A Database Publication

# apple user

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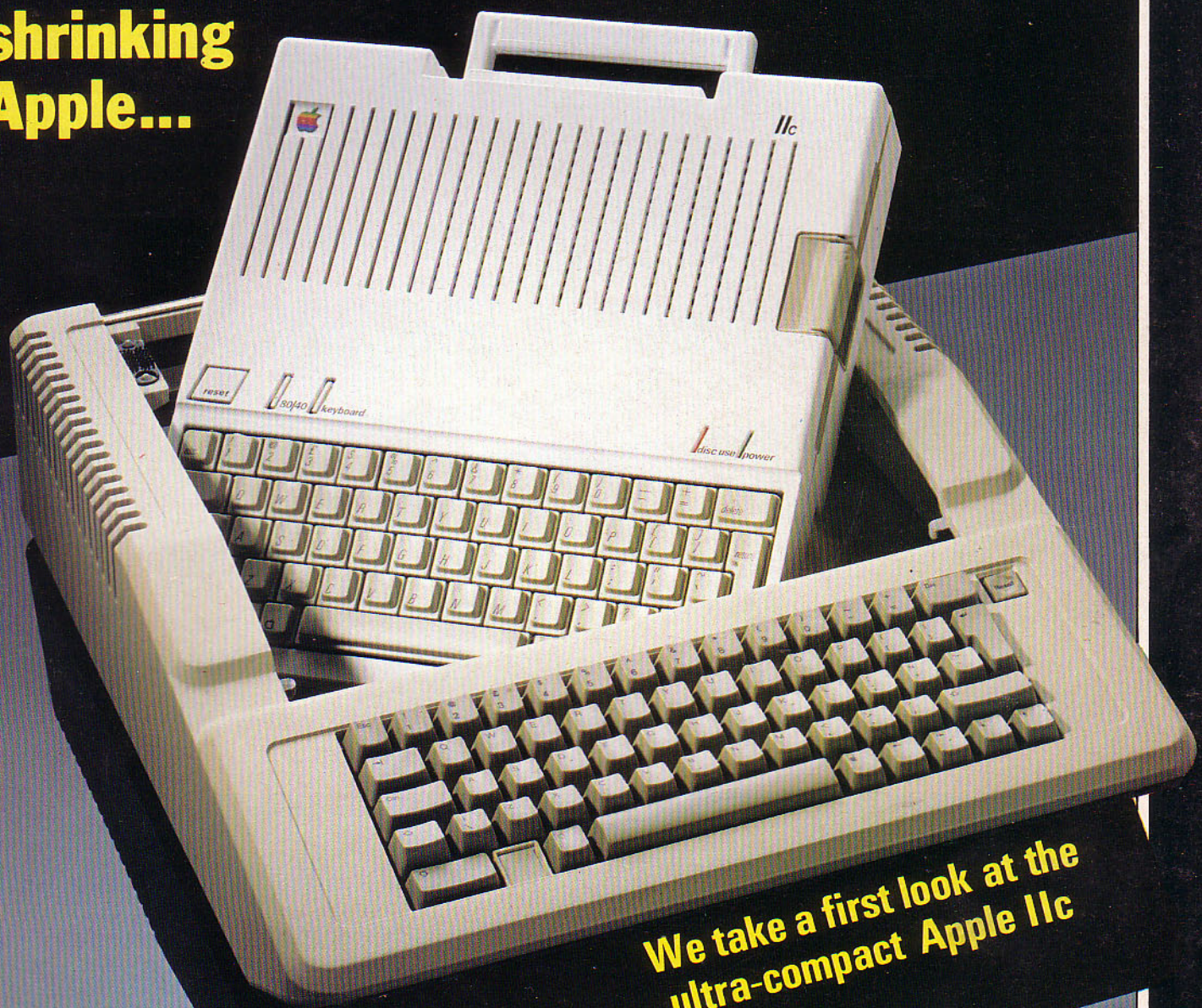
-the new name for Windfall

## The incredible shrinking Apple...




We take a first look at the ultra-compact Apple IIc

Creating 3D images

Multiplan and Ultraterm reviewed

Apple Raid! Addictive maze game

MEM/DOS: The French answer to CP/M

Speedy way to compile semi-standardised letters

Appleworks: Giant advance in integrated software

See the new Apple in action at APPLE '84 Fulcrum Centre, Slough May 24-26

apple user
Volume 4
Number 5
May 1984

*The new Apple IIc*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# Apple hits Mac target

MORE than 50,000 Apple Macintoshes have been sold in the first 100 days since the machine was released in the United States.

"That was our original target when we launched the product on January 24 – and we are more than satisfied at having achieved it. We are delighted", said an Apple spokesman.

In Britain dealers report significant advance orders for the Macintosh despite the non-appearance of the machine that is described as the ultimate in user-friendliness.

Macintosh micros won't be available in British shops at least until the middle of June.

The machine should have been released here at the end of April but Apple decided to postpone that date by "at least 45 days".

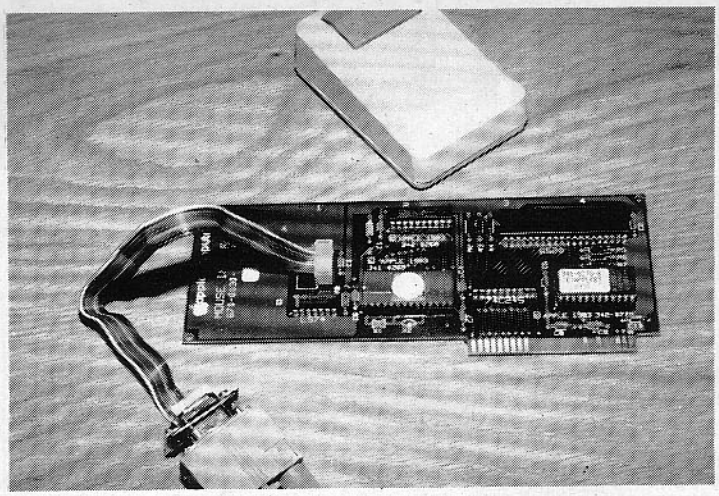
It says production of the 240 volt version has been affected by the current worldwide chip shortage.

"It is true that in Europe and the UK we have announced Macintosh and cannot ship it – however it is the only aspect of the program that we have not been able to achieve on target", said Nigel Parry of Apple UK.

"What we couldn't forecast was the drastic effect the chip shortage would have on our production".

Apparently it is only components for the 240 volt version of Macintosh that are affected – production of the American version is continuing unabated.

American Macintoshes are already a fairly common sight in the English market. Supplies of the 110 volt systems (with suitable power supply adaptors) have been delivered to most Apple dealers for demonstration purposes.



# A mouse for the Apple II

–Page 11

# War declared on copycats

**AN all-out campaign to rid the UK market of copy Apples is about to be launched.**

Within the next few weeks solicitors letters will be despatched to five companies – one manufacturer and four importers – on behalf of Apple UK.

The companies involved will in some cases be offered the opportunity to settle out of court.

And if Apple wins the day, the remainder may be forced to the wall through the legal imposition of punitive damage awards.

"One way or the other, we intend to end this problem", said Steve Holmes, the Apple UK executive in charge of the crackdown.

Last year the company found itself faced with copy machines flooding into its territory from 20 different sources.

"However after we won our case against Franklin in the United States, the number of companies involved dwindled to half a dozen", Steve Holmes told *Apple User*.

"The others were obviously scared off by what had happened".

Nor is Apple UK going to limit its legal actions simply to machine lookalikes. It now intends to seek redress from firms involved in copy peripherals such as disc controller cards.

Despite this latest assault on would-be imitators, the company believes the best way of protecting its interests long term lies with the introduction of the Apple IIe and ProDOS.

Meanwhile over in Warrington, U-Microcomputers has just announced a new "Apple compatible" machine.

The U-Com 2 System 2 is designed to run DOS 3.3, UCSD p-system and Apple format CP/M software.

Its basic system includes a 64k motherboard with eight expansion slots, separate keyboard with numeric pad and one built-in disc drive.

A further drive can be fitted in the case and two more externally.

The retail price is £599 for the one-drive system.

Asked if he foresees any legal problems with Apple UK, the North West company's founder, Dr Bill Unsworth said: "We sent them our motherboard to look at in March last year – so they've had a long time to do something about if they had wanted.

"If they really had a case against us I'm sure we would have heard by now".

# Agreement ends

VISICORP, once the star of the spreadsheet scene, is reported to be having trouble getting its marketing act together.

