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BITS & BYTES

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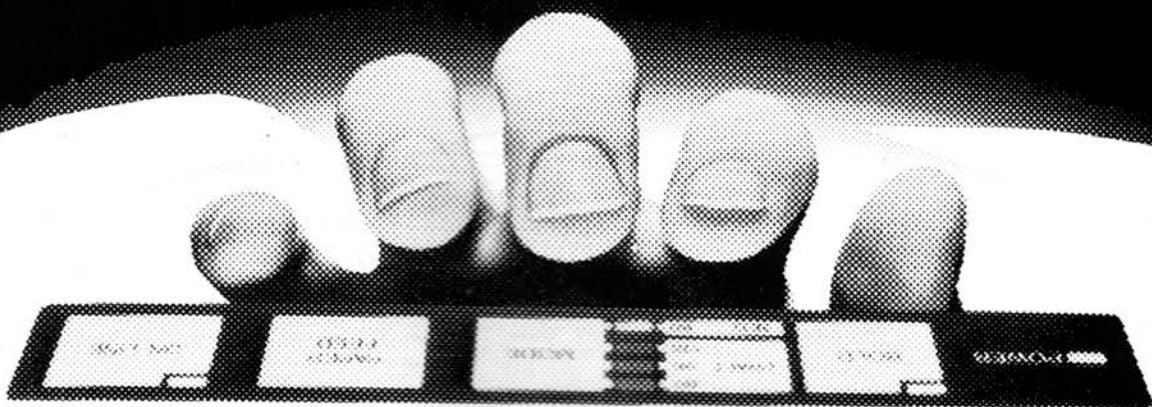


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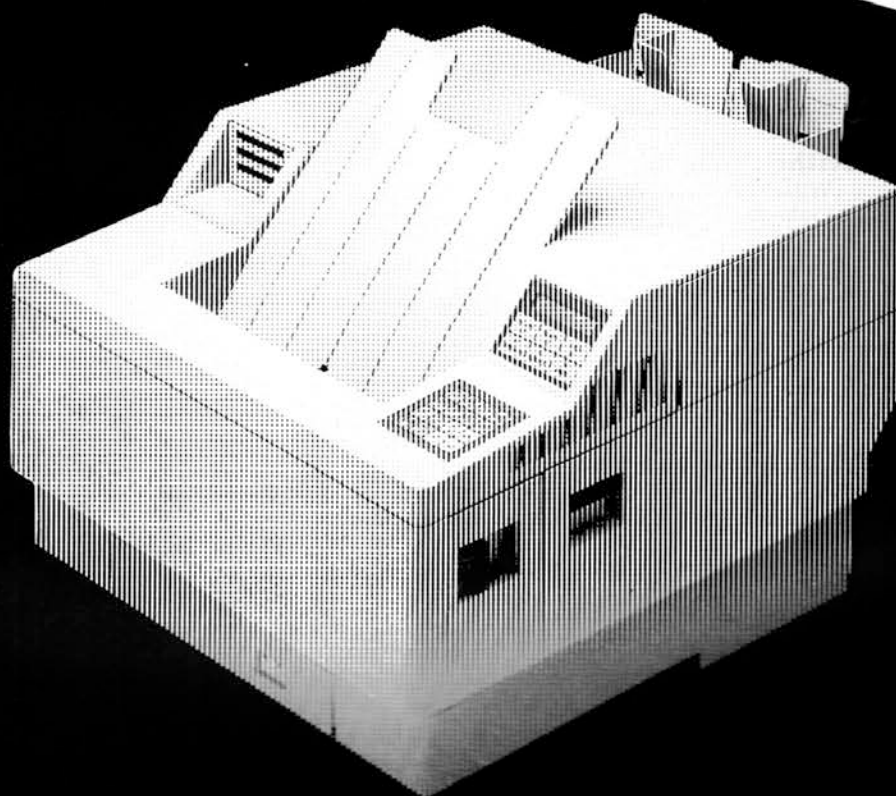
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Have you entered the Ashton-Tate
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Compatibility Mac

Launched at the international Appleworld event in Los Angeles last month were two new Macintosh products which emphasise compatibility and expandability. According to CED Distributors general manager Mal Thompson, the enhancements to the Macintosh are the result of two years of research among users, to ensure that new models incorporate all of the features sought by business.

The top-end Macintosh II runs the new M68020 chip at 15.7MHz and is a direct competitor with the MS-DOS 80386 machines. Two keyboards are available, the extended model having a T-cursor pad and function keys, and it comes with one or two internal floppy drives or with single floppy and 40Mb hard disk. Standard 1Mb RAM can be expanded to 8Mb on the motherboard, or up to two gigabytes using NuBus slots.

The SE model, placed between the existing Mac Plus and the II, uses the Motorola 68000 microprocessor of the Plus but at faster speed. Its 96-pin expansion port will enable such applications as the transfer of information between Macintosh and MS-DOS,

and the provision of remote communications, terminal emulation, 68020 acceleration, Ethernet and token ring cards.

Both will accept cards and the new Macintosh 5.25-inch disk drive to import MS-DOS files from disk, or use the recently-announced AppleTalk PC card to transfer files from an MS-DOS machine over the Appletalk network to the Apple LaserWriter printer.

The 386 – myth or reality?

Microcomputers based on the Intel 80386 chip are hot news these days, promising faster processing and all manner of networking and other capabilities. Much has been written about them, usually sourced from overseas publications, and the New Zealand industry is poised, ready to take deliveries of these marvellous new PCs.

The only problem is that nobody has yet seen any of the various 386 machines in any quantity. "Supply problems" is a catch-phrase wearing a bit thin after several months' use, and although the excuses taken individually seem valid enough the fact remains that the initial promise of dozens of expensive and fast super-

micros being used around the country has not been realised.

What has happened to the 386? Is it a case of promise being more than the manufacturers can deliver? Does it need more development? Is it in fact a mythical machine talked about just to tantalise the users?

The answers should be clearer before long, and the suppliers continue to promise deliveries. Watch this space, as they say.

Software Showcase popular

High interest is reported in the New Zealand Software Showcase, an area devoted exclusively to locally-written software at the Computing 87 exhibition to be held in Auckland from 28-30 May.

A number of local software companies have so far agreed to exhibit, with more showing interest and expected to join in. The Software Showcase is being promoted overseas as well as throughout New Zealand, in an effort to attract foreign buyers.

Exhibition space is filling fast at Computing 87, and companies which have not already done so are advised to reserve space by telephoning Auckland (09) 796-775 urgently.

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TPB004

The effect of "The Big Bang" on the City

by Martin Webb,
Investment Analyst, Paul Morgan & Co. Ltd

In previous discussions we have focused our attention on methods of valuation for both listed and unlisted equity securities. Essentially we have endeavoured to ascertain how the market will value these securities.

One of the major world equity markets is the London Stock Exchange which is also arguably the oldest of all the stock exchanges in the world. The Stock Exchange is steeped in tradition and history, and embodies the very quintessential elements of the modern capitalist system.

However, as the song goes, "time waits for no one," and last year saw the introduction of changes that have dramatically altered the manner in which business is now conducted in the London equities market.

The phrase "Big Bang" was coined to describe 27 October 1986, for on this day the exchange abolished the system of minimum commissions in the domestic UK market and intro-

duced new electronic dealing systems for UK company and government stocks. Looking at the electronic dealing system we find that from 27 October prices have been displayed on a continuously updated electronic screen service - SEAQ (Stock Exchange Automated Quotations). The SEAQ electronic price information system is available on a nationwide basis and shows a complete list of all market makers in a particular security, together with the buying and selling prices that the market makers are quoting as well as the volume for which those prices hold.

In addition the new SEAQ network also monitors and stores all trading information, enabling the Stock Exchange to build up a complete surveillance system. This in turn enables the Exchange to enhance its standards of investor protection.

As a result of the City's move into

virtually computerised trading the once chaotic trading floor of the exchange has been almost deserted. Recently the London Stock Exchange announced that it was to close the trading floor, thereby ending nearly two centuries of face-to-face dealing in shares and government stocks. With the increasing sophistication of computers and the rapid increase in the innovative applications of this technology, one must seriously wonder how much longer it will be until the trend to electronic, non face-to-face trading sweeps other major sharemarkets.

Having said this, it is still patently obvious that it will be some time until the young aggressive stock exchange operators disappear from the trading floors of the New Zealand Stock Exchanges. Until this happens, interested investors can still view the physical working of the sharemarket by visiting the public viewing galleries between the hours of 9.30am to 10.30am and 2.15pm to 3.00pm.

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S873

Three at once

Newly-announced by NEC are three additions to the company's PC and peripheral lineup. The APC IV Powermate, a desktop 80286 AT with 640kb standard (expandable to 8Mb) and full-colour NEC multi-sync screen, is positioned against XT's in price, with an entry level of \$6,900 for the complete system. It has the so-called enhanced AT keyboard with 101 keys, and the 20Mb hard disk can be upgraded to 40Mb.

Another newcomer to the list of battery-powered laptop portables is the NEC Multispeed, with its processor running at either 4.77 or 9.54MHz. IBM PC-compatible, it has 640kb RAM (128kb battery backed) with two built-in 3.5-inch floppy drives and an FDC port which allows the user to plug into the external floppy controller of an IBM PC, utilising the PC's 5.25-inch disk drive.

The screen is supertwisted LCD, which New Zealand manager Brian Grounsell points out is an NEC invention, and the Multispeed has a number of integral programs on ROM: word processor, including dictionary; filer (database); thought processor (notebook); and communications. A built-in modem to conform with NZPO specifications is expected

to be available "in five or six months". Price will be around \$4,000.

NEC's entry into the laser printer field, the SilentWriter LC800, is not strictly speaking a laser as it uses an LED array, but it has a similar printing speed of eight pages/minute. According to NEC the 300,000 page life will reduce the cost of consumables, and it retails at \$7,300 with a second bin hopper available for \$580.

Sharemarket data on line

Now available on-line via the Post Office Starnet system is Shardata, which gives sharemarket library services, historical share data and Stock Exchange listings.

Released by the Christchurch-based computer hardware and financial software wholesaler White Knight, Shardata contains weekly trading statistics on all New Zealand listed companies and currently 150 Australian companies, with more planned to be added along with listings from Singapore, UK and USA.

Bob Radley, managing director of the associated Radley Investments, explains, "While present personal

computer users have a wide range of sharemarket software available to them, they still need access to both current and backdated sharemarket information and statistics to give them more effective forecasting of trends or assisting in decision making.

"Historical statistical data is the lifeblood of sharemarket technical analysis, and Shardata will give users the ability to compile a variety of trends charts which will reveal price and volume trading trends."

Shardata's on-line information loads directly into Metastock, an American technical analysis program, and can then be extensively user-analysed.

Extended database

New from WordTech Systems is dBase III+, which it describes as "the DBASE III+ Superclone", a database extended language interpreter for PC compatibles. Completely compatible with DBASE III in both files and commands, it also has an on-line help system, windows and such other features as automatic initialisation of memory variables, fast indexing and a prompt which indicates the work area and database in use.

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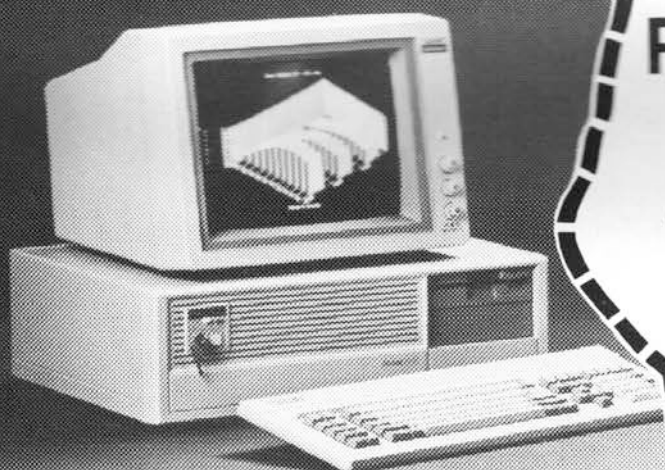
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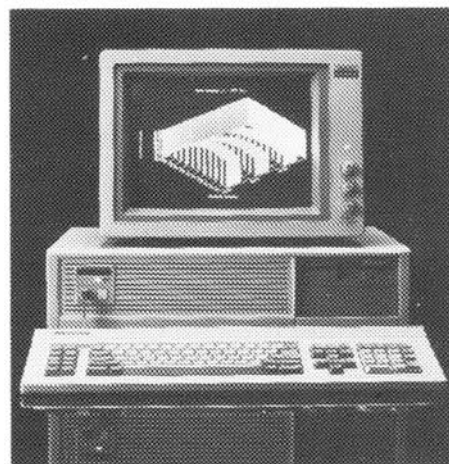
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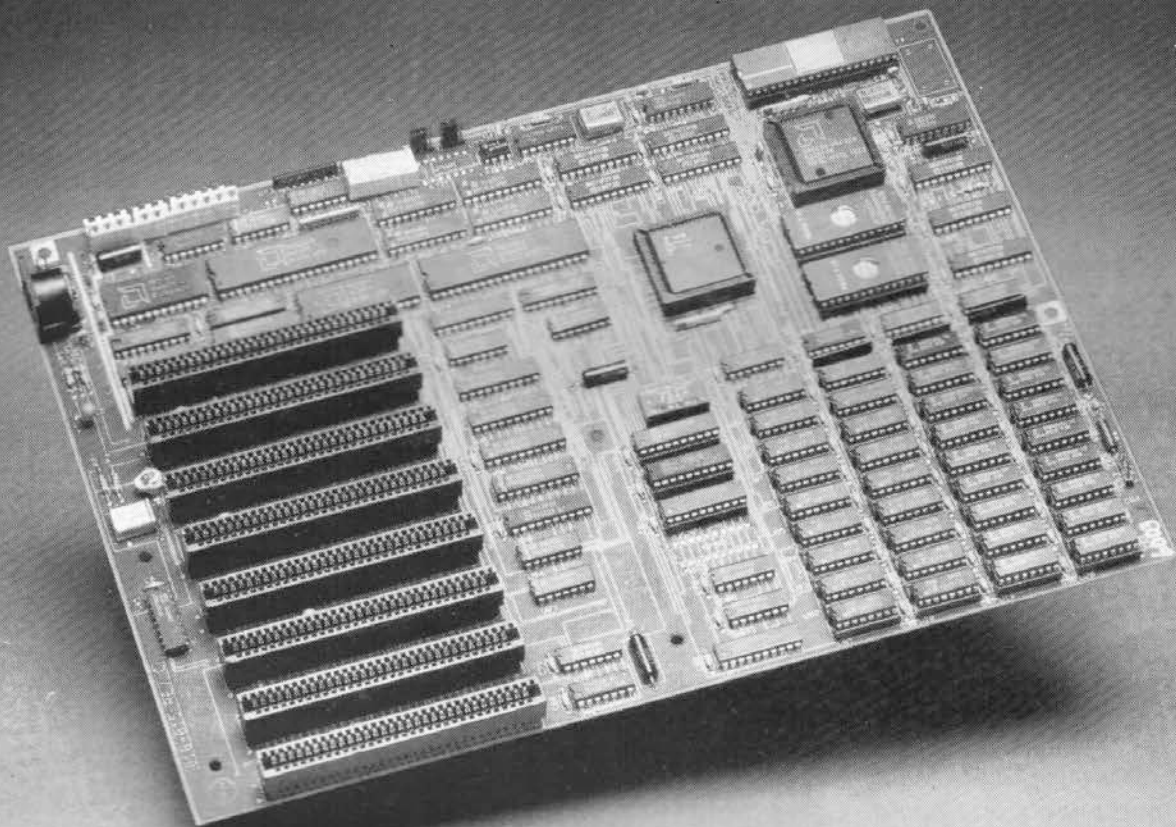
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Change at the top

Consolidated Enterprises has sold its interests in CED Distributors, the New Zealand distributors of the Apple range. The new owners are Mal Thompson, currently general manager; Russ McLean, sales director; and Ian Thompson, presently CED director.

"In order to maximise the new market opportunities available to Apple in New Zealand," states Mal Thompson, "Apple Inc has approved this change as being in its best interests and is very supportive of the proposed privatisation."

Great conversations

A 20,000-word vocabulary for an experimental desktop speech-recognition system has been demonstrated by IBM scientists at the T.J. Watson Research Center, and includes 97 per cent of all the words a speaker is likely to use in business. The pioneering 5000-word system required a room full of hardware.

During a 20-minute preliminary session a speaker reads a special document to allow the computer to recognise his or her sound patterns and individual way of speaking. Speech then uttered into a microphone, with brief pauses between words, appears on the computer screen and can subsequently be edited by voice or keyboard and stored, printed or transmitted.

The sound patterns are matched with candidate words taken from the 20,000-word vocabulary and further matched against a 25 million-word database of IBM office correspondence, giving a contextual ability to distinguish between similar-sounding but different words.

Name change

Auckland-based Calibre Group, bought last year by the Australian company Impact Systems, is changing its name to Impact Technologies Ltd and trading simply as Impact. The Novell and TeleVideo ranges will continue to be marketed, along with the Impact laser printer series.

With branches in Wellington and Christchurch, Impact last year moved its Auckland office to new premises in Glenfield, to accommodate increased staff numbers and provide factory space for future manufacture of laser printers.

Improving

"In April 1975 we opened in New Zealand with one customer and 20 staff. Since then we have not only grown but also improved productivity, to the stage where we have 116 staff and over 200 customers," said Peter Thompson, general manager of Data General New Zealand, at the official opening of Data General House in Wellington on 20 February.

Guests of honour for the occasion were two of Data General's 1968 founders. Ed de Castro is currently president and chief executive, and Herb Richman is executive vice president, responsible for worldwide sales and support of the company's compu-

ter systems.

"I don't need to stress the importance of software here in New Zealand," said de Castro. "You have developed a reputation for producing world-class software products. Pound per pound, New Zealand and Australia have more software talent than any other part of the world."

"By the way, sorry you didn't do a little better in the America's Cup. You may be aware that the *Australia IV* syndicate used our systems extensively. And we are proud to be involved with *Stars & Stripes*, providing Dennis Conner with Data General/One portables used on board. Maybe we can help New Zealand in the next race."



Ed de Castro (right) presents Peter Thompson with a plaque to commemorate the opening of Data General House.

Software copyright policy

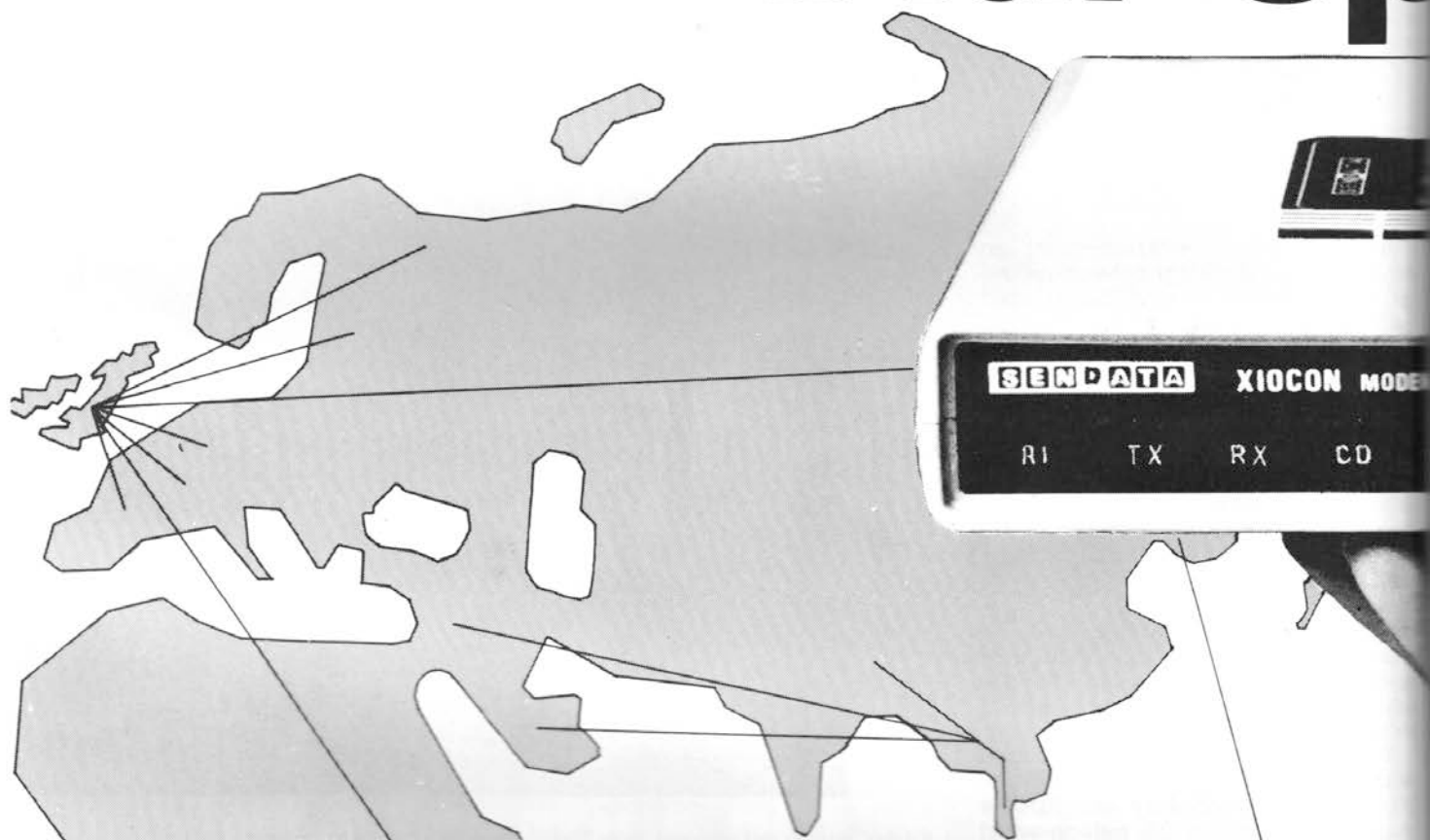
In response to changes which have taken place in both the software marketplace and the schools, the American-based International Council for Computers in Education has adopted the 1987 ICCE Policy Statement on Software Copyright. It reflects revisions to the 1983 policy statement made by a new committee comprising educators, industry association representatives, hardware vendors, software developers and vendors, and lawyers.

The 1987 ICCE statement makes three specific recommendations to be considered for adoption by the

appropriate agencies:

- * approval by school districts of a District Copyright Policy, giving only one person authority to sign software licensing agreements;
- * adoption by school districts of specific recommended guidelines for software use within the district; and
- * adherence by educators to specifications listed on the copyright page for an individual piece of software, with the committee suggesting areas of delineation for software publishers.

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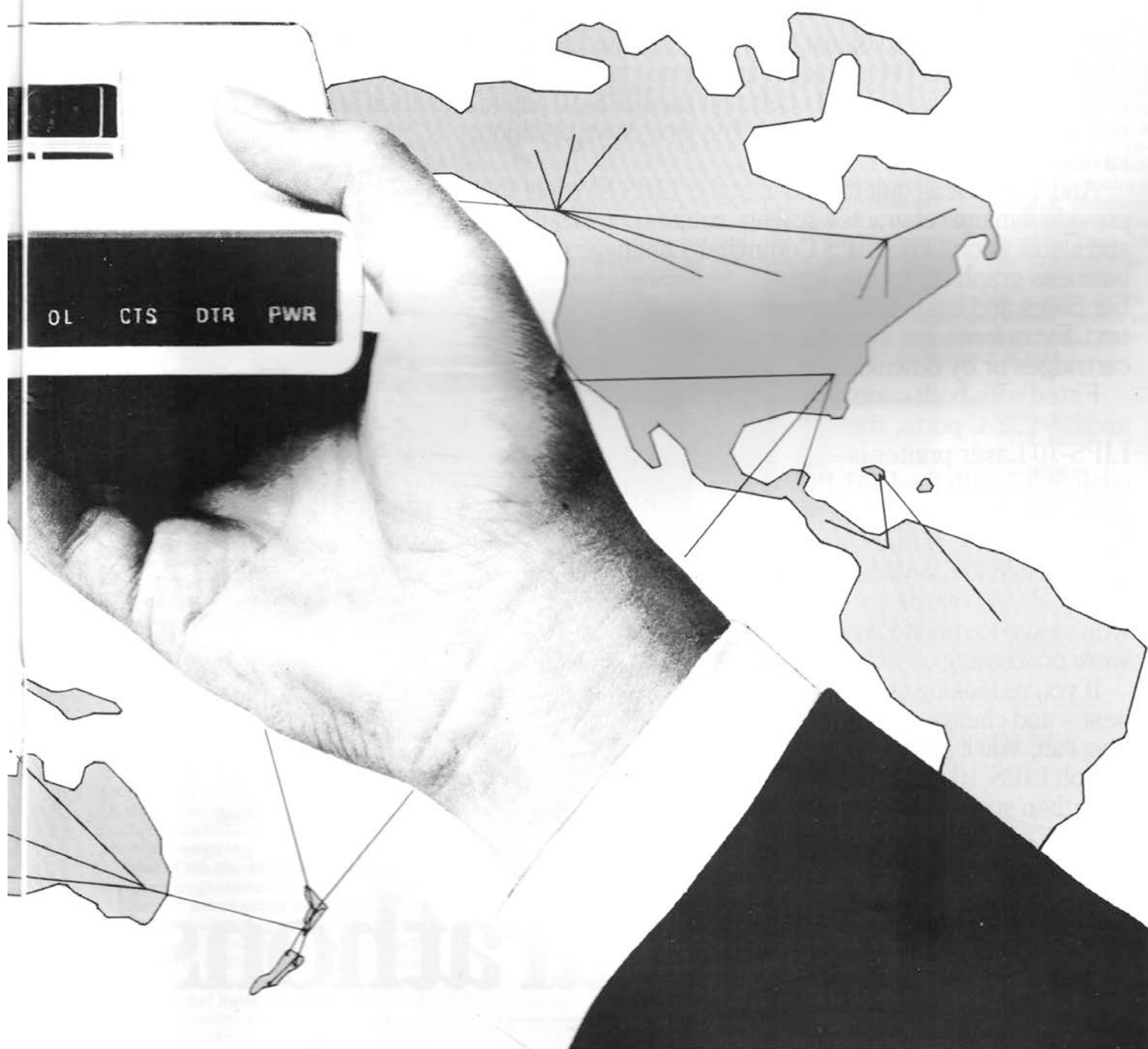
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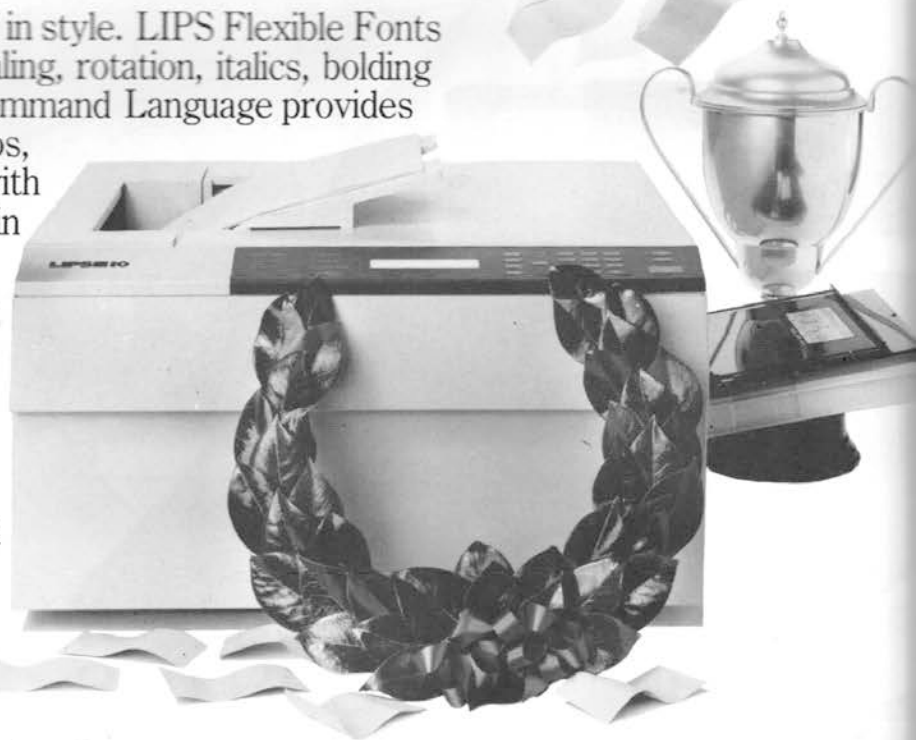
LIPS-10 is a speedster that's built for marathons. Built to last 5 years at 500 sheets per day. That's a long way ahead of 150 sheets a day for less than 3 years. There's less

servicing too. Instead of just 3,000 sheets, the LIPS-10 supplies kit lasts 15,000 sheets. So overall you reduce maintenance and achieve much lower running costs. To allow unattended operation the LIPS-10 paper cassettes and output tray both hold 250 sheets. And face down collation, saves sorting time.

And it does it all quietly and in style. LIPS Flexible Fonts provide dynamic character scaling, rotation, italics, bolding and justification. The LIPS Command Language provides business graphics, forms, logos, bar codes and easy merging with text. Extra fonts are available in cartridges or by downloading.

Fitted with both centronics and RS-232-C ports, the LIPS-10 Laser printer is compatible with the IBM-PC range, compatibles and most minicomputers. It emulates the Diablo 630 daisywheel and Epson FX-80 matrix so you won't have to modify your word processing or software.

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it sprints marathons!

Is desktop publishing a practical reality for businesses and publications? John Slane takes a look at what's available for micros and examines them against what he would like to see.

**DESKTOP
PUBLISHING**

The cold reality of Desktop Publishing

Last month's article described an "ideal" hardware and software setup for Desktop Publishing. Now, in Part 2, we will look at the cold, hard facts.

The preparation of masters for publishing requires the setting of text and the placement of borders, graphics, illustrations and areas of toning or shading. For six years I owned and operated a conventional computer-driven, phototypesetting machine. Characters in sizes from 4 point to 72 point had the resolution of a photograph as they were produced optically, not by beam scanning.

However, the firmware and software was relatively unsophisticated. I found I needed to use my Model 1 TRS-80 to work out best-fit calculations to design layout for material that had to be tightly copy-fitted such as advertisements, business cards, and so on.

A few months ago I began using Pagemaker on the very powerful Macintosh.

Three things immediately impressed me:

1. the joy of being able to see on screen the form and layout that would later be reproduced on paper;
2. the ease of creating and positioning graphics; and
3. the marvellous capacity to produce a page on the screen that included all the elements of the finished requirement with no need to cut, paste and rule on a lay-up board to produce the required master copy.

Once the initial excitement had faded somewhat, I then encountered increasing frustration and annoyance. This expensive and high technology gadget wouldn't do some of the things that were bread-and-butter essentials on my ancient phototypesetter.

First of all, the Macintosh keyboard has no programmable function keys. For word processing and something like Pagemaker this means that other much more convoluted ways have to be found to call instructions. All dedicated typesetting machines have 20 or 30 special keys, uniquely labelled, that call functions with a single press.

The Macintosh is inefficient in cal-

ling instructions (a minimum of two key presses or many centimetres of rolling the mouse around). Incidentally, why on earth did the Mac designers decide that menu selection should be done by releasing the mouse button, instead of clicking it as seems eminently more sensible?

Secondly, as alluded to in Part 1 of this article, the initial developers of Pagemaker don't demonstrate any intimate knowledge of the essential requirements of typesetting.

Typesetting essentials

An operator must have complete

control over the following:

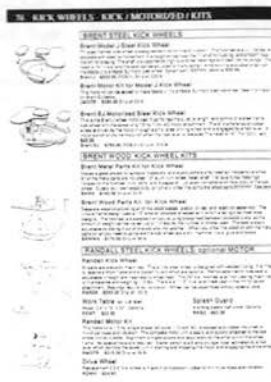
1. Minimum and maximum spacing between words. On a conventional typesetter this might be expressed as a minimum of three units and a maximum of 18. Setting a line in manual or automatic mode with such parameters in operation will require a hyphenation of the last overflow word if the "stretch" between words would have to be greater than 18 units to achieve a right-justified margin.

Failure to have such spacing definitions operating can cause "rivers of white" to apparently run down through paragraphs of text.

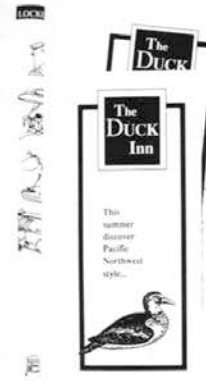
BALLOON LIFE



Magazine by Tom Hanson, Balloon Life Magazine, Inc.



Catalog by Judith Baldwin, Ceramic Supply of New York and New Jersey



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Letterhead, Business Card by Kristen Ransom, Communique for Cooks Headquarters



Tabloid by Bill Boudier, FDR Publications, for Thorax Hospital and Medical Center

FRANK'S MONTHLY GARDENER



Small Business Communications by Lisa Mendenhall for Frank's Nursery and Crafts, Inc.

2. Kerning. In the "good old days", compositors using lead monotype would physically chop away part of the stem carrying a character in order to mortice one letter closer to an adjacent one, for example to put the "o" under the overhang of "T" in the word "To". If this wasn't done the spacing, although mathematically regular, looked wrong to the eye.

In large sized italic scripts this became so essential that type was soon developed which had part of the ascenders and descenders overhanging the lead stems. This allowed the tail of an italic "y" to stretch underneath and to the left of the preceding letter. The amount of overlap was the degree of "kerning".

In electronic typesetting, kerning is achieved by backspacing a character usually in steps of half a unit. In large headings, and mostly where upper-case is used, kerning is essential for good presentation. A classic example is the word WAVE. Kerning pushed the "A" under the "W" and the "V" under the "A". In a firm's name, it is essential to push the "T" into the "L" in "Ltd." (See illustrations.)

The current version of Pagemaker doesn't know about kerning.

WAVE LTD

3. Leading (pronounced "ledding"). When lines of type are hand assembled the depth of the stems carrying each character is just wide enough so that there is a little bit of white space between the bottom of the descenders of the line above and the tops of the ascenders of the line below.

When assembled in this way, the type is said to be set "solid". If the lines are anything but very short, this solid setting is hard to read. Readers tend to lose their place when scanning from the end of one line to the beginning of the next.

To improve readability, the compositor would add strips of lead between lines to increase the spacing between them. A typist does a similar thing when selecting one and a half or double spacing on the typewriter.

However, a typesetter has many more choices. Leading can be any spacing, generally measured in 72nds of an inch, or "points".

Pagemaker has an elementary understanding of leading.

WAVE LTD

But there are (at least) two leading specifications required in most typesetting jobs. The primary leading is the setting for the spaces between text lines. A secondary leading refers to the drop between paragraphs, or the drop to a sub-heading, and will seldom be an exact multiple of the primary leading in typesetting (although it generally will be in type-writing).

The current version of Pagemaker doesn't support secondary leading.

4. Leaders (this time, pronounced "leeders", just to be confusing!). A leader is any character that can be selected to automatically fill any variable or unspecified space.

For example, after typing "Address" a press of the Use Leader key will automatically put a dotted line (or a solid line, depending on the leader selected) from the end of the word right through to the right-hand margin. Or "Address", Use Leader, "(Use capitals)" will put "Address" on the left-hand side, put "(Use capitals)" on

Have you entered the Ashton-Tate Framework II competition yet? See page 33.

Limited stand space available

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the right-hand side and fill the space in between with a dotted line.

A vitally important feature of leaders is that each character in the leader will always be aligned vertically with any leaders printed above or below. One of the most useful characters often selected as a leader is not really a character at all, but a fixed space. This is used when you want to split text left and right aligned on the same line.

The current Pagemaker doesn't know about leaders.

5. White space between letters. Typesetters need to have control over the tightness or looseness of spacing between letters. Until recently it was fashionable to have letters so close they were nearly touching one another. I'm pleased this isn't so popular now, although I notice some typists are setting 12 pitch for their 10 pitch daisy wheels and consequently some characters actually touch or overlap. I don't know why they think this is a good idea.

Pagemaker doesn't know about varying white space between characters.

6. Fixed spaces. It is frequently essential to insert spaces which will not be subject to expansion or contraction when text is spread between the left and right margins.

Pagemaker doesn't know about

fixed spaces.

Rather wistfully, I remember that my 1975 computer typesetter could do every one of the six functions described above. I've given Pagemaker quite a hammering in its lack of attention to typesetting basics. I could also add that it's unnecessarily cumbersome, convoluted and unreliable in use. It's also very slow when text documents get longer than about seven pages. The basic design of the Macintosh has to take some responsibility for this – a poor keyboard, small screen, unacceptable mouse design and an inefficient operating configuration.

The difficulty of mastering Pagemaker should not be underestimated. Don't believe half the publicity about how easy it is to use.

In defence of Pagemaker

Pagemaker is very good in handling graphics, and with persistence (and much more time than you thought it would take) very pleasing copy can be produced.

I had the opportunity of trying a pre-release copy of the IBM PC version of Pagemaker. This is the version which includes the announced enhancements that will eventually be available for the Macintosh. A copy

was supplied courtesy of Brimaur Computer Services, and I ran it on an IBM AT clone.

Many of the "basics" I have lamented have been implemented in some degree in the new release. However, it's hard to report objectively on how good the new Pagemaker is since I have not tried it in the debugged form.

Don't hold your breath though. The release was suggested for February, then for April, then for June/July. It's anyone's guess when the last of the obvious bugs will be slain. The Mac version will be some months after the PC release.

Other desktop programs

Overseas, there seem to be a lot of desktop publishing programs aimed at users who need something with a bit more versatility than good word processing programs. Reviews I have read suggest that many are merely toys and are unlikely to interest people serious about desktop publishing. The deficiencies in the early examples launched on to the market made it obvious to some software developers that there was a significant gap that could be filled by new software that addressed the needs of people serious about typesetting per-

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formance.

I saw a brief demonstration of PCTEX (supplied by ComputerStore) which runs on the IBM PC. PCTEX is a program for a specialist corner of the market, specifically those who want exceptionally accurate placement of characters and who are prepared to work at mastering the command codes to achieve this.

Graphics are at a very primitive level (judged on the examples I saw), but for those writing scientific and mathematics manuals or textbooks the capacity to present complex formula statements with the symbols in the right places could make the effort worthwhile.

The program is not dynamic, as Pagemaker would claim to be. To format a three-page sample which has relatively little specialised formatting, about 96 lines of setup definitions are required, and then the global versions of these definitions are embedded in the actual text to direct the typesetting layout.

Clearly not everyone's cup of tea! I am told, however, that some of the boffins at places like DSIR think PCTEX is just great.

A program that has just arrived on my desk is called Harvard Professional Publisher. This is also (with its eight 360kb disks) designed to run on IBM type personal computers.

A study of the manual suggests that Harvard is somewhere between Pagemaker and PCTEX. Embedded codes call up typesetting functions. The codes can be predefined, inserted in custom menus and placed in text when required without re-keyboarding them.

I was surprised to see that the exemplary examples of what Harvard can do showed consistently ragged column endings, such as the left column not finishing aligned with the right hand column. Neither my customers nor *Bits & Bytes* ones would wear that sloppiness!

However, it is claimed that controls over kerning, leading, word spacing and so on are all met in this program. I may have an opportunity to try out this pre-release copy in more detail and could report on it in another issue.

Who will be using desktop publishing programs?

In my opinion, there will be a great many individuals and companies interested in the possibility of doing their own preparation of printers' masters. The avalanche of printed materials assailing us from all quarters tends to make us blasé and very selective about what we read. Unless the content is gripping and of particular relevance, unattractive material is likely to be left unread.

The potential reader needs to be seduced by being offered publications which are eye-catching, readable and easily comprehensible. The trouble taken to present high quality visual material can offer returns to the people responsible for producing it.

Just as colour TV is now the expected norm, so a higher standard of printed presentation will become the defacto bottom line. Companies that stick to their electronic typewriters for their newsletters and so on may find that their (worthwhile) messages are going unread. The subtle pressures for better quality printed information will be hard to resist.

The demands for typeset material will probably go in two directions: to the established typesetting firms (creating more business); and to the setting up of in-house publishing operations (resulting in less work for the professional typesetters).

In-house typesetting

Many firms already have the hardware required for setting up copy for publication.

A practical, workable minimum is a 32-bit computer (for example Macintosh Plus or PC AT with enhanced graphics) together with a suitable printer. Generally, a dot-matrix printer will be inadequate for this purpose (poor resolution and lack of inbuilt fonts matching those in the publishing software). A suitably set-up laser printer is really the bottom line.

Software? Yes, there is desktop publishing software out there ready to use. Perhaps some of it is still a bit fragile, a bit limited, or fearsomely difficult to learn. But it's available and might suit a particular firm's needs.

Now, what about the staff to run it?

Desktop publishing, even at its most straightforward, is more difficult to master than word processing software – publishing programs offer vastly more features and options to be learned and integrated. It's not just a matter of coping with the mechanics of the software; to be acceptable the final output has to look right graphically.

Clearly there are many novice users of publishing software who haven't yet developed skill in presenting pleasing text and graphics. Typically we are seeing boxes and borders and shading all over the pages, borders too thick, type too large, overuse of emphasised type, and too many varieties of typeface used on one or matching pages.

There's a relatively fine line between having something look right or having it look a mess. Setting up a page for publication is a bit of art, and a big bit of skill and experience.

My pick is that many companies will have difficulty in training and keeping staff who are proficient at publication work. Presently typesetters have a similar problem when the requirement is to create something suitable for the customer as compared with merely keyboarding a designer's specifications.

There may be a similar parallel with in-house printing. When cheap, tabletop offset printing machines became available, some companies were persuaded to go into printing their own stationery. The result was that markedly inferior printing resulted. Today, only the really big firms continue successfully with in-house printing, and their equipment is as sophisticated as would be found at commercial printing houses and runs full time.

The compromise solution

It may be found that many people do not need a full publishing program to produce the kind of copy they want.

Perhaps the biggest breakthrough of all will be caused by the advent of the laser printer and the more sophisticated word processing programs which provide for the inclusion of graphics, different sizes and styles of font, precision line spacing and even the use of leaders (as found in Microsoft Word, latest edition).

Publication copy of a very acceptable standard could then be available using the skills of any competent word processing typist. It would then be more economic for specialised work to be contracted to professional typesetting firms.

However, typesetters shouldn't get too excited about all the work that is going to come to them. I believe that the word processor/laser printer combination will enable some firms to do in-house what they presently send out to the typesetters.

The last word?

I've given a good deal of thought to the hardware I would find acceptable to run desktop publishing without actually going to equipment which is configured for and dedicated to typesetting.

Now I think I know what I would opt for, at least as an interim solution, is the new Atari ST with detachable keyboard, up to 3Mb of internal memory, good sized monitor, better screen resolution and higher speed than the Mac, standard inputs and outputs for everything, function keys, and way under the cost of any other 32-bit machine.

Just one small problem. Where's the sophisticated desktop publishing software for it?

What to look for in a laser printer

by Don Sykes

Marketing Manager, Hewlett-Packard (NZ) Limited

It's a simple enough checklist: you want a printer that will cost next to nothing, require no maintenance, last a lifetime and do everything short of hiring your next employee. And since everyone is clamouring for desktop publishing, you might as well get a laser printer.

Given the above checklist and a healthy dose of reality, a laser printer may well address the needs of your

organisation and pave your entry into the desktop publishing market. Selecting the best laser printer is, of course, based on your particular projected applications. However, there are some general guidelines that will make the process clearer and ultimately rewarding.

Do you really need a laser printer? Is your need for top quality letters and memos, fast? Would you like to enhance your communications with charts, graphics and pictures? Are you looking to drastically reduce typesetting costs, dramatically cut production time and produce high quality documents with a creative appearance?

If so, a laser printer is the answer for you. Laser printers can use virtually any type of plain paper or company letterhead and make changing paper quick and easy, but be aware that laser printers can't handle multi-part forms or continuous feed paper.

As you begin shopping for a laser printer, make sure the printer is compatible with your PC and will support the software you're considering for the task.

If you're just starting out in desktop publishing, know that a few type styles are good, more are better, but a whole lot more aren't essential. A newsletter you've created with 14 type styles and six sizes of letters is difficult to read and defeats your goal of a professional-looking publication.

How many type styles do you need? How many type styles are available for the printer you're considering and how many can be printed on a single page? Are the type styles resident in the printer's permanent memory or on plug-in font cartridges?

If you are planning to use graphics in your documents, remember that graphics require a lot more of the laser printer's memory than plain text. Plan for this in your printer selection. Get at least 500 500kb of RAM. If you can get 1Mb or more, do it. Also, check to make sure the printer can be upgraded with additional memory. As you become more sophisticated and creative with your applications (and you will!), you'll need this extra memory.

Important issues for laser printers are speed and resolution. Most personal laser printers print text at a rate of about eight pages per minute, this speed being slowed when graphics are being printed. Check on the printer's speed when printing charts,

graphs and illustrations. Most laser printers have a resolution of 300 dots per inch (dpi). Resolution for graphics may vary, depending on the percentage of the page covered by the graphic, so look at the varying dpi/graphics ratios and results to make sure your needs are met.

Where will you put it? When printing, most laser printers emit only a soft hum, versus the ratchety clacking of a daisy wheel or pin printer. It's not necessary to position the printer away from phones and conversation areas. Is there room on your desk, table or computer centre for a printer that needs a space approximately 16 inches by 20 inches? If this is a problem, know that laser printers work great in a shared environment — that is, several users and several PCs can all tap into the same printer.

Maintenance is a factor on laser printers. It's more like taking care of a copier than an impact printer. Toner cartridges usually are replaced at approximately every 3,000 pages. This is about the only maintenance you'll have to do and you'll never get your hands dirty winding in a stubborn, ink-soaked ribbon.

After you've looked at all the printer's features, look at what the manufacturer is offering in the warranty and long-term support. Check the specifics of the service contract and ask the salesperson or dealer to put you in touch with one or two experienced users of the printer you're considering.

Make sure you're buying a laser printer from a manufacturer that will be able to provide long-term service and support. Will the firm still be around in five years? How many service centres does the company have and where's the closest one? Is on-site service readily available? Is there a long wait for it? Is there an extra charge? If you ever need technical assistance or repair service, you want to be sure it's going to be available.

As you look at laser printers, know that they're the most exciting, creative and flexible addition the computer market has seen in several years. The technology will continue to evolve, so take care to match your evolving needs to the market and your investment.

Read the reviews in the computer magazines, try different models in computer stores and investigate what businesses similar to yours are using. Enjoy the challenge and get ready for great results.

T H E DOS NEWSLETTER

Published Fortnightly
For Users of
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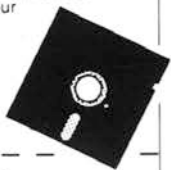
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New scientific calculator



Hewlett-Packard describes its new HP-28C range as the next generation of scientific calculators, believed to be the first capable of doing symbolic mathematics. Its four-line 23-character LCD display and separate alpha and numeric keyboards allow a new range of problems to be solved using a calculator, and it comes with 128kb ROM and optional printer, with communication between the two by infrared beam.

Voltage surge protection

With a response time of 10 nanoseconds, a British surge protection device is the ultimate in easy installation – its three-pin plug construction allows it to be inserted into a socket to provide sharp end protec-

tion to equipment plugged into the adjacent socket.

The Bowthorpe Button will also provide both positive and negative surge protection to other equipment connected to positions in the same multi-gang socket. It limits surges to a peak within the figure accepted by electronic equipment manufacturers and automatically resets after operation.

Powerful new portable

Announced at the end of February was Compaq's latest desktop computer, the Portable III which, with its 12MHz 80286 chip, is faster than other IBM PC-AT compatibles and second only to the new generation of 80386-based machines.

At the Auckland launching (which demonstrated that video has some way to go before it can match the resolution of movie film), Compaq Australia's managing director Ian Penman claimed the new portable was technologically far ahead of its competitors.

The 40Mb hard disk model had an average access time of less than 30 milliseconds, less than a third of the AT's, while the RAM of up to 6.6Mb (standard 640kb) would allow users to run the largest spreadsheets.

"It is not a casual user's machine," said Penman. "It's expensive."

Mains-powered, the Portable III has a gas-plasma screen adjustable for tilt, full-size 84-key detachable keyboard, and standard 5.25 inch floppy and hard disk drive of 20 or 40Mb. A snap-on expansion unit includes two full-size 8/16 bit slots for LAN and mainframe links, and the whole unit measures 24.9 x 40.6 x 19.8cm and weighs 9.1kg.

Drift northwards

Another company to move out of the provinces into metropolitan Auckland is Chevron Software, which moved its staff and head office from Tauranga at the beginning of March.

"We felt it was appropriate to move," says administration manager Kim Redstall. "Our biggest market is the Auckland area, with 58 per cent to date."

Chevron's general manager is David Anstice and technical manager Andrew Simmonds. The main product continues to be the Charter series of accounting software.



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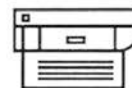
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Another step in the evolution of banking

**EFTPOS
FEATURE**

by John King

Just what is this new trading system known as EFTPOS? Is it, as some motorists have thought, a sort of engine oil additive? Does nearly everybody, or 292 out of 300 innocent bystanders recently polled in a Hamilton street, greet it with blank looks? And is it something out of science fiction, the beginning of the long-forecast cashless society?

The reality of EFTPOS, or electronic funds transfer at point of sale, is more of the trend in currency trading, from cold cash through cheques and, more recently, plastic credit cards. Cash, or at least coinage, has been around for a couple of thousand years and the other systems rather less, although none has been supplanted in the course of the evolution of banking.

It is, quite simply, a means of making use of the real-time capabilities of the modern computer and communications equipment to transfer funds from the buyer's bank account to the seller's, at the point of sale and on that day. And it differs from the credit card arrangement, where the buyer still has the use of the amount of that transaction for a set period (credit), in being a debit system where funds are deducted immediately from the cardholder's account.

To confuse the issue, however, is an announcement from the NZ Bankers' Association that access to EFTPOS is available to all the four trading banks' credit card holders, a card-base of some 2.3 million spread among the people of New Zealand. Cardholders now have the choice of payment from the debit card, with same-day debiting but online control of spending against funds in the account; through the charge card with monthly repayment; to the credit card which offers a free credit period and the facility to spread repayments over an extended time.

"This is a big step forward for both consumer and retailer convenience," says Bob McCay, Bankers' Association chairman. "It is a natural progression towards the trading banks providing retailers with their ideal of access to all types of cards through a single retailer terminal. Having proved the system with our own cards, we have commenced marketing open access through our system to other card issuers."

But the trading banks weren't the first with the system. As long ago as 1984 the Trustee Banks pioneered a trial scheme with Shell Oil at two Auckland service stations, and today it covers virtually the whole country through the Cashline system. Before their merger into Trustbank (from which a number of Trustee Banks



Cashline at work in an Auckland supermarket.

have since withdrawn), the individual banks established an electronic banking authority to work on the introduction of the new technology. Cashline equipment is now installed in a large number of supermarkets and service stations, with customers choosing whether to pay from cheque or savings account, and also having the option of drawing out cash at the same time as they buy goods.

Neutral

Cashline is being promoted as a system available to everybody in a neutral manner, running on the Post Office packet-switch-based technology. "We believe that retailers want a terminal sitting on their counter that can process any of the acceptable debit or credit cards on the market," states Don Brash, Trustbank managing director.

"It is a basic principle of our operation that we actively promote this

concept. We hope that ultimately we will achieve a national EFTPOS system that is dominated by no institutional clique and is simply a means to provide retailers with a straightforward guaranteed payment sales mechanism.

"At the same time the system must provide financial institutions with a secure and economic method of transferring funds from a customer to a retailer."

Cashline national co-ordinator Ray O'Connor says the methods being used by the banks and Post Office Telecoms are at the forefront of worldwide technological advances. "There has been a large amount of technology pioneering in this project for both the Post Office and Cashline partners. We have worked together closely to achieve this first for New Zealand, and substantial resources will be required to maintain a 24-hour, seven days a week service to what will ultimately be thousands of retail users."

He sees the system having a place

initially in supermarkets, restaurants, fast-food outlets, liquor stores, department stores, chemist and book shops, service stations and other outlets where the turnover or the value of purchases is relatively high. An attraction to retailers is the reduction of bad cheques, savings on cheque clearance fees and less need to hold large sums of money. Record keeping also improves with Cashline's daily printout of transactions.

Hardware

The hardware side is optimistic, with suppliers talking about EFTPOS being "ready to boom". Unisys, the merged Burroughs/Sperry company, is well placed in the market with its terminals and reports having sold some \$2 million worth in the most recent month. Both the trading bank and Trustbank systems are being supplied, with the Bank of New Zealand in conjunction with Group Rentals the first rental company to enter the field.

Unisys' EF1820 units, recently released, have the facility to read both the standard magnetic stripe and "smart" programmed cards, which have a built-in chip containing information on the cardholder and account. The manufacturing of terminals has just started in Australia for

the local market, and a smart card pilot scheme will be run in New Zealand later this year.

According to Peter Helms, marketing manager of Unisys' financial marketing division, EFTPOS has passed well beyond its pilot phase and is now in a period of marketing consolidation as banks promote its benefits.

Record keeping also improves with Cashline's daily printout of transactions

"We are now entering the phase of rapid growth," he says. "The same cycle happened with automatic teller machines, where initially people felt there was no place for them and that the consumer would not accept the technology. In reality, people took to ATMs very readily and the race was on to capitalise on that market."

"Now we have a large and expanding mass of consumers who are comfortable with EFTPOS and in fact prefer it to writing cheques all the time."

New Zealanders are used to an efficient banking system, and the ever-quicken pace of life means that more time-saving devices are always welcomed. In the USA, Avis is testing

portable hand-held computer terminals which communicate to the main office machine via radio link, enabling rental cars to be checked in by customers while they're still in the parking lot. By the time they have unloaded their luggage, information on vehicle number, mileage and fuel has been transmitted to the terminal inside and communicated in turn to the main Avis computer in Garden City, New York, which sends the customer's name back to the attendant for verification, and the completed rental agreement is printed out.

The customer then has the option of boarding the shuttle bus immediately for the airline terminal or picking up a copy of the rental agreement at the desk. It's ideal for those people who are habitually late for their airline connections.

The possibilities in the whole field of EFTPOS are endless.

"... the system must provide financial institutions with a secure and economic method of transferring funds from a customer to a retailer."

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Not EFT, but definitely POS

**EFTPOS
FEATURE**

At a time when EFTPOS systems are coming into vogue, a locally-produced point-of-sale system has appeared on the market. Harvey Lockie, already well-known among pharmacists for his prescription program, has spent the past 18 months developing Checkout, a retail management system intended initially for pharmacists but able to be adapted for most types of retail outlet.

"The cost in interest and other factors of having an unproductive item on the shelf is higher than it was a few years ago," he points out. "You probably know your half-dozen most profitable items, but is that enough? Too often you lose sales by not carrying enough of your most profitable items, or you lose money by having too many of the slow movers."

He says that stock reduction should be "in the order of 10 to 15 per cent", keeping levels to a minimum within the monthly invoice cycle. The automatic reordering, unlike most similar systems, also takes into account the number of days to the end of the month, and instead of reordering to the optimum stock level, will take only enough to see through

to the start of the next month's normal ordering cycle.

In developing his system, Lockie kept in mind two major objectives. "Rule number one: nothing must ever stop the customer's money from going into the till. Rule number two: it had to be as fast as a till for the number of keystrokes for entry - a total of six, five codes plus quantity."

Checkout is designed around the Commodore PC ("for continuity of supply and other factors"), sitting atop a cash drawer operated by the computer and with the usual range of printer, screen and cables for normal PC operation. Should a shop have more than one till, one can be set up as the master terminal with its hard disk containing the master file, serviced by up to 100 slave terminals, their floppy drives holding only information pertinent to their own sales. An optional arrangement might have the office PC entirely removed from any till but able to run the system as well as all the other normal retail business applications.

"With a separate computer on each till, there's less chance of things going wrong," says Lockie. The pur-

suit of reliability through simplicity has also led to the method of data transfer between slave and master terminals - physical hand-delivery of floppy disks, eliminating interconnecting cables and other links which can cause trouble.

According to its designer, what sets Checkout apart from other retail management systems is its flexibility. A series of options, which can be changed at any time, allows such things as printing tax invoices, either automatically or on demand; summaries of cheques and credit card details; setting security levels for access to the program; and adjusting optimum stock levels for possible seasonal downturns. More than that, however, is its "learning" capability, so that reordering is suggested according to variations of sales patterns and not to preset limits.

And it can even print out a GST invoice for the customer who has discovered the need for it only after the sale is completed, something no normal accounting system ever has to cope with.



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EFTPOS FEATURE

Where to now?

by Peter Helms,
Marketing manager, Unisys financial marketing division

EFTPOS is here, it's running well and growing in acceptance. The prophets of doom were wrong and their cries that EFTPOS is not needed can be remembered along with famous one liners like "New Zealanders don't want Saturday shopping, ATMs or hotel closing hours extended beyond 6.00 pm." The new technology payment mechanism called EFTPOS is now set to become a most significant component in the information age.

The current facilities offered by EFTPOS are simply debit access to savings or cheque account. Very soon credit access will be supported by EFTPOS, and with our already high national use of credit cards this will cause a boom in the use of the system.

A pressing need exists to allow expansion of transaction interchange across the trustee and trading bank networks which will also include card transactions from other financial and non-financial institutions. The technology exists which would enable such a system and in itself is nothing startling. The challenge is in reaching agreement among the various institutions on how to implement such a system.

Having passed through the pilot phase of only a few EFTPOS terminals, and the consolidated phase where banks sign up major retailers, the next step will be the normalisa-

tion phase of EFTPOS. Through the steady proliferation of EFTPOS and educational advertising, the use of cash and cheques will become seen as the less convenient alternatives to EFTPOS. Cash payment will imply that the transaction is sordid and secret... like GST evasion. Making other customers wait as you fumble through the process of writing out a cheque will become uncool and old-fashioned.

During the normalisation phase of EFTPOS the technology which delivers the service will change little as far as the card holder and retailer are concerned. Devices in the short and medium term will continue as stand-alone units, although the security mechanisms (encrypting PIN pads) will start to show up on some electronic cash registers.

The next exciting phase of EFTPOS will begin with the introduction of "smart cards" or plastic cards with a variety of computer chips built into them. There are several existing intelligent card technologies available and currently operating overseas. In addition, various new card technologies are being invented and tested. The introduction of smart cards is the next generation of EFTPOS.

The Burroughs, (now Unisys) EF1820 EFTPOS terminals are supplied from Ingeneco, the world's leading manufacturer and designer of

smart card terminals and one with which Unisys has a close partnership. The terminals have the built-in capability to operate smart cards, as they do overseas in several networks. When our customers are ready to implement smart cards, regardless of whether they want to use the French CP8 card or Japanese DiNippon or both, we have the technology and expertise to go ahead.

Our thinking about the purpose of plastic cards becomes far more lateral as we consider the developing new technologies. Drexler or laser cards, for example, have a strip of the material which compact disks are made out of attached to them. On this medium a plastic card currently holds 40mb of data which could also comprise a detailed image of the card holder.

We have become used to luggable computers and laptop computers, and associated with EFTPOS will come the super smart card computer. The Casio calculators which are the size and thickness of a ordinary magnetic card are probably very close to what we will all be carrying around in the future. Such a super smart card will be one's EFTPOS access, passport, key to the car, health records, accountant and possibly also a communicator - beam me up Scotty!

But are New Zealanders ready for this?

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PC node for larger networks

by Mark James

1986 was, according to the marketing hype, supposed to be the "Year of the Network". It didn't happen, of course; although sales of networking hardware and software for microcomputers are rising, most people still find it more practical to share files by swapping diskettes. The main problems with networks seem to be the high cost, sluggish performance, a lack of hardware or software standards, and the absence of network versions of popular programs such as Lotus 1-2-3.

Toward the end of last year, Digital Equipment Corporation (DEC) announced its long-remembered VAXmate computer, a reasonably IBM-compatible micro that attempts to address the problems of networking in a novel (and proprietary) way: by including much larger computers in the network. Digital is the manufacturer of the VAX range of minicomputers, and one of its strengths has been the ability to link VAXes into local-area networks and clusters, using DECnet running over Ethernet. The VAXmate is designed to be a microcomputer node on DECnet.

Physical description

The VAXmate comes with its own high-resolution monochrome monitor, built integrally into the main unit, and a detachable keyboard. The screen can tilt vertically across an angle of 15 degrees (a nice touch generally found only in integral LCD screens) but cannot swivel. The video controller can emulate several common video modes (IBM CGA, EGA, Hercules and DEC VT-220). To the right of the keyboard, mounted vertically, is a single floppy disk drive capable of reading and writing 360kb and 1.2Mb MS-DOS diskettes, as well as Digital's RX50 (400kb) diskettes.

The keyboard and Digital's three-button mouse attach to the right side of the system unit; to the rear are the network port, one standard RS-232 serial port, and another, non-standard serial connection intended for Digital's LA75 printer. No parallel port is available.

Inside the system unit is an Intel 80286 processor running at 8MHz, along with one megabyte of main RAM memory, the video, diskette and Ethernet controllers, and a calendar/clock. An 80287 floating point chip is optional. There is no cooling fan; the entire unit is convection-cooled through ventilation slots on the top and sides of the monitor. This makes

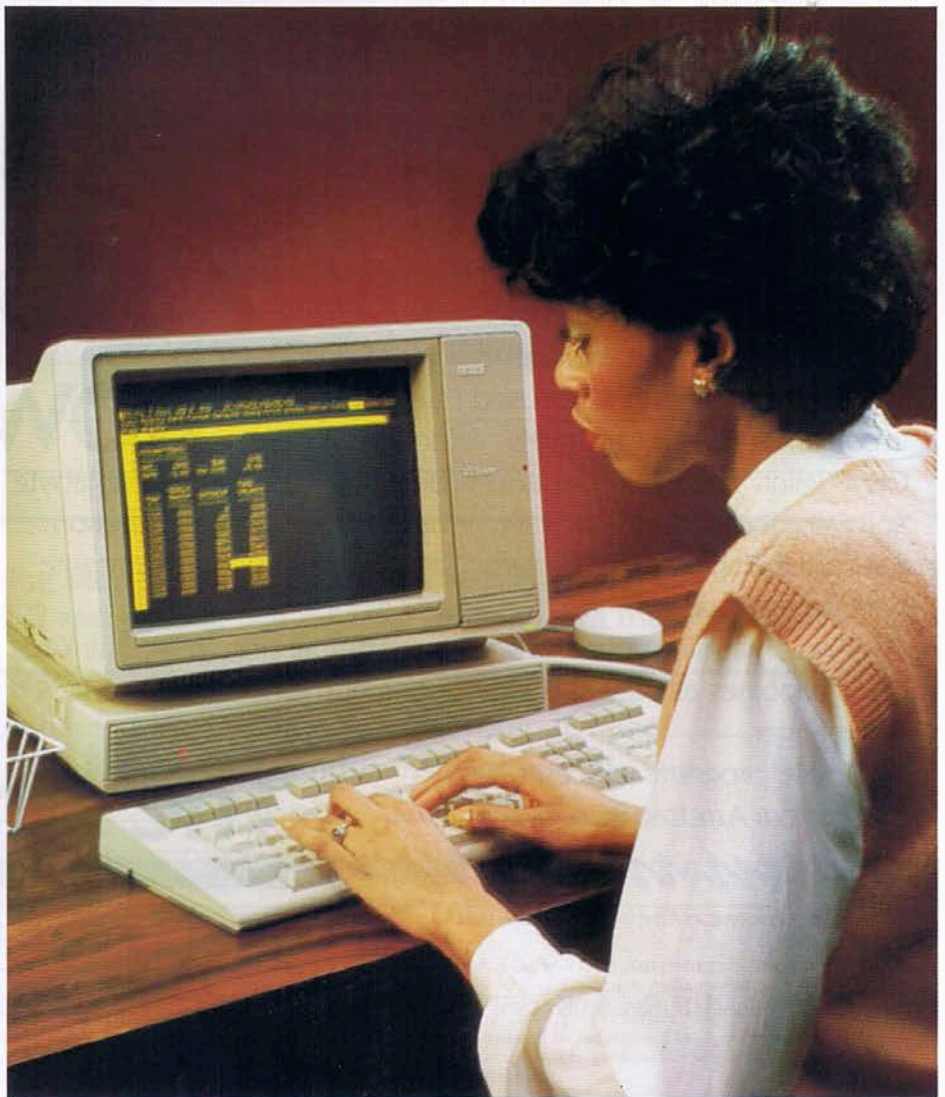
for a quiet office workstation, but the user must be wary of placing papers or other objects on top of the unit.

The American version comes with an optional modem, but this will not be offered on the New Zealand model. According to Digital, Post Office type-approval regulations make this "impractical".

The keyboard contains 105 keys laid out to resemble Digital's VT-220 line of video display terminals: twenty function keys across the top, and a cursor and editing keypad separate from the numeric keys. (IBM adopted a similar layout for its "enhanced" PC/AT keyboard.) The scan codes are compatible with those of the IBM PC, except that programs which themselves keep track of the Num-lock status can get confused, a common problem with AT-compatible keyboards.

Apart from this one glitch, the keyboard is a pleasure to use. The full-travel keys have a nice firmness, and the F and J keys are dished for touch typists. Special keys are labelled with both their DEC VT-220 function and (in blue) their IBM-compatible function.

The standard VAXmate configuration includes neither hard disk nor slots for expansion cards. Digital has promised both in an expansion box that sits underneath the main unit. Dubbed the "pizza box" by DEC-watchers because of its shape and perhaps its temperature, the expansion



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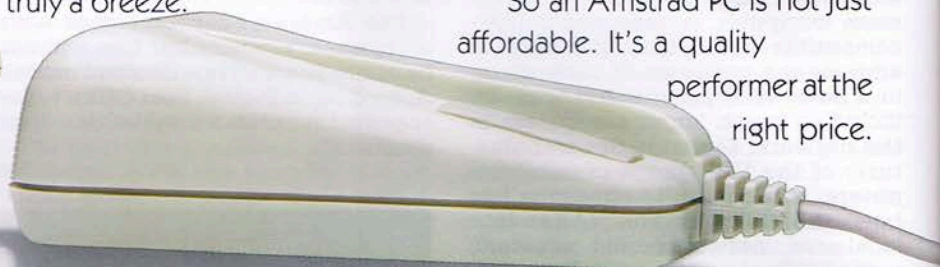
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sion unit contains a 20Mb hard disk and an AT-compatible bus with room for two long cards. Release of the box was delayed because of cooling problems (like the main unit, the "pizza box" is convection-cooled), but is now readily available.

Compatibility

The VAXmate can boot from an ordinary MS-DOS or PC-DOS 3.1 diskette, in which case it behaves much like a PC/AT clone. Programs like Lotus, Norton Utilities, Flight Simulator, video and music games run without problems, except for the Num-lock incompatibility mentioned above, while programs that require specific video characteristics (such as Flight Simulator) may require that the video mode be adjusted. The only program that I could not get to run was Sidekick, which told me that I was running an "unknown DOS version", but this appears to have been an isolated and untypical occurrence. Multi-user systems can use the standard serial port for an extra terminal, although the lack of a parallel printer port might present a problem for some systems.

The VAXmate, however, is not really intended to be an AT clone.

When booted with its "key diskette", the computer comes up as a network node. The key diskette is nothing more than an MS-Net system with an elaborate AUTOEXEC.BAT that sets up a number of logical devices for the VAXmate on its network host machine. The VAXmate used for this review was attached to a MicroVAX II computer with three 70Mb hard disks; this was my network server (host), and I was its only "guest". Up to 25 VAXmates may be served by one MicroVAX II, while many more may be attached to the larger VAX machines. One VAXmate with a hard disk may serve as host to up to four other VAXmates.


The MS-Net configuration allows up to 14 logical devices to be used by MS-DOS programs. The review machine had seven of these set up (see Table 1), including four that resided physically on the MicroVAX. All MS-DOS system programs and files were found on drive H:, except for COMMAND.COM and MS-Windows which were placed in a RAM disk (drive C:) for speed.

From the VAXmate's point of view, the four network drives H: through K: are simply devices containing MS-DOS files. In reality, however, each of the logical drives is assigned to a sub-directory on one of the MicroVAX


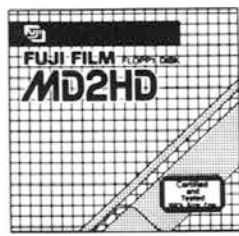
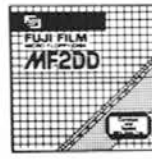
disks, and the files are not MS-DOS files at all, but VMS ones. (VMS is the Digital-proprietary operating system for VAX computers.)




It is the responsibility of the networking software on the MicroVAX to make the VMS files look like MS-DOS ones, but there are limitations to this. The VMS filing system is much more complex than MS-DOS, with its simple device directories and file-allocation tables (FATs). Norton Utilities' DT (disk test) program, when run on a network device, gives an "Error reading FAT", which is not surprising, since there isn't one. The NU program dies horribly with a divide error whenever it tries to do anything on a network drive. When the VAXmate is running on the network it will not run some software on remote network resources, in particular CHKDSK, DISKCOPY, JOIN, LABEL, RECOVER, SUBST and SYS. In general, any attempt to load an absolute sector from a network drive will fail, although addressing files rather than devices should present no problems.

At one point I was faced with zero free blocks on the J: drive. I deleted a file of about 17kb, and did a DIR; still zero free blocks. I deleted another of 50kb, and still no free space. Finally I deleted a one-megabyte database, and at last I had a megabyte free. The



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lesson here is that the J: drive, being a VMS subdirectory, has a more elastic capacity than does your average MS-DOS device.

One other compatibility issue will involve the expansion box, when it becomes available. The VAXmate includes, as standard equipment, some extra hardware not found on most PC-compatibles, such as the network controller and the serial printer port. These take up interrupt vectors and status registers somewhere, which may conflict with those used by some add-on boards. Therefore boards that work in the IBM PC/AT and its clones may not function properly in the VAXmate; it is best to try before you buy.

File sharing and security

The logical drives on the network host may be private to a single VAXmate station, or shareable among several or all VAXmates. The MS-DOS system files on drive H: and the Windows files on I:, for example, are shared, which guarantees that all VAXmates networked to the same host are using the same version of the shared programs. The startup procedure, which connects the logical drives to VMS subdirectories, will ask for a password if access to the subdirectory in question has been restricted. The system manager for the VAX host system is responsible for deciding which logical drives of which networked VAXmates will correspond to which VMS subdirectories, and whether these subdirectories are private or shared.

One of the most serious problems facing any network is file-transfer performance.

As with most network systems, there is no inherent provision in the VAXmate implementation of DECnet for the regulation of multi-user access to files. However, the VAXmate system can take advantage of the fact that network files are really VMS files; and VMS, a multi-user system of long standing, has some inbuilt security features in its filing system. Permission to read, append to, change, or delete a file may be restricted to one person or to a group, or given to everyone. You need to get into VMS in order to set these file characteristics (the VAXmate provides terminal emulation software so that anyone may log onto the host VAX). This implies, again, that a VAXmate network needs someone with VMS system management skills.

These security features apply to whole files only; there is no provision for record locking in networked databases. Some microcomputer database products have network versions that cater for this need, but not all do.

Network performance

One of the most serious problems facing any network is file-transfer performance. If one computer seeks information that is resident on another, that information must be

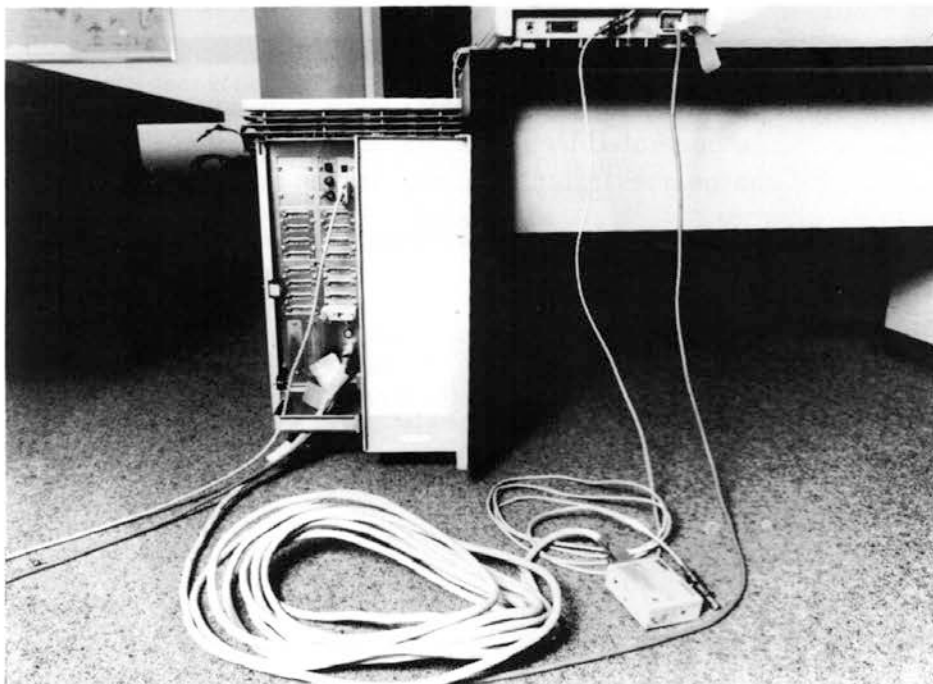
sent down the network wire. This involves five steps:

1. The network software on the VAXmate must recognise that the program currently running has just requested data that are available only from the server, and must direct the network hardware to transmit a request for the information to the server.
2. The network hardware must transmit the request to the server, taking care not to interfere with anything else going on in the network.
3. The network server software on the host machine must recognise the request, find the relevant data and assemble it into a form suitable for transmission on the network.
4. The network hardware on the host must send the data to the network hardware on the requesting station, taking care not to interfere with any other tasks that the network may be engaged in at the time.
5. The network software on the requesting station must assemble the transmitted data into a form that looks, to the program, as if the data came from an ordinary MS-DOS device.

Performance problems can arise at any of several points: the line transmission speed may be too slow; either the network hardware or the server software may be unable to cope well with conflicting requests from multiple stations; or the software for assembling and disassembling the transmitted data may be inefficient.

Since I was lucky enough to have an entire MicroVAX II as a network server dedicated to my VAXmate alone, I cannot judge the efficiency of Digital's network in multi-user situations. I did, however, give the network a good single-user thrashing, comparing its performance in MS-DOS COPY and sequential and random sector access with similar operations on a high-performance 40Mb hard disk. The results are summarised in Table 2.

The most surprising statistic comes from the COPY of a 360kb file to and from a diskette. Copying from a network drive to the diskette is almost as fast as copying from a hard disk, but going in the other direction is considerably slower on the network. This indicates that Digital's server software is optimised for downloading from the host, rather than uploading to it. This is good, since nearly all operations will involve some downloading (even running MS-DOS programs – remember that they are all on the H: drive), but



The connection side of the VAXmate (on desk) and MicroVAX II. The cable from the VAXmate goes to the Destra station adaptor, from which the heavier transceiver cable connects to the DEQNA (Q-bus network adaptor) board within the MicroVAX. The other ports are all for terminals

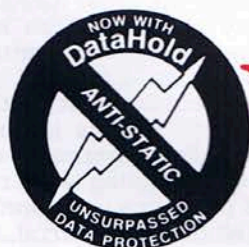
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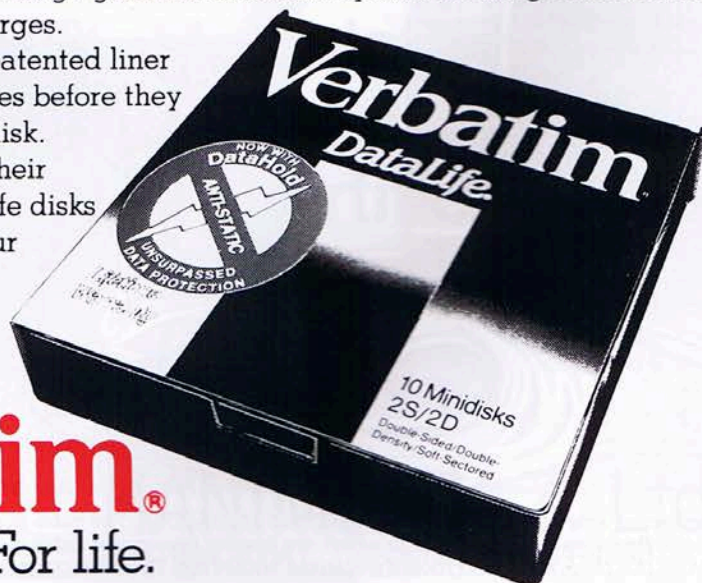
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not many will need to upload.

Ease of use

Although it requires a VMS guru to set it up properly, once this is done, the VAXmate is very friendly to use. The key diskette used to boot the machine may, in fact, be used on any VAXmate on the network; the logical device assignments and the file security will be identical, so that a user may move from one work area to another with nothing except the key diskette. (The boot procedure may be placed on a hard disk instead of on the key diskette if desired.)

Digital has included some very nice touches in the VAXmate design. For example, the "Compose" key, necessary for VT-220 emulation, has been moved out of the way. In its old location it could have been confused with the Alt key. The system can be rebooted either with the usual Ctrl/Alt/Del combination, which performs a minimum of tests, or with Ctrl/Alt/Home, which does a full configuration check and lists all peripherals known to that system.

In addition to the usual MS-DOS programs and files, the VAXmate can run VMS programs through the terminal emulation facility. In addition, Digital plans to introduce a PC version of its All-in-One package, a user-friendly front end to the VMS operating system. Although All-in-One has been criticised for its sluggish response times, it does shield the non-technical user from the command-line interface of VMS. The PC version will include word processing and trans-network message switching.

Once hooked into DECnet, the VAXmate user is not limited to his or her own local area network. The server VAX may itself be networked to other VAXes with other local area networks attached, and may even be linked into an IBM mainframe computer. This presents an interesting situation: Digital has announced an add-on networking card for IBM PCs and compatibles that will give them the ability to link, like VAXmates, into DECnet. This means that the IBM PC will finally have a network link to IBM mainframes – but it will be Digital and not IBM that will provide it.

The VAXmate documentation does not go into much detail as to the possibilities of its DECnet connection. There are two principal manuals: one describing Windows, terminal emulators, the desktop and paint programs; the other on MS-DOS, with a good error message summary and index. The manuals are well-presented but a bit massive and intimidating to the new user. A smaller introductory booklet with getting-

started tutorials would have been a good addition, while some information on VMS would also be useful, since a VAXmate user is likely to encounter that operating system at some point.

Conclusions

The VAXmate computer, although largely compatible with the IBM PC/AT, is not suitable for use as a mere

PC/AT clone, as many other such computers are both more compatible and less expensive. The VAXmate, as its name implies, is designed to work alongside Digital's VAX computers. Its unique networking features make it the microcomputer of choice for those who wish to combine the features of MS-DOS and VMS. The VAXmate should be considered by those organisations that already have a VAX, or are considering acquiring one.

TABLE 1: VAXmate logical device assignments

Device	Location	Content
A:	{ Floppy disk	"Key diskette"
B:	{	
C:	RAM disk	COMMAND.COM
D: E:	{ unused	(VAXmate hard disks, tapes etc.)
F: G:	{	
H:	VAX	MS-DOS programs and files
I:	VAX	Microsoft Windows
J:	VAX	Shared applications
K:	VAX	Private files
L: M: N:	{ unused	(Other network-based files)

TABLE 2: Access times, network vs. hard disk

Function	VAXmate J: drive	40Mb hard disk
COPY 360K file to diskette	21.9 sec	18.8 sec
COPY 360K file from diskette	38.0 sec	17.0 sec
Sequential access (reading of 100 consecutive 4K blocks)	8.36 sec	4.18 sec
Random access (100 4K blocks read randomly from a 1-megabyte file)	10.34 sec	5.22 sec

Microcomputer summary

Name	VAXmate
Manufacturer	Digital Equipment Corporation, U.S.A.
Microprocessor	Intel 80286
Clock speed	8 MHz
ROM	64Kb: IBM PC/AT-compatible BIOS
RAM	1Mb
Disk drives	Single 1.2 Mb floppy
Video	Inbuilt 800x400 monochrome monitor; CGA, EGA, Hercules, ReGIS support; choice of green or amber display
Keyboard	105 full-travel keys; separate cursor and editing keys; 20 programmable function keys; enhanced AT (VT-200) layout; three-button mouse included
Sound	Single-voice speaker (IBM-compatible)
Communications	10MHz DECnet-compatible Ethernet port, including cables; IBM-compatible serial port; serial printer port
Operating system	MS-DOS 3.1, MS-Net
Languages	All MS-DOS languages
Bundled software	MS-DOS, MS-Net, MS-Windows; Windows help, Paint and Calc programs; DECnet support software; VT-220 terminal emulation
Options	80287 math chip (\$1170 plus GST) 2 megabytes expansion RAM (\$3744 plus GST) Expansion box with 20-megabyte hard disk, power supply and two long card slots (\$4271 plus GST)
Price	Basic model \$8880 plus GST
Ratings (5 highest)	Documentation 3; ease of use 5; expansion 3; connectivity 5; support 4; value for money 4.

Review machine supplied by Digital Equipment Corp (New Zealand) Ltd.



This Lotus driver has been exploring the user interface to the full for some years.

Back off, Lotus

by Ken Maize

Let's go for full disclosure, right up front. At work, I use The Twin, Mosaic Software's excellent spreadsheet program that does everything that Lotus 1-2-3 does and more. (I don't use VP Planner, another 1-2-3 clone that Lotus Development Corp. has attacked in court.)

So I guess that makes me a less-than-disinterested critic of the Lotus lawsuits announced recently. But I didn't choose The Twin or pay for it (my employer did). If I had, I'd have chosen SuperCalc, which I learned on my late, lamented Osborne computer. It's a lot better than 1-2-3 and even better than The Twin, albeit more expensive.

Lotus says I'm a miscreant, and maybe an unindicted co-conspirator in the crimes of the software clones. That judgment, it appears, is made solely on the basis that The Twin and VP Planner look like 1-2-3. It's the "look and feel" argument, and one I think is particularly specious and intellectually bankrupt.

1-2-3 looks like SuperCalc, with only insignificant differences. And SuperCalc looks like VisiCalc. VisiCalc looks like the ledger paper I used to use in the days when Wylbur was a

hot-shot editor and the closest thing I had to a personal computer was a communicating mag card selectric typewriter talking to an IBM 360.

So what? Should the ledger paper manufacturers sue Lotus? From a computer user's perspective, these look and feel suits are dangerous and mischievous in the extreme. I've said it before, and, alas, I suspect I'll be saying it again: a standard user interface is in **all** our (even Lotus') interests.

I can get into an old Volkswagen beetle, or a new Ferrari Testarossa (pant, pant), and drive either beast. Why? Because, despite some trivial differences, the "user interface" is the same. The look and feel are enough alike so that I can drive either.

It's not that either machine goes out of its way to make life easy for me. It might be easier to drive the VW if the accelerator were on the rim of the steering wheel and the clutch on the left door panel. But that isn't the way the worldwide auto industry does it. They have standards. The right pedal is the gas, the left is the clutch and the brake is in the middle. That standard even holds in England, where the driver sits on the right.

Nobody really questions this arrangement, or suggests that because Ford (or whoever) first figured out this layout, that all subsequent similar configurations were patent or copyright violations. In fact, the auto industry would be devastated by the Tower of Babel that exists in microcomputer software. Fewer cars would be sold if each car had a different user interface.

In cars, the essence of user friendly is user familiar. And that's what grabs me about the recent Lotus suit, not to mention other recent suits brought in computerland (oops, is that a trademark?). As near as I can tell from the information distributed so far, Lotus does not allege that either Paperback or Mosaic stole the code to 1-2-3. Nor does Lotus publicly dispute that both VP Planner and Mosaic do some things better than 1-2-3. For example, VP Planner can access database files directly, while 1-2-3 can't, according to Paperback Software's Adam Osborne. Mosaic has much better graphics routines, as I can testify.

The beef that Lotus has taken to the courts is that the other products are similar enough to 1-2-3 that the same consumer can effectively use all three. So to prevent others from honesty competing against it, Lotus is prepared to punish the consumer. I hope the consumer will strike back, by punishing Lotus in the marketplace.

Lotus's litigiousness appears to me to be part of a dual strategy for the Massachusetts software house, which has faced an erosion of the market for its major product, 1-2-3. The second part of the strategy is to bring out a whole bunch of slick new products — HAL, Metro and Manuscript among them — that work smoothly with 1-2-3.

It's the second course of action that will truly lead Lotus toward continuing growth and prosperity. The first course of action — taking its competitors to court — will ultimately prove to be a dead end. I hope Lotus will see the light and drop its nuisance suits. Should it fail to do so, I hope Mosaic and Paperback hang tough and refuse to make some sort of back-room compromise that finesses the look and feel issue and doesn't settle it definitively.

Ken Maize is Newsbytes East bureau chief.

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A little working piece of the future

The BBC Domesday Project has been hailed as the greatest thing since its predecessor 900 years ago. Pip Forer examines its usefulness in the New Zealand context, and asks about the potential of a similar local project.

As I write this I am sitting amidst lush Coromandel bush in the homestead of Waiwurrie Farm, four miles up the shingle 309 Road. After a day's field work researching I am sitting at a table using an optical disk system to stroll around my childhood haunts on the Isle of Wight, in England. As chance would have it I can even look at a picture of the street where I was brought up. At my fingertips lie over 20,000 maps, tens of thousands of photographs and hundreds of megabytes of computer-readable information. Domesday systems have arrived in New Zealand.

A preview of what Domesday entails was given in a report from the UK published in *Bits & Bytes* last September. To recap very briefly, the Domesday Project creates a desk-top information system featuring computer and video technology and enormous amounts of statistical information, maps and images on two twelve-inch video disks. The computer handles access to data on the disks, often using the ability to superimpose its output onto a background of video imagery. The player handles the synchronisation of the two screen images and recalls the video and data from the disks.

One disk contains images on a variety of topics, plus statistical and factual information that can be recalled, read, graphed or mapped. This information was largely gleaned from various official data sources that agreed to provide material for the project. Information can be called up through a hierarchical menu, by typing in key words or by strolling through a 'gallery', literally an art gallery of UK life where every picture, if pointed to with the mouse, reveals a whole array of imagery. You can even 'walk' out of different doors of the gallery into simulated walks of Brecon town, a typical farm, a semi-detached house (that just might have been Jerry and Margot's before they moved in next to Tom and Barbara), or a walk on a Dorset beach.

On the other disk lies a complete map coverage of the UK at different mapping scales, integrated with imagery and data collected from a nationwide popular survey that involved over a million people (the majority being school children). The maps provide a reference frame from which photos and text can be recalled. Point at an area, zero in on a town and then select Photos from the menu to see pictures of the area.

The prototype systems available for inspection in April 1986 looked impressive. Many sceptics, however, claimed that the final product would never match the mock-up prototypes. Questions also remained about just how much of the data and imagery on the disk would actually be further accessible for people to use in their own analyses and programs.

The full systems were launched in the UK on 25 November 1986 and one arrived in New Zealand 10 days later. Happily the systems live up to their promises. They are exciting for what they offer, they are exciting for what can be developed from them, and they are exciting because they are a major step into a new publishing future.

Significant and complex

One has to start by saying that this is a very significant product to review. It is also a very complex one. The system that I have to review is the Domesday system first released by the BBC. In one regard this is a single product, but the hardware forms the BBC's Advanced Interactive Video system (AIV), which has applications in education and training far beyond the Domesday project itself.

In turn the AIV is made up of three components, which have their own strengths and weaknesses. The most important are a modified BBC Master series micro and a Philips laservision video disk player badged as the BBC LV-ROM. The player is the major technical innovation. It is an optical disk reader that combines the digital storage capacity of CD-ROM systems with the still-frame and animation capabilities of conventional video-disk. Philips developed this at great cost (only Sony has so far advertised

any similar product). The micro is from Acorn, who has crafted video control, a videodisk filing system (VFS) and a fashionable SCSI interface onto a BBC Master 128. Acorn has also added a user interface driven by a very positive trackerball, giving a similar effect to a mouse but requiring less desk space.

The Domesday Project's triumph, and the reason such a dramatic development happened first in the UK and not Japan or USA, is that it manages to put new information-storage hardware alongside a data source of suitable size. The two disks can contain over 200,000 images, plus over a gigabyte of digital data and programs. The problem with creating a useful product with such technology is as much how to assemble enough usable data at low cost as it is to handle the great volumes of data for the user. The involvement of the BBC and the 900th anniversary of the original Domesday provided enough momentum to allow a critical mass of general interest data to be assembled in this case. Creating further routine data sets of such size remains a major challenge.

Given the achievement of assembling the data, what surprises, for good or bad, does the actual system offer? The browsing interface, the way of moving around among so much data, is good in places, less so in others. Its basics can certainly be learnt very quickly and by experimentation,



since almost everything is achieved by menus and pointing. The map interface works well on the community disk. Locating places and working with the maps, text and photos is very intuitively done through simple on-screen menus.

The gallery approach on the national disk is less satisfactory, and can lose the first-time user. Partly this is because the floor plan of the gallery is rather avant garde (sort of linked hexagons) which would make navigation difficult even in the real world.

Arch News

Value is what the 1985 SOA National Seminar in Atlanta is about — and it's what you'll find in greater quantity and greater quality than ever before at the convention's 1985 SOA Exhibit of New Technology and Products.

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Er. W. W. W.

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20005

June 10: Deadline, call for 500
word abstracts, "Designing and
Managing Commercial Buildings:
An Intensive Workshop."

June 25: American International
Solar Conference and Exhibition
Thomas Convention Center,
Dallas, TX.

Call 202/555-1919
for details and
register early for the
1985 SOA National
Seminar, March 9-12
in Atlanta.



The Art of Corners
A retrospective...
at 19th Century
corners at the
Seattle Architectural
Gallery through
January 12.

"Architectural
best of a new
world. It needs
no explanation
or other discipline
or rule to make
it so useful
or useful."

— Philip Johnson



Master Architect

The man featured in this month's issue may well be one of Vancouver's best kept secrets. You may not know his face, but if you live in Vancouver you know his work — that is, if you've ever visited Simon Fraser University, The Museum of Anthropology, Robson Square/The Law Courts, or any of a number of other governmental, commercial and residential buildings. The man is Arthur Erickson, Architect, and he has called Vancouver home for most of his life.

While the layperson may not recognize his face or name, during a remarkable and prolific career spanning more than 30 years, Arthur Erickson has received dozens of honorary degrees and virtually every major professional and personal award. To list them all would take pages, but they include the Man of the Year award, 1972; the Tau Sigma Gold



Architectural
best of a new
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no explanation
or other discipline
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it so useful
or useful."

— Philip Johnson

McNally & Young

2780 Bracken Road, Prince, Wellington

19 September 1986

Mr. Gregory T. Schneider
Brand Manager
Corn Dip Chips
32 Battery Street
Penrose
AUCKLAND

Dear Greg,

Enclosed for your review is the 1986 4th quarter competitive advertising survey for major snack and specialty food brands.

Competitive spending during quarter 3 was marked by one *exceptional occurrence* (or lack of, as the case may be): the virtual absence of spending by Corn Dip Chips' major competitor, Snacker Crackers.

As we have discussed, the Agency believes that this hiatus was due to a planned 4th quarter re-launch by Snacker Crackers. We believe the brand is now in the middle of a complete *product reformulation* and subsequent re-introduction, and that they are consolidating their ad spending to fund a major January 1987 campaign. We will provide a recommended plan to counter this anticipated launch within the week.

Once you have had a chance to review the attached summary, please call to discuss next steps. I look forward to your comments.

Best regards,

Kristi Stanton
Account Supervisor

KMS

Some glowing reports

The Twain Marsh Project Investment Proposal

Introducing...

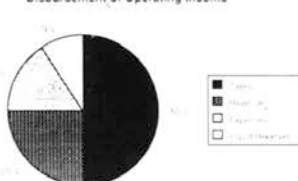
Prime Development is pleased to announce the largest project ever undertaken by the company — the Twain Marsh Project. Over 5 years of company-funded research has gone into the engineering and design of this modern business park. Now, with full federal, state and local government approval, Prime Development Co. is ready to solicit investors for what could become the best land deal of the century.

Unparalleled profitability

Naturally, we wouldn't be undertaking a project of this scope if we didn't expect it to return an unparalleled profit to our investors. The company anticipates that after completion, the project will break even in 2 years, and that investors can expect an annualized yield of over 15% after taxes.

How can Prime Development offer such an attractive return on your equity? Automated cost control, for one. The following chart outlines the disbursement of operating income (note the unusually large cash reserve). It's just one way Prime Development manages your investment better than any other development company in the nation.

Disbursement of Operating Income



100% of 1984 revenues and operating assets attributable to the project have been assigned to Prime Development Co. for the next five years.



Financial Report

The Watermill Restaurants, Inc.

1984 Year in Review

	March 31	June 30	Sept. 30	Dec. 31
TOTAL RESTAURANT SALES	\$115,800	\$126,700	\$130,723	\$151,500
COSTS AND EXPENSES				
Cost of Sales	67,460	68,035	71,994	76,143
Operating G.S.A. (see Note 1)	32,722	36,400	40,542	42,997
Interest (long-term)	251	224	185	30
	\$4,433	\$11,661	\$12,721	\$18,125
Income before Federal Taxes	\$1,167	\$24,129	\$27,022	\$34,103
Provision for Federal Income Taxes	\$0.374	\$2,023	\$3,902	\$6,976
NET INCOME	\$10,793	\$10,126	\$13,120	\$17,127
NET INCOME PER SHARE	\$1.08	\$1.20	\$1.31	\$1.76
CASH DIVIDENDS	\$0.20	\$0.20	\$0.20	\$0.20

(All figures in thousands, except per share amounts.)



Note 1: Six restaurants owned by others, including certain directors and officers of the Company, are managed by the Company under contracts entered into in fiscal year 1972. As consideration for managing

the restaurants, the Company receives 35% of the restaurants' net operating income as defined in the agreements. The Company compensates the restaurant managers out of its management fees.

This document was printed on 100% recycled paper by Apple LaserPrint and MacDraw.

Anyone who writes reports, compiles newsletters, or sends out standard letters is in the publishing business.

And you don't need to be Rupert Murdoch to discover that trying to publish even a moderate flow of paper is not without its complications.

Now Apple Macintosh, the computer that uncomplicated business computing is uncomplicating business publishing. Apple call it Desktop Publishing. And it's receiving rave reviews.

To use it, all you need is half an hour to learn, and enough imagination to make use of the whole host of options Apple Macintosh gives you to create your own professional document.

You are in control with Desktop Publishing on Apple Macintosh. Words and figures can be set in a wide variety of typefaces and sizes. Use Macintosh's unique point and click "mouse" technology to assemble charts, even draw diagrams.

Move your words about to fit around your charts and diagrams. If you don't like the words, or you've changed your mind on the typeface, alter them at the click of a button using the "mouse".

And because you've checked all your work on Apple Macintosh before you print, you print only as many copies as you need. So when you've done creating, and you're satisfied with the result, print it.

The Apple LaserWriter printer will churn out high quality copies faster than you can say 'Xerox' — and a lot quieter.

If a particular job demands typesetting, simply send your finished job on the disk to a Desktop Publishing Service and they will run it out on their Linotronic typesetting equipment.

Only Apple could have conceived such a brilliantly simple, efficient, economical business publishing system.

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ts on Macintosh.



Macintosh
Desktop Publishing

CA 5578

This is helped by being able to call up a floor plan with an updated 'you are here' arrow, but what is missing here is the facility to point to a place and say 'take me there'.

This omission is not typical of the help facilities, though. These include the usual context dependent text screens which provide information on how to do a particular operation or what a particular piece of information might mean. In addition there is a Demo option. When selected, this brings up a video demonstration of what you are trying to achieve, complete with sound and movement. The examples of these I have sampled were quite excellent.

Easily achieved

A big question mark for many potential users was how much the laser disk would be a closed system, and how much it would allow access to its contents. The final product should satisfy many of the doubters. On the BBC Master version the integration of laser disk and normal micro functions is very easily achieved. This is potentially a very useful feature of the system and deserves some amplification.

The videodisk player has two functions. One is to control video imagery, which requires control functions very similar to a video tape recorder (with the addition of fast, random access finds by frame number and variable mixing of the two video sources, micro and video). The other is to download digital data from one of the audio tracks, for which a special Disk Operating System is needed. The player itself contains a Z-80 chip to manage most of this, and allow some local programming of control. For any command the external micro sends a particular command to the player, which actions it and if necessary returns information to the micro, using RS232 or SCSI ports. Of course all this makes it theoretically possible to interface the player with other micros.

Acorn's micros have always had a very strong capability to work simultaneously with different filing systems. It is therefore not surprising that the operation of the videodisk link is particularly easy from the Master 128, which has been augmented by additional ROM features.

One provides direct access to control the video display from any language that accesses the normal command line interpreter (commands starting with *). The other is a Video Filing System (VFS), which can be switched in and out of use just like DFS, ADFS or the network filing system and provides identical syntax. Thus the files on the laser disk can be

catalogued with *CAT, a byte can be read from a BASIC program with BGET#, or a program CHAINED just as if from floppy disk.

This design does not mean anyone can rip straight into all the Domesday data, since much of it is compacted and some is in protected files. Without additional information this material will remain unusable.

However, a great deal of the textual material (and potentially much else) can be assessed. This is exciting news for program developers, and a nice surprise for other users is that data and text can be downloaded from the laser disk onto floppy in a standard file format while using Domesday. The user can then load this material up into a word processor, analytical program or spreadsheet (if it has a simple parsing facility). Video images cannot be so easily captured (although a video printer could do it for you).

All in all the player, and its integration with the BBC Master, are very impressive. It will be interesting to see how this integration carries through to machines from other manufacturers as these emerge. With the Acorn version the AIV system itself provides a very elegant and robust interactive video system for use with normal video disks.

and or two as the prototype systems suggested? Would you be able to move almost instantaneously from map to map? Many doubted it, but the actual system behaviour gets pretty close.

The recall times for various operations give some idea of the system capabilities. Give a feature name from the quarter of a million available and, if it is a unique name, the correct map with the feature highlighted appears within eight seconds. If there are several places with the same name you get a list to choose from. What if you require to see any photos or texts on a particular topic? I tried 'Castles and Forts', and it took 18 seconds to sort out the options and 14 to display the first 100 of 700 items. You need help? It takes about six or eight seconds to come. Of course the actual delay will depend on the relative position of the images accessed and the data.

On the national disk queries through the Find option work quite rapidly. A query on Boars produced 15 matches in five seconds and displayed the data and text files available to me on the topic. To draw a graph of lamb consumption in the UK over the last five years took five seconds once the topic was decided. Drawing a map of hotels and guest houses in each one-kilometre square



Access times

One question constantly put was what the access times would be for particular searches. Could you check through a gazetteer of 250,000 place names and find a name within a sec-

on the Isle of Wight (an area about the same as Christchurch) took 21 seconds.

None of this is absolutely immediate, but given the volume of data it is fast enough to impress. It will be interesting to see how much of



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Macintosh Desktop Publishing

the delay is attributable to the player and how much to the processing and micro work. (As a guide to this the worst case to display any video frame under your own program's computer control is 2.5 seconds. To display the next video image in sequence takes 0.6 seconds.)

The only time the system is noticeably slow is when doing fine detail maps of large areas, but since these can involve perhaps ten thousand kilometre squares from a total of almost 280,000 even this seems acceptable. In general the mapping interface works well. The general data retrieval interface for the national data disk is also strong: you simply type in any topic you are interested in. The system does a fast search and returns appropriate data sets. On the way it does a few sensible things, like applying a synonym list to your original request. The only oddity so far has been asking for white water rafting and getting back data on whiteware (i.e. washing machine ownership). By contrast the menu-driven approach to the same task is very rigid.

All in all the Domesday system is probably the most comprehensive single publication on contemporary Britain. It is a great achievement, with a lot of latent educational value. The software and data offer enormous advances in microcomputer databases, while the disks alone offer a significant resource. Apart from Domesday the AIV delivery system has a lot of powerful capabilities, and its features probably deserve a review in their own right.

Of course there are limitations. Video images can reveal only so much detail. The retrieval mechanisms on the system sometimes give odd results. You can occasionally get lost, especially in the gallery. Requests can be very sensitive to misspelling. Some data is old or fragmentary. Swapping disk sides, while rarely needed, takes time. Most of these, though, are minor quibbles that serve to stimulate excitement for what might be, rather than devalue what has been achieved.

The main significant shortcoming is common to any information source, however big: a general-purpose database always fails to answer questions for certain specialist areas, its effective use if always prescribed. In Domesday the particular choice of popular data collection, which has had limited editorial control, acts to accentuate this in some areas.

But is Domesday any use down under?

In New Zealand the immediate impact of Domesday systems may be small. Outside the libraries, universities and a few other institutions

reference material on Britain may not hold much attraction. However, their real value must lie in their technology's potential for development, *per se*, and with New Zealand material.

The educational possibilities of the medium are considerable, but hardly scratched. Attached to Waikato University but working on a system at Piu Piu (deep in the King Country on another gravel road) Bob Barbour is already using Domesday material as a base to see how this technology and concepts from artificial intelligence can be used to provide an enhanced learning environment. Work has been stated at the University of Canterbury's geography department into linking imagery and the map interface more effectively. The potential in many fields, from mapping to tourist promotion, is quite outstanding.

This potential is partly demonstrated by the existing Domesday system. However, the possible extensions in the fields of better mapping, better interfaces, better data retrieval and speed are just as exciting. The Master 128, with a 4 MHz 8-bit co-processor, achieves dramatic results, sometimes at the cost of flexibility. What will emerge when a 32-bit chip with megabytes of memory, such as on a Cambridge Workstation, is brought to bear? The possibilities are dramatic.

Just as important for New Zealand is the potential of such a collection of accessible data for this country. For the UK it is at the same time both a national resource and a national treasure. Its creation fostered many skills in advanced information technology and an exciting national project that brought many groups together into a common purpose.

This potential has excited interest in several places. Holland and Australia (who seem to favour using a double o in spelling Domesday) are undertaking feasibility studies of a similar national data project.

Moves are also afoot in New Zealand. The Geographical, Computer and Computer Education Societies are all considering facilitating a feasibility study in New Zealand. The Geographical Society already has a

working group undertaking a detailed evaluation of the Domesday system in a New Zealand context and will hold a seminar on the topic later in the year. Guest speakers at the Computer Education Society Conference in Christchurch in August will be specialists in the area. Why couldn't we do it here?

A New Zealand use of the same technology would be a great project for some suitable anniversary, tailored to local needs and local resources. A national project that involved schools and community groups throughout New Zealand and gave an impetus to the widest possible range of information technologies would have a lot to commend it in this regard. Individuals and schools would become involved in collecting data, collating it nationally (perhaps by modem for many) and its final publication, working constantly with the new mediums of information technology.

The national creation of a national archive in the Domesday pattern would be a grand educational experience in itself. If in addition it created resources useful to map users, farmers, librarians, historians, the tourist industry and education (which with careful design it certainly could) then all to the good.

The Domesday systems are the first of a breed. The first edition is expensive and has data of limited use to most Kiwis. But get to see one if you can, and don't just dismiss it because the data is British.

Imagine an enhanced version where you can take a simulated walk up the Fox Glacier or to the outhouse at Pioneer Hut from the safety of your Wellington sitting room. Or again your children can rapidly retrieve information and visuals on the history and status of kauri forests. Or you can plan your holiday route with access to all manner of data on attractions and views.

Think about the limitations of trying to do the same things through available books and papers. Domesday is a small working piece of the future, a future we should seek to be part of.

System components

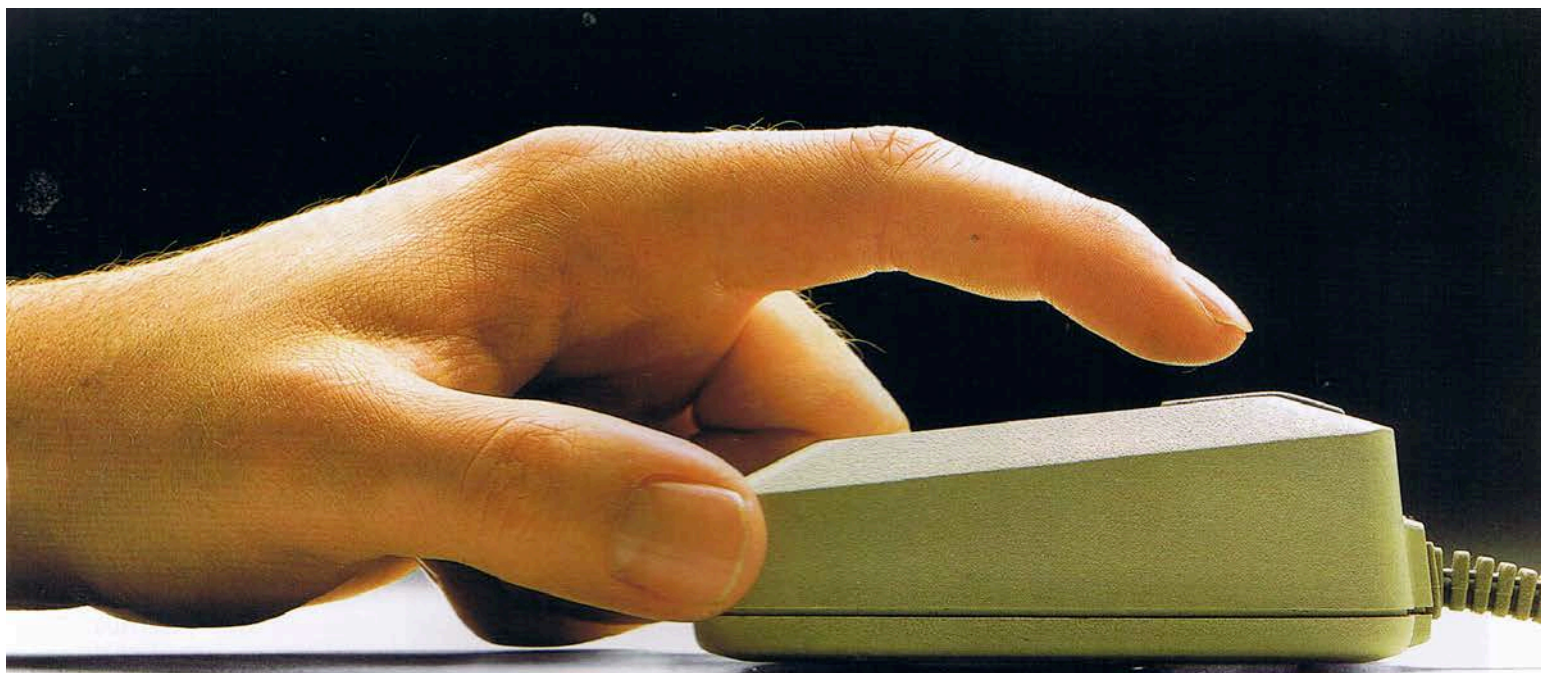
Micro: BBC Master 128 with VFS, SCSI port, trackerball and turbo coprocessor. (An IBM-PC compatible version is planned for release shortly). 64k RAM, 4 and 16 colour graphics.

Monitor: RGB SCART monitor (Eurocard connection).

Player: BBC LV-ROM (Philips VP415) hybrid optical disk player with SCSI and RS-232 interfaces, internal genlocking and video level mixing.

Disks: Two 12" optical disks. Capacity 54000 images and 365 Megabytes of digital data per side.

Cost: \$14,600 excl. GST



Simple pointers to reporting on Macintosh.

The fact that Apple Macintosh Desktop Publishing, a system so mind boggling in its sophistication, is so incredibly simple to use is testimony to the genius of Apple.

As far as Apple are concerned a computer, no matter how sophisticated, is only as useful as peoples ability to work with it quickly and efficiently. If you've ever tried to decipher a computer manual you'll appreciate their logic.

With Apple Macintosh Desktop Publishing there are no complicated computer languages to learn. The Macintosh screen is laid out like your desktop. To access any information on the desktop you simply point to it using an ingenious little device Apple call the "mouse". Click the button on the top of the "mouse" and you're working with Macintosh.

Type your information on the screen then, if you're not satisfied with the result move the words around, experiment with typefaces, even insert diagrams and graphics, all by pointing and clicking with the "mouse".

In no time at all you'll be producing your own glowing reports well worth the paper they're printed on. Thanks to the remarkable, high quality Apple LaserWriter printer.

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CLAUDE 5070

Ready, Set, Grow!

by Pip Forer

People seldom review third releases of software. By that time the product has usually been long settled and either succeeded or been by passed by time. However, this is an exception. Ready, Set, Go! deserves exposure, even if it is just for the Ready, Set, Go! version two users already out there.

Ready, Set, Go! is a desktop publication (DTP) package for the Macintosh (the only low-cost environment currently appropriate for DTP in my view), and comes from Manhattan Graphics. Manhattan Graphics is that rare thing, an organisation that is not hooked on its own solutions. It was (and still is) a traditional publishing company, but saw the limitations of traditional printing technology and produced a DTP program early on in the Mac story.

In its first incarnation the program sold well, mainly because it was cheaper than its rivals, notably PageMaker from Aldus. Although it was an inferior program to PageMaker it nonetheless claimed to have the larger user base. However,

as PageMaker improved and drew more publicity through its close association with Apple's marketing strategy, PageMaker tended to become synonymous with DTP on the Mac.

I sat with Ready, Set, Go!, feeling increasingly insecure. I upgraded to version 2 after some thought. When the option to upgrade to version 3 came I almost gave it away and sent an order to Aldus. In part I am writing this review as an expression of relief that I did not. Version 3 was not the gentle upgrade along similar lines that I expected... it was a radical rewrite. That meant a certain amount of unexpected relearning on my part, but it has proved effort well placed.

Ready, Set, Go! version 3 is very smooth software. On a MacPlus it is fast, flexible and very effective. It provides enhanced typesetting and layout features and at the same time has brought in most of the features from a decent word processor. Many people have noted the tendency for word processors and page layout programs to integrate slowly into a new, more

powerful whole. Ready, Set, Go! is the furthest I have yet seen along that path.

RSG is designed from the base up to make use of whatever your Macintosh has in the way of memory. It needs a Mac Plus with 512kb as a minimum, but will utilise the megabyte of a Mac Plus or the 2 or 4Mb of current custom expansions and expected future models. You can simultaneously process as many documents as the memory will support, each of an indefinite length. The standard working screen for the user can be seen in the figure.

In this case there is a 13-page document (denoted by the leaves at the bottom of the screen; the dark one is page one, the current page). The active page (actually this part of the text) has been reduced to fit within the working window so as to get an overall view of what the layout looks like. RSG supports five levels of scaling from 'Size to Fit' up to 'Double Size', at each of which the user can directly work with all components of the page in front.



The Danes have always travelled in style.



Carlsberg Beer
The Great Dane.

Any RSG page can contain any of three kinds of 'objects': text blocks; graphics blocks; and embellishments. The embellishments allow enhancement of layouts and presentation. At present those available are straight lines, circles, boxes and 'rounded boxes'. You select your option by clicking its icon and then you draw the feature on your page.

As in MacDraw any shape can be drawn filled with a particular pattern or using a particular pattern as the pen for its outline. Any shape can also be modified at a later date by selecting it with the arrow cursor and then either dragging it to a new size or shape, or by entering dimensions from the keyboard for added precision. The line type options in the lower left of the screen's icon panel can be used for any of the embellishments used in setting up pages and are selected by pointing and clicking with the mouse. Embellishments allow the highlighting of special portions of text, the indication of breaks in the text and generally enhanced layout.

However, the real content of any publication is its graphics and text. RSG handles both of these admirably. Graphics blocks are created with the

crossed box icon and can contain standard Mac images. Any graphics within the block can be either cropped (moved around with some parts of the image being cropped off by the block) or scaled. Either operation is handled very smoothly and very quickly.

Text blocks are likewise created using the "T" icon. The handling of text once in the box is very impressive. RSG includes a real-time hyphenation option that works well (and has the option of suppressing undesired hyphenations). It includes the standard search and replace functions of any word processor, and of course it supports the range of Macintosh fonts and styles. It has a spelling checker (which is admittedly rather slow and could be much improved), and supports key-stroke glossaries for frequently used phrases.

Above all else it allows superb control of detailed layout in the text. Tabs can be set with a tab width specified for each column, so that each column will wrap round text to its own next line if the text is too long to fit within the specified field. Line spacing is controlled not in crude single or double spacing but by printer's points, so it is possible to finely tune appear-

It has kept its price advantage over Page-maker while enhancing many of its rival's features.

ances. Furthermore, you can adjust this for individual lines. In addition, words (or asterisks) can be set above or below the normal line of type in point increments and individual letters can be spaced out or kerned (closed up). Almost every operation can be applied throughout the whole document or just to a single line or word. Parameters for spacing can also be set for paragraphs.

Finally, any text block can be designated as a Postscript block. This means that its contents will not be printed out as they stand but will be interpreted as a set of postscript instructions. Postscript is the language used by many laser printers for controlling their output and it allows effects such as large headlines set at an angle diagonally across a page. To obtain effects the micro cannot yet manage, the Postscript block is a useful addition.

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Almost all of the features are very intuitive and easy to use. The power of many of them is enhanced by two things: the ability to import material; and the way in which blocks interact. RSG makes importing (and exporting) text extremely simple. While you can use the Macintosh Scrapbook to move material if you wish you can also bring in standard ASCII text files, files from certain word processors and pictures direct from MacPaint. Since these formats are also provided as output by front line spreadsheet and graph programs such as Excel and Cricket Graph (as well as many image scanners), it becomes a very simple matter to assemble material for desktop publication.

How the blocks interact is also important. For a start text blocks can be linked in chains, into which related text is placed. RSG flows the text between blocks in a chain in real time. As you type more text in or resize a block, so all the rest of the text is adjusted. This happens very quickly and to great effect. The lightning icon controls this linking and blocks in the layout can be very simply linked and delinked by pointing with this.

Blocks also can be made to 'flow around' each other. Any picture

block, for instance, is first created so that text blocks will flow their text around its outside. However text blocks can also be made to wrap around each other, for instance to add emphasis to an inserted quotation. While wrap-around tends to slow down the drawing of page layouts after each adjustment, it is a very powerful feature.

All in all the system works smoothly and with only one noticeable bug (if your disk has not enough room to print a file when asked, the program reacts in a rather ungainly way). Professional layout is made very simple by a variety of positioning tools, including adjustable grids to which new blocks can be 'smapped', on to interactive rulers along the side of document screens (naturally in inches, centimetres or points according to your wishes).

Common features, such as page numbering or 'runners' at the top of pages, are handled by two 'master' sheets, the contents of which can be called up on every page printed. One master is for left pages, the other for right ones (verso and recto to use part of the archaic terminology of publishing that is suddenly enjoying a widening popularity).

Ready, Set, Go! 3 is well worth a look at. It has kept its price advantage over Pagemaker while enhancing many of its rival's features. Undoubtedly new versions of any product leap-frog each other in the nature of things, and its rivals will strike back. However, Ready, Set, Go! does break new ground in being the first so-called DTP program that I would consider for many daily word processing chores.

It is another step towards the all-purpose document-preparation environment, and it is a new step in the cost-performance curve.

However, the real content of any publication is its graphics and text.

IBM compatible

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Internal 10MB Winchester

Optional 1200/2400 internal modem (synch/asynch)

RS-232-C port for serial communications or printer

Optional serial/parallel adapter

(2) RJ12 jacks for voice and data

Full size keyboard with IBM/Wang keys

DOS 3.2 seamless Wang/IBM operating environment

8086 compatible CMOS microprocessor (8MHz)

Full size 80 x 25 super-twist LCD screen

512KB RAM expandable to 1MB

CGA graphics compatible

Built-in Epson MX80 compatible printer

Optional industry standard colour monitor support

Rechargeable battery runs up to 4 hours

SCSI port connects up to 6 peripherals

3.5" and 5.25" external disk drives

Numeric keypad option

Communication options: Wang Systems Networking, TTY, 2110/VT-100, 3270 SNA/BSC

All Except This One

weighs less than fifteen pounds and runs on batteries. With so much going for it, we have reason to think the Wang LapTop computer will be carried away more than all the other portables put together.

WANG

Masterton: Wairarapa Computer Services, 428 Queen St., (059) 82899. **Wellington:** Computers for People, 45 Taranaki St., (04) 859675. Office Resource Centre, 6th. Floor, 64 Dixon St., (04) 851512. Wellington Business Centre, 6th. Floor, United Bldgs., 107 Customhouse Quay, (04) 731900. **Christchurch:** Argos Data Systems, 210 Oxford Tce., (03) 790455. **Dunedin:** Shand Computer Systems, 134 Lower Stuart St., (024) 740939.

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AMSTRAD 3004

A spreadsheet usurper?

Is King Lotus about to be toppled from the spreadsheet pedestal? Larry Elliott reviews one package which would like to think itself at least on a par with 1-2-3

For some time now Lotus 1-2-3 has been accepted, almost universally, as the spreadsheet package for the IBM PC and compatibles. Despite several attempts to dethrone the king 1-2-3 has managed to survive, in spite of considerable cost advantages to the prospective usurpers.

Yet another hopeful has raised its head... enter The Twin, part of the Integrated 7 collection from Mosaic Software Inc. Integrated 7 is yet another multi-component package incorporating spreadsheet, database, word processor, business graphics, datamail, communications and terminal emulator. Sounds all too familiar? However, this package is available in parts!

The Twin is the spreadsheet and business graphics components, all contained on just three diskettes. Upgrading is, according to the manual, simple. Just send off the form and the upgrade kit will follow. At least that is the situation for U.S. users; hopefully the local agents will arrange a similar deal.

And how does The Twin shape up?

For those familiar with Lotus 1-2-3, using The Twin is a breeze. Not only does the screen look almost identical, even to the default colour settings, for The Twin offers the chance for the user to individually set colours, but also the command structure. For regular operation the manual would not even be required to be opened. The Twin will read in Lotus 1-2-3 files without any problem, and offers an option to save in the 1-2-3 format.

It is slower than release 2.01 of Lotus. My checking on speed shows Lotus 1-2-3 version 2.01 loading a 44kb worksheet file in 6.5 seconds, whereas The Twin took 16 seconds. (Note these tests were undertaken on an IBM PC Portable fitted with a Turbo Board running at 8MHz and an 8087. The programs and files were retrieved from a hard disk rather than a diskette.)

It is possible, of course, that there is some translation during this additional time. Set to manual recalculate, Lotus took two seconds, The Twin three, fairly close by my book. During regular usage The Twin accesses the program quite regularly and this may slow its operation on a floppy diskette based machine. Lotus is of course loaded into RAM which speeds up its operation considerably.

The manual is well written and easy to follow. It is well organized into the various sections, again much like Lotus. An update file is included to provide the latest information and corrections.

Hardware options

Hardware installation is accessed direct from the menu rather than a separate install section. This is most likely because The Twin has limited hardware options. Five plotters are supported, including HP Models 7470 and 7475. Eight dot matrix printers, including Epson and IBM are supported, as well as the IBM Color Printer, IBM Proprinter and the HP Laserjet. Where hardware allows, printers can be used for hardcopy of graphics. None of the newer graphics cards such as the EGA format is supported, at least by version 1.4. As for 1-2-3, two monitors can be used concurrently, one for text and the other for graphics.

The 8087 co-processor is supported although I could find no reference to the support of the Intel Spec "above boards". RAM requirement to run The Twin is 320kb, with 512kb recommended.

If the spreadsheet section is comparable with 1-2-3, what about the graphics? Here I have to say that The Twin has it all over Lotus. Graph types available include: Line, X-Y, vertical bar chart, horizontal bar chart, 3D bar chart, pie chart, 3D pie and combination pie and bar. Quite a collection! Options include a vast variety of titling and labelling sizes and locations, 13 different fonts (imagine presenting your monthly sales figures using Old English Script) and eight line and shading selections.

Of particular interest to me was the option to be able to have logarithmic scaling. Given that I often use a spreadsheet/graphics program for scientific data, this is particularly useful. Graphs can also be saved in a slide format for retrieval by other sections of the Integrated 7 range. Although these features do place The Twin's graphics section above Lotus 1-2-3, I really wonder how often the average user would have found 1-2-3 graphics limiting.

If I have some hesitation with The Twin, it is in the spreadsheet. The menu appears across the bottom of

the screen together with a bar describing the function keys. During input this bar disappears, only to reappear after hitting Enter. I found this extremely distracting. Another quirk was that the requirement to recalculate a manual recalc spreadsheet is indicated by a ! rather than a CALC prompt.

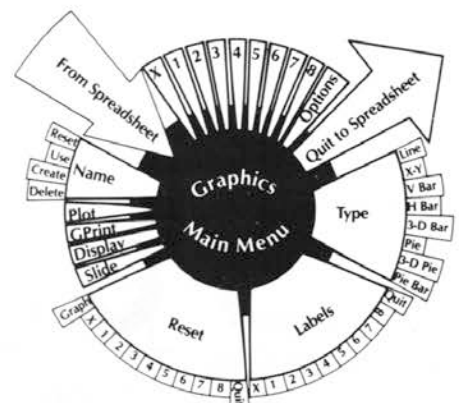
To summarize all of the similarities/differences between The Twin and Lotus 1-2-3, a text file is included on the Library Disk. Rather than describe all of them myself I have concluded this review with this information.

The Twin V1.4 vis-a-vis 1-2-3 V1A

Files

The Twin saves its files in a nearly identical format to 1-2-3. However, to avoid confusion, The Twin saves files in a format called .WKT. If you wish to save .WKS files, you may use the / File Translate 1-2-3 command. The Twin will read both 1-2-3 Version 1A .WKS and Release 2 .WK1 files directly, but it may save data beyond row 2048 which will not be read by 1-2-3 V1A. The Twin will not read or translate graphics information from Lotus.

The Twin can directly read .DIF and .VC Visicalc files without using a separate Translate program.



Graphs

The Twin has presentation quality graphs. The Twin allows you to save and display graphs as slides, has easy-to-use input form screens, and many other graphics features not found in 1-2-3. Instead of using marker symbols, The Twin uses dashed lines. However, scatter graphs are not supported.

Printing

With The Twin you do not have to specify a range every time you print. With

1-2-3 a range must be specified before printing. The Twin will default to a setting, which is the full worksheet.

Screen display

The Twin displays its menus at the bottom of the screen, not at the top. The Twin has an on-screen memory indicator that continually displays the amount of free memory available. In the "READY" mode, the meanings of the function keys are displayed for you. If you are using a colour monitor, you can change the colours of the spreadsheet and menus to suit your taste.

Pointing at range names

When pointing to cells in the "POINT" mode, you may press the [Name] key (F3) to select range names.

Hardware configuration and colour definition

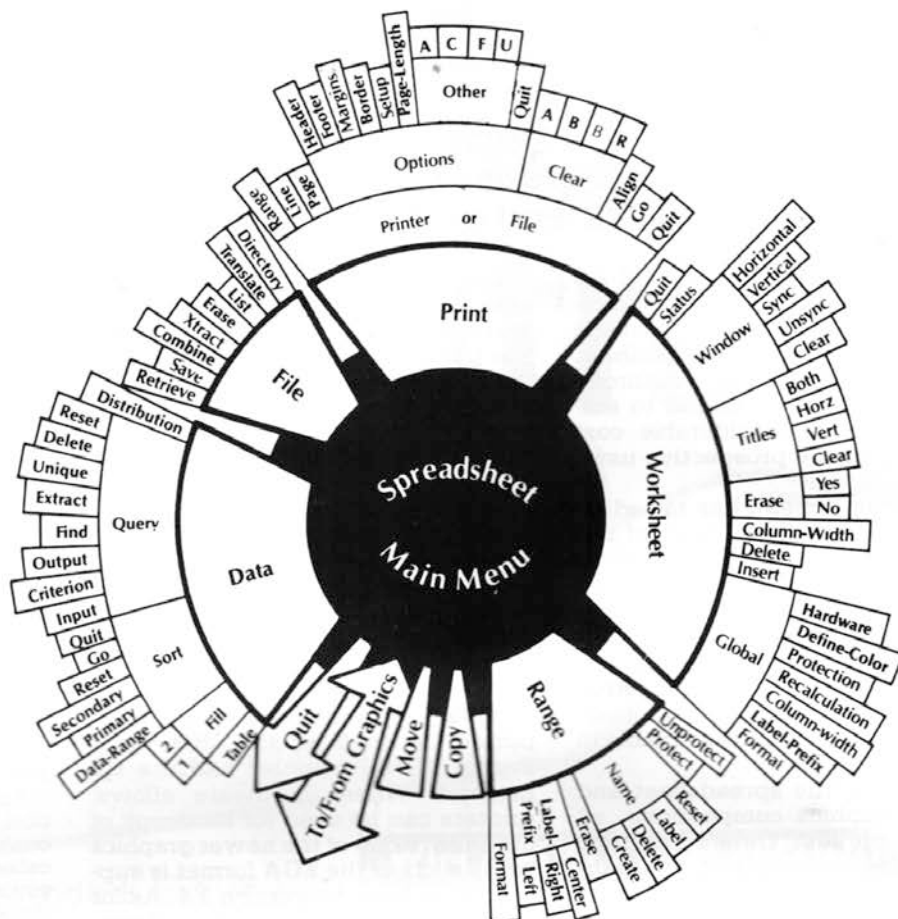
Configuring The Twin to conform to your hardware is done through easy-to-use input form screens. This is done by selecting "Hardware" from the Worksheet Global menu (/W G H).

The Twin also has easy-to-use input form screens that allow you to change the colours of various parts of the screen display. Changing colours is done by selecting "Define-Colours" from the Worksheet Global menu (/W G D).

Cursor movement

In the "EDIT" mode, The Twin allows you to toggle between Insert mode and Replace mode. 1-2-3 does not toggle; it always uses the Insert mode. To toggle between modes, press the [Ins] key. In the Replace mode, as the cursor moves from left to right; characters that are in the cursor's path will be written over, rather than get "pushed" along.

In the "MENU" mode, you can select menu items with the [Space] and [Backspace] keys as well as the cursor keys. [Space] will move the cursor one item to the right, and [Backspace] will move the cursor one item to the left.



When using macros, The Twin has additional special key symbols that are not in 1-2-3. These are (Backtab), (Cprtsc), (Cright), (Cleft), (Cpgup), (Cpgdn), (Chome), (Cend), (Centre), (Break), and (Ins). If you use these key symbols in your macros, be aware that they will not be recognized by 1-2-3.

Cell protection

In The Twin, protected cells are highlighted, but you can define different colours if you wish in colour configuration. When Global Protection is enabled, 1-2-3 will not warn you that you are typing into a protected cell until you press the [Enter] key. The Twin will not allow you to type in any entry while pointing at a protected cell; a beep will sound if you attempt to do this.

Functions

The Twin supports these additional functions:

@AND @OR @NOT @RATE @MIRR

Automatic worksheet

When The Twin is started, it will search the default data drive for a file called AUTOTWIN.WKT. If it finds this file, it will load it into memory and run any auto-execute macro that it finds. This will also happen if The Twin finds a file named AUTO123.WKS or .WK1.

Disk swapping

The Twin requires a diskette user to swap disks after starting. Once this is done, there is no need to leave the program to plot a graph, print a graph, define your hardware configuration, import DIF files, or translate your worksheet to DIF format. 1-2-3 requires you to leave the program and swap disks to perform these functions. Note that if you have a hard disk system, you never need to insert or swap any diskettes; there is no "key" disk required.

And is Lotus still the king? I think so... at least for my specific applications.

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V 22 — 1200 Full Duplex Answer/Originate

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- 8, 9, 10, 11 Bits — Switch Selectable

Model MD 412

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- Visual Status Indicators for Power, Off Hook, Autoanswer, Ring Indicator, Receive Data, Carrier Detect, Transmit Data, Request to Send

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It's as simple as importing your dBASE data and letting Framework II do the rest. The sample document at the right was created using a letter created in the Framework II word processor, and data from dBASE which was loaded into a spreadsheet and graphed. Then, all of these elements were printed on a single page to produce a final document that looks more like it came out of a professional print shop than of your desk.

Framework II has many special features designed to simplify your day-to-day work load.

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Word Processing—use the powerful Framework II word processor to create custom reports of your data, produce letters for mass mailings, and even create dBASE applications. The 80,000 word spelling checker/corrector makes it hard for you to make a mistake.

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Mailmerge—use a dBASE datafile and a Framework II letter to create form letters for mass mailings.

James Adams
Computers Inc.
1774 Independence Way
Boston, MA 02110

Dear Sir,

As you requested, I have included below the net sales figures for our division for the first three months of this year.

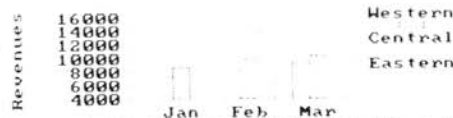
To arrive at these numbers I first extracted the sales figures for each of my representatives from our dBASE database, then I created a consolidation spreadsheet to arrive at the totals shown.

In addition, I have graphed the results to give you a better visual representation of the results.

1st Quarter 1987

	Jan	Feb	Mar	Total
Western	7,100	8,150	9,100	24,350
Central	8,600	9,840	10,400	28,840
Eastern	12,100	13,780	14,100	40,000

1st Quarter



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Sincerely,

James Adams
Computers Inc.

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The traveller's notebook

by John King

Just how useful is a laptop portable to somebody who wants both mobility and instant access to a microcomputer? And can a pilot play Flight Simulator on it?

There I was (all good flying stories start this way) – over Cook Strait at 500 feet in a Tiger Moth, nothing but blue whitecapped sea and other vintage aeroplanes and ferries all around me, the wind whistling through the rigging and the Gipsy Major roaring away steadily – playing Flight Simulator on a laptop computer. Rowan Atkinson and Amstrad, eat your heart out!

Actually, it didn't quite work out like that. Most of the ingredients were there: nine aeroplanes; LOTS of Cook Strait (real lifejacket territory and not my favourite piece of New Zealand in a single-engined aircraft); helmet and goggles and all the right gear; and a Bondwell Model 8, an eminently portable laptop at 4.5kg and 512kb. The problem was that the compass in the Tiger Moth's front cockpit got in the way of the computer's screen when it was raised. That, coupled with the fact that the supplied MS-DOS version 2.11 wasn't compatible with the version of Flight Simulator a friend brought along for the trip, meant I had to while away the nervous crossing by taking photographs instead.

Incompatibility also affected another intended demonstration of a laptop portable's usefulness. With the aid of a modem we were going to chat with an Auckland computer or two from the depths of the South Island, but the RS-232 outlet on the Bondwell didn't match that of the modem, which meant that the heavyweight optional mains-powered disk drive I was lugging around wasn't needed and so was a waste of effort.

But those were side issues to the original plan: to discover how useful a laptop would be to a peripatetic journalist when aviating in old aeroplanes with restricted weight and room. A secondary consideration was a test flight of the Bondwell 8, a mid-weight, low-end laptop portable.

The first answer: very. The second: quite good, with some reservations.

By now, every journalist or person who habitually types out more than one draft of a document has come to realise that the standard typewriter is no longer a convenient working tool; once the step up to a word processor has been made, anything less

is slow and painful. The same used to be said about typewriters and long-hand, so now the ideal thing might be a lightweight battery-powered portable computer with, of course, word processing capabilities, for taking notes at convenient times and having the facility for printing out back home or in the office. (The price of the Wang LapTop with its built-in printer is outside the scope of the average journalist.)

Convenient

At 4.5kg the Bondwell 8 (eight what?) is not too heavy, cutting off circulation only when used with legs fully outstretched, and its modest size makes it easy to slip into convenient spaces in the back of the baggage-carrying Auster. In the air it's easy to use, once the (passenger's!) control stick has been removed to give uninterrupted room around the knees. The Auster, however, being a snug fit for two people in the front and lacking elbow room for typing, gives rise to a strange hand posture with only forefingers pecking at the keys and a slow rate of word entry. The keys have a good feel, but in turbulence there's a tendency to hit stray letters on the way past, further slowing down work.

The keyboard has 76 keys, including 10 function and four cursor. Restricted space has led to an odd design of the cursor keypad, where each is shaped exactly opposite to its actual function. That may be fine for a touch typist, but for the visual operator the layout is daft, and surely some diamond-shaped arrangement is possible. A further criticism is the lack of indicator lights or screen indication for Caps or Num lock, which is not particularly clever.

According to Bondwell, a strong feature of this machine is its ability "to execute all popular IBM-compatible software, including Lotus 1-2-3, Symphony, Dbase II and III, Multi-mate, Wordstar, Flight Simulator, Framework, GEM, Sidekick, and PFS series software." I didn't try all of those, of course, and have reservations on some of them, depending on the MS-DOS version used. The built-in speaker coped with the IBM Song,

but was utterly lost amid the considerable din of an aircraft engine in flight. Fortunately the Model 8 doesn't seem to rely noticeably on aural cues when in use, which adds to its flexibility.

It's not a games machine. Moonbug, for instance, had some strange effects as the bottom part of the screen, where all the action was taking place, wasn't shown, and the bugs kept appearing and disappearing at random. The CPU response was quicker than that of the screen, too, resulting in shadowy flickering figures and diring devices.



The Bondwell 8 rates 4 out of 5 for usefulness. As a seat, the Auster tyre's comfort rating is minus 2.3.

Screen

Ah yes, the screen, all 23 x 7.6 cm, 80 columns x 25 rows of LCD. The main problem is that of legibility, as the viewing angle is narrow and the contrast can be adjusted between zero and not much. Modern technology has come up with some perfectly acceptable screens on other machines, and for the Bondwell's undoubted versatility in other fields to be utilised properly it will have to be much more legible. One of the problems is reflection from overhead light sources, either sunshine when



outdoors or artificial lighting inside at night.

The backlit screen takes care of low ambient lighting (but doesn't improve on the narrow viewing angle), and the machine can be used in pitch darkness. If the user's a touch typist, that is – the hunt-and-fumble variety like me needs something to

... once the step up to a word processor has been made, anything else is slow and painful.

Microcomputer summary

Name:	Bondwell 8
Processor:	CMOS 80C88, 4.77MHz
RAM:	512kb
Disk:	built-in 3.5in, 720kb formatted
Display:	backlit LCD, 640 x 200 pixels, 230 x 76mm area, 80 x 25 characters
Keyboard:	full size, 76 keys, 10 function, 4 cursor
Ports:	RS-232C serial, Centronics parallel, second drive, RGB video
Power supply:	built-in ni-cad battery 12v, 3ah, running time 8 hours, external AC/DC adapter
Options:	external 3.5 or 5.25 mains powered disk drive, RS-232C serial cable, parallel printer cable
Size and weight:	284 x 310 x 78mm (L x W x H), 4.5kg
Retail price:	Bondwell 8 \$2,992 external 5.25 in drive \$847 carrycase \$88 printer, RS-232C cables \$77 each.

light up the keyboard.

That can of course be done by shining the screen downwards, but only at the expense of not being able to read the screen. Besides that, the continual swivelling of the screen is probably not what the makers intended, and might lead to reliability problems. The ideal answer came during the major power cut of Waitangi Day, when I sat at ease with a candle at my side, amusing the children with the eerie green glow on my face from the backlighting, working happily away and wondering how many other computers around the place had lost data when the power went off.

That's another advantage of the laptop, but seldom actually needed until perhaps another period when the Electricity Corporation gets its sums wrong. The Bondwell's built-in ni-cad battery gives a running time of eight hours (probably less when the screen backlight is switched on), and it will recharge while operating. The power adapter is a small transformer which fits easily into the carrying case and makes plugging into any wall socket during an overnight stop a matter of routine.

It all adds up to a useful and powerful notebook, the 512kb RAM and built-in 3½-inch floppy drive being more than adequate for just about anything out in the field. I'm used to PFS Write and find it entirely suitable for my needs, but the Bondwell came equipped with Wordstar which was explained by the fact that "everybody uses it" but tended to be a case of overkill. Plenty of people out there swear by it, I know, but in the absence of a Wordstar manual it took me a long time to work out that Control-K is just the thing for saving a file. Logical, it's not.

A laptop computer is definitely harder to misplace than a pen and bunch of notes written on oily paper. (Ever spent a week with a Gipsy Major aero engine? It has all the oil retention characteristics of a British motorcycle.) It is also infinitely more satisfying to use. Every journalist should have a laptop, especially when it can be plugged straight into a printer back at base and all the material is there in front of you. The cost is an individual decision, but Bondwell's Model 8 at around \$3,000 is reasonable, even if that would buy enough typing paper to keep anybody going a lifetime.

If only it had a decent screen!

Footnote: Just announced by Bondwell but not yet seen in New Zealand is the 8ST, with what is described as a "greatly improved" screen to replace the existing LCD. Its price is expected to be about \$250 higher than the standard Model 8.

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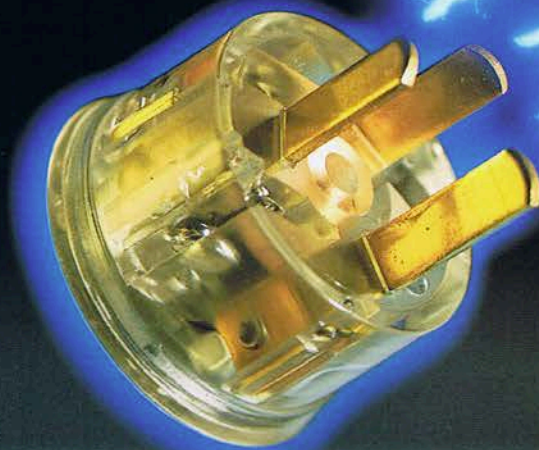
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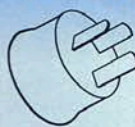
A damaging power surge only has to hit once and it could cause computer malfunction or corruption of your precious files.

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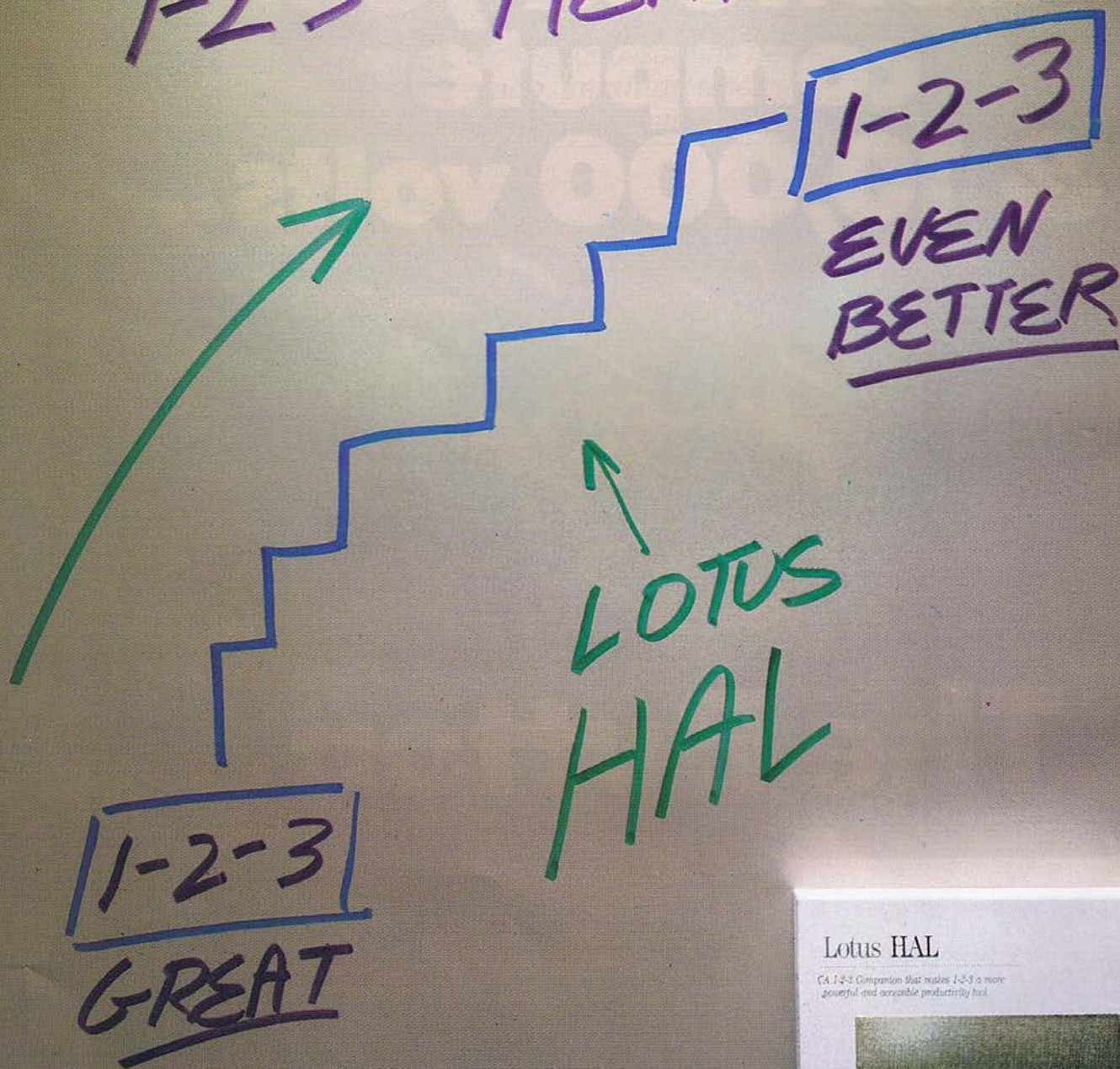
***Push for
The Button..***



Available from leading computer retailers.

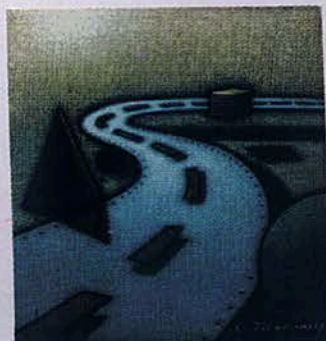
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Accounts for the first-time user

by Eric Vossen

MLS Junior is an accounting package written in a microcomputer version of COBOL called CIS-COBOL. ML Systems has been writing and installing systems in a wide variety of businesses since 1977, and MLS Junior is the cut-down version of the MLS Professional Accounting System. It is claimed to run on virtually any microcomputer operating system, but it is probably worth adding that the microcomputer operating system must be able to support COBOL (which rules out PICK), so it's probably best to check with ML Systems.

For IBM PCs and compatibles, a minimum of 128K is required, plus 64K for each additional user. MLS has controlled the multi-user file and record handling problem on MS-DOS by building its own file handling algorithm into the programs.

Three installation plans are described in the documentation for this product, making ML Systems variously responsible for the successful installation of the software:

- Installation is client's responsibility, plus one day course and 10 phone support calls.
- MLS installs on the client's computer, plus one day course, a half-day management course and 10 phone support calls.
- MLS installs on the client's computer, plus one day course, a half-day management seminar, three planning meetings, a final review, and unlimited phone support.

The second option would be best for most users.

Although MLS Junior is described as building block application software, ML Systems prefers to sell it as a complete package (retailing at \$1595 plus GST), leaving the availability of submodule purchase in stages to its more senior system.

The following paragraphs discuss those features of each subsystem that bear special comment because they vary from what might normally be expected from a "small business accounting system".

Debtors

The eight-character debtor's code may be structured to use the search facility, whereby the operator types in as much of the debtor's code as is known, or can be guessed at, and then selects the correct code from

those displayed by the computer. The details entered during banking entry may be used to produce a bank deposit slip supplement.

While this subsystem is operated as an "open item" system, the pre-defined format of the debtor's statement makes no provision for the "tick and cross" usually associated with open item remittances.

Tax is calculated and added to a debtor transaction as it is posted to the debtor's ledger. Help panels are a handy feature for the puzzled first-time operator. The debtor's aged trial balance may be produced for selected aged balances. Statements may be printed for a single account or for an account range.

Stock

Products are identified by a 10-character stock key, and must be described in 25 characters. Such a short description is not always sufficient, considering that abbreviations are not always understood by a customer. A search facility is generally available for the stock code - similar in use to that for the debtors and supplier codes. Setting up the stock code, as for the debtor codes, must be done carefully if this handy feature is to be properly used.

The reality of the stock credits problem seems to have been specifically addressed by this package. Returned stock is passed into a holding account pending clearance. MLS Junior allows for six (!) prices when the discount table is taken into consideration (one retail and five trade). Selection of a price for a particular customer depends on an indicator on that customer's record.

This stock subsystem supports one stocking point, but the documentation for MLS Junior implies that more than one stocking point may be used with enhanced versions of the package. Quantities may be held to zero, two or four decimal places, with a maximum of six digits.

The product group (for s/a reporting) and the discount group (for pricing) are identical. Depending on the sophistication of the user, this may be an awkward constraint. Although it may certainly be of interest to see how profitable certain groups of discounted products are when compared with others, stock sales reporting requirements do not necessarily coincide with the particular discount-

ing structure that applies to groups of products.

The operator may delete stock lines from the stock ledger. The deletion program allows a deletion depending on stock-on-hand. It should also take into account whether or not there are any outstanding customer orders, supplier orders, unposted transactions, or current period sales. The first three checks would reduce the number of frustrating operational errors. The last check would ensure that the system balances at the end of an accounting period.

Creditors

The creditors' system allows for both prompt and standard processing of supplier invoices, as well as the facility to hold disputed accounts. Creditor payments may be made by cash or cheque. This subsystem seems to operate simply as a ledger of outstanding transactions. There is no cheque register, and hence no separate bank reconciliation.

GST is handled for tax inclusive/exclusive invoices and supplier credit notes.

Supplier payments seem to be awkwardly handled. The user nominates the amount being paid to the supplier, and the posting program attempts to allocate that amount to any invoices due for payment. Happily, the user may manually select invoices to be paid, and credits to be claimed, and will probably prefer to do so.

Sales invoice (& credit note) entry

Up to 90 stock sale lines and/or "sundry" lines may be recorded for any single document.

Sales invoicing and credit note entry is straightforward. Invoice and credit note documents may be produced whenever an entry session has been completed, and the document formats are predefined. No facility exists to vary them.

Each transaction line is passed to the debtors subsystem for later posting to the debtors' ledger. Similarly each transaction line is passed to the stock subsystem for later posting. Curiously, no transaction is passed to the stock ledger for "sundry" sales lines. Total month-to-date sales in the

stock ledger do not necessarily agree with total sales in the debtors' ledger.

For those users with an anxious eye to the future of GST, MLS provides variable tax percentages by product. Prices/charges displayed during invoice entry are ex-tax. Taxes are calculated later by the invoice preparation program, when the invoices are actually printed.

End of Period

All posted activity ends up summarised on the Monthly Trading Summary Report.

Manual

The manual has no screen layouts. Sample reports are provided as a separate appendix to the manual proper. The user wanting to see worked examples should not look at this section of the manual, as the sample control reports do not necessarily match the sample transaction listings.

With tongue in cheek, the prospective user should note that this manual is written for male operators, probably to the irritation of the majority of other operators. It is not difficult to phrase instructions that disregard

the gender of the person reading following those instructions.

The reports produced by the system are discussed in some detail. That is, each column that appears on a report is explained as to source or calculation used.

A substantial part of the manual deals with the interface with the computer operating system, and with the more mundane (but nonetheless essential) aspects of computer house-keeping – backup data, restore data, reconfiguring the system, operation of the "Spooler", etc. Some of the instructions contained in this last section are too technical for (particularly) the first-time user, so assistance in installing this system and training in the use of the procedures described would be mandatory.

Price lists may be generated for each of the several classes of customer. Something special is the facility to round prices to the nearest 50c or \$1.00 or whatever; and the facility to "addend" a price (eg \$2.00 "addended" by 0.01c becomes \$1.99).

Transactions generated by the stock and debtors subsystem for posting to a general ledger are pre-coded. For example, miscellaneous sales in MLS Junior must be G/L code 5100. This is probably of considerable assistance to the first-time user, but

for the more experienced or demanding user, the facility to set up different cost centre codes would be really useful.

Control reports for updates produce a number of control totals by ledger code. No general ledger is documented with MLS Junior. Presumably these ledger codes, with their corresponding amounts, are to be separately posted to an external general ledger subsystem if the results of debtor, creditor and stock processing are to be incorporated in period and annual accounts.

General ledger cost centre codes are predefined, and may not be changed.

Reports may be printed straight to the printed, or "spooled". Spooling a report involves writing an image of the report to disk for later output to the printer, and is normally done if a printer is unavailable while the report is being produced, or if several users are wanting to use the printer at the same time. Operation of the pseudo-spooler in this package seems quite awkward when compared to normal spoolers.

MLS software can drive a range of different printers and terminals. The prospective user should check with the dealer/installer as to which options are available. A maximum of two printers may be used by this package.

Summary

Introduction details how to start using the system, including the switchover from manual to computer-based records.

Good operator documentation, although lacking screen layouts.

Programs simple to use, and consistent.

Updates produce the control reports required for monitoring the system, and checking against manual controls.

User training required for certain aspects of operation – namely backup, restore and spooler operation.

The next step up from this package is the MLS Professional, which includes subsystems for customer order processing, supplier order processing and general ledger.

MLS Junior is a good introduction to computer control of accounts and stock for the first-time user.

For those users with an anxious eye to the future of GST, MLS provides variable tax percentages by product.

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Dick Daniell muses on various aspects of the laptop portable, while his dog stares wistfully from the floor.

Why my dog hates Tandy

Not just Tandy, Brother too. It's a very small dog, just a lap dog, although it behaves like a real dog. And, to its sorrow, it cannot curl up on my lap on a winter evening, if my lap is host to my 2 kg Model 100 lap computer, or if I am typing instead into the memory of my Brother portable EP 44.

Neither machine is as big as a city telephone book, and each is self-contained, except that the Model 100 needs to be coupled to a printer, while the EP 44 can print as it goes, or link to an external printer. The Tandy is a full computer, while the Brother is limited to being a word processor, printer and communications terminal.

It is the CMOS (Intel 80C85, for the Tandy) memory that puts these devices apart from the conventional personal computer, and makes them more expensive to buy. The memory never sleeps, because it's always connected to the ni-cad battery. I can type, and switch off the main machine, knowing all the text will be there when I switch it on again, even if I have been overseas in the meantime. No disk, no tape required. Saving text or data to memory is automatic. It's even possible to change the batteries on the Brother without losing the contents of memory. The Model 100 batteries are self charging if I use a mains adaptor. Just replace the ni-cads every few years.

The Brother (with calculating facilities included) has a small memory, less than two full pages. If the memory were bigger, I would not have needed the Tandy. But the Brother is ideal to take the minutes of a meeting. It is silent, yet it can produce printed copy as it goes, for immediate use by the chairman, while the memory contents are later revised and printed for the minute book and for circulation the next day, giving board members a quick reminder of the matters they were expected to follow up.

I have used a tape recorder, to be handed to a typist after the meeting, but it's not as good as the contemporaneous record, where tricky points can be cleared up then and there. Except that if I am trying to record the discussion, it makes it harder for me to join in.

I recall that at one time a Cabinet paper, after decision, used to be minuted, say "approved", by the Cabinet Secretary in red ink, and

returned to its source, later to be sighted by the Audit Department. Presumably there was a brief similar matching entry in Cabinet records. No photo copiers in those days, so retained records of Cabinet meetings must have been minimal.

The perils of recording too much have been amply publicised by the tape recorder in the oval room at the White House.

Length

The Model 100 can address only 64kb at a time, and with all the built-in or plugged-in programs etc in ROM, that leaves less than 32k of usable RAM. I do not find a memory of 10 or 15 pages of close typed work to be a limitation. Long memos and reports may make their author happy, but they do not perform their function of being read.

Churchill demanded reports not exceeding one page – more than that showed its author had not thought the matter through carefully enough. The US Supreme Court, dealing with very complicated matters already considered by a number of lower courts, allows counsel just 20 minutes for oral presentation of argument – about ten times as long as I am willing to listen to a salesman.

The author of a book may well need to keep much of it on disk, if he has not first thought through his work, and fears he may have to correct his errors, on further reflection.

And no-one needs great masses of figures on his knees in front of the television. Even so, a printout summarising the month's transactions can be three or four times as big and heavy as a lap computer containing the same information. Instead of lugging home a massive paper report, it would be far easier just to log on to the mainframe. Tandy includes a Bell modem in the tiny Model 100, as well as parallel, serial and bar code interfaces. The Brother has an RS 232 which needs an external modem, if telephone is used.

Reporters overseas commonly carry a Model 100, or its NEC or Olivetti equivalent, so they can type their stories and transmit them down the telephone immediately, whether they are reporting from London or Nepal. The sub-editor brings it up on his screen, and it may be set automatically in to type after editing. If, later,

there is a dispute about the report, it may be impossible to say whether what was printed was what the reporter transmitted, or what the sub-editor evolved from it, because the reporter did not make notes on paper, or submit a written story.

Why do I like a lap portable?

Firstly, I am sick of working in offices. I take my machine outside, under a tree, or on a patio, and there I fill it up. In due course I take it inside, and plug it into the printer.

Secondly, I find cathode screens on terminals are hard to read, while I can read the LCD screen on the Model 100 across the room, should I so wish. The small screen on the Brother (15 characters only) takes a few days or so to get used to, but after that it's not hard to set out a complicated layout.

Thirdly, I am not tied to a single workstation, nor do I have to modify room lighting.

Fourthly, if I have routine work to do, I can do it in front of the TV, or on a train or a plane. When I travelled more than I need to now, I took a dictating machine, which was OK to use in a hotel bedroom, but the background noises were a nuisance to the typist if I dictated in a train, and ruled out planes.

Travellers with a true portable can type or compute anywhere, and then as soon as they are alongside the telephone can upload to or download from their office computer. The Model 100 provides for logging on procedures to be built-in, for US (Bell) sources such as Compuserve and Dow-Jones. The communication facilities can even be used (at up to 19,000 baud if the bigger computers can cope) to download from one computer, and upload to another, that cannot be directly linked to each other.

Fifthly, all the programs I use are built-in. I do not often use a storage device. I have data management, data processing (spreadsheet), and word processing all on one chip, and they are all interactive. In other words, information from data files can be used by the spreadsheet or selected and merged with word processing. No disk or cassette required – it's all up and running on the menu as soon as I switch on. Even if I had not acquired this multiple chip, the Tandy has good text processing, telecommunications, scheduling, and data listing and recovery facilities permanently "on tap".

Sixthly, its battery, with power back up. No problems from mains supply failing, or spiking.

Comparisons

Is it better than a conventional PC? To which I ask, better for what?

Is my wrist better than my grandfather clock? Is my Walkman better than my quartz synthesized digital tuner? Is my 3-cylinder runabout better than my 4.4-litre V8? Is my half-frame Canon better than my 6 x 6 TLR professional? It's horses for courses. When I had an office that was on-line to a mainframe, my portable did my own type of work better, while no small machine could look at the way the mainframe carried out its task of dealing with 8,000 ledger accounts.

The average owner of a portable wants word processing, or data handling, or data gathering, on the spot. Data managing and calculating programs are really computer languages as they stand, and so he may never need to use BASIC. However, if he does, Microsoft provided for NEC, Olivetti and Model 100 as comprehensive a version of BASIC as can be found on any machine, and possibly the most powerful BASIC on any microcomputer. And some enhancements specifically for the 100, such as all calculations in 14-digit precision. When released, no microcomputer then in existence had more intrinsic functions. So nothing was left out, to make it a portable.

Since then other manufacturers have been tempted to cram not just a quart, but about four litres into a pint pot. Disc drives, backlit LCD screens,

printers, and the rest can now be found in some so-called lap portables. Not really portable, because of the power supply, like the cheap electric motor car, which needed a \$10,000 extension cord.

Another penalty attached to these advanced machines is weight that will dismay you at the airport counter, or carrying it any distance, plus a price penalty that could run to an extra \$10,000. I liked the look of the Bondwell portable, but the screen was too hard for me to read. I find the idea of a 7 kg computer on my lap no more attractive than water on the knee. I managed to lift an IBM portable today – it was not much harder to do than the log splitting I worked on at the weekend. Precious McKenzie, I salute you.

So, who should use a portable? (Apart from ten-stone weaklings).

Obviously, people who are mobile, who want calculation or data gathering in the field. Stocktaking, using the bar code reader. Word processing, in the office, on the move, or at home. Time recording and charging out. The disabled. "EP 44, phone home." Plug-in anywhere terminal user, for access to mainframe, database, high quality printer, or communications anywhere. Instant ledger keepers. Reporters. Company and board secretaries. Students working in a library. And those who prefer to work in the fresh air. Experimental program development, leaving the bigger machine free to get on with routine work.

I still use my pocket programmable calculator, but I hardly ever use the typewriter without first putting the text in the lap machine's memory,

and there correcting it.

Portables are not suitable for games, nor are they substitutes for a large mini. Unlike large machines, they do not become suitable for fishing sinkers after a few short years. Too light! They are an adjunct to, not a substitute for, an office electronic typewriter. The Tandy can be programmed to make music – should you be stuck on a desert island, with plenty of batteries. The Brother is not for data processing, or programming, and it has only simple mathematical functions. Commercial software for the Tandy is limited in range, but what there is is highly developed. Multiplan, data and word processing, spreadsheets and the like are available on plug-in ROMs that preserve precious RAM.

Tandy has slightly upgraded the 2 kg model 100, with the model 101. The model 200 has built-in memory banks, and built-in Multiplan spreadsheet, and a bigger screen, but it's still light and truly portable. Tandy also builds a still bigger model. Sharp and others produce small memory portable "word processors".

Other lap portable computers are Sord, 3 kg; Epson PX-8, 2kg; NEC, 2kg; Commodore etc. For "heavy metal" aspirants to our weight-lifting team, IBM, Wang, Grid, Data General, Sharp and Hewlett Packard have elaborate machines with advanced features, from 4 to 7 kg upwards. May the force be with you!

I take my machine outside, under a tree, or on a patio, and there I fill it.

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When the power goes off and you're searching for the candles, it's time to consider the consequences of the failure on your expensive computer equipment. Peter Ensor takes us through the field of uninterruptable power supplies in search of everlasting light.

Without a break

Power to the People, so the slogan says, but on the night of Waitangi Day this was not the case. At home a computer was at work running a spreadsheet program. The lights dimmed; should the data be saved? No, not yet — then darkness.

As was widely publicised, this incident was part of a large power failure that covered the northern part of the North Island. Certainly it was a rare occurrence, but one that could be devastating to anyone running a computer system at the time.

There are always stories about the company who did not consider the possibility of a power blackout and later spent three months writing software to try to recover the lost data. With many companies heavily reliant on computers, advantage is certainly taken of the good power supply record that we have, especially in the main centres.

But how good is that power?

The New Zealand Supply Regulations which New Zealand Electricity, the main generating authority in New Zealand, is required to abide by, state that the frequency is kept within 1.5

per cent of 50Hz except in conditions of emergency. Over a 24-hour period the frequency will be accurate to within three seconds. That is, the clock running off the mains frequency will be accurate to within three seconds.

How bad can it get and for how long? At 49Hz your hot water heating could be turned off if there is time, and at 47.5 Hz the power could be automatically disconnected. If the frequency is not recovering then load would be shed in 20 per cent steps until either the frequency returns to 50 Hz or there is nothing more to turn off.

If the power cannot be turned off fast enough, at 45 Hz, which was the frequency reached on that fateful day, the generators will operate for about a minute before they are disconnected from the national grid.

Voltage is the other consideration to a computer. It may vary by 5 per

cent on the standard voltage of 230V as measured at the main switchboard of your home. In addition to this may be a further 2.5 per cent voltage drop in the wiring to the outlet.

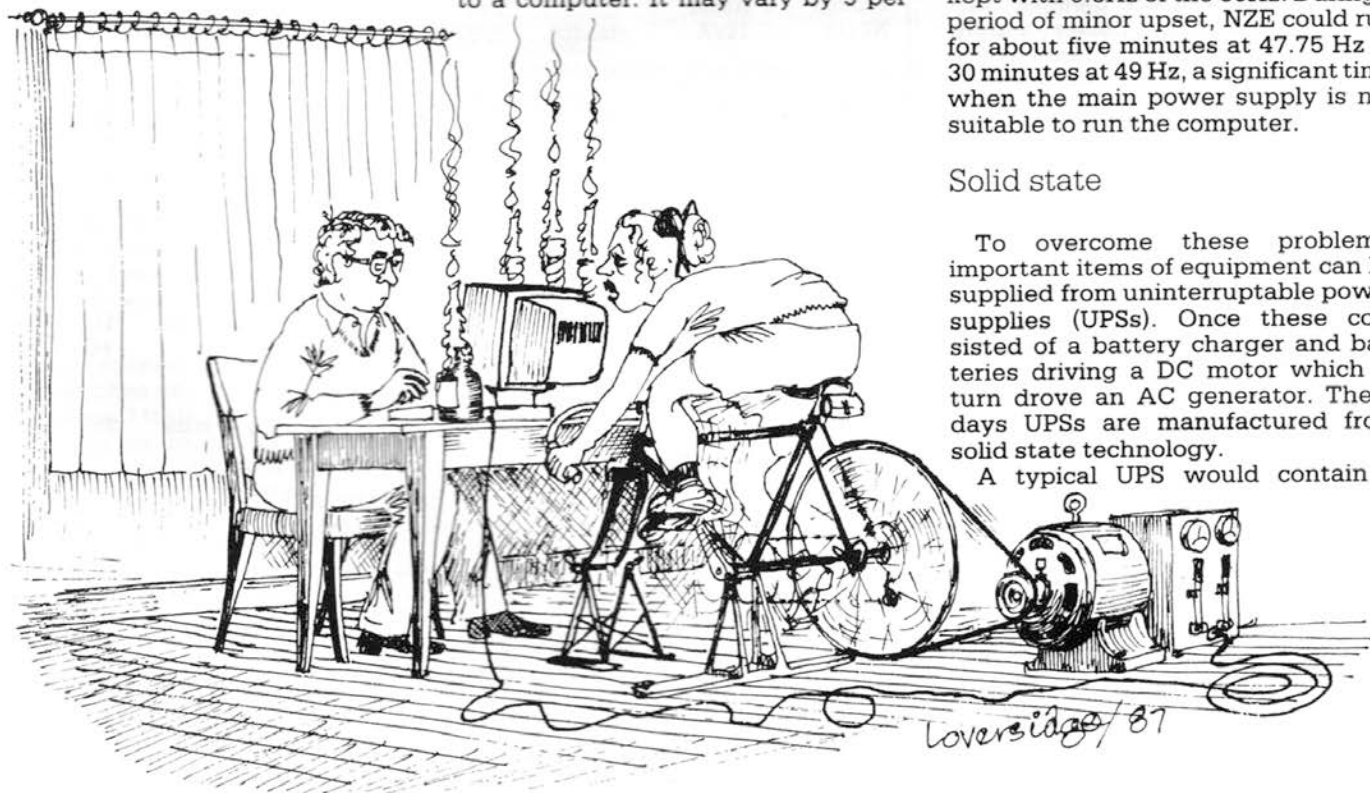
This means that when you come home on a cold winter's night the voltage could be as low as 212 volts. As the night wears on and the heaters are turned off, the voltage could rise to 241, a voltage difference of 29. That is ignoring all the spikes, temporary voltage drops caused by such things as large motors starting (nicknamed brownouts) and other rubbish that is sent down the power lines.

The design of the computer will dictate how it will react to the power fluctuations. Many of the smaller computers convert the AC to DC and so can tolerate voltage and frequency deviations. Others are not so tolerant. Many of the older eight-inch disk drives require the frequency to be kept within 0.5Hz of the 50Hz. During a period of minor upset, NZE could run for about five minutes at 47.75 Hz or 30 minutes at 49 Hz, a significant time when the main power supply is not suitable to run the computer.

Solid state

To overcome these problems, important items of equipment can be supplied from uninterruptable power supplies (UPSs). Once these consisted of a battery charger and batteries driving a DC motor which in turn drove an AC generator. These days UPSs are manufactured from solid state technology.

A typical UPS would contain a



Are you sure the power's still off?

rectifier or battery charger, a set of batteries and an inverter. The battery charger will not only charge the batteries, but also supply power directly to the inverter.

The voltage of the battery bank can differ from system to system. For a small UPS suitable for a PC computer the battery voltage could be about 24 or 48 volts, but for a 10kVA unit a 250-volt battery bank would not be uncommon.

When the main power supply fails, the batteries would deliver the power to the inverter, thereby providing a constant source of supply. An inverter converts the DC power from the battery into the AC power, similar to that available from a standard power point. The inverter is synchronised with the main power supply so that should the inverter fail then the load can be transferred to a bypass circuit. This circuit bypasses the rectifier-inverter to let a filtered power supply through to the computer, the changeover being automatic and usually undetected by the computer.

The synchronisation continues until a disturbance is detected. In the more sophisticated UPS systems the inverter is constantly monitoring the input frequency, and when the frequency drifts off the 50Hz standard by a predetermined amount, typically 0.5Hz, the inverter will stop tracking the input frequency and lock onto an internal standard.

These internal standards are usually crystal controlled and can maintain the output frequency to an accuracy greater than 0.01 per cent. The synchronisation of the inverter output with the main power supply allows the inverter to transfer the load to the standby circuit when the inverter is being overloaded. This could typically occur when disk or tape drive units are being started.

At 150 per cent overload, the load is transferred to the bypass circuit and will be transferred back at 125 per cent to operate off the inverter.

A commonly provided feature of the larger UPS systems is a manual bypass switch. This works in a similar way to the automatic bypass and is used to allow maintenance on the automatic static switches. Because of the high dependability of the static switches, the manual switches are very rarely used.

Two types

There are two basic types of UPS systems: continuous mode and standby mode.

The continuous mode UPS runs the computer normally off the inverter, providing a good quality clean power supply to the computer. The standby mode UPS runs the computer off the main supply via the bypass circuit

and changes over to the inverter when a power failure is detected.

The standby type, while it lowers the wear and tear on the UPS, does mean that there is no guarantee that the inverter will be going when you want it.

The use of the UPS system will vary depending on the user's requirements. This can range from the need to keep a basic system going for 15 minutes to enable the system to be shut down in an orderly manner with files closed and everything in its place, to keeping a full system going to process the day's transactions.

In many multi-storey office blocks there are emergency generator sets installed, supplying power to such items as fire pumps, lifts and emergency lighting. While this power is often available for computers, there will be a break of up to 15 seconds before the power will become available. For large installations such as Databank, a combination of a UPS system and emergency generators is used, the UPS system providing coverage until the emergency generators start.

Not only can computer systems be run off a UPS system. Air conditioning systems can also be run, but the size of the UPS that would be required would be prohibitive. As an alternative an exhaust system can be provided. The heated air can be

extracted from the computer suite to be replaced by outside air of hopefully a lower temperature. To prolong the UPS backup time that is available and to limit the heat output, selected equipment can be shut down after a power failure.

Lighting

Often overlooked is a light for the operator to be able to control the computer for any orderly shutdown. There is no reason why the same battery system that provides emergency power to the computer cannot provide emergency lighting on the main exit routes.

The UPS must be able to handle the starting currents of the equipment. They may not be started during a power failure, but especially for the continuous operating mode UPSs every startup in the morning will have to be catered for.

The installation of a UPS is usually an economic matter based on loss of data and/or processing time or for public relations criteria. With the higher number of computers being used and the pace that modern technology affects the construction of uninterruptable power supplies, more and more will find their way into the small business.

Company	Product	Mode	Output	Overload Capabilities	Backup Time	Price
Stanton NZ Ltd	Anglo 1kVA	standby	freq $\pm 0.001\%$	30% for 10 seconds	15 mins	\$9295 +GST
International Data	IPM 20kVA up	cont.	$\pm 0.05\%$ freq $\pm 1\%$ volt	150% FL trans- fers to by-pass - back at 125%	15 mins	\$102,000 +GST
Control Systems Consultants	Emerson Electrical					
	200VA	standby	$\pm 2\%$ freq $\pm 2\%$ volt	150% FL transfers to bypass	15 Mins	\$1360 +GST
	1000VA	cont.	as above		10 mins	\$5700 +GST
Electropar	Precision Power Products Pty 1kVA	standby	$\pm 0.01\%$ freq $\pm 5\%$ volt	current limited	15 mins	\$5500 +GST
Ocean Energy Products	Unipower 500VA	cont.	$\pm 5\%$ volt	200% short term 30% intermittent duty	4 hours	\$5300 +GST

Uninterruptable Power Supply systems

HAL – a new dimension to Lotus

HAL has been arriving for weeks so you can imagine we are pleased to announce that it is actually here.

What is HAL?

It is a new software release from Lotus Corporation and it front-ends Lotus 1-2-3. Unlike the 2001 version, this HAL doesn't speak English. However, it does understand it!

Standard Lotus commands can now be replaced with simple English instructions. For example the formula '@sum (C5.C50)' may provide a budget total for January in Lotus, whereas HAL will accept 'Add January' to achieve the same task.

Other than this English interface, HAL introduces a number of invaluable features to Lotus:

- on-line help
- undo last command (what joy!)
- a search and replace option
- spreadsheet linking

HAL will cost you approximately \$400 and requires a minimum of 512kb (it is a RAM-resident product). It is not copy protected and therefore is capable of being installed on your hard disk. HAL will interface to both Version 1A and Release 2 of Lotus.

We are impressed. It adds a whole new dimension to spreadsheeting.

Supercalc 4

While we are on the theme of spreadsheeting, we ought to summarize the new features of Supercalc's latest release, version 4.

For the uninitiated, Supercalc from Computer Associates in the USA is one of the major rivals to Lotus. It compares favourably with its rival in terms of features and in some areas, notably:

- size of spreadsheet
- keystrokes per command
- command trail
- graphs on monochrome screens without graphics board
- printing at 90 degrees through 'Sideways'.

Supercalc 4 is preferred.

Computer Associates has introduced certain new features as an upgrade from Supercalc 3. Briefly, these are:

- full menu as opposed to one letter abbreviations
- increased size of spreadsheets
- full compatibility with Lotus 1A and 2 worksheets

Definitely a contender for Spreadsheet of the Year award.

Best and worst of 1986

A much respected US-based PC magazine has announced its best and worst hardware for 1986. We feel it is worthy of reproduction in this column.

Interestingly, both awards emerge from the category of laptop computers. The best of 1986 was the Toshiba T3100 (the AT speed laptop) and T1100 plus (the battery-powered PC Compatible), regarded as co-winners.

According to the magazine there was no worst hardware winner, but most disappointing was IBM's PC Convertible.

Besides the best and worst, a special achievement award went to the hot new Compaq Deskpro 386 as the most significant hardware of the year. The significance attaches not to what it is, but the direction in which it is pointing the PC family.

Putting personnel in order

We are aware of a new software product that will appeal to personnel departments who wish to build organisation charts and keep them up-to-date.

Orgplus allows the construction of charts with as many as 350 names on up to 99 levels. It offers a range of output styles with eight box formats and seven chart layouts.

Known drawbacks include the inability to view the chart on screen, and a department cannot have two equals heading it.

Orgplus works with 'Sideways', the software that allows you to rotate printouts 90 degrees, thereby printing particularly wide charts. It is available for PCs with 256kb RAM and DOS 2.0 or later for \$US70.

Revving up your PC

Tools abound to add additional power to the traditional PC. All we are yet to see is the wide black racing stripe for the processing unit to give that extra fire to the performance!

Given that your machine has extra slots for the boards to be fitted, you can look at adding such devices as

turbo boards, enhancement kits, graphics boards, memory upgrades, hard cards and multifunction boards.

Different terminology disguising similar features. We are talking about the ability to add additional RAM (memory), built in clock/calendar (battery powered), hard disk storage capacity, games port and capability to display graphs/diagrams on screen.

Shop around for quotes, as prices vary dramatically for identical products. Memory upgrades will be the most common requirement where users are wanting to take advantage of the plethora of RAM resident software packages on the market.

PC access to minis and mainframes

With the IBM PC and its clones proving to be tremendously popular, we are seeing all the significant minis and mainframe manufacturers allowing PCs to act as terminals into their systems. This is a significant step forward for the manager or executive who needs processing power at his screen and needs access to the absolute wealth of PC software.

The benefits are those of speed, convenience and independence, although the corporate data processing department could well see it in a different light.

The dual role of the PC is achieved through the development of terminal emulation software which runs on the PC and asks the operator whether he would like to be linked into the main computer or rather run as a PC under MS-DOS. Naturally, the emulation software loads the keyboard values that suit your central computer, thereby creating an input terminal closely resembling your original dumb terminal. All very simple really.

As a first move, contact your system supplier, who ought to be able to advise you in your quest for computer excitement as the MS-DOS level.

MicroLab is Coopers & Lybrand's micro computer consulting arm providing independent advice on business systems.

Through this column MicroLab offers a commentary on developments in the computer industry as they affect the business person.

Learn to type a cheap and easy way

by Colin Marshall

Type-right describes itself as an interactive teaching machine that, in simple terms, helps you learn to type. Developed by Dick Smith Electronics, the Type-right package has more to it than its appearance at first suggests.

Included in the package which retails at \$79.95 are a keyboard and a manual. The keyboard requires four "C" size batteries which are not included. For what the package does, the price is fair to good.

The manual has a cardboard front and back and is intended to stand beside the keyboard as the tutorials are followed. Unfortunately there is no built-in brace and the manual tends to slip over if set up on a wooden desk, as it would be in a classroom situation. The manual is very well set out and extremely easy to follow, with clear diagrams to illustrate numerous things that the text describes.

The keyboard has a small LCD display at top centre that displays a maximum of eight characters. The

keys are set out in the normal QWERTY format, spaced as one would expect a computer keyboard to be. The keys are not all one colour but rather alternately light and dark grey depicting those for an individual finger that should always relate to a given zone. The keys have a decidedly tacky feeling with a real 'click' each time the key is depressed, so this is not for the person wanting to learn to touch-type.

The keyboard is made of plastic, a strong tough durable plastic that will stand up to rough use by children and the occasional accident with a hot drink. For classroom use this is acceptable for primaries and lower secondaries. All the keys and their functions are fully described in the manual.

The user starts off by going through what amounts to a theory lesson, which covers the functions of the keyboard, the computerised Type-right operations, and correct fingering.

Next the lessons really start. The colour coding system is explained and the importance of posture emphasised – oops, just wait while I move – and illustrated. The first lesson focuses on the home or centre row on the keyboard. Unfortunately F and J keys have no raised dots as on many typewriters and computers. A series of letters appears on the LCD display and the user mimics the letters on the keyboard. If you make a mistake there is a quiet 'tinny' sound from the keyboard, and if the time limit is exceeded there is a louder beep. At the end of each sequence you are given a score, and need to achieve a score of at least 60 to continue.

Lessons two, three and four continue along the same lines with an increasing number of letters and numbers. The numbers and letters are randomly generated.

Lesson five teaches the user how to use the SHIFT key with the newly learned skills. The SHIFT key in effect

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doubles the number of keys available on the keyboard and used in the first four lessons.

Next come some of the unique things that this unit can do. A series of exercises has the user entering sequences of words, then phrases. These get harder and harder to complete correctly as new characters, numbers and letters are added. The fourth level of lesson seven has a page to type in which makes sense, while following lessons have things to type in which don't necessarily make sense. This forces you to look carefully at what is written as you type, and the emphasis is on keeping your eyes off the keyboard. At the upper levels it is virtually impossible to be looking at the text and the keyboard at the same time.

By level nine you are typing up to 400 words and getting a word per minute count. One of the exercises includes typing in a program listing, another a form letter.

During the exercises six to nine you can get an error rating by pressing the error key. Ideally your speed and

error rate should improve as you go along.

A game mode flashes letters across the screen, with the object being to press the letter before it gets across the screen. Three incorrect entries and the game is over. This little touch is a good reward and fun as well. There is no immediately apparent sequence - the characters are randomly selected.

All in all the package is a good one. While it does not have the visual impact or functions of a computer typing tutor, nor the takeaway results of a typewriter, the Type-right course could work well.

The main drawback is the lack of real variation. There is no way that you can experiment or have fun as you could with a computer or typewriter. Children who tried the review machine grew bored with it after a short time, while with a computer or typewriter they would feel more free to experiment themselves - even when forced to keep their fingers on the right keys.



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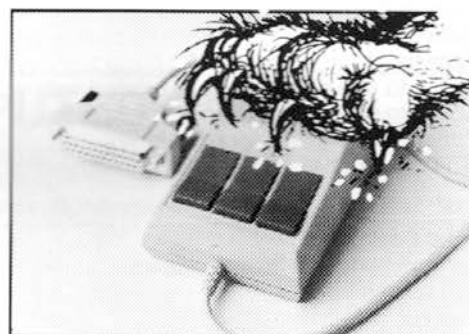
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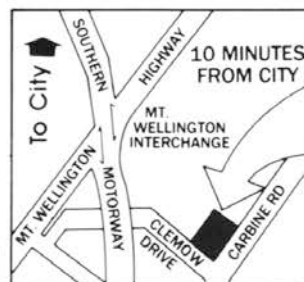
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From elementary to advanced

a book review by Dennis V. Lally

Publishing computer books must be one of the riskiest ventures around. Things change so fast in the computer industry, and what was just released when an author completed his manuscript is usually obsolete by the time the book reaches the

shop display. Thus computer magazines, geared to respond to the news breaks of high tech, account for the vast volume of computer reading.

The buyer of computer books is more discerning, which is not surprising, since most computer books cost

more than an annual subscription to a magazine. Generally, this person buys a computer book for its reference value, particularly specialist information that augments a manual. Books of more general information tend to be less popular now as the computing community matures.

The Apple Macintosh Book, now in its second edition, is both a case in point and an exception. The book was written just over a year ago when the 512K Fat Mac with 400K drives reigned supreme. Readers will be disappointed not to have the Mac Plus detailed or SCCI hard drives compared. First impressions are that this might be just another routine book covering all the general topics.

First impressions can, however, be deceiving. The author, Cary Lu, has composed a most balanced book which moves from elementary to advanced specialist subjects as you progress through its pages.

Advancing through the book, however, is not what you are supposed to do, advises the author. Instead, he suggests that you discriminate among the four sections which he has defined, and each of which could have been a separate book. This accounts for the 422 pages of *The Apple Macintosh Book*.

The first section is for non-owners considering a Macintosh and for very new owners. This section is mercifully short and can be ignored by anyone who has either read the Apple manual or used the Mac for any period greater than a week (thereby attaining novice power user status!).

The second section is about software, containing eight chapters, each covering a specific software application such as graphics programs, business programs, integrated software, communications programs and so on. Programming languages are also covered. I was surprised to find that even a year ago you could program on a Mac in Modula-2, C, Logo, LISP, Forth, Neon, COBOL, FORTRAN, APL, and several versions of Pascal and BASIC.

A book can show its age when talking about specific software packages, and even magazines have trouble keeping up with new releases and versions. Nevertheless, Mr Lu was obviously privy to many pre-release versions and was astute enough to include those which he thought would be significant. One year later we can see how well those products

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fared and observe that Mr Lu's predictions are invariably on target. He makes comparisons of databases, word processors and spreadsheets. His comments are thorough and unbiased and show a working knowledge of each package, as well as an understanding of the requirements of the computer user. Each software chapter starts with a detailed demonstration of the most common package representing the group. These chapters are still valuable for the novice software purchaser, even though many more products are now available, because they help the prospective purchaser determine his or her actual needs.

The third section describes the inner workings of the Macintosh, and experienced users will find that this is where the book starts to become interesting. This is the largest section and accounts for nearly half the pages. Although the MacPlus and 800K drives were not available at the time of writing, they were anticipated. The author has apparently always been kept aware of forthcoming developments by Apple and Microsoft. His first edition of this book had to be written before the first 128K Macs were ever released. No doubt the third edition is at the printers and I would be surprised if Cary Lu wasn't currently writing the fourth edition now!

Relevant

The section on how the Macintosh works is still very relevant because the basic architecture of the machine has not changed. An in-depth coverage of all the components is made, including the input and output ports and all the things that might connect to them. The information on disks will dispel a few of the myths that prevail.

Section four contains the last 100 pages and is devoted to specialist and technical topics. Unusual specialist topics include using the Macintosh in moving vehicles and how the Macintosh can be used by the physically handicapped. Of more common interest is the section on communications which starts with a detailed explanation of the ISO protocol layers common to all computer communications.

The Apple Macintosh Book is a comprehensive compendium about the Macintosh. There have been and gone a plethora of beginner how-to books on the Macintosh, but the intuitive ease of operation of the Macintosh makes these books quickly redundant. *The Apple Macintosh Book* wisely devotes only 30-odd pages to beginners, and these pages are really more suited to the prospective Macintosh buyer who wants to vicariously try before buying. The

new or intermediate user will benefit from the sections on software and hardware and find this book a valuable reference. The expert user might find some pieces of value in the later, more technical sections, but the serious pro would be better served by the specialist book, such as *Inside Macintosh* or by periodicals like *MacTutor*.

In the light of the above comments, I would recommend this book to all Macintosh owners. The novice user will grow with this book, and later as an experienced user will find it valuable for reference. Most of the more advanced concepts actually date very slowly. The advanced user and technical person would benefit by having this book on hand for use in explaining technical subjects in jargon-free style to lesser mortals.

Cary Lu serves as an example to all writers on computer-related topics. His style is easy; he writes plainly yet with authority and with the reader's interests at heart. The book is sensibly illustrated and nicely laid out. Published by Microsoft Press, it is distributed by Penguin Books in New Zealand and like other computer books of its size will be priced in the \$50 to \$60 range.

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Life in the fast lane

by Joe Colquitt

The following series of articles was written with Commodore 64 6502/6510 in mind. Other 6502 machines will run examples if corrections are made to addresses. The C64 calls ML with SYS; other BASIC may use CALL or USR etc.

I'd like to correspond with anyone who has fine scrolling routines. I have some, but would like more to compile a full article on the subject.

Machine language (machine code, source code) comes into its own when small operations need to be done faster than an interpreted language can do them. An interpreted language (such as BASIC) is one in which statements in a program are looked up in tables and executed (hence the relatively slow speed).

The other common class of languages is the compiled language (such as Pascal). A compiled language does not look up tables, but instead translates the original program into a pseudo ML, containing pre-formed variable stores, routines etc etc. It's an awkward concept to explain succinctly, but the bottom line is that, for example, a compiled BASIC program will run probably four to ten times faster, and some parts of the program may execute 100 times faster.

Although getting pretty fast in some instances, the compiled programme is quite a bird's nest of routines compared with good, efficient in-line ML. Apart from this, the compiler's operating system needs to be present, which could be 2-4kb of program. A 25-line BASIC program may compile to 5kb, while a competently written ML routine for the

same task could occupy less than 0.5kb, and have the added advantage of being locatable anywhere in memory.

I generally find that BASIC is adequate for mundane feats such as printing a menu or inputs, but is hopelessly slow for tasks such as clearing a bitmap screen or sorting alphabetic lists. These are the occasions when a bit of ML can be called up from the BASIC program.

It is **not** necessary to write a complete program in ML in normal circumstances. Even many arcade-style games are in BASIC with an ML subprogram to handle the fast bits. For example, if there's a pause or keywait in a program, it makes no difference whether it's in BASIC or ML. I tend to find that graphics or bodies of data (text etc) to be shifted require the use of ML. Additionally, ML is good for special duties, such as split screens or polling outside devices like thermocouples and event switches.

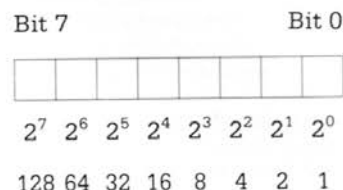
Whatever effects ML produces, speed of execution is the primary reason for the effect, or the availability of the effect. A bitmap screen clear can be done in BASIC or much faster in ML, but screen splitting is available only in ML because BASIC is too slow to take advantage of the effect.

ML is a very specific language to write in. Whereas BASIC has variables and arrays, the ML programmer has to make his or her own variable areas. In one respect this is desirable, because ML doesn't create any working space unless told to. I've had BASIC programs crash because strings have grown into the program. In ML, there isn't the concept of dynamic or static strings. You just form a string and put it away somewhere, and use it when necessary.

The last topic to cover this month is the hexadecimal/binary system that ML uses. The computer at its fundamental level operates with a series of on/off switches, ie binary. You've heard of 8-bit or 16-bit machines. An 8-bit machine has 8 binary switches connected together, which forms a byte. These bytes are then grouped together in banks of 16kb to make a memory block. The 16kb blocks are the stuff of which larger machines are made. The whole computer is like a huge Lego set, each brick (byte) having 8 switches.

Into these bytes are put instructions (program) or data, which the computer executes or reads when told to. A PEEK command returns the value of a byte, and in BASIC it will display in decimal (0-255). When programming ML, it is usual to use hexadecimal, base16 (00-FF). In

binary, each switch (bit) in a byte is 1 or 0, and each bit to the left of its neighbour has twice the ON value. It's a similar concept to decimal, which increases by powers of ten. The diagram below represents a byte. Note that the bits total 225, the maximum a byte can contain.



Hexadecimal uses the digits 0 1 2 3 4 5 6 7 8 9 A B C D E F to count to 15 (decimal uses 0 to 9). To see how a hex number is formed, assume that a memory location contains 201. The bits for that location would be set as follows:

1 1 0 0 1 0 0 1 ie 128+64+8+1

The bits 7,6,5,4 (high nybble) are set at 1 1 0 0 = 12 = C. The low nybble (3,2,1,0) is 1 0 0 1 = 9. 201 is therefore represented as C9 in hex. Once you've done only a small amount of ML programming, translating numbers becomes quite easy. All it really involves is counting.

If you want a monitor/assembler, sent a disk or tape (with sample save) with return postage to Joe Colquitt, 6 Martin Ave, Mt Albert, Auckland.

Number converter

```

5 PRINT "C64 3dn11...HEX TO DECIMAL
10 PRINT "C64 12...DECIMAL TO HEX
15 PRINT "C64 13...8-BIT BINARY TO DECIM
AL TO HEX
20 PRINT "C64 14...END: REM dn=cscr down
25 PRINT "C64 12 ENTER CHOICE
30 GET A: IF A#="" THEN GOTO 35
35 S=VAL(A): D=SGOTO40,70,125,180
40 PRINT "C64 13 * TO EXIT
45 INPUT "C64 12 ENTER HEX": H#
50 IF H#="" THEN RUN
55 D=0: IF H#="" THEN FOR I=1 TO LEN(H#): A=ASC
(MID$(H#,I))-48: D=D*16+A*(A/9)+7: NEXT
60 PRINT "C64 13: H# =": D: "DECIMAL"
65 GOTO 45
70 PRINT "C64 13 * TO EXIT
75 INPUT "C64 12 ENTER DECIMAL": D#
80 D=VAL(D#)
85 IF D#="" THEN RUN
90 A=INT(D/4096)
95 B=INT((D-(A*4096))/256)
100 C=INT((D-(A*4096)-(B*256))/16)
105 E=INT((D-(A*4096)-(B*256)-(C*16)))
110 H#="0123456789ABCDEF"
115 PRINT "C64 13: D# =": MID$(H#,A+1,1)
:MID$(H#,B+1,1):MID$(H#,C+1,1):MID$
(H#,E+1,1) "HEX"
120 GOTO 75
125 PRINT "C64 13 * TO EXIT
130 PRINT "C64 12 ENTER LEADING ZEROS
135 INPUT "C64 12 ENTER 8-BIT BINARY": C#
140 IF C#="" THEN RUN
145 L=0: C=C#*2: FOR X=0 TO 127: L=L+C*2
150 L=L+VAL(MID$(C#,X,1))*2*(X/1)
155 NEXT
160 C1=LEFT$(C#,4): C2=RIGHT$(C#,4)
165 A=(C1/16)+1: B=(A-INT(A))*16+1: B4="0
123456789ABCDEF"
170 PRINT "C64 13: C1:": C1: "DEC:": A: "
:MID$(B4,A,1): MID$(B4,B,1): "HEX"
175 GOTO 175
180 END

```

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TRADE ENQUIRIES WELCOME

A question of balance

by Pip Forer

It is a hot summer night in Christchurch. In one of the hill suburbs a dozen or so people call a halt to what has been a long meeting. Yet most of the people involved feel fairly content. The programme for the New Zealand Computer Education Society National Conference has made good progress.

The key questions have all been those of balance (an obsession that reflects Christchurch's particular personality, perhaps?). Will the books balance when it is all over? Will expected attendance balance with actual numbers? Can we balance the sexes more? Can we find a cultural balance? Most important at this meeting, will the programme of activities balance to the needs of the wide body of educational computer users in New Zealand?

Selecting a group of keynote speakers and session topics may sound like a pleasant pastime for a sunny afternoon, preferably done while sipping wine in a hammock. In practice it can be quite an exacting and drawn-out exercise.

On this night, however, balance looks good. In spite of a couple of sur-

prising exceptions the computing community has proved very supportive in sponsorship for some of the key elements required for forward planning. Barson Computers has signed up as major sponsors, and Progeni, Commodore and Grandstand have also come to the party.

Numbers look good too, with many expressions of interest even before the main publicity goes out. Culturally the warm hospitality of the Rehua Marae has ensured that taha Maori will enrich the gathering.

But what of that final question? What is actually going to happen at the conference? The answer is a great deal, and it looks not just exciting, but exciting and balanced. Overseas speakers are balanced in almost every respect: men and women educators, from Australia, North America and Europe and in fields ranging from the latest developments in information technology through to Logo in the primary classroom.

Who do we have? In strictly random order:

Bill Higginson, Canadian Logo educator and researcher into classroom use of computers. Bill spent

1984-5 associated with Seymour Papert's group at MIT.

Sandra Wills, active in every aspect of Australian educational computing, expert on the First Fleet project and currently chairperson of the Project Australian 1988 video-data base exercise. Sandra is also busy on organisation for the IFIP world computers in education conference in Sydney in 1990.

Anthony Adams, an English educationalist with stimulating views on the interaction between school English and technology.

Peter Evans, from Deakin University, Australia, an expert on strategies for computer management in labs and classrooms and deeply involved in computer education for teacher trainees.

Mike Tibbets, a senior executive with the UK's Domesday Project who has many insights into the project's links to school activities.

Liddy Neville, known to many as an incisive thinker on educational computing (especially primary) and a lover of Logo. Liddy is returning yet again (almost by public demand) with support for Logo and thoughts on

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We may also see Bob Lewis at the conference. Bob is director of the Information Technology and Education project in the United Kingdom. Joseph Weizenbaum too may be around following on the Computer Society conference earlier in the week. If so, he can be counted on to bring a positive kind of scepticism to his pronouncements on the abuse of computers, or to give insights on his work with Peace Education overseas.

The base is also in place for a strong representation from New Zealand speakers. Sessions are slated for almost every possible interest. What would you like to know more about? The planned list of sessions for workshops and papers is long: English language teaching with computers, special education, computing studies curriculum development, Logo and other applications at primary schools, school administration using micros, computers in education at tertiary level, training and educating with interactive video, information technology in the school, initiatives in integrated studies using computers, evaluations of Domesday Systems, communications in education, desktop publishing in education, computers in secondary school applications.

Not to forget also significant reports on research on computers in education, including some from the Department of Education's evaluative studies, now moving towards their final stages. The problem will now be fitting everything into three days rather than addressing omissions or imbalances.

You can just make out the Southern Alps as the group of people on the hill suburb begins to break up. "What about some publicity?" calls someone a little too removed from total complacency. "How about a short, balanced piece for *Bits and Bytes* readers?" suggests another. "Remember to tell them it's on from 30 August to September in Christchurch and invite them to come."

I guess we will have to get round to going that sometime.

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Regaining dominance?

by Grant Cowie

This is the first of what will hopefully be a regular column devoted to the Apple Macintosh. In future issues I will be looking at some of the new software packages (good and bad) that seem to be appearing regularly now. However, for this first column I thought it might be appropriate to take a good hard look at the Macintosh itself and where it fits into the New Zealand computer scene.

The Macintosh has certainly come a long way since its release in 1984 as an underpowered runt of a machine with 128kb of RAM and 400kb disk drives. Since that time it has captured the imagination of many computer users and professionals, and has inspired several lookalikes (notably the Amiga and the Gem software package for IBM PCs and compatibles). It is only in the last year, however, that the Mac has become a viable tool for the serious user, and a major force in the business market.

Three factors have contributed to the recent success of the Macintosh. The most important of these was the release of the Macintosh Plus computer early last year. With 1Mb of RAM and 800kb disk drives this was undoubtedly the machine that Apple should have released two years earlier. And, equally important for New Zealand users, the local Apple agents brought their prices down to something sensible, so that the Macintosh range could finally almost compete with the IBM PC and compatibles.

The second factor was the release of Microsoft Excel, which is probably the spreadsheet system of choice for novice and power users alike (see the August 1986 *Bits and Bytes* for a review of Excel). This system incorporates spreadsheet, business graphics and powerful macros, and is by far the easiest of any such system to master. Even committed Lotus 1-2-3 and Symphony users have been known to express a yearning for Excel when they have seen it properly demonstrated.

The third factor was the availability of Omnis 3, a powerful database system. There have been other database systems available for some time, notably Odesta Helix, but Omnis seems to have captured a large slice of the market and has been particularly well supported in New Zealand. It provides the ability to design and build reasonably advanced customised business applications, such as a small accounting system, time and cost system, personnel records and so on.

The combination of these factors

means that the Macintosh is at last a viable business tool. It offers ease of learning, tremendous user-friendliness and a wide repertoire of useful business software.

Against this is its price. To purchase a Macintosh Plus with 20Mb of hard disk at present costs just under \$10,000 before GST. This does not compare favourably with PC XT clones at around \$5,000, or AT clones at about \$8,000 (it should be borne in mind in making comparisons that the Macintosh is closer to an AT in power than an XT).

So where does this leave the Macintosh in the New Zealand marketplace? As far as I can see if you're looking for a straight accounting package there is very little point in paying a significant premium for a Macintosh. However, once you move out into areas of management information and analysis of data, then the Mac becomes the machine of choice. Managers are interested in solutions and need easily accessible tools. The Macintosh provides these, but at a premium.

One aspect of the Macintosh that I haven't mentioned is so-called Desktop Publishing. In the States the Macintosh, coupled with its high quality Laserwriter printer, has provided corporations with the ability to do their own publishing in-house. This appears to cover everything from annual reports through to company newsletters and management reports.

I don't know how the desktop publishing market drive is going in New Zealand, but I am sceptical that a market really exists here. Tell the average general manager that you've got the gear for him to do his own publishing in-house and he'll probably show you the door. However, talk to him about faster, quieter and better quality word processing and he might be interested. And in my opinion, having looked at the offerings from the MS-DOS world, the Macintosh is at present the only system that can produce high quality documents at a sensible price.

Early in March Apple announced two new versions of the Macintosh. The Macintosh SE (for System Expansion) is a faster and presumably more expensive version of the Macintosh Plus. It has two internal drives, one of which can be a 20 Mb SCSI hard disk, and operates up to 20 per cent faster than the Mac Plus. The major departure is the slightly open architecture—the SE has a slot for expansion cards,

although at present these must be fitted by qualified Apple technicians.

It is interesting that MS-DOS coprocessor cards are apparently already available from third parties for the SE, and that Apple has also announced a 5.25 inch disk drive that can read MS-DOS disks. These capabilities mean that your expensive Macintosh will be able to emulate cheap IBM PC clones and run Lotus 1-2-3, dBASE, Wordstar and so forth. There is even a new keyboard with function and cursor control keys.

At the top end of the range Apple has announced the Macintosh II, based on a 16MHz 68020 microprocessor and including the 68881 floating point coprocessor chip, providing performance increases for mathematical calculations of between 200 and 300 times the Mac Plus. The machine comes with a choice of high resolution monochrome or colour monitors, and six expansion slots for add-on cards. Of particular interest is the announcement of A/UX, an Apple version of UNIX for the Macintosh II.

So what effect is all of this going to have on the computer market? Of great significance is the fact that the Mac can now run MS-DOS and UNIX. Traditional (although in my opinion irrelevant) criticisms that the Mac was out of the MS-DOS mainstream of business computers no longer have any foundation. The Macintosh II is clearly geared at high-powered number-crunching applications, and hence will tend to be used more for CAD/CAM, engineering and research applications than for straight-out business applications. The Mac SE is a slightly faster and more versatile version of the Mac Plus, and will be competing squarely against the new 80386 based MS-DOS machines.

Apple has finally responded to market pressure and released an open architecture machine with MS-DOS and UNIX capabilities. How these will fare in the local market place will depend upon their yet-to-be-announced pricing. The main competition will be from the PC clone market, whose low pricing strategy has reduced IBM's role to that of an important bystander.

This may mean that 1987 will go down as the year that Apple regained dominance in the personal computer marketplace.

Creating new styles of text

by Nigel Burrell

Different types of textures producing multiple texterity in programming are of the essence nowadays. It certainly contributes well to good entertainment, utility, and business type programs, setting a professional look about the application it is suited for.

You may think achieving two or three different styles of text on the graphic screen may take up too much memory space and is really only suited for machine code programs... but is it?

You can in fact achieve this goal by taking the existing character shapes offered by the computer and re-group them into a selected format.

The following programs can be used only on the graphic screen - SCREEN 1 for SVI, SCREEN 2 for MSX users. Redefining the text characters on the text screen can be done by use of the VPOKE command, but this will be fully explained at a later date.

The BASIC program list shown below is a routine that prints out an extended character length of each character held in A\$. Feel free to incorporate this routine within your own programs.

MSX Users

```
10 COLOR 15,1,1:SCREEN 2
20 OPEN "GRP:" AS #1
30 A$="THIS IS THE EXTENDED STYLE"
40 D=8:C=D/2:GOSUB 90
50 GOTO 50
90 A=121-LEN(A$)*C
100 FOR F=1 TO LEN(A$)
103 FOR T=F*D+A TO F*D+A+1
110 PSET (T,40),POINT (T,40)
120 PRINT #1,MID$(A$,F,1)
130 NEXT: NEXT: RETURN
```

SVI Users

```
10 COLOR 15,1,1:SCREEN 1
20 A$="THIS IS THE EXTENDED STYLE"
30 D=8:C=D/2:GOSUB 70
40 GOTO 40
70 A=121-LEN(A$)*C
80 FOR F=1 TO LEN(A$)
90 FOR T=F*D+A TO F*D+A+1
```

```
100 LOCATE T,40:PRINT MID$(A$,F,1)
110 NEXT: NEXT: RETURN
```

Variable list

A = centre start point.
D = character length.
C = half the character length (used in conjunction with variable A to determine centre start point).
F = loop from 1 to the length of A\$.
T = position of next character to be printed.

If you wish to see just how each character shape is formed just type in the pausing loop: 105 FOR P=1 TO 120:NEXT

Now, how about Chaped style? The following program demonstrates this:

MSX Users

```
10 COLOR 15,1,1:SCREEN 2
20 OPEN "GRP:" AS #1
30 A$="THIS IS THE CHAPED STYLE"
40 GOSUB 90
50 GOTO 50
90 A=121-LEN(A$)*3
100 FOR F=1 TO LEN(A$)
103 FOR T=F*6+A TO F*6+A+1
110 PSET (T,40),POINT (T,40)
120 PRINT #1,MID$(A$,F,1)
125 LINE (T-1,40)-(T-1,46),1
130 NEXT: NEXT: RETURN
```

SVI Users

```
10 COLOR 15,1,1:SCREEN 1
20 A$="THIS IS THE CHAPED STYLE"
30 GOSUB 70
40 GOTO 40
70 A=121-LEN(A$)*3
80 FOR F=1 TO LEN(A$)
90 FOR T=F*6+A TO F*6+A+1
100 LOCATE T,40:PRINT MID$(A$,F,1)
```

```
105 LINE (T-1,40)-(T-1,46),1
110 NEXT: NEXT: RETURN
```

Now for Extended Chaped style combined.

MSX Users: just change

appropriate lines to read:

```
30 A$="THIS IS EX. CHAPED STYLE"
90 A=121-LEN(A$)*4
103 FOR T=F*8+A TO F*8+A+2
125 LINE (T-2,40)-(T-2,46),1
```

SVI Users: make obvious changes:

```
20 A$="THIS IS EX. CHAPED STYLE"
70 A=121-LEN(A$)*4
90 FOR T=F*8+A TO F*8+A+2
105 LINE (T-2,40)-(T-2,46),1
```

There are still many kinds of text styles that you may be able to come up with by experimentation. I actually use these text styles all the time when designing my programs.

To designate each piece of text to different locations of the screen you can use the following formula:

A\$="message":A=left starting co-ordinate:B=topmost co-ordinate:GOSUB to sub-routine.

Plus remember to take out line 90 (MSX users) or 70 (SVI users).

Incidentally, to keep the routines running at maximum speed it would be a good idea to define variables A,F,T, and B as integers, for example 5 DEFINT A-B,F,T. Also, if you can pack the whole loop of commands onto the one line, that maintains speed too.

To achieve much bigger characters than the ones provided from the keyboard, you may have to design your own characters separately by using the LINE or DRAW commands. Of course, this type of programming takes up quite a bit of memory space and printout speed becomes very slow. Imagine how long it would take to come up with the character set using this method.

Next I will be reviewing some new SVI and MSX programs.

Have you ever sat all night puzzling over an adventure, wondering why you do it? I'm sure these programs are designed for masochists. They inevitably cause immense frustration (often rage), but the satisfaction of solving an adventure is rewarding.

Over the next few issues I'll show you how to write your own adventures, so you may be able to inflict suffering on somebody else for a change. A fair degree of competence is needed to construct an adventure — the programming can get quite involved, and the game itself may take a fair bit of memory. The operating system of an adventure doesn't necessarily have to be large, but such incidentals as messages or a few pictures will take their toll on memory. A good understanding of arrays is desirable, because an adventure written in BASIC is totally dependent on the cross-referencing of arrays.

Both numeric and string arrays are used in the game, one- or two-dimensional. Individually, arrays like this aren't usually a worry, but collectively a dozen or so multi-element arrays could become a headache if the program is not developed properly. Planning is important to an adventure. There is such scope for

inventiveness that the last thing you want to do is change your mind halfway through programming. Sometimes this is unavoidable, for example if you think of new locations that would help the logical flow of events, but at the very least, you must have a firm idea of the overall adventure structure.

The first thing to decide on is the topic of your adventure. Space or futuristic subjects seem to be the most common, but personally I prefer a more realistic scenario. It wouldn't be impossible to write an adventure around a school, or even the Beehive (also full of kids). The example I'll work through is, to put it bluntly, simple, but it does contain all the elements necessary to construct an adventure of any size. Refinements like sound/graphics can be added.

To give you something to think about till next time, here's an outline of the creative steps.

- Decide your topic and the objective.
- The number of locations (rooms etc).
- The number of objects to be found or used.
- The number of verbs to be understood by the game.
- Any special features, such as randomising.

The way I'll work this is to let you base your own game around mine, building on it by substitution, enlargement and extrapolation.

For the topic and objective, I'll make the simplest scenario I can think of: taking the dog out for a walk. Sounds silly I know, but it's a start and could even be the opening scene

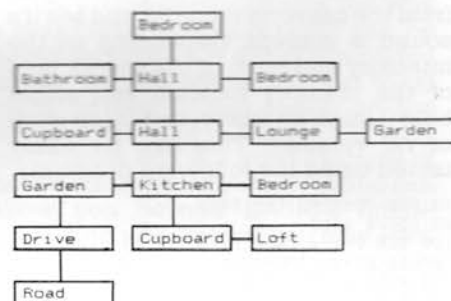
to a much larger game.

OK, topic and objective done. The number of locations can be the rooms in the house being left. The objects could be the dog, a lead, and clothing. The verbs will be fairly basic. You don't, for example (or shouldn't) KILL many things when you take the dog out. Special effects could include different weather, a cat appearing at random etc.

What you need to do now is draw your map. My example one is below. Note that all that's needed is a set of boxes with inter-connections (directions in/out). These locations are then numbered, preferably in the order in which an adventurer would expect to come across them. This keeps the programmer's job simpler and more logical.

Next, place the objects and number them. Find verbs to go with these objects, using common ones like GET, OPEN and perhaps throwing a couple of stinkers in. If you have any text adventures, have a look at them, and discover what inputs they'll accept. That should give you a fair idea about the degree of difficulty to aim for.

Until next time, I'll leave you to it.



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Speech recognition

by James Palmer

Several months ago I had a lot of typing to get done on my Atari. What a waste, I thought. If only I could simply 'read' my letters to the computer, then it would only take a fraction of the time.

Hence was born my Audio - Linguistic Interactive Communications Environment (know as ALICE to its friends). As with most programming ideas the concept seemed promising, the end result possibly brilliant, but the further the development went, the more impractical it became. This article looks at the way a typical concept can be developed and the way technical and programming problems can hinder its progress.

Obviously enough I started off by trying to find a way of letting my Atari 'hear' what I was saying. The Atari's own tape recorder provided a convenient and quite simple solution. After some background reading and a series of trial and error programs (mainly erroneous), I was able to read a meaningful signal from the recorder.

Bit 4 of memory location 53775 (SKSTAT) allows data to be read directly from the serial input port. This enables you to test the signal from the cassette recorder and see if a sound is present. Depending on the intensity and pitch of the sound, bit 4 of the memory location will either hold 0 (high intensity) or 1 (high pitch or no volume). This can be easily tested using the following program:

```
10 REM TESTING THE TAPE
20 GOSUB 1000
100 REM Put a tape into the recorder and
    press play
110 POKE 54018,52:REM Turn on the tape
120 X=USR(ADR(ML$))
130 PRINT PEEK(205)
140 GOTO 120
999 STOP
1000 REM Set up the Machine Code
1010 DIM ML$(15)
1020 FOR N=1 TO 15
1030 READ A
1040 ML$(N,N)=CHR$(A)
1050 NEXT N
1090 RETURN
1100 DATA 104,160,1,169,16,44,15,210,208
    ,2,160,0,132,205,96
10 ; SAVE #D:LISTEN.ASM
12 ; Look at Bit 4 of 53775 (SKSTAT), and
    store 0 or 1 at 205.
20 ; 8/2/86
30 ;
40 ; X=USR(THIS)
0100 SKSTAT = 53775
0110 ;
0200 START
0210 .ORG 32768
0220 ;
0230 PLA
0240 ;
0245 LDY #1
0250 LDA #16
0260 BIT SKSTAT
0270 BNE L1 ; NO SOUND
0280 LDY #0
0290 ;
0300 L1 STY 205
0310 ;
0320 RTS
```

Listing 1

Type in the program and put a music cassette into your Atari tape recorder and press Play. Now RUN the program. A stream of 1s and 0s should scroll down the screen. To stop the program press BREAK and type POKE 54018,60 to turn off the cassette recorder.

All that the short machine code routine does is to look at the 4th bit of the byte at 53775 and store its value (0 or 1) into location 205 where it can be checked from BASIC. It is much faster and easier to examine individual bits from machine language than to manipulate them directly from BASIC.

At this stage the numbers on the screen are all pretty meaningless. To try and make some progress towards speech recognition we must do two things: firstly increase the sampling rate; and secondly find a better way of displaying the data. These requirements were both satisfied by using a more complex machine code routine.

```
10 ; SAVE #D:ALICE.ASM
11 ; Adapted from ALICE3.ASM, for Bits a
    nd Bytes, 8/2/86
20 ; Audio Linguistic Interactive Commun
    ications Environment
30 ; 11/9/86
40 ;
50 ; X=USR(THIS,ADR(DAT$))
60 ;
70 ; GET 256 DATA POINTS,DISPLAY THEM GR
    APHICALLY AND PUT THEM IN DAT$.
80 ;
0100 ;
0110 DATADDR = 210
0112 SCRNNADDR1 = 204
0114 SCRNNADDR2 = 206
0116 LP1 = 208
0118 HEIGHT = 209
0120 SKSTAT = 53775
0125 SAVMSC = 88
0130 ;
0200 ; START
0210 .ORG 32768
0220 ;
0230 PLA
0240 PLA
0250 STA DATADDR+1
0260 PLA
0270 STA DATADDR
0280 ;
0290 LDA 88
0300 STA SCRNNADDR1
0310 STA SCRNNADDR2
0320 LDA 89
0322 CLC
0324 ADC #20
0330 STA SCRNNADDR1+1
0340 STA SCRNNADDR2+1
0350 ;
0360 LDA #0
0370 STA LP1
0380 ;
0390 LOOP1
0400 LDA #0
0410 STA HEIGHT
0420 ;
0430 LDA SCRNNADDR1
0440 STA SCRNNADDR2
0450 LDA SCRNNADDR1+1
0460 STA SCRNNADDR2+1
0470 ;
0480 LDX #128
0490 ;
0500 LOOP2
0510 LDA #16
0520 BIT SKSTAT
```

```
0530 BNE LP2A ;THERE IS NOHNG TH
ERE
0540 ;
0550 INC HEIGHT
0560 ;
0570 SEC
0580 LDA SCRNNADDR2
0590 SBC #40
0595 STA SCRNNADDR2
0600 BCS N1
0610 DEC SCRNNADDR2+1
0620 ;
0630 N1 LDY #20
0635 LDA #0
0640 BEQ LP2B
0650 ;
0660 LP2A LDY #25
0670 LP2B DEY
0680 BNE LP2B
0690 ;
0700 DEX
0710 BNE LOOP2
0720 ;
0730 LDY LP1
0740 LDA HEIGHT
0750 STA (DATADDR),Y
0760 ;
0770 TYA
0780 AND #7
0790 TAX
0800 LDA #128
0810 CPX #0
0820 BEQ LP1A
0830 LP1B LSR A
0840 DEX
0850 BNE LP1B
0860 ;
0870 LP1A
0880 LDY #0
0890 ORA (SCRNNADDR2),Y
0900 STA (SCRNNADDR2),Y
0910 ;
0920 INC LP1
0930 LDA LP1
0940 BEQ END
0950 AND #7
0960 CMP #0
0970 BNE LP1C
0980 ;
0990 CLC
1000 LDA #1
1010 ADC SCRNNADDR1
1015 STA SCRNNADDR1
1020 BCC LP1C
1030 INC SCRNNADDR1+1
1040 ;
1050 LP1C
1060 LDA #0
1070 BEQ LOOP1
1080 ;
1090 END RTS
```

Listing 2

To use this program, again put a music cassette into the tape recorder and press Play. When you can hear music coming through your TV speaker press Return and the program will start sampling the music.

This time the machine code routine is somewhat longer and more complicated than the first one. Firstly it samples the cassette port 128 times (at about 8,000 samples per second), and counts the number of times it found a 0 at bit 4 of location 53775. This produces a number between 0 and 128 which represents the intensity of the sound on the tape for that brief period of time. The routine then uses this value as the Y co-ordinate and plots a point on the screen. It also stores the value in DAT\$.

This is repeated 256 times so that in the space of about four seconds the computer has taken 32,768 samples and plotted the resultant data on the screen. The BASIC program then joins up the dots to make a more meaningful graph.

```

10 REM ALICE
20 REM Audio Linguistic Interactive Comm
  unications Environment
30 REM By James Palmer
40 GOSUB 1000
100 REM Listen to the Tape
110 GRAPHICS 8
115 PRINT "    Put in a tape and press p
  lay"
120 PRINT "    Press RETURN to start samp
  ling"
130 POKE 54018,52
140 INPUT A$
150 X=USR(ADR(ALICE$),ADR(DAT$))
160 POKE 54018,60
170 PRINT :PRINT :PRINT
200 REM Join the Dots
205 COLOR 1
210 PLOT 0,128-ASC(DAT$(1,1))
220 FOR X=2 TO 256
230 DRAWTO X-1,128-ASC(DAT$(X,X))
240 NEXT X
300 PRINT "Press RETURN to RUN the progr
  am again"
310 INPUT A$
320 GOTO 100
999 STOP
1000 REM Set up the Machine Code
1010 DIM ALICES$(128)
1020 FOR N=1 TO 128
1030 READ A
1040 ALICES$(N,N)=CHR$(A)
1050 NEXT N
1060 DIM AS$(14)
1070 DIM DAT$(260)
1080 DAT$(1)="*":DAT$(260)="*":DAT$(2)=D
  AT$
1090 RETURN
1100 DATA 104,104,133,211,104,133,210,16
  5,88,133,204,133,206,165,89,24
1110 DATA 105,20,133,205,133,207,169,0,1
  33,208,169,0,133,209,165,204
1120 DATA 133,206,165,205,133,207,162,12
  8,169,16,44,15,210,208,19,230
1130 DATA 209,56,165,206,233,40,133,206,
  176,2,198,207,160,20,169,0
1140 DATA 240,2,160,25,136,208,253,202,2
  08,222,164,208,165,209,145,210
1150 DATA 152,41,7,170,169,128,224,0,240
  ,4,74,202,208,252,160,0
1160 DATA 17,206,145,206,230,208,165,208
  ,240,21,41,7,201,0,208,11
1170 DATA 24,169,1,101,204,133,204,144,2
  ,230,205,169,0,240,155,96

```

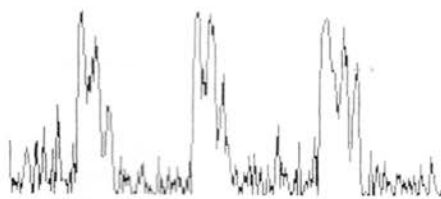


Figure 1 - the word "hi" repeated three times.

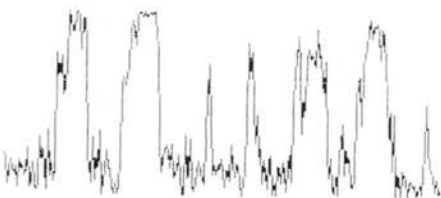
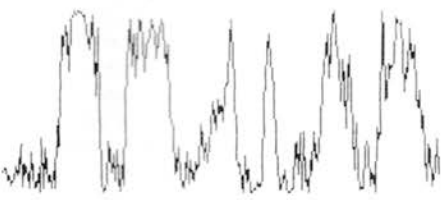


Figure 2 - three renditions of "to be or not to be", showing the imperfections in this method of speech sampling.

Actual speech

The next step is to represent spoken words on the screen. To do this, first record some speech on a blank tape. To start with, click your finger (or make some other distinctive sound) and then repeat a short word a couple of times, taking care to make the words clear and distinct. Now put the tape into your Atari recorder, press Play, and Run the program. Listen for the click, and as soon as you hear it, press Return and your Atari will start 'listening' to the tape. As you hear your voice coming through the TV speaker you should see a corresponding pattern of dots appear on the screen.

After the machine code routine has finished the dots will be joined up, and the graph on your screen should hopefully look something like figure 1 (although of course the actual patterns will differ).

Interpretation

With luck you should be able to see obvious similarities between the words. Unfortunately they are not always distinct and as you will probably be able to see, even a slight difference in the pronunciation of a word can change its pattern markedly. This makes designing a system to translate the patterns back into actual words very difficult. Also if you try saying similar words and printing their graphs you will often find that there is not much difference between them.

Clearly if this system was to be used for speech recognition a different method of displaying the data, so as to make the words more distinctive, would have to be devised. Unfortunately though, most of the problems are due to our method of 'hearing' the speech.

By using the Atari cassette system

we have introduced two major difficulties. Firstly, using a tape adds a lot of unwanted noise and static to the signal; for instance ideally the gaps between the words on a graph should be almost perfectly flat, but clearly they are not. Secondly, the Atari can only supply us with either a 0 or 1 to represent the sound it can hear on the tape. Obviously this is hardly an ideal range of values when we are trying to depict sounds such as human speech.

Summary

This method of speech sampling is probably too crude ever to be used successfully for full-blown speech recognition. However, it could perhaps be developed enough to recognise a few simple and clearly distinct words (eg. up, down, left, and right).

The simplicity and convenience of using the Atari's own tape system leads to the program's own downfall. The in-built features are simply not refined enough to handle the interpretation of complex human speech. To be successful, a speech recognition system would need a better sampling device and a method of comparing the data to speech patterns stored in memory, so that it can tell what the word was.

This article demonstrates the way a reasonably simple concept can be developed until it is either completed or else it becomes impractical to go much further. It also shows off the power of the Atari's in-built capabilities and is a good example of how a machine language routine can allow you beyond BASIC's limitations. And who knows, you may even learn a little about the way you speak, or even about the way your Atari listens.

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by Pip Forer

Two rather traditional but nonetheless vital applications of computers are running databases and doing numeric work, in particular maths and statistics. Using programs for these ends in a school situation is not always easy. However, very good (and some not so good) programs have appeared for the BBC which cater for these needs. This month we look at two: Microtab, a statistical package from Edward Arnolds; and Supastore, a database from Acornsoft.

These are of interest partly because they reflect different design approaches to software for data analysis. One chooses to require the user to undertake all of the work using a command language, while the other works almost entirely through menus.

Microtab is the language-driven option. Here is a package that allows you to enter data sets from all sorts of sources (field work, lab work, published tabulations) and undertake a wide variety of statistical manipulations on them. Microtab handles a wide range of tests and descriptive statistics. It will do the simple descriptive stuff such as means and standard deviations, and also more telling tests such as analysis of variance, which would be much less common in a school context. It will undertake a correlation exercise or compare two time series, i.e. data collected over time such as rainfall or unemployment. It will also produce graphs for you: histograms, scattergrams, plots over time.

To do this, Microtab has its own system for entering and editing data. It also has a command language. For instance in order to read in two variables, say hours and wage rate, into the system the command is:

```
READ HOURS INTO C1 AND RATE
INTO C2.
```

To multiply one by the other and get the wage packet for someone the command is:

```
MULTIPLY C2 BY C1 AND PUT
WAGES INTO C3.
```

To get mean and standard deviation of the wage values enter DESCRIBE C3.

This appears on the surface to offer many advantages. Command languages usually mean you can get more control and flexibility from a program, and this one uses plain English! However, there is a darker side. The plain English must be perfectly typed and the user must be well-versed beforehand in how the

command language works. In practice this means using the program quite a lot.

Supastore takes a very different view, requiring the user to work almost entirely through menus. Choices appear on the screen and the user employs the arrow keys to select a particular one by highlighting it. When using it with an existing data base it is possible for a student to undertake a variety of searches and reports without using any other means of specification. The parameters of the database are all established early on by whoever creates it. Here the names of the fields are specified and data types laid down, and from here on in the user simply selects certain records by number or certain fields by name from a menu on the screen.

Furthermore, the sometimes confusing process of making a report of selected items is simplified by the notion of formats. Formats exist both for searches and for the specific information retrieved by a particular search (all the fields or just some). In a classroom or other environment predefined searches can be provided (each with its own title) for either searching or modification.

This approach tends to limit the power of the program, especially for the frequent user who still has to work through the menu structure. However, it also allows someone to set up a database which can be interrogated with minimum experience. In a classroom where the job is learning about databases and their use (perhaps as a casual component of a history lesson) rather than learning about the program in detail, this is a great plus.

In general the menu approach wins in the classroom for just this reason. The learning overhead for the program, which is educationally dead weight in many subject applications, is minimised while the practical applications are maximised for the casual user. I found Supastore by far the simplest database program I have seen to set novices to work on, and in this regard it fills an important niche. It is, however, a relatively unsophisticated database in terms of what an experienced user can make it do.

What do these two programs compare with? Microtab has a few rivals, but is the most comprehensive system I have seen that will run on a Model B. However, some of the comprehensiveness stems from providing facilities that few users will need. Quite a few other systems, including our own StatsMap, provide the basic

statistics, graphs etc. The version I had was DFS based but a network version is available. At the top end of the BBC users it certainly has a niche.

Supastore comes up against three obvious rivals: the simple but applicable VuFile; the very usable but standalone based Masterfile from Beebugsoft; and Acorn's View family Viewstore. It beats the first for facilities and all three for ease of use. It is also quite practical on the network. It certainly fails to provide some of the facilities which Masterfile gives, especially calculated field values and numeric reporting of totals or means in particular subsets.

On the other hand it has some very nice capabilities for handling strings which make it much better for storing bibliographies for class use. Viewstore is perhaps even more comprehensive but is handicapped by its complexity and again its capabilities on the network. Neither of these two has ever seemed to me to be practical on a heavily loaded network.

Supastore is ROM based with a series of supporting programs read from disk. It is purchased in 5-packs and from some initial testing would not seem to cause many problems with multiple users running it at once. My one disappointment, however, was that it is not as closely designed for multiple user operation as I had first heard. Common class databases are easy to set up and make available to all, but problems can occur if several users want to augment the same data base in the same session (and this is not just from one group undoing another's changes). Supastore also works in mode 3 so you need to have bought wisely with monitors: low cost, low-res ones will cause you pain.

In summary both of these packets have merits. Microtab has a lower price tag: the UK price is about £NZ100 with a \$30 premium for each additional network station. Supastore has a super price: around \$750 for a 5-pack with five sets of manuals. At that (three times the Microtab for a five station network) it appears somewhat dear. This is a shame since it bears clear marks of having been designed with a keen perception of what a general-purpose school database should offer. It is very much a people's program.

Microtab is impressive in what it offers even on a model B, but is for a much smaller group of users, those who are doing quite a lot of statistical analysis and would work with it over a longer period of time, during which they would learn its ins and outs.

We kid you not: by Steven Searle computer records are the key

Goat breeding appears to have little to do with computing but computers do provide goat farmers with an important ability – basically, the development of a “dating service”.

After selecting goats for breeding, a farmer intent on creating a stud herd will then want carefully to record and analyse the performance of progeny from ear-tagged parents. This effort is to meet increasing demand from farmers wanting well-bred goats for establishing their own herds.

“At present our goat industry has fewer than 40,000 goats, and it’s probably where the sheep industry was a hundred years ago,” says the owner of one of Taumarunui’s goat studs, Mr Robert Hall. “We will establish a national herd, but we have to condense the time of development.”

To that end, recording and analysing stock data is essential, he says. “Accurate record-keeping of breeding and production, on each goat, is the guts of this whole industry.”

Robert Hall is a director of Cashmere Goat Stud NZ Ltd, and he and his goat farm manager have introduced new farming techniques, some imported from the University of Melbourne’s goat research unit, along with an IBM PC as part of the pioneering enterprise. With 1,500 head on file, and 4,500 more being entered, the PC is acting as a database holding each goat’s characteristics and production history.

The program used is Primesoft’s Sires, adapted for goats. Each animal is listed with details on sire and dam, fertility, colour, kid weaning weight,

length of guard hair and down, mating record, and class (of purity). Also recorded are details of age, teeth, and ultimate fate. The records are kept after a goat has become “inactive” – a short way of saying “gone to greener pastures” – and will eventually cover many generations of the herd.

Operating the computer is neither the owner nor farm manager, but Judy Simpson, who is contracted from a Te Kuiti accountancy firm. The system is used solely for stock records, with accounting records being kept separate. According to Mrs Simpson, both systems could be more integrated, but an apparent problem is the reconciliation of livestock records with the requirements of ledger accounts.

Another computing problem at the Hall farm is the need eventually to have Robert Hall’s other businesses – a quarry, sheep farm, angora stud and machinery imports – consolidated on one balance sheet, but Judy Simpson says she is attempting to evaluate other software options to enhance the computer system. Economic projections could become a further facility, investigating the return on importing more stud stock from Australia, or the worth of the Taumarunui farm’s cashgora wool, which fetches \$44 per goat compared with angora’s \$66 per goat.

Sheep, incidentally, produce \$15 worth of wool per animal per year.

“What else can we do,” asks Robert Hall, “except go for higher value product and accelerated production? But to do that we need the best of available knowledge, and the best tools.”



Judy Simpson at work.

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Conditional BATches

by Selwyn Arrow

We are again looking into BATch files this month, with part two in a continuing series on this useful subject. Don't despair if you are already familiar with the subject matter so far, as we will have a change next time and discuss the PATH command that enables us to locate files in other directories or disks.

Games

Did you find time to figure out how to improve on last month's GAMES.BAT file so that it will display a directory of games to choose from? With the one line file we looked at (BASICA %1) you had to enter the precise name of any game you wanted and this was picked up and used in the variable (%1) when you typed GAMES (the BATch filename) followed by your choice, ie GAMES GAME1.

The first part of our improvement is to insert a new line at the beginning of the BAT file:

```
DIR *.BAS/W
BASICA %1
```

This translates as: display a DIRectory of all files (on the current drive and subdirectory of course) with any filename (*) and the extension .BAS (for BASIC), in 3 columns (/W). Now each time you call up GAMES, your faithful BATch file will present you with a listing of available BASIC files so that you can make your choice.

But there is still a problem as it does not allow enough time to read the listing before executing the next line, where it calls BASIC and this of course clears the screen!

The answer to this is to make it wait for you to read and make your choice. We could insert the PAUSE command on a new second line so that it will then wait for as long as you wish, that is until you press any key to resume. Only then would it proceed to execute the next line (BASICA %1).

Unfortunately, here we hit a snag, as variables can only be entered when a BATch file is first called, so that in this case unless we already knew and had entered a suitable filename, our variable %1 will be "empty" and so only BASIC will be run. We would usually find that we could enter a choice only **after** we had run the BATch file, so that we could read the DIRectory first! Finding the answer to this circular dilemma leads us to the conditional BATch command.

Useful conditions

The syntax of this command is IF <condition> <command>. As in BASIC, the IF command depends on a particular <condition> being True, so it will execute the next <command> on that line. When the condition it is testing is not True (therefore False) the IF ignores the command by skipping the remainder of that line.

The <condition> parameter we will use for this exercise is the <string == string> comparison. Here the <condition> is True only when the two strings are identical. The first string is usually a variable, in our case %1. The second string is usually the one we hope it will match with so that the remainder of that line can be executed. I say "usually" because what we want to achieve here is <condition> to indicate if we have chosen to type in a filename from the start. That is, we want to test for the existence or not of our %1 variable.

To accomplish this, the line should look something like:

```
IF %1 == "no filename" GOTO
"display menu"
```

The words in lower case describe what we want, so now let us find out how to find the correct parameters to do exactly what we require.

There is no parameter available to indicate "no filename", so we will have to fudge it a bit by appending a character that is unlikely to be used in a filename, such as '@', to both sides of the equality sign, ie %1@==@. This <condition> again has two possibilities: when our variable contains a filename we will get a False or unequal condition, ie 'filename plus @' is not equal to @; and it then follows that we will get a True condition when there is no filename appended to @, ie @ of course equals @. This now translates as: IF there is no filename in %1 then GOTO the line to display the DIRectory. We can GOTO <labels> in BATch files, as these are identified as non executable lines which start with the symbol ':'.

Our GAMES.BAT file would now read:

```
IF %1@==@ GOTO MENU
BASICA %1
GOTO END
:MENU
DIR *.BAS/W
```

So there we have it. If we do not type in a program name the first line will cause a branch to lines 4 and 5 to display the menu of programs for us to enter a name. When we have entered a program name its presence will allow the program to continue from line 2, first loading BASICA and then your choice of program.

Final result

At this stage I would strongly advise that you add comments to your GAMES.BAT file so that it can keep you informed of its actions as it is executing, as well as documenting it so that in a couple of weeks it will still make sense to you. My finished file would look like this:

```
ECHO OFF
CLS
IF %1@==@ GOTO MENU
BASICA %1
ECHO Thank you for playing Games
GOTO END
:MENU
ECHO I need a name as well! So
ECHO try again with one of these
DIR *.BAS/W
ECHO Now type GAMES xxxxxxxx
ECHO where xxxxxxxx is the game
:END
```

I have also thrown in a couple of new commands to show how they can be used. ECHO OFF disables the display (echo) of each command as it is executed by the command processor, as otherwise all of the lines would be displayed, making a mess of your screen. ECHO at the beginning of a line will display that line only, as you will see from line 5.

CLS may be familiar to most BASIC users, as it clears the screen. I have placed it after the ECHO OFF command because any current lines contents are always displayed **before** being executed when ECHO is ON. By placing CLS on line two then the first line is cleared from your screen immediately after it is displayed.

When you run this file you will find that the last two ECHO lines will appear **after** the directory to tell you what to do next. Try writing to me care of *Bits & Bytes* to tell me how you would further improve on this BATch file in any way and I will do my best to include the best examples in a further column on this subject.

Other menus

There are other ways of writing a menu of programs, of course. The most obvious is to write a menu program in BASICA (or your own computer's version of BASIC), but that is not the purpose of this DOS column.

Incidentally, there are three other types of conditions described in your DOS manual that can be used with the IF command: EXIST <filename>, NOT <condition>, and ERRORLEVEL <number>. We will cover

Exploring GW-BASIC

by Bryce Utting

While Sanyo BASIC is superior in many ways to other versions of BASIC on 8088 micros (ie. GW-BASIC), especially in terms of memory allocation, it is different in enough ways to prevent a large number of GW-BASIC programs from working. Leaving aside the problem of IBM specific PEEKs and POKEs, this month and next I will describe many of the differences between Sanyo BASIC and the IBM PC's GW-BASIC/BASICA.

BLOAD filename [,offset]

Loads a file (FILENAME) that is in BSAVE into memory at the segment stored in the file. The offset used is that in the file, unless OFFSET is specified.

BSAVE filename, offset, length

Saves LENGTH bytes to the file FILENAME starting at address OFFSET in the current segment. The file starts with a one-byte header (FD hex), followed by the segment, offset and length (two bytes for each). The data is after this (LENGTH bytes), followed by a one-byte EOF marker (1A hex).

CIRCLE [STEP] (x,y) radius [,colour [,start,end [,ratio]]]

Draws a circle (radius RADIUS) centred at X,Y in COLOUR (or the default if this is not specified). START and END control the arc length that is drawn (in radians, starting with 0 at the right-hand side of the circle and moving anti-clockwise. A semi-circle with the lower part not drawn would have START=0, END=pi.)

If one of these parameters is negative the arc is drawn with a line to the centre from the specified end(s) of the arc (NB: the absolute value is used for drawing the arc).

RATIO controls the shape of the circle – the larger the number, the taller and thinner the circle. On screen 1 the default is .415, on screen 2 0.82 (0.5 and 0.95 give better pictures on the monitor I use).

CLEAR [,memory [,stack]]

As well as the usual functions (clearing variables), CLEAR allows memory space to be reserved for the user. MEMORY gives the top address available for BASIC (the maximum is just under FFFF hex), freeing all memory above that for 8088 routines. STACK assigns space for the BASIC stack (which handles GOSUB/RETURN, WHILE/WEND and FOR/NEXT constructs). 512 bytes are usually set aside, but this can be changed to allow larger numbers of nested loops.

CLS [function]

FUNCTION selects which screen is to be cleared: 0 clears the entire screen, 1 clears only the graphics viewport, while 2 clears the text viewport.

CONT

Unlike Sanyo BASIC, there is no CONT N command to disable the BREAK key.

CSRLIN

This is also present in Sanyo BASIC, but the manual ignores it. It returns the vertical position of the cursor (the text cursor, not the graphics cursor), and is similar to POS.

DRAW graphic\$

DRAW executes the graphics commands in GRAPHICS\$, according to the Graphics Macro Language. In GML, commands are separated by semicolons although these are only strictly necessary after variables and the X command.

Where numbers are required in a string, they can be given either as constants (eg. "u30;120" or "u30120") or by using BASIC variables (eg. "u=updistance;1=length;"). The commands B and N are prefixes and can be used before all other commands except for A, TA, C, S, X and P.

U [N]

Move up distance N*scale (set by S). If N is omitted, 1 is used instead (this is true for all draw commands except M).

D/L/R [N]

Move down/left/right as above. The diagonal draw commands are E (up & right), F (down & right), G (down & left) and H (up & left). The parameter N follows the above rules.

M x,y

Move to x,y. If a + or - sign is used before x, x and y are added to the current graphics position (ie. a relative draw) otherwise the absolute position x,y is used. Unless a B prefix is used, a line is drawn from the old position.

B

When B is used as a prefix, the graphics cursor moves to the point specified by the command but no line is drawn.

N

When N is used as a prefix, a line is drawn but the cursor returns to the original position.

A n

Set rotation angle in multiples of 90°. This command rotates all following lines in much the same way that Sanyo BASIC's SYMBOL does. The main difference between this and TA is that A scales figures that have been rotated 90° or 270° so that they should appear the same size as with 0° or 180°.

TA n

Rotate angle n. N must be in degrees, between -360 and 360. A negative angle rotates clockwise, positive counter-clockwise.

C n

Set colour – 0 to 3 on screen 1, 0 or 1 on screen 2.

S n

Set scale factor. N=4 gives full scale, 1 gives 1/4, 8 gives double etc. This affects all drawing commands (U D L R E F G H M) – note that relative M is scaled, absolute is not.

X string

This uses the specified string much as a subroutine, executing the commands in it exactly as if that string had been used as the main parameter for DRAW. Note that the string name must be followed by a semicolon (eg. "u20xSQUARE\$d20" not "u20xSQUARE\$d20").

P a,b

Paint starting from the graphics cursor position using a as the colour to fill the area with the b as the border colour.

EDIT line

Lists the specified line of the program in memory and positions the cursor on the first character ready for editing.

FRE (n)

Unlike Sanyo BASIC, FRE only returns the total memory available to BASIC. This is because GW-BASIC keeps program, variables and stack all in the same segment (leaving a maximum of 64kb available) while Sanyo BASIC uses a different segment for each item (leaving 64Kb for program, 64kb for variables, up to 64kb for each array, etc.)

KEY ON/OFF

As well as setting function key interrupts, this also switches on or off a one-line display of the function key definitions (on line 25).

Cont. on p 85

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Modem magic

by Peter Biggs

Question: Why all the fuss about modems? Answer: Because they open the door to computer communication worldwide and offer exciting prospects for the newcomer in data communications.

I'll begin with a bit of background. Data communications in New Zealand need to go through the NZPO Telecoms Packet Switching Network called PACNET and electronic mail goes through the fledgling service called STARNET.

How to start? Well, to begin the life of a communication adventurer you need to do some setting up. The items you need are:

- A BT telephone plug – not the old style phone plugs. Call the Post Office if you need your phone rewired.
- A PACNET NUI (Network User Identity) number and a password. These are applied for through Telecoms. Every time you use PACNET you are charged according to the time you were on line.
- RS232 serial interface capability in your computer and an RS232 cable. A PC clone needs a full standard RS232 cable. The cable costs around \$30-\$50.
- Communications software to use the serial interface. For IBM clones I found the public domain program 'PC-TALK III' one of the simplest and cheapest at \$20-\$30, available from Remarkable Enterprises. Other communications programs are Crosstalk/Mirror from the USA, and Multicom from the UK which allows videotex translation for the PC. Many programs, such as PFS: First Choice, have communications options and all well-supported computers have communications software.
- A modem. Depending on your need for speed and sophistication, a simple 300 baud modem currently costs around \$400 and others cost more. The world-wide standard for sophisticated devices is the Hayes series of modems, one of the more sophisticated of which is the 'intelligent' auto-answer/auto-dial modem. These have a series of internal codes which perform a number of functions and good communications software usually has a Hayes option.

Having got all this, what next? Well, you need someone to talk to. New Zealand offers Aditel and others, Australia offers Viatel and Orbit, the USA offers The Source, CompuServe and many others, and the UK offers Pergaman-Infoline

among others. NZ, Australia and the USA all offer Bulletin Boards for users to talk to each other. All of these require you to pay a registration fee for a manual, ID numbers and passwords and then you pay for connect time or frames for videotex systems.

Alternatively, you could talk to another computer at your regional sales office, connect to a remote EFTPOS terminal, or even download text from a remote client's terminal. Stockmarket reports and other data can also be downloaded.

allow the telephone to be plugged into the modem. Hence the likely need for a phone extension cable! All are powered from the mains and can be left on for extended periods.

The multispeed modems use the so called 'world chip', the AMD7910, developed by AMD and Thomson Semiconductors in France and used by most modems today. The MD1200 uses the TSG7515 integrated modem protocol chip from Thomson which offers the 1200 baud V22 standard. These chips convert signals to the various communication protocols such as Bell (not allowed in this country) or CCITT.

Explanations

Communication protocols, I hear you say!? What are they? Before we



This review centres around the modem. Basically, modems send and receive communications signals, usually via the telephone network. There are only a few brands available in NZ and only two (that I know of) are designed and built locally.

One of the companies is Comcor Technology, formed as a result of the breakup of the Fountain group which produced the VMD312 300 baud modem. This modem has been available for some time and now Comcor has released another three. These are the MD1200 1200; baud, the MD312 1200/75, 300/300 Manual Multispeed, and the MD412 Multispeed Auto-Answer modem. These cover the V21, V22 and V23 standards.

The modems come safely packed in polystyrene boxes with a small 20-page Owner's Manual. They have sturdy metal cases with push button switches and with LED indicators on the front. Overall, they present an air of functionality. They all have about three metres of phone cable and

go further, I will discuss some modem terms and some communication protocols or standards. The speed of signal transmission is given in baud or bits per second – 1200 baud being some four times faster than 300 baud, while 1200/75 is a split speed. Half duplex means that transmission and reception need to be separate in time, whereas full duplex is the ability to transmit and receive simultaneously.

Communications have two major standards – Bell for North America and CCITT for Europe, Australia and NZ. The Bell 103 standard is for 300-baud and Bell 212A is for 1200-baud full duplex. PACNET automatically translates your signal to any protocol such as Bell if you are accessing databases in North America.

The CCITT standard is further broken up into V21 (300 baud), V22 (1200-baud – full duplex) and V23 (75/1200) which is used for Videotex. The advantages of V22 1200 baud is that both sending and reception are at the same fast rate (unlike videotex) and

obviously faster than 300-baud.

The word Modem comes from the two words MOdulate/DEModulate. Modems work by modulating a carrier wave with your data thereby slightly changing the shape of the wave. This is transmitted down the telephone line where it is demodulated or decoded by a modem at the other end. The modulation modifies the shape of the carrier wave by frequency shift (V21/V23) or phase shift (V22).

This type of transmission is called 'asynchronous' with the signals packaged into 'wordlengths' of 8-11 bits. The usual wordlength is 10 bits - 1 bit to start, 1 to stop and 8 data bits; or alternatively, 1 bit to start, 1 to stop, 7 data and 1 parity bit. PACNET uses 10 data bit wordlengths and is constantly 'talking' to keep the signals synchronised.

Features

Now back to the modems. The MD1200 is 8-11 bit switchable by dip switches at the back of the modem and will accept simple three-wire operation if desired. Modem status is determined visually by LED indicators for the standard Power on, Autoanswer AA, ring indicator RD, Off hook (O/H), carrier detect CD, receive, transmit, and Request To Send RTS. Push buttons switches determine whether you use Manual or Auto Answer, Originate or Answer. If two terminals are trying to communicate, obviously one needs to be set to 'originate' and the other needs to be set to 'answer'.

The MD312 Manual Multispeed modem, however, will work at a range of speeds from full duplex 300 baud, 1200 half duplex and 1200/75 full duplex through to videotex 75/1200. The MD412 combines all the features of the MD312 with an Auto Answer function. All the modems naturally have NZPO approval, conforming to the standards CSA2008 and CSA5001-4 and will automatically release the line in case of a power failure, upon the loss of an incoming carrier signal or if no carrier is detected from an answering modem within 30 seconds of dialling.

The fronts of the modems are shown here:

The manuals were good but a little obscure for the first time user. I would have liked to see some simpler instructions and explanation of terms used.

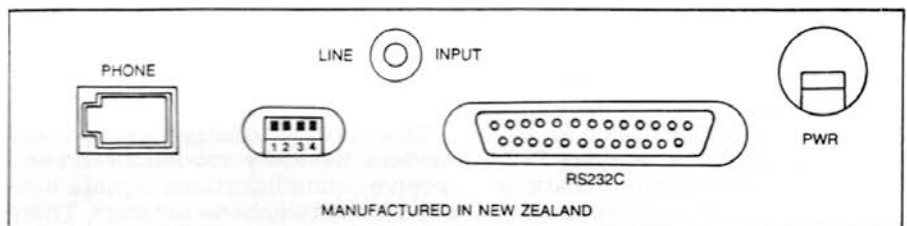
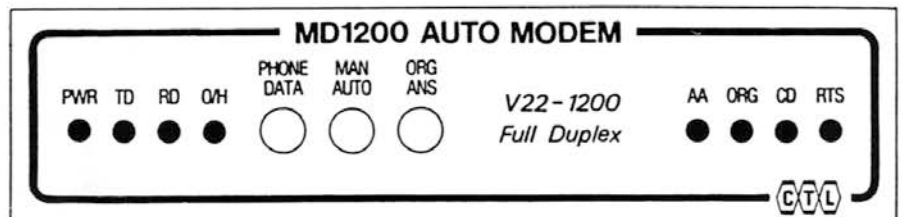
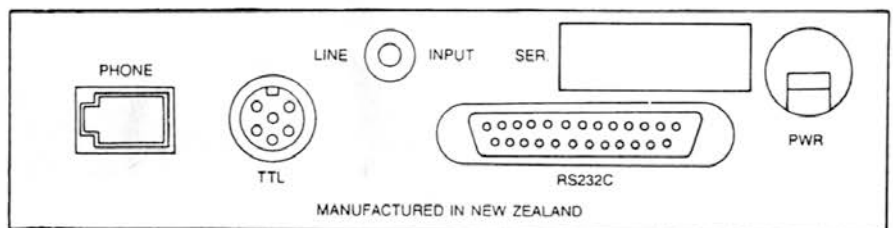
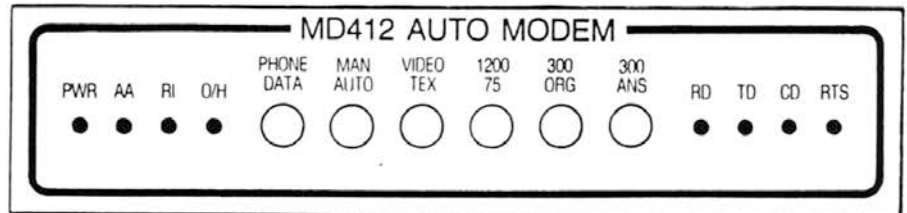
Using the modems was basically easy. I plugged them in, fiddled with the buttons, plugged my phone in and dialled up, trying PC Talk III, Crosstalk and Multicom software. They all worked, but I had problems with a dirty line when I tried accessing The Source at 1200 baud. The

modems all functioned well and I found no faults.

Overall I still consider all modems overpriced so I cannot say much about value for money. Generally, you have to pay for what you need. The manual I would give a 6 out of 10 as it could be improved with more user-friendly information. It's all there and

they have tried, but it can still be baffling. My advice is to look for 1200 baud multispeed if you can or go for the Hayes intelligent modem standard.

However, you can still get a lot of fun from a simple 300 baud modem, and when you make your first contact it really does seem like magic.



Modem front and back panels

Manufacturer: Comcor Technology Ltd
Distributed by Machine Ware phone (09) 491789
Prices: MD1200 1200 baud/Auto Answer \$814
(excl. GST) MD312 Multi speed \$381
MD412 Auto answer/Multispeed \$479
Comcor Technology is also releasing a Hayes compatible intelligent modem next month for about the same price as the MD1200.

Footnote: Bob Shaw of Machine Ware says: "New Zealand is unique in its modem requirements. Imported units have to be modified to gain NZPO approval, and modems using the Bell standard are prohibited. Locally manufactured modems are designed to meet with NZPO approval, and may therefore be the most suitable product."

"But because of the small local market, unit and manufacturing costs are higher, so whichever way the modems are produced, imported and modified or locally designed and manufactured, unit costs are bound to be a little higher than, say, the US domestic market."

Sanxion

Price: \$52.00; software company: Thalamus

Sanxion is a classic shoot-em-up where you play the role of a Sanxion fighter pilot. You must constantly patrol your "beat" of the planet's ten sectors and destroy any intruding aliens. The screen is split into two sections. The bottom screen is the playing area while the top one acts as a long range attack scanner warning you of approaching aliens.

At the end of the sector is the ReGen station where you have the chance to earn extra points by destroying as many drone ships as possible in a set time. When you have 10,000 points an extra life is awarded, and once you are through all ten sectors you go on to the dark side of the planet and who knows...

The sound is impressive with brilliant Rob Hubbard music and graphic and sound demos. The superb scrolling and sprites make this one of the best shoot-em-ups to date.

Graphics 9 (great scrolling and sprites); sound 9 (good music and spot effects); presentation 9 (well thought out instructions and good options); hookability 9 (instantly impressive and addictive); overall 9 (one of the best shoot-em-ups).

Paperboy

Price: \$60.00; software company: Elite

Imagine yourself braving the streets of an American suburb. Only riding skills and a steady throwing

arm can get you through the week of a paperboy.

Paperboy is the Commodore version of the arcade classic where you play the part of a delivery boy on his weekly run. Things are not as easy as they sound since there are all sorts of nasties out to get you, from runaway tyres and dogs to bikies, kids on skateboards and erratic joggers.

But it's all in the life of a paperboy. You must deliver to all your customers or they desert you, and you can also smash the windows of non-subscribers. Then comes the training course where you can extra points by going over jumps hitting targets etc.

The music is good but there are very few spot effects. The graphics are good although some are not very colourful. In all a very good arcade conversion.

Graphics 8 (good graphics but not very colourful); sound 8 (great sound despite the lack of sound effects); presentation 8 (good instructions but no options); hookability 9 (very addictive and a really attractive game); overall 8 (great fun to play despite the bad points).

These games were supplied by Murray's Computer Village.

Reviewed by Brent Dickens.

THIS MONTH'S HOT LIST

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3. dBase III Plus: Ashton-Tate	1095.00	3. Fastback: Fifth Generation	360.00	Ability	\$295.00
4. Paradox: Ansa Software	1095.00	5. Norton Utilities: Norton Computing	249.00	Includes 6 full-featured applications: Wordprocessing, Spreadsheet, Database, Graphics, Telecommunications. Presentation. Fully-integrated, no complicated commands. What-you-see-is-what-you-get printouts. Imports Lotus 1-2-3 files, not copy protected.	
5. Microsoft Word: Microsoft	995.00	6. Turbo Pascal: Borland Int'l	250.00	Leading Edge W/Spell & Merge	\$195.00
6. PFS: First Choice: Software Publishing	525.00	7. Smartcom II: Hayes	CALL	Leading Edge Basic	\$149.95
7. SQZ: Turner Hall	195.00	8. Disk Optimizer: Softlogic Solutions	125.00	Although Leading Edge Word Processor is amazingly simple to use, it offers advanced features that make it brilliant. Macros, windows, automatic backup, automatic write-to-disk, and extensive printer support are but a few examples.	
8. Lotus HAL: Lotus	365.00	9. Dan Bricklin's Demo Program: Software Garden	250.00	Norton Editor	\$275.00
9. Sidekick: Borland Int'l	189.00	10. Microsoft Quick Basic: Microsoft	335.00	A Programmer's Editor including the following features: easily customized and saved, split-screen editing, a wonderful condensed/outline display, structured programming features; auto indenting for Pascal or C, a hot "find matching symbol" feature, nice word-oriented features too: paragraph reformat, word wrap, word action. You can write your manuals with this one editor.	
10. G & A: Symantec	1010.00			PrintQ	\$295.00
11. Multimedia Advantage: Ashton-Tate	1195.00			PrintQ represents a major breakthrough for IBM PC users. Finally, you can access application programs while you print! PrintQ is an easy-to-use, professional-quality print spooler with mainframe power. PrintQ increases your PC's productivity so dramatically, it's like having an extra PC at your command. Only better.	
12. DAC Easy Accounting: DAC	CALL			Turbo Pascal Numerical Methods Toolbox	\$195.00
13. VP Planner: Paperback Software	250.00			New from Borland's Scientific & Engineering Division Turbo Pascal Numerical Methods Toolbox implements the latest high-level mathematical methods to solve common scientific and engineering problems. Fast!	
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DEVICE is an MS-DOS device (eg, PRN, COM etc) or a disk file (eg, LISTING.BAS) that the listing is sent to. PRN is similar to LLIST, a filename similar to SAVE with the ,S option. LLIST does not have Sanyo BASIC's NUMBER parameter, which specifies the number of lines printed per page.

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Cont. from p 80

some typical uses for these at a later date.

What I have shown over the last couple of months is how you can use DOS's own inbuilt commands to save a lot of typing each time you want some repetitive action to occur. In particular we have looked at how we can make batch files more responsive to our needs by using variables and how they can be used to make logical decisions.

We will take a break from BATch files over the next couple of months and perhaps return with an example using the FOR command which we have not touched on yet.

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