heuristics, Tim Hartnell, February 1988
AI — The power of sight, Tim Hartnell, April 1988
All I want for Christmas is . . ., Contributors, December 1987
Breaker, Breaker, Gerry Hui, October 1987
Business Software Catalog, Staff, December 1987
Business Speciality Software, Steve Keen, May 1988
Business Speciality Software — Part 2, Steve Keen, June 1988
Buying a computer, Gregg Faulkner, December 1987
Buying a Computer, John Hepworth, May 1988
Communications Software, John Hepworth, October 1987
Communications Software, John Hepworth, January 1988
Computer Afterthoughts, Staff, June 1988
Computer New Faces, Tim Hartnell, November 1987
Computer Tutors, Merv Beamish, September 1987
Computers go for a dive, Tracey Simpson, November 1987
Computers in Education, John Kerr, August 1987
Computers in Music Education, Andrew Brown, February 1988
Computing at Cameron Manor . . ., Farquhar Cameron, February 1988
Courses for a Computer Career, Staff, September 1987
Database Data, Steve Keen, July 1988
Down the line, ONLINE, Gerry Lacey, October 1987
Educational Software — an Overview, Jeff Richardson, September 1987
Electronic Mail and your Security, Staff, April 1988
Electronic Mail and your Security, Staff, April 1988
Encoder for Encryption, Tim Hartnell, January 1988
Enter the Transputer, Roy Hill, October 1987
Fairlight Instruments, Andrew Symaniz, July 1988
Fairlight Instruments — First Ten Years, Andrew Symaniz, December 1987
Fairlight Instruments — Series III CMI, Andrew Symaniz, January 1988
Faster, 'Blazer, Faster, Matt Whelan, October 1987
Fidonet, Bill Bolton, October 1987
First Australian Forth Symposium, Roy Hill, July 1988
Framework in Perspective, Robert Carr interview, August 1987
Functional Programming Languages, Bob Finney, June 1988
Graphic Arts and DTP, Mark Snell, November 1987
Graphics and Friendly Computers, Paul Gardiner, November 1987
Graphics in graphic detail, Arthur Inglis, November 1987
Hand Held Computers, Robert Thirlwell, June 1988
History of DOS, Chris Allen, January 1988
Home Education Hardware, Staff, December 1987
Home is the Office, Paul Walsh et.al., December 1987
Hype about HyperCard, HyperText . . ., Stewart Fist, June 1988
If You're Game, Dof Dickinson, December 1987
Inkjet Printers, Robert Thirlwell, July 1988
Is there Life on Amstrad?, Tim Hartnell, May 1988
Magic Squares, Tim Hartnell, March 1988
Megadisc, Robert Thirlwell, May 1988
Microsoft Art Competition, Staff, January 1988
Modems for Home Users, Larry Lewis, October 1987
Monitors, Ewart Stronach, April 1988

What did you miss?

OUR FIVE Year Index was published with the July 1986 issue; the index for August 1986 to July 1987 was published with our July 1987 issue — back issues are available (refer to the Services page). Alternatively, we will forward copies of both these indexes for $4, including postage. Note that copies of any of the Tutorials we have published are available — refer to the Services page.

Music — MIDI Theory, Andrew Symaniz, February 1988
Music — Non Real-Time Music Composition, Andrew Symaniz, September 1987
Networking — Changing concepts, Stewart Fist, May 1988
No One's Far From Anyone Anymore, Phil Tripp, July 1988
No Smoking!, Ewart Stronach, May 1988
Parliament House Computers, Bill Olson, June 1988
Personal Computer of the Year Finalists, Staff, April 1988
Personal Computer of the Year Winners, Staff, May 1988
Pop it up . . ., Keith Mackay, March 1988
Printer Catalog — Part 1, Staff, March 1988
Robots — Value for Money?, Dof Dickinson, December 1987
Software Piracy, Linda Graham, January 1988
Supercomputer Applications, Roy Hill, February 1988
Supercomputer Based on the Novix NC4016, Roy Hill, November 1987
Taking a Quantum Leap, Ian Allen, January 1988
The dilemma of the next PC, Katherine Harrington, January 1988
The Legal Impact, Peter Knight, January 1988
The Prophet — National PAMS Listing, Larry Lewis, October 1987
The Prophet — National PAMS Listing, Larry Lewis, April 1988
The Way of the Future, Sid Morris, June 1988
Tower of Hanoi, Tim Hartnell, June 1988
User Groups, Staff, January 1988
What's behind the 386?, Stewart Fist, January 1988
Xenix — Alternative to LANs, Staff, April 1988
Xenix — Applications, Staff, April 1988
Xenix — Development Environment, Staff, April 1988
Xenix — Hewlett-Packard, Staff, April 1988
Xenix — Introduction, Staff, April 1988
YC's BBS — How do I download?, Staff, November 1987
Your Computer's AT Catalog, Staff, February 1988
Your Computer's Bulletin Board, Staff, October 1987
Your Computer's CADalog, Staff, November 1987

REVIEWS — Computers:

(Format: Machine, model, processor, operating system, story title, author, issue)

Acer 910, Jake Kennedy, March 1988
Acorn Archimedes, Roy Hill, March 1988
ADE Opal 286, Brian Webster, February 1988
Amstrad PPC512 Portable, Ewart Stronach, July 1988
Amstrad PPC640 Portable, Ewart Stronach, July 1988
Anitech ALR 386/220, Ewart Stronach, March 1988
Apple IIe, Staff, December 1987
Atari 520ST, Staff, December 1987
Atlantis 386, John Hepworth, November 1987
BBC Master Series 128, Staff, December 1987
Blue Chip 286, Adrian Huyskens, February 1988
Bondwell 8 Portable, Jan Roberts, August 1987
Cambridge Z88, Robert Thirlwell, June 1988
Casio Digital Diaries, Robert Thirlwell, June 1988
Cleveland 286, Staff, January 1988
Commodore 64C and 128D, Staff, December 1987
Compaq Portable 386, John Hepworth, March 1988
Enter the Transputer, Roy Hill, October 1987
Epson PC AX, Brian Webster, December 1987
Gridlite, Jan Roberts, September 1987
Hand Held Computers, Robert Thirlwell, June 1988
Hewlett-Packard Portable Plus, Jan Roberts, May 1988
Hewlett-Packard Portable Vectra, Jan Roberts, May 1988
Hewlett-Packard Vectra ES/12, Fred Fattal, February 1988
Hitachi HL 300, Jan Roberts, June 1988
HP-28C Calculator, Geoff Prince, August 1987
IBM JX, Staff, December 1987
IBM PS/2 Model 80, John Hepworth, June 1988
Kookaburra Lap Computer, John Mclean, April 1988
Megalogic PD 8000, Robert Thirlwell, June 1988
Microcomputers in Education, Mark Kosten, March 1988
NEC Multispeed, Jan Roberts, September 1987
NEC PowerMate II, Fred Fattal, February 1988
Neostar 286 Mini, Keith Mackay, June 1988
Neostar 386, Ewart Stronach, May 1988
Olivetti M280, Dennis Fox, April 1988
President 286, Adrian Huyskens, February 1988
Prolap 286, Jan Roberts, June 1988
Psion Organizer, Robert Thirlwell, June 1988
Sancom 286, Adrian Armitage, February 1988
Sharp PC-7000, Jan Roberts, January 1988
Sharp PC4500, Jan Roberts, June 1988
Skai 286, Paul Zucker, February 1988
Sotec PHC-16, Jan Roberts, August 1987
Tandy 1000 EX, Staff, December 1987
Tandy 3000, Brian Webster, February 1988
Toshiba T1000, Jan Roberts, January 1988
Toshiba T1000, John Hepworth, February 1988
Toshiba T1100+, Jan Roberts, September 1987
Toshiba T1200, John Hepworth, February 1988
Toshiba T3200, John Hepworth, February 1988
Toshiba T5100, John Hepworth, February 1988
VZ-300, Staff, December 1987
Your Computer's AT Catalog, Staff, February 1988
Zenith Laptop Range, Jan Roberts, May 1988

REVIEWS — Peripherals:

(Format: Machine, model, story title, author, issue)

49 Mbyte I2CARD, John Hepworth, November 1987
AMB 286 Speed Card, Peter Feldtmann, November 1987
Bit Blitzer, Larry Lewis, October 1987
Brother Twinriter, Staff, April 1988
BusinessCard 21 and 262, John Hepworth, November 1987
Computer Afterthoughts, Staff, June 1988
Databridge DSP 1200, Larry Lewis, October 1987
Dataplex DPX 2400, Larry Lewis, October 1987
Diconix 150 Portable, Robert Thirlwell, July 1988
Digicom Digis 80286A, Peter Feldtmann, November 1987
Epson GQ-3500, Staff, October 1987
Epson LQ1050, John Hepworth, July 1988
Epson LQ2500+, Staff, April 1988
Epson LQ500, Robert Thirlwell, May 1988
Epson LQ500, John Hepworth, July 1988
Epson LQ850, John Hepworth, July 1988
Franklin Spelling Ace, Sian Smith, March 1988
Genoa Galaxy, Ewart Stronach, January 1988
Hewlett-Packard Deskjet, Robert Thirlwell, July 1988
Hewlett-Packard Paintjet, Robert Thirlwell, July 1988
Honeywell Bull 4/66 Printer, Staff, November 1987
Hyperace 286 Accelerator Card, Peter Feldtmann, August 1987
Hyperace 286 Plus Accelerator Card, Peter Feldtmann, August 1987
Logitech Logimouse, Bill Hughes, December 1987
Maestro GPA Supermodem, Larry Lewis, October 1987
Monitors, Ewart Stronach, April 1988
MTBasic, Greg Bradley, August 1987
NEC Multisync, Ewart Stronach, April 1988
NetComm 1234A, Larry Lewis, October 1987
NetComm Auto Modem 1234A, Keith Mackay, March 1988
NetComm Datalock 1234SA, Keith Mackay, March 1988
NetComm Pocket Modem 123, Gareth Powell, December 1987
NetComm Smart Modem 1234SA, Keith Mackay, March 1988
NetComm Trailblazer, Matt Whelan, October 1987
Nice Modem 2, Larry Lewis, October 1987
Nice Modems, John Mclean, April 1988
Optimouse, Keith Mackay, September 1987

PC Mouse, John Hepworth, March 1988
PC-Turbo 286e Accelerator Card, Peter Feldtmann, August 1987
PEP Printer Enhancements, Ewart Stronach, August 1987
Printer Catalog — Part 1, Staff, March 1988
Printer Catalog — Part 2, Staff, April 1988
Radio Modem, Gerry Hui, October 1987
Ricoh LP4150, Staff, March 1988
Ricoh PC600, Staff, March 1988
Robots — Value for Money?, Dof Dickinson, December 1987
Star NX-1000, Staff, April 1988
Sweet-P 601 Plotter, Staff, November 1987
TI's Omnilaser 2108, Staff, October 1987
TI's Omnilaser 2115, Matt Whelan, October 1987
Tiny Turbo 286 Accelerator Card, Peter Feldtmann, August 1987
Turbo Upgrade card, Peter Feldtmann, November 1987
Witty Mouse, Ewart Stronach, January 1988

REVIEWS — Software:

(Format: Program Name, machine suitable for, story title, author, issue)

1987 **Software Roundup**, Staff, January 1988
@Liberty, Liberty, John Hepworth, May 1988
Advanced Flight Simulator, Gregor Stronach, February 1988
Amy's First Primer, Brian Davey, June 1988
ANUGraph, Kaye Stacey, February 1988
Apollo, Steve Keen, June 1988
Autosketch, David Chatwin, November 1987
Bookworker, John Nicholls, January 1988
BridgePal, Bert Mond, February 1988
Business Software Catalog, Staff, December 1987
Business Speciality Software, Steve Keen, May 1988
Business Speciality Software — Part 2, Steve Keen, June 1988
CAD-3D for the Atari, Paul Fisher, November 1987
Carbon Copy Plus, John Hepworth, January 1988
Chief, Ewart Stronach, June 1988
Codeview, Larry Lewis, September 1987
Compugraphic Typesetting System, Mark Snell, November 1987
Computer Tutorial, Sid Morris, September 1987
Comsell Learning Centre, Merv Beamish, September 1987
Crosstalk XVI, John Hepworth, October 1987
Dac Easy Base, Steve Keen, July 1988
Dac Easy Word III, Keith Mackay, February 1988
Designer Series, John Hepworth, March 1988
Early Games, Colin Fox, September 1987
Effective Business Accounting, John & Vic Beacham, August 1987
Eureka, Glenn Fulford, May 1988
Fastype, Alison Cassidy, September 1987
Fidonet, Bill Bolton, October 1987
First Choice, John Hepworth, August 1987
FlipTrack Education System, Tim Hartnell, September 1987
Fontasy, Ewart Stronach, December 1987
Foresight, Steve Keen, June 1988
Fraction Factory, Colin Fox, September 1987
GLEE, John Mclean, February 1988
Gunship, Stuart Elflett, August 1987
HAMfisted Publishing, Matt Whelan, October 1987
Hangman, Sian Smith, July 1988
Hi-Tech C, Jonathon Scott, July 1988
Ideal Terminal, Sid Morris, July 1988
If You're Game, Dof Dickinson, December 1987
Indoor Games, Stuart Elflett, August 1987
Introducing C, Merv Beamish, September 1987
Intuit, Rose Vines, September 1987
ITEK Personal Typesetting Workstation, Mark Snell, November 1987
Kidgames for Pre-schoolers, Brian Davey, February 1988
Letter Magic, Ewart Stronach, December 1987
Listen & Learn, Merv Beamish, September 1987
LogoWriter, Brian Davey, August 1987
Lotus 1-2-3 V2.01, John Nicholls, August 1987
Lotus Manuscript, Rose Vines, February 1988
Mace Utilities, Keith Mackay, May 1988
Macros & Advanced Functions, Merv Beamish, September 1987
Make a Match, Match, Colin Fox, September 1987
Map Magic, Steve Keen, June 1988
Megadisc, Robert Thirlwell, May 1988
Memory Mate, Steve Keen, July 1988
Metagraphics MetaWindows, Peter Hill, January 1988
Metatext, Staff, May 1988
Metro, Keith Mackay, August 1987
Micropro Easy V1.5, Keith Mackay, September 1987
Microsoft Access, John Hepworth, October 1987
Microsoft Word V4, John Hepworth, April 1988
Microsoft Word V4, Keith Mackay, June 1988
Microsoft Works, John Hepworth, July 1988
Mirror II, John Hepworth, October 1987
Modula-2, Michael McCarthy, August 1987
muMath, Glenn Fulford, August 1987
Music and Education — PD programs, Brian Davey, September 1987
Music Selector, Steve Keen, June 1988
NetComm Program V3.0, Matt Whelan, March 1988
NewsMaster, Tim Hartnell, January 1988
Norton Guides, John Hepworth, April 1988
Norton Utilities V4.0 (and advanced), John Hepworth, September 1987
Open Access, John Nicholls, August 1987
PC-Debtors, John Mclean, March 1988
PC-Professor, Sid Morris, January 1988
PFS:Professional Write, Keith Mackay, September 1987
Plotting with POLARIS, David Chatwin, November 1987
Pop-up Deskset, Keith Mackay, March 1988
Postcode, Ewart Stronach, August 1987
Postcoder, Ewart Stronach, August 1987
PrintQ, John Hepworth, December 1987
Printworks, Staff, April 1988
ProDesign, David Chatwin, December 1987
Professional YAM, John Hepworth, January 1988
Project Manager Workbench, David Chatwin, May 1988
Q&A, Steve Keen, July 1988
Reflex, Steve Keen, July 1988
Relay Gold, John Hepworth, October 1987
SAMM, Steve Keen, June 1988
SideKick, Keith Mackay, March 1988
SideTalk, John Hepworth, January 1988
Silk — a smooth spreadsheet, John Nicholls, November 1987
Soft-Tech, Steve Keen, June 1988
Softerm PC, John Hepworth, October 1987
Sorting Made Simple, Ian Robinson, August 1987
Statgraphics, Brian Webster, December 1987
Stickybear Mathematics, Colin Fox, February 1988
Stickybear Music, Colin Fox, September 1987
SuperProject Plus, David Chatwin, May 1988
T/Master, Jan Roberts, July 1988
The Magician, Ewart Stronach, December 1987
Tornado Notes, James Fortune, June 1988
Touch, Sid Morris, February 1988
Toy Shop, Jeremy Star, September 1987
Trust Writer, Keith Mackay, January 1988
Turbo Basic, Peter Feldtmann, July 1988
Turbo Prolog V1.1, Roy Hill, September 1987
TypeQuick, Merv Beamish, September 1987
VP-Planner, Peter Hill, December 1987
Webster New World Writer, Keith Mackay, February 1988
Wishbringer, Glen Hampson, December 1987
Word (Logistics), Brian Davey, September 1987
Wordcraft V3.2, Keith Mackay, March 1988
WordMagic, Jon Fairall, May 1988
WordPerfect V4.2, Keith Mackay, October 1987
WordStar 2000 Plus V3, Keith Mackay, June 1988
XTreePro, Chris Allen, July 1988
Xywrite III V3.14, Keith Mackay, October 1987
Zim, Steve Keen, June 1988

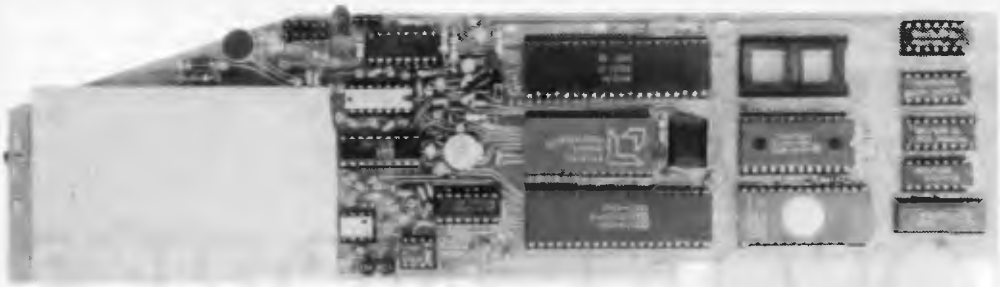
TUTORIALS

(Format: Story title and series number, author, issue)

80286 Real and Protected Modes, John Summerfield, July 1988
AI — Heuristics, Tim Hartnell, February 1988
All I want for Christmas . . ., Tim Hartnell, November 1987
Amiga — Balance of Power and Digi-View, Gregg Faulkner, September 1987
Amiga — Diga!, FutureSound, Videoscape, Gregg Faulkner, January 1988
Amiga — Fred Fish Disks, Gregg Faulkner, August 1987
Amiga — Genlock, Provideo and Club Amiga, Gregg Faulkner, October 1987
Amiga — Music Studio, Gregg Faulkner, May 1988
Amiga — Neglected waif, Gregg Faulkner, July 1988
Amiga — Printmaster Plus, Gregg Faulkner, February 1988
Amiga — Public Domain software, Gregg Faulkner, March 1988
Amiga — Telecomputing, Gregg Faulkner, April 1988
Amiga — WordPerfect V4.2, DigiPaint, Gregg Faulkner, December 1987
Amiga — Workbench, Start-up Sequence, Gregg Faulkner, June 1988
Amstrad — A slice of pie, Tim Hartnell, May 1988
Amstrad — Alien Basics, Tim Hartnell, November 1987
Amstrad — Barcodes and music, Tim Hartnell, June 1988
Amstrad — Fractals, Tim Hartnell, March 1988
Amstrad — Free disk of software, Tim Hartnell, July 1988
Amstrad — GEM Paint and LocoScript, Tim Hartnell, October 1987
Amstrad — Graphics commands in Basic2, Tim Hartnell, April 1988
Amstrad — Mallard Basic, Tim Hartnell, February 1988
Amstrad — PC1640 PD and PCW software, Tim Hartnell, January 1988
Apple — Applefest, Stewart Fist, February 1988
Apple — AppleWorks, Stewart Fist, January 1988
Apple — CD-ROM, MIDI, Stewart Fist, July 1988
Apple — Hedgehogs, graphics and the GS, Stewart Fist, May 1988
Apple — MS-DOS card, Stewart Fist, November 1987
Apple — Super Serial Card and IEEE-488, Stewart Fist, September 1987
Atari — Adding drives, printer drivers, Paul Fisher, February 1988
Atari — CAD-3D and Pro-copy, Paul Fisher, October 1987
Atari — Mega ST, Paul Fisher, July 1988
Atari — Mega STs and StarGlider, Paul Fisher, September 1987
Atari — PC-Ditto, Paul Fisher, March 1988
Atari — Subroutine library, Paul Fisher, December 1987
Atari — Subroutine library for the ST, Paul Fisher, August 1987
Atari — Winnie the Pooh, Paul Fisher, April 1988
BBC — Arthur, Bruce Mitchell, September 1987
Behind HyperCard — Part 1, Stewart Fist, July 1988
C64 — A bug in the 1541 ROM, Ian Allen, August 1987
C64 — A never ending story, Ian Allen, July 1988
C64 — Assembler, Ian Allen, March 1988
C64 — Metabasic and Speedscript, Ian Allen, January 1988
C64 — NetComm 64/128 Modem, Ian Allen, September 1987
C64 — Punternet, Ian Allen, April 1988
C64 — Smart cash registers, Ian Allen, June 1988
C64 — Speed limits of Basic V2, Ian Allen, November 1987
C64 — Sprite cursor positioner, Ian Allen, May 1988
C64 — The amazing asterisk, Paul Fisher, October 1987
DebtMaster — Part 8: Backup Your Ledger, Lindsay Ford, August 1987
DOS Dirty Tricks, John Summerfield, April 1988
Encoder for Encryption, Tim Hartnell, January 1988
Functional Programming Languages, Bob Finney, June 1988
Give Your Programs a Good Start, David Mellefont, August 1987
Going BATty- Tricks with batch files, John Summerfield, October 1987
Graphics Techniques — Animation, Miroslav Kostecki, February 1988
Graphics Techniques — CAD Procedures, Miroslav Kostecki, May 1988
Graphics Techniques — Fundamentals, Miroslav Kostecki, November 1987
Graphics Techniques — Mazes, Miroslav Kostecki, July 1988
Graphics Techniques — Memory, Miroslav Kostecki, March 1988
Hardware Hacking — Reset Button, Tom Moffatt, July 1988
Hype about HyperCard, HyperText . . ., Stewart Fist, June 1988
IBM — Brooklyn Bridge and PC Alien, John Hepworth, September 1987
IBM — CLRECHO, John Hepworth, December 1987
IBM — Cruise Control and DirecLink, John Hepworth, January 1988
IBM — Languages, John Hepworth, March 1988
IBM — Laplink, John Hepworth, November 1987
IBM — Modem7 and Making a Null Modem, John Hepworth, August 1987
IBM — NetComm Program V3.0, John Hepworth, July 1988
IBM — Serial communications, John Hepworth, April 1988
IBM — StyleWriter, John Hepworth, June 1988
IBM — Three essential files, John Hepworth, February 1988
IBM — Turbo Pascal Toolbox, John Hepworth, May 1988
IBM — User groups and Formatting, John Hepworth, October 1987
Is there Life on Amstrad?, Tim Hartnell, May 1988
Mac — GENlock, Stewart Fist, May 1988
Mac — Hypermedia, Infowindow, Stewart Fist, April 1988
Mac — Mac Colour and dBase Mac, Stewart Fist, January 1988
Mac — MacLap?, Stewart Fist, June 1988
Mac — Multifinder and Unix, Stewart Fist, October 1987
Mac — Networking, Stewart Fist, February 1988
Mac — Procedural language, Stewart Fist, March 1988
Macintosh — Year of the LAN, Stewart Fist, August 1987
Memory Muncher, Andrew Larkin, July 1988
Microbee — Adding a second joystick, Ian Roberts, August 1987
Microbee — Adding a Third Disk Drive, Ian Roberts, September 1987
Microbee — Enhanced Shell system, Ian Roberts, March 1988
Microbee — Running different disk drives, Ian Roberts, October 1987
Microbee File, Sharon France, January 1988
Microbee File — A BEE in the Garden, Dof Dickinson, December 1987
Microbee File — A cow of a program . . ., Sharon France, May 1988
Microbee File — Digiscan, Sharon France, April 1988
Microbee File — Mice and GTMark, Dof Dickinson, February 1988
Microbee File — MS-DOS, Quizmaster, Sharon France, June 1988
Microbee File — What about the software?, Sharon France, July 1988
Microbee File — WordStar, Sharon France, March 1988
Microbee File — Zeephon and PrintMaster, Sharon France, November 1987
Mouse Trapping, Malcolm Greer, June 1988
Music — Channel mode messages, Andrew Symaniz, May 1988
Music — Digital Sound Synthesis, Andrew Symaniz, August 1987
Music — Manufacturer specific code, Andrew Symaniz, July 1988
Music — Manufacturer specific code, Andrew Symaniz, July 1988
Music — MIDI Theory, Andrew Symaniz, February 1988
Music — Real-time Music Composition, Andrew Symaniz, October 1987
Music — Subtractive Synthesis, Andrew Symaniz, December 1987
Music — System messages, Andrew Symaniz, June 1988
Networking — Changing concepts, Stewart Fist, May 1988
Networking — Part 1: LANS, Stewart Fist, October 1987
Networking — Part 2: Ethernet, CSMA/CD, Stewart Fist, November 1987
Networking — Possibilities, Stewart Fist, March 1988
Networking — Token Rings, Stewart Fist, February 1988
PCs in Marketing, Les Bell, August 1987
SizeA, Ron Lyth, February 1988
The Attainment of Assembly — Part 1, John Summerfield, October 1987
The Attainment of Assembly — Part 2, John Summerfield, November 1987
The Attainment of Assembly — Part 3, John Summerfield, January 1988
The Attainment of Assembly — Part 4, John Summerfield, March 1988
The Attainment of Assembly — Part 5, John Summerfield, June 1988
Turbo Tips — More dBase Connections, Peter Hill, February 1988
Turbo Tips — Part 8: Run-time errors, Peter Hill, August 1987
Turbo Tips — PATH, Peter Hill, March 1988
Turbo Tips — The dBase Connection, Peter Hill, September 1987
Turbo Tips — Turbo Power Utilities, Peter Hill, May 1988
Underground — ARC and PKARC, John Hepworth, September 1987
Underground — AsEasyAS, John Hepworth, May 1988
Underground — Baker's Dozen, John Hepworth, March 1988
Underground — File Express, John Hepworth, June 1988
Underground — NARC, PC Macpaint, John Hepworth, April 1988
Underground — PowerMenu, John Hepworth, July 1988
Underground — QubeCalc, John Hepworth, November 1987
Underground — Telix, John Hepworth, August 1987
Underground — TheDraw, SimCGA, John Hepworth, February 1988
Underground — WSS Index and Zmodem, John Hepworth, January 1988

MODEM FOR APPLE II & IIE

NOW IN STOCK WITH FULLY OPERATIONAL FIRMWARE & NEW FEATURES



"VIATEL NOW IN FULL COLOUR ON THE APPLE IIGS AND IMAGE WRITER PRINTER"

* Super intelligent direct connect MODEM/VIATEL terminal for APPLE II, IIE & compatibles fully contained on a single card — plugs into slot#2 — does not require separate serial card or software. All software is permanently resident in an onboard 128K EPROM. It is hidden in the slot#2 card space, leaving the whole of memory completely free for other programs unlike disk based comms software which must occupy the main memory excluding other programs. It is menu driven and automatically senses for ProDos or DOS 3.3 operation. Received files are appropriately converted before saving and can be used.

Sending/receiving files is very simple:—
— Press "ESC" to display menu.
— Select "(S) END A FILE" option
— Answer the prompt "FILENAME?:"

The modem will search the disk for the file, make all the decisions (e.g. binary, basic, textfile, DOS 3.3 or ProDos) and transmit it in the correct format. <CR> transmits the file in memory. Similarly to receive a file select "(R) ECEIVE A FILE" option.

* AUTO ANSWER — AUTO DIAL. Senses true dial tone, ring tone, busy tone and acts intelligently, returning status messages. Characters can be included in the phone number to set baudrate, pause, "await dialtone" and multiple redial on busy. On answer, it selects the incoming baudrate by precision frequency measurement. This is much more reliable than the normal autosearch using carrier detect which is often confused by voice and phone tones. A reliable autosearch is a must for bulletin board operation.

* 300 Baud full duplex or 1200/75 and 75/1200 with fast automatic line turnaround. An upgrade kit to add V22 (1200/1200 baud) and V22 Bis (2400/2400 baud) will be available later.

*Main menu option "(V)IDEOTEXT" shows the VIATEL menu. It becomes a full graphics VIATEL terminal, automatically dialling and transmitting the user ID stored in the battery backed ram. When online, a keypress will immediately save pictures to memory. These can be reviewed later and selectively saved to disk or printed (requires a graphics printer card). Pictures can be loaded from disk and printed out. The modem can act as a videotext host and can be programmed to act on frame information. e.g. — use the clock to ring "MONEYWATCH" hurly and dial you at the office if your shares move outside a given range.

* TELESOFTWARE DOWNLOAD facility to purchase programs over VIATEL from suppliers such as MICROTEX 666 and TANGO.

* A full wordprocessor in EPROM for pre-composition of text before transmission. It can also be used to edit or print received files as well as for general wordprocessing.

* Onboard battery backed calendar clock can time and initiate calls or keep an activity log. ProDos uses it to time and date disk files and it is accessible from Basic.

* 2Kx8 battery powered CMOS RAM stores default parameters, phone numbers, ID, password, logon strings, search codes and setup parameters (e.g. baud rate, parity, printer ON) for each number, allowing single keystroke call establishment to specific areas of complex databases. Main menu option "(T)ELELIST" displays the list of 23 names and one is selected.

* Incorporates XON/XOFF and CHRISTENSEN error correcting protocol. Textfiles are not so fussy but error correction is a must when transferring program files. A debug function can display normally invisible control characters sent by the host.

* Can output directly to printer even when online at 1200 Baud — a fast printer is not required as the printer is spooled out of the receive buffer. A "FILTER" function is available to remove screen control characters from textfiles (these can drive a printer crazy). Special scroll routines print to 80 column screen and printer at 1200 Baud without any lost characters.

* Unique "PHANTOM MODEM MODE" function allows the modem to be permanently connected with the normal phone. When answering, if it doesn't immediately detect a calling modem it generates ringing tone back to the calling party and sounds the APPLE bell, giving you 60 seconds to answer the phone.

* If you have previously purchased this modem and have not yet received an updated EPROM VERSION V2.18 and a manual, contact AUTOMATIC ICE CO — there is no charge for these

AUTOMATIC ICE COMPANY

Mastercard & Bankcard

10 SMITH STREET, CHARLESTOWN, 2290.
PHONE (049) 63 3188 — (049) 63 1386

Price $299 *(incl S/T)*

MICROSOFT WORKS

without breaking the bank

If you've recently become the proud owner of a bouncing PC, then consider John Hepworth's advice on getting the Works!

YOU'VE JUST bought a PC clone, have you? One of those PC compatibles with twin floppies for around $1000, or with a hard disk for $2000 or less. Now you face the problem of getting legitimate software without breaking the bank – already severely strained by buying the PC in the first place.

Most users need the classic trinity of a good word processor, simple to use database and a spreadsheet. Later, some will buy a modem and will need communications software. You could buy the standard, independent and fully functioned packages like Microsoft Word, dBase III and Lotus 1-2-3, but the street prices of these three combined is around the cost of a low end clone with monitor and hard disk, and is enough to frighten the average user right off.

Users familiar with PCs from work and buying a clone for home, find the Public Domain and User Supported databases, word processors and spreadsheets very good, but novices really need a moderate level of general PC experience before they can learn to use Public Domain software from the limited manuals on disk.

As a result, a number of entry level integrated packages have been released to the market. One of the newest is Microsoft Works for the PC. It includes an excellent word processor, a very good spreadsheet, an adequate database and adds a communications module as the icing on the cake. Up to eight files can be open at a time, and can all be of the one type or can be a mixture of database, spreadsheet, word processor and communications files, though only one can be actively worked on at any one moment. It is possible to copy data from one function to another, and to merge data from one application into another. Form letters, with data merged into a document for a database file, are easy, as is copying spreadsheet data into a document or including a chart from a spreadsheet into a printed document.

Sorting is available using up to three fields as keys, and is quite fast.

Works makes extensive use of menus, which is appropriate for an entry level package. These are excellently laid out for beginners, but without a mouse are just a little on the tedious side for advanced users. With a mouse, Works flies for all users at all levels.

Room to grow

Many other entry level integrated packages are very simplistic and suited only to limited home use. To make matters even worse, many make it difficult to take data from their proprietary file formats and transfer it to more powerful packages as the user's needs mature. Such packages are only suited to the low end user who is certain that they will never need to progress in power and features. Microsoft Works overcomes this in a number of ways. First, the individual components are powerful enough that many users will never outgrow them. Secondly, file conversion facilities are builtin to make transfer of data to other packages easy.

Word processor files can be saved in Microsoft Works format, or in formatted ASCII with a carriage return and line feed at the end of each line, or as unformatted ASCII with a carriage return and line feed only at the end of each paragraph – a file format which is easy to load into almost any other word processor for reformatting by the target word processor.

The database can read and write files in what is often called mailmerge format (Works calls it text), with an inverted comma at the start and end of each field, a comma between fields, and a carriage return/line feed at the end of each record. Such files can easily be written and read by a diverse range of databases from dBase to PC-File, and allow data to be transferred in both directions between Works and the majority of other databases.

The spreadsheet uses the Lotus 1A file format and while the commands and functions do not cover an identical range,

many are the same. Lotus graphs display correctly in the Works spreadsheet, and Lotus 1A and Lotus 2 files can be loaded. The communications module allows for autodial and autoanswer, with manual communications from the keyboard plus ASCII and Xmodem file transfer in both directions.

Running Works

Running Works is simple. Merely type WORKS at the DOS prompt, and press Enter for it to load. If you want to use a mouse, then the mouse driver supplied with the mouse should be activated before running Works. One then opens a file in spreadsheet, database, word processor or communications.

A typical screen appears, with a menu bar with several options across the top line of the screen. A hint line occupies the bottom line and the second bottom line is the status line, with details like the file in use, the page number in a word processor and (when loading or saving) the percentage of the file which had been successfully loaded or saved.

There are two ways to get from the text or data area to the menu area at the top of the screen. With the keyboard one presses Alt either before or simultaneously with the highlighted letter in the name of each menu item. With a mouse, one takes the cursor to the desired item in the menu bar and clicks the button.

Either way, a second level menu drops down from the selected item in the menu bar. One can then use the cursor keys to select it, and then press Enter, or just press the key highlighted in the desired item, or use the mouse to select the menu item and click the button to choose it. As indicated before, up to eight files can be open at a time, with any one being on screen and in use at a time When merging data from more than one file all files concerned must be in memory.

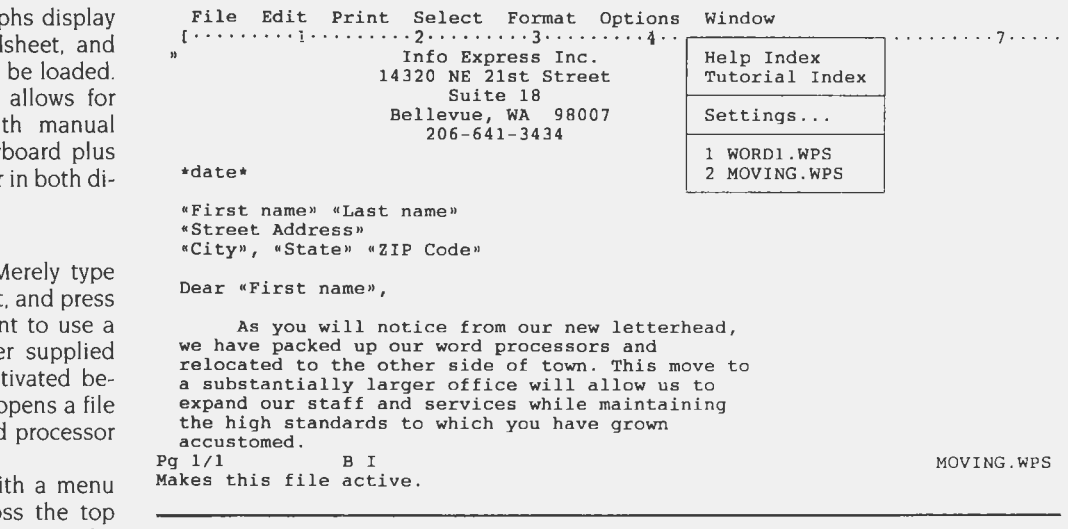


Figure 1. *Microsoft Works' word processing screen is typical of all the modules – there is a menu bar across the top of the screen with 'hint' and status lines across the bottom.*

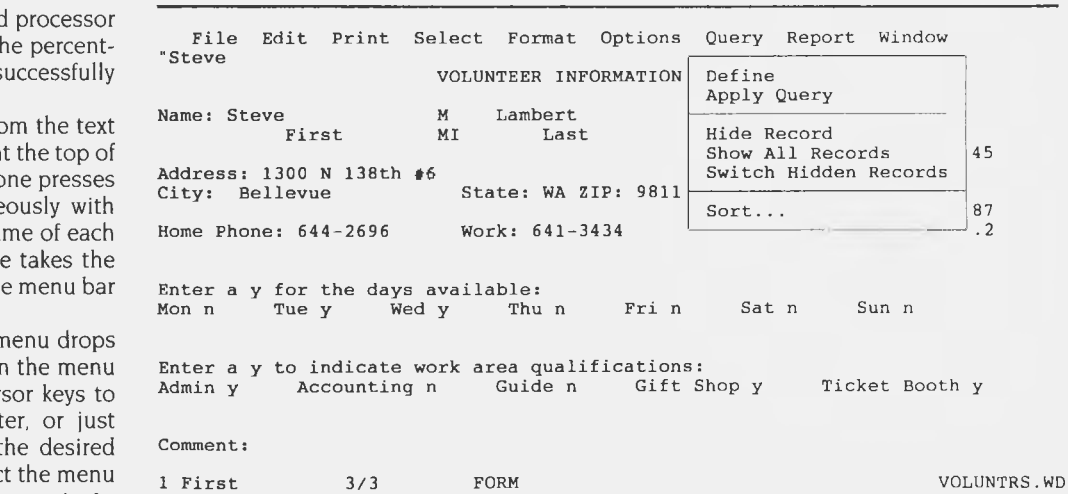


Figure 2. *The RAM based Works database offers two views of the data – List shows one line per record and one field per column with several records onscreen at once, while Form (shown here) shows one record at a time for updating.*

Word processor

The star of the show is undoubtedly the word processor. While quite different in detail from the well known Microsoft Word, it shares much of the underlying philosophy even if the keystrokes (or mouse actions) required to achieve an end might be quite different. I am writing this review with the Works word processor and have had no difficulty adapting to it from Word, or of jumping back and forward at regular intervals.

It has given me the added bonus that, as I wish to check a detail of one of the other modules like the spreadsheet, database or communications, I merely open a file in that module without quitting Works or the word processor file, look at the action in the other module, and then resume exactly where I left off.

The word processor includes a spell checker, reformats paragraphs on the run, and shows page breaks on screen accurately. It keeps up with my touch typing on a 4.77 MHz PC and, all in all, has the ability to carry out many quite significant tasks. Indenting a paragraph, and hanging indents with the first line (possibly with a paragraph number) to the left of the rest of the paragraph are also supported, as is ragged right, centred, ragged left and justified text.

Graphs from spreadsheets, and text from spreadsheets, can be inserted and form letters can be created, inserting data from selected fields in a database into letter after letter. Multiline headers and footers are possible. Naturally one can copy text from one place to another, move or delete blocks of text, and can do searches and search-and-replace. As all eight of the possible files which can be open at a time could be documents, one can do text transfer from one to another, but boilerplating a legal document together from

It's a miracle!

FREE

SOFTWARE!

IBM PC
Apple II
Mac

DETAILS IN OUR ***NEW*** CATALOGUE of cut-price & **FREE SOFTWARE**

For *your* copy, ring **(03) 648 1191** at *any* time, and be ready to tell our receptionist your name, address and make of computer.

Or write: Tim Hartnell, Interface Publications (Aust.) Pty. Ltd., Room Y4, 34 Camp St., Chelsea, Vic., 3196

selected standard paragraphs would be more tedious in Works (not designed for such tasks) than it would be in business oriented word processors like Microsoft Word.

Database

There are two major subdivisions between databases in the IBM PC world. One type, typified by dBase, keeps all the data on disk and merely reads, manipulates and writes one or a few records at a time. The other, like Reflex, and the simplistic database functions in Lotus, loads the whole database into RAM and manipulates it there. This makes it easier to do some things like charting, graphing and analysis, but it does limit the database size to what will fit in memory, while the disk based systems can have databases limited only by free disk space.

The Works database is RAM based, and this does give great flexibility in interrogation of the data and merging of it with other modules. It also removes the need to predefine a field size – if the data is too long for the field it is not lost, but some is merely not displayed, and the field can be resized at will! Like Reflex, two views of the data are available. The list view is akin to a spreadsheet, with one line per record and one column per field, and several records on the screen at a time. The forms view shows one record on the screen, with various prompts and the field names there to be seen.

I loaded a database with around 1400 records, each of about 250 characters into a Works database and found that, with a 640 kilobyte machine and only one Works file in action, that I had used only half the available memory. With such large databases the more significant limitation is the time it takes to load and save such a database from RAM to disk. This is around a minute or more each time with a 4.77 MHz PC and hard disk, but for most home and small business databases, the use of RAM based structure will not create any real problems. As a rule of thumb, if the database will fit onto a 360 Kbyte floppy it can be loaded into Works provided that only the one application is in use and the machine has 640 Kbyte of memory.

Sorting is available using up to three fields as keys, and is quite fast. Data queries are also available, though in general can find only an exact match for the contents of a field, and just specifying a string matching the leading letters or a string within the field will be unsuccessful.

Spreadsheet

While the spreadsheet reads and writes files in Lotus format, it actually operates quite differently. The available functions overlap those of Lotus with many being the same, but with some variations, additions and deletions

In Lotus, the / key is used to toggle to the menu from the spreadsheet itself, but in Works the Alt key or mouse is used. Formulae can be entered into a cell by pressing the =, +, or – keys, followed by the formula, and cell addresses can be entered into a formula by 'pointing'. Absolute, relative and mixed cell references are supported.

Numbers and text (labels in Lotus) are entered by just putting the cursor on the appropriate cell and typing. Works is intelligent enough to differentiate between cells which contain legal numbers and ones with text that just happens to start with a numeral. If you did want to enter a pure number (say 123.45) as text, then preceding it with an inverted comma, as in "123.45, does the trick. Numbers and text can be left, right or centrally aligned within a cell using menu options.

Spreadsheets defined in Lotus can be loaded and graphs defined in Lotus can be displayed. Speed on the spreadsheet is excellent. On a 4.77 MHz PC with 36 millisecond hard disk, the standard *Your Computer* benchmark spreadsheet loaded slower than it did in Lotus 1A, but faster than it did in Lotus 2.0. Recalculation and saving times were very close for Works, Lotus 1A and Lotus 2 –

	Load Sec	Recalc Sec	Save Sec
Lotus 1A	72	30	64
Lotus 2	198	31	65
Works	156	29	80

Macros

Veteran users of PCs will be aware that there are two different types of macro support offered by software. In each case the macro is a way of capturing some or many keystrokes and replaying them while in a application, automating some tedious task

The two types? Keyboard enhancements like Smartkey and SuperKey are coresident software loaded before an application program and can be used with almost any application program, while pro-

grams like Lotus have the ability to include extremely complex macros within the spreadsheet. Works has macro capabilities of the first type, and includes a co-resident macro program on the disk.

Printers

Drivers are provided for an excellent range of printers, but if it doesn't suit your needs, there are also drivers for unformatted output, and for standard daisywheel and dot matrix printers with and without the ability to formfeed and/or backspace. While there are several laser printers, the Setup menu and the manual index make no mention of Apple LaserWriter or of generic PostScript drivers.

No provision is made for users to write their own printer drivers, or adapt a 'near miss' to suit their unique printer, but I found that the printer drivers for Microsoft Word appeared to work well, and with Word came a program MAKEPRD.EXE so that users could write or modify printer drivers. My printer is a Toshiba with emulation of the IBM graphics printer, plus additional character sizes and spaces and the addition of 24-pin near letter quality to the standard draft 9-pin output. Previously I used MAKEPRD to modify the Word driver for the IBM Graphics printer to suit the Toshiba, and the modified Word printer driver worked well with Works!

The package

Microsoft Works comes in a sturdy box, with no less than eight 5¼ inch and four 3½ inch disks. Also in the package is the main manual of around 600 pages in a ring binder, a 12 page quick reference keyboard guide, a keyboard template, and a 100 page spiral bound book of appendixes On top of the package is a simple leaflet called the roadmap which details backing up the distribution disks, running the setup program and starting Works for the first time. Recognizing that many buyers will be novices, a 24 page book is included called *Getting To Know Your Computer*, and is a very well illustrated and written elementary guide to running IBM PCs and compatibles. Last but not least is a book detailing some possible uses for Works.

The manuals are very well written and illustrated, with good explanations of functions every time I needed information They are organised in reference style, and instead of providing a written tutorial, an excellent, interactive, tutorial on disk is provided that, in its 5¼ inch version, takes no less than three of the eight disks.

```
   File  Edit  Print  Select  Format  Options  Chart  Window
"Loan Amortization Table
         A            B            C          D          Help Index
1                                Loan Amortization Table  Tutorial Index
2
3    Price        $126,000.00                          Te  Settings...        360
4    Down          $20,000.00                          St                   11/83
5    Interest           11.50%                         Pa  1 SHEET1.WKS     049.71
6                                                          2 LOAN.WKS
7         Date        Balance     Payment   Interest                        alance
8        11/83     106,000.00   1,049.71   1,015.83        33.88     105,966.12
9        12/83     105,966.12   1,049.71   1,015.51        34.20     105,931.92
10        1/84     105,931.92   1,049.71   1,015.18        34.53     105,897.40
11        2/84     105,897.40   1,049.71   1,014.85        34.86     105,862.54
12
13   Note: The number of sample payments has been reduced for
14   disk space reasons
15
16
17
18
19
20
C1                                  CALC                                LOAN.WKS
Makes this file active.
```

Figure 3. The Works spreadsheet reads and writes Lotus 1-2-3 files. Recalculation and saving times are similar to Lotus'.

System requirements

As with most software these days, the addition of a hard disk to your system will make using Works easier, but it is by no means essential. Works can be run on a system with two 360 Kbyte floppy drives, with the program and the printer drivers fitting on one floppy disk with around 30 Kbyte to spare; the Help and Spell files are on a second floppy, and will all fit on a 720 Kbyte floppy. The user is prompted to change 360 Kbyte disks when either help or spell checking is required, and this leaves the B drive for the data disk. Works needs 384 Kbyte of RAM, but as with most software, the more the better.

A great range of video boards are supported, including Hercules, CGA, EGA, VGA, MCGA, Olivetti/AT&T 6300+ High-Resolution Mono, Ericsson Graphics Card 1070, Amstrad PC1512 Graphics Board and the Tandy Model 1000. Hayes compatible modems are required if autodial and answer is to be used, and a vast range of printers are supported. A mouse can be used if it comes with a driver to emulate the Microsoft Mouse.

Roundup

In the past I have had reservations in recommending entry level integrated packages to all but those users with limited immediate and future needs, as many that I have seen do not have the power needed when the user grows, and worse make it difficult to take data to another package when an upgrade is required – not so with Works.

The word processor is excellent, far more powerful than WordStar even if not as powerful as Microsoft Word. The spreadsheet is fast and powerful, and can read and write Lotus files even if the functions are not completely compatible. The communications module is good, offering autodial and answer, compatibility with Hayes modems, and file transfer using ASCII and Xmodem. The database is adequate, but is the least impressive of the modules. It will allow the user to maintain quite large collections of data and transferring the data to other modules or other packages is easy.

Works' ability to mix data from the various modules is excellent, and being able to insert charts form the spreadsheet or data from the database into a wordprocessor document could be a godsend. If one was merely buying a word processor or spreadsheet with the capabilities of those in Word, value would be very good. To get both the word processor and the spreadsheet, plus a database and communications, is truly excellent value □

Product Details

Product: Microsoft Works
From: Microsoft, 1 Skyline Pl, Frenchs Forest 2086 NSW
(02) 452 0288 **Price:** $392 IBM version, $563 Macintosh version
All prices taxed. Please note Microsoft's new address and phone number.

T/MASTER

master of the tables

THERE ARE FEW truly integrated programs combining great numerical, statistical and word processing skills. Load up a word processor and you are, more likely than not, reduced to arithmetical calculations at a kindergarten level. Load up a spreadsheet and you can play with numbers to the *n*th degree – but try and write a letter in Multiplan!

Once you have moved the numbers into the word processed document, they are dead! They usually can't twitch themselves into the tiniest calculation. And look at the fate of words stuck into a spreadsheet! They are imprisoned in narrow columns and can be edited only with difficulty.

Many computer users dream of a program where they can call up documents at any time, re-edit them, change a figure and recalculate, all within the same document, letter or report without shifting to other 'frames', 'modules' or 'programs' They don't want dead, static, numbers in reports that need to be rejuvenated in a separate spreadsheet. They want *living* numbers within their documents.

T/Master

Enter T/Master, short for 'master of the tables'. (Don't despair if you have an 8-bit computer since there is an earlier, nearly as powerful, version called T/Maker which runs on both 8- and 16-bit machines.) If you use numbers and statistics *and* have to write reports *and* maintain a database, then this program deserves your very serious consideration

T/Master turns your screen and memory into a 'chalkboard' where all data entered in your current 'document' can be manipulated by word processing, spreadsheet and database commands without exiting to other modules or frames.

For example: you can start off a report with text then type in a table of, say, weather statistics, including command lines, complex formulas and references, including other documents It will do the required calculations and turn the results into a stacked bar graph. Then enter a table of costs of insulating your home, which will be automatically tallied to get subtotals and total costs. Finally, enter formulas to make it calculate statistical relationships between weather statistics and insulation costs and enter this in your conclusion. You can do all this without leaving the word processor!

The idea of integrated packages is great – one package does all. But most have one strong 'module' and the rest are just adequate. Jan Roberts has mastered a package that's all strength!

If at any time you want to update your report, just edit in new figures as in any word processor, drop down to the command line at the bottom of the screen and tell it to 'compute' The document is then updated.

This program has no need of esoteric codes – it uses words like Get, Insert, List, Tally, Merge and Compute. You can set up batch files that automatically recalculate your document, merge data files and construct bar graphs all with Compute.

You can set up your own single-word commands, and write your own menus to help novices through more involved 'chalkboards.' It is a programming language that nearly anyone can learn. Just think how you could use it. You could set up self-calculating letters to be sent to clients – mailmerge and calculate all at the same time. You can even make your documents tamper proof by protecting your in-built calculations from secretarial errors.

Getting Started

T/Master is not copy protected and is supplied on two disks. Once installed (a simple procedure), typing 'tm' brings up the opening screen. The top line instructs you how to move around the 12-item menu which has all plain language commands such as Edit, Create, Save, Delete, Print and Help.

The cursor keys operate only within a document you are editing so they cannot be used for moving around the menu. (I would like the alternative of toggling the cursor pad over to the menu with, say, Esc or Alt.)

If you're asked to provide a file name, you can specify it by wild card. Appropriate file names are then listed and you select the wanted one with the function keys. The menu can be toggled with MENU! to give more screen room.

The bottom two lines of the screen are for typing in commands as an alternative to using the menu on top. Whole strings of commands can be chained and these command lines can be stored in the document itself in a form that will not print out.

Stored command lines

If a string of commands is stored in a document, it can be invoked with the Do or Execute command from the command line (Do deletes the commands from the document, Execute doesn't). If you want to execute all the stored command lines in the file at once, you can either use the Compute command from outside the file or F8-C from within.

This allows you to set up a master docu-

ment containing all the needed command lines. You can then enter fresh data at any time, Do all the stored commands and have a clean file ready for printing out.

Power zones

An area of a document can be set aside as a calculating or graphing scratch pad (or Zone). F7-Z starts the Zone and F7-E ends it. The rectangular Zone is highlighted on the screen.

Within the Zone, calculations can be made on one line, vertically, or even snaking across the page. The Zone has a range of mathematical operators including sines, arctangents, discounts, log base, averages, reciprocals and so on. The results can be turned into a bar graph of varying widths and forms by pressing F8-B!

Or, a Zone can be used to change the typeface or format of a block. F7-T allows you to define the new typeface, F7-Left Arrow left justifies all text in the Zone; F7-Right Arrow, right justifies; F7-Down Arrow, centres.

Fonts-y editing

The editing commands with T/Master are unique and take some getting used to: for example, Ctrl-End moves the cursor to the prior word and F10 deletes the current line. It is easy to change fonts when editing. You can put the cursor over a character in the font you want and 'pick up' the font for for use elsewhere (with Esc-=) or you can order the font by number (Esc-5 gets font 5, for example).

It's possible to drop the date or time into a file with an Esc-D or -T. You can even set it to drop in the date and time when the file is printed out. Page and footnote numbering are automatic.

It has powerful margin controls. You can type in different kinds of margins into the same document. For example –

```
<<center                                    >>
```

This will centre all text until further notice. The arrows set the margins. You can right justify or left, fix an indentation for the first line or leave it free to start anywhere – all with the appropriate word between the arrows. If you say 'justify' it will straighten the right margin, if you say 'micro', it will use micro-dot spacing to justify the right margin (necessary if you are using proportional spacing). There are function key alternatives – F5-R for Ragged, -J for Justified, -M for Microdot.

You can tag a margin line with a name so it can be called up later, change just one margin, recall a margin and simultaneously change one of its characteristics.

```
Edit or Update    Get              Create           Save
Active Drive      Files index      List file        Delete
Print             Stop             Help

  using menu                  * MAIN MENU *
 Edit or Update   Enter or Edit text or data in a workfile. (Also type E.)
 Get              Get a file from disk.                     (Also type G.)
 Create           Create a new working file.
 Save             Save a file to disk.                      (Also type S.)
 Active drive     The disk drive where files are created or retrieved.
 Files index      Index of files on disk.
 List file        List or type file to screen.
 Delete           Delete a file from disk.
 Print            Print a file.
 Stop             Return to operating system.
 Help             T/Master help.

Press any key to continue...

1/1  What next?
```

Figure 1. T/Master's Main Menu.

```
PRINT : F1, F2 move in menu; F3 select; Esc H for help.

Finished selecting  From page        To page          Multiple copies
Print to disk       Double space     Number pages

      using menu                * PRINTING OPTIONS *

 Finished selecting  Move on to final print menu.
 From page           Print from page number ...
 To page             Print to page number ...
 Left Margin         Indent document this number of spaces for printing.

 Multiple copies     Print multiple copies.
 Print to disk       Print file to disk (instead of printer) under new name.
 Double space        Double space entire document during printing.
 Number pages        Put page numbers at bottom of printed pages.

Press any key to continue...

1/1  Select options or type 'end' to continue:
```

Figure 2. The print menu and its context sensitive help screen.

Power printing

The Align command reorders the text according to the margin lines inserted. Margins do not adjust until you use this command – or the alternative F5-A to align the current paragraph, Esc-F5-A to align the whole file. You can have multiline headings and footings – and different ones for odd and even pages. You can even order these to remain inactive until a certain page number is reached!

There is a versatile Print command which allows commands like 'print double copies 4' that would double space the printout and do 4 copies 'Print contents' would just print out lines containing to disk, adding a page number each time – an easy way of doing a contents page. You can select scattered pages to print out using the Page Skip command. Esc-P at any time will print out the current file Esc-F-P will print from the cursor forward

There is a host of design commands similar to the dot commands in WordStar. Some of these display a great sense of humour. For example, >RAW prints all design commands and tab characters as plain text, >RARE operates merge documents (CONTINUE) commands but prints all other commands. Finally .COOKED terminates .RARE and .RAW commands!

T/Master has good mailmerge abilities using databases either within the file or elsewhere on the disks These include mailmerging instructions such as CONTINUE filename (moves to another file and continues) and PAUSE MESSAGE (halts until a key is touched and gives a message).

List management

A list can be Tallied, Sorted, Counted and Tabled. Tally is a great command which subtotals a list by item names and finally totals up – it's great for sorting out purchase lists, housing contents insur-

ance, statistical surveys and more. Columns can be Arranged into different sequences

You can Sort by ascending or descending order, Sort just characters or numbers, or Sort by dates or times. You can tell it to Sort from the top line of the screen down, or only predefined sets of lines

Saving

Save comes in many different forms. Asave saves in scrubbed ASCII format without control codes (useful in moving files to other programs), Ssave (Super save) preserves everything, modes, margins, right down to cursor position which is marvellous for files you have to continue editing. Save is the normal vanilla save; Hexsave is for programmers – all characters in the 'hex font' are converted to single bytes on disk.

If you wish to keep your work confidential, 'Mix' it with a code word. The coded document is in all ASCII characters, not just alphabetical. But, in the friendliest way, you can record a clue to help remember the code word: for example, Captain could remind you the code is Moonlight.

To individually check a word, set the cursor on it, type F6-D, and it will look up the word in its 52,000 word dictionary and list alternative spellings. I checked the word 'flipp'. Up came flippancy, flipped and flipper – but not flip or lip. Overall, the spelling checker is powerful, but much too awkward to use and certainly has shortcomings

Database

It is really simple to set up a T/Master database using the menu at the top of the screen. Select Create from the menu, then select Database on the next menu It sets itself up for entry of field names and characteristics in a colourful format. You enter the name, Tab to the field length, then to the instructions. You can write up instructions using the field names such as 'unitcost = COST/NUMBER A field is limited to one line and will not automatically expand with the data you put into it.

But, you can put in instructions to draw information from other databases, you can give conditional instructions, and you can Scan 14 records at once and change rules and formats – you have full editing facilities as in the word processor. If you add fields, change instructions or move lines, then Process will update the recorded format

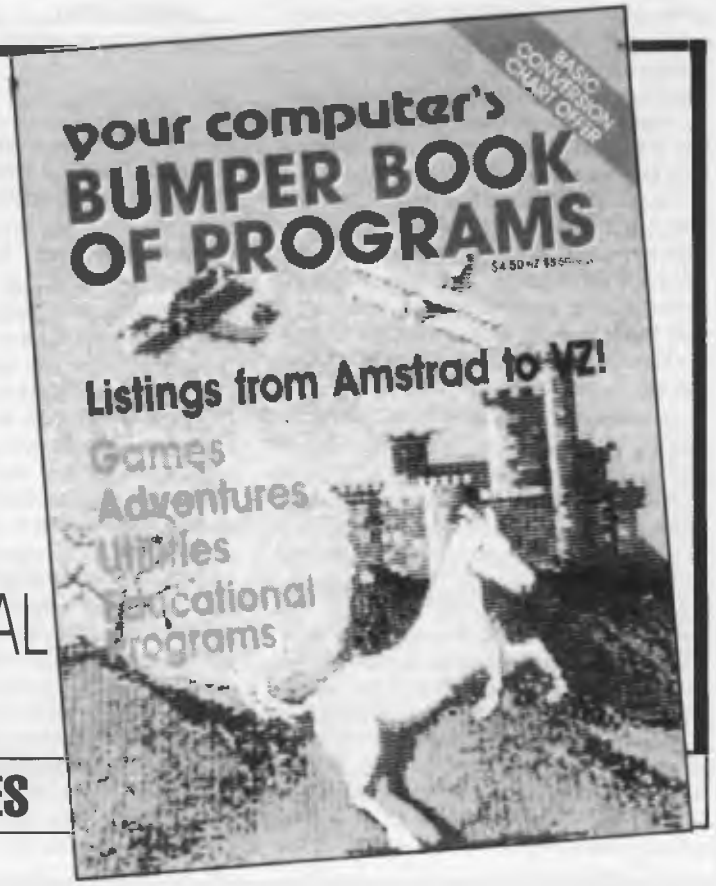
It's easy to create an index for your database Just enter 'Index databasename index-field'. Records can be Ordered by ascending or descending order, by dates or by times You can Select records from a database (using conditions like 'when'), create new Total records, Drop non-totals records, Group records by selected fields, producing summary reports for sub-categories

You can even draw data out from the database and enter it into a table format using the Table command with many automatically carried out calculations You can Unload data onto disk selecting it through a Mask Reports can be made and inserted in your main document in a chosen typeface and format

Spreadsheet

Using T/Master you can draw up a spreadsheet or table to suit your requirements that is fully integrated into a report or a letter to your bank manager You define your own columns exactly where you want them (except flush against the far left margin for the first 15

your computer's
BUMPER BOOK
OF PROGRAMS
LISTINGS FROM
AMSTRAD TO VZ!
• GAMES • ADVENTURES
• UTILITIES • EDUCATIONAL
PROGRAMS
ON SALE NOW AT NEWSAGENCIES



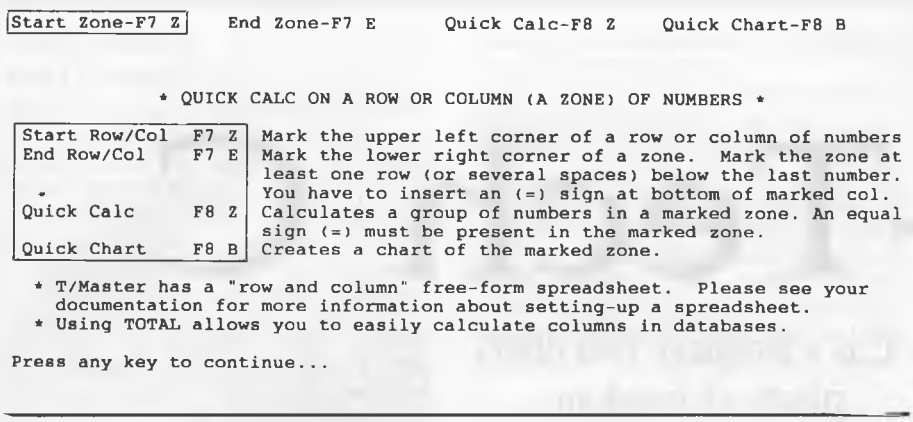


Figure 3. In T/Master, an area of the document can be defined as a Zone for scratchpad calculations or used as a free-form spreadsheet.

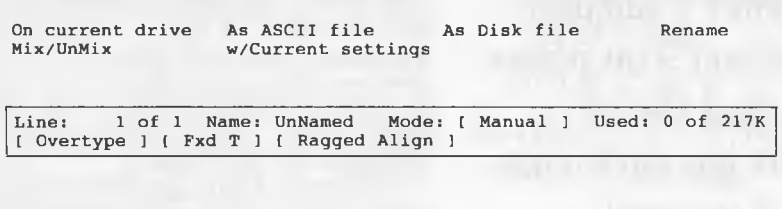


Figure 4. T/Master offers the choice of saving the file 'as is', in ASCII or Hex format, or Mixed (encrypted).

spaces on each line are reserved) A column definition line looks like this –

```
columns  xx;xxx   xxx;xxx   x;xxx;xx
```

The *xxx*s define the position of the column, the decimal places and the numbers of digits. The columns can be named in plain English and referred to by these names in your formula!

The first seven spaces on the left of the spread sheet are reserved for vertical calculation strips. You can put in + and = signs and so on here – and even subdivide these seven spaces so they each operate on only certain columns in the table. The next eight spaces are reserved for explanations and formulas.

A great number of mathematical and statistical functions are available plus a number of unique features – Esc-S will colour in the columns making it easy to enter figures, Esc-F will Freeze all to the cursor's left and above it, making it easier to scroll figures without loosing column headings.

Talk

There is a Talk command for telecommunications via a modem that has been newly added to the program. You can call up telecommunications from any file you are editing or from command lines. Talk can be set to work automatically using preset parameters or to work manually – Talk Filename will initiate automatic use of the parameters and instructions stored under that Filename including automatic dialing of numbers.

You can send characters as you type them or define an area of the screen for a local edit. This allows you to prepare a block of text using the full word processing facilities and then to send it simply by pressing Return.

T/Master offers an excellent method of setting up business systems tailored to particular needs. This is particularly easy because command lines can be integrated into documents and operated sequentially with the simplest of commands.

One command line could, for example, load data from several databases alongside newly entered data in a new table, construct a bar graph, summarize the results, insert them with the bar graph into a report and mailmerge it with a selected list of addresses. With wonderful plain English commands available, no prior knowledge of programming is required

I am sure anyone who has to work with statistics, financial calculations or basic data and integrate this with general word-processing would find T/Master absolutely marvelous. □

UPGRADE

T/Master has been upgraded from Version 1.29 to 1.61 and now has even more power. The upgrades are compatible with previous versions and cost a nominal $75.

Graphics

T/Master can now make 8 different kinds of charts from any set of figures These include pie, point, radar, three kinds of bar and two kinds of line charts.

All manner of displays are now supported and drivers for an even larger number of laser printers and ink jets are also included. (You really need an EGA screen and a high density printer to appreciate the graphics.) Graphics generated with a Macintosh, ClickArt, under GEM, Windows, PC-Paintbrush and a number of scanners can now be read and integrated with T/Master files.

Printing

It's now possible to create a graphic picture index and call files from it when printing with a 'graphic picname' command

Another enhancement which moves T/Master towards a fully integrated desktop publishing program is that text will now automatically flow from the bottom of one column to the top of the next with up to nine columns on one page (only when printing out, however) Also, headings can be set to go across more than one column, even in the middle of a page.

The package now comes with a printer control language allowing up to 10 densities to be defined according to the capabilities of your printer, to print graphics and text at different densities, and send escape sequences to instruct the printer

Telecommunications

You can now load or edit T/Master communication script files that will fully control a smart modem (or work a StupidModem, like mine!) For example, you can tell it what parameters to set, then to dial a specific bulletin board, and give an error message if it can't connect; if it can, the script file waits for the request for your name and then supplies it; it then waits for the password request and supplies it (from another, encrypted file, if you want secrecy) and then steps automatically through up- or downloading a file using your favorite protocol.

Product Details

Product: T/Master V3
From: T/Maker Co, California
Distributor: The Computer Factory, 214 Harbord Rd, Brookvale 2100 NSW (02) 938 2522
Price: $595 taxed

Hi-Tech C

C is a language that offers plenty of freedom – and it has advantages as a beginner's language, as Jonathon Scott points out (and Hi-Tech's compiler has advantages of its own).

FINDING A REVIEW of a software product that answers *your* questions can be difficult. Either you ask someone who is not familiar with the software, and who is not likely to be able to devote enough time to using it to give a full and faithful report, or you ask an already dedicated user, who will inevitably be biased towards whatever angle suits his or her application.

This review comes another way; I work with a variety of computers and their users, but am not a dedicated C person Further, the need arose to recommend a compiler, so some time was to be spent assessing some choices. It is hoped that this has resulted in comments that will be useful to a lot of people

This review came about with the assistance of Nick Repin, Greg Kable and numerous other associates who I would like to thank for valuable discussions

Another language?

There is no shortage of computer languages apart from C ' Basic, Pascal and Forth thrive; Prolog and Lisp have followers for their special properties; Cobol, and Fortran linger; Occam and Ada are on the way; Algol and HPL are still around ' to name but a few. Assembly and microcoding approaches will probably be appropriate on occasion for years to come. Why introduce another?

Well, one reason is that languages become obsolete. New ideas and conceptual advances which are not conveniently retrofitted, as well as hardware advances, combine to make languages 'dated' and relatively slow. Also, specific hardware or specific tasks (such as multiprocessors or artificial intelligence problems) can demand different languages.

C was created to allow Unix to be written. Hence C is designed for use by computer scientists, not occasional users, so it offers great power and much freedom, but makes demands upon the skill of the user, providing minimal checking. C was designed to get 'close to the machine', but to remain transportable, so that programs can be tightly implemented but also moved to new hardware with a minimum of fuss. It arranged to have a small 'kernel' of built in functions, and a large, growing library of higher level extensions.

These aims have produced a language with a distinctive flavour and a definite purpose. Being potentially 'close to the machine' has the advantage that the compiler ought to produce code approaching assembly language code for compactness and speed of execution. Possibly only Forth can offer comparable performance to a good C compiler's output.

For instance, C allows variables to be declared as 'register', which tells the compiler that the variable is to be used a lot and is to be stored where it can be accessed quickly.

The proximity of the compiler to the machine also means that if the programmer must tinker with the hardware directly he or she can, albeit at the cost of transportability. (This might, for instance, be required to speed up access to a graphic interface whose operation via the operating system is unacceptably slow.)

Since C is a compiler of the multipass type, it offers the opportunity to connect at the assembly or linkage level with code from other sources, and ease of transfer to different machines, or production of a range of cross compilers. (A cross compiler is a compiler which operates on one machine, but produces code for execution on a different machine.)

C can build to complex functions using extensive libraries. In contrast to reaching a low level, C can also incorporate high level functions, such as hyperbolic trigonometrics and their inverses or comprehensive file operations. A library of subroutines and blocks of code that are built up during a large project, can be incorporated into the compiler.

This pattern of building up the software library, which is expressed so explicitly in Forth by the definition of words and so vaguely in many versions of Basic as subroutines, fits naturally into C Indeed it provides much of itself in this very form, as many of its common parts are actually written in the small kernel of commands which are the irremovable heart of C. These inner definitions may never be seen by the programmer, because in one or more of the compilation passes, it diligently translates the 'high level' definition into its low level equivalent

Most beginners start with Basic, but C is suitable as a learner's language for a number of reasons. Basic has far lower ultimate performance ' growth to commercial power is not a path for which Basic is suited, as few real world companies use it C on the other hand is common. Basic is not well standardised, so the transfer to a new machine can take away a lot of the built up base of code Local versions of Basic can be very isolated C is *highly* standardised, so what you learn will remain useful to you for a long time. If you change (upgrade) computers, your skill and your programs can go with you. When you learn C, you must also learn about processors and operating systems. This knowledge takes time to acquire, but it is something any professional software person must eventually tackle.

Because of its structure and the availability of a variety of forms, such as local variables, C inherently lowers the bug rate in code produced by a programmer.

What makes a good C compiler?

Before discussing Hi-Tech C specifically, I would like to examine just what attributes a compiler may possess which might make it better or worse than another. In other words, let's define the things to look for in a compiler.

Code density is simply the measure of how small an executable file is produced when the C statements are compiled. It is not quite this simple, as one compiler might produce a larger executable than its competitor for a small program, but a smaller or comparable executable for a large program. Nevertheless, executable size is important Half the motive for C's low level extreme is the ability to generate compact, fast code.

Code execution speed is the other side of code density. Executable size and executable speed are often in competition as aims, but together they say a lot about the tightness of a compiler Execution speed is critical in any real-time application, and many languages are rejected for a task on this basis. Forth and C specifically aim at performing in this area It is C's ability to handle this speed as well to tackle large tasks (such as operating systems) which constitute much of its appeal

The compiler execution speed might seem very secondary a property. However, if you are a 'business' user, you pay for the time a programmer sits and awaits a compilation, and if you are doing a quick test to see which of two possible paths is better, it is possible to forget what you were doing if the test forces you to go away and kill time, so do not underestimate the degree to which compilation speed can impair efficiency.

Expression complexity is a rather interesting property of a compiler. In Basic there is a line length as well as a stack length, both of which can prevent an expression being evaluated. In C it is possible to ask the compiler to nest too deeply, to have a line which must be broken down in order not to be too complicated to compile. This limit should be large enough that only the most intricate and incomprehensibly deep expression is thrown out.

A compiler can be a 'native compiler' or a 'cross compiler', depending upon what operating system it runs under (what computer you are using), and for what operating system or CPU it is compiling code to run on. The term 'cross compiler' implies that the host and target are different, which is to say that you are writing a program on one computer which is designed to run on a different one

It is not only good to be able to buy whatever you need, but it is often nice to be able to buy exactly the same C for another situation. Every new machine for which or on which you can use a compiler is another machine with which your skill and your programs can quickly be used, so the range can be very important if you ever wish to upgrade or add to your machines.

We said that speed and size of the compiled output can compete to some degree

Most beginners start with Basic, but C is suitable as a learner's language for a number of reasons.

Compilers usually offer optimisers which put one of these two ahead of the other, in case you are short of time or space in particular. The optimisers will have properties such as effectiveness, speed and so on themselves.

Compiler size will be significant if you don't have a lot of memory. On a virtual-memory-supporting machine, the bigger the compiler's required space, the slower it might have to run, because of the increased I/O. On a small machine (for example, CP/M systems) the compiler will have less memory to play with anyhow.

Support of archaic functions, and of the latest standard forms, is important. This comes into play if you receive a source code file and need to compile it on your machine. It is not pleasant to have the thing tell you it does not know some new or old word, especially if you don't know it either, because getting around this is time consuming.

Compilers can offer a host of very useful functions local to that compiler, or local to an operating system upon which it is running. These are great if you don't need to maintain transportability, but must be avoidable if you have to keep it. Thus the alternative tools are best provided too.

The Unix operating system is unusual in that it regards all things connected to the computer as equivalent 'files'. Therefore, the keyboard is a read-only file, the screen a write-only one and all peripherals just look like files on some imaginary storage medium. Typing a file becomes copying it from one place to another. This insulation of the program from the awareness of what a device is provides a useful flexibility. A C compiler ought to offer this same insulation in the interests of transportability of applications.

Documentation

Documentation is probably the most important attribute! The library needs to be carefully described and easy to refer to. Local operating system parts must be flagged and discussed. Finding out how to cope with some special attribute (such as ROMmability of code) should be easy with the documentation.

If you have an application which demands interaction with low level code from other sources, adherence to the standards of the machine may be important. For instance, use of assembler mnemonics defined by the maker of the CPU in a computer can be critical for assembly mating of code from one compiler and another.

Compilers provide some sort of assistance in debugging the executable code. In Basic, when it is interpretive rather than compiled, debugging is simple, because the program is translated into executable machine code line by line. Some debugging tools are very flashy The opposite end of the extreme is simply to step through the executable code, find the bug, and then try to work out where in the high level statements the error has been made

Hi-Tech C

With its code density Hi-Tech C seems to have the competition at bay. Tested, admittedly only on smallish applications, and against only three other handy compilers, it gave executable files as little as half the size of the alternatives, and never as big This is suspected to be not only a result of the compiler's claimed 'sophisticated code generation strategy' but good library and link management Full marks.

It is difficult to comment on its code execution speed here with a limited specific comparison. There are very few people who can offer an objective comparison between Hi-Tech and any other compiler, for the simple reason that almost no professionals have spent time compiling the same code on the same machine with two different compilers! Although, Hi-Tech code is said to be fast by many of its users.

I ran some simple programs, and felt

that it was not significantly different ' not enough to dare to draw conclusions. I can say that it does not suffer from any stupidities that might force down the speed. It seems safe in the circumstances to take the word of the company's own descriptions which boast the use of methods that ought to ensure fast executing code I doubt anyone would complain about the execution speed.

The compiler was found to be very much limited, on the jobs we tested, by I/O. Where there was a compiler available on the same machine for comparison, I found it to be rather heavier on disk usage, and thus slower This could be a significant problem on machines which do not have a hard disk.

With IBM-type PCs, the speed of the (hard) disk, the clock speed and the RAM speed all vary with maker and model and cost. For instance, some Taiwanese AT-clones, boasting a fast clock speed, perform dreadfully on account of having slothful disks and slack RAM Execution speed is not proportional to clock speed, necessarily. The overall variation, often an order of magnitude, swamps the edge a compiler may have on everyday tasks

I had trouble with expression complexity only on the CP/M (Z80) version. A routine which Aztec C could swallow proved to overwhelm the Hi-Tech compiler. This is embarrassing, but not serious One must recall that C is a language for larger machines, and is only ported to CP/M machines as some sort of concession, as far as this reviewer can see

Aztec C actually allows table sizes to be controlled as an option This presumably indicates some concern over the problem, but then the version of the the Aztec compiler used was tailored carefully to CP/M.

Range of Hosts and Targets

Hi-Tech gets full marks here too. Available target processors include Z80, 64180, NSC800 (Microbee); 68000, 68010 (Apple Mac, Amiga); 8086, 80186, 80286 (PC); 65816 and 8096 Host operating systems include CP/M-80, MP/M-80 (Microbee), CP/M-86, TurboDOS, PC-DOS, MS-DOS (PC), Concurrent DOS, Atari ST, Unix, Apple IIGS and Amiga.

Hi-Tech offers an optimisation pass which the manual indicates defaults to space optimising It has a speed-optimising sub-option, which it is claimed helps on function entry, and is thus useful for cases of frequently called functions. The manual is rather misleading on this. In one place it suggests that the optimiser is optionally omitted, but it is as elsewhere suggested, optionally invoked

Some compilers do not make any optimisation choices available. However, some programs tried with this one showed no significant reduction in size Some programs exhibited quite noticeable reductions which were evident by viewing the intermediate assembler files It is difficult to know just what to conclude here, as C is a fairly tight language in itself, and optimisation not likely to reap large rewards in space. It could be expected that speed may be obtained in exchange for space by 'flattening out' subroutines into in-line code, though the gain might be small.

I suspect that the optimisation provided here is simply a 'peep-hole' type, which operates by adding another pass to the compiler, and merely reaping what optimisation benefits follow from having the further pass, for instance optimisation of jump instructions and so on On the whole, this optimiser does not give the impression of being particularly potent

Hi-Tech's compiler, especially the CP/M version, is comparatively large. There are bits you can do without, but it is better to have more of the set of utilities available at the same time If you are running only floppy disks, this could become inconvenient. A single 386 kilobyte disk for the system, editor and C utilities is about the minimum that you would want to have to deal with, and that allows a second disk to carry the files you are editing.

Supported syntactical forms

Hi-Tech states in its literature that as soon as the new ANSI standard is passed, it will support it. (See for example *C Standard Library*, Jack Purdum and Timothy C. Leslie, Que, 1987.)

That's a bold statement, considering that Microsoft has started the incorporation already. It is worth noting that the price of the compiler includes one year's updates and guaranteed response support This with the promise of ANSI standard, looks good, and if the standard is in when you go to buy, you are well advised to check that this support is there

Hi-Tech does offer the basic library routines, and no more are required than are provided. In comparison, Microsoft C (under MS-DOS) already offers many library routines beyond the operating system specific ones, which Hi-Tech does not. These can be quite useful The price difference reflects the support extent Hi-Tech states that it does not support anachronisms.

Importantly, Hi-Tech C supports the usual low level Unix functions, which means that transportability is good. Hi-Tech indicates clearly when a function is specific to an operating system. The operating system specific routines are few, in comparison with those supplied with, say, Microsoft C

An argument in favour of this approach is mountable, of course, but it is very nice to have use of the vastly larger (if potentially more dangerous) library of Microsoft C. In regard to Unix functional mapping to local operating system, Hi-Tech has taken good care to see that the I/O mapping is sound

Documentation

The Hi-Tech compiler comes with an A5 ring-bound manual in two sections These are the section common to all versions, and a section specific to the version you have, which takes account of the operating system under which the compiler is to run. In common with other compilers the documentation is intended to be taken along with a C reference manual (The standard C reference manual is *The C Programming Language*, Brian W Kernighan and Dennis M Ritchie, Prentice-Hall, 1978.)

The documentation is quite good. It tells you most of the things you want to know, and it gives those examples which can be so critical to quickly getting familiar with a C function.

One must realise that C is a language which allows the programmer plenty of freedom ' with which to get into terrible problems C does virtually no run-time checking, such as verifying that array indices are not out of bounds. Hi-Tech C claims to give extended checking facilities which approach those of 'lint' (The lint program is a Unix utility for searching programs for bad or dangerous constructions, erroneous or missing usages of variables and so on It is rendered necessary by the lack of checking in the language itself.) Whereas Fortran will report an error for an incorrect type usage in a statement, C often does not Confusion of pointers and data in C leads to insidious run-time bugs.

There is no doubt that Hi-Tech C does give useful warnings, such as the failure to use a declared variable, but it is not what one might call a comprehensive checker This is not a criticism, for it is above the C requirement, but the new user should not be led into thinking that it offers total and instantaneous error checking like Hewlett-Packard Basic.

The documentation is comparable to that of a number of C compilers It is, on the other hand, far less comprehensive than that which Microsoft provides ' about one third the magnitude Hi-Tech's

bare bones approach is acceptable, but not the best that can be found

Assembler compatibility

The multipass format of C compilers includes an assembly level. Hi-Tech provides its own separate assembler for this level, appropriate to the processor on which the code is to execute. I did not have cause to use it as an assembler.

However, some users may need to incorporate assembly code from another source. Magazines are full of code that you might want to import. A problem presents itself here, in that the Hi-Tech assembler does not support the CPU maker's mnemonics. This means, for example, that Intel standard assembly source code may not assemble with the Hi-Tech assembler on an 8086-type machine

No statement is made in the documentation which indicates whether an Intel assembler can be used with the other passes of the Hi-Tech compiler or vice versa. This is a potential problem for anyone who needs to import code from other sources. All the other sources of assembly level code require painful modification to be of any use. Some people I spoke to thought highly of the Hi-Tech assembler itself, while others disliked it apart from its incompatibility.

Hi-Tech provides a debugger and its support features in the appropriate compiler passes. Microsoft offers whizz-bang debugger systems for its C on MS-DOS machines, such as Codeview. These provide full colour multiline displays and a whole lot of snazzy features. They are also terribly machine specific.

In the course of this review, one piece of code was found which seemed to be misbehaving, and which appeared to all who were consulted to be clean at the C source level. It has been passed on to Hi-Tech, although I have had no response as yet

Summary

The Hi-Tech package is professional, has produced tight fast code in applications being sold in Sydney, and is available for a wide range of machines Its price includes one year of updates, answers to questions by phone and guaranteed response to problem reports. As such, it represents excellent value

Microsoft C, regarded by some as a 'Rolls Royce' C compiler, costs, for a PC, considerably more than Hi-Tech C, and though it offers more, I am are inclined to think that the value is lower. If you are a business where the compiler cost is minimal in comparison to programmer's time, this might be a better bet For learning, small business applications and so on, Hi-Tech is probably the go, and I had no trouble eliciting statements to this effect from users

There is a lot to be said for using a company that is 'local', that is in the same country, apart from arguments about buying Australian. Local companies are much more likely to be able and willing to help you if you have need of this. Hi-Tech's pledge of support reflects its appreciation of this. □

Product Details

Product: Hi-Tech C
From: Hi-Tech Software
PO Box 103, Alderley 4051 Qld
(07) 300 5011
Price: CP/M $275; DOS $330;
Atari $275;
Apple (for CP/M card on Apple II) $274
All prices taxed.

GRAPHICS TECHNIQUES

So far we've covered the basic techniques of graphics and some simple Cad procedures, now let Miroslav Kostecki and Paul Vermeer a-maze you . . .

WHAT COMES to mind when you think of a maze? Confusion? Tunnels and passages everywhere? Too hard to understand? In fact, we also associate mazes with intelligence. It is generally accepted that the greater the intelligence, the faster a path will be found through a maze. Scientists create many mazes for animals of various types to test their reactions and intelligence.

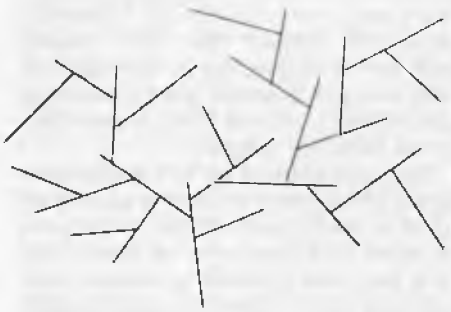


Figure 1. *The simplest of mazes – just like a tree, there's only one path between any two ends.*

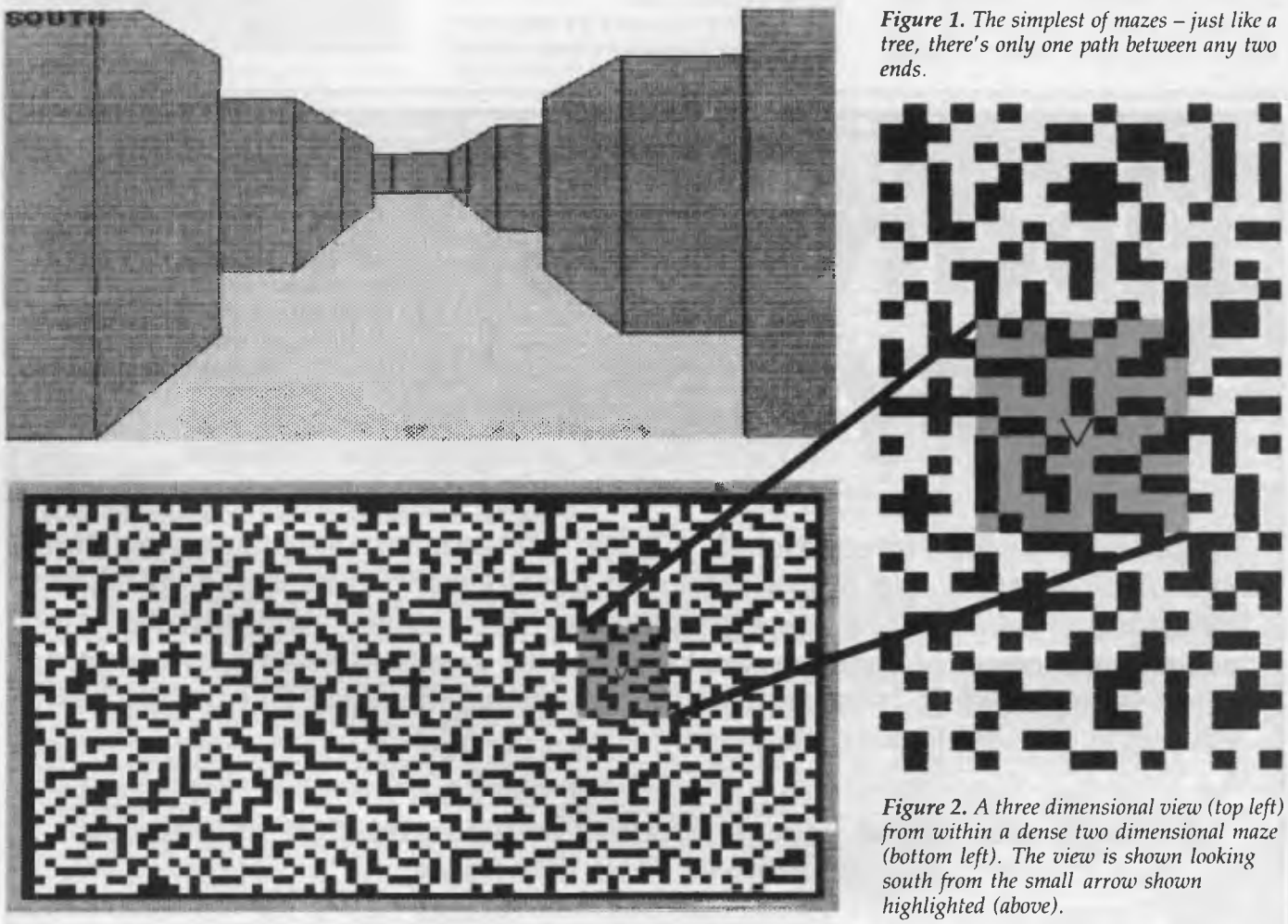


Figure 2. *A three dimensional view (top left) from within a dense two dimensional maze (bottom left). The view is shown looking south from the small arrow shown highlighted (above).*

For example, there have been many robot mice specifically designed and produced to find their way to a point in a maze, to advance the mechanical side as well as the intelligence side of robotics. Competitions are held every year or so to determine the fastest robot mouse to find its way through a maze. The fact is, mazes don't need to be confusing. When you understand what they are, and how to construct them, they become very interesting.

To start with, let's examine closely what a maze is. We know it is a complex network of paths or passages designed to puzzle those working through it. A similar system can be represented as a pattern of lines. They may range from round to square and include many shapes and sizes. One aspect common to almost all mazes is a connecting path which must be found between the beginning of the maze and the finish.

The perfect maze would be a compact, but easy to follow system of paths. It would have only one possible path from any point within the system to any other point, but with a path existing for every point. This type of maze may appear impossibly complex to be able to create in reality, but there is a simple technique which produces it.

Branching

First lets look at a system which already exists and has the above 'one path through' characteristic. For this we would just have to look at any tree. Notice that from any branch on the tree, to any other branch, there is really only one path. You simply move along the branch to the trunk and from there to the other branch. Look at a tree and try it for yourself, but make sure no one is watching you!

This type of branching can now easily be transformed into a simple procedure. To demonstrate this concept, simply draw a line on a piece of paper. From this line you then branch off in any direction. If you keep adding branches just anywhere and do not cross them over, you will have produced precisely the same kind of branching as on a tree. Notice that these branches are all the same width, the width of the pen, so that it is much harder to find your way from one branch to the next.

In replacement of pencil and paper, it is a simple matter to convert this procedure to computer – see Figure 1 Previously we have used straight lines, since the

```
100 ' MAZE DRAW. (c) 1988, Living Image
110 ' ____________________________________
120 '
130 'Setup screen 320 x 200 and array
140 MODE 1: DEFINT a-z
150 DIM j(2000),k(2000)' arrays for starting points
160 CLG 1 ' Clear graphics screen to ink 1, black.
170 '
180 'Draw outer edge in ink 3
190 FOR i=0 TO 10
200 PLOT i,i,3: DRAW 639-i,i
210 DRAW 639-i,399-i: DRAW i,399-i: DRAW i,i
220 NEXT i
230 '
240 'Overall starting point
250 sx=INT(RND*20): sy=201-sx*8: sx=sx*8+239: s=0
260 x=sx: y=sy
270 PLOT -10,-10, 0 ' Change plotting ink to 0, white
280 '
290 'Construct Maze
300 j(s)=x: k(s)=y: s=s+1
310 GOSUB 490' put square
320 le=le+1: IF le>20 THEN 430 'length >20 end branch
330 d1=0
340 a1=TEST(x+8,y-8): a2=TEST(x+8,y+8)
350 a3=TEST(x-8,y-8): a4=TEST(x-8,y+8)
360 ON 4*RND GOTO 380,390,400
370 d1=1: IF TEST(x+16,y)+a1+a2=3 THEN x=x+8: GOTO 300
380 IF TEST(x,y-16)+a3+a1=3 THEN y=y-8: GOTO 300
390 IF TEST(x-16,y)+a3+a4=3 THEN x=x-8: GOTO 300
400 IF TEST(x,y+16)+a4+a2=3 THEN y=y+8: GOTO 300
410 IF d1=0 THEN 370
420 'select new branching point from those stored
430 IF s=0 THEN 540
440 s=s-1: m=INT(RND*s)+1: le=0
450 x=j(m): y=k(m): j(m)=j(s): k(m)=k(s)
460 GOTO 330
470 '
480 'Wipe a small block out
490 PLOT x,y: DRAW x+6,y: PLOT x+6,y-2: DRAW x,y-2
500 PLOT x,y-4: DRAW x+6,y-4: PLOT x+6,y-6: DRAW x,y-6
510 RETURN
520 '
530 'Put Finish and Start
540 x=619: y=INT(RND*10)*8+22
550 IF TEST(x-8,y)<>0 THEN 540
560 y=y+2: x=x+4: GOSUB 490: x=x+8
570 GOSUB 490
580 x=27: y=INT(RND*10)*8+206
590 IF TEST(x+8,y)<>0 THEN 580
600 y=y-6: x=x-12: GOSUB 490: x=x-8
610 GOSUB 490
```

Listing 1. *Maze Draw is a simple but efficient routine for drawing a two dimensional maze – it uses the Test command to test points on the screen and a branching point array of 2000 points.*

branches on a tree are usually fairly straight. However, if we use crooked lines instead, our lines will form more of a maze. It then becomes an arduous task to find the correct passage through. Of course, the lines still must not cross or touch other branches. Each branch still touches another only once.

On a computer, a maze is usually constructed by first drawing a grid of small boxes over the screen. An array is set up to store the state of every edge on the grid. Now as the edges are taken away, a passage is constructed along the boxes. Branching is made by forming new passages off the old ones. The computer can check if a passage exists by checking the array which is changed as the passages are constructed.

Amazing improvements

A major consideration in the construction of mazes is where the beginning of the first branching is going to occur. This point would be picked randomly, but far away from the start and end points. The beginning and end should be as far from each other as possible to increase the length and difficulty level of the path.

Notice, too, that while a very large maze takes much longer to construct than a small one, it will be much more difficult to traverse. The size of the maze is normally limited by the screen resolution and memory capacity, as well as the speed of the computer.

Instead of using an array, the computer can simply check the state of the screen using a screen test command. This eliminates the need for arrays. Using the screen to test the maze also means that very large, complex mazes can be constructed on a high resolution graphics screen and little memory is being used. Array storage can be very heavy on memory when large, complex mazes are constructed

Another big improvement is to do away with the grid system all together and simply construct the maze 'freestyle' This enables a more complex maze to be made in a smaller space. A different checking system though, is obviously needed to scan the screen for other passages already constructed. However, with greater complexity comes a problem: the computer will have to work harder to find suitable branching places No need to worry though, this is overcome with the next, most important improvement.

Many maze generating programs simply sample random spots in the maze to find a branching point which is suitable. This causes huge delays, especially when the maze has nearly filled its allotted space and there are few branching points left. There have been many methods to overcome this and the following one seems as good as any other.

As the paths are constructed, block by block, the computer stores every point of every path. Then when the current branch stops, the programs simply picks a branching point out of the array and either starts from there, if it is legitimate, or eliminates the point out of the array and reduces the number of stored points. When the array runs out, then there are no more possible branches and the computer has completely filled the space.

It seems that with this branch/storage method an extremely large array of points will be needed, but in reality an array of about 2000 points is usually enough. When the 2000th point is stored, then the current branch stops and many of the old, useless positions are thrown out before another branch begins.

The program given in Listing 1, Maze Draw, uses all of the improvements described so far It uses the Test command to test points on the screen and a branching point array of 2000 points. A larger array may enable the program to proceed faster. Carefully type the program into your computer and observe how the array

```
1000 '---Turn Maze into 3D display-----------------
1010 '
1020 ' Load maze into array
1030 DIM x(15),t(15),b(15), m(80,50)
1040 FOR i=0 TO 80
1050  FOR j=0 TO 50
1060   m(i,j)=1
1070   IF TEST(i*8,j*8)=0 THEN m(i,j)=0
1080  NEXT j
1090 NEXT i
1100 '
1110 ' Calculate perspective points and store
1120 dx=250: tx=280: bx=400: x=-dx/3
1130 x(0)=x: t(0)=250+tx: b(0)=250-bx
1140 s!=1.62
1150 FOR i=1 TO 15
1160 dx=dx/s!: x=x+dx: x(i)=x
1170 tx=tx/s!: t=250+tx: t(i)=t
1180 bx=bx/s!: b=250-bx: b(i)=b
1190 NEXT
1200 '
1210 ' Setup display
1220 MODE 1: INK 0,13: INK 1,0
1230 BORDER 9: INK 2,5: INK 3,20
1240 x=RND*50+10.5: y=RND*30+10.5
1250 IF m(x,y)<>0 THEN 1240
1260 PLOT -10,10,1
1270 dx=0: dy=-1
1280 '
1290 ' Main loop; display & wait for key presses
1300 GOSUB 1470 ' redraw 3d
1310 LOCATE 1,1
1320 IF dy=-1 THEN PRINT "SOUTH";
1330 IF dy=1 THEN PRINT "NORTH";
1340 IF dx=-1 THEN PRINT "EAST";
1350 IF dx=1 THEN PRINT "WEST";
1360 IF INKEY(0)<>0 THEN 1390
1370 IF m(x+dx,y+dy)=0 THEN x=x+dx: y=y+dy: GOTO 1300
1380 IF m(x+dx,y+dy)=1 THEN SOUND 1,300
1390 IF INKEY(8)=0 THEN tt=dx: dx=dy: dy=-tt: GOTO 1300
1400 IF INKEY(1)=0 THEN tt=dx: dx=-dy: dy=tt: GOTO 1300
1410 IF INKEY(2)<>0 THEN 1440
1420 IF m(x-dx,y-dy)=0 THEN x=x-dx: y=y-dy: GOTO 1300
1430 IF m(x-dx,y-dy)=1 THEN SOUND 1,300
```

```
1440 GOTO 1360
1450 END
1460 '
1470 ' 3d Redraw Subroutene
1480 CLS
1490 dist=1
1500 xx=x+dx: yy=y+dy
1510 WHILE m(xx,yy)=0
1520 dist=dist+1: xx=xx+dx: yy=yy+dy
1530 WEND
1540 IF dist>15 THEN dist=15
1550 ' vertical lines
1560 FOR i=1 TO dist
1570 MOVE x(i),t(i): DRAW x(i),b(i)
1580 MOVE 640-x(i),b(i): DRAW 640-x(i),t(i)
1590 NEXT
1600 ' horizontal at end
1610 MOVE x(dist),t(dist): DRAW 640-x(dist),t(dist)
1620 MOVE x(dist),b(dist): DRAW 640-x(dist),b(dist)
1630 '
1640 FOR i=0 TO dist-1
1650 '
1660 'find block on left side
1670 IF dy=-1 THEN m=m(x-1,y-i)
1680 IF dy=1 THEN m=m(x+1,y+i)
1690 IF dx=-1 THEN m=m(x-i,y+1)
1700 IF dx=1 THEN m=m(x+i,y-1)
1710 '
1720 'draw horizontal if a passage exists
1730 IF m<>1 THEN 1770
1740 MOVE x(i),b(i): DRAW x(i+1),b(i+1)
1750 MOVE x(i),t(i): DRAW x(i+1),t(i+1)
1760 GOTO 1810
1770 MOVE x(i),b(i+1): DRAW x(i+1),b(i+1)
1780 MOVE x(i),t(i+1): DRAW x(i+1),t(i+1)
1790 '
1800 ' find block on right side
1810 IF dy=-1 THEN m=m(x+1,y-i)
1820 IF dy=1 THEN m=m(x-1,y+i)
1830 IF dx=-1 THEN m=m(x-i,y-1)
1840 IF dx=1 THEN m=m(x+i,y+1)
1850 '
1860 ' draw horizontal line if passage exists
1870 IF m<>1 THEN 1910
1880 MOVE 640-x(i),b(i): DRAW 640-x(i+1),b(i+1)
1890 MOVE 640-x(i),t(i): DRAW 640-x(i+1),t(i+1)
1900 GOTO 1930
1910 MOVE 640-x(i),b(i+1): DRAW 640-x(i+1),b(i+1)
1920 MOVE 640-x(i),t(i+1): DRAW 640-x(i+1),t(i+1)
1930 NEXT i
1940 '
1950 ' fill floor and sky with colour
1960 MOVE 320,0: FILL 2
1970 IF dist>1 THEN MOVE 320,399: FILL 3
1980 RETURN
```

Listing 2. This is an extension of Listing 1 that uses the newly constructed maze to position you randomly within it and then constructs a three dimensional view from that position. The can be changed by stepping forward or backward or by turning to the left or right.

is constructed. A delay between lines 310 and 320 may be inserted so that you can see the process more clearly.

Three dimensions

Once a maze has been created, it can be used in various ways. A simple two dimensional representation on the screen is the most common. Sometimes the screen only displays a small section of the maze with most of the maze being off the screen. This is more difficult to program, but it is possible to have a much larger overall maze. Another way to extend the perception of the maze is to give a three dimensional scene of what it would look like if we were actually in the maze itself, looking down a corridor for instance, with side passages branching off.

A maze or any passage or array, can be transferred into a three dimensional view by projecting the picture as if you were standing inside the passage, room or maze. Side passages are easy to build on just by making lines horizontal instead of diagonal. Now, look at Figure 2, which shows both a maze in two dimensional form, and a three dimensional view from within the same maze.

In the view, all vertical lines stay the same, in precalculated perspective, until the other end of the passage is reached The side walls follow this line of perspective unless a side passage exists, in which case a horizontal line is drawn as the corner of the passage, both above and below

Listing 2 is an extension of Listing 1. It will take the newly constructed maze and position you randomly within it Then a view is constructed of the inside of the maze in three dimensions. By pressing four keys you may step either forward, backward or turn to the left or right The display will then quickly redraw the new view. The directions, North, South, East and West are given with the top of the maze taken as being North

Probably many uses for mazes and particularly the three dimensional passage section have already come to mind. Programs such as adventure games are virtually half done with the above system. The 'passages' program may even be expanded to duplicate the movements through a building design to find

In conclusion, note the use of random numbers in the maze drawing process. Computer graphics are relying more and more on random and semi-random constructions Random numbers are going to play an increasing role in computing as programs become more complex. In fact, these random functions are extending into every avenue of computing □

Real and Protected modes in the 80286

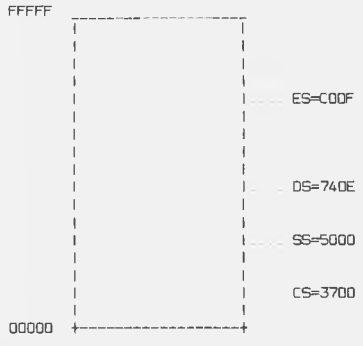
Why can't the 80286 chip run Real mode software while in Protected mode? John Summerfield explains . . .

IN HIS REVIEW OF the IBM PS/2 model 50 (YC, July '87), Les Bell said that the 80286 cannot run software written for Real mode when it is running in Protected mode. I believe some expansion of his comments is appropriate for those readers who do not understand the difference between Real mode and Protected mode. This discussion is directed at those with a programming background, and those with some knowledge of computer architecture.

The 80286 in Real mode

When an 80826 is running in Real mode, its four segment registers contain Real memory addresses. These registers address real memory in units of 16 bytes, called paragraphs.

Any memory address comprises two components, a segment address and an offset address. Both parts of the address are 16 bits long. The following reflects the 80286 memory, as viewed in Real mode –



The 80286 has four segment registers –

CS – for Code Segment; program instructions are fetched from this area;

DS – for Data Segment; data items are normally accessed in this segment;

ES – for Extra Segment; optionally, data items may be accessed in this segment;

SS – for Stack Segment; used for saving subroutine return addresses, parameters, and other data items. Accessed by CALL, RETurn, PUSH and POP instructions

Programmers generally have DS and ES pointing to the same segment, but they may have different values to allow easy copying of data from one arbitrary memory address to another. Please note that all these memory addresses are hexadecimal numbers, so that 3700 corresponds to the decimal number 14080.

The memory addresses are 20 bits (5 hexadecimal digits) long, and allow the 80286 to address 1 megabyte (1,048,576 bytes) of memory. I have assigned arbitrary values to each of the segment registers; each register can contain any of 65,536 values, and they can (and often do) address the same area of memory if required.

The area of memory addressed by a segment register is called a segment, and each segment may be up to 65,536 bytes long. The address of a segment is the address of the first paragraph of memory in the segment. Since the segment registers contain a paragraph address, the Code Segment is at paragraph address 3700, which corresponds to byte address 37000.

To address any byte in memory, we must store an appropriate segment (or paragraph) address in the appropriate segment register, and add an offset to it Say we wanted to address a byte at address 740F5. With the segment register values above, we could simply use an offset of 15 (740E0 + 15). This instruction sequence would also allow us to address location 740F5 –

```
MOV  AX,740F        ;put the segment
                     address in register AX
MOV  ES,AX          ;copy it to the
                     segment register
```

These two instructions would allow us to address it with an offset of 5. Because of the segmented nature of the 80286 memory, we write addresses like this: 740E:0015, 740F:0005, and so on. These are alternative ways of addressing the same memory location.

Another feature of Real mode operation is that the application has access to the entire instruction set of the CPU. It can perform its own input and output, and can access and update any area of memory.

The 80286 in Protected mode

It is apparent that, in Real mode, any memory location can be addressed with a wide range of combinations of segment addresses and offsets. However, when the 80286 is switched into Protected mode, the memory addressing scheme changes dramatically. The segment registers no longer contain memory addresses; they contain values used to index a table of segment addresses. This table is called a Descriptor Table.

Because of this difference in memory addressing, the registers CS, DS, ES and SS are no longer called segment registers; they are called segment selectors, to reflect their new function of selecting segments of memory. With this memory addressing scheme, the addresses 740F:0015 and 7410:0005 are not necessarily the same (but they could be). The numbers

740F and 7410 reference two different entries in the Descriptor Table.

The descriptors are each 8 bytes long, and contain a 24-bit segment address (giving access to 24 Mbyte of memory), the segment length (in bytes) plus some control information. A descriptor table cannot exceed 64 kilobytes in length, and so cannot contain more than 8 Kbyte descriptors. These descriptors cannot normally be modified by application programs; this provides a means of protecting programs from each other.

Since the segment descriptor contains the segment length (in bytes), applications cannot use memory beyond the defined area within the segment: in Real mode, segments are 64 Kbyte long, whereas in Protected mode they can be as short as 1 byte.

In Protected mode, the 80286 software can control the facilities used by applications programs. It controls whether they can do their own input and output; descriptors can only be established at the highest level of privilege.

Why Real mode software won't work in Protected mode

When the 80286 switches to Protected mode, there is no way back. It continues in Protected mode until it is reset, or turned off. (It's possible, of course, to use external hardware to perform the reset under software control.)

There are two features of the 80286 which prevent software intended to operate in Real mode from functioning in Protected mode. In Real mode, the following instruction sequence is valid –

```
MOV  AX,ES      ;copy the Extra Segment
                 address to register AX
INC  AX         ;Add 1 to it
MOV  ES,AX      ;put result back in ES
```

This instruction sequence gives access to a new segment, 16 bytes up in memory from the previous one.

In Protected mode, however, it would cause a different descriptor to be used in forming memory addresses. The new segment could be anywhere else within the sixteen megabytes of memory!

If you think that this does not represent a problem to you because you use a high-level language, think again! Turbo Pascal does memory calculations like this. It's likely most do something similar. I would expect other products like dBase and Lotus 123 do similar things.

The other problem is with programs that contain hard-coded memory addresses. For example, any programs that access the IBM PC video RAM directly instead of using the DOS or even the ROM calls cannot run because descriptor numbers greater than 7FFF are not valid; this cuts out hard-coded access to memory locations B000:0000, B800:0000 and so on.

Another 'gotcha' is badly behaved programs that address memory out beyond the defined area in a segment. Many programs stored as COM files are like this. A program is loaded from a COM file of, say, 4000 bytes long. It uses 64 Kbyte of memory starting from its load-point. Such programs often contain instruction sequences like this, too –

```
mov  ax,cs      ;address of code segment
                 to register AX
add  ax,0400h   ;add length of
                 code segment, in paragraphs
mov  ds,ax      ;my data area starts here
mov  es,ax      ;point ES at it too
```

What is the big catch?

The big catch is this: When the 80286 runs in Real mode, it's behaving (almost) exactly the same as an 8088 or an 8086. It does have some new instructions, and it does detect more errors. Almost all software written for an 8088 or an 8086 (or 80186 or 80188) computer system will produce the same results on a similarly-configured 80286 system provided it's not dependant on instruction timings or dependant on undefined features of the 8088 (or other) CPU.

Since it's emulating an 8086, there is a lot which runs on it: PC-DOS, MS-DOS, Lotus 123, dBase, Multimate, Samna, WordStar, Lattice C, Digital Research's PL/I-86, CP/M-86, Concurrent DOS, Pagemaker, Ventura – all your favourite PC software.

Writing programs for both environments

You will need some additional software tools; if you use a high-level language, you will need compatible versions. If you write in Assembler, and use instruction sequences like this –

```
Albert  segment 'code'
        assume  cs:Albert,ds:victoria,es:victoria
        mov  ax,seg victoria     ;get segment
                                  address
        mov  es,ax               ;copy to segment
                                  registers
        mov  ds,ax
```

you shouldn't have any problem. When you link for Real mode operation, segment addresses can be incorporated in the EXE file; when you link for Protected-mode operation, the linker can include details of the segments (length, type and so on) to enable the operating system to establish the required descriptor tables.

The good news

The 80386 (used in the Model 80, the Compaq 386, and others) is capable of running in 'virtual 8086' mode. This provides the capability to run 8086 programs while the 80386 is in Protected mode. In this V86 mode, the 80386 used the values in the segment registers as paragraph addresses in the same way as the 8086 does.

Although the 80386 does not use address translation involving the segment registers (as it and the 80286 do in Real mode), it does have the additional capability of paging, and so has page tables which allow the V86 addresses to be translated to any address in virtual memory. This address translation allows more than one V86 task to be run concurrently in a multitasking environment.

It's rumoured that Intel is developing a new CPU with 80386 software capability, and which is a plug-in replacement for the 80286. All we need now is the software!

In summary

The 80286 cannot run PC-DOS/MS-DOS software because of its different memory architecture. There could be some specific exceptions to this, but it's a pretty good guide.

The 80286 cannot run software that directly accesses video RAM because it cannot respond to the hard-coded addresses used. Therefore, we should not expect OS/2 to run DOS applications in Protected mode, although it might do so by using CPU-reset hardware to get back to Real mode.

Because of its limitation, I do not expect the 80286 to have a long life. If I were buying a new machine now, I would look to one of the 80386 machines in preference to a PC/AT, if I thought I might possibly want to run Real-mode software under a multitasking operating system. The extra speed would merely be a rather nice bonus. □

References

IN WRITING this article, I have referred to *Inside the 80286* by Ed Strauss, published by Prentice Hall, and Intel's *80386 Programmers' Reference Manual*. I obtained both from McGill's Newsagency (some newsagency!) at 187 Elizabeth St, Melbourne. I recommend both to those with a fairly strong technical bent (and a strong wallet).

Part 1

BEHIND HYPERCARD

THERE ARE QUITE a few computer journalists more enthusiastic than I am about HyperCard – and yet I think it's one hell of a program. Gareth Powell at the Sydney Morning Herald, for instance, promotes it as the most important program of the decade. I'm not sure that I would go out on a limb this far, but HyperCard is obviously revolutionary and also interesting. So even if the revolution fizzles, the fascination might remain

One thing is for sure; you are not going to waste your time by learning about HyperCard. At the very least it is certainly the foretaste of programs to come. So if you're a Macintosh user with even the slightest interest in discovering how future data management programs will work, you should spend a few hours looking 'behind the scenes' of HyperCard and digging into its programming language HyperTalk.

This is such revolutionary software that some of the more showy features have tended to disguise important innovations that lie behind. For instance, HyperCard provides the novice with a gentle pathway into programming – an aspect which is quite unusual with substantial procedural languages If you want to write anything worthwhile in C or Pascal or dBase III then you've got to sit down for two or three months and learn a mass of very esoteric commands and syntax *before* you can create code remotely worthwhile. Nine out of ten writers of Basic probably never write anything of any use to anyone. But HyperCard is different.

At the basic level, the program automatically programs itself through clicking and linking. It's not the first Mac program to do this, but it is the best. You can take this automated programming process a significant step further with very few lines of handwritten code – and you'll be capable of doing this by the time you finish this article.

HyperCard is undoubtedly revolutionary, but this extraordinary complex 'language' is probably the easiest to program. In fact, Stewart Fist will have you writing your first program before you finish Part 1 — and there are still 3 to come!

This is what is so amazing – this extraordinarily complex 'language' is probably the easiest to program in a worthwhile way.

HyperTalk

There's a lot been written about HyperTalk as an 'object oriented' language like the famous SmallTalk, but it is not a true 'object orientated language', and it also owes plenty to the standard single-structure languages like dBase II.

Apple admits that HyperCard is not a 'classical object-oriented programming system, although it implements some object-oriented concepts, such as passing messages and having objects.' Are you any the wiser? Hang on – you will be!

Apple will soon have the *HyperCard Script Language Guide* in print if you really want to get deeply involved, but at the time of writing the manual is only available the draft level – and it has some mistakes. Danny Goodman's book, *The Complete HyperCard Handbook* still hasn't arrived at this time, although I hope to be reviewing it by the time this series is in print.

The only way to understand HyperCard is to play with it. And the only way to investigate HyperTalk is to go inside, have a look around and make some changes – so first of all make a copy of the disk HyperCard and Stacks and use that as a tutorial disk. Fire up the copy, and let's have a nosey around inside.

Clicking on the HyperCard icon should bring you up on the Home Card, and by clicking the left arrow at the bottom of the card you will go straight to the last card in the Home Stack – the User Preferences card.

Click on the Scripting radio button at the bottom – this provides you with 'tools' to enable you to create and alter stacks and script. Notice that the top menu bar has changed; along with the Tools menu there's now one labelled Objects. Why this emphasis on Objects?

HyperCard programs aren't flowing streams which start at one point and finish at another, rather they are collections of discrete code modules (called 'handlers'). Each module is part of a 'script' attached to an 'object'. There can be hundreds or thousands of handlers in a HyperCard stack, each of which performs its task quite independent of the others – although they communicate with each other by sending 'messages'.

The word 'object' is used in an analogous way. There is nothing physical about these objects HyperCard has five different types of 'object' – Buttons, Fields, Cards, Backgrounds and Stacks – plus two quasi-objects (Home Stack, which is just a special form of stack, and the HyperCard program itself which often acts like an object).

You activate an object (usually, by clicking on it or sending it a command/message) and its handler code sends a message through a predefined pathway to another object If this object's handler recognises the message some action is usually initiated.

For instance, go to the Home Card and click on the Phone icon. You jump instantly to the Phone Stack ready to insert a new phone number. Your click within the active area (a transparent button) over the Phone icon initiated a message from the attached handler. This message then flowed up through the various levels of the program until it was registered by another object (in this case HyperCard itself) and this triggered the switch to the Phone Stack

The action has to be predictable – in other words there must be some order to the sequence of objects, and this is where the heirarchy comes in. Messages flow upwards from low-level objects (buttons and fields) to higher levels – and the higher the level the more widespread the action.

Obviously the handler that actually made the switch between Home and Phone stacks needs to be at a higher hierarchical level, since its effect (the switch to a new stack) is felt by all the cards, backgrounds, buttons and fields below it

Think of it as an inverted tree structure with one Home Stack at the top trunk level, a number of Stacks below on main branches, then many Cards each with Background, Fields and Buttons. It's a matter of one Supreme Commander, a few Generals, many Lieutenants, hundreds of Corporals and thousands of Privates.

Change back to the Home Card and we'll have a look at the the script that initiated the action that swapped you to the Phone stack From the Tools menu, select the Button tool in the middle of the top row Then click on the Phone icon to select this button (you'll see a rectangle of walking ants), then go to the Button Info bar of the Object menu and click again.

In the dialog box which now appears, click on the Script panel, and this will reveal the handler responsible for the action The script attached to this button only has one handler that begins at the keyword 'on' and finishes with the line beginning with 'end' –

```
on mouseUp
  go to stack "Phone"
    visual effect zoom
end mouseUp
```

It couldn't be much simpler, could it? It doesn't take a college education to realise that 'mouseUp' is the release phase of clicking the mouse, and that 'go to 'Phone'' is the message (the command) that causes the stacks to swap This issued message has the messageName 'go', (which is also a HyperTalk command) and so in this case it is captured and used by the HyperCard program itself (but it need not be). 'Phone' is the parameter The word 'to' and the quote signs are superfluous, and are included to make the script more readable and avoid ambiguity.

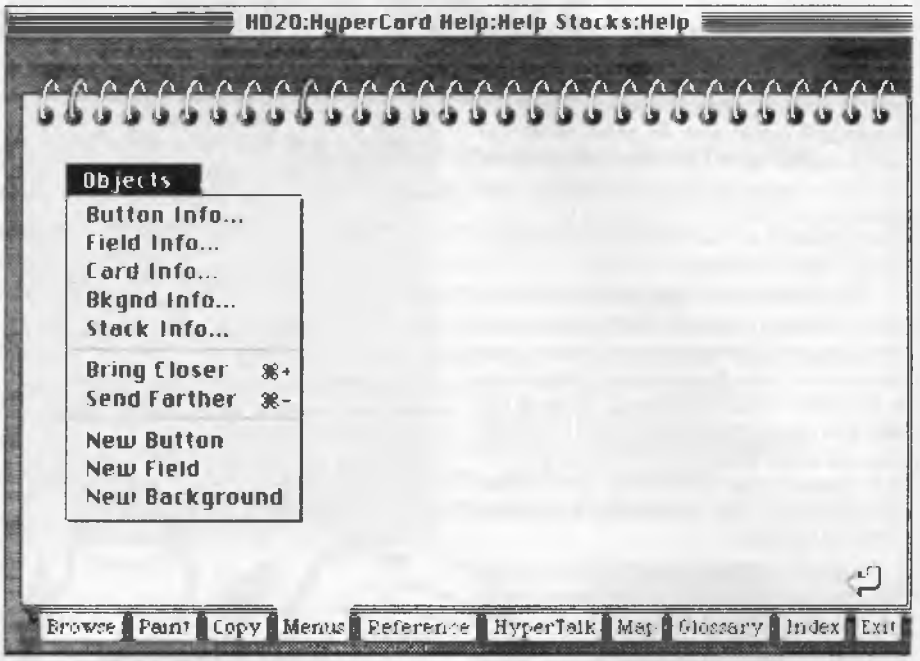


Figure 1. *In HyperCard, not all objects are equal. There's a rough sort of heirarchy in the status of objects – Buttons and Fields are at the lowest level, then progressively Cards, Backgrounds, Stacks, the Home Stack, with HyperCard itself at the top. The Home Stack is a special case, and you can treat HyperCard itself as an 'object' since it can both send and receive messages.*

There's also a line of code here which creates the visual zoom effect, but it's not necessary for the system to work. It is, however, a good indicator of how English-like HyperCard's command language is, and this makes it easy to learn. In fact, we can do some programming ourselves while we are here.

Notice that the cursor assumes the I-beam style (as in MacWrite) whenever it is in the script area. This shows that you can add, modify or delete command lines in exactly the same way as you would change the text of a letter.

Try it now. After the 'on mouseUp' line, insert a new command line that just says 'beep' (no quotes) or 'beep 3', if you want to be flashy. Click on the OK panel, de-select the button icon in the Tools menu and try it out. From now on the Phone icon, and only the Phone icon, will sound the bell (once or three times) when you select it. See how easy programming is!

While you are at the Home Card, use the Objects menu to have a look at the script associated with the Home Card itself, its background and the Home Stack You'll see an increasing degree of complexity as you get further up the heirarchy, as you would expect.

At the Card level there are three script modules ('handlers') to do with updating the time on the card and showing or hiding the Copyright notice The Copyright notice only appears at boot-up.

The Background script has been set to handle things like the non-appearance of the message box and the menu bar when the Home stack is opened, and the Stack script is primarily concerned with external commands ('XCMD' in the jargon – from C, Pascal or the Mac assembly language) and the storing of information such as the User's Name and preference level.

But, just as the higher levels are obviously hard to understand, the lower levels are certainly easier than you expected, aren't they? You might not be able to reprogram a Home Stack in your first few days, but you can manipulate buttons and fields, and there's a progressive learning path through this program

Heirarchy

In HyperCard, not all objects are equal. There's a rough sort of heirarchy in the status of objects which you will see if you pull down the Objects menu (Figure 1) HyperCard recognises, in order of importance, Button and Field objects as equal bottom, then progressively Cards, Backgrounds and Stacks. The menu list is upside down to my way of thinking; Stacks should be on the top.

The full extent of the operational heirarchy of the program has Buttons and Fields are at the lowest level, then progressively Cards, Backgrounds, Stacks, the Home Stack, with HyperCard itself at the top. The Home Stack is a special case, and you can treat HyperCard itself as an 'object' since it can both send and receive messages. You will understand the significance of this later.

Think of the program as a five-storied building with a basement. When messages arrive at the front door they are first checked at the lowest level to see whether they are intended for this floor. If they are not intercepted here they are passed on to the next floor, then to the next, and so on until some may finally trickle through to the big boss at the top and he deals primarily with 'commands'.

Mouse messages come through the sewer, so these are first checked at the basement level (Buttons and Fields), while most other messages come in at the street-level (Cards). But however they enter the building, messages always move upwards, if they are not intercepted.

The internal activity of HyperCard all depends on 'messages'. For instance if you click down on the mouse button this action sends a system message called 'mouseDown'. When you let the button up, the message 'mouseUp' is broadcast. If you don't do anything at all, the program constantly broadcasts the message 'idle'.

The term 'message' here is used in a wider fashion than the term 'command' (builtin keywords initiate some action). It often includes both a command and a parameter, such as 'go' (the command) 'Home' (the parameter). It also includes system-event messages sent as a result of some action (like clicking the mouse), 'function calls' (builtin calculations which return some value to the initiating handler), and message or function names that you have made up during scripting to trigger some action further up the object heirarchy. Many messages have parameters attached, but they don't need to. Here are some examples of messages –

HyperTalk

HYPERTALK IS A very flexible language. It doesn't worry about upper or lower case, nor does it have an excessively strict syntax. However, to avoid ambiguity it is best (but not essential) to –

a) Enclose names within quotes (for example, go to stack 'Home'),

b) Put the word 'stack' in front of a stackName,

c) Put the word 'card' in front of a cardName/number,

d) Address a card, button or field by its ID number,

e) Put the words 'card field' in front of a card field name to avoid confusion with a background field, and

f) Ideally refer to an object by both its type (for example, 'card') and identification number (for example, ID 5734)

go Home – HyperTalk command + parameter

mouseUp – system 'event' message

xyz – message to author-defined handler that will start with 'on xyz'

average (Len1, Len2) – function call + parameters

nameLength (lastName) – author-defined function call + parameter.

MouseUp or mouseDown (event) messages flow first to the topmost button or field attached to the area under the cursor (they are directed to the appropriate button or field by the program, since it keeps track of where the cursor is).

The system-event messages mouseEnter, mouseWithin, and mouseLeave are generated within the program and flow to the appropriate button or field object. But these are post-facto (after the event) messages, and they are sent after the program has already decided which field or button the cursor has entered/left.

The mouseLeave message is sent only to the button or field that the cursor has vacated – and then it passes on up the heirarchy until it finds a handler that needs a 'mouseLeave' message.

If they aren't recognised at the Button or Field level, all messages pass to the appropriate Card, then to the Background, the Stack, the Home Stack and on the HyperCard. Messages can be intercepted at any level where the appropriate script handler exists, and they can act from any level.

For instance, a handler which puts the time into a card field, doesn't have to be at the field level, it can be at the Card, Background or Stack level just as easily – and at these levels its influence will be progressively wider.

When you are programming, it is usually your decision as to which level you will write a handler – and you decide this on the basis of how wide you want the influence of the handler to be felt.

System messages aren't the only kind. As we have seen there are also HyperTalk command statements, function calls, and also you can type messages into the message box by pulling down the Go menu. This is actually a form of direct programming.

Try writing 'go to next card' in the message box. You'll see that the reaction is exactly the same as if you'd clicked on the appropriate arrow/button – because the issued message was exactly the same.

Your keyboard-entered message came in at the second (Card) level, then travelled up through the system until it reached HyperCard itself. At this level the 'go' message was recognised as a command and the 'next card' parameter was acted upon.

If you select the Stack Info bar from the Objects menu, then show its script, and write a short useless handler like –

```
on go
    play "boing"
end go
```

You will find that this short-circuits any messages in the message box like 'go to next card'. If you've got card or background arrow buttons that previously took you to the next card, or the last card, you'll find that they don't work either. Everytime you try, the system just 'boings'

Taking control

This is a trivial example with important consequences, because it means that you can write your own handlers using a messageName identical to a HyperTalk command, and steal control from this command. You can use the command for your own purposes, then pass it on again, if you wish.

But we are jumping ahead too quickly!

Objects don't necessarily need to have scripts associated with them. For instance, from the Home Card, select the Field tools (right in Tools menu) then click on the small field that holds the Time on the bottom right of the card. Go to the Objects menu, select Field Info, then click on Script and you'll see that this 'field' object doesn't have its own script.

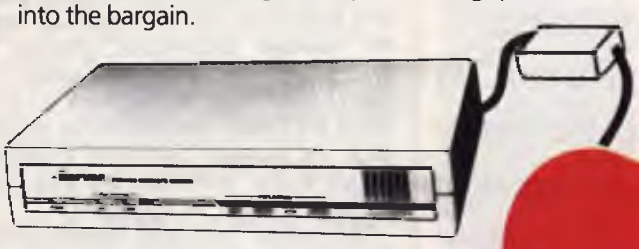
This is natural enough; this is a special

How to get an extra bite out of your MAC.

R and I Servers overcome Appletalk limitations.

The **R-Server** is a **network Gateway and Bridge.** It can operate in 2 modes. Firstly, it provides remote users with single user access to the network, via a modem and secondly, as a bridge, it can link two networks via modems and two R-Servers.

I-Server functions as a **local bridge** between Appletalk networks. Expand the number of inter-connected users and resources, extend overall network coverage and speed throughput into the bargain.



PhoneNet increases opportunities, distance and saves money too.

With simple PhoneNet PLUS connectors, you can network an entire building, quickly, and inexpensively. Because you'll save money by utilising ordinary telephone cable. Which means now, an Appletalk network can go a long way, for a lower cost. The PhoneNet software library gives network managers the utility to optimise performance on an Appletalk network.

The Star Controller is an intelligent hardware device that provides sophisticated network management, testing and fault isolation.

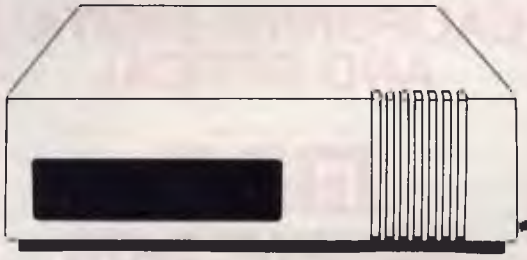
MacRecorder provides a complete audio workshop.

Record, edit, and play live or pre-recorded sound on your Macintosh, with the multi talents of the MacRecorder.

MacRecorder lends itself to many uses within business and academic communities. Business uses include employee orientation and training, sales and advertising presentation and slide shows. Academic applications, include language and music tutorials, project reports and courseware.

NetWay 1000 can marry up to 31 Macintoshes on Appletalk to one IBM host.

No more unattached Apples with the NetWay 1000. NetComm's NetWay provides IBM 3270 terminal emulation and mainframe file transfer to every Macintosh on the network, allowing up to 16 host sessions to take place concurrently.



NetComm

Total Communications Solutions

NetComm (Aust) Pty Ltd · NSW PO Box 284 Pymble NSW 2073 Tel: (02) 888 5533 Telex: AA27488MODEMS Keylink: 6007:DNC002
Viatel: 288855330 Fax: (02) 887 2839 **VIC.** (03) 241 0534 **QLD.** (07) 232 0306 **WA.** (09) 220 3407

NE014

California Digital

DO YOU WANT THE BEST

PRICE
QUALITY
SERVICE ?

YOU HAVE TO PHONE, FAX OR WRITE TO AUSTRALIA'S NUMBER 1 MAIL ORDER HOUSE:

CALIFORNIA DIGITAL AND OPTICAL

MDS

MOHAWK DATA SCIENCES PTY. LTD.

P.O. Box 115, 14-47 WESTBANK TCE.,
RICHMOND, VIC. 3121
TEL.: (03) 429 4297 or (03) 819 7234
FAX: (03) 427 1131

WE CARRY ALL MAJOR BRANDS

TEL 03/429 4297

TEL 03/429 4297

field just for display. Clicking on the time or changing the numbers is not intended to initiate any action through the system.

This object (a field) is a passive receiver of messages originated by the hardware clock chip. However there must be a script handler somewhere to intercept the clock messages and cause the numbers to be displayed – and you'll find this in the Home Card script. It could have been higher at the Home Stack level

So some objects have no script, and can therefore send no messages. At the other end of the spectrum, some parts of the HyperCard system are constantly sending messages, and other objects are constantly receiving them and interpreting them through script handlers.

If you are moving the cursor about on the screen and you enter an area allocated to a button (or a field), HyperCard sends the message 'mouseEnter' through the system (entering at the appropriate button or field) and cycling back to itself. While the cursor remains within this hotspot, the program constantly broadcasts 'mouseWithin' messages, and as it leaves the area it sends 'mouseLeave'.

The button field itself usually doesn't do anything with this stream of cursor-position messages because its handler has been set to look for the mouseUp command of a click unless it has been deliberately changed – which is what we will now do!

For no other reason than to get comfortable with modifying scripts, find your way again back to the script handler belonging to the Phone button on the Home Stack, and change the two 'mouseUp' references to 'mouseLeave'. Exit the script, re-set Tools, then pass your cursor over the Phone icon. Your change now activates the stack swap as you withdraw the cursor from the button area; you don't need to click.

Here's another fun one. Select the Time field on the Home Card, and enter the three line script –

```
on mouseWithin
  beep
end mouseWithin
```

Now whenever your cursor is within the Time field area on the bottom left of the card, the bell will sound.

Customisation at last!

In Part 2 we'll look further at messages and handlers, and get a better idea of the way different messages are handled within the system, and what this means to the programmer. □

HARDWARE HACKING

Adding a reset switch

Welcome to a new series of articles by Tom Moffat aimed at making your computer easier to use, and giving you some insights into its operation. Don't worry if you're not an electronics freak, you'll be able to handle this, and you're certain to find a few sneaky tricks you can pull on your PC.

FOR THE FIRST installment of 'Hardware Hacking' we will show you how to add a reset button to your PC If you do much programming, you'll see the immediate worth of a reset button. When you make a mistake in your program, you usually wind up with a crash of some kind; you lose control of the computer You can normally recover from these little incidents by the software reset method of pressing Control, Alt, and Delete, all at the same time. The computer beeps, the system reloads from the disk, you can reload the files you are working on (you *did* save them before running the program, didn't you!) and all is ready for you to try again.

However, if you're not so lucky, you may discover that the crash has disabled the keyboard, so everything, including the Ctrl-Alt-Del combination, is ignored. This occurs for one of two reasons. The keyboard generates an interrupt whenever any key is pressed.

(Interrupt: a microprocessor feature that forces the main program to drop what it's doing when some prearranged external event occurs. The external event is attended to, and then normal program execution resumes where it left off.)

The keyboard interrupt sends the microprocessor off to an area of low memory where it expects to find the address of the machine code routine that handles the incoming data from the keyboard If this memory area has been corrupted by the crash (a common occurrence), the processor goes spinning off into never-never land Result: no keyboard. The keyboard also gets zonked if you've temporarily disabled the processor's interrupt function as part of your program, and then the program crashes. No interrupts – no keyboard

The traditional way to recover from loss of keyboard is to reach for the big red switch and turn the whole computer off, and then on again. This works, but it isn't really too good for the computer, or the monitor. In fact, it isn't really wise to switch any electronic device off and on unnecessarily, even a TV set. It stresses the components, and in particular picture tubes.

Most computers in the past had some type of button that could be pressed to restart the computer from scratch without needing to turn it off and on again. But IBM apparently didn't see a need for this, and instead opted for Power On Reset which would only occur when the machine was first switched on. However, many makers of IBM compatibles have seen the light. They haven't installed hardware reset buttons as such, but they have put circuitry on their system boards to allow easy installation of a hardware reset

Minor surgery

To make use of this facility you will have to perform some minor surgery with an electric drill and a soldering iron But before you do anything, it's necessary to find out if the system board on your computer has been pre-wired for a reset button

I have been involved with two IBM compatibles, and I've been able to put reset buttons in both. The first machine, which belonged to a former employer, quickly became known as a Brand X. This machine made its way into Australia via Taiwan, Hong Kong and New Zealand, and it appeared to be thoroughly illegal. It had exact copies of the IBM ROM memory chips, including Basic-In-ROM. (That's a definite no-no!) And the circuit boards, case, disk drives, everything, were totally devoid of serial numbers or even maker's names. It was as if the computer had just fallen to Earth from outer space

The other machine, the one I use now, is a Unitron. This company has produced both Apple and IBM compatible machines They are very popular in Tasmania, particularly among government users, they're priced right, and well supported by their dealer. But they seem to be a mystery in the rest of Australia for some reason. Both machines are housed in the standard big steel IBM type case, with a bonnet that opens up like in a car so you can get inside and fiddle around.

The interesting point is that the Brand X and the Unitron appear to have very similar system boards. They could have come out of the same factory (maybe they did!). The Brand X system board takes 256 kilobytes of memory and you need an extra card to expand it. The Unitron takes a full 640 Kbyte on the system board; no extra card is required But in the area around the card slots and logic chips, they seem to be almost identical. And they both have easy connections for reset buttons. Similar system boards seem to be fairly com-

mon in other brands of compatibles as well. So you could very well be in luck.

To find out if you can easily add a reset button, remove the cover from your computer, or open the bonnet if it has that type of case. Now look just behind the rightmost card slot and see if there is a little connector with two pins sticking straight up. It may be marked JP1. If it is present, success is likely, and it's time for a trip to an electronics shop. You will need to buy the following:

1 normally-open push button switch;
1 100 ohm resistor (1/4 watt will do);
1 meter of multi-conductor ribbon cable;
8 Molex pins (you only need two, but you may wreck some);
A bit of plastic tubing that will fit over the Molex pins.

To save further money you should now find a friend who's into electronics, and borrow the following:

A small soldering iron and some solder;
An electric drill, with a bit to fit your push button;
Side cutters and long-nose pliers;
The friend (who might enjoy watching you drill holes in your computer).

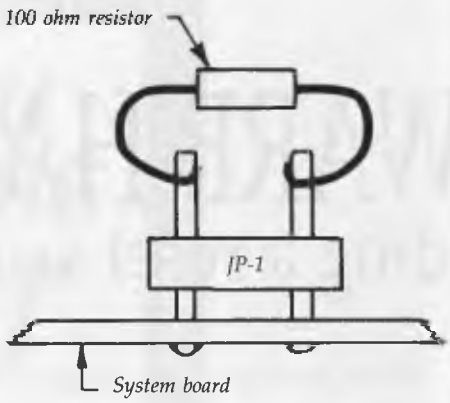


Figure 1. *To test if a reset button can be fitted to your computer, fire it up, with the cover open. When it's all properly booted and sitting there waiting for action, take the 100 ohm resistor in your fingers and carefully bridge it across the connector pins. Don't worry about getting electrocuted, the voltages here are very low. If all is well, when the resistor makes contact the computer should beep, spin its disk and reboot.*

Now back to the computer. Fire it up, with the cover open. When it's all properly booted and sitting there waiting for action, take your 100 ohm resistor in your fingers and carefully bridge it across the two pins of the connector you found earlier; one wire to each pin. Don't worry about getting electrocuted, the voltages here are very low. If all is well, when the resistor makes contact the computer should beep, spin its disk and reboot exactly as if you had used Ctrl-Alt-Del on the keyboard. The computer may or may not conduct its power-on memory test; it depends on the brand of computer.

If this test works, try it again, just to make sure. If the test doesn't work, that is, if nothing happens when you bridge the connector with the resistor, then the easiest course would be to give the whole project a miss. It could be that the little connector has some other purpose in your computer. We used the resistor to test it, instead of a bit of wire, so the resistor would act as a 'safety valve' if it shorted the wrong thing. But if the connector is there, in the right place, you would have to be pretty unlucky for it not to work!

Where to put it!

If all is okay, you must now decide where you want to mount the reset button. In the first of these modifications I made, to the Brand X computer, I found two blank plastic panels, right on the front, that could be removed to allow the installation of extra disk drives. I simply drilled a hole in one of them (dead easy) and mounted the switch there. The only trouble was, it was very visible, and people would come along and say 'What does that do?' and then press it (groan). The computer would, of course, reboot, sending some big WordStar file or something off into oblivion. Not a good idea.

The Unitron installation was a bit more discreet. This machine's case has its main front panel protruding a few millimeters over a smaller surface near the bottom. The button was mounted on this smaller surface where it is somewhat hidden by the larger overhanging front panel. The spot chosen was near the left hand side of the computer. See the side view in Figure 1. It was necessary to temporarily remove the speaker bracket to do this, but it made a nice neat installation. A third option would be to mount the switch on the rear of the computer, where you could find it by feel.

What happens during a reset?

THE RESET CIRCUIT is one of the most extensive in the IBM PC and most other computers as well. When you press *that* button, or when the machine powers up, a pulse is generated that propagates to just about every major chip in the machine. In the IBM PC, it comes into the main microprocessor on pin 21, which goes briefly high and then low again. This causes the program counter to begin executing instructions from address FFFF0 (hexidecimal) which is 16 bytes below the top of the PC's 1 megabyte addressing capability. (In a CP/M computer using a Z80 processor, execution starts at address 0000 after reset, the opposite end of memory. How about that!)

There just happens to be a ROM chip in the IBM's highest address space; in fact it occupies the top 8 Kbyte of addressable memory. This is generally referred to as the Boot ROM or the BIOS ROM (basic input/output ROM) and if you look inside the computer you'll find it sitting in a socket near the middle of the system board. There will probably be an identifying sticker on it.

The sixteenth instruction from the top will tell the microprocessor to jump somewhere lower in the ROM where there are instructions which actually do something useful. The first thing that happens is called POST or Power On Self Test. This checks the memory, figures out how much there is, and then tests various slots and connectors to see what else is hooked up to the computer. If all is okay, the ROM software energizes the default disk drive which reads in the DOS. With DOS in memory, control is passed to it, sign on messages appear, you're asked to enter the date and time, and at last the DOS prompt (A> or C>) tells you that your wish is the computer's command.

At the end of the memory test, the BIOS Rom writes '1234' into an area of low memory. Then, after a software reset (Ctrl-Alt-Del), the BIOS checks for this value in that location, and if it is there it bypasses the memory test, saving lots of time. Upon hardware reset (your new button), the BIOS may or may not take into account the '1234', depending on what version of BIOS you are using. This explains why some computers do the full memory test on reset, and others don't.

Before doing any work on the computer, *be sure* to remove the power cord from the mains socket, and for double safety remove the other end of the power cord from the computer. As well you'll need to remove cables to monitors, printers and so on, so you can have free access to the main system unit. Also, *beware*, if drilling in the steel cabinet – do not let any filings get into the computer's works. Protect the area with plastic bags and masking tape, and make sure it's *absolutely clean* afterwards.

If all is well, when the resistor makes contact the computer should beep, spin its disk and reboot exactly as if you had used Ctrl-Alt-Del on the keyboard.

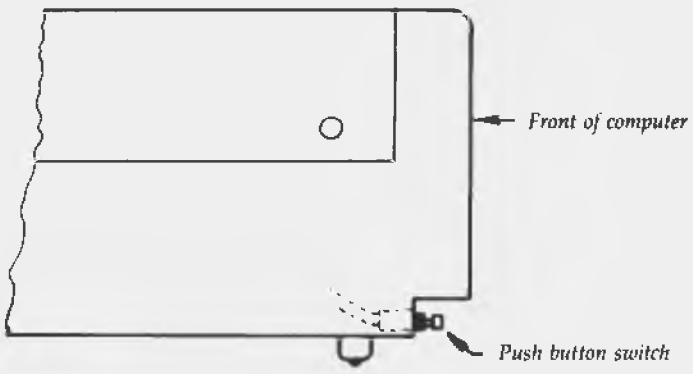


Figure 2. The reset button was mounted near the front left side of the computer – it was necessary to temporarily remove the speaker bracket to do this, but it made a nice neat installation.

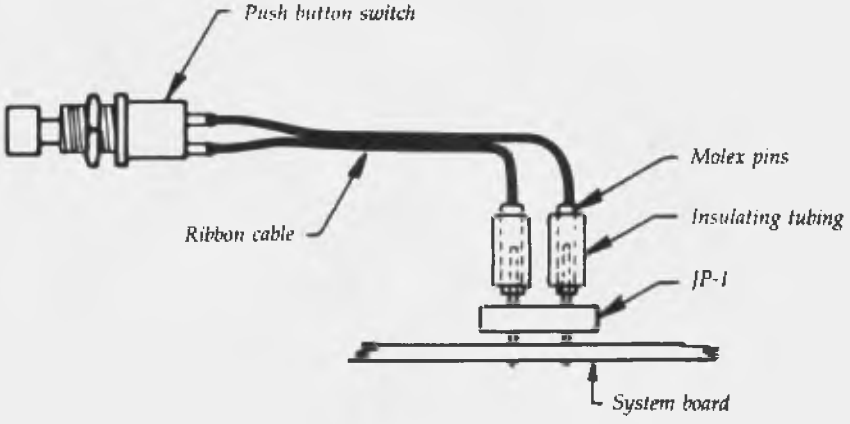


Figure 3. After measuring out enough wire to make it from your chosen button position to the connector on the system board, solder one conductor to each lug on the button; then install the button into its hole. On the other end, solder a Molex pin to each wire.

Wiring

Now to the easy part, wiring it up. With your fingernails, separate two strands of the ribbon cable from the rest. Measure out enough wire to make it from your button position to the connector on the system board. Leave plenty of slack so the wire can be neatly run beside or under the circuit boards Referring to Figure 2, solder one conductor to each lug on the button; then install the button into its hole. On the other end, solder a Molex pin to each wire. Molex Pins are really meant to be used in home-made circuit boards as makeshift integrated circuit sockets, but they slide nicely over the little pins sticking out of the system board as well. The idea is to avoid the need to solder directly to the system board pins.

Once the Molex pins are on, slide a bit of your plastic tubing over each one to prevent them shorting against each other, and then slide one Molex pin onto each of the system board pins (use your long nose pliers for this). You can toss out the 100 ohm resistor – that was only for the initial trial to see if the system board connector was what it appeared to be. But hang onto the rest of the Molex pins and the ribbon cable; we've got another interesting project coming up next month!

Smoke test time. Restore the power cord, make sure your monitor is hooked up, put in your DOS disk and switch on. The computer should fire up as normal and eventually sit there on the DOS prompt waiting for something to happen. Well, it's now in for a shock. Press your new button and the computer should beep and DOS should reload, just as if the machine had been switched on. Remember, there may or may not be a memory test. On the Brand X, I discovered that a short jab on the button would reboot without the memory test, but if I held it down for half a second or so it would start the memory test from scratch. I have never figured out why this happened.

You will find your new reset button valuable. I certainly have! For what it's worth the mightiest crash I ever caused on an IBM came about when I was experimenting with the counter/timer chip, writing commands directly into it. Because of a simple typing error, the commands went somewhere else. When the program was run, The screen filled with flashing rubbish, both disk drives lit up and started spinning, and the speaker made a noise like 'guk-guk-guk'. And of course the keyboard failed. But the trusty reset button brought it all back to life. □

MEMORY MUNCHER

Here's an easy way to simulate the effect of limited memory on an application – a program that eats memory for breakfast (compliments of Andrew Larkin)!

A COMMON PROBLEM for programmers and other computing professionals is trying to determine the behavior of applications and programs in low memory situations. Quite often it can be very difficult to calculate in advance how a certain program will behave when executed in an environment with restricted memory. In order to simulate these circumstances, a programmer would often have to physically remove memory from his or her own computer in order to simulate the effect of limited memory on an application. This technique has several limitations.

Firstly, it is very inconvenient – there are a few PCs around that seem to be designed to discourage attempts to get at add-in boards. Besides which, extracting add-in boards and memory chips from a computer can be a pain – bruised and scraped knuckles trying to retrieve that rogue screw that deliberately dived into the bowels of the PC on it's kamikaze mission to wipe out something.

The second limitation is that, in most cases, you can only disable memory in lumps of 64 kilobytes – which is a very inconsiderate size when trying to simulate more arbitrary memory configurations. There are undoubtedly other ways of restricting the memory available to an application, but I don't use them. I have my own technique – a program that eats memory for breakfast. I call it Munch.

Munch is a 9-byte program that 'gobbles up' lumps of memory. While it is not the smallest program that I have ever written, it is certainly getting close. For those who know and love machine code, I could have squeezed at least another byte or two out of the program, but the result wouldn't have been so easy to explain.

Munch uses a single MS-DOS function call that 'terminates' the program, but retains a specified amount of memory for the program. This function is used frequently by applications such as SideKick and many device drivers (like the Microsoft Mouse driver MOUSE.COM) that get 'installed' in memory. The function is commonly known as Terminate and Stay Resident or TSR.

Here is the complete assembly language source code to Munch –

```
mov     ah, 31h
mov     al, 00h
mov     dx, ffh
int     21h
```

If you have a Macro Assembler then you will have to work out the segmentation and other unimportant details for your self A brief explanation of what it does: the first line sets the ah register to the value of 31 hexadecimal; this is the TSR function number for MS-DOS. The second line sets the al register to 0; this is the return code for the program. The return code is also known as the error level and can be tested using the MSDDOS batch command language (batch files). Line three sets the amount of memory to be retained when the program finishes; this value is in terms of paragraphs of memory. A paragraph of memory is 10 hex (or 16 decimal) bytes.

These are the sizes (and parameters) for dx that I've found the most useful: 256 Kbyte (3fff), 64K (fff), 16K (3ff), 4K (ff), and 1K (3f).

Notice that the value to be placed in to the dx register is one less than the exact number of paragraphs in the given memory size. This is to compensate for a 16 byte overhead on each memory block in MS-DOS. These header blocks are used by MS-DOS as part of it's internal memory management scheme. The last line of the program performs the familiar int 21h software interrupt to MS-DOS, the standard MS-DOS interface.

I normally keep a complete set of Munch programs around on my hard disk. To distinguish them, I include the memory size of the tool in the program's name. For example, a 4 Kbyte version of Munch is normally called something like MUNCH0-04.COM, while a 256 Kbyte version would be called MUNCH256.COM.

An improvement that you could make to Munch would be to set the al register to the memory size in kilobytes that is being taken out. This has the limitation though of not being able to handle numbers greater than 255, but I am sure that you could work out something.

With the five different sizes of Munch given above, it is possible to get almost any memory size accurate to about 1 kilobyte – which is accurate enough for most.

Use of the program is very, very complicated: just run it. Each time that you invoke the program, Munch gobbles up the specified amount of memory. To recover the memory, simply restart the computer.

As most IBM compatible PCs are supplied with the programmers tool called DEBUG, the 'instructions' in Listing 1 should work for everyone.

```
C:\>debug
-a 100
xxxx:0100 mov ah,31
xxxx:0102 mov al,00
xxxx:0104 mov dx,ff
xxxx:0107 int 21
xxxx:0109                [Press Return Here]
-n munch004.com
-r cx
CX 0000
:9
-w
Writing 0009 bytes
-q
C:\>
```

Listing 1. Step-by-step instructions for creating a 4 Kbyte version of Muncher (with DEBUG). All you have to type are the commands that are underlined. Simple, eh?

You can use the MS-DOS CHKDSK (Check Disk) utility to find out how much memory is available to programs. Also use this utility to check that Munch is working correctly. When calculating your memory requirements, don't forget that there are 1024 bytes in a kilobyte instead of 1000 as you might expect.

By the way, it is not nice to place things like this in people's AUTOEXEC.BAT files, alright? □

HELP

From Peter Norton

THE NORTON GUIDES
On-line Help for programmers.

Don't hunt through a pile of books and manuals whenever you need a piece of programming data. Peter Norton has written a complete series of On-Line Programmers' Guides that put exactly the information you want, up on your screen in seconds.

These comprehensive pop-up databases are crammed with everything you need to write applications in your particular language or operating environment. Cross-referencing ties in related information and the built-in compiler lets you create databases of your own, complete with an electronic index.

Each package consists of two parts: A memory resident instant access program and a comprehensive cross-referenced database crammed with just about everything you need to know to program in your favourite language. And we mean everything.

With the Guides you get:
Information about language and syntax and a variety of tables, including ASCII characters, line drawing characters, error messages, memory usage maps, important data structures and more.

Assembly: • Instruction Set: Includes flags affected, addressing modes and bytes per instruction • Assembler Directives: Detailed descriptions of all pseudo-ops and directives for both Microsoft and IBM Macro Assembler • DOS Service Calls and Interrupts: All up to DOS 3.3 • ROM BIOS Calls: All described in detail • Tables: PSP, Low RAM usage, Effective address calculations, ASCII chart, Keyboard scan codes, line drawing characters, standard file handles, and more!

BASIC: • Popular Dialects: BASICA, QuickBASIC, TurboBASIC, • Statements and functions • Tables: Line drawing characters, ASCII chart, Extended keyboard codes, Run-time error numbers, Command line switches, Operators, precedence order, and more!

PC Extras is the sole Australasian distributor for Norton products.

C: • Language description: including programming statement operators, data types and structures. • Library functions: library and built in, from write to abort • Preprocessor Directives: commands, usage and syntax • Tables: ASCII, line drawing, keyboard scan codes, error codes, character constants, header files, coercion rules, operator precedence, and more!

Pascal: • Turbo Pascal: a thorough description, including program syntax, operators, data types and structures • Library Procedures and functions • Tables: ASCII, line drawing, keyboard scan codes, error codes, compiler directives, reserved words, internal data formats, and more.

NEW **OS/2 & API**
• Kernel API: Full coverage of all API services. DOSx, KBDx, MOUx and VIOx. Organised by name, full cross-referenced by functional groups and related to use • Functions: Full discussion of each, with programming tips and detailed notes on all parameters. • Calling Sequences: Samples in both C and Assembly, with programming examples in C. • Structure Tables: Includes all data formats used in OS/2 programming.
• Tutorial: OS/2 concepts • Conversion Guide: DOS-to-OS/2, how to use pipes, queues, semaphores, etc. • Basic Reference Data: ASCII codes, error and return codes, special keystroke codes, ANSI escape sequences and IOCTL functions.

A Guides reference summary screen pops up on top of the program you're working in.

Summary data expands on command into extensive detail (pictured). And you can select from a wide variety of information.

THE NORTON EDITOR
"best editor available"

The best programme writing tool you can get. So says industry guru Bill Bolton. And it's the fastest, slickest programmer's editor available for the MS-DOS world.

Features include: • Edit two files at once, each of unlimited size • Split screen editing • Auto-indent • Find matching punctuation • Condensed mode for outlining • On-line help • Execute another program without leaving the editor • Enter control characters and the IBM extended characters into your program • Print blocks or programs from within the Editor using user-defined settings such as page size and left margin • User-adjustable display appearance – select colour combinations and cursor type • Go directly to a specified line • Switch a word or line from lower to uppercase, or vice versa, automatically • Find and replace bidirectionally
• Set tab expansion on or off • On-line help screens

Yes! Please send me further information on the following Norton products:

Name: _____

Company/position: _____

Address: _____

_____ Postcode: _____

Phone: _____

Send to: PC Extras, PO Box 213 Waterloo, NSW 2017,
Sydney Ph: (02) 319 2155, Fax: (02) 698 1422 Melbourne Ph: (03) 416 1422

p.c extras

XTREE PRO

NEW

JUST ARRIVED FROM U.S.A.!
The latest version of XTREE designed for power users who need almost instantaneous disk re-organisation combined with text editing.

Advanced disk management for todays professional

- **Improved file management** — up to 16000 files.
- **Quick disk logging** — up to seven times faster.
- **Multiple drive logging** — up to 26 drives.
- **Dynamic Text Editor** — create and edit a file from within Xtree Pro.
- **File attribute security protection** from movement or deletion of System Files.
- **Multiple file specifications** — up to four different file specs.
- **Special view command** — view files of different formats.
- **Command shell** — DOS like Command line.

R.R.P. **$245**

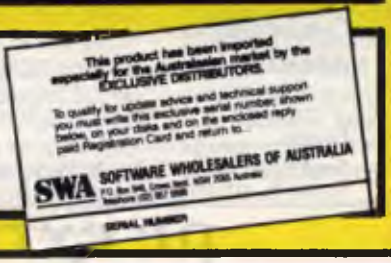
TRADE-IN YOUR XTREE!

UPGRADE TO XTREE PRO

FOR ONLY

$65.00

IMPORTANT
When buying XTREE or XTREE PRO make sure your software has the sticker on it.



XTREE

The standard for file and directory management

For novice and small system users who need to organise their hard disk chaos quickly and efficiently.

- Intuitive graphic display of directory structure.
- Single keystroke operations on individual or groups of files to copy, move, delete, rename, view or print.
- Sort files by name extension, size, date and time.
- Modify DOS file attributes.

R.R.P. **$165**

PERFECT INTERFACE (Aust.) Pty. Ltd
7th Floor, 8 West Street, N. Sydney NSW 2060
Phone (02) 957 1112

Please send me _____ XTREE PRO $245 each
or _____ XTREE, $165 each.
I enclose my cheque for $ _____ or please debit my American Express, Diner's Club, Visa, Mastercard or Bankcard plus $7.50 freight.

Card expires _____ Signature _____

Name _____ Phone No _____

Address _____

Company _____

NEW PRODUCTS

Software

BBX Progression 2
Risegold
Phone: (02) 799 6622
Price: $600 taxed

BBX Progression 2 is a powerful application development package designed for the business environment. Major features of the language include builtin windowing, graphics and file management facilities. All system and peripheral drivers within the language compensate for different environments. For example, a windowing environment developed on machines with graphics capability will run on any of the 40 or more machines supported by the language.

Directory Assistance
Sourceware
Phone: (02) 411 5711
Price: $69 taxed

Directory Assistance is a disk management system for IBM PCs and compatibles which allows users to perform complex commands without having to exit from the program in which they are working. It resides permanently on the PC's RAM. Directory Assistance combines powerful DOS utility commands with 300 online help screens and a comprehensive inbuilt DOS tutorial. It enables users to easily move files from one directory to another, rename file, change file attributes and edit file contents.

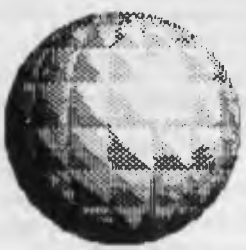
Conn-x
Sourceware
Phone: (02) 411 5711
Price: $199 taxed

A new videotex software product which can be programmed to remember Viatel commands, Conn-x, and the Dataplex DPX-224 are being bundled by Sourceware.

Conn-x can store complex commands to enter Viatel, reducing user access to only a few strokes. It also allows videotex graphics to be displayed on a monochrome screen. The DPX-224 is capable of replacing four conventional dial modems. It operates at speeds of 300 to 2400 bps and support Viatel, Austpac, Aftel, Midas, Ausinet and all other asynchronous and synchronous database communications services. It also supports the Microcomputer Network Protocol (MNP). A second version of the Conn-X package is available for Hayes compatible modems.

Impossible Mission
Atari
Phone: (02) 805 0344
Price: $29.95 taxed

You are sent on a Cobra Blue top secret survival mission against the terrorist professor, Elvin Atombender. He is a psychotic genius who has used computers to steal money and build up an eight tower fortress, secured by deadly robots. Under Cobra Blue phase II you must enter Elvin's complex, locate and arrest him within eight hours. You are a fast athletic agent who can run, flip and search with dynamic skills. Good luck on your mission!



Gemstone 110
Living Image
Price: See below

Amstrad CPC users will be pleased to know that Living Image has released a collection of 110 Amstrad programs written in Basic. All programs are easy to follow and are accompanied by remarks within the programs and instructions.

Living Image says it encourages programmers to take subroutines out of the programs and use them in their own. The programs include utilities, business, educational, graphics and games. The complete collection (2 disks) is $38.95; programs 1 to 50, $20.95 (1st disk), and programs 51 to 110, $22.95 (2nd disk). Order from Living Image, PO Box 409, Elizabeth Centre 5112 SA.

Elite
Personal Computer Software
Phone: (02) 923 2899 taxed
Price: $1539

Elite is a desk top publishing package for the office environment. It is designed for use by a person able to use word processing and does not require any knowledge of typesetting techniques or terminology.

Elite contains Wordcraft Version 3 for preparation of text and its own Imagemaster program for image processing and A4 page makeup. Images may be captured and saved by a memory resident screen grabber utility. Elite requires an IBM PC, XT, AT or compatible with 512 kilobytes, hard disk, CGA screen and mouse.

Lewis Pay Pack
Custom Made Software
Phone: (02) 399 8566
Price: $990 taxed

The Lewis Pay Pack (reviewed in YC '87) has been upgraded. More than 50 new features have been added to the payroll package including: able to calculate holiday records in hours or days, tax averaging for commissions and bonuses and birthday reminders.

Pay Pack is designed specifically for Australian enterprises with up to 250 employees, while Maxi Pay Pack caters for 700. It lets a business streamline all aspects of payroll processing. The latest version is a result of feedback from users.

Modern Jazz
Imagineering
Phone: (02) 697 8666
Price: $750 taxed

Lotus, through distributor Imagineering, has announced that Modern Jazz should now be available. Modern Jazz is a powerful integrated business software package for Apple Macintosh users. It is designed specifically for users who want the benefits of integrated software without having to sacrifice power.

The package combines six functions: worksheet, graphics, database, forms, word processing and communications. Modern Jazz also offers a number of features designed to take advantage of new powerful features to take advantage of Apple's new Macintosh SE and Macintosh II PCs.

Service Industry Accounting
Sybiz
Phone: (08) 232 0600
Price: $1495 taxed

Sybiz has released the Service Industry Accounting package which is geared towards those companies which charge for their work on the basis of time and materials used. It is targetted at architects, consultants, engineers, plumbers, auto electricians and mechanics.

The package is a complete integrated solution covering all aspects of accounting, costing, billing and stock control. Two styles of invoicing are provided in the package. Either weekly or monthly cycles can be selected.

SageNet Starter Pack
Personal Computer Software
Phone: (02) 923 2899
Price: $900 taxed

The Starter Pack is for small busi-

PC-SIG AUTHORIZED DEALER

Pay-If-You-Like Software

Why pay hundreds of dollars for software? The alternative will now save you even more money and time.

Many IBM and compatible users are now aware of SHAREWARE. That's the approach to marketing software which bypasses the high publishing and distribution costs to give you software at the lowest possible price. For a nominal fee you can obtain high quality software and if you like that software you are encouraged to register with the author. This registration usually costs between $20 and $150. In the past most registrations have needed to be sent to the USA – that meant obtaining a bank draft, waiting and wondering what you'll get and then often you would need to spend a couple of hours at customs paying duty and sales tax.

Now things have changed! We can now offer registration for many SHAREWARE products and save you the trouble of dealing with overseas authors. The registration fee of course varies from product to product but in every case you'll save both time and money Products marked with a ☆ on this page can be registered with us – many of them exclusively with us.

PC-SIG is the world's largest distributor of SHAREWARE with a library of over 1000 disks. Manaccom, as PC-SIG's authorized distributor in Australasia, can offer all additions to the library within a couple of weeks of their release in the USA. But that's not all. Our disks are imported with the programs already copied so you can be sure you are getting the latest version available.

You need not be a member to purchase our disks Members receive our 400+ page Directory, bimonthly magazines and hotsheets and discounts on disks. Right now members (and that includes new members who use the coupon on this page) can purchase a selection of ten disks from the library for just $59.50 including tax (+$5 p&h) ($NZ99 50+$5) That is just

$5.95
per disk
$9 95 per disk in NZ

If you decide that you don't like the software you may still keep it. You only pay the author's registration fee if you like the software and decide to use it. Manuals are included on the diskette or you can purchase our new publication "Up and Running in 15 Minutes" which covers the products marked ✐ on this page

The following is a small selection from the library:

❑ **#5, #730 & #1015 PC-FILE+ (3 disk set)** ✐ ☆
Jim Button's very popular database system Works with other Buttonware software eg PC-TYPE, PC-CALC+.

❑ **#78 & #627 PC-WRITE (2 disk set)** ✐ ☆
The famous Shareware word processor from Quicksoft. Everything you need in a word processor including spell check.

❑ **#90 & #594 GENEALOGY ON DISPLAY**
Written in BASIC with concern for the novice Genealogist. As well as the expected features eg printing family trees, family group sheets, and descendents charts the program creates parentchild indexes and prints ID numbers.

❑ **#105 PC PROFESSOR**
A very popular tutorial on the BASIC programming language which increases in complexity as the user progress.

❑ **#199,#1016 & #1017 PC-CALC+ (3 disk set)** ✐ ☆
A new version of the popular and easy to use spreadsheet program from Buttonware.

❑ **#287 & #288 FILE EXPRESS (2 disk set)** ☆
Expressware"s great new easy to use and much more powerful data base system. Very easy to get started as it comes complete with an on disk tutorial.

❑ **#320 TOUCHTYPE**
A colorful way to improve your typing. Suits either PC or newer enhanced keyboards.

❑ **#403 PC-TUTOR**
Ideal for new users to gain an understanding of your PC and how to use it Checks on your progress with question answer format.

❑ **#455,#681 & #682 PC-TYPE (3 disk set)** ☆
Jim Button's WP with on line help, spelling checker, whoops key, and mailmerge which works with PC-FILE, Wordstar and ASCII files

❑ **#480 PC OUTLINE** ✐ ☆
One of the very best Shareware products. Can outline and organize documents point by point Ideal for essays and the like From Brown Bag Software

❑ **#499 PROCOMM** ✐ ☆
Datastorm Technology's state of the art telecommunications software.

❑ **#505 PC STYLE** ☆
Analyses text files for readability – considers the number of words per sentence, % of words of specific length, personal words, action words. Make your writing read better.

❑ **#523 SIDEWRITER**
Turn your spreadsheet on its side and print it on your Epson or compatible printer down instead of across the page.

❑ **#524 & #525 EXPRESS CALC (2 disk set)** ☆
One of the better Lotus 123 clones handling worksheets up to 64 columns by 256 rows. Complete with tutorial and documentation

❑ **#528 NEW YORK WORD** ☆
A sophisticated WP originally written for larger machines. Includes hyphenation and de-hyphenation.

❑ **#608 AUTOMENU** ✐
Magee Enterprises menu management program that has become one of the fastest selling Shareware programs.

❑ **#641 MAHJONG (Australian author)**
A fascinating game with extraordinary graphics on colour or Hercules mono. Excellent documentation for beginners with play levels from beginner to excellent.

❑ **#646 AMY'S FIRST PRIMER**
Six games to teach basic reading skills to a pre-reading child. Positive reinforcement helps the learning can be fun approach.

❑ **#669 & #670 GRAPHTIME II (2 disk set, Australian author)** ☆
Business presentation graphics with line column and pie charts Works with dBase Mutiplan and Lotus. Hercules version on #833 & #834.

❑ **#687,#688 & #689 IN-CONTROL (3 disk set) (Aust. Version)**
Comprehensive contact filing system with on-line documentation, high speed search, electronic card file and tickler file. Can graphically display appointments for next two weeks.

❑ **#705 CHILDRENS GAMES**
A straight forward approach to making fun educational with good graphics. Geared for 2 to 10 year olds.

❑ **#727 POWERMENU** ✐ ☆
Brown Bag Software's menu system with 10,000 selections All your applications can be a keystroke away!

❑ **#728 & #729 HOMEBASE (2 disk set)** ☆
A second generation memory resident desktop organizer from Brown Bag software. PC Magazine said "it delivers the most bang for the buck among desk top organizers".

❑ **#765 GALAXY** ✐
A new leader in Word Processors with enough versatility and strength to be valuable to both the beginner and professional user

❑ **#780 BRIDGEPAL**
A great way to practice your bridge with up to three partners

❑ **#800 BAKER'S DOZEN** ☆
A collection of more than 13 utilities from Buttonware.

❑ **#806 & #807 REMARKABLE GENERAL LEDGER (2 disk set,NZ author)**
Not only includes a full general ledger but it has various reports on your entries, a bank reconciliation and trial balance.

❑ **#812 & #813 SOAR (2 disk set)**
Service Oriented Accounts Receivable for businesses that provide services as well as products. Menu driven and easy to operate.

❑ **#816 & #817 TURBO C TUTORIAL (2 disk set)**
Programmers who know other languages will be very familiar with Turbo C when they complete the lesson.

❑ **#819 CROSSWORD CREATOR**
Ideal as a learning tool but can be used by anyone who enjoys designing or solving crossword puzzles

❑ **#828 EDRAW**
Sophisticated graphics able to draw schematics, block diagrams, flowcharts and can even be used to lay out a printed circuit board

❑ **#830 & #831 WAMPUM (2 disk set)**
A full featured menu driven implementation of dBase III. Can be used for application development and an enduser database management system.

❑ **#836 DISK COMMANDO**
Seventeen utilities for your floppy or hard disk drives. Shareware's answer to Norton Utilities

❑ **#844 FUN KEYS,EDUCATIONAL FOR CHILDREN**
Teaches the alphabet to 2 to 5 year olds by showing pictures for each letter and playing nursery rhyme melodies.

❑ **#846 & #847 LOTUS LEARNING SYSTEM (2 disk set)**
Designed to teach novice users how to use Lotus and includes some sample worksheets.

❑ **#849 GRAPHICS COACH FOR RUNNERS**
Gives serious runners an easy way to monitor their training. Can produce monthly and yearly graphs and tables with average speed, runner's pace and total distance.

❑ **#870 HGCIBM – COLOUR EMULATION FOR HERCULES**
Enables software written for colour cards to run on the Hercules mono card.

❑ **#878 TEACHERS DATABASE FOR THE CLASSROOM**
Not just a database but test scores may be weighted, averaged, statistically analysed, changed to a percentage or changed to a letter grading. Saves significant amounts of teacher's time.

❑ **#879 BIORYTHM MONTHLY SCHEDULE PROGRAM**
Not only can you produce a Biorythm but compare those of two people for compatibility.

❑ **#893 PRIVATE LINE AND WEAK LINK**
Private Line is an encryption\decryption program. Weaklink connects two PC's via their serial ports and allows file transfers. For example file transfers can be made from the 5.25" drive on one machine to a 3.5" drive on another.

❑ **#909 & #910 dTIME KEEPER (2 disk set)**
Can record time by the minute for a number of employees. Provides current accounts receivable totals and enables automatic billing of standard charges. Menu driven.

❑ **#918 CAMBRIDGE THOROUGHBRED HANDICAPPER**
Attempts to predict future performances by analyzing the past performances. Also gives a betting strategy.

❑ **#923 PROFESSIONAL REAL ESTATE ANALYST**
A set of Lotus macros to analyse the return on a property using up to 14 different measures.

❑ **#1007 C WINDOW TOOLKIT**
Designed for the novice and intermediate C programmers who want full screen, colour, cursor control and windowing capabilities without complex escape sequences or DOS level interrupts. Even more features for the experienced programmers.

Yes, I would like to try the following PC-SIG software:

____ ____ ____ ____ ____ ____ ____

____ ____ ____ ____ ____ ____ ____

TOTAL	5.25"	@ $13	_____	$NZ15
	3.5"	@ $15	_____	$NZ18
ANNUAL MEMBERSHIP		@ $38	_____	$NZ50
NEW MEMBERS X-TRA SPECIAL Membership + 10 Disks	5.25"	@ $97.50	_____	$NZ149.50
	3.5"	@ $117.50	_____	$NZ179.50
"UP AND RUNNING IN 15 MINUTES"		@ $28	_____	$NZ35
POSTAGE AND HANDLING			~~$5.00~~	
		TOTAL	_____	

Payment by: ☐ Cheque ☐ COD (Aus only)
☐ Visa ☐ Bankcard ☐ Mastercard

Card No:_____
Expiry:_____ Signed_____
Name_____
Address_____
_____ State_____ Code_____

MANACCOM PTY LTD

Mail: Freepost No 29 (No stamp required)
PO Box 509
Kenmore Qld 4069

Call on 07 374 1311
Fax on 07 374 2274
Viatel #49000*

Represented in NZ by

Remarkable Computers
PO BOX 1641
Dunedin
024 778 068

Software Plus
172-6 Ponsonby Rd
Auckland
09 767 667

All prices include applicable sales tax or GST.
© PC-SIG, Manaccom 1988

nesses that wish to network their PCs. It includes two half length networking cards that will fit any available half slot in an PC, XT, AT or compatible. The cards work at a maximum 16 MHz. Installation is simple. The manual provides explicit instructions with photos for the Amstrad and IBM PCs. Each SageNet card has two 9-pin D connections, one male, one female. The five meter cable is terminated with one of each sort.

Peripheral Systems

Memory Lane
Peripheral Systems
Phone: (02) 437 6255
Price: $285 taxed

Memory Lane is a PC software program for finding and consolidating information created by all your other programs. It searches and retrieves the full text of any or all of your files located on your fixed disk.

The program speeds up the creation of new documents by letting you 'cut and paste' existing information from any file into any other file or program. Memory Lane works with word processors, database management systems, spreadsheets, accounting and other programs.

Winter, Summer & California Games
Atari
Phone: (02) 662 7944
Price: $29.95

Three games for the Atari VCS have been released for the athletically (but computer-bound) inclined. Summer Games is a series of strategy games involving skeet shooting, swimming, rowing and the 100 yard dash. Winter games features Biathlon skiing, bobsled, ski jumps and speed skating, while California Games features skate boarding, surfing and roller skating.

Vaxtel
Micro Computer Technology
Phone: (02) 419 7588
Price: Not supplied

The Vaxtel package for accessing Prestel-type videotext systems now provides for X.25 connections via Austpac in Australia or Pacnet in New Zealand. Vaxtel supports all VT200 and VT300 terminals and operates in colour on the VT225.

The new interface to packet switching network uses the VAX PSI software from DEC. It allows multiple users to simultaneously access various Prestel services. Pages of information can then be saved to disk on the VAX for later recall.

New Machines

Graphics workstations
Tektronix
Phone: (020 888 7066
Price: Not supplied

Tektronix has introduced 14 new graphics products: eight 4300 series high performance Unix based graphics workstations, five compatible 4200 graphics terminals and an applications processor.

The 4300 series workstations incorporate industry standards, including Motorola's 68020 processor, UTek – Tek's implementation of 4.2 Unix, with System V extensions – X Windows, network file system, Ethernet LAN with TCP/IP protocol and Plot 10 graphics software.

The range of graphics address terminals offer many capabilities including the ability to be upgraded to fully integrated workstations. The three 4230 series three dimensional graphics terminals and two 4220 two dimensional graphics terminals offer a standard Ethernet local area network connection as well as RS232.

NEC Information Systems
Phone: (02) 439 6584
Price: $6999 untaxed

The new NEC Portable features a high speed 80286 processor and 40 megabytes of hard disk storage. It is able to run most PC application packages.

The Portable also provides a link to future products, such as OS/2 and associated packages. The screen is a tilt adjustable, backlit LCD, with 640 *x* 350 pixel resolution. Connecting ports for external expansion are featured, as are internal expansion slots and 3½ inch floppy drives. The keyboard has 93 keys and a separate numeric keypad and cursor diamond.

OMEGA
COMPUTER EQUIPMENT

Turbo XT
Omega Computer Corporation
Phone: (02) 819 7415
Price: See below

Omega Computer Corporation has released a range of PCs for stand alone or network purposes. Three machines are being launched initially – a half height Turbo XT, an AT and a 80386 Super Tower.

The Turbo XT has a 10 MHz processor and an 'all in one' main board containing 640 kilobytes of RAM, multi I/O, multi display and FDC. The AT has a 12 MHz 0 wait state processor. The 1 megabyte of 80 ns RAM can be expanded to 16 Mbyte, making it suitable as a fileserver or a very powerful workstation on a network. It is also available in a half height case.

The Super Tower 386 has a 20 MHz, 0 wait state processor. Its 2 Mbyte of 80 ns RAM can be expanded to 16 Mbyte and with its 32-bit bus, the Omega Tower can meet the heaviest fileserver demands. The Turbo XT sells for $2095, the AT for $3795, and the Super Tower for $9595.

Zenith laptops
Zenith Data Systems
Phone: (02) 417 7999
Price: See below

Zenith Data Systems has released three new laptop computers: the Supersport, the Supersport 286 and the Turbosport 386. Processors in the three models range from an 80386 and an 80286 running at 12/6 MHz with zero wait states to an 80C88 running at 8/4.77 MHz.

The clock speed can be switched dynamically and each model has the option to add a numerical co-processor. Standard RAM sizes permit full use of base operating systems, but all three models have 1 Mbyte RAM option to increase computing power. The three portables offer an optional, detachable keypad to simplify entry and manipulation of data. Each model supports the use of additional cards for networking, high resolution video, or other needs by offering an optional expansion chassis.

The Supersport is priced at either $3699 or $5899, depending on floppy drive configuration; the Supersport 286 with a 20 megabyte hard disk costs $7999, or $9399 for a 40 Mbyte hard disk. The Turbosport 386 with a 40 Mbyte hard disk is priced at $11999.

Peripherals and Extensions

CCA Systems
Phone: (02) 660 0077
Price: $582 taxed

CCA Systems has announced a new 3½ inch, 1.44 megabyte disk drive option for the Compaq Portable III, Portable 386, DeskPro 286, DeskPro 386 and DeskPro 386/20 models. The third height 3½ inch drive option is available as a primary or secondary (A or B) drive.

p.c extras

Deluxe Option Board
PC Extras
Phone: (02) 319 2155
Price: $299 taxed

PC Extras has announced a new version of the option board that can read and write Mac data disks in any PC equipped with a 3½ inch internal drive.

Installed in either an IBM PS/2 Model 25 or 30, or a PC or AT compatible, the new Deluxe Option Board enables these computers to use Mac data disks in their PC's internal 720 kilobyte 3½ inch drive. The standard bus version is shipping now. A version for micro channel will be available in August.

AB5-P256K
Advanced Components
Phone: (03) 739 1198
Price: $750 taxed

The AB5-P256K is a fully automatic five port auto sharer with internal 256 kilobyte buffering. The unit combines the technologies of both an auto sharer and a 256 Kbyte printer buffer.

It will automatically share one parallel printer with up to five computers. The unit has five parallel inputs and one parallel output. With the 256 Kbyte buffering, all five inputs can spool in simultaneously. The AB5-P256K also includes a hold button which locks onto any selected computer.

Range of Arcnet products

ADE Computers △
Phone: (03) 543 2677
Price: Not supplied

ADE has announced the release of its range of Arcnet local are network (LAN) products. These products include the LAN/A Arcnet cards; a full range of Arcnet network servers;4, 8, 12 or 16 port active hubs; 4 port passive hubs; Novell Advance Netware 286; fibre optic or coax interface and network accessories.

The LAN/A network expansion card is the interface between the network and IBM PCs or compatible workstations. The LAN/A hardware complements the Novell Advanced Netware 286 proprietary network operating system

Multiscan △

Teco Australia
Phone: (02) 684 4277
Price: $1272 taxed

The Multiscan is a 14 inch intelligent monitor. It sits on an angular tilt and swivel base, with an ergonomically designed facia. The screen has special tinting to reduce glare.

The Multiscan features control switching for text mode on/off, horizontal width on/off, adjustment controls for monitor contrast features, brightness, horizontal/vertical positioning and size. The rear panel of the monitor holds additional controls for the selection of scan mode, analog and digital input facilities.

Hyperformance boards

Hypertec
Phone: (02) 819 7222
Price: $1674 taxed

Hypertec has developed a speed board called Hyperformance that allows the Olivetti M24 and M24SP to run faster than the Olivetti M28 The Hyperformance board has been designed to run with both the Intel 8086 and 8088 processors. Tests show a typical Lotus recalculation which takes 12 seconds on the M24 takes about four seconds with the installation of a Hyperformance board.

P321SLC

Toshiba
Price: $1522 taxed

Toshiba has released the P321-SLC colour printer; it is the colour version of the 24-pin P321SL. The new printer has a resolution of 360 by 360 dots per inch, operates at 216 characters per second and has a builtin tractor feed. Up to eight colours can be printed. It has complete front panel control. A 32 kilobyte buffer is standard. There is also an automatic single and dual bin cut sheet feed paper feeder.

EGA conversion kit △

Electronic Solutions
Phone: (02) 427 4422
Price: $995 taxed

Electronic Solutions has bundled its multistandard PEGA EGA card with its ESM 5400 colour monitor. The PEGA EGA card gives compatibility with all established standards and can drive CGA and monochrome monitors if required. The monitor is a high quality microetched screen model with high brilliance phosphers suitable for graphics and Cad work.

NX-1000CL printer

Star Micronics
Phone: (02) 736 1144
Price: $619 untaxed

Star Micronics has released the NX-1000CL dot matrix colour printer. It is capable of draft printing at 144 characters per second (cps) and can print at 36 cps in near letter quality mode. It uses a four colour ribbon to mix up to seven colours in the printing process.

The NX-1000CL does not require special colour software to drive it. A wide variety of type styles and fonts are standard. Italic printing can be done in either draft or near letter quality modes.

RDT △

TCG
Phone: (02) 699 9569
Price: Not supplied

TCG's new portable RDT data terminal is designed to defy the most extreme operating conditions. The RDT can withstand multiple drops from two meters, is water resistant and can operate normally in temperatures from -20 to +60 degrees Celsius. All external contacts are short circuit protected and it can operate for more than 100 key contact hours on its alkaline battery packs. The RDT communicates through an RS-232 port and can support barcode wands and printers.

SF15B

Star Micronics
Phone: (02) 736 1144
Price: See below

Star Micronics has released bin feeders for two of its 15 inch models, the NB-15 and the NB24-15. The single bin feeders can have an optional second bin. The feeder allows users to print material onto letterhead and other single sheet paper. It is called the SF15B and sells for $403 untaxed. The second bin, the EB2, sells for $275 untaxed.

PCII/C

Awanet
Phone: (02) 360 2822
Price: $2995 untaxed

Awanet has released the PCII/C Plus (for colour) networking board, designed for IBM PC, XT, AT and compatibles. The board supports two users, providing them with 768 kilobytes of memory each.

It is fitted with two 16-bit processors, operates at 10 MHz and supports CGA. It works in conjunction with the latest versions of PC- and MS-DOS. Each board also has a dedicated serial port for each user.

SX Series

Computec
Phone: (03) 882 1326
Price: Not supplied

The SX Series expandable SCSI hard disk subsystem for Macintosh Plus, SE and Mac II are built-in with high performance SCSI hard disks mounted in an expandable enclosure. This flexible enclosure allows for future growth. It features 150 megabyte to 1.2 gigabyte capacity, 16.5 ms average access time, embedded SCSI hard disks, optional streaming tape backup and AppleShare capabilities.

SmartNet 4000 Switching Pad

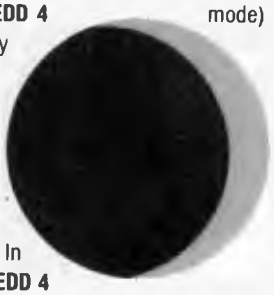
Datacraft
Phone: (03) 727 9111
Price: See below

The SmartNet 4000 Switching Pad is an entry level asynchronous pad/switching pad based on a high performance 16-bit 80186 processor with 512 kilobytes DRAM, upgradeable to 1 megabyte.

It provides up to 10 X.25 links and up to two high speed (V.35) X.25 links with 4 to 16 asynchronous channels with speeds up tp 9600 bps. The SmartNet4000 is fully software configurable with an internal 3½ inch disk drive. Software architecture and command structure is the same as the 2000 and 3000 series. Pricing starts at $4500.

BACK 4 UP
ESSENTIAL DATA DUPLICATOR

Back up your copy-protected disks with **ESSENTIAL Data Duplicator 4 PLUS** ■ **EDD 4 PLUS** is new technology, not just 'another' copy program. The **EDD 4 PLUS** program uses a specially designed hardware card which works with your disk drives to back up disks by accurately copying the bits of data from each track. Don't be fooled . . . no other copy-program/system for Apples can do this! ■ In addition to backing up disks, **EDD 4 PLUS includes several useful** utilities such as examining disk drives, certifying disks, displaying drive speed rpm's, plus more! ■ **EDD 4 PLUS** runs on Apple II, II Plus (including most compatibles), and IIe, and is priced at $190.00 (duodiskl/unidisk 5.25 owners must add $32.00 for a special cable adapter). ■ A standard **EDD 4** version which doesn't include any hardware is available, and can be used on Apple IIc and III (using emulations mode) and is priced at $125.00.



■ Bankcard and Master card accepted by phone. Add $3.00 to all orders for postage and handling.

All orders must be prepaid.

WARNING: EDD is sold for making archival copies only

UTILICO SOFTWARE
83 HALL ST., BONDI BEACH,
NSW 2026 PHONE (02) 30 2105

Tektronix 4693D ◁

Tektronix
Phone: (02) 888 7066
Price: $14,500

The Tektronix 4693D is a 300 dots per inch, true colour printer that produces life-like output. It is fully compatible with Sun and Apollo workstations, the IBM PC and the full line of Tek terminals and workstations.

Its high speed Centronics interface can download complex images in as little as five seconds for maximum user productivity. The Motorola 69020 processor drives ultra fast intelligent lamp processing. The 439D offers 12 megabytes of memory and can store three full images of 1024 *x* 1280 pixel with 24 bits of colour information per pixel.

Services

How to use Ventura Publisher

Barrington Corporation
Phone: (08) 232 1333
Price: See below

How to use Ventura Publisher is an audio based training course for desktop publishing. In five self study cassette lessons of an hour or two each, the training course introduces the new user to every major command and capability of the program.

By listening to step-by-step instructions on tape, the learner works hands on with the Ventura program itself. Teaching files are provided on a course data disk and a fully indexed Quick reference guide summarizes all key concepts. The course price has not yet been confirmed, but is expected to be around $189 to $200 untaxed.

Miscellaneous

Catalog △

Sylex
Phone: (02) 647 2888
Price: Not applicable

At last! The definitive catalog of Sylex products has been released! Sylex has issued its 1988 catalog, available from its Sydney, Melbourne, Brisbane and Canberra offices. The catalog features its range of ergonomic furniture, such as chairs and tables, as well as a range of peripherals such as copy holders, keyboard seals, printer holders and footrests.

Amiga the Movie

Commodore
Phone: See below
Price: (02) 427 4888

There have been many blockbusters that have hit both the large and small screens. Commodore has decided to get into the film industry with the release of Amiga the Movie, a video which present viewers with all the features of the Amiga 500. It is aimed at prospective buyers of the 500. The movie may be bought for $20; this is refunded when delivered back to the dealer. If the viewer purchases the video and the Amiga 500, bonus software has been offered to the value of $200.

FX-910

Triumph Adler
Phone: (02) 748 3388
Price: $2650 taxed

The FX-910 is a compact fully featured facsimile unit. It is able to sit on the corner of a desk or hang on a wall and operates by simply plugging it into an ordinary phone line. The FX-10 weighs only 10 pounds. Single button transmission is possible by storing frequently dialled numbers in the autodialer; up to 50 numbers can be stored. The fax unit features a delayed dialling facility. A four digit password is used to prevent unauthorised polling of sensitive documents.

OKI

MICROLINE PRINTERS

Save $ $ $

SUPERB PERFORMANCE AT AFFORDABLE PRICES

Suit IBM, IBM Compatibles, PC, XT, AT, Commodore PC's, AMIGA, Atari, Microbee, ICL, NEC, NCR, PRIME, UNISYS, & Macintosh

ALL SOFTWARE *ALL APPLICATIONS*

FEATURES: Draft, NLQ Print, bit map graphics, menu select, rear and bottom feed, colour

182	9PIN	120cps	30NLQ	80col
183	9PIN	120cps	30NLQ	136col
192	9PIN	240cps	40NLQ	80col
193	9PIN	240cps	40NLQ	136col
292	18PIN	300cps	100NLQ	80col COLOUR
293	18PIN	300cps	100NLQ	136col COLOUR
294	18PIN	400cps	100NLQ	136col COLOUR
390	24PIN	270cps	90LQ	80col
391	24PIN	270cps	90LQ	136col
393	24PIN	450cps	120LQ	136col
LASER		6 ppm	300api	15 Fonts Resident

Service — Ribbons — Toners

RIBBONS, ROLLS & PRINTERS PTY LTD
48 New Illawarra Road,
BEXLEY NORTH, NSW 2207
Ph: (02) 507 663 **Fax (02) 502 1152**

your computer

SONY.

WIN A $1200 SONY COLOUR TV!

All you have to do is subscribe to Your Computer and your subscription automatically enters the Sony draw.
12 months subscription only $42.00.

1ST PRIZE

The Sony Trinitron remote control television features: Flat and square black screen; Australian standard PAL colour television system; A/V inputs BCN (Video) RCA (Audio); Multi function wireless remote commander; On screen display (Program No., Volume, colour, contrast, tuning) This modern monitor style Super Trinitron with black screen is superb for viewing!

2ND PRIZE

Plus, subscribe now and also enter the draw for second prize of a portable TV with AM/FM radio — Great for the car or home, valued at $159.00

10 CONSOLATION PRIZES

AND consolation prizes will be given 10 lucky subscribers of an AM/FM all weather transistor valued at over $10.00 each!

Your Computer provides friendly, informal advice on technical subjects, specialising in tutorials showing users how to get the most out of their equipment. Your Computer is a must for anybody with a micro-computer!

To enter, simply fill out the attached coupon, and post in the reply-paid envelope. If missing send name, address, telephone no., and cheque, money order or credit card details (card type, card no., expiry date and signature) to: Your Computer/Sony Competition, Freepost No. 4, P.O. Box 227, WATERLOO NSW 2017 (No stamp required) for enquiries Ph: (02) 693 9517 or (02) 693 9515.

HURRY! Offer closes July 1988, for Your Computer.

CONDITIONS OF ENTRY

1. The competition is open only to Australian Residents authorising a new/renewal subscription before last mail July 31, 1988. Entries received after closing date will not be included. Employees of the Federal Publishing Company, Sony Australia and their families are not eligible to enter. To be valid for drawing, subscription must be signed against a nominated valid credit card, or, if paid by cheque, cleared for payment.
2. South Australian residents need not complete the coupon but may enter only once by submitting their name, address, and a hand-drawn facsimile of the coupon.
3. Prizes are not transferable or exchangeable and may not be converted to cash.
4. The judges decision is final and no correspondence will be entered in to.
5. Description of the competition and instructions on how to enter form a part of the competition conditions.
6. The competition commences on April 1, 1988 and closes with last mail on July 31, 1988. The draw will take place in Sydney on October 12, 1988 and the winner will be notified by telephone and letter. The winner will also be announced in the Australian on October 17, 1988 and a later issue of the magazine.
7. The first prize is: a Sony Trinitron Remote Control colour TV ($1,200). 2nd prize: 5 inch portable Black & White TV set ($159 each), plus 10 consolation prizes of AM/FM all weather radios (approx $10 each).
8. The promoter is The Federal Publishing Company, 180 Bourke Road, Alexandria NSW 2015. Permit No. TC88/675 issued under the Lotteries and Art Unions Act, 1901; Raffles and Bingo Permits Board Permit No. 88/357 issue on 8/3/88; ACT Permit No. TP88/202 issue under the Lotteries Ordinance, 1964.

DICK SMITH ELECTRONICS

FIRST CHOICE FOR COMPUTER PERIPHERALS!

Low cost, high performance IBM Software

The most powerful, easily manageable, fully integrated software you'll get at this amazing low price! The Easy Working and Better Working Series of software from Spinnaker -it's exclusive to Dick Smith Electronics.

The Writer With Spelling Corrector!

The complete word processing package! Includes spelling check, editing, search and find, block insertion & removal, header & footnotes and much more! It even has a mail merge option for the production of form letters. Cat X-9100 **$24.95**

The Planner

Just like a professional spreadsheet! Allows you to work with rows and columns of numbers with extensive mathematical functions. Perfect for budgeting, tax records, expense reports, etc. Can be fully integrated with Spinnaker Filer Cat X-9200 **$24.95**

The Filer

The multi-purpose program that simplifies storage, selection and reporting of information. It acts much like a box of index cards and it's so easy to use. Great for mailing lists, inventories, club memberships, etc. Cat. X9300 **$24.95**

The Graph Maker

You can create distinctive, eye catching graphs and pie charts in six different styles! Just enter the numbers to be plotted directly, or import the information from the Planner or Filer programs. Fantastic for reports, etc! Cat X-9501 **$24.95**

The Connector (Communications)

Allows your computer, through a suitable modem, to talk with other computers via the telephone line! You can have the program dial up a telephone number and send or receive a file,'chat' via the keyboard and hang up at the end of a session. Cat X-9707 **$24.95**

Running Start

Confused by DOS? This program teaches you all there is to know about it and gives you a handy DOS Manager as well. So things are even easier, you get a Typing Instructor and a Word Processing program with tutorial - All at this one low price! Cat X-9813 **$99**

Eight in one

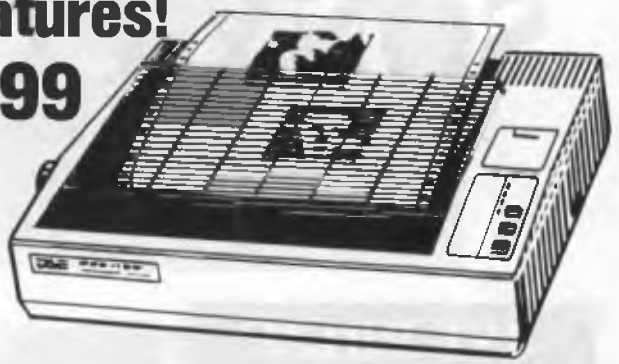
The fully integrated package that combines all the program options needed by the vast majority of computer users. Combines word processor, spreadsheet, filer, graphics, communications, desktop utilities, outliner and spelling checker in one manageable package. Cat X-9401

Exceptional Value! $149

DSE Dot Matrix Printer

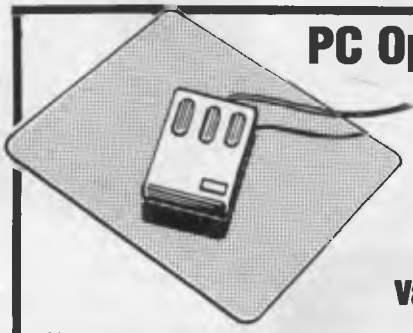
Outstanding value and features!

$499



Compare the features, value and quality with anything else - you won't find better! Fast 135cps for graphics or near letter quality for that important correspondence, this does it all. With inbuilt tractor feed it handles paper from 101 to 254mm width. It even does *italics!* Cat X-3225

PC Optical Mouse



It's faster, more accurate, more controllable and requires much less maintenance than a mechanical mouse! Comes with designer Pop-Up menus for interaction with a huge range of popular software. Cat X-3800

Value at $249!

Also available in BUS version! Cat X-3802 **$279**

PC Paint Plus - Easy Computer Art

Create your own graphics and images in up to 16 colours or B&W easily and quickly. PC Paint Plus makes it all possible. Great for personalized correspondence, graphics presentations... anything! Cat X-9500 **$99**

Special Offer - Huge Saving!

Buy both PC Optical Mouse (X-3800) and PC Paint Plus (X- 9500) together and you'll save $49!

All For Only $299

DICK SMITH ELECTRONICS

• **NSW** • Albury *21 8399* • Bankstown Square *707 4888* • Blacktown *671 7722* • Bondi Junction *387 1444* • Brookvale (Warringah Mall) *93 0441* • Campbelltown *(046)27 2199* • Chatswood Chase *411 1955* • Chullora *642 8922* • Gore Hill *439 5311* • Gosford *25 0235* • Hornsby *477 6633* • Liverpool *600 9888* • Maitland *33 7866* • Miranda *525 2722* • Newcastle *61 1896* • North Ryde *88 3855* • Parramatta *689 2188* • Penrith *(047)32 3400* • Railway Square *211 3777* • Sydney City *267 9111* • Tamworth *66 1711* • Wollongong *28 3800* • **ACT** • Fyshwick *80 4944* • **VIC** • Ballarat *31 5433* • Bendigo *43 0388* • Box Hill *890 0699* • Coburg *383 4455* • Dandenong *794 9377* • East Brighton *592 2366* • Essendon *379 7444* • Footscray *689 2055* • Frankston *783 9144* • Geelong *43 6804* • Melbourne City *326 6088* • Richmond *428 1614* • Ringwood *879 5338* • Springvale *547 0522* • **QLD** • Brisbane City *229 9377* • Buranda *391 6233* • Cairns *311 515* • Chermside *359 6255* • Redbank *288 5599* • Rockhampton *27 9644* • Southport *32 9863* • Toowoomba *38 4300* • Townsville *72 5722* • Underwood *341 0844* • **SA** • Adelaide City *232 1200* • Beverley *347 1900* • Darlington *298 8977* • Elizabeth *255 6099* • Enfield *260 6088* • **WA** • Cannington *451 8666* • Fremantle *335 9733* • North Perth *328 6944* • Perth City *481 3261* • **TAS** • Hobart *31 0800* • **NT** • Stuart Park *81 1977*

Order by phone Toll Free (008) 22 6610 for DSXpress 24 hour Despatch.

Keyboard seals △

Sylex
Phone: (02) 647 2888
Price: $49 taxed

To overcome the inevitable coffee spills, cigarette ash and dust, Sylex has introduced Keyboard Seals. A Seal is only a few microns thick and covers the keyboard.

It is strong enough to protect the keyboard from liquid and dust that could ruin sensitive circuitry yet, it is flexible so that the keyboard still retains a tactile response. The Keyboard Seal will not brittle with age. Keys remain clearly visible as the Seals are form fitted to most popular makes of keyboards.

Reinking ribbons

The Ribbon Reinking Co.
Phone: (03) 729 4059
Price: See below

Printer ribbons may be one of the necessities of modern technology, but the cost of replacing old with new doesn't have to be. The Ribbon Reinking Co. reinks used ribbons as well as being able to fix and reink faulty ones. Normal reinking is half the cost of a new ribbon, while repair work is a quarter of the cost of a new ribbon. So if you are sick and tired of spending all that moolah on new ribbons, why not reink?

Manual

GFS Electronics
Phone: (03) 873 3777
Price: See below

GFS Electronics, radio modem manufacturer, has announced the publication of a 10 page manual designed to answer queries about data transmission. It was written about the X.25 type packet radio protocol used in GFS' CPU-50 smart packet radio modem.

The manual, called *Data Transmission Using Packet Radio and the CPU-50 Smart Radio Modem*, assumes some basic knowledge of computers and radio. It is priced at $5, including posting. Postal address is PO Box 97, Mitcham 3132 Vic.

Nefax 25

NEC Australia
Phone: (03) 267 6355
Price: $5900 taxed price

The Nefax 25 is a facsimile unit with an extra-high speed transmission mode that delivers an A4 size page in nine seconds. The machine features UHS, CCC and MDVV modes and ensures that the receiving end unit gets the message as fast as possible, whatever the mode.

It allows the user to preregister up to 200 commonly called numbers, 36 of which are available at the push of one key. There is also a facility to include 164 abbreviated numbers

The Pressure Pen

TCG
Phone: (02) 699 9569
Price: $1695

The Pressure Pen simulates a wide range of paint and air brushes. It can sense up to 32 different pressures, allowing artists to instantly vary effects such as brush size and paint opacity.

The Pressure Pen is compatible with GTCO's range of Digi-Pad and Digi-Pad PC digitisers and it the latest addition to the range of graphics peripherals. All GTCO products are distributed in Australia by TCG.

A series of seminars will be conducted by Management Technology Education. Seminars include Successful User Documentation (to be held in Sydney, Melbourne, Adelaide and Perth), OS/2, PC/MS-DOS and Supporting PCs (Sydney and Melbourne). For further information contact: (02) 262 5555, (03) 670 7117 or (008) 22 4514.

Ausgraph '88 exhibition and conference will be held in Melbourne from July 4 to 8 at the Hyatt on Collins. Enquiries (03) 387 9955.

Building Services – A Perspective for the Future is the title of a conference to be held at Surfers Paradise by the Chartered Institution of Building Services Engineers from July 7 to 9. For further information contact the Conference Secretary, Robert Turner, 3 Paxton Crs, West Pennant Hills 2120 NSW.

Accountancy in the Age of Technology is the theme for a conference organised by the Institute of Chartered Accountants. It will be held at Broadbeach, Queensland from July 10 to 13. For further information contact Vic Prosser on (02) 290 1344.

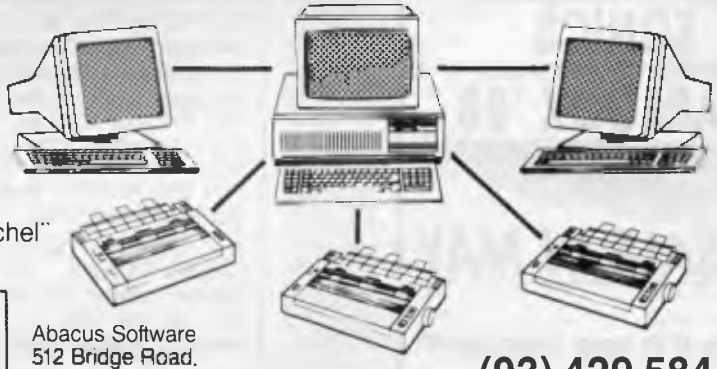
The Fourth National Space Engineering Symposium will be held in Adelaide July 12 to 14. Papers dealing with any space engineering are invited. Contact (062) 73 3633

The 5th International Federation of Purchasing and Materials Management (IFPMM) Asia Pacific Regional Conference will be held from 13 to 15 July at the Sheraton Hotel, Brisbane. Contact the Conference Secretariat on (07) 371 7900.

THE "SATCHEL" MULTI-USER ACCOUNTING SOFTWARE

You get all 6 Modules...
- Invoicing/Credit Notes
- Accounts Receivable
- Stock Control
- Sales Reporting
- Accounts Payable
- General Ledger

Multi-user DOS is built-in with "Satchel" and runs under MS-DOS/PC-DOS.



$1195 (Incl. S/Tax) 3 users 3 printers

$995 (Incl. S/Tax) 2 users 2 printers

$795 (Incl. S/Tax) Single user

abacus

Abacus Software
512 Bridge Road,
Richmond, Vic. 3121 (Dealer enquiries invited) (03) 429 5844

Papers are being called for SUGA '88, the SAS Users' Group of Australia annual conference. Deadline for abstracts is 15 July The conference will be held 12 to 14 October at Darling Harbour. Contact the co-ordinator on (02) 908 2244.

Forum '88, organized by the Honeywell Bull Users' Association, will be held at the Sydney Hilton Hotel from July 21 to 23. Contact (02) 218 9578

Comdex Australia '88 will be held at the Darling Harbour Conference and Exhibition Centre in Sydney from July 26 to 28. Contact (02) 959 5555.

Computer based training, a seminar organised by the NSW branch of ACS is to be held on the 28 and 29 July. A second seminar, Application for Expert systems, will be held on 18 and 19 July. Both will be held at the Masonic Centre, Sydney. Contact Gay Gosling (02) 262 2166.

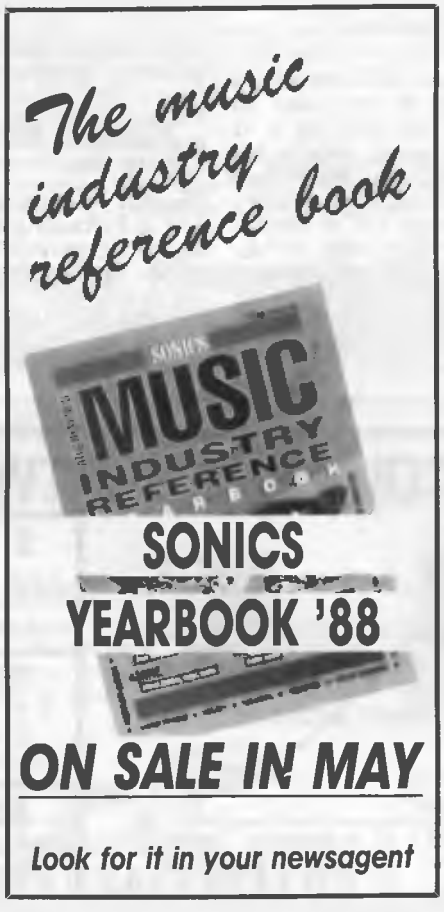
Ergonomics is the title of a Worksafe Australia external education program to be held in Sydney on 8 and 9 August. The program is conducted by the National Occupational Health and Safety Committee. For further information phone (02) 265 7555.

Knowledge based systems in civil engineering will be discussed at a symposium to held at Monash University from August 18 to 19. Contact (03) 565 4718 or (03) 565 4949.

AutoCad Expo '88will be held at Centrepoint in Sydney from August 23 to 25 It will incorporate the Third National AutoCad Users' Conference. Papers have also been called for by the organisers, Autodesk Australia. Contact (03) 429 9888.

Geomechanics '88 is the fifth Australian/New Zealand conference and exhibition on Geomechanics. It will be held in Sydney from August 22 to 24 at the Hilton Hotel. Contact the Institution of Engineers, Australia on (062) 73 3633.

ACC '88, the annual conference for the ACS will be held at Darling Harbour, 21 to 23 September. Contact Karen Hucks (02) 211 5855.



Microbits 88 is an introductory course on interfacing principles for IBM and compatible machines. The course is either part time (6 weeks duration, 1 night a week from 14 September) or full time (5 days) from 5 December. For further information contact the Queensland Institute of Technology, Physics department on (07) 223 2196.

The Australian Robot Association will be holding an international symposium and exposition on robots at the Sydney Hilton and Centrepoint from the 6 to 10 September Contact the association at GPO Box 1527, Sydney NSW 2001

TADSEM '88, the sixth national seminar hosted by Technical Aid to the Disabled, will be held at the Queen Elizabeth II Rehabilitation Centre, Camperdown on the 7 and 8 October. The topic for this year's seminar is Computers Serving People with Disabilities. Contact (02) 808 2022.

Beyond 2000 Science and Technology Spectrum is a multimedia multi dimensional 'experience' held in conjunction with the *Beyond 2000* TV technology show. Five interconnecting pavilions will present working displays of life in the future including lifestyle, medical (featuring a replica of a human heart), industrial, science and electronics. Contact Spectrum Exhibitions on (02) 281 2555.

Infotex '88 is a computer and communications show especially for government. It will be held from November 8 to 10 at the National Exhibition Centre, Canberra. Contact (02) 959 5555.

SST-88, the second Australian International Conference on Speech Science and Technology, will be held at Macquarie University, Sydney, on November 29 and December 1 Contact the Secretariat at Macquarie University on (02) 805 8784.

Microbee Users Group of WA.- New members please note that the group meets at the Leederville Technical College. For further information contact the secretary, Ross Gould on (09) 417 1374 after hours; or write to PO Box N1090, Perth 2000

The Australian Paradox Users Group (APUG) has been formed. Regular monthly meetings will be held on the last Tuesday of each month at Bird Cameron, 316 Queen St, Melbourne 3000 Victoria For further information contact Gordon Castle on (03) 563 1037 Or write to APUG PO Box 26, Chadstone Centre 3148 Victoria.

CLUES, the C Language Users and Enthusiasts Society, is now holding regular meetings at Microsoft, 1/17 Rodborough Road, Frenchs Forest on the first Tuesday of every month

Special Interest Groups for PC Users: CONSIG meets on the first Wednesday of each month in Sydney; contact (02) 290 2655 The DTP Graphics SIG meets on the first Tuesday of the month in Sydney; contact Mark Richards on (02) 929 5855. PCWEST meets on the first Monday of the month in Sydney; phone Bill McEwen (02) 627 2488.

The President Users Group meets on the last Tuesday of each month at the Hornsby Inn Contact Raymond Toms on (02) 212 5277

Watercomp '89, the first Australasian conference on Technical Computing in the Water Industry organisers are asking for papers. The conference will be held from May 30 to June 1, 1989 at the Regent Hotel, Melbourne. Contact the Institute of Engineers, Australia on (062) 70 6549.

Overseas Exhibitions

ECCE '88, the European Conference on Computers in Education, will be held from 25 to 29 July at Lausanne, Switzerland. Contact Switzerland (021) 27 7321 or telex 24833.

Comtec '88 will be held at the World Trade Centre in Singapore from 25 to 28 August. Contact Paul White on (03) 663 3911

A three day conference on Graphic Design Systems will be conducted by McDonnell Douglas Information Systems from August 31 to September 2. Contact Graham Reeve, Sydney (02) 887 9425.

Internepcon/Semiconductor Asia/Pacific, will be held from 14 to 17 September at the World Trade Centre in Singapore. Contact Ann Theseria or Kareen Chang, Cahners, Singapore 271 1013. □

LARRY LEWIS

THE PROPHET

SYSOPS BEWARE! In an electronic magazine that is available from my bulletin board there is an article written about a user in the United States who was taking legal action against a SysOp (System Operator) for invasion of privacy. Apparently the user had been having correspondence with another user on this system in private mail (the actual discussion was not mentioned in the article). The SysOp for some reason took the private messages and re-posted them onto a public board for everyone to see. The user has claimed unspecified damages as a result of this, which basically means go for whatever she can get, on the basis that the publishing of the messages has damaged her personal reputation and also her continued employment.

Now I have two seemingly conflicting concerns over the issue (as did the original article); if the messages were posted by the SysOp for some self satisfying urge (like being a twit) then he/she should really be taken out and shot. On the other hand, if the SysOp is innocent (hmmmm?) then the risk is that this could cause a flood of copy cat type suits simply to try and make money.

This is especially relevant to me for a number of reasons, mainly, because a little while ago some messages that were entered as private on Prophet by one of my users were processed by some new software I am writing as public instead (ouch!). Now I know there is no comparison in intent, but courts don't generally worry about whether you meant to do something or not – they are only concerned about whether you did it at all.

At the rate bulletin boards are going we will need lawyers full time – checking messages, file uploads and complaints. I know this is probably over reacting but sometimes you wonder

I never cease to be amazed at the attitude of certain individuals, not just people using bulletin boards. Most boards in Australia provide an excellent service better than most, if not all, of the so called commercial systems. Generally they are free of charge, or the charge is so minute that it is not worth thinking about.

So it's for the benefit of others that a bulletin board system is run . . . but before entering the system for the first time you are asked by the system (at the instruction of the operator) to complete identification details which is commonly called registration. Now there are still a few boards that do not require any details, but these are becoming very rare creatures indeed.

Why all the fuss? Well long, long ago, in the pre-history of boards, like 18 months ago, even Prophet didn't need you to register. You want to use the system? Sure go right ahead! I had survived like that for a few years; the 'Howdy, welcome in' was easy for everyone

But along came the disrupters . . . posting foul language and performing other acts of vandalism, so new users now need to register. This means you tell me your name, address and telephone number and before I give you access I can check the information (if necessary) and ensure you are who you say you are. Not much trouble really, takes only a few minutes to complete and a couple of days to process.

Now we get people (very few thankfully) who think that it is an infringement on their rights to be 'forced' to supply this information. WALR (What A Load of Rubbish)! Bet if you knocked on their front door and asked for dinner they would want to know who the hell you were! I am always amused (or is that, annoyed?) when someone demands that I give them access without knowing who they are.

MicroGeneral has graciously replaced my ailing hard disk with a new Brand (sic) drive. Boy, it's so quiet, it must be a Dishlex!

The Registry has a new Victorian co-ordinator in Rowan Stevens, System Operator of the Brainstorm Australia BBS. I hear John Blackett-Smith succumbed to too much Malibu at the last SysOps meeting. Seriously – John, thanks for the help and hope the withdrawal symptoms are not too bad (from the Registry – what else?).

Welcome Rowan, I'm sure that you'll find the role of co-ordinator interesting and challenging (doublespeak for 'Do you realise what you are in for?'). There are over a hundred changes this month – we all are suffering from keying and ticking all of them but at least it's done and out for all. □

Primary electronic collection points

The last full listing was given in the April 1988 issue; refer to the Services page on how to obtain Back issues.

ACT – PC Exchange RIBM
(062) 58 1406

NSW – Prophet TBBS
(02) 628 5222

Vic. – Brainstorm Australia
(03) 758 7086

Qld. – AMPAK RCP/M
(07) 263 7070

SA – The Electronic Oracle
(08) 260 6222

WA – Nemo BBS RAPL
(09) 370 1855

PAMS News 8805

NEW SOUTH WALES

*** Amended ***
ABCOM-dataLINK
Sysop: Ben Sharif
Phone: (047) 36-4165
FIDOnet: 713/304
Baud: V21 V22 V22bis V23
Access: Mem Reg VA
Computer: IBM AT Clone
DOS: PC DOS
BBS*oftware*: QuickBBS

*** Amended ***
Airlock Hermitage
Sysop: Greg Glynn
Phone: (02) 600-1384
FIDOnet: 713/609
Baud: V21 V22 V22bis V23
Access: Reg VA
Hours: Weekdays: 1730 – 0800
Weekends: 24 hours
Computer: IBM PS/2 60
DOS: PC DOS
BBS*oftware*: Opus

*** Amended ***
Amiga Zone BBS
Sysop: Richard Duffy
Phone: (02) 771-6351
Baud: V21 V22 V23 B103 B212
Access: Mem LVA
Hours: Daily: 2100 – 0700
Computer: Amiga 1000
DOS: Amiga
BBS*oftware*: BBS-PC!

*** NEW System ***
Apollowline BBS
Sysop: Richard Heppell
Phone: (02) 869-8349
Baud: V21 V22 V23
Access: Reg VA
Computer: Macintosh
DOS: HFS
BBS*oftware*: Red Ryder Host

*** NEW System ***
Apple Users Group – Apple // BBS
Sysop: Cameron Brawn
Phone: (02) 498-7084
Baud: V21 V22 V22bis V23
Access: Mem LVA
Computer: Apple //E
DOS: PRODOS
BBS*oftware*: Proboard //

*** Amended ***
Apple Users Group – MAC BBS
Sysop: Bruce Stanley
Phone: (02) 498-7084
Baud: V21 V22 V22bis V23
Access: Mem LVA
Computer: Macintosh
DOS: HFS
BBS*oftware*: Red Ryder Host

*** NEW System ***
BAD NEWS travels fast
Sysop: James Stevenson
Phone: (02) 540-1879
Baud: V21 V22 V23
Access: Reg VA
Computer: IBM XT
DOS: MS DOS
BBS*oftware*: Opus

*** Offline ***
Blackboard BBS

*** NEW System ***
BLAZE-dataLINK
Sysop: Lee Enfield
Phone: (047) 36-4825

FIDO*net*: 713/303
Baud: V21 V22 V22bis V23
Access: Mem Reg VA
Computer: IBM AT Clone
DOS: PC DOS
BBS*oftware*: QuickBBS

*** NEW System ***
Books BBS
Sysop: Jon Ruwolt & Chris Ruwoldt
Phone: (02) 281-4791
Baud: V21 V22 V22bis V23
Computer: IBM XT Clone
DOS: MS DOS
BBS*oftware*: Opus

*** Amended ***
Cesspit RAPL
Sysop: Andrew Winter
Phone: (02) 543-7204
Baud: V22 B103 B212
Computer: Apple IIE
DOS: PRO DOS
BBS*oftware*: GBBS PRO

*** Amended ***
Coastal Opus BBS
Sysop: Kevin Mann
Phone: (043) 23-2275
FIDO*net*: 711/430
Baud: V22 V22bis V23
Access: Reg VA
Computer: IBM AT Clone
DOS: MS DOS
BBS*oftware*: Opus

*** Amended ***
CoCo Arena QBBS
Sysop: John Kelly
Phone: (02) 646-5573
Baud: V21 V22
BBS*oftware*: QuickBBS

*** Amended ***
Delta Net
Sysop: Geoff Arthur
Phone: (02) 457-8281
Baud: V21 V22 V23
Access: Public
BBS*oftware*: QuickBBS

*** Amended ***
Dick Smiths RIBM
Sysop: Paul Beaver
Phone: (02) 887-2276
Baud: V21 V22
Access: Public
Computer: Multitech PC-500
DOS: MS DOS
BBS*oftware*: Opus

*** NEW System ***
Eagle One BBS
Sysop: Terry Harvey
Phone: (02) 745-3190
Baud: V21 V22 V23
Access: Reg LVA
Computer: Tandy 1000
DOS: MS DOS
BBS*oftware*: BBS-PC!

*** Online ***
Galaxy RAPL
Sysop: Chris Nelligan
Phone: (02) 875-3943
Baud: V21
Access: Mem LVA
BBS*oftware*: Proboard //

*** Amended ***
HighTech
Sysop: Ross Wheeler
Phone: (060) 25-1813
FIDO*net*: 712/201
Baud: V21 V22 V22bis V23 B103 B212
Access: Reg LVA
Computer: AT Clone
DOS: MS DOS
BBS*oftware*: Opus
Info: 147.575 Mhz VK2DGY (Radio) 1200 bps Amateur Packet Radio

*** Offline ***
Info-Centre BBS

*** Amended ***
Integra TEX
Sysop: Kevin Leong
Phone: (02) 746-1109
FIDO*net*: 712/703
Baud: V22
Access: Public
Computer: IBM AT Clone
DOS: PC DOS
BBS*oftware*: Opus

*** Amended ***
Landover BBS
Sysop: Lance Lyon
Phone: (02) 319-1793
Baud: V21 V22 V22bis V23 B103 B212
Access: Mem LVA
Computer: Commodore PC5
DOS: PC DOS
BBS*oftware*: BBS-PC!

*** Offline ***
Matrix (Newcastle) BBS

*** Amended ***
Micro Design Lab
Sysop: Kevin Lowton & Lindsay Gorrie
Phone: (02) 663-0151
Baud: V21
Access: Reg VA

*** Amended ***
Micro Mart C Users
Sysop: Rick Polito
Phone: (02) 560-3607
FIDO*net*: 712/501
Baud: V21 V22 V22bis V23
Access: Reg LVA
Computer: DECA AT
DOS: MS DOS
BBS*oftware*: QuickBBS
Info: C & dBase User System

*** Offline ***
Mirage Arcane

*** Offline ***
New Frontiers CBCS

*** Amended ***
Newcastle Amiga BBS
Sysop: Stan White
Phone: (049) 58-7099
Baud: V21 V22 V22bis V23
Access: Public
Computer: Amiga 1000
BBS*oftware*: BBS-PC!

*** Amended ***
Nightmare BBS
Sysop: Todd Wright
Phone: (02) 545-1132
FIDO*net*: 712/503
Baud: V21 V22 V22bis V23
Computer: FTC 1600XT
BBS*oftware*: Opus

*** Online ***
Omen RTRS
Sysop: Ted Romer
Phone: (02) 498-2495
Baud: V21 V23
Access: Public
Hours: Weekdays: 1630 – 0900
Weekends: 24 Hours

*** NEW System ***
Pandemonium QBBS
Sysop: Mark Farnan
Phone: (02) 411-7642
Baud: V22
Access: Reg VA
Computer: IBM XT Clone
BBS*oftware*: QuickBBS

*** NEW System ***
PC Users Group – IBM Board
Sysop: John Clarke
Phone: (02) 724-6813
Baud: V21 V22 V23
Access: Reg LVA
Computer: IBM AT
DOS: PC DOS
BBS*oftware*: Opus

*** NEW System ***
PC Users Group – Microcomp Board
Sysop: Bruce Edney
Phone: (02) 540-1842
FIDO*net*: 712/505
Baud: V21 V22
Access: Mem Reg VA
Computer: IBM PC
DOS: PC DOS
BBS*oftware*: Opus

*** Amended ***
PC Users Group – Westpac Board
Sysop: Geoff May
Phone: (02) 221-5520
Baud: V21 V22 V23
Access: Mem VA
Computer: IBM PC
DOS: PC DOS
BBS*oftware*: Fido

*** Offline ***
Raucous BBS

*** Online ***
Sci-Fi BBS
Sysop: Greg Hope
Phone: (02) 646-4865
Baud: V21 V22 V23
Access: Public

*** Offline ***
Scorpio BBS

*** Amended ***
Shore BBS
Sysop: David Gill & Jason Sharp
Phone: (02) 959-3936
Baud: V21
Access: Reg VA
Hours: Weekdays: 1800 – 0730
Weekends: 24 Hours
Computer: Macintosh
DOS: HFS
BBS*oftware*: Red Ryder Host

*** NEW System ***
SMUG Bee RCP/M
Sysop: Stephen Thompson
Phone: (02) 476-6396
Baud: V21 V22 V22bis V23
Access: Mem Reg VA
Computer: Microbee
DOS: CP/M80
BBS*oftware*: PBBS

*** Name Changed ***
Sydney PC Users RIBM
Info: Now Called
PC Users Group – Westpac Board

*** NEW System ***
The Exchange FRP BBS
Sysop: Cameron Martin & Scott Caundle
Phone: (02) 644-9211
Baud: V21
Hours: Daily: 1900 – 0730
Computer: C-64
BBS*oftware*: FRP

*** Offline ***
The Guild FRP BBS

*** NEW System ***
The Ivory Tower
Sysop: Colin Leslie
Phone: (02) 668-8021
Baud: V22 V22bis
Access: Public
Computer: IBM XT Clone
DOS: MS DOS
BBS*oftware*: GTPower

*** NEW System ***
The Runway
Sysop: Colin Lean
Phone: (02) 569-5130
FIDO*net*: 712/506
Baud: V21 V22 V22bis V23
Access: Reg VA
Computer: IBM XT
DOS: PC DOS
BBS*oftware*: Opus

*** Amended ***
Triops BBS
Sysop: Pdisk
Phone: (063) 62-9715
Baud: V21
Access: Public
Hours: Daily 2100 – 1800
Computer: C-128
BBS*oftware*: KBBS

*** Offline ***
Ventura Publisher BBS

*** Amended ***
Zeta
Sysop: Nick Andrew
Phone: (02) 627-4177
FIDO*net*: 713/602
Baud: V21 V22 V22bis V23 B103 B212
Access: Mem VA
Computer: TRS-80
DOS: NEWDOS 80
Info: C, Unix & Minix Users

QUEENSLAND

*** Offline ***
Cairns & District IBBS

*** NEW System ***
FAR-NOR-64 BBS
Sysop: Ian Pearse
Phone: (070) 54-6892
Baud: V21 V22 V23 B103 B212
Access: Mem Reg LVA
Computer: C-64
DOS: BASIC IEEE

...We're in the business of Business Computers

HARDWARE

	Ex tax
***HIGH PERFORMANCE SYSTEMS — GREAT VALUE**	
Epson PC/AX2, 20Mb, mono	3025
Epson PCe, 20Mb, mono, 10MHz	2605
NEC Powermate 286 or 386	Call
Mitac - the most reputable clone - 8088, 80286 and 80386 systems	Call
***MONITORS**	
NEC Multisync 2	1079
TVM MD300 CGA	550
***FILE STORAGE**	Call
We have a full range of floppy and hard disks at competitive prices including Miniscribe, Seagate and Hardcard. Call NOW for a quote on your requirements.	
***ADD-ON BOARDS**	Call
Again, a full range including Intel, Hypertech, AST and Everex. Call NOW for your quote.	

*ALL PRICES INCLUDE FULL TECHNICAL SUPPORT

SOFTWARE

	Ex tax
SPREADSHEETS	
Lotus 1-2-3	569
Quattro	247
MS Excel	745
WORDPROCESSING	
MS Word	679
WordPerfect (4.2)	520
Multimate II	625
WordStar Professional	435
DATABASE	
dBASE III Plus	789
Paradox 2.0	925
Dataflex	842
PROJECT MANAGEMENT	Call
COMMUNICATIONS	Call
ACCOUNTING	Call
PUBLISHING	
PageMaker	Call
Ventura	1157
GRAPHICS	
Harvard Graphics	569
MS Chart	425
INTEGRATED	
Framework	875
Symphony	835
First Choice	229
UTILITIES	Call

CALL FOR MORE THAN 500 TITLES NOT LISTED.
Add 14% for tax inclusive price.

TOP VALUE FOR THE AUSTRALIAN TOP TEN

	RRP ex tax	Our price ex tax
1. Lotus 1-2-3	855	569
2. DisplayWrite IV	965	790
3. WordPerfect	775	Call
4. Microsoft Word	795	Call
5. dBASE III Plus	1300	789
6. Multimate II	970	625
7. WordStar V 4.0	590	435
8. Microsoft Multiplan	345	Call
9. Microsoft Excel	875	Call
10. Dataflex	1340	842

Lotus

	Ex tax
Lotus 1-2-3	569
Lotus Hal	199
Lotus Metro	139
Lotus Freelance Plus	688
Lotus GraphWriter	688
Lotus Manuscript	688

Microsoft

	Ex tax
MS Word	679
MS Excel	745
MS Quickbasic	119
MS Quick C	119
MS Mouse	199
MS Works	262

SUPERTRADER BENEFITS WITH EVERY PURCHASE
3 months' FREE Hotline support with EVERY product. All products sourced from official Australian distributor and carry the manufacturers' warranty as well as our own guarantee. 12 months FREE 4P membership (normally $100) with a single purchase over $1000. Delivery and insurance for only $9.50 anywhere in Australia.

The Computer Trader

Bankcard, Visa and Mastercard accepted. All stock subject to availability. Add 14% for tax inclusive prices.

98 Hoddle Street, ABBOTSFORD (03) 417 7044
261 Broadway, SYDNEY (02) 552 1755

0605BUSINESS

THE BUTTON SPIKE PROTECTOR

Surges and spikes are caused not only by lightning strikes and load switching but also by other equipment being switched on and off, such as fluorescent lights, electric motors, fridge freezers, air conditioners, etc

For effective protection such spikes must be stopped before they reach your equipment. Simply plug The Button into an outlet and it will protect all equipment plugged into adjacent outlets on the same branch circuit. The Button employs unique metal oxide varister technology and will dissipate 150 joules of electrical energy. (nearly twice that of comparable surge arresters.)

SPECIFICATIONS:
Voltage 240V Nominal
Total Energy Rating 150 joules
Response Time 10ns
Protection Level 350V peak

..... **$34.95**

CPF CONTINUOUS POWER FILTER SPIKE ARRESTOR

The Fortron CPF Filtered Electronic Spike Protector provides a protective electronic barrier for microcomputers, printers, telephone systems and modems, electronic typewriters, audio and stereo systems and other sensitive electronic equipment.

The CPF provides protection from dangerous electrical spikes that can cause anything from obvious damage (like immediate equipment failure) to less obvious harm that can drastically shorten a system's life.

CPF's superior circuitry design and semi conductor technology responds instantly to any potentially damaging over-voltage, ensuring safe trouble free operation.

Additionally, CPF's filtering capability helps eliminate troublesome and annoying interference, general hash created by small motors, fluorescent lamps, and the like that threaten the performance and shorten equipment life of unprotected electronic components.

SPECIFICATIONS:
Electrical rating: 220-260 volts (AC) 50Hz 10 Amp
Spike/RFI Protection: 4,500 amps for 20m/second pulses
Maximum clamping voltage: 275V differential mode

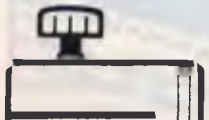
Cat.X10088 ..... **$69.95**

INSIDE THE IBM PC

(Revised and expanded edition) -Peter Norton

The widely acclaimed guide to the IBM PC's inner workings. The latest edition now covers every model of the IBM micro: PC, XT and AT, and every version of DOS from 1.1 to 3.0

B20080 ..... **$44.95**



DISK NOTCHER

Converts 5¼" single sided floppy disks to double sided by placing an appropiate notch in the floppy disk jacket

C21070 **$9.95**

SCOOP PURCHASE!

PRINTER RIBBONS TO SUIT:

CP80, SX80, DP80, BX100, MB100
1-9 (C22036) 10+
$8.95 **$7.95**

MX70 MX80 FX70 FX80 RX70 RX80
1-9 (C22031) 10+
$8.95 **$7.95**

MX100, FX100, RX100
1-9 (C22002) 10+
$19.95 **$18.95**

LX80
1-9 (C22003) 10+
$11.95 **$9.95**

LQ1000
1-9 (C22012) 10+
$27.60 **$25.00**

PRINTER STANDS

- Restores order to your work area
- Conveniently stacks paper printout in document tray automatically
- Made of black plastic coated steel
- Suitable for most printers
- Excellent value at these prices!

C21054 (80/132 column) **$26.95**

ENCLOSED PRINTER STAND

- Keeps your paper and print-outs neat and orderly
- Transparent cover makes it easy to check on paper supply
- Paper can be fed from the centre or the rear according to the design of the printer
- Removable drawer which allows paper to be changed without moving the printer
- Retractable rear basket makes print-out collection fast and convenient
- Suitable for most printers

C21055 ..... **$59.95**

DELUXE PRINTER STAND

- Restores order to your work area without occupying extra space
- Feeds and refolds paper under the printer automatically
- Adjustable paper deflectors ensure smooth flow of paper
- Made of moulded plastic
- Suitable for most printers

C21058 (80 column) **$69.95**

GENUINE CANON LASER CARTRIDGES

EP R340002 Cartridge:
For Canon and HP Laserjet
EP-S R640002 Cartridge:
For Canon and HP Series 2 Laserjets

..... **each $210**

COMPUTER PAPER

Quality paper at a low price! 2,000 sheets of 70 gsm bond paper

Cat C21003 11 x 9½" **$39.95**
Cat C21005 15 x 11" **$67.95**

SAVE $206!

PANASONIC KX-P1081 DOT MATRIX PRINTER

- 120 C.P.S.
- Pica or Elite character set
- Print Modes: N.L.Q., Dot Graphics, Proportional Font, Draft
- Proportional Printing
- Reliable and Compact
- Proportional Printing
- Logic Seeking
- 1K Printer Buffer

Cat C20035 **Normally $595**
SAVE $206, . ONLY $389

PRINTER LEAD FOR IBM*

- Suits IBM* PC XT and compatibles
- 25 pin "D" plug (computer end) to Centronics 36 pin plug

Cat P19029 1.8 metres **$14.95**
Cat P19030 3 metres **$19.95**

RS232 DATA SWITCH WITH TESTER

- No power required
- Ideal for 1 computer to 2 peripherals or 2 computers to one peripheral
- 25 pin RS232 "D" connectors.
- Six dual coloured LED indicators showing certain flow status:

T.D. Transmit Data
R.D. Receive Data
R.T.S. Request To Send
C.T.S. Clear To Send
D.S.R. Data Set Ready
D.T.R. Data Terminal Ready

- Size 200(W) x 68(H) x 150(D)mm

Cat.X19110 ..... **R.R.P. $169**
Our Price $149

2 & 4 WAY RS232 DATA TRANSFER SWITCHES

If you have two or four compatible devices that need to share a third or fifth, then these inexpensive data transfer switches will save you the time and hassle of constantly changing cables and leads around

- No power required
- Speed and code transparent
- Two/Four position rotary switch on front panel
- Three/Five interface connections on rear panel
- Switch comes standard with female connector

2 WAY Cat.X19120 **only $59**
4 WAY Cat X19125 **only $99**

2 & 4 WAY CENTRONICS DATA TRANSFER SWITCHES

Save time and hassles of constantly changing cables and leads around with these inexpensive data transfer switches. These data switches support the 36 pin centronic interface used by Centronics, Printronics, Data Products, Epson, Micronics, Star, and many other printer manufacturers

- No power required
- Speed and code transparent
- Two/Four position rotary switch on front panel
- Three/Five interface connections on rear panel
- Switch comes standard with female connector
- Bale locks are standard

2 WAY (X19130) ..... **only $59**
4 WAY (X19135) ..... **only $99**

PRICE BREAK THROUGH!

20 M/BYTE HARD DISK

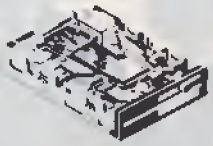
Tandon drive with controller card IBM* compatible Warranty
Cat X20010 **ONLY $595**

40 M/BYTE HARD DISK

Seagate drive IBM* compatible 12 month warranty
Cat X20020 **ONLY $795**

80 M/BYTE HARD DISK

Seagate drive, IBM* compatible 12 month warranty
Cat X20030 **ONLY $2,695**



NEC DISK DRIVES

3½" DISK DRIVE

- 1 M Byte unformatted (640K formatted)
- Double sided, double density
- Access Time 3m sec

Cat **$255**

5¼" SLIMLINE

- Switchable 1.6 M Byte to 1 M Byte unformatted
  1.2 M Byte to 720K formatted
- Double sided, double density
- AT compatible

Cat C11906 **$269**

8" SLIMLINE

- Double sided, double density
- 1.6 M Byte unformatted

Cat C11908 **$785**

APPLE* COMPATIBLE SLIMLINE DISK DRIVE

Compatible with Apple 2+
Cat X19901 . Normally $225
SPECIAL $179

APPLE* IIC COMPATIBLE DISK DRIVE

(including cable **only $199**
* Apple is a registered trade mark *

3½" EXTERNAL DRIVE

- 720K formatted capacity
- 37 way D type connector fits directly onto drive controller card
- Compatible with IBM* PC/XT
- Requires DOS 3.2 or greater
- Size 266(D) x 104(W) x 75(H)mm

..... **only $395**

COPY HOLDER (YU-H33)

- Copy area 9" x 11"
- Sliding line guide
- Flat metal base

C21060 ..... **$39.95**

BABY AT* COMPATIBLE COMPUTER! FROM $2,295

- Final assembling and testing in Australia!
- 1 M/Byte Main Board
- Switchable 8/10/12 MHz
- 1.2 M/Byte Floppy Disk Drive
- 80286 CPU
- Colour Graphics Display Card
- 8 Slots
- Floppy & Hard Disk Controller
- Printer Card and RS232
- Keyboard
- 200W Power Supply
- Manual
- 6 Months Warranty
- Dimensions: 360(W) x 175(H) x 405(D)mm

SHORT BABY AT* 512K RAM... **$2,295**

STANDARD BABY AT* 640K RAM, hard disk drive.
WITH 20 M/BYTE HARD DISK **$3,295**
WITH 40 M/BYTE HARD DISK **$3,795**
WITH 80 M/BYTE HARD DISK **$4,695**

IBM* XT* COMPATIBLE COMPUTERS FROM $875

Check these features and our prices. We're sure you'll agree they're exceptional value for money!

- Final assembling and testing in Australia!
- Fast 8MHz TURBO Motherboard
- AT* style keyboard
- Tested by us for 24 hours prior to delivery!
- 8 Slot motherboard
- 12 months warranty!
- 150W power supply

*$875 COMPATIBLE COMPUTER

256K RAM Single Drive, Graphics and Disk Controller Card. **$875**

256K RAM COMPATIBLE COMPUTER

2 x 360K Disk Drives, Multifunction Card, Colour Graphics, Disk Controller, 1 Parallel Port. (Includes Timer Disk) **$1,045**

640K RAM TURBO COMPATIBLE COMPUTER

2 x 360K Disk Drives, Multifunction Card, Colour Graphics, Disk Controller, 1 Serial, 1 Parallel Port. (Includes Timer Disk) **$1,175**

WITH 20 M/BYTE HARD DISK:
& single 360K Floppy Disk Drive **$1,775**
& dual 360K Floppy Disk Drives **$1,975**

WITH 40 M/BYTE HARD DISK:
& single 360K Floppy Disk Drive **$2,475**
& dual 360K Floppy Disk Drives **$2,675**

TAKE ADVANTAGE OF ROD IRVING ELECTRONICS' VAST RANGE OF PERIPHERALS AND EXCEPTIONAL PRICES!

THOMSON EGA MONITOR

Top quality high resolution EGA monitors with a space-age design

SPECIFICATIONS:
CRT: 14 inch (360mm) diagonal, 90 degree deflection
Display Size: 245(H) x 180(V)mm
Phosphor: P22, non glare, tinted screen
Dot Pitch: 0.31mm
Video Bandwidth: 18 MHz
Resolution: 15 75KHz - 640 x 200
21 85KHz 640 x 350
Input Signals:
1. RGBI - positive, H(+), V(+)
2. RrGgBbI - positive, H(+), V(−)
Input Impedance: TTL Level (330 ohms)
Dual Scanning Frequency:
Horizontal 15 75 KHz or 21 85 KHz +−10Hz
Vertical 50 - 60 Hz
Connector: 9 pin, D-type
Size: 312(H) x 363(L) x 380(W)mm
Weight: 10 8 Kg (Net)

X14525 ..... **$895**

Z-DIN 12" 20MHz COMPOSITE MONITOR

X14514 (GREEN) **$129**
X14516 (AMBER) **$129**
(10 OR MORE $119 EACH!)

RITRON 2 MONITORS

Stylish monitors available in green or amber displays and featuring swivel base that tilts forward and back 30 degrees and swivels right to left 60 degrees!

SPECIFICATIONS:
CRT DISPLAY SIZE: 12 inches non-glare 90 degree deflection
INPUT SIGNAL: 1 0 - 2 5V p-p composite video signal
INPUT IMPEDANCE: Normal 75 ohm, high approx 50K ohm
INPUT TERMINALS: RCA phone jack
RISE AND FALL TIME: Less than 25 us
VIDEO BANDWIDTH: 20MHz
Corner; 800 lines
Geometric distortion; 2% or less
Linearity; less than 2%
CONTROLS: Front; Power On/Off brightness, contrast
Rear; Vertical hold, Horizontal hold, Vertical line, Vertical size

Green Cat X14506 **Normally $179**
Amber Cat X14508 **Normally $179**
NOW ONLY $139

ZDIN TTL 12" MONITOR

SPECIFICATIONS:
TUBE: 12" 90° non glare dark screen
SIGNAL CONNECTOR: 9 pin D connector
INPUT:
Input signal: Separate signal with intensity
Video Input: 4 0V p-p · 1 5V positive going
Horizontal Frequency: 18 44 KHz
EXTERNAL CONTROLS: On Off Brightness Contrast V-Size, V-Hold V-Line
VIDEO
Display Area: 210 x 150mm
Display Format: 25 lines 80 characters per line 9 x 4 dots per character block
Frequency Bandwidth: 22MHz
Resolution: 900 lines at centre 80 characters x 25 lines
POWER
Consumption: 35W
120V AC, 50Hz, 0 15A
DIMENSIONS:
327(W) x 310(D) x 286(H)mm

Cat No	Description	Price
X14500	(GREEN)	$149
X14502	(AMBER)	$149

MOUSE MAT

- A quality mouse mat for accurate and comfortable tracking
- Anti-static
- [illegible] x 225mm

C21075 ..... **$14.95**

WITTY MOUSE

- Three buttons user definable Get the maximum selective features possible by having a third button choice
- A specially silicone coated steel ball transfers mouse movement to internal motion encoders without the need of a special surface Smooth gliding over any hard, even surface
- High resolution movement of 195 dots/inch This means you can work with a smaller table space with less hand movement than a lower resolution mouse
- Optical rotary encoder
- [illegible] tracking speed 200mm/sec
- Mouse resident firmware
- Auto repeat key
- 1 5 metre lead
- DB25 socket connector
- Weight 212 grams
- Size 116 x 66 x 34mm

Cat.X19950 ..... **$79.00**

NOTE: HARDWARE ONLY SOFTWARE NOT INCLUDED

5¼" DISK STORAGE (DD100-L)

Efficient and practical! Protect your disks from being damaged or lost!

Features...
- 100 x 5¼ disk capacity
- Smoked plastic hinged lid
- Lockable (2 keys supplied)
- High impact ABS plastic base
- Contemporary design

C16020 **only $17.95**

MICRODOT DISKS!

FREE PLASTIC LIBRARY CASE WITH EVERY 10 DISKS!

DESCRIPTION	1-9 BOXES	10+ BOXES
3½" 2S/2D	$32.95	$30.95
5¼" 1S/2D	$12.95	$11.95
5¼" 2S/2D	$13.95	$12.95
5¼" 2S/HD	$29.95	$27.95

"NO BRAND" DISKS!

Now you can buy absolute top quality disks that are also the cheapest in Australia! They even come with a lifetime warranty, which indicates the quality of these disks. So why pay 2-3 times the price for the same quality?

Packs of 10, D/S D/D without boxes, or brand name, just their white paper jacket, and index labels. (5¼" disks includes write protects).

5¼" 2S/2D "NO BRAND" DISKS

10+ DISKS	100+ DISKS	1,000+ DISKS
$7·95ea	$7·50ea	$6·95ea

(ALL PRICES PER 10 DISKS. TAX EXEMPT PRICES LESS $1)

JUMBO 5¼" DISK STORAGE (DD120-L)

If you have lots of disks, you'll appreciate the extra capacity of this disk storage unit when it comes to locating a particular disk

Features...
- 120 x 5¼ disk capacity
- Smoked plastic hinged lid
- Lockable (2 keys supplied)
- High impact plastic base

C16028 **only $22.95**

VERBATIM DISK SPECIALS!

(ALL PRICES PER 10 DISKS)

DESCRIPTION	1-9 BOXES	10+ BOXES
3½" 1S/2D	$44.95	$42.95
3½" 2S/2D	$46.95	$43.95
3½" 2S/HD	$99.00	$95.00
5¼" 1S/2D	$22.00	$21.00
5¼" 2S/2D	$26.00	$24.00
5¼" 2S/4D	$75.00	$70.00
5¼" 2S/HD	$42.95	$41.00

5¼" HIGH DENSITY "NO BRAND" DISKS

10+ DISKS	100+ DISKS	1,000+ DISKS
$29·95ea	$27·95ea	$26·95ea

(ALL PRICES PER 10 DISKS TAX EXEMPT PRICES LESS $1)

3½" 2S/2D "NO BRAND" DISKS

10+ DISKS	100+ DISKS	1,000+ DISKS
$29	$27	$25

(ALL PRICES PER 10 DISKS TAX EXEMPT PRICES LESS $2)

3½" DISK STORAGE (DD80-L)

- Holds up to 80 x 3½" diskettes
- Smoked plastic hinged lid
- Lockable (2 keys supplied)
- High impact plastic base
- Contemporary design

Cat C16038 **only $19.95**

DUST COVER

Keep your computer and accessories free of dust and grime while not in use

XT* Cover Set (C21066) **$14.95**
AT* Cover Set (C21068) **$16.95**

TELECOMMUNICATION PLUG TO 2 SOCKETS.

Ideal for modem connections

Cat Y16014 ..... **$12.95**

KEYBOARD DUST COVER & COPY HOLDER

- Combines two functions in one set
- Flexible clamp can be attached to most brands of keyboards
- Made of clear acrylic plastic
- Overall size 449 x 180mm

C21064 ..... **$29.95**

Rod Irving Electronics
MELBOURNE: 48 A'Beckett St. Phone (03) 663 6151
NORTHCOTE: 425 High St. Phone (03) 489 8866
CLAYTON: 56 Renver Rd. Phone (03) 543 7877
SOUTH AUSTRALIA: Electronic Discounters P/L, 305 Morphett St, ADELAIDE Phone (08) 212 1799
NOTE (Prices may vary interstate due to freight costs)
MAIL ORDER:
Local Orders: (03) 543 7877
Interstate Orders: (008) 33 5757
All Inquiries: (03) 543 7877
CORRESPONDENCE:
P.O. Box 620, CLAYTON 3168
Telex: AA 151938
Fax: (03) 543 2648

MAIL ORDER HOTLINE
008 335757
(TOLL FREE)
(STRICTLY ORDERS ONLY)

LOCAL ORDERS & INQUIRIES (03) 543 7877

POSTAGE RATES:

$1	$9.99	$2.00
$10	$24.99	$3.00
$25	$49.99	$4.00
$50	$99.99	$5.00
$100	$199	$7.50
$200	$499	$10.00
$500 plus		$12.50

The above postage rates are for basic postage only. Road Freight, bulky and fragile items will be charged at different rates.

All sales tax exempt orders and wholesale inquiries to: RITRONICS WHOLESALE, 56 Renver Rd, Clayton. Ph. (03) 543 2166 (3 lines)

Errors and omissions excepted Prices and specifications subject to change

IBM*, PC*, XT*, AT* are registered trademarks of International Business Machines *Apple is a registered trademark *Denotes registered trademarks of their respective owners

BBS*oftware*: BBS64
*** Amended ***
Marlin-Coast BBS
Sysop: Ray Chalmers
Phone: (070) 51-7220
FIDO*net*: 640/501
Baud: V22 V22bis B103 PEP
Access: Reg VA
Computer: Cleveland 286
BBS*oftware*: Opus

SOUTH AUSTRALIA

*** Amended ***
Adam Link BBS
Sysop: Greg Hicks
Phone: (08) 270-2713
Baud: V21 V22 V22bis V23
Access: Reg LVA
Computer: IBM AT
DOS: MS DOS
BBS*oftware*: PC Board

*** Offline ***
Adelaide MicroBee BBS

*** Amended ***
Multiple System BBS
Sysop: Danny Vozzo
Phone: (08) 255-5116
Baud: V21 V22 V22bis V23
Access: Reg LVA
Computer: Apple //+
DOS: Apple DOS
BBS*oftware*: GBBS

*** Offline ***
The Postie BBS

VICTORIA

*** Amended ***
ACES High
Sysop: Daryl Harvey
Phone: (03) 878-2918
Baud: V21 V22 V23
Access: Public
DOS: PRODOS
BBS*oftware*: GBBSPro

*** Amended ***
Alpha Centauri BBS
Sysop: David & Kim Nugent
Phone: (03) 874-3559
FIDO*net*: 632/348
Baud: V22 V22bis
Access: Reg
Computer: Micro 10-AT
DOS: PC DOS
BBS*oftware*: Opus

*** Offline ***
Atlantis RBBS-PC

*** Amended ***
Brainstorm Australia
Sysop: Rowan Stevens
Phone: (03) 758-7086
FIDO*net*: 631/322
Baud: V21 V22 V22bis V23 B103 B212
Computer: IBM XT
DOS: MS DOS
BBS*oftware*: Opus

*** Amended ***
Cave 76
Sysop: Avatar
Phone: (03) 882-9179
Baud: V21 V22 V22bis V23
Hours: 1800 – 1000 Daily
Computer: IBM XT Clone

*** Amended ***
Crystal Palace
Sysop: Chris Brunton
Phone: (03) 725-1923
Baud: V21 V22

*** Amended ***
Crystal Symphony Opus
Sysop: Greg Jones
Phone: (03) 874-4176
FIDO*net*: 632/346
Baud: V21 V22 B103 B212
Access: Mem VA
Hours: Daily: 2200 – 0700
Computer: IBM XT Clone
DOS: PC DOS
BBS*oftware*: Opus

*** Amended ***
Electronic Cross-Over BBS
Sysop: Stephen Paddon
Phone: (03) 367-5816
Baud: V21 V22 V22bis V23
Computer: IBM AT
BBS*oftware*: QuickBBS

*** NEW System ***
L & A Opus BBS
Sysop: Phillip Kelly
Phone: (03) 800-3215
FIDO*net*: 631/327
Baud: V21 V22 V23
Access: Reg LVA
Computer: IBM AT
DOS: PC DOS
BBS*oftware*: Opus

*** Amended ***
Labyrinth
Sysop: Stephen Jones
Phone: (03) 318-6562
Baud: V21 V23
Access: Reg VA
Hours: Daily: 2100 – 0900
Computer: IBM XT Clone
DOS: MS DOS
BBS*oftware*: Fido

*** NEW System ***
MacLink BBS
Sysop: Roger Harris
Phone: (03) 772-4098
Baud: V21 V22 V23

*** Amended ***
Maxitel BBS
Sysop: Jos Van Der Sman
Phone: (03) 882-6188
Baud: V21
Access: Public
Computer: C-64
BBS*oftware*: FPR BBS

*** Amended ***
Melbourne Data Exchange
Sysop: Robert Broomhead
Phone: (03) 561-6556
FIDO*net*: 633/360
Baud: V22 V22bis V23
Access: Reg VA
BBS*oftware*: Opus

*** Amended ***
Melbourne PC Users Group BBS
Sysop: Charles Sandercock
Phone: (03) 819-5392
FIDO*net*: 631/323
Access: Public
DOS: MS DOS
BBS*oftware*: Opus

*** NEW System ***
Mercury
Sysop: John Swanland
Phone: (03) 887-1485
Baud: V21
Hours: Weekdays: 1930 – 0600
Weekends: 24 Hours

*** NEW System ***
Miki's Opus CBCS
Sysop: Miklos Bolvary & Emil Zudic
Phone: (03) 801-7040
FIDO*net*: 631/326
Baud: V22 V22bis B103 B212
Hours: Daily: 2100 – 0900
Computer: ELT AT
DOS: PC DOS
BBS*oftware*: Opus

*** Amended ***
PC Connection IBBS
Sysop: Lloyd Barrett
Phone: (03) 528-3750
Baud: V21 V22 V22bis V23
Computer: IBM XT
DOS: MS DOS
BBS*oftware*: IBBS

*** Name Changed ***
PC User BBS
Info: Now Called
Melbourne PC Users Group BBS

*** Amended ***
Pegasus
Sysop: Lee Gordon-Brown
Phone: (03) 725-4948
FIDO*net*: 630/309
Baud: V21 V22 V23
Access: Public
Hours: Weekdays: 1700 – 0900
Weekends: 24 Hours
Computer: IBM AT
DOS: MS DOS
BBS*oftware*: Opus

*** Amended ***
Sotec BBS
Sysop: Jim Tsorlinis
Phone: (03) 890-8166
Baud: V22 V22bis B103 B212
Access: Reg VA
Computer: Sotec XT Turbo
DOS: PC DOS
BBS*oftware*: Opus

*** NEW System ***
Super Dimensional BBS
Sysop: Mulia Marzuki
Phone: (03) 560-2659
Baud: V22 V22bis
Hours: Daily: 2100 – 0800
BBS*oftware*: Opus

*** NEW System ***
The Amiga Limits
Sysop: Captain Kirk
Phone: (03) 725-2895
Baud: V21 V22 V23
Access: Reg VA
Computer: IBM AT
DOS: PC DOS
BBS*oftware*: QuickBBS

*** Amended ***
The Australian Pub with NO Beer
Sysop: Grahame Mitchell
Phone: (03) 736-1814
FIDO*net*: 632/350
Baud: V21 V22 V23
Access: Mem VA
Hours: Daily: 1000 – 0800
Computer: Amstrad 1512
BBS*oftware*: Opus

*** Amended ***
The Krime Philes CBCS
Sysop: The Renegade
Phone: (03) 743-0324
Baud: V21 V22 V22bis V23
Computer: Mitac XT
BBS*oftware*: Opus

*** Amended ***
The NATIONAL CBCS
Sysop: John Blackett-Smith
Phone: (03) 25-6904
FIDO*net*: 630/301
Access: Public
Computer: IBM AT
DOS: MS DOS
BBS*oftware*: Opus

*** NEW System ***
The Outer Limits
Sysop: Captain Kirk
Phone: (03) 725-6650
Baud: V21 V22 V23
Access: Reg VA
Computer: IBM AT
DOS: PC DOS
BBS*oftware*: Opus

*** Amended ***
The Real Connection
Sysop: The Real Article & Deep Image
Phone: (03) 288-0331
Baud: V21 V22 V23
Access: Public
Computer: IBM XT Clone
DOS: DoubleDOS
BBS*oftware*: Opus

*** Amended ***
Thongheads Welfare BBS
Sysop: Thongers
Phone: (03) 419-9256
Baud: V21 V22 V22bis
Access: Reg
Hours: Weekdays: 1800 – 0900
Weekends: 24 Hours

*** Name Changed ***
Yarra Valley BBS
Info: Now Called
The Australian Pub with NO Beer

*** NEW System ***
Yarra Valley BBS
Sysop: Frank Conner
Phone: (059) 64-3126
Baud: V21 V22 V23 B103 B212
Access: Mem VA
Computer: C-64
BBS*oftware*: Punter

WESTERN AUSTRALIA

*** NEW System ***
The Hotel
Sysop: Rod Evans
Phone: (09) 325-4752
Baud: V22 V22bis
Computer: IBM AT Clone
DOS: MS DOS
BBS*oftware*: Opus

First Australian Forth Symposium

The First Australian Forth Symposium was held in late May at the University of Technology, Sydney, and its results surprised even the organisers, as Roy Hill reports . . .

INITIAL indications led us to expect about 100 participants, which we considered fairly healthy for a conference of this nature. Over 200 people attended, with a large contingent of overseas visitors, including several from Alaska.

Come Forth!

FORTH was the first of the fourth generation languages. (Born, we are told from the arrogance of Charles Moore.) It's compact, fast and cheap – sound interesting?

If you'd like to know more, see Roy Hill's introductory articles, 'Come Forth' – Parts 1 and 2, in our May and June, 1987, issues. Back copies are available – refer to the Services pages.

Also, in the November, 1987, issue, in 'Your Own Personal Supercomputer', Roy told of the Novix chip, a dedicated Forth chip 'invented' by Charles Moore, and used by the Australian company, Maestro Electronics, to develop a supercomputer.

The overseas visitors included Charles Moore (who developed the language), Elizabeth Rather (the second Forth programmer), Rob Reiling (President of FIG USA) and Henry Laxen and Michael Perry (the writers of F83).

The symposium dinner was attended by over 100 of the participants and the after dinner key-note addresses by Charles Moore and Elizabeth Rather were both humorous and informative. Nearly all of the overseas visitors indicated that they will return to the next symposium, which we hope will be hosted in Melbourne in 1989.

A list of participants is being circulated to all of those attending. Any persons who were unable to attend the conference and wish to be included on the list should contact –

Mr Jose Alfonso,
Continuing Education,
University of Technology,
PO Box 123,
Broadway 2007 NSW

Copies of the conference papers ($20) are also available from the above address. In addition, the conference was able to establish a Users' Group for owners of the Maestro Novix Board. The group may be contacted through –

Mr Keith Lane,
PO Box 74,
Boronia 3155 Vic.

The organisers of the conference would like to thank Federal Publishing, and, in particular, Jake Kennedy, the editor of *Your Computer* magazine, for the active support provided A large amount of editorial space was provided for articles and symposium information and it was support such as this that ensured the outstanding success of the conference.

Rob Reiling assured participants that 'No other first time Forth symposium anywhere in the world' has attracted such a large number of participants and such a wide variety of papers and application workshops. □

Electronics Today

Free HI-FI magazine inside

Australia's most respected electronics magazine now includes Sound Insights, a monthly digest of news, views and reviews on audio equipment. If you take your listening pleasure seriously, then Sound Insights is a must.

Electronics Today International is the pre-eminent magazine for the electronic lifestyle. We follow the latest developments around the world, in computers, in the physical sciences, in audio engineering, in communications, and space technology. For the practical fanatic, we have a great selection of do-it-yourself projects every month. Read ETI for the best writing in any electronics magazine.

Look for it each month at your local newsagent or subscribe now by phoning (02) 693 9517 or 693 9515

TIM HARTNELL

YOUR AMSTRAD

In the column this month we have a graphics program for the 464/6128 and a 'pyramid-creator' for the Amstrad PC. In addition, we have news from a couple of Amstrad user groups, plus details of a digitising service being offered to users of PCW desktop publishing programs.

CP/M software for the CPC Models

Bob Siddon, in Bendigo, points out that an Amstrad postal users group for CPC models has been producing a monthly journal in Australia since July 1985. The journal – supplied on disk – is aimed at users interested in learning about their machines, and computers in general.

The group has built up a collection of 16 disks of CP/M utilities, dBase II shells and MBasic programs. Copies of these library disks are free, with only a postage charge for dumps to users' disks, 3½ inch or 5¼ inch. For a list, with notes, of the programs in the library, all you need to do is send a disk, plus $2 for return postage, to Bob at the Amstrad All Australia Postal Group, PO Box 1084, Bendigo 3550 Vic.

Note that PCW users should send a preformatted disk, as the group can copy to PCW format, but cannot actually format a PCW disk. Write to Bob, at the above address, for details on the CPC Journal

Sunshine Amstrads

From Queensland, Mark Abbot tells me about the Gold Coast Amstrad User Group of which he is the president. His address is 17 Ewan Street, Southport 4215 Qld; (075) 31 2114. The club meets at 2 pm on the second Saturday in each month at Benowa State High School, Mediterranean Street, Benowa.

Desktop Digitisation

In New South Wales, David Higgins of PO Box 985, Cooma 2630 NSW, has explained that he's offering an image digitising service for PCW desktop publishers. He handles Fleet Street Editor Plus, Desktop Publisher, Newsdesk International and Masterpaint.

A free disk of Amstrad PC-specific software will be given to anyone supplying hints which are used in this column.

Using CONFIG.SYS

Mark Thomas, from Port Lincoln in South Australia, recently decided to move from an IBM PC XT to an Amstrad PC1512. He says he is 'very happy' about making the change.

'I note that there seems to be general agreement that GEM is a *pretty* way to be introduced to the principles of files, directories and graphics programs, but that

when it comes down to simply loading programs, copying files and so on, DOS (or DOSPlus) is the way to go,' says Mark.

'The problem is that you need to lead some DOS commands, and it takes a while to learn all the tricks to set the machine up *just right*.'

Mark has had the benefit of many hours experimentation with his Amstrad PC, and says that the most useful lines you may have in the text file CONFIG.SYS are –

FILES=n – This command sets up the maximum number of files which can be open at one time. This is important for database programs particularly, which often use more than the default of 8. A more useful number is 20.

BUFFERS=n – This command reserves an area of memory for data being read from, or written to, disk. The larger the number, up to about 30, the faster most 'disk-intensive' programs will run. Each buffer uses half a kilobyte, so you had better be careful if you're short of memory. A pretty good balance of speed versus memory used seems to be 15.

DEVICE= – This command is used to specify any number of 'device drivers' (separate commands for each) which handle such mundane but useful tasks as setting up RAM drives and handling extended screen and keyboard functions.

COUNTRY=n – This allows you to tell the computer it lives in Oz, so that it gets the dates the right way around.

Spiral Galaxies on the 464/1628

Jeff Hughes, from Watsonia North in Victoria, has created a very neat graphics program for the 464/1628. When you run the program, you are asked to enter a value for step size, and values for the variables a and b. See Listing 1

```
5 CLS
10 MODE 2
20 DEG
30 ORIGIN 320,200
40 INPUT "step size,a,b,",s,a,b
50 CLS
55 PLOT 0,0
60 FOR ang=0 TO 36000 STEP s
70 x=ang*(COS(a*ang)):y=ang*(SIN(b*ang))
80 DRAW x/120,y/180
90 NEXT ang
```

Listing 1. The listing for Spiral Galaxies, a graphics program for the 464/1628 – compliments of Jeff Hayes.

When you've got this up and running, try the following values –

STEP	A	B	Picture produced
80	1.0	2.0	Cubism
91	1.0	1.0	Spiral Galaxy
91	2.0	1.0	Wedge Starship
91	1.0	2.0	Unfoldment
91	2.0	2.0	Sea Urchin
91	0.5	1.0	Butterflip
170	1.0	1.0	Star burst

Name Pyramid

A somewhat simpler program is provided for owners of Amstrad PCs this month. It creates a pyramid out of any words (up to 15 letters long, including spaces and any other characters) you enter Try it with your first and last names, and then with other words, or symbol combinations.

```
REM Amstrad PC Pyramid
REM Tim Hartnell - Your Computer
CLS
PRINT:INPUT"What is your full name";a$
IF LEN(a$)>15 THEN a$=LEFT$(a$,15)
a=LEN(a$)
CLS
PRINT:PRINT
FOR g=1 TO a
PRINT TAB(24-g);
FOR h=1 TO 2*g
PRINT MID$(a$,g,1);
NEXT h
PRINT
NEXT g
```

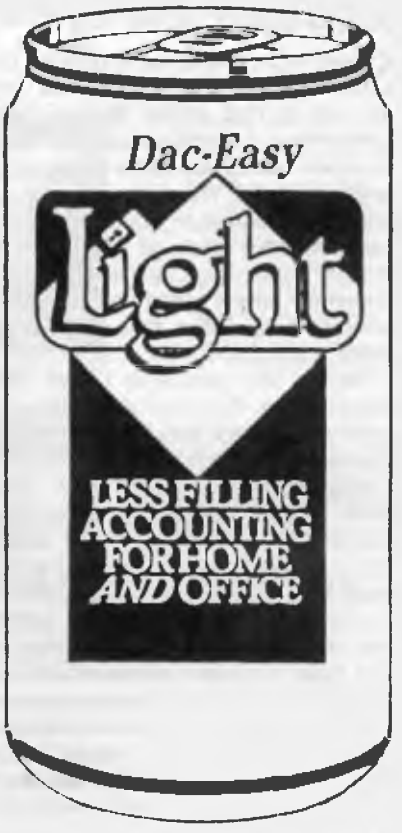
Listing 2. For the Amstrad PC- make a pyramid out of words up to 15 characters long.

The program is easy to modify so that you can print the pyramids out on your printer rather than, or in addition to, the screen; it also gives you a chance to admire one pyramid, before asking you to enter details for a subsequent one, rather than demanding that you run the program from scratch each time you want to create a pyramid.

We'll be including Your Amstrad in future issues of the magazine. I'd be interested in hearing from any companies making hardware or software for any of the Amstrad range for review in this column. As well, I'd be more than happy to share any of your discoveries, hints, tips, comments and programs with other users of the great Amstrad machines, along with details of any Amstrad-specific user groups.

A free disk of Amstrad PC-specific software will be given to anyone supplying hints which are used in this column Please write to Your Amstrad, Tim Hartnell, Your Computer, Box 227, Waterloo 2015 NSW. □

A REFRESHING APPROACH TO EASY ACCOUNTING



For Small Business and Personal Finances

- General Ledger
- Creditors Ledger
- Debtors Ledger
- Invoicing
- Monthly Budgets
- Bank Reconcilation
- Activity Reports
- Budgets etc.

All you expect to make accounting a pleasant part of your your busy life.

Comes with full on-screen help as well as your manual and is priced at only

$149.95

CALL NOW:

MACE Software

STD FREE 008-777-509

OR (07) 870-3600

WE ACCEPT □ BANKCARD □ VISA □ MASTERCARD

23 SYLVAN ROAD TOOWONG (BRIS) AUSTRALIA

IBM UNDERGROUND

Power menu

Some experienced users sneer at using menu systems to bypass DOS. Count me out of that group Novices benefit greatly from a simplified user interface, as do power users. With many programs on a large hard disk, manually entering commands to change to subdirectories and run programs takes far too many keystrokes. For far too long users have had to remember where everything is – menial housekeeping duties that the computer surely should do for us.

For the last year or so I have used a menu system that uses a complex set of interlocking batch files. To run them, I get the user's selection via SETERROR.COM, a program that was in 'Your IBM', August 1986. I also use XtreePro and Norton Commander to wander around my disk, but to use these as a DOS shell does require a fair knowledge of DOS. Some commercial menuing programs are available that read through the files on your disk, and build a custom menu system. Now there is PowerMenu, a shareware product that can take over almost all the duties of running programs from a menu, and can also take over many routine housekeeping duties.

What is PowerMenu?

PowerMenu is an operating environment for IBM PCs or compatibles, providing easy access to any application. Word processing, spreadsheets or any other PC programs are just a keystroke away. PowerMenu is particularly suited for end users who would rather not worry about subdirectories, command line parameters and command names. A typical use would see PowerMenu set up to run a word processor when the W key is hit. Users exit from word processing, are back in the main PowerMenu, and need never interact with DOS.

PowerMenu uses the familiar SideKick like menu structure. Context-sensitive online help is available at the touch of a key. Passwords can be set for individual applications and submenus. Users can temporarily exit to DOS, run programs and commands, and return to PowerMenu. It also contains a file manager, allowing files to be marked in several subdirectories, and performs DOS functions on these files.

Installation

PowerMenu comes on a disk with a root directory and two sub-directories. I got it from a bulletin board, and it is now on the YC Bulletin Board as PWRM?DOC.ARC, PWRM313.ARC and PWRM313.DOC. All the files from the original publisher (Brown Bag Software) are in PWRM313-ARC, while PWRM313.DOC details how to install them on a floppy disk to make a master disk, and PWRM?DOC.ARC has the documentation reformatted for 66 and 70 line paper.

The F1 key brings up Help, F2 invokes Utilities, F3 offers Options, F4 jumps to DOS and F5 runs the Disk Manager.

Having obtained, or recreated, the master disk, place it in the A: drive and log onto it. Run MINSTALL.EXE, an installation program which creates a subdirectory on your C: drive called MENU, and copies the files across. It then looks through your hard disk for standard applications and creates a menu system, taking only a few minutes even with a large and slow hard disk. This is a 'first stab' only, as the program has to look at file names and guess which programs they are. It will inevitably miss some and mis-identify others, but customising and fine tuning a menu system is not too difficult for anyone with reasonable PC know-how, though novices might need some assistance.

Menuing system

When starting PowerMenu, an initial copyright message appears, followed by the main screen. At the top is a box with the publisher's name, program name, version, serial number, date and time. Superimposed is the first menu, offering 10 choices. Some of these are actual programs which could be run, while others are the names of sub-menus. Up to four levels of menus can appear on screen at a time, and so it is possible to have around 10,000 choices available.

A program or sub-menu can be selected in one of three ways. A highlight bar can be moved with the cursor keys over a choice, and be actuated with the Enter key. The choice can be made by pressing the leading letter of the title. Beside each menu entry is a number form 0 to 9, and pressing it can also select an option. Menus can be relocated on screen by pressing the Scroll Lock key and then using the cursor keys to move the menu.

Entries can be modified by moving the cursor bar over them and pressing Ins to invoke an editor. When editing a menu entry, the title to be shown in the menu, the directory in which it is found, the program file name (for example, WS.COM for WordStar), parameters and password are specified. Menu entries are deleted by highlighting them with the cursor bar and pressing Del, while a new entry is created by placing the cursor over a blank entry and pressing Ins to invoke that editor again. In addition, many DOS commands are available from menus.

If this menuing system was all that was offered by PowerMenu it would still be powerful and useful, but there are other features. The F1 key brings up Help, F2 invokes Utilities, F3 offers Options, F4 jumps to DOS and F5 runs the Disk Manager. Disk Manager, Options and Window to DOS can also be selected from the Utilities menu, and are each covered in their own sections below.

Utilities

Many possibilities are available from the Utilities menu. These are Help, Disk Manager, System Info, Map of Progs, Window to DOS, Printer Status, RAM Status, Time Set, New Date, Colors, Options and Exit. Any of these can be selected by either highlighting the desired one with the cursor and pressing Enter, or by pressing the letter corresponding to the leading letter.

System Info looks at your machine, and details the type of machine, the BIOS date, RAM size, DOS version, co-processor if any, number of parallel and serial ports, number of logical drives and the type of video adapter. Map of Progs details the active programs on the system, their starting address and the amount of memory used. Printer Status merely shows if the printer is available or not. RAM Status shows the total amount of RAM, the amount used and the amount available. Time Set and New Date reset the DOS clock for the remainder of the session but would not usually reset the hardware clock. Colors resets foreground and background colours and intensities to suit your eyes and monitor.

Options

The options menu allows the person setting up a menu system to control just how much access a user has to various functions. Users can be allowed or denied Menu Editing, Menu Moving, Setting of Time, Setting of Date, Clear on Exit, Utilities Menu, Window to DOS, Exit to DOS and Disk Manager. It also allows beeping to be turned on or off, the screen-blanking time to be set, and for creation of passwords and specification of an editor program.

Disk manager

The Disk Manager displays a list of files in the root directory and a list of the next level down of sub-directories. These can be sorted at the touch of a key by Name, Extension, Date/Time or Size. Files can be Erased, Renamed, Copied, Moved and Hidden/Shown. Directories can be Opened by highlighting their name and then selecting Open, whereupon the files in them are listed. Directories can also be Closed, Erased, Made and Renamed. Alternative drives can be selected, files can be run, and the DOS command line accessed.

Of all the features of PowerMenu, Disk Manager proved the least useful. Mainly this was because the intensities chosen often made menu bars disappear on my mono screen. In addition, running my editor from Disk Manager proved to be impossible.

Documentation

There were 27 pages of documentation on the disk, enough to validly evaluate the program, and enough to encourage registration to get the full printed manual. Registration is $US89.95 plus $US5 Shipping, for which you get the latest version of PowerMenu and a printed and bound Users' Manual. For $US49.95 plus $US5 shipping, you receive the latest Users' Manual, while $US29.95 allows you to continue to use the copy of the program currently in your possession. The shipping costs quoted are for the US, and a little more should be sent to allow for international postage.

PowerMenu is a product of Brown Bag Software, File #41719, PO Box 60000, San Francisco, CA 94160 USA. I note from the opening copyright screen when starting up PowerMenu that they accept Visa, MasterCharge and American Express when users register. Now you have no excuse for not registering! Get an evaluation copy of PowerMenu from the *Your Computer* Bulletin Board, or buy one direct from Brown Bag. I am sure that you too will soon find that you run your system with a power menu! □

We just made the whole page perfect

Colour makes it special. PagePerfect supports the EGA and VGA colour standard and prints in black, white, or seven shades of grey for text or background.

Professional word processing. Powerful and easy to use. You get all the commands you insist on plus special features designed just for publishing. Includes its own spelling corrector, Thesaurus and more!

Help is there when you need it. You always see what commands mean. Help screens are instantly available too.

Integrated images. A complete Image Librarian is right at your finger tips.

Full layout capabilities. Now, get flexible layouts, fast. Use your style sheets to lay out your complete document in advance. Then enter text with PagePerfect's word processor.

Introducing PagePerfect.™

The right choice for desktop publishing.

No wonder people get excited about PagePerfect!™ Here's a brand new product that combines desktop publishing power and advanced word processing capabilities.

With PagePerfect you don't have to struggle with a lot of unrelated software products. Everything you need for powerful desktop publishing is right there at your fingertips. And best of all, it's so easy to use.

With PagePerfect the layout you see on screen is exactly what you'll get. And it reflects all your style choices for headers, footers, margins, borders, multiple columns and more.

Want to create and edit text right on your composed page?

No problem.

Need a complete set of professionally designed layouts?

Use ours. (PagePerfect comes with a full library of specially designed style sheets!)

Another great thing about our product is that you can view your document at nine different zoom levels, and see multiple pages at once. Edit text from any two documents at the same time and in most zoom levels.

We know you'll appreciate the fact that PagePerfect gives you terrific flexibility in type-style and point size.

Does all this sound too good to be true? Well, we haven't even scratched the surface. Which is why we invite you to find out more about what we have to offer — a breakthrough product that's specially designed for you.

In no time at all, you'll discover how easy it is to make your pages perfect, too.

IMPRINT COMPUTER PUBLISHING SYSTEMS

3/637 Darling St., Rozelle
N.S.W. 2039, Ph: (02) 818 3577

	File Manager	Image Librarian	On-Line Help	Find/ Replace	Speller/ Thesaurus	Graphics Editing	Rec Retail*
PagePerfect	Yes	Yes	Yes	Yes	Yes	Yes	$ 995.00*
Ventura	No	No	No	No	No	No	$1750.00 *
Pagemaker	No	No	Yes	No	No	No	$1995.00*

vs. the competition. See for yourself why we're the smart choice. *Inc Tax

produced by

YOUR APPLE

The sound of one Apple clapping . . .

It might seem serene on the surface, but the optical disk business is duck-like in its efforts – there's a lot of people paddling like mad below the surface. I am now convinced, more than ever, that the CD-ROM format is going to be as important to our computing future as was the invention of the floppy disk in its day.

Apple released its CD-ROM for the Apple GS and the Mac at Microsoft's annual compact disk conference in Seattle, and from all reports it's a bottler. If you are thinking of investing in CD-Audio for your hi-fi, give it a miss for a couple of months, and await the Apple product. It won't be cheap (over $2000 is one bandied figure) but it could be worth the cost – because Apple, it seems, is widening its field of interest much further in the audio market.

Apple has done a first, again (I think) by producing this dual player – but it seems to be placing a rather costly premium on its innovation. I don't know anyone else putting out a dual audio/ROM compact disk player, although it surprises me that Apple hasn't emphasised this point (if it's true) in its press release. Maybe Apple has an agreement with Sony and Philips to play down this aspect. I'm just guessing.

In the press release on the CD-ROM unit, you've got to wade through the first three and a half pages of hackneyed PR guff to find the revealing throw-away line – 'It also features an audio chip set and *desk accessory* software that let it play audio CD tracks on CD-ROM as well as commercial audio compact disks.' I did a double-take and had to re-read this three times before the message sunk in.

That's all Apple say. Apparently the desk accessory it is talking about is a program that comes with the unit to allow your computer to access the disk via the SCSI port. If you haven't got SCSI, you'll need it now

MIDI

Apart from the obvious advantages of only having one expensive CD unit in your home instead of two, there's also the point that with the new $100 MIDI interface and the excellent sound chips in the Apple IIGS and Mac, the Apple product tree is sending out an exploratory branch into the world of the professional musician and audio-recordist.

MIDI (Musical Instrument Digital Interface) has been around for quite a few years now, but just recently its taken off seriously. MIDI was first announced back in 1983 after a joint effort by electronic instrument manufacturers around the world. They realised that there was a need to link together the various new electronic music recorders, samplers and synthesisers that were taking over the music industry.

As you would expect, MIDI information is simply a specially formatted data stream which can be generated by any standardised instrument or recorder For instance a MIDI format electric guitar can feed its data stream into a MIDI synthesiser, and if the guitar is specially equipped with MIDI controls, it can manipulate and reshape the sound produced by the circuits of the synthesiser. The output can be a combination of sounds that you can't get from a single instrument.

Computers and Music

IF YOU WOULD like to know more about how MIDI works, see Andrew Symaniz' series 'Microcomputers, MIDI and Music ' In this issue he continues his discussion on MIDI channel messages Back issues are available for previous articles in the series; refer to the Services page for information on obtaining copies.

On the technical side, MIDI uses quite simple serial hardware and software protocols. The hardware standard is very flexible by being limited only to specifying such things as the type of shielded three-wire cable to be used (5-pin DIN connectors at both ends), and the basic outline design of a circuit needed to handle MIDI format data at 31.25 kilobits per second.

At the software protocol level, MIDI specifies three types of data handling. There are standard codes that turn notes on and off and specify relative audio volume; optional codes for controlling modulation, pitch changes and vibrato; and system exclusive codes which are unique to each instrument/synthesiser and which are used to programming it.

Data travels along a single MIDI cable in only one direction but they use a 4-bit channel identifier which can address 16 different instruments, or groups of instruments.

Both the GS and Mac need a data path to transfer data between the computer and the MIDI instrument This link has to have a high-speed serial-to-parallel interface and voltage-conversion circuitry.

Once you've got the MIDI link and the right software, your Apple can become the equivalent of a very expensive studio multitrack recorder You can record a sequence of notes and these controls will be recorded in the computer memory by a 'sequencer' program Switch the program to 'play', and the instrument comes under the computer control and replays the notes as recorded You can also sample musical sounds and store them digitally to be replayed by a synthesiser.

Once inside the computer, the data can be massaged in any way you want It can also be linked together with other recorded data streams to create multiple tracks which play simultaneously. In fact, you can perform an infinite number of digital overdubs without degrading the sound one iota. This is where this system is superior to even the best analog multitrack recording where every overdub results in a devaluation of the audio quality to some degree.

Tempo

Musicians also appreciate the fact that with MIDI you can manipulate the tempo of prerecorded music at any time without that chipmunk effect that you get on tape recorders if you try to speed them up. If a musician is facing a difficult part of a recording, he or she can handle it at slow-speed or in the key that they find best, then speed it up later and swap it to a different key.

After you've made a recording, a MIDI data transcription program can analyse everything and set it out in standard musical notation, ready for printing out on paper. Transcription programs aren't perfect yet, but they give you one hell of a start towards transferring your composition to paper.

And with the high quality of graphics on both the Mac and the GS, comes the ability to manipulate sounds (both music and sound effects) by using screen-based graphical sound profiles rather than a series of numbers

Reshaping sounds that have previously been sampled is likely to become the way of the future for music recording – and at the same time the process will open up a Pandora's box of problems for lawyers trying to impose copyright restrictions. When does a reshaped sound cease to be a copy, and exist in its own right? □

JUST ARRIVED IN AUSTRALIA!

MACE UTILITIES

VERSION 4.1

Now with 3 manuals and 3 disks!

Recovery Features

UnFORMAT: Recovers from an accidental FORMAT of a hard disk, even when not installed. Recovers perfectly when previously installed. Recovers Sub-directories and the files contained in the subs if you have not used Mace before.

NEW

FLOPPY **UnFORMAT:** Recovers from an accidental format of a floppy disk.

NEW

FORMAT-F: Replaces DOS FORMAT with a safe, non-lethal format. Includes a /R option which will RESURRECT otherwise unreadable floppy disks.

NEW

FORMAT-H: Replaces DOS FORMAT. FORMAT-H is guaranteed safe. If you own an AT&T or Compaq, you need this!

UnDELETE: Restores erased or deleted files. UnDelete will show a list of all deleted files in the File Allocation Table and allow you to choose the one you wish to undelete. Recovers easily, quickly and safely.

REMEDY: Diagnoses and locks out bad sectors on a disk automatically. If Remedy encounters an error, it will declare the spot bad, move any data in the area, and lock out the sector. This is especially useful for "dying" disks.

RESTORE BOOT SECTOR: The Boot sector contains a program that loads DOS when the computer is turned on. It also has information pertaining to the format of the disk or partition. RESTORE BOOT will copy, from a picture taken by MACE, a new boot sector to an unbootable drive.

NEW

SQZD: Optimizes directory paths. SQZD removes deleted entries from all directories and closes up the spaces.

VCACHE: Hard disk accelerator increases speed of cartridge and fixed disk operations using memory caching to eliminate repetitive disk access. Allocate up to 8MB of extended or expanded memory, or 512K of standard memory for caching disk data. Automatic and transparent after installation.

VSCREEN: Speeds up your screen display.

VKETTE: Floppy disk accelerator, cashes data transfers to and from floppy diskettes.

NEW

dbFIX Searches for lost DBase files. Repairs and recovers damaged DBase files and allows reconstruction of partially overwritten DBase Files.

BRAND NEW VERSION

Hot Rod features

UnFRAGMENT: Physically reorganizes all files on the disk, speeding access time dramatically! Fast UnFRAGMENT searches the disk for fragmented files and puts them back together. UnFRAGMENT in the regular mode puts files together in the order they are sorted and moves free space to the end of the disk.

NEW

SORTD: Optionally sorts your entire disk or individual directory entries by Name, Extension, Date-Time or Length.

ONLY $210

Perfect™

PERFECT INTERFACE (Aust.) Pty. Ltd
7th Floor, 8 West Street, N. Sydney NSW 2060
Phone (02) 957 1112

Please send me _____ Mace Utilities 4.1 $210 each

I enclose my cheque for $ _____ or please debit my American Express, Diner's Club, Visa, MasterCard or Bankcard plus $7.50 freight.

☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

Card expires _____ Signature _____

Name _____ Company _____

Address _____

Phone No. _____

JOHN HEPWORTH

YOUR IBM

A plethora of riches this month! First is Version 3 of the NetComm communications program, also available in a generic form from CyberSoft. Second is Athena BIOS, a hardware/software solution that allows almost any CGA software, including self-booting games, to run on systems with Hercules video boards.

The NetComm Program V3

Australia presents a unique challenge for authors of communications programs. Viatel is widely used, as is an equivalent in the UK, but not in the USA. At the same time the bulletin board scene is very active, and along with business communications, needs high speed communications across half the world via satellite links. This requires very efficient error correcting protocols like Zmodem so that high speed modems are not hobbled waiting for the next packet to be transmitted, as can happen with the ubiquitous Xmodem.

The NetComm Program V3 offers Viatel and general purpose communications at speeds up to 19,200 baud, depending on the computer used. It has several popular error correcting protocols, including Xmodem, Ymodem, Zmodem and Sealink, while ASCII transfers are also supported.

Other features are a chat mode, with separate windows on the screen for transmitted and received text, a learn mode which can watch a log-in, record it, and then automate subsequent calls to the same host, a WordStar compatible editor and a powerful script language. Support is included for the Microsoft Mouse, and my Mouse Systems Mouse worked well when using a driver to emulate the Microsoft Mouse. Video cards supported include MDA, CGA, EGA, VGA and Hercules.

A NetComm session

The NetComm Program can be run on a two floppy disk system, but a hard disk system is preferred. Copy the files to the hard disk, and run the main program NETCOMM.EXE. A setup routine is run automatically if NETCOMM.EXE has not previously been run. Now the main off-line screen appears. A status bar is at the bottom and the titles of several menus at the top. The status bar shows OFFLINE or ONLINE at the left, and the time of day at the right. Selection of a menu can be made by cursor keys or mouse to move the cursor, or by pressing the highlighted letter in a menu or option name. The menus initially available include Help, Connect, Edit, Run, File, Setup and Quit.

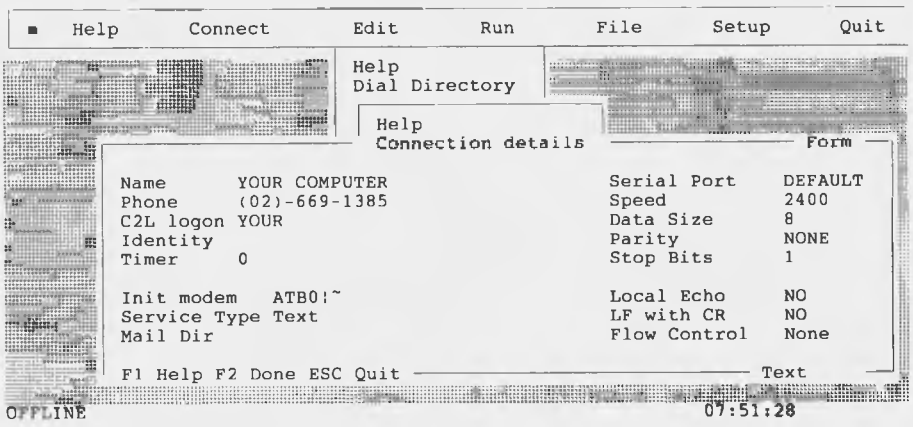


Figure 1. From the Edit menu in Version 3 of the NetComm Program, the user can alter the dial directory, edit a file, a script program, modem and connection details.

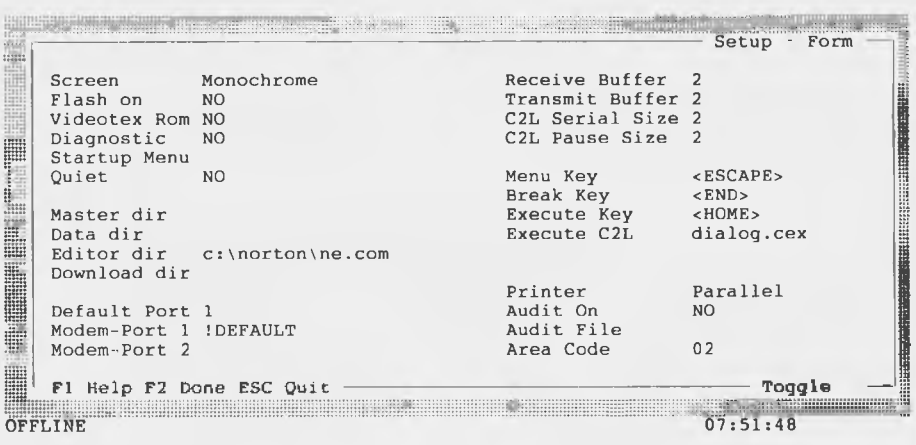


Figure 2. The Setup screen allows most of the program's default parameters to be reset.

Connect is used to dial a host or connect to a local computer with a direct cable to the one in use. It has a range of second level options including Help, Call, Answer, Pickup and Local. Call is used to initiate a call, Answer to set up the system to answer incoming calls, Pickup to allow users who are talking to each other to go from voice to data, and Local connects to another computer with a direct cable link.

From the Edit menu one can alter the dial directory, edit a file, a script program, modem and connection details and so on. Run can execute any program external to the NetComm Program, and can execute internal script language programs. The File options are extensive, so I won't list them here. The Setup menu allows most of the program's default parameters to be reset. The user can specify Jump Keys to bypass the menu system and speed up common tasks, though in general the program is fast and easy to use via the menus.

Calling a host

Calling a Viatel host or a Bulletin Board is easy. From the Offline screen, pressing C pops down a Connect menu. Pressing C again shows a list of the five hosts that the user has nominated as the most frequently called. One of these can be selected either by pressing a numeric key from 1 to 5, or by moving a cursor bar and

pressing Enter, while pressing F2 displays all other entries in the dialling directory. At all times context sensitive help is available by pressing F1, and the actions the user could take are listed across the bottom of the window The program will automatically redial if connection is not made, but only for five attempts in accordance with Telecom regulations.

At this point I should digress and note that at any time the user can tell the NetComm Program to watch a session as the user logs onto a host, read the prompts coming down and the user's responses, and store the details in a file The next time this host is called, log-on is automatic. The learn mode is entered by running the program LEARN.CEX from the R)un C)2L menu selections.

After calling a host, connecting, and automatically logging-in if desired, the screen goes to on-line mode. The screen appears similar to the off-line screen, but there are some subtle differences The status bar now shows the word ONLINE at the left side instead of OFFLINE, and the time display at the right shows the time elapsed for the call, and not the time of day The menu options have disappeared from the top of the screen and, of course, the user's keystrokes are sent to the serial port and not acted on by the program Pressing the Escape key pops a list of possible menus across the top of the screen. These are Help, Options, Edit, Run, File, Setup and Quit, all much the same as the possibilities in the off-line menu, though the Call menu has been replaced with the Options menu.

From the Options menu the user can Disconnect, Redial, Capture Text, Print Text, Get (receive) File, Upload (send) File, split the screen for Chat Windows or more Pressing Escape at almost any time takes the user back up the menu system by one level, and in on-line mode can toggle from the highest menu to terminal mode

The combination of Viatel, Zmodem and the ability to learn a log-in sequence have weaned me from the various communications programs I previously used. The NetComm Program V3 is a great program, and is an infinite improvement over the previous version. My only reservation relates to the manual. While most attractive in appearance inside and out, it appears to have been written by a technical person deeply involved in the development of the program, and can be rather opaque to others less fortunate. Fortunately, after initial setup the manual is redundant and the program just becomes one of the most powerful, useful and satisfying communications programs I have ever used.

The NetComm Program is bundled with current NetComm modems, but can also be purchased separately, and upgrades are available for existing users of older versions of the program. It comes with details of the configuration of a large range of NetComm modems. The generic version of the program, sold under the GateWay banner by CyberSoft, has configuration details for many modems from other manufacturers.

Registered users of previous versions can update for $57 (you must return your Version 2 disk as proof of ownership), while the recommended retail price for outright purchase is a mere $114; these prices are taxed but do not include shipping. The NetComm program comes bundled with the Trailblazer Mark II, all SmartModems, all In-modems and the Premium Pocket Modem 123. If you bought a new modem after 20 March, you can get a free upgrade to Version 3 if you produce an invoice and return the Version 2 disk. Contact NetComm on (02) 888-5533.

Athena BIOS

Most PCs being bought for use in the home have either a CGA video board, driving a colour or low resolution video monitor, or a Hercules compatible video board driving a higher resolution monochrome monitor Both can display graphics, but graphics programs written for just one will not run on the other While many business programs can display graphics on both, most games and many low end graphics programs are written solely for the CGA. They will show text (if any) on a Hercules screen, but not graphics. Some Public Domain and user-supported programs like SIMCGA allow many programs which expect CGA to run on Hercules, but a significant number of programs still won't run. Worst affected are games which are not run from the DOS prompt but require the machine to be rebooted, using the games disk instead of a boot disk.

Athena Digital has attacked this problem in two ways, hardware and software, both packaged together as the Athena BIOS. It has a software solution which allows the vast majority of programs written for CGA to be run on a Hercules. It also has a tiny expansion board, as long as an expansion slot and only about 3 cm wide, carrying just four chips.

The Athena BIOS can be run two ways. For normal programs, the file ATHENA.SYS is copied to your boot disk and a line is added to your CONFIG.SYS file, containing DEVICE=ATHENA.SYS. This loads the Athena device driver. Initially the CGA emulation is inactive, and a program called ATHENA.COM is used to control it. The command ATHENA /E at the DOS prompt invokes CGA emulation on a Hercules board, and with other parameters ATHENA.COM can disable the emulation and can do other video related tasks.

The combination of Viatel, Zmodem, and the ability to learn a log-in sequence have weaned me from the various communications programs I previously used. The NetComm Program V3 is a great program, and is an infinite improvement over the previous version.

To run a self-booting game (such as Kings Quest) the PC is rebooted using a copy of the ATHENA distribution disk made with DISKCOPY. This loads its own code without DOS, checks the hardware, and then invites the user to insert the self-booting disk and press any key to continue. The self booting disk then loads and runs.

Athena BIOS was very successful with a range of games and other software on my PC. I did not find any CGA specific software that I could not run, but as Athena only claims that 95 per cent of CGA software can be run on Hercules under its system there must be some that doesn't.

My review copy came from VapourWare; (02) 632 8841. At $99 taxed it is almost essential for anyone with a PC with Hercules video. □

MARTIN CARR

YOUR ATARI

Atari's Mega ST

The June 1986 Australian release of the Atari ST series of computers literally changed the face of home computing in this country No longer were we restricted to a meager 64 kilobytes of memory or a measly 16 colours. Never again would we have to put up with a word processor that showed only 40 columns (half a page of standard text). The world of WYSIWYG (what you see is what you get) was suddenly opened up to the home user and overnight the home computer was technologically ahead of the venerable IBM and its clones.

The 520ST gave its owner 512 Kbyte RAM, 360K disk storage, 512 colours and a 68000 processor running at 8 MHz. Included also was a MIDI (Musical Instrument Digital Interface) port to satisfy those so inclined. Atari 1040 owners were rewarded with extra RAM (1024 Kbyte) and a double-sided 720 Kbyte disk drive as standard.

Surely we had reached the paragon of home computer power. Why, even small business was showing a definite interest and professional writers had finally found an affordable, easy to use machine to replace their antiquated typewriters; everyone was happy. Or were they? As the power of the ST was exploited it became apparent that even 1 Mbyte of RAM was not enough for memory-hungry applications such as Cad and desktop publishing (DTP) Atari had followed the market and early this year announced the worldwide release of its new ST models: the Mega ST range.

There are two models of Mega ST: the Mega 2 and the Mega 4. Externally they are identical with the CPU designed to sit under the monitor, thus presenting a smaller footprint and maximising valuable desk space. The CPU casing also houses the one 720 Kbyte, 3½ inch double sided disk drive. On the rear panel you will find the usual ST connectors including the Reset button, On/Off switch, RS232C port (for modem or serial printer) with a DB25 male connector, standard IBM parallel printer port, power socket, monitor socket for either colour or monochrome Atari monitor, floppy disk port for external drive, DMA port for connection of a hard disk unit or laser printer, MIDI In and MIDI Out ports for synthesizer or musical instrument connection.

Figure 1. *The two models of the Mega ST, the Mega 2 and Mega 4, both feature a DMA port for connection of a hard disk unit or laser printer.*

Cooling fan

An interesting feature of the Mega ST is the cooling fan mounted beside the reset switch. Whilst the 520 or 1040ST have never encountered overheating problems, the Mega, with more available internal space, has obviously been designed with future internal hardware add-ons in mind. Extra circuit boards may mean more heat build up and the inclusion of a fan is a sensible move by Atari. The notion of hardware add-ons is supported by the presence of a removable panel on the rear of the CPU. This panel is in line with an expansion board connector inside the computer and it is through this opening that a cable will pass to connect to other peripheral devices. This leaves the way clear for third party manufacturers to produce many new products for the machine (networking and so on).

The Mega ST's keyboard is separate and attaches to the CPU via a cable with a small US four wire telephone jack at the end Although the cable is long enough for most situations, it may be possible to extend it using one of the new modular phone extenders available from most electrical components stores.

The keyboard has a positive feel and is a great improvement over the type fitted to the previous ST models. The actual keyboard layout has not been changed. However, the Mega keyboard being detached has allowed Atari to include several enhancements not possible before. Small adjustable supports allow the user to set the keyboard at the most comfortable angle and will be appreciated by all who use the machine. Mouse and joystick ports are located at the rear of the keyboard and are much easier to reach than those on the older STFM. The location of the mouse port also makes life a little more convenient for the left hander.

Internally, the main difference between the two Mega STs is memory capacity. The Mega 2 has 2 Mbyte of RAM whilst the Mega 4 has a whopping 4 Mbyte available to the user. At the time of writing, only the Mega 4 is being fitted with the much heralded Blitter or Graphics Accelerator Chip, although purchasers of the Mega 2 will have upgrades made available to them shortly.

The Blitter offers users dramatically improved graphics performance. This will be most noticeable in the increased speed that will accompany your normally slow Cad packages. Most graphics programs will be able to take advantage of the Blitter's capabilities, however should you have any problem with a particular package, it is simply a matter of calling on the Options menu from your desktop and

switching the Blitter off. This will return the computer to its normal unblittered speed. Bear in mind that the Blitter only speeds up graphics, it has no effect on the actual processing speed of the machine.

Both machines use the familiar GEM operating environment and, as such, are compatible with existing ST software. This assures the prospective Mega ST owner of access to a vast range of programs. Music applications, DTP, spreadsheets, databases, Cad, games and much, much more are available for these new machines *now*.

Many of the excellent packages available will readily take advantage of the extra RAM, allowing much larger and more complex documents to be produced. Where, with the 1040ST you could hold tens of pages in memory, the Mega ST will hold hundreds. Those with a musical inclination will have more than enough memory for their needs and will be able to take Steinburg Pro 24 to its limits. Publishing Partner becomes a joy to use and the future holds prospects of Ventura Publisher (currently for IBM) becoming available for the Mega ST. Business interests will see larger spreadsheets, more indepth accounting packages and larger databases. With the huge memory of these new Atari computers and the blinding speed of the 68000 processor, we will soon see many new business packages available that will take advantage of the vast computing power of the Mega.

The graphic artist and video effects specialist will also benefit from the increased animation possibilities offered by the combination of memory and Blitter capabilities. This may be the point where we begin to see the Atari enter the field of advertising, or become an important instrument in video production. Real estate, too, may soon accept the Mega as an economical means to control rent rolls or property and client listings.

Operating system

The Mega, 520 and 1040STs are now fitted with a new version of TOS-on-ROM (The Operating System) which includes many improvements over older versions. File copying and disk backup are much faster and continuous scrolling of windows is possible from the desktop. These improvements, however, have caused a small incompatibility with programs which make illegal calls to the operating system or use certain disk copy protection techniques. This is not the fault of the machine, rather proof that sloppy programming has its price. Atari has always stated that programmers should not sidestep certain system procedures as some parts of TOS may be subject to change. It should be pointed out that literally hundreds of programs have been tested and very few problems actually found. I have not found any commercial packages that won't run on the new machines, although several Public Domain offerings seem to now be incompatible. This is a small price to pay for the vast improvements offered by the new ROMs.

Figure 2.*The 520ST has 512 Kbyte RAM, 360 Kbyte disk storage, 512 colours, a 68000 processor running at 8 MHz and a MIDI (Musical Instrument Digital Interface) port.*

Unfortunately, a machine such as this does have some disappointing drawbacks. By including a disk storage capacity of only 720 Kbyte Atari has limited the usefulness of the Mega in its basic form. In order to make full use of the massive memory it is essential that a hard disk be utilised. At current retail prices this will add $1295 to the cost of a system. Unlike the 520 or 1040STFM, the Mega does not have an RF modulator; whilst it is unlikely that business users would use a TV as a visual display unit, it does limit the machine somewhat for home use.

The lack of a modulator also precludes the user from easily taking a composite video and audio signal (a simple cabling job) from the machine to a device such as a video recorder. This will be seen as a major stumbling block by businesses that wish to record the computer's output via video for future showing (for example, sales presentations, real estate listing with accompanying digitised picture, for viewing in a client's home and so on).

It would certainly make good sense for Atari to include composite video and audio output as standard equipment. Yet another problem is encountered when the user, due to limited space, places the keyboard directly in front of the CPU. The keyboard now blocks access to the disk drive and makes the task of switching disks extremely difficult, if not impossible. Those with a hard disk drive will not encounter this problem as the CPU can be 'stacked' on top of the drive unit, both cases being of the same dimensions.

On the positive side, with the release of its Mega STs, Atari has taken a giant step forward and will no doubt reap the rewards as more and more individuals and businesses take advantage of the 'power without the price' marketing strategy. Atari has obviously aimed its new machines at the business market. By separating its games and business interests, Atari hopes to lose the 'toyshop' image it created with the release of its earlier 8-bit machines. With the powerful multi-megabyte computers it hopes to woo businesses who for far too long have been forced to use the outdated, expensive technology offered by the major computer companies.

With a recommended retail price of $2495 for the Mega 2 and $3495 for the Mega 4, Atari is really living up to its motto. It should be noted that the price quoted for both machines does not include a monitor. The Atari monochrome monitor has a RRP of $345 while the colour monitor has a RRP of $595. Have a talk to your local Atari dealer; I'm sure you'll come out smiling. All prices quoted are taxed and applicable from 1 August – so be quick!

The test machine was supplied by Atari Corporation Australia; (02) 805 0344. □

GREGG FAULKNER

YOUR AMIGA

Strength to strength . . .

All those people who, twelve months ago, were outspoken in doubting the future of the Amiga must by now be eating their words. Far from dying, this remarkable machine has gone on from strength to strength.

Sales of the Amiga 500 have far exceeded Commodore's most optimistic forecasts and sales of the Amiga 2000, though slow at first, have climbed dramatically.

What can explain such sales success? Certainly it's not any sort of dynamic marketing by Commodore. When was the last time you saw an Amiga commercial on TV or in the popular press? I can't remember any comparable consumer item which was treated with such disdain by its own manufacturer.

Reading through the 'Letters to the Editor' columns of computer magazines such as *Amiga World* and *Amazing Computing* serves only to convince me that Commodore almost goes out of its way to be unhelpful and apparently uncaring in their attitude toward owners or potential owners of Amigas.

So what has caused this neglected waif of a machine to become the success it is? In my opinion there are several factors which, together, have caused the Amiga to succeed where other machines have failed.

First and foremost, credit must go to those Amiga pioneers such as Dale Luck, Carolyn Scheppner and others who created magic software to bring the machine to life. And, also to Fred Fish, whose work in collecting and distributing Public Domain and Shareware software enabled struggling Amiga owners to keep abreast of the rapid developments; and to Leo Schwab and all the other stalwarts who have contributed utilities and entertaining nonsense graphics, animations and examples goes much of the credit.

Pioneering Amiga software companies such as Aegis, Electronic Arts, New Tek, Lattice and many others made enormous contributions to the success of the Amiga. The Interchange File Format (IFF) 'standards' developed by Electronic Arts are among the most significant software standards developed for any microcomputer.

Above all else, the tremendous enthusiasm of early Amiga owners who supported and promoted the machine during the 'bad times' of software shortage made the Amiga a success. I have owned several other micros but with none of them have I experienced the same comradeship that I have found among Amiga owners. Perhaps Commodore's lack of support has forced the close contact and willingness to share ideas and assistance.

Three dimensional graphics and animation packages like Sculpt 3D, Animate 3D, VideoScape 3D, Silver and others are light years from the 'originals' like Graphicraft. Games like Ferrari Formula 1, Dark Castle and Time Bandit have brought true arcade speed and imagery to the Amiga. Jet has followed on from Flight Simulator for those of us who feel 'the need for speed . . .'

So what has caused this neglected waif of a machine to become the success it is?

Yes, the Amiga has really come of age. The list of software titles available in Australia runs for many pages and covers every conceivable function, from spreadsheets to speedway games, from word-processors to graphics. I think it is fair to say that there is software available for every imaginable purpose, (almost!).

One theme which appears not to be covered is genealogy, right Ailsa? I have been asked by several people to recommend a genealogy package for the Amiga, but I don't know of one. If anyone out there has written, or would care to write, such a package I'll be pleased to give it a mention. In this bicenthingo year it might even qualify as a bicenthingo project and attract a megabuck grant – who knows.

New software

A couple of new packages to mention this month. First up is Kind Words, a new and very pretty word processor for Amiga users who want more than a toy word processing package but can't afford the big bucks for WordPerfect.

Nice and easy to learn and use, able to incorporate IFF images with text wrap-around, possessing a very useful set of fonts and printer drivers, this is really a very polished product. I don't believe that it has the same brute force ability as WordPerfect but it is still a nice package to use.

Kind Words works best with two floppy disk drives (even better with a hard disk if you have one), but is quite acceptable with a single drive system. It's well worth a look if you're in the market for a medium-priced word processor.

Second in line this month is PIXmate, an image enhancement package from Progressive Peripherals and Software in the glorious US of A. Billed as a 'total image processing system', PIXmate contains a stunning array of image modification facilities. I feel as though I've been waiting years for a package like this.

I frequently digitise images from books, maps, magazines and so on; I've often been frustrated by the lack of contrast or the colour balance or some other aspect of the digitised image. Now with PIXmate I don't have to put up with second rate images. If I'm not happy with the contrast I can change it. Colours can be changed individually, or the colour balance of the whole image can be changed with a single mouse movement.

The facilities that PIXmate offers were used by NASA to improve the planetary images returned from deep-space craft. The list of functions goes on and on: contrast, saturation, intensity, red, green and blue balance, colour merge, format conversions, colour matching, colour negative, bitplane rotation, and on and on . . .

PIXmate uses the Amiga's 'halfbrite' mode which permits up to 64 colours on screen at a time. This facility doesn't work with some of the very early Amigas sold in the USA, but I believe that all Amigas sold in Australia will be quite OK. PIXmate can also use all the other Amiga modes such as lo-res, med-res, interlace, hi-res and HAM and can handle overscan and PAL.

What more can I say, this is a great package – an absolute must for anyone involved with images on the Amiga (isn't that all of us?). At about $99 it won't break the bank either. PIXmate is not copy protected so it's easy to back-up and to install on your utility or hard disks. Let's hope the software thieves give this one a break. It's a darned good package at a fair price so if it's worth using, it's worth buying. Cheers for now. □

ATLANTIS INTERNATIONAL COMPUTERS

IMPORTERS
SUPPLIERS
DISTRIBUTORS
& SALES

ATLANTIS INTERNATIONAL PTY LTD
19 WADHAM PARADE,
MT. WAVERLEY,
VIC. 3149
PH: (03) 807 3139 807 7187
FAX: (03) 807 6824

TANDON 20Mb CONTROLLER & CABLE
$555.00

TAPE BACK UP ARCHIVE
60Mb Int. $1695.00
60MbExternal $1795.00

MODEMS SENDATA 321 ADS
$520.00

AIC 386-16T
IMb RAM
45Mb H/D
1.2Mb Floppy
$6995.00

LAPTOP AT
640K 0WAIT
$2000.00
WHILE STOCKS LAST

COLOUR PRINTER STAR NX1000CL
$579.00

MONITORS
CGA $499.00
EGA $720.00
PGA $1150.00
TTL $175.00
COMPOSITE $149.00

STAR LASER
$5995.00

NO FRILLS DS/DD per 10
$12.50

AT Up Grade
Replace existing XT to an AT
$699.00

BULLETIN BOARD (03) 807 9514
"DISCOVER ATLANTIS"

Atlantis International Pty Ltd trading as Atlantis International Computers was established in 1983 by founder and managing director Mr. Paul Sahhar. That aim of the company was to professionally supply and service the Micro Mini computer market with a large range of high quality systems.

Soon after establishment, it was apparent that there was a real demand by commercial and corporate clients for serviced IBM compatible equipment. Five years of involvement with some of Australia's largest companies, government departments and public institutions has seen Atlantis grow to become one of the countries biggest wholly Australian owned micro computer specialists.

Atlantis are currently based in the Melbourne suburb of Mt. Waverley, where the head office supervises a staff of 14 people located at our 2000 sq.ft warehouse and Oakleigh Service Centre. Staff have extensive knowledge of IBM and compatible hardware and software along with expertise in all areas of PC computing and data communications

Atlantis International Computers provide a comprehensive range of computer systems for any application, from traditional areas such as word processing, accounting, database and spreadsheets to advanced networking systems, CAD/CAM and scientific/engineering packages. We aim to provide a total integrated package designed to increase productivity and efficiency in any business.

PRODUCTS:

Atlantis International Computers provide a comprehensive range of computer systems for all business applications. Fully compatible with enormously popular IBM personal computers, all Atlantis systems provide superior performance at a very competitive price.

The workhorse of the range is the Atlantis Turbo. Utilising the 8088-2 processor running at a racy 8Mhz, the Turbo is ideal for use as a network work-station, word processor or small business accounting system. Featuring a larger than average power supply (150 Watts), extra expansion slots (Total of eight) and plenty of room for add-ons the Atlantis Turbo provides the first time user with excellent value for money.

For increased performance and the last work in modern styling, look no further than the Atlantis 286. Attractively mounted in a slim line, small footprint case, the 286 looks good on anyone's desk. With the power of an 8Mhz 80286 processor moving things along and with memory expansion up to a total of 16 Megabytes, the Atlantis 286 is more than capable of running a host of advanced applications such as CAD/CAM, simulations and integrated accounting systems.

Of particular interest to the small to medium sized business is the Atlantis 286+T. Based on the traditional AT style system and featuring high speed 10/12Mhz 80286 processors these systems are ideal for either a desk top version (286+) or as a smart free standing tower case (286+T) these systems provide Multi-user performance at a single-user price.

Flagships of the range are the Atlantis 386 and the 386+. Atlantis was the first company to release an Australian built 80386 computer system during September 1987. Again in September, 1987 we were the first to release the high speed 20Mhz 80386. Featuring the advanced 80386 32-bit processor these systems compare to the many modern mini computers and will easily out perform a VAX 6800.

Using high speed memory, state of the art support chips and many other techniques enable the Atlantis 386 and 386+ to perform an order of magnitude faster than existing PC compatible systems.

Thus the Atlantis 386 and 386+ have important roles to play as large network applications, graphic simulation and engineering workstations.

Atlantis supplement their range of computer systems with a complete inventory of peripherals, such as Data-C monitors and floppy disks, Star Printers, Microsoft Software and games. They also supply consumables such as paper, printer ribbons and accessories like to the CT-100 diskette storage boxes.

BUY YOUR UPGRADES DIRECT AND SAVE

3½" EXTERNAL DISKETTE DRIVES — $351

NEC 3½" 720 K Drive/Steel Case/37 Pin Plug
XT/AT Compatible — Must use DOS 3.2/3

TAPE BACKUP

Mountain Tape Backup Drive complete with Software and Manuals.

TD4440 ..... AT Compatible
TD4340 ..... XT Compatible — **$795**

5¼" EXTERNAL DISKETTE DRIVES — $525

FOR PS/2 MODEL 25/30/50/60/80

- ★ Attractive Case
  Includes All Fittings & Software
- ★ Allows PS/2 to create 5¼" Disks Readable by XT/AT's.
- ★ Software on 5¼" Disks can be run directly by PS/2 Machines.

ACCESSORIES

Keyboard Tactile 101 Keys. Switchable to PC/XT/AT	$151
Joystick. Quickshot. 2 Button	$39
Chassis to Fit 3½" Floppy in 5¼" Slot	$ 30
Micro Mover — Steel	$399

MONITORS

NEC Multisync II 14"	$1150
NEC Multisync 15" Hires	$1839
NEC Multisync 20" Hires	$4470
THOMPSON 12" TTL	$216

PRINTERS

Brother 80 Col 100/25 NLQ 9 Pin	$436
Brother 132 Col 240/50 NLQ 9 Pin	$942
Brother 132 Col 216/72 NLQ 24 Pin	$1297
NEC P2200 Pinwriter 80 Col 140/60 NLQ 24 Pin	$665
Oki Data ML182 80 Col 120/20 NLQ 9 Pin	$397
Oki Data ML183 136 Col 120/20 NLQ 9 Pin	$751
Oki Data ML193 136 Col 240/40 NLQ 9 Pin	$981

MODEMS

300/1200 BPS Full Duplex External
Hayes Compatible V21, V22 ..... $315

300/1200/75 BPS Full Duplex External
Hayes Compatible V21, V22, V23 ..... $399

DISKETTE DRIVES

NEC Diskette Drive 5.25" 1.2MB (Reads/Writes 360K)	$231
NEC Diskette Drive 3.5" 720K	$245
NEC Diskette Drive 3.5" 720K. External	$351
NEC Diskette Drive 3.5" 1.44MB	$271
NEC Diskette Drive 3.5" 1.44MB. External	$378
Panasonic 360K 5.25"	$180

MOUSE

GENIUS MOUSE — $155
Dr. Halo III Software. Super Tracking Speed. Programmable Resolution. Pop-up Menus. Menu Maker. Mouse Pad. Mouse Pocket. 3 Button Serial.

WITTY MOUSE — $92
C400 3 Button Serial.

POWER SUPPLIES

Power Supply 220W AT	$240
Power Supply 200W AT	$185
Power Supply 150W PC/XT	$166

CASES

AT/XT Case Fliptop	$109
AT Case	$147
Tower Case with 220W Power	$749
Baby AT Case with 200W Power	$384

RIBBONS

Brother M1109	$12.50
Brother M1509	$17.21
Epson EX800, EX1000, LQ2500	$15.60
Epson LQ800	$13.75
Epson LQ1000	$13.16
Epson LQ1500	$12.70
Epson LX80	$9.10
Epson MX80	$10.84
Epson MX100	$13.74
Epson MX100 Refill Pack	$5.70
NEC P3, P7	$17.44
NEC P5	$12.46
C. ITOH 8510	$9.10
Oki Data M80	$3.08
Oki Data M84	$8.69
Oki Data ML182, ML183, ML193	$11.20
Panasonic KXP110	$12.70
Riteman 12	$14.80
Toshiba P1350	$13.94

Advance Peripherals
EXPANDING COMPUTER POWER

ADVANCE PERIPHERALS PTY LTD
Suite 3, 846 Pacific Highway.
(P.O. Box 215) Gordon. N.S.W. 2072.
Prices Quoted Include Sales Tax
Prices Are Subject To Change Without Notice

TO ORDER PHONE
(008) 25 1489
FAX: (02) 498 2665
IN SYDNEY CALL
498 2411

BUY YOUR UPGRADES DIRECT AND SAVE

DISKETTES

LIFETIME WARRANTY

5¼" DISKETTES

10 BRAND 2S 2D 360K	$0.99
VERBATIM BONUS 1.2 MB	$3.19
BASF 1.2MB	$3.50

3½" DISKETTES

VERBATIM DATALIFE 720K	$3.60
VERBATIM 1.44 MB	$8.39
BASF 720K	$3.14

DATA CARTRIDGES

VERBATIM DL 2000 40 MB	$41.00

HARD DISK DRIVES

NEC

20 MB Disk	$454
20 MB with Controller & Kit	$546
30 MB with Controller & Kit	$577
40 MB 40 MS Disk	$907
85 MB 23 MS Disk	$1610

CMS

21 MB Hard Card	$624

SEAGATE

20 MB Disk	$438
20 MB with Controller & Kit	$512
30 MB Disk	$464
30 MB with Controller & Kit	$566
40 MB 40 MS Drive	$817
40 MB 28 MS Drive	$1103

ADD ON CARDS

DISK CONTROLLER CARDS

Hard Disk (2X) Controller PC/XT	$151
Advance Hard Disk (2X) & Floppy (4X) Controller AT	$291
Advance Universal Floppy (4X) Controller PC/XT/AT	$102
Floppy Disk Controller (5¼") PC/XT	$72
3.5" External Floppy Controller AT	$95
Hard Disk Controller RLL OMTI 5527A PC/XT/AT	$222
ESDI Interface for 170MB Drive AT	$616

MULTIFUNCTION CARDS

Parallel, Serial, Game Port, 1.5MB Capacity, Zero K AT	$206

MULTI I/O CARDS

Floppy (2X), Parallel, RS232, Clock, Game Card PC/XT	$146
Clock/Calendar Card PC/XT	$67
Clock/Calendar/RS232 Port PC/XT	$86
Parallel Port PC/XT	$46
RS232 Port PC/XT	$72
RS232 Port/Parallel Port PC/XT	$80
Parallel, RS232 (2nd Optional), Clock, Game Port PC/XT	$102
Parallel, RS232 (2nd Optional), Game Port AT	$102

VIDEO CARDS

Mono, Hercules Graphics, Printer Port PC/XT/AT	$117
Colour Graphics, Mono, Printer Port PC/XT/AT	$105
Colour Graphics, Mono, Hercules, Printer Port PC/XT/AT	$168
EGA, CGA, MGA, HGA, Multisync 80386 Only	$259
EGA, CGA, MGA, HGA, Multisync, Double Scan PC/XT/AT	$335

MEMORY EXPANSION CARDS

Memory Expansion 64-640K Zero K PC/XT	$70
Memory Expansion 2MB EMS Compat. Zero K PC/XT	$168
Memory Expansion 128K Zero K AT	$76
Memory Expansion 1MB Zero K AT	$85

PROCESSOR BOARDS & MOTHER BOARDS

8088-CPU Board Turbo 4.77 & 8 MHZ Zero K	$203
286-CPU Board, 0 Wait, 8 & 10 MHZ, Zero K	$633
286-CPU Board, 1MB Ram, 0 Wait, 8 & 10 MHZ	$1332
286-CPU, 200W, Babycase, 1MB Ram, 0 Wait, 8 & 10 MHZ	$1576
386-CPU Board, 2MB Ram on Board, 0 Wait, 20 MHZ	$3217

ADVANCE Peripherals
EXPANDING COMPUTER POWER

ADVANCE PERIPHERALS PTY LTD
Suite 3, 846 Pacific Highway.
(P.O. Box 215) Gordon. N.S.W. 2072.
Prices Quoted Include Sales Tax
Prices Are Subject To Change Without Notice

TO ORDER PHONE
(008) 25 1489
FAX: (02) 498 2665
IN SYDNEY CALL
498 2411

IAN ALLEN

YOUR C64

A never ending story?

Back in the 16th century, prevailing opinion had it that the earth was the centre of the universe. When an upstart astronomer named Galileo stated the outrageous notion that the earth in fact revolved about the sun, he was forced by the powers that be to renounce his words. Legend has it that when he recanted he whispered under his breath 'Nevertheless, it still moves' Today you can say the same thing about the C64.

Because the C64 is still moving. Despite the prevailing opinion that 8-bit computers are dead, it continues to sell strongly even though it is now six years old. That in itself is remarkable, but even more so when you realise that this computer, (apart from one cosmetic facelift), is exactly identical to it's original 1982 form. It's a phenomenon unparalleled by any other computer make or model, and it's one that can't be ignored A track record of such continuous success contains lessons for all of us, not just pundits, so just what is it that keeps the C64 going?

Ancient history isn't going to help us here. All of those folklorish tales about Commodore's aggressive pricing or it's vertical integration with chip maker MOS technologies may explain some of the 64's initial success, but they don't explain why it still sells in 1988. The real competition the C64 faces today comes from technically much more advanced computers like the Atari and Commodore's own Amiga 500. These machines are only a few hundred dollars more than a C64 plus a 1541 drive so why do people still opt for the 64?. The price differential is even smaller when you look at the C128D yet it still sells as well. Why?

C128D – an extended 64?

Commodore had planned to phase out the 64 when they first introduced the C128. Instead, the 64 remained and the 128 was phased out in favour of the 128D It's easy to see why if you think of the C128 as an extended C64. it caters for people who want true 80 column word processing and more portability (just one box to carry instead of three), but it's essentially used in 64 mode. I'm sure there is the odd user who uses CP/M or 128 native code extensively, but in my analysis, the C128D is effectively a C64 targetted at a particular niche market.

But that just brings us back to the question of the 64. I was pondering this subject when I came upon a recent issue of *Compute's Gazette*, the US magazine that specialises in CBM products. Two different articles got me thinking. One by Contributing Editor Fred d'Ignazio was a piece on why people like computers. He had done a little survey and had classed people into six types –

1) Puzzle solver,
2) Organizer,
3) Escape artist,
4) Teacher,
5) Conversationalist, and
6) Toy collector.

Puzzle solvers love solving riddles and problems – like how to make this machine do what I want it to? Organisers are people who want to impose order on chaos – obvious database junkies. Escape artists love computer games. Teachers get hooked on the way computers can engage a child's attention. Conversationalists go for telecomputing, modems and so on. Toy collectors – well we all know one of them.

An interesting thing about this list is that it doesn't include any categories which relate to business use. Categories like: Opportunist – people who see computers as a way of making a living (just kidding!). The point is that his sample was taken from C64 users, or 'home' computerists and when you think about it, the C64 fulfills all of those needs. If this is what home computing is about then the C64 is a very good 'home' computer. Now I know that practically every computer can be made to fulfill these functions, but how many of them are actively marketed at a consumer range?

A few years ago, about the time that IBM abandoned the PC jnr., the conventional wisdom became that the notion of a computer in every home was bunkum. More accurately they meant that there was no money in it. But as heretics like Galileo have proven, conventional wisdom is not always true.

This notion of the C64 being a very good home computer doesn't explain away its success in the face of the Amiga 500. The Amiga does everything that the C64 does, it can even passably emulate the C64, and its graphics and computer power are far superior. Isn't it also a good home computer?

That's where the second article in the *Compute's Gazette* came in. It carried a report on the 1988 Consumer Electronics Show (CES) Commodore wasn't represented there, but CBM software supporters were. What appears to be happening in the States is a revival of the videogame machine. Nintendo, Sega and Atari all have dedicated computer games machines. These use cartridges and retail for less than a C64, but the software houses which support Commodore were there in force with a whole range of cartridge based games. EPYX president, David Morse was quoted as saying 'games can be done better on the 64 than on a Nintendo.'

Of course a computer is always going to be more versatile than any games machine, but what we may be seeing here is the beginning of a whole new market for the 64 and for consumer computers.

Max

In 1982 when Commodore first released the 64 it had plans for another 64-based machine This was code named Max and was meant to be a strictly games based machine designed for direct competition with the Atari 2600. The videogame market collapsed and Max never saw the light of day. Could it be that six years on, the C64 is taking on the same market that Max was meant for – people who initially are not interested in computers but just want a cheap form of entertainment for the kids? If a few more dollars gets them a real computer as well, why not? It might even help them at school. Certainly this reasoning explains the logic behind the C64 family pack which for an often discounted $499 gives you half a dozen games, paddles and joysticks and a datasette.

But the thing is, a C64 is perfectly adequate for home computing. If you've purchased a family pack, all you need extra is a disk drive. C64 software is cheaper than for any other computer because of its volume market, and you can do just about everything you'd ever want to do with it – word processing, telecommunications, databases and games, games games!

None of this is to detract from the Amiga or Atari. In an ironic kind of way I see them as selling to exactly the same sort of people who first bought the-64 six years ago; informed buyers who are prepared to spend more but who also get a kick out of being part of the development curve of a new(er) machine. However, if I'm right, the C64 success story is far from over. And if it continues to introduce new people to the world of computers, then that can only be a good thing. I know I'm in no hurry to part with my C64/128! □

SHARON FRANCE

MICROBEE FILE

What now Microbee Systems?

I was surprised to recently receive in the mail, a letter marked 'Important Legal Document – Do Not Discard'. It was from Compumark, a company making a take-over bid for Microbee, an adjunct to the closure of Impact Systems. The company is offering 1.5 cents per share to shareholders (a far cry from the 55 cents per share I forked out just two years ago).

I no longer want to speculate about what will happen. Given the time involved in getting this copy to print (approximately two months) what I may comment on today may be contradicted tomorrow (as was the case with my predictions of a Microbee computer/Impact laser printer desktop publishing set-up back in January this year). All I hope is that Microbee owners will, at the very least, not be disadvantaged. To this end, if there is something you would like to see in this column, to help you and your Microbee (for example, specific reviews, examples of applications and so on) please write to Microbee File, *Your Computer*, PO Box 227, Waterloo 2017 NSW. I feel that there will continue to be support for current Microbee owners by the majority of third party software producers.

Software snippets

In response to a circular I sent out to Microbee software producers I received many and various replies.

Research Technology seems to be doing well from its modest drafting/drawing package, WordGraph A For Drafting, despite not having advertised for quite some time. The package itself has been updated to cater for Premium Microbees and adapted to a variety of printers.

It is a drafting package which is aimed at delivering a hard copy diagram exactly the size and shape it was on the screen. This means you can use a ruler at the screen or use the millimeter read-out provided. It has reportedly been utilised by road and landscape designers for cross-sections and quote diagrams, students and teachers for illustrating technical writing, circuit designers and small engineering firms.

Apparently, a down-turn in sales and piracy have taken their toll on the fair-dinkum adventure program company, Grotnik Software. The author of Grotnik Wars, Bunyip Adventure and others is now offering all its Microbee titles as part of a Shareware scheme. You are encouraged to hand out copies of the program to your friends. If they like it, they are encouraged to send whatever renumeration they think reasonable to the author. They are then entitled to any updates, information or list of new titles.

Gee Software closing down

Hard times seem to have hit the smaller software people. A hobbyist concern, Gee Software is looking at closing down its Microbee Software section mainly due to the efforts of pirates and slow sales. Gee Software specialise mostly in educational material, and provided me with a synopsis of five of its programs. It appears that it caters mainly for preschool and primary aged children. If you are interested and need more information, drop a line to Gee Software, PO Box 556, Elizabeth, SA 5112. You may not be too late.

There are those who are still doing their fair share of sales to Microbee owners. These include the utilities oriented Glyphic Software (Write-Hand-Man, Spooler, Mailing label processor and so on), the business based Carpe Office Systems (General Accounting package – invoice, general ledger, payroll), CARE for the primary classroom (Carefile, Spelling Manager, Challenger) and Denham Software catering for the high school scene (Eucalypts, AIDS, Maths packages). Will we see new titles released by these people in the coming six months?

Some hitherto sole Microbee (CP/M) software producers have taken the hint and have diversified into the MS-DOS field. As one producer puts it, his programs have 'grown' from Microbee programs. If you are interested, Software Support Services has Turbobase (Super Bee-Base 3), Cashbook and Mark (all accounting type programs) now in IBM PC compatible format.

Primarily Microbee

If you dread having to collate, scale and redistribute your class's marks, then Primary Teacher's Mark Book, in its updated form, will win you over. It is a simple to use program and, as is expected of all efficient contemporary programs, is menu driven. Accordingly, to run Mark Book, you need a disk based Microbee with at least 64 kilobytes of RAM.

The amount of data it can handle is pretty impressive and, to my mind, exceeds the needs of a large primary school. For example, the maximum number of pupils per class is set at 45. Up to 20 subjects are allowed per class, with a maximum of 20 marks permitted for each subject. The program allows adequate space for names of students, classes and subjects, and provides for whole and half marks and absent pupils.

The program features a number of calculations which are automatic – totalling and conversion to percentages, compen-

LANGUAGE TERM 1 – 4 JARRAH

Name	100	50	Tot	Sc	Pos
BABA, A	90	44	89	72	1
DUCKLING, U	98	35	89	71	2
WHITTINGTON, D	78	47	83	66	3
BOOTS, PI	87	32	79	61	4
WHITE, S	69	50	79	61	4
BEARD, B	78	34	75	57	6
MAN, G	67	45	75	57	6
THUMB, T	67	44.5	74	56	8
PIPER, P	55	50	70	52	9
BEAUTY, S	67	32	66	48	10

Scaled to an average of 60.0
Standard deviation 7.5

Figure 1. This printout from Primary Teacher's Mark Book shows that by scaling, marks may be redistributed using a different average and standard deviation.

Name	Cl	50	100	100	100	Tot	Pos
MAN, G	4JA	46	75	94	97	89	1
WHITE, S	4JA	40	79	90	98	88	2
DUCKLING, U	4JA	41	89	82	86	85	3
BABA, A	4JA	34	89	67	90	80	4
BOOTS, PI	4JA	41	79	85	75	80	4
EFANT, L	4GU	42	55	97	82	79	6
WEE, P	4GU	30	80	93	73	79	6
GUL, C	4GU	37	71	65	91	75	8
MUE, E	4GU	32	61	82	86	75	9
WHITTINGTON,	D4JA	41	83	65	67	73	10
BIRD, J	4GU	33	67	87	67	73	11
BEARD, B	4JA	29	75	78	67	71	12
BUSS, I	4GU	25	65	67	88	70	13
BEAUTY, S	4JA	44	66	66	67	69	14
DVARK, R	4GU	47	59	65	66	68	15
OTTER, C	4GU	30	60	81	54	64	16
PIPER, P	4JA	35	70	74	45	64	17
THUMB, T	4JA	30	47	54	89	63	18
PARROT, X	4GU	31	51	65	42	54	19

Key to subjects

A: ART B: LANGUAGE C: MATHS D: SPELLING

Figure 2. Grade Co-ordinator's Aid combines results from two classes to give a better view of the grade as a whole.

Name	Cl	50	100	100	100	Tot	Pos
BABA, A	4JA	34	89	67	90	80	4
DUCKLING, U	4JA	41	89	82	86	85	3
WHITTINGTON,	D4JA	41	83	65	67	73	10
WEE, P	4GU	30	80	93	73	79	6
BOOTS, PI	4JA	41	79	85	75	80	4
WHITE, S	4JA	40	79	90	98	88	2
BEARD, B	4JA	29	75	78	67	71	12
MAN, G	4JA	46	75	94	97	89	1
GUL, C	4GU	37	71	65	91	75	8
PIPER, P	4JA	35	70	74	45	64	17
BIRD, J	4GU	33	67	87	67	73	11
BEAUTY, S	4JA	44	66	66	67	69	14
BUSS, I	4GU	25	65	67	88	70	13
MUE, E	4GU	32	61	82	86	75	9
OTTER, C	4GU	30	60	81	54	64	16
DVARK, R	4GU	47	59	65	66	68	15
EFANT, L	4GU	42	55	97	82	79	6
PARROT, X	4GU	31	51	65	42	54	19
THUMB, T	4JA	30	47	54	89	63	18

Key to subjects

A: ART B: LANGUAGE C: MATHS D: SPELLING

Figure 3. Print-out according to subject from Grade Co-ordinator's Aid. The above is in order of merit in language.

sation for pupil absences, ranking of totals, sorting of names and saving and retrieval of data. Mark Book even allows quite sophisticated manipulation of the data through weighting, scaling and standardising.

The first time the program is accessed, the user is asked to key in each pupil's name, thus creating a class. The software is intended to be used for one class only, so once you have entered your pupils' names, they will be called up every time the program is used. If the software has been bought for a school, along with its sister program (a Grade Co-ordinator's Aid) then multiple copies of the software may be made for use by other teachers in the school. This should be done at the outset to avoid confusion.

Once the class list is typed in, all of the menu options deal with the members of that class. A quick run through these options demonstrates the depth and versatility of this program. The Display Roll option presents on screen the full class roll, in traditional mark book fashion, for any subject. To the left of the screen is the list of students' names. Adjacent to these are columns for marks for each test, and to the right are three columns calculated by the computer. These are the TOT column (converted to a percentage), the SC column (the converted score if you have scaled the marks) and the POS column (for each student's position in class).

A basic requirement of such programs is to be able to print out the information. The Print Roll function is straight forward, requiring an Epson compatible dot matrix printer to be connected to the system. The first time this option is used, the program will ask for a date or a common heading to be entered (for example, Term 1 or Jarrah 4) Two options are available; the list can be printed in order of merit or in alphabetical order

To Edit the roll, E is entered at the main menu This allows you to change both names and marks in your roll. In this mode, the cursor becomes a block, which can be moved around the screen using the arrow keys or the ESDX direction diamond. Once on top of the item to be changed, pressing the Del key erases it, freeing the space and allowing the correct information to be typed in Many items can be edited at once, if necessary.

As a class completes a new test, a New Column can be created, by pressing N from the main menu Your new column may be in an already established subject or in a new subject area. The computer will prompt you to choose You are also given the option of entering the marks in

random order (you type in the first few letters of a pupil's name – great for a stack of unsorted tests) or alphabetical order

New pupils are simply added to the roll by entering A at the main menu (for Add Pupil). Type in the pupil's name in the same format as you have established. He or she is added to every subject across the board. Similarly, pupils and columns may be removed. The computer will prompt you for the relevant details, and then once confirmed, will delete the specified column or pupil.

For those statistics buffs, the program provides for weighting and scaling. This allows for emphasis to be placed on one test over another, the case of weighting, and marks to be more evenly distributed, in the case of scaling. Through these processes, which to a degree sacrifice accuracy, the program prompts you for all of the information it needs.

If you are considering scaling marks to either space the class out a bit more, or to group their marks closer together, it is possible to see a graphic representation of the raw scores by using the Graph Roll option. The raw scores are graphed on the left of a vertical line which bisects the screen. Each division on the line, represents a range in marks of five percent, with 100 at the top and 0 at the bottom. Horizontal bars extend from the line, representing the marks which fall in each 5 per cent range. If and when marks are scaled, a new scaled graph appears on the right of the vertical line.

At the start of term, it is often necessary to Clear Subjects. Selecting Z puts you into this mode. You are asked whether all subjects are to be cleared, or just specified ones. Note that this operation does not clear the roll of names. This is only possible by deleting the file NAMES.LST.

The operation Grand Totals is the link into Mark Book's sister program a Grade Co-ordinator's Aid. This option retrieves the total marks for each pupil for every subject and creates a roll containing each subject total. At this point subjects may be weighted and scaled. The information may be printed, displayed to screen or saved. If the latter option is chosen, a name for the class will have to be entered at the appropriate prompt. The file created from this 'save' is then manipulated by a Grade Co-ordinator's Aid.

Last, but certainly not least, is the Exit Program option, and not surprisingly, it is activated by the Esc key. The Esc key is very handy with Mark Book, as it can be used to get you out of all sorts of sticky situations – even printing unwanted lists.

The manual which accompanies the program is easy to follow – it may even be used as a mini tutorial to help you familiarise yourself with the program. A section worthy of note is the Trouble-shooting Guide. It poses common questions and supplies the appropriate answers related to the running of the software. It is in plain English – a real boon for those of us who have had enough of computer jargon.

The program, in all, is a pleasure to use, not a chore. This is most important, considering what you want and what you will get is a tool, not a tangle of computer software that needs to be mastered before used.

In conjunction with Mark Book, I was provided with a 'beta test' version of a Grade Co-ordinator's Aid. Basically, it amalgamates all of the information on the Mark Book disks used by class teachers and allows for across-the-grade comparison of pupils.

As you would imagine it is a piece of software that needs precise input. Teachers of each class have to therefore enter test scores for the same tests, which have to be marked out of a common score. Grade Co-ordinator's Aid would not be able to correctly function given 2A's maths tests were marked out of 50, 2B's out of 35 and 2C's out of 100. Just as there would have to be consensus between teachers for this to work on paper, there is a similar, perhaps more exacting need when the computer is employed. There are, however benefits for this. All of the data comes together and can be printed out in various forms, allowing clear assessment of a whole grade.

The capacity of the program is limited to the following – 200 pupils per grade, 20 subjects per pupil and 10 classes per grade; again, sufficient for all of the primary schools I have encountered. The program uses the same standards set up by Mark Book, employing a similar menu driven style. It appears to be a logical adjunct to Mark Book.

Both Mark Book and Grade Co-ordinator's Aid can be purchased from Nectar Software, 1 Barracks Street, Emu Plains, 2750 for the sum of $55 to schools. As Grade Co-ordinator's Aid was supplied as a beta test version, it may not be available as yet. Enquiries should be directed to the above address or phone (047) 35 2158.

There are plans to release an MS-DOS versions of this software, but no commitments have been made to date. I hope that this does go ahead, allowing those with IBM PCs and clones to have access to a system that will put their grade books straight. □

SERVICES PAGE

LETTERS TO THE EDITOR

We are happy to receive your comments and, if they are of interest to other readers, publish them. Letters will only be considered for publication if they include your name and address, although we can withhold such details from publishing on request. Note that we reserve the right to (and probably will) edit all letters for the sake of brevity, clarity or accuracy

SUBSCRIPTIONS

Standard 12-issue rate within Australia: $42. Standard 24-issue rate within Australia: $79.80. Surface rate for New Zealand and Papua New Guinea: $51.80; airmail rate: $57. Rates for other countries on application All overseas rates quoted are to be paid in Australian dollars. Allow up to eight weeks for subscription processing.

BACK COPIES

Back copies of *Your Computer* are available from The Federal Publishing Co, PO Box 227, Waterloo 2017 at A$4 00 each, including postage for Australia and New Zealand. We will supply photostat copies of articles where a back issue is not available, at the single-magazine price for each feature copied A special service is offered for Tutorials: see below.

TUTORIALS

All Parts of Tutorials published within the last 2 years are available as photocopies for a charge of $0.50 per Part plus $4.00 for postage and handling within Australia (overseas postage additional). Please identify the Tutorial by its complete name and specify the Parts by number or the issue of publication All but the latest of our Tutorials are listed in our 5-Year Index, published with our July 1986 issue.

READERS' ENQUIRIES

We will make every effort to answer readers' written enquiries, if accompanied by a stamped, self-addressed envelope, although staff shortages and deadline pressures may cause delays. Please include your telephone number(s) with any enquiry Phone enquiries not related to subscriptions, readers' advertisements, or other 'service information' cannot be accepted.

COPYRIGHT

All material appearing in *Your Computer* magazine is copyright and cannot be reproduced in part or in full, by any means, without the written permission of the Publisher or Managing Editor. Computer clubs and schools can, however, apply for restricted permanent reproduction rights for non-commercial, limited-circulation use (for example, newsletters and class instruction) Given that it sometimes takes us a while to answer such requests, you can consider that restricted permanent rights apply in these cases from the day you send in your letter, and will later be confirmed (or withdrawn) by our reply

LIABILITY

Although it is policy to check all material used in *Your Computer* for accuracy, usefulness and suitability, no warranty, either expressed or implied, is offered for any losses due to the use of any material from this magazine.

EDITORIAL CONTRIBUTIONS

Contributions to *Your Computer* are welcomed and will be given every consideration 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. Please read these notes carefully to get an idea of the style and format we prefer.

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 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 through our Bulletin Board system, which is on-line 24 hours a day, seven days a week Contact our office by phone for details on transferring material in this way.

Contributions on Disk: Contributions can be accepted in most disk formats, although some have to be 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, 20 cm CP/M disks or IBM PC-DOS minifloppies We can also handle, in-office, most soft-sectored 13 cm disks, thanks to PC-Alien – so unless you have a particularly strange format, send it on disk straight from your machine. Please pack them extremely carefully if posting and label all disks with your name, address and phone number

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 – preferably new – 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.

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. □

AD INDEX

Abacus 117
Advanced Peripherals 138,139
Ann Court Com. Serv. 33
Atlantis OBC,137
Automation Ice Co. 77
Avtek 6
Babani Books 69
Blue Chip 50
Blue Sky Industries ..... IFC
Californian Digital 100
Choice Marketing 46
Computer Trader 121
Custom Made Software 36
Dick Smith Electronics 61,116
Discware 26,27
Electronic Solutions 14,15
Federal Publishing 58,84
Freesoft Int'l 49
Imprint 129
Informatics 28
Interface Publications 80
Mace 127
Maestro 8
Mannacomm 108
Marketworld 25
MicroDOS 12
Microeducational 34,35
Micro General ..... IBC
Micromart 68
Microsales 10,11
Multiview 18
NEC 3
NetComm 99
PC Extras 105
Perfect Interface 106,131
Ribbon Rolls & Printers ... 33,113
Ritronics 122,123
Strobeck 49
The Computer Factory ... 136,138
Utilico 111
Vapourware 32,56
Westinghouse 30

FREE READERS' CLASSIFIEDS

Wanted
Cut sheet feeder for Epson LX 86 printer Will pay $100 Phone Jeff Broadhurst, 12 Richards Ave, Launceston 7250; (003) 447 622.

Modem
Avtek Minimodem 2 with cables and booklet. $100 or nearest offer. $270 new. I. McDonell, PO Box 272, Gisborne 3437 Victoria

Apple
Apple IIe owner wishes to swap Public Domain software. Send list to Grant Kwai, 15 Narrun Crescent, Dundas 2117 NSW

Brother
Brother WP 600 PC printer. As new. Dot matrix thermal printing, comprehensive editing functions, RS 232C interface. $425. Phone David on (02) 654 2203.

C64
C64 owner wanting to swap Public Domain programs, mainly disk. Contact Duane French, 7 Widowson St, Georgetown 7253 Tasmania.

Glyphic Software
Poor Person's Write-Hand-Man ($47) in versions for CP/M 2.2 and 3.0 and for all machines from 8 inch SSD to Amstrad 3 inch CP/M (and all Microbees 3½ inch or 5¼ inch) – if it's CP/M it will run W-H-M!

Also for CP/M 2.2 and 3.0 are Poor Person's Spooler ($40), Spread Sheet ($40), Mailing Label Processor ($30) and Spelling Checker ($30) Xpert Software's Side2/Banner2 (only $45) for expert sideways (down instead of across) printing of wide ASCII documents, for example: spreadsheets, timetables; also first class banners in several fonts.

For CP/M 2.2 (for example, all Microbees) there is Xpert's exceptional quality (85 page manual and valuable support files) Xtrakey program (super value at $49) for option packed keyboard redefinition. Xtraprint ($49) also fro CP/M 2.2 (103 page manual) offering powerful control of all popular printers.

Assembly language your bag? We have Mitek's Relocatable Z80 Macro Assembler/Linker/Library Manager and screen based Symbolic Debugger. The entire package including manuals is just $120 and is super value and includes bonus PD Dazzlestar

For MS-DOS (PC, XT, AT and compatibles) there is Xpert's Side2/Banner2 ($45 – cheap by comparison, but nobody does it better). From Sofcap Incorporated we have professional quality HD Tuneup version 2.03 ($75), to defragment, compress and optimize hard disks up to 32 Mbytes – stops disk thrash and speeds read/write access. Write or phone for free catalogue of all products. Purchase by cheque or Bankcard/Mastercard from Glyphic Software, PO Box 391, Pennant Hills 2120 NSW; (02) 484 3827.

DEALERS, distributors, mail-order houses and other commercial organizations or individuals who have a message to spread 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) 693 6626 or write to PO Box 227, Waterloo 2017 NSW. DISPLAY ADVERTISEMENTS (50mm deep x 60mm wide) in the Market Directory are $125 per insertion if finished artwork is supplied (Set and Makeup is $40 extra for the first insertion only). Payment must accompany copy Closing date is 6 weeks prior to the month of publication.

FREE CLASSIFIEDS are for readers only, not commercial organisations. The first 20 words are accepted free of charge with a charge of 20 cents for each additional word. Good quality black-and-white prints may be included for a charge of $10 each. Multiple classifieds in one issue are treated and charged as singles
COMMERCIAL ORGANISATIONS can place classifieds for a charge of 35 cents per word (minimum charge $10) Black-and-white photographs may be included for a charge of $20 each
PRINT OR TYPE your ad clearly and legibly, double-spaced, and separately include your name, address and phone number for checking purposes, even if these are not to be included in the ad
Any payment due must accompany the copy.

COMPUTER BOOKS

Over 2000 book titles for the hobbyist and professional.
For your **free** catalogue call or write
*M*achine *L*anguage P.O. Box 36, Brooklyn Pk. S.A. 5032.
(08) 353 4679

Electronics Australia

Australia's Top Selling Electronics Magazine

Jam-packed each month with news of the latest exciting developments in video, TV, hifi, computers and car electronics. More for the hobby enthusiast, too: easy projects to build, articles on how things work, circuit ideas and lots more . . .

Available monthly at your newsagent or subscribe now by phoning (02) 693-9517 or 693-9515

MICHAEL BURLACE

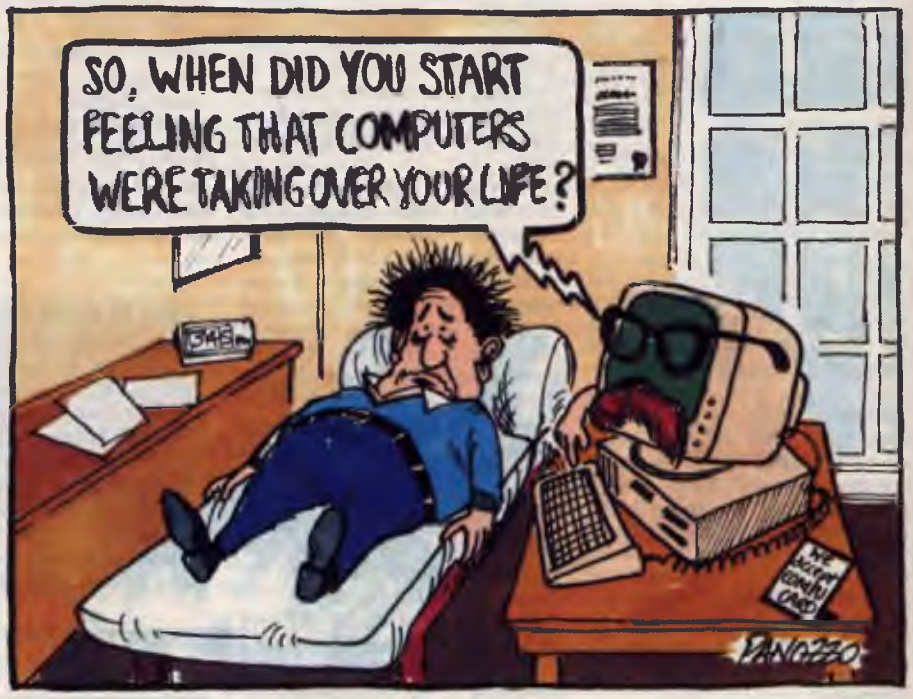
CURSORY GLANCE

After you get jailed for hacking your way into Dial-A-Prayer, you may get released on parole. If you've been in for a few years, you may find that when you come out you have a beautiful piece of jewellery to wear. This is the latest way of keeping track of you dishonest characters. Now they slap a bracelet on your wrist which responds to calls from a central switchboard. When your number comes up and your wrist rings (shades of Dick Tracy!) you dial the switch operator and tell them you're in the middle of a bank heist and can you call back later? And that's that, none of this silly business of having to walk into police stations or see your parole officer three times a day No interruption to your going about your business and no nasty leg irons to clank as you mug little old grandmothers. It all costs less than $10 a day per person surveilled or whatever the word is. Now if they could just get them onto the crims before they go to jail we could really cut crime

■ Software companies are facing such stiff claims from buyers in the USA that they have been carrying insurance against it. Apparently, the cost of the premiums has become so great that a special insurance company has been set up just to handle their business. Can't see how that would help – the problem is the number of claims and the fact that their cost outstrips the return from premiums. Most insurance companies try to spread the losses from one area by sharing the risk with other companies and with their other areas of insurance

■ Computers do things for people who least expect help from them. With smoking in the workplace such an issue today, some people who dislike technology and happen to also be non-smokers are happy to see a computer arrive because they can demand clean air and claim that this will reduce the risk of data corruption as well as lung corruption.

■ At the moment there is rapid progress on silicon solar cells which in the next few years may lead to rooftops covered with cells to provide power for the building below. Once that happens we can expect to see competition for light space. A significant side benefit of this could be computers which run on the office lighting in the same way as many solar-powered calculators.



Bootstrap

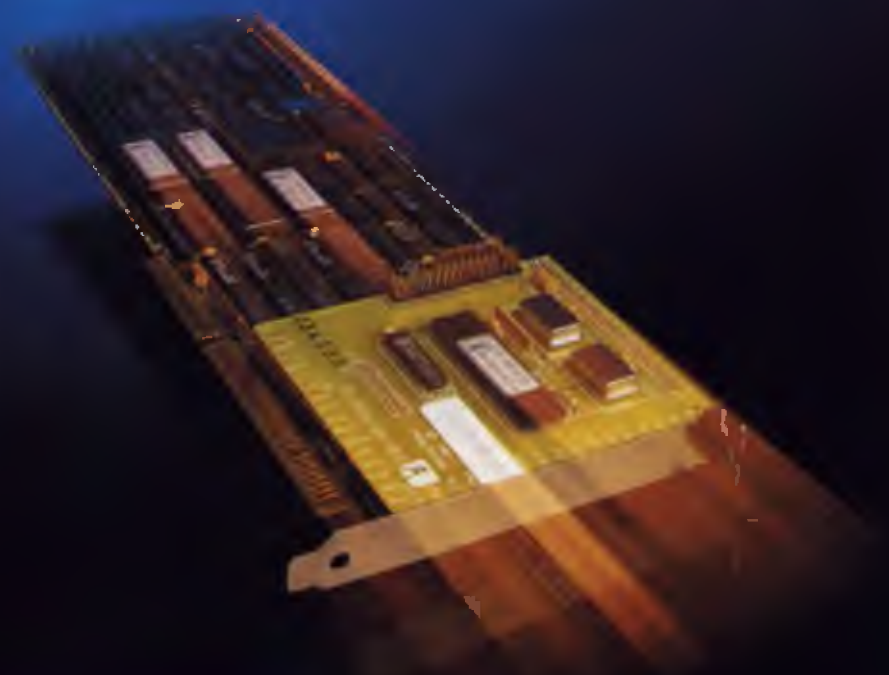
For some years now pilots have been trained on simulators and the computer industry has been run on stimulators. The pilots use flight simulators which emulate the real world of planes and give them a chance to fly while still on the ground The computer industry uses stimulators such as coffee and cocaine. In the USA, the computer industry is so boring, or something, that coffee is not enough. Many of the employees of big and small computer companies use cocaine and the like to get them through the day. This is another form of flight simulation or how to fly while keeping your feet on the ground – at least physically. This column is written on a little coffee and tea and a rare indulgence in computer-induced torpor. The only white powders my local coffee shop sells are aspirin

So off the stimulators and back to the simulators: A US company has come out with a new simulator which allows you to practice being a psychiatrist. This is a new twist on Eliza, the famous program which pretends it is a shrink and goes to work on *your* neuroses. The new program is based on an interactive video disk and allows you to counsel a person (an actor) who is apparently depressed. (Possibly about the cost of psychiatric treatment in the land of the free.)

A Cairns company has taken this idea one step further and produced a program which can deal directly with people with mental problems. And let's face it, who of us doesn't have a few? Otherwise why would you read columns like this one, eh? In a few years, anyone who rings up a counselling service feeling depressed will be connected to a computer. Schizophrenic people will be put onto two computers. Manic depressives will get to talk to a '386-based or 68020-based computer and a cassette-based computer at once, allowing both halves to be handled at appropriate speeds. Perhaps people who are psychopathic could be given a few operating system programmers to beat up, thus restoring the sanity of the rest of us who would otherwise have to vent our frustrations on those same programmers More difficult cases such as people sūffering from sanity will still be handled by humans. The system is to be marketed as Lifeline-Online, and it's coming to a phone booth near you soon. □

Michael Burlace is a consultant and trainer with The Clear Group. He may be contacted on (02) 317 5190 or by writing to PO Box 57, Broadway 2007 NSW.

BREAK THE SPEED BARRIER



0.5 mS AVERAGE DISK ACCESS

ACCELERATE YOUR DISK BY 10 TO 20 TIMES ITS CURRENT SPEED

If you need rapid hard disk access you should be using the new PM3011A Caching Disk Controller. The PM3011A represents a giant step in speeding-up CAD/CAM operations and clears the disk bottle-neck in Network/Multi-user systems.

PM3011A features:

- Plug in replacement for standard AT Controller.
- Completely compatible with **all PC** operating systems and hardware, including Novell, Xenix, Pick, BOS, Theos etc.
- Rated by Coretest* 106 times faster than the original PC Hard Drive, when tested in a 12MHz Ø wait state 80286 machine with a 72MB 25mS drive.

* Coretest is a trade mark of Core International

MICRO · GENERAL

MG

Micro General Pty Ltd (Incorporated in NSW)
58 Atchison Street, St. Leonards NSW 2065
Telephone: (02) 439 8400
Fax: (02) 439 8157

QUALITY AND SERVICE YOU CAN RELY ON

BYRNE & STEWART 1294/MG7

See the light with Data-C

Atlantis International Pty Ltd has released the Data-C range of monitors for personal computers. These monitors are hand picked by Atlantis from overseas and are the cream of the market. Only the very best monitors have been selected so the user will get the benefit of higher resolution for the lowest possible price. Unlike other monitors currently available, all monitors are unpacked and carefully checked for alignment before being sent out into the market.

DISTRIBUTORS: 9406

MELBOURNE

Hi-Technology Computers	PH: 596 6211
Ultra-Phase Computers	PH: 857 8026
Rampage Computers	PH: 241 3031
Data Parts Camberwell	PH: 20 7895
West End Computers	PH: 350 5144
Maxwells Office Supplies	PH: 419 6811
Lasercord Computers	PH: 233 7000
Super Turbo Computers	PH: 763 4555
Atlantis Computers	PH: 277 3139
Nunawading Electronics World	PH: 894 1829

INTERSTATE SOUTH AUSTRALIA

Computer Enterprises	PH: 08 239 0292

COUNTRY

Data Parts Shepparton	PH: 058 21 7155

ATLANTIS INTERNATIONAL COMPUTERS

ATLANTIS INTERNATIONAL PTY LTD
49 Wadham Parade, Mt. Waverley, Vic. 3149
Ph: (03) 807 3139, (03) 807 7187. Fax: (03) 807 6824