Sailing into 1983 on the crest of a wave of Visicalc sales, VisiCorp found itself down in the trough by year's end.

Several competitors brought out rival programs that outperformed VisiCalc, and in a short time outsold it. For example, Lotus 1-2-3 outsells Visicalc two to one, reports *Business Week*.

Then VisiCorp became involved in legal wrangles with Software Arts, the company that wrote and still owns the VisiCalc program (VisiCorp owns only the marketing rights).

Now Software Arts has announced the end of its marketing agreement with VisiCorp and has taken back exclusive selling rights.

# We haven't infringed regulations, say Apple

**APPLE Computer UK has promised the Office of Fair Trading that it won't pressure its dealers to keep retail prices up.**

This follows a warning from the OFT about this unlawful practice.

Under the Resale Prices Act, micro dealers are free to sell, advertise and display for sale goods at any price they like. However, they may not sell goods as a "loss leader".

Manufacturers can suggest a retail price to dealers as long as they don't try to enforce a minimum price or threaten dealers with reprisals if they don't toe the line.

What prompted the OFT to lean on Apple was a complaint by London-based Apple dealer CW/P Computers.

According to CW/P, its supplies of Apples were cut off after it had sold 1,000 to customers at discounts of up to 38 per cent.

Said Robin Adda of CW/P: "It is not necessary to cut prices to do business, but we believed that for Apples to remain competitive with other products they should be sold at competitive prices and not those recommended by Apple.

"This does not mean a price war. It simply means you cannot force a dealer to sell at a given retail price".

The OFT announced the news in a vaguely-worded statement that implied Apple UK was in the wrong.

However, questioned by *Apple User* the OFT admitted "Apple UK has not been found guilty".

They added that as soon as they took the matter up, Apple agreed to write to its retailers and assure them it will not try to maintain minimum resale prices.

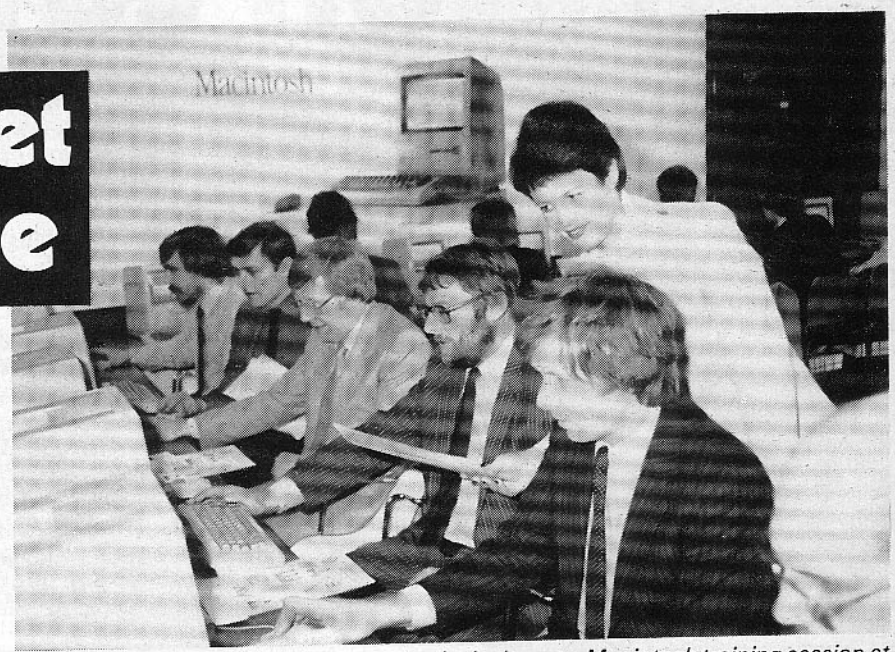
Apple itself was adamant that it had always obeyed the spirit and the letter of the law and that the dealer complaint was unjustified.

"We don't believe we have infringed OFT regulations", said Apple's Mike Spring.

"Our recommended prices are a guide to the margins dealers should be looking for in order to stay in business and give end users the kind of support we would like.

"All we would say to dealers is: 'Make some allowance for support, consultancy, sales and services in your pricing'. We have seen enough bankruptcies in micro dealerships and that cannot continue".

# Managers get the message




*Apple dealers at a Macintosh training session at the Blackwood Hodge Management Centre*

MANAGERS from all over Britain are getting to grips with Apples and Lisas on a new course in Northampton.

The 12-week course was devised by Blackwood Hodge Management Centre, a self-financing unit attached to Nene College of Further Education, Northampton.

Sponsored by the Manpower Services Commission and organised with help from Apple, the course develops the skills of managers – some of them unemployed – in such aspects of information technology as spreadsheet, word processing, graphics and systems analysis.

The Apple-orientated course has been dubbed "M.I.Tech" (Managing Information Technology) by the management centre.

If the idea is a success it will be sponsored by the MSC for colleges all over the UK.

The management centre has 15 classrooms, a lecture theatre and 32 bedrooms for residential students.

It was set up with a grant from Blackwood Hodge, the engineering group. It has been self-financing since 1981.

Says director Dr Leslie Saward: "We are in the business of providing the management education that people want".

And a large part of what they want these days is linked to Apple computers. Although the centre does a range of tailor-made management courses – not just involving computers – there is a strong emphasis on Apple technology.

For example, under contract to Apple, they recently ran Lisa courses for Apple dealers and their customers.

They also teach Apple users how to use the various software packages. These courses are sold through Apple dealers, and to the centre's client list which includes such names as Plessey, Avon and Barclays Bank.

With all this activity, and with some courses booked into next year, the management centre is building a new 68000 Technology Training Centre and exhibition area.

At its core will be a range of new Apple IIe and Lisa training and development services.

They will include not only traditional training but also videotape and self-instruction software-based learning methods.

apple '84
3rd National Apple User Exhibition

# Apple's latest lines on show...

**THIS month's Apple '84 – Europe's top Apple show and user get-together – is your chance to catch up with all the latest developments on the Apple scene.**

Once again, the venue is the newly-air conditioned Fulcrum Centre in Slough. The show runs from Thursday to Saturday, May 24-26.

Centrepiece will be Apple's latest micro, the IIc (c stands for compact). This is the machine that Apple expects will stand the micro world on its ear.

*(A review of the IIc starts on Page 39.)*

Macintosh, Apple's mouse-driven marvel, will also be on show.

Star prize in a free competition for visitors is a complete Apple system.

The contest is being supported by Symbiotic, who are dealing with exhibition registrations using their Symbnet networking system.

Visitors will automatically receive a lucky number at the door. These will be stored on hard disc and the winners picked by computer at the end of the show.

As well as the first prize of an Apple, there's a second prize of the latest release from Blyth Computers, an Omnis 2 database package.

Micro Software International has donated a PractiCalc 2 package for third prize, and there are *Apple User* sweatshirts for the next 10 numbers out of the electronic hat.

The Apple User Convention takes place alongside the exhibition on Friday and Saturday, May 25 and 26.

Friday's sessions will include an in-depth look at a number of new software packages, including TK! Solver and PractiCalc, plus the latest offering from Apple themselves – Appleworks *(see page 17 of this issue).*

Nick Levy, the guru of the spreadsheet scene, will be there to answer questions, and key people from Apple will be holding an open forum where users will be able to air their views.

There have been a number of exciting developments in mass data storage in the last 12 months.

Eric Rixon of Symbiotic and John Groves of Intec will guide you through the plethora of available products.

Paul Wright of Blyth Computers will explain computer-based information management packages with a view to giving end users an insight into now to get the best from their systems.

Saturday's session begins with Ian Manzie of Tandata conducting a guided tour around the world of data communications, "Teach your Apple to use the telephone".

Then Janet Rothwell of NCC will show how the video disc is used in computerised training.

*Opening the Apple '84 show will be Mr Roddy Symes, President of the South Bucks and East Berks Chamber of Commerce and Industry. His company – a Slough-based metal finishing firm – relies heavily on computers.*

And Mike Glover of Leicester Computer Centre will reveal how to teach Epson printers new tricks, during an informed discussion on software and hardware utilities.

Dominating the exhibition stands will be Apple UK who have taken the entire stage on which to create an impressive display of all their products.

But there will be much, much more to interest all types of users.

The businessman who is looking for new software will be able to visit such well known names as Systematic International, Textstore, Southern Computers, Dynatech Microsoftware and Hal Computers.

For those users active in the world of computer aided design Robocom will be showing their latest Bit Stik, and 3D Digital Design are exhibiting their latest products.

For the general user U-Microcomputers and Dark Star Systems will have much to offer. Pete and Pam and their Yorkshire neighbours, Pace Systems will be showing the latest in independently produced software and hardware products from both the United States and the UK.

Disc drive manufacturers Eicon will also have a major presence.

This year's show offers more than ever before and spans the complete spectrum of Apple applications.

# More power to patients

AIDED by the Manpower Services Commission, the Cheshire Home in Brixham, Devon has installed two Apple IIes, a BBC Micro and a Commodore 64 for the use of residents.

These enable severely disabled people to type their own letters using the micros as word processors. The home's newsletter is also put together on an Apple, by its editor using a chin-operated keyboard.

And for those who can't see too well, the on-screen text can be enlarged or spaced out at will.

Now there are plans to use the micros for increased patient mobility – enabling them to open doors, switch on lights, etc, simply by pressing a key on their own keyboard.

# Slot in a mouse

MORE than a million Apple II owners now have a chance of putting a mouse on their micro – thanks largely to the inventor of the Apple II, Steve Wozniak.

When Wozniak rejoined Apple last year the 6502 mouse project was in danger of being scrapped. The controller card needed to run the mouse had so many chips that it couldn't physically fit inside an Apple.

However Wozniak developed a logic array that drastically reduced the chip count from dozens to just five and the end result was a normal-size interface card.

The only Mouse II software currently available is MousePaint. It was written by Bill Budge who has achieved star status in the Apple programming world for his 3-dimensional graphics packages such as Raster Blaster.

**APPLEWORKS is a remarkable new integrated program from Apple that combines word processor, filing system/database and spreadsheet in one easy to use program.**

**And the three functions are fully-fledged implementations – not just watered down versions of other successful single programs.**

**They are loosely based on Applewriter IIe, Quickfile IIe and Visicalc. However they are not intended to replace the dedicated single purpose application program, which caters for a different market.**

**Appleworks will cost about £169 in the UK – not bad when you consider it contains all the serious software many people are likely to need.**

**An identical program, Three Easy Pieces, is available for the Apple III, making full use of the bigger machine's 256k internal memory. It costs £295.**

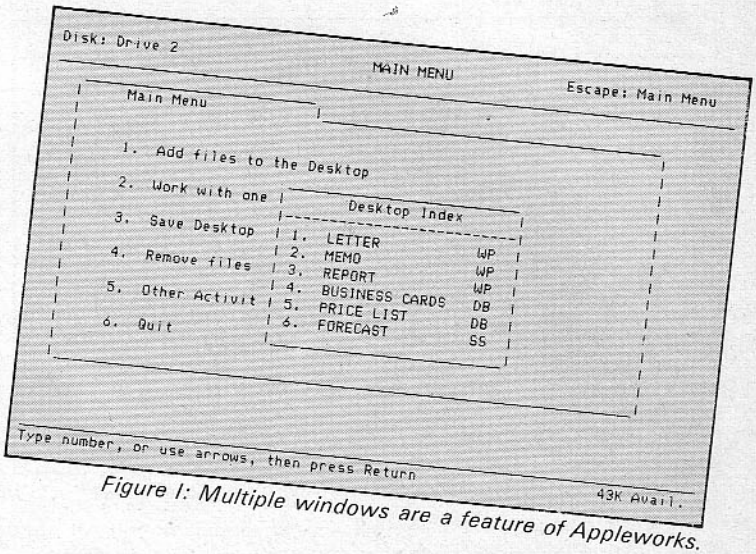



*Figure I: Multiple windows are a feature of Appleworks.*

# Three-in-one works a treat

## DAVID CREASEY and PETER BRAMELD test the first in a new generation of software for the forthcoming Apple IIc

WILL Appleworks be as important to the success of the new Apple IIc as Visicalc was to the Apple II?

The answer is 'yes', believe top people at Apple UK. And after our first session with Appleworks we see no reason to doubt it.

This very powerful integrated package is extremely easy to use. It will run on an Apple IIe – but not the earlier versions of the II – but is being firmly tied to the new Apple IIc.

Included with the latter is a double-sided tutorial disc which is effective but doesn't do the package full justice, offering only a flavour of its full capabilities.

Appleworks is one of the first in a new generation of Apple software which exploits the potential of the ProDOS operating system. ProDOS's inherent flexibility has made it possible to design Appleworks to fully utilise the Apple's available memory at all times.

What is really clever about Appleworks is that it allows you to load data, or files, into memory.

In effect Appleworks views your Apple's RAM as a desk top. On loading you must specify which files you want to work with. They can be either new or existing ones, and can be any combination of word processing, database or spreadsheet files.

You can load, or save, more than one file at a time. (See Figure I.)

Once in memory these files can be pulled onto the screen one at a time, at the touch of a few keys.

If you want to change from spreadsheet to word processing you simply place your current workfile on the desk top – which means in RAM – and pick up a word processing file.

As you work, the required program routines or modules, such as help screens, print menus or cut and paste capabilities, are accessed only when required.

If you have small files the program will load a large number of program modules, thereby cutting down the number of times it needs to go to disc in between performing individual tasks.

Conversely if you have a large number of files more memory will be used for file storage and a smaller amount for program modules, thus ensuring optimum use of memory at all times.

This means that with Appleworks you are always using the full memory potential of your machine.

All this operates within the constraints of memory – which is 55k usable memory with a IIc or a 128k IIe, and only 10k user memory with a 64k IIe – and for up to a maximum of 12 files on the desk top at any one time.

Appleworks' desk top philosophy might suggest that there are Macintosh and Lisa-style icons and graphics – but the package doesn't use these.

However the terminology is very similar, and the command structure carries a flavour of 32 bit technology. Apart from the desk top analogy, you can cut and paste material between files.

There are a lot of nice things about using Appleworks. Commands throughout the three applications are uniform, except where they are unique to that application.

The same style and format of operation is used throughout, whether you are choosing printer options or calling up a help screen, listing the various command options.

You can dump an image of whatever is on screen at any time. And you can have up to three printers at a time selected for use with the program.

This is particularly useful if you have access to different printers using different control codes. Once you have told Appleworks which printer you are using, it automatically handles the handshaking.

The Appleworks screen format is based on a traditional filing box system. It starts with the main menu and each further option selected is shown by another filing card overlaying those already on screen. (See Figure II.)

In effect this means Apple-

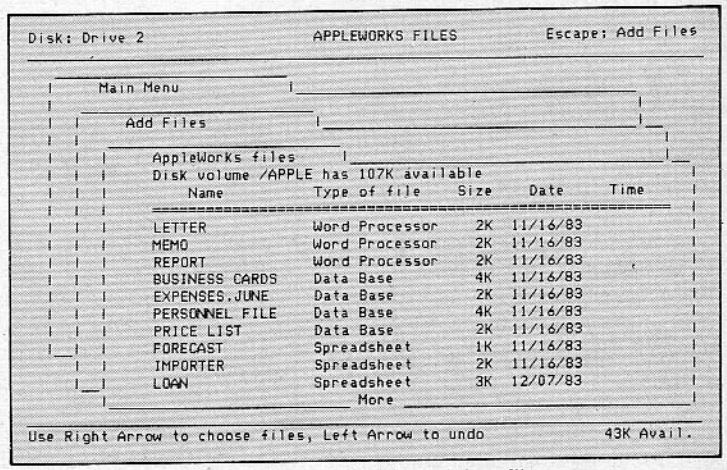
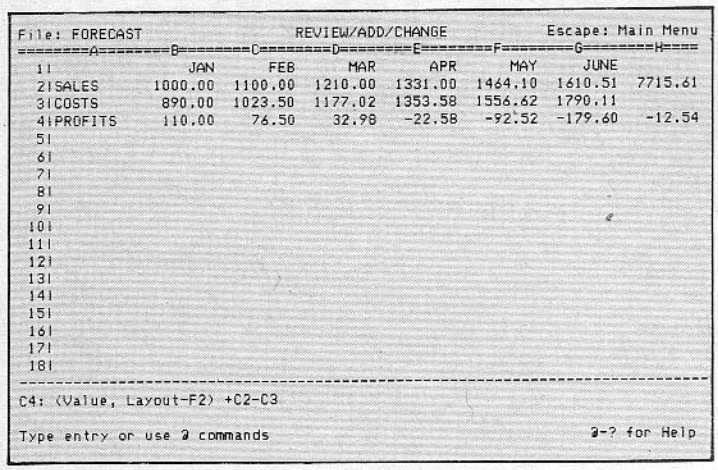



*Figure II: The on-screen format simulates a box file system*



```
File: FORECAST                    REVIEW/ADD/CHANGE              Escape: Main Menu
========A========B========C========D========E========F========G========H====
  1|              JAN      FEB      MAR      APR      MAY      JUNE
  2|SALES       1000.00  1100.00  1210.00  1331.00  1464.10  1610.51  7715.61
  3|COSTS        890.00  1023.50  1177.02  1353.58  1556.62  1790.11
  4|PROFITS     110.00    76.50    32.98   -22.58   -92.52  -179.60   -12.54
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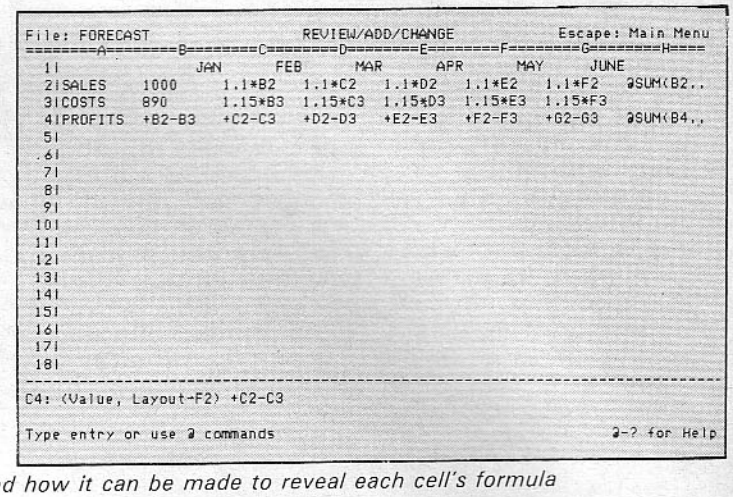
C4: (Value, Layout-F2) +C2-C3

Type entry or use @ commands                                    @-? for Help
```



```
File: FORECAST                    REVIEW/ADD/CHANGE              Escape: Main Menu
========A========B========C========D========E========F========G========H====
  1|              JAN      FEB      MAR      APR      MAY      JUNE
  2|SALES       1000     1.1*B2   1.1*C2   1.1*D2   1.1*E2   1.1*F2   @SUM(B2..
  3|COSTS        890     1.15*B3  1.15*C3  1.15*D3  1.15*E3  1.15*F3
  4|PROFITS    +B2-B3    +C2-C3   +D2-D3   +E2-E3   +F2-F3   +G2-G3   @SUM(B4..
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C4: (Value, Layout-F2) +C2-C3

Type entry or use @ commands                                    @-? for Help
```

*Figure III: A simple worksheet created with the Spreadsheet . . . and how it can be made to reveal each cell's formula*

works has a built-in route map, and you know where you are at any time in use.

When you are actually working on a file the screen format is more like an ordinary sheet of paper with top and bottom header margins containing reference information.

Disc catalogs, when requested, are presented alphabetically within a file-type – word processor first, then spreadsheet and database. The length of each file (in k) and the current date is also shown.

The program employs two types of cursors. One is a flashing underline which inserts text as typed.

This is changed to a flashing, inverse square by pressing Open Apple-E (for edit), which allows you to overtype existing information.

Cursor movement, using the arrow keys, is easy. You can move either a letter, word or screen at a time. Or you can move through a document by holding down the Open Apple and pressing 1 (beginning) through to Open Apple and 9 (end) or any number in between.

You can delete, move or copy text in any direction by a character, word, line, block, screenful or whole document.

The cut and paste capability allows you to copy or move a document segment into a scratchpad or buffer zone in RAM. It will stay there until you overwrite or incorporate it into another file, or switch off the power.

The speed with which you can change from working with one document to another on the desk top is quite remarkable. Simply press the Open Apple together with Q, use the cursor bar to highlight the name of the file you want to switch to, and press Return.

The desk top manager built in to the program tells you the status of any of your files – whether they are new, have been SAVEd or need SAVEing. It will also alert you should your desk top become too cluttered – that is, you run out of available memory.

It will also tell you to remove (SAVE) some of the documents from the desk top before continuing.

This memory consideration brings us to the main limitations of the program. Appleworks cannot be used on an early Apple II because it requires an 80 column card to operate – and it will only recognise a IIe 80 column card.

And although it works adequately on a 64k IIe, to really appreciate the effectiveness of having several files in memory at any one time you need the IIe and IIc 128k extended memory capability.

The spreadsheet allows you to develop large financial models with up to 999 rows and 126 columns.

This doesn't mean you have the largest spreadsheet in the world – because memory constraints mean you cannot use all of it at once. But it does allow you to have either very long columns or very wide rows.

The Appleworks spreadsheet is a desk top application program for the businessman who won't use large spreadsheets or dedicated models. He might have expenses he wants to list vertically – but which won't fill up all the rows.

The spreadsheet itself is fairly conventional in its mode of operation (Figure III). It will perform all the functions of Visicalc together with some of the features contained in Advanced Visicalc and Magicalc.

This means that it allows variable column widths, lockable and hideable cells, and also includes a facility to sort strings or numbers by rows, columns or blocks.

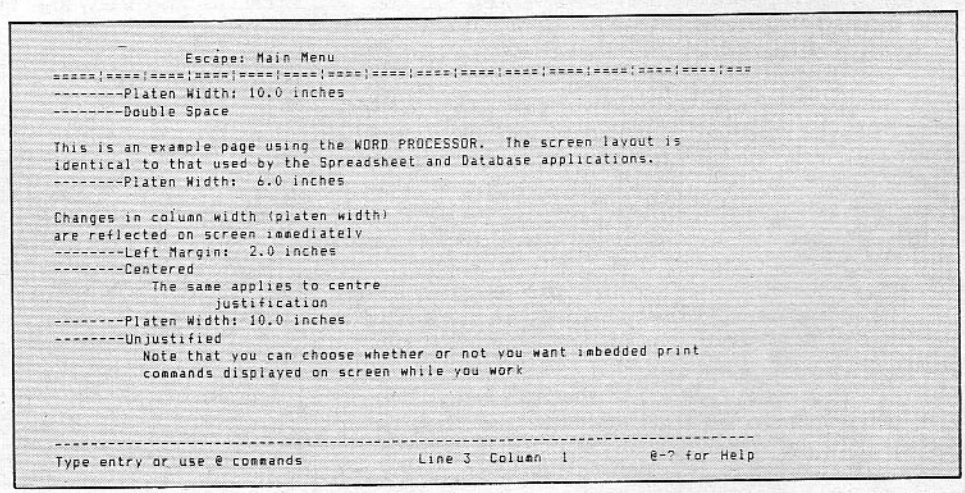
The presentation of commands and help screens is impressive and overall the package is very user friendly.

One particularly useful feature is the ability to display in situ the formula each cell contains.

This will be of considerable help to the first time user wanting to examine how the spreadsheet works, or for debugging a spreadsheet not doing what you want it to do.

And there is more good news for people already used to spreadsheets and in possession of tried and tested templates. The Appleworks spreadsheet will read Visicalc and DIF files, as well as any Ascii file. These however require conversion to the ProDOS filing system.

The word processor is like a



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                    Escape: Main Menu
=====|====|====|====|====|====|====|====|====|====|====|====|====|====|===
--------Platen Width: 10.0 inches
--------Double Space

This is an example page using the WORD PROCESSOR.  The screen layout is
identical to that used by the Spreadsheet and Database applications.
--------Platen Width:  6.0 inches

Changes in column width (platen width)
are reflected on screen immediately
--------Left Margin:  2.0 inches
--------Centered
            The same applies to centre
                  justification
--------Platen Width: 10.0 inches
--------Unjustified
          Note that you can choose whether or not you want imbedded print
          commands displayed on screen while you work


--------------------------------------------------------------------------------
Type entry or use @ commands            Line 3  Column  1          @-? for Help
```

*Figure IV: The page layout using the wordprocessor*

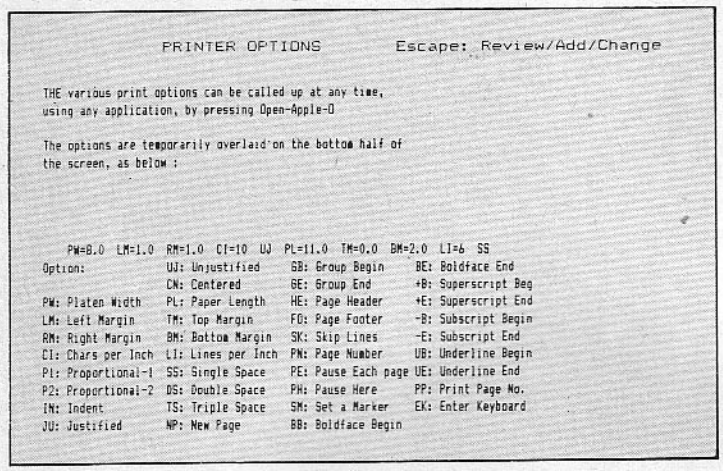



*Figure V: Appleworks printer options*

cross between Applewriter IIe and Wordstar – but a lot easier to use.

It gives you 'visual integrity'. This doesn't mean that what you see on the screen is what is printed on paper, as with Macintosh and Lisa, but it means that when you change column widths the change is reflected on screen (Figure IV).

Line lengths as well as page breaks are true to the printed output, although Appleworks does not display variable line spacing.

Cursor movement as well as Delete, Move or Copy functions can be performed on the current character, or in either direction by a character, word, line, block, screen or document at a time.

There are powerful find and search and replace capabilities. It is very easy to move blocks of text, and apart from the quick cursor movements you can place unlimited and repeated markers in the text as well.

Control-L toggles underlining on or off and Control-B toggles bold print on or off. The printer options allow you selection of a wide range of characteristics, from character size to the number of lines per inch and the width of the finished document.

You can call up these print options at anytime, anywhere in your document (Figure V),

Tabbing can be done either forwards or backwards across a line, either to pre-set tab markers or to ones set yourself.

It is an easy program to experiment with, and very very simple to get working productively for you.

However certain Applewriter IIe features, such as WPL (Word Processing Language), split screen and mail merge capabilities are not included.

The database application is a considerably enhanced version of Quickfile IIe.

It is a general purpose, personal filing system which allows you to define several databases with up to 30 categories in each database record.

More than one database can be placed on the desk top at a time and it is easy to incorporate database information into a word processing file.

Once you have created a database you can subsequently enter, retrieve and sort information, define the reports you want and print out reports in either label or table format.

The program reads files previously created by Quickfile, or else in a DIF format.

It allows you to perform arithmetic functions on numerical data in the table format.

# Appletips

## Play a card trick on ROM

WOULDN'T it be great if we could change the routines in ROM? But, alas, as any programmer knows, ROM is unchangeable.

However we can change all this with the help of the language card.

An example is changing the cursor display to inverse instead of flashing.

This sounds like fun, but before jumping with joy, note that this method will not work on language cards that have an autostart monitor mounted on them. At least I don't think it will – try it anyway.

Use this method:

`CALL -151` (To enter the monitor)
`C081:00` (Write enable the card)
`D000<D0000.FFFFM` (Copy the monitor and basic into the language card)
Change whatever bytes you want to change. (`FD14:00` will make the cursor inverse)

At this stage the monitor is not affected, so nothing will have happened.

`C082:00` (Write protect the card)
`C083 and CR` (Enter ROM mode)
At this stage all changes made will be noticeable. Remember however that the above method is not permanent.

**Azwan Khan, aged 13, Kuala Lumpur, Malaysia.**

HERE'S a method of changing the catalog header on FastDOS. Existing DOS 3.3 utilities to do this won't work with FastDOS as the catalog header is stored in a different set of memory locations ($B478-$B46D) compared with $B3AF-$B3BA on normal DOS 3.3.

The program POKEs the new header into the DOS image in memory. To save it permanently you should initialise a disc with it soon after running the program.

A word of warning! It's a good idea to practise using this program on a spare disc, before putting it to proper use.

**Darrin Gordon, New Zealand**

```
10 HOME : HTAB 4: INVERSE :
   PRINT "CATALOG HEADER
   CHANGE FOR FASTDOS": HTAB
   8: PRINT "BY DARRIN
   GORDON : NORMAL
15 HTAB 8: VTAB 8: INPUT
   "TITLE (MAX 11 CHARS)
   ";A$
20 IF LEN (A$) > 11 THEN 10
30 FOR T = 1 TO LEN (A$) :B$
   = MID$(A$,T,1) : POKE -
   19335 - T, ASC (B$) +
   128: NEXT : FOR X = -
   19335 - T TO - 19346 STEP
   - 1: POKE X,160: NEXT
40 PRINT CHR$ (4);"CATALOG"
50 PRINT "USE PROGRAM AGAIN?
   ";: GET R$
60 IF R$ = "Y" THEN RUN
70 END
```

# FLEDERMAUS

## Mapping made easy with Apple's ubiquitous mouse

**A MATE for a mouse is just one of the inventive ideas to flow from the emergency planning department of the North Western Regional Health Authority since it acquired its Lisa micro.**

**The department is using Lisa very much as a working tool and is not only finding a considerable improvement in efficiency, but is expanding its knowledge about new applications ideally suited to Lisa.**

**Its latest coup is to develop a special mapping device which allows a map to be copied onto the screen from one on the desk, and vice versa.**

**The method is described here by CHARLES FAIRFAX, the Authority's regional specialist in community medicine, who is responsible for emergency planning.**

COMPUTER graphics are used very widely for games, for illustration and for pictorial display. What is less appreciated though is that they have a very effective professional application in the scientific and medical fields.

They may remain in simple pictorial form or have calibration added to allow subsequent calculation. Developed in this way they can be employed to tackle many of the quite tricky problems to be encountered in Health Service planning.

Handled with intelligence, they can become quite sophisticated computer tools.

In a previous article *(Windfall, October, 1983)* I described how in the North Western Regional Health Authority we developed the Apple II Europlus into an enhanced system for use in emergency planning.

Among a wide range of functions the system made use of the Apple graphics tablet with adapted software. Maps and site plans of the region were transferred to the computer by tracing the detail from overlays on the graphics tablet.

Information was then added by use of the Bombplot and Apple Graphics programs and calibration done from the tablet's menu bar.

These were then analysed, the calculations being carried out using the Distance and Area functions, also from the menu bar. By this means measurements could be made either directly or by calculation on a wide range of factors.

On the one hand we would be looking at casualty data from aerial bombardment and on the other the visiting distances of relatives of hospital inpatients.

The system proved quite useful, having many possible applications both in war and peace.

Another illustration of its versatility may be seen in the field of hospital architecture. Building sketches may be drawn, proposed alterations made and their resultant costs estimated, all in the one exercise.

This method proved to be quite good, particularly when applied to mapping. It was simple and effective, but had one or two slight disadvantages.

At times the tablet was prone to disturbance from static electricity, especially in hot, dry or thundery weather.

We were never completely let down, but often the pressurised antistatic spray worked overtime and the operation was tedious from the frequent need to deal with adventitious glitching.

Although technically possible, it was quite a tiresome process to overprint text on the picture. We never quite managed this to our complete satisfaction.

Loading, saving and printing all involved keyboard routines with the need to use filenames that were sensitive to incorrect spelling, spacing and punctuation. Listings had to be examined and patches had to be poked into printer interface software.

It was quite difficult to get this right, hardly ever first time off. We had many a laugh over our mistakes. Very occasionally frustration led to the use of language other, and somewhat less friendly, than Pascal.

A rather special problem came to light when we applied the method to the examination of the effects of high level atmospheric and exo-atmospheric nuclear bomb bursts.

These explosions produce high energy broad band electromagnetic pulses capable of damaging the sensitive tablet. It does contain rather a lot of wires!

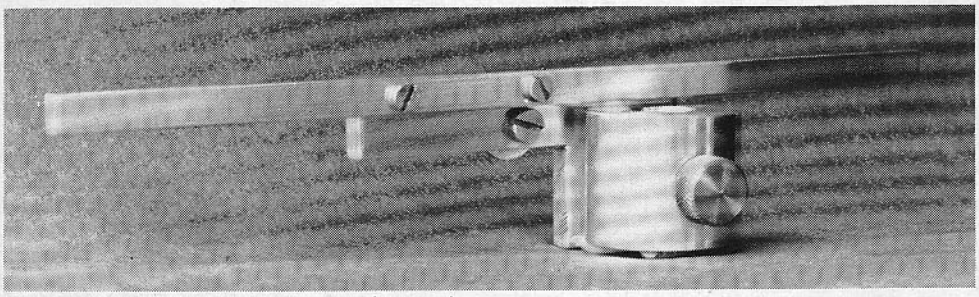
Working in the confines of a Faraday Cage, although a feasible way of coping, did not altogether recommend itself for ease and comfort.

When Lisa arrived many of the problems were solved. The LisaDraw graphics system was superior in nearly every respect, proving a great improvement on the previous Apple Graphics.

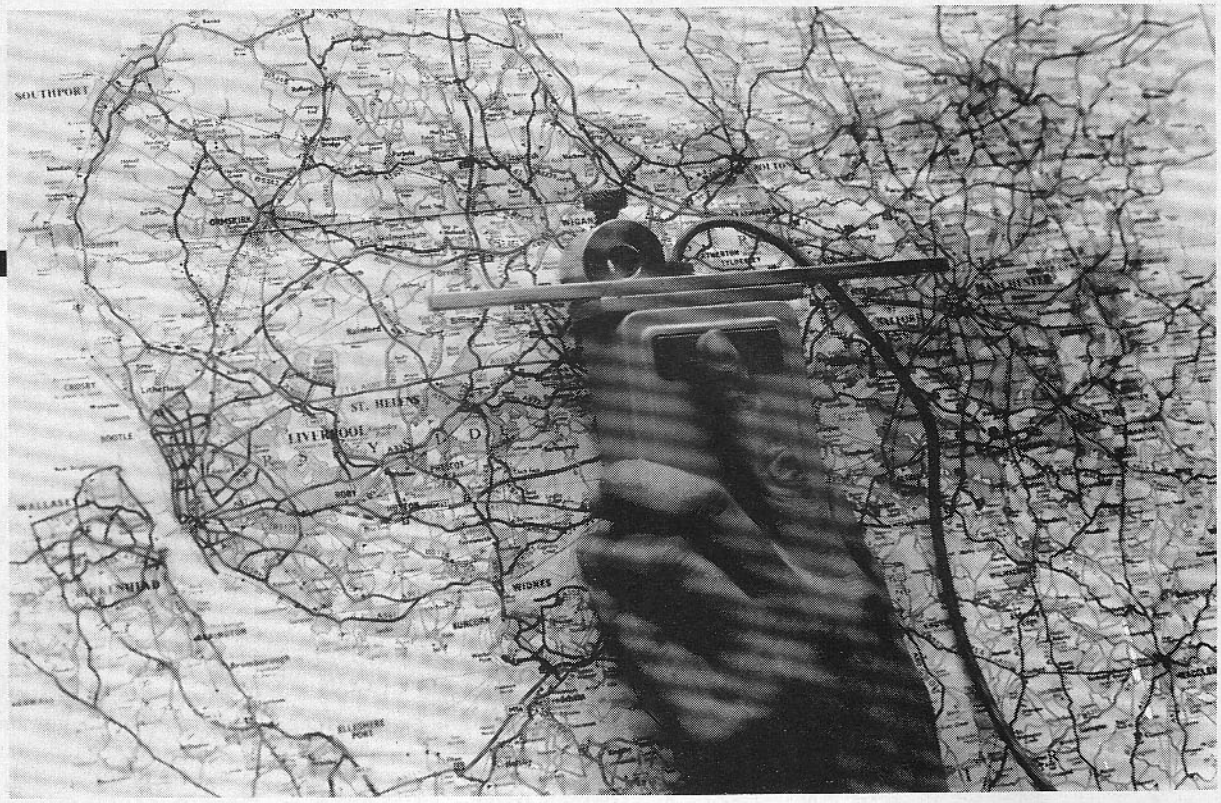
It did not use a tablet. Text could be incorporated with ease, the integrated internal software was a pleasure to use and printing likewise.

Gone were the problems of selecting the right printer interface card. Gone were the complex sequential program patches for graphics dumping.

Gone too, alas, was our



*The Fledermaus – a mouse mapping tool*




*Use the Fledermaus hole as a sighting tube when tracing from a map into Lisa, or as a pencil holder when tracing from the screen onto paper*

simple method of direct tracing. The baby had been thrown out with the bath water!

The mouse tracing a map moves only a few inches to fill the screen. Furthermore working as it does on a mechanical ball transducer, it is affected by rotation as well as vertical and horizontal movement. This had to be dealt with or the idea of using it for our application would prove a failure.

Lines on the screen would be drawn by rotation without the mouse having moved along a traced path. A new and more elaborate drawing instrument could have been devised to overcome this or the mouse could have been given an extra ball, with more elaborate highly sophisticated software to correct for rotary movement.

Neither commended itself, both being far too complicated and tedious to develop. As a simpler alternative, a mechanical attachment to the plastic housing was constructed to act as a sighting tube and also to carry a writing point, say a felt tip or ballpoint pen or a pencil.

This permitted a map to be copied onto the screen from one on the desk and vice versa. Rotation of the mouse body while in use had to be eliminated, so a transverse bar was fitted to keep it in line with the grid.

The first alignment bar we fitted was far too long. Six inches or so proved quite sufficient.

Simple as it may appear, the design of the bar is quite critical. It must be stiff enough not to bend in use and at the same time not be too thick and obstruct the view of the map being traced.

In operation one leaves out the pen to trace the map, looking down the tube and following the roads, railways, rivers and so forth. In reverse, to draw on paper one inserts the pen in its tube and follows with the cursor the outline of the map on the screen.

The only slight skill that has to be acquired is to keep the alignment bar in line with the grid of the map. Cross wires were suggested, but are not needed.

Details can be grouped and made to shrink and grow. A bank of these can be constructed on half of the screen and selected items copied to the working area on the other half.

The banked graphics may be copied or created for a particular purpose. If so required, very large numbers can be prepared and stockpiled as multiple "papers".

In practice commonsense should prevail and only a small set be used commensurate with the task in hand.

Customised scaling can be adopted, as well as cutting, pasting and copying. This latter facility can be used to duplicate parts of the bank of details to be recalled and transferred at will.

All this can be produced from the standard integrated software without adopting purpose-written extra programs.

The attachment plate to be fastened onto the mouse was made of $\frac{1}{4}$in thick light alloy sheet cut to fit the end of the plastic cover.

Mounting holes were drilled and tapped as required for bolts to carry the penholder and alignment bar. This latter was constructed of solution-hardened magnesium bar – $\frac{1}{4}$in × $\frac{3}{16}$in rectangular section chosen for its lightness and rigidity.

The siting tube or pen holder was constructed from 1in diameter light alloy round bar bored through its length and cut away at the rear to produce a flat surface to butt onto the plate.

This was drilled and tapped on the flat side at the rear for its mounting bolts and on the round side at the front to take the diamond knurled finger bolt which on tightening holds the pen.

Suitable dimensions are available in the form of a constructional drawing and data sheet. The precise details are very much a matter for the skills of the individual constructor.

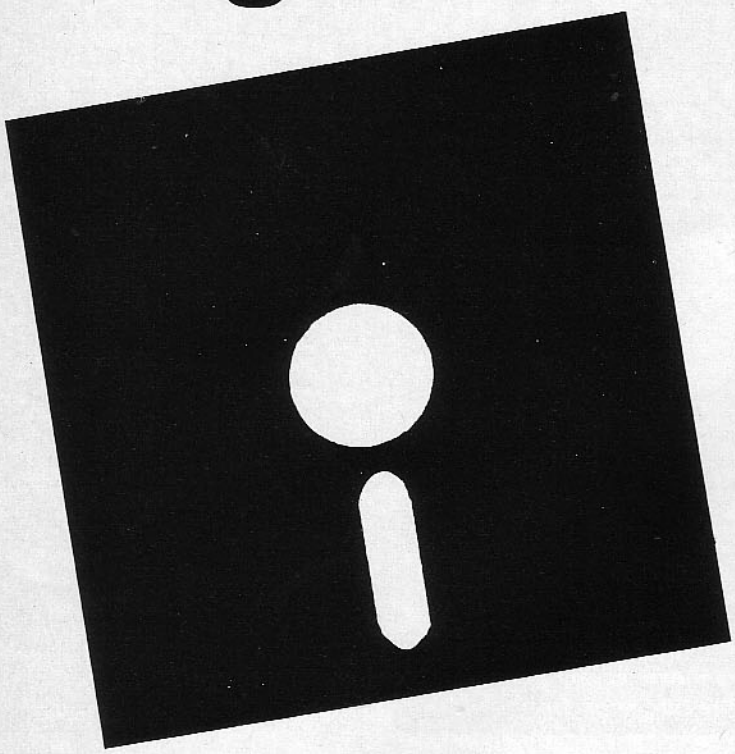
Some perhaps might like to work with other materials, plastics for example. Some may not wish to drill and tap threads and so turn to adhesives. This is unimportant – it is the principle that matters.

A name was sought for the new device, that is as soon as we were sure that it worked. This was soon proved.

It surpassed all our early expectations. What started in good fun proved to be a serious addition to our armamentarium.

The offers of a name were many, mostly ribald. The final choice was one suggested by Dr Sylvia McLauchlan, a medical colleague working in our department. Her choice of name was Fledermaus. It stuck.

# Using DOS from within a Basic program



By John Fothergill

THE use of the disc operating system is frequently required from within a Basic program in order to save or recall data. However DOS errors caused by such things as forgetting to insert a disc, misspelling a file name, etc., can crash the program.

This may be annoying, especially if you've just spent the last half-hour inputting data which is subsequently lost.

A set of routines which may be incorporated in any Basic program have been written which handle DOS errors in such a way that control from the program is not lost.

The ONERR GOTO command is used to check that no errors occur during storing or retrieving operations.

At other points in the program the ONERR GOTO flag is disabled and it is expected that individual input responses are checked.

For example, the routines include a "Get and Check file name" facility which prevents inputting an illegal file name.

It is suggested that files are locked after saving so that accidental erasure cannot occur.

```
100 REM  DOS Error handling.
200 REM  Set up constants.
210 D$ = CHR$(13) + CHR$(4):
    REM  Return + CTRL-D
220 G$ = CHR$(7) :  REM
    CTRL-G = Bell
300 GOTO 1000:  REM Skip
    subroutines
400 REM  Subroutine to get
    and check filename, FI$.
410 INPUT "File name : ";FI$
420 IF FI$ = "" THEN PRINT
    G$: GOTO 410
430 IF LEN (FI$) > 30 THEN
    PRINT "File name too
    long." : PRINT G$: GOTO
    410
440 IF ASC (LEFT$ (FI$,1)) <
    65 OR ASC (LEFT$ (FI$,1))
    > 90 THEN PRINT "File
    name must start with a
    letter.": PRINT G$: GOTO
    410
450 RETURN
500 REM  Write error
    handling routine.
510 POKE 216,0: REM Switch
    off ONERR GOTO
520 PRINT G$: PRINT G$:
    PRINT "*** DISK OPERATING
    SYSTEM ERROR ***"
530 IF PEEK (222) <> 10 THEN
    610
540 PRINT "File name already
    used."
550 PRINT "     Type 'R' to
    replace existing file"
560 PRINT "       or 'C' to
    change your file name."
570 GET Q$: IF Q$ <> "R" AND
    Q$ <> "C" THEN PRINT G$;:
    GOTO 570

580 IF Q$ = "C" THEN PRINT:
    PRINT "New ";: GOTO 2010:
    REM Return to disk
    writing routine.
590 ONERR GOTO 500
600 PRINT D$ "UNLOCK"FI$:
    RESUME
610 IF PEEK (222) = 4 THEN
    PRINT "Write protected
    disk."
620 IF PEEK (222) = 8 THEN
    PRINT "Input/Output
    error."
630 IF PEEK (222) = 9 THEN
    PRINT "Disk full."
640 PRINT "Correct fault and
    push return.": PRINT :
    GET R$: ONERR GOTO 500

650 RESUME
700 REM  Read Error Handling
    Routine.
710 POKE 216,0: REM Switch
    off ONERR GOTO
720 PRINT G$:PRINT G$: PRINT
    "*** DISK OPERATING
    SYSTEM ERROR ***"
730 IF PEEK (222) = 5 THEN
    PRINT "'End of data
    error'": PRINT "Check
    this file was intended
    for use": PRINT " with
    this program.": PRINT
    "Otherwise file is
    corrupted.": PRINT : GOTO
    3010
740 IF PEEK (222) = 6 THEN
    PRINT "No such file.":
    PRINT "Input correct ";:
    goto 3010
750 IF PEEK (222) = 8 THEN
    PRINT "Input/Output
    error.": PRINT "Correct
    fault and push return.":
    PRINT : GET R$: ONERR
    GOTO 700
760 RESUME
1000 REM  Your program here.
2000 rem  Your write to disk
    routine here.
2010 GOSUB 400: REM  Get and
    check file name.
2020 ONERR GOTO 500
2030 PRINT D$"OPEN" FI$
2040 PRINT D$"WRITE" FI$
2050 REM Your data here
2060 PRINT D$"CLOSE" FI$
2070 PRINT D$"LOCK" FI$: REM
    Prevent accidental
    overwriting.
3000 REM  Your read from
    disk routine here.
3010 GOSUB 400: REM  Get and
    check file name.
3020 ONERR GOTO 700
3030 PRINT D$"OPEN" FI$
3040 PRINT D$"READ" FI$
3050 REM  Your data here
3060 PRINT D$"CLOSE" FI$
```

**MULTIPLAN is one of the most popular spreadsheets for the Apple II range. It helped launch the IIe in February last year, replacing Visicalc as Apple's favoured product, and versions are now available both for Macintosh and the new Apple IIc.**

**We reviewed the package in the March 1983 issue of Windfall, but Nick Levy's impressions were then based on using Multiplan with an old Apple II Plus and so did not take into account the use made of the IIe's Open Apple, Tab, Delete and dedicated cursor control keys.**

**We felt it was well worth a second look to find out what Multiplan can do – and who might want to buy it.**

# Multiplan's Xternal command makes up for memory restriction

I FIRST used the IIe version of Multiplan on an Apple II Plus. The lack of the enhanced keyboard features of the IIe led me to conclude that using Multiplan could be a rather cumbersome process.

I have since learned more about the program and grown to like, respect and admire it for what it has to offer.

But when it comes to recommending it to prospective users of electronic spreadsheets against other financial packages certain reservations have to be made.

Firstly, Multiplan is only suitable for the preparation of models or worksheets which occupy about a quarter of the 63 columns x 253 rows of the spreadsheet.

By this I mean that no Multiplan model can be developed which requires more than about 30k of memory.

Even if your Apple has an extra 256k of user memory Multiplan will not be able to take up even a single byte of it.

Its spreadsheets cannot be expanded by adding extra memory to the Apple, as one can do if you want to increase the size of a Visicalc or a Magicalc spreadsheet.

I noticed, however, in a recent advertisement in this magazine that a utility is available which will enable Multiplan to make use of the additional memory provided by a certain make of RAM card, costing about £300 plus £25 for the utility.

Such a utility could certainly be of help to users who have to develop large Multiplan worksheets.

I have a theory that the more you work with electronic spreadsheets, the larger and more complex the model you develop becomes.

So if at first you convince yourself that you will never need to develop large complex models, watch how yours grow in time, size and complexity.

However, to the good news. Multiplan's inhibition to take up any additional installed memory is more than compensated by a Multiplan command called Xternal.

This enables users to create a large number of relatively small models and link them together (see Exhibit I).

What is special about the Xternal command is that links created with it can be made permanant and automatic so that if you change the sales budget for one product then the new figures will automatically cascade to the material budget as well as the financial budget.

The new figures will then be taken up and revise the product cost model as well as the labour cost schedule, etc.

Furthermore, if for example a labour schedule model extracts information from a sales budget, then the sales budget figures which appear in the labour schedule model become protected and cannot be altered.

You cannot play "What if . . ?" with the sales budget figures in a labour schedule model. To do so you will have to change the sales budget data in the original sales budget model.

So if your modelling requirements necessitate transferring data to and from six or more spreadsheets – which by virtue of Multiplan's automatic linking facilities can be kept relatively small – then Multiplan is certainly the best package for you.

Next the question of using Multiplan with either one or two disc drives.

I would definitely not recommend Apple users to use it with one disc drive as in my opinion it will involve the user with too much disc swopping between the Multiplan program and a Multiplan data disc.

I am therefore particularly concerned with the use of Multiplan on the Macintosh, which has a single disc drive.

I wonder whether Microsoft – the program's makers – have designed the Macintosh version so that the whole of the program can be loaded into Macintosh's RAM.

If not, users will have to get into the bothering routine of disc swopping whenever they enter a Multiplan command which does not reside in the Macintosh RAM.

So if Multiplan on Macintosh operates in the same manner as it works on the Apple, and you intend to use the program regularly, you will almost certainly want a second disc drive for your Macintosh.

How easy is it to use Multiplan? It is generally claimed, even by Multiplan users, that using the manual, the program can be learnt easily. I suppose this could be true only if you intend to use it in a rudimentary way.

Anyone claiming that Multiplan can be learnt easily probably has not studied the manual beyond Page 187, and most certainly has not covered Pages 309 to 425.

It does not matter so much for learning Multiplan in depth if you know how to create eight windows, how to insert rows and columns, how to format cells or how to lock them – all no doubt highly desirable skills.

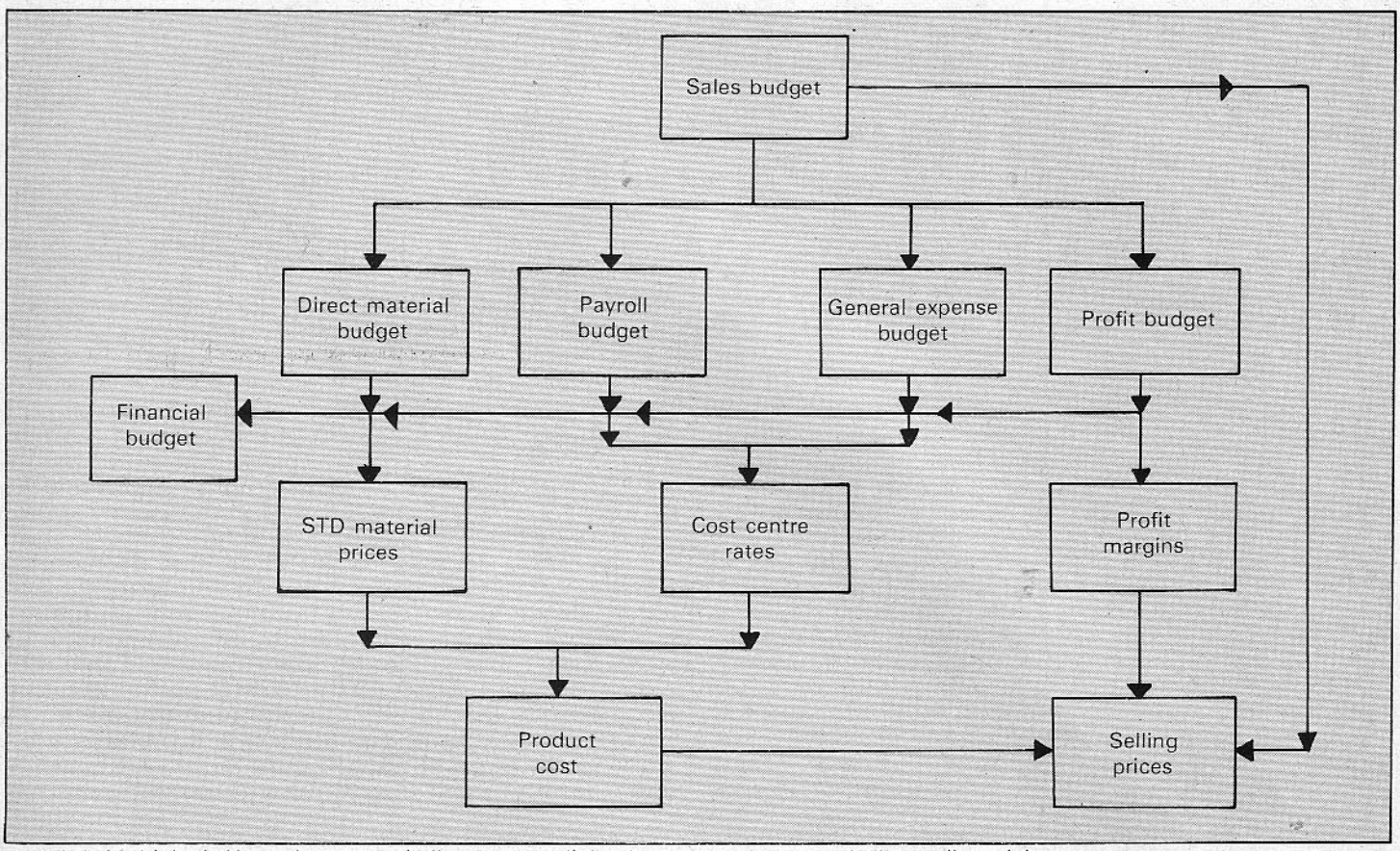



*Exhibit I: Multiplan's Xternal command allows you to link a large number of relatively small models*

**By NICK LEVY**

The four most important things to master if you want to use it effectively are, I believe:

- How to Copy entries created by the command name, including copying from Xternal files.
- How and when to use the Reference key (@).
- How to use effectively the LOOKUP function, especially in conjunction with NAMEd sets of figures.
- How to use the IF function.

Here are two simple examples to test your skill:

Enter six figures at random in the first six cells in row 1. Give this set a name, say, ONE.

Could you now Copy the six entries referred to as ONE. into rows 5 to 10? You must of course use the reference ONE in conjunction with the Copy command.

Next, put the cursor on R13C1 and press the = key. How would you proceed in order to enter the six figures described as set ONE to appear in row 13?

The next example involves clearing the screen and entering six three-digit figures into the first six rows in column 1. Total them up in R7C1.

Can you now calculate in column 2 the value of each figure in column 1 as a percentage of the total without naming cell R7C1. (You may have to rewrite the formula in R7C1 using the Reference key to convert relative cell references to absolute references.)

Incidentally, my only complaint about the facility to use names for one or more set of figures is that there are no facilities to forewarn users if the same name is used twice in one and the same model.

There appear to be a number of typing errors in the Multiplan manual and reference card which users should be aware of.

In page 1 of the reference card and Page xxv of the manual you are shown how to scroll the screen with the aid of the Open Apple. This should be shown as a Closed Apple.

Similarly the use of the Closed Apple as shown in Page 3 of the reference card and Page xxvi of the manual do not perform the functions ascribed to them.

The authors of the Multiplan manual have obviously not read Sir Ernest Gower's classic, "The Complete Plain Words", which is a campaign for clearer writing.

Gower's example of a typical obscure statement: *"Prices are basis prices per ton for the*

3. Place common sub-expressions in an intermediate cell, then refer to that cell when the sub-expression is needed in a formula in another cell. This saves retyping and recomputing the same information. For example, if SUM(Sales) appears in several formulas:

```
MIN(1000,SUM(Sales))
SUM(Sales)*commission%
AVERAGE(Sales)          (this example has it hidden)
```

it is more efficient to compute SUM(Sales) once in a cell, then refer to that cell from the formulas. Having the intermediate result visible also helps with tracing problems in the setup of the formulas.

*Exhibit II: Extract from Pages 365/6 of the Multiplan manual*

*representative - basis - pricing specification and size and quantity",* can be compared with the following even more obscure quote from the Multiplan Manual (Page 323):

*"If the area Score is a table giving adjusted composite scores for raw scores on two components in a test, then:*

***INDEX(Score, Raw1, C, Raw2, C)***

*will give the appropriate composite score, based on the two raw scores".*

This is supposed to teach you all about Multiplan's Index function. As the message has not yet got through to me I am still very intrigued by what Index does. Would someone be kind enough to explain it to me?

The manual introduction states (Page xv) that "Appendix 1 'Helpful Hints' is the most important" (of the additional information contained in the manual).

I would fully endorse that statement although I cannot understand what hint number 3 (see Exhibit II) is all about.

Could someone please explain to me what is the significance of the statement in the hint: "(this example has it hidden)"?

If you enter MULTIPLAN in R1C1 then move the cursor to R1C2 and type =LEN(R1C2), you will get the value 9, which is the number of letters in the word Multiplan.

The example used by the manual to explain what the function LEN does is (see Page 327):

**MID(T,LEN(T)1,)**

which is an expression that will return a letter from the alphabet, not a value!

Why was it necessary to incorporate in the example the function MID which is irrelevant to the understanding of LEN and confuses the issue?

The function MID with its own example – which I am sure every student of Multiplan will find is most ambiguous – is not explained until you reach Page 333.

The function MAX returns the largest value in a list of numbers. It will also return the largest value in a range of numbers – but this is not mentioned in the manual.

The MAX function is simple and easy to use unless you try to understand the following example from the Multiplan manual used to demonstrate MAX (see Page 332):

**"Best of "&FIXED(COUNT (scores),0)&"is"&FIXED (MAX(scores),2)**

I wonder what student of Multiplan could possibly follow the above example, or the one which accompanies the MIN function (Page 334):

**"Lowest of "&FIXED (COUNT(times),0)&"is" &FIXED(MIN(times),0)**

It looks as if the authors of the manual are trying to put you off using Multiplan in depth!

All the above examples incorporate Multiplan commands and functions which convert text into numbers and numbers into text.

But when these are the one and only examples used to describe what each of the functions perform, concatenating the issues can only lead to confusion.

Here is another example:

If you enter in any cell the value =COLUMN(), Multiplan will record the column number of that cell.

You wouldn't guess that at once from the example on Page 316 in the manual:

**1981+COLUMN()–4**

Any reader who has got so far deserves some fun, so why not try the following:

Enter =COLUMN()*ROW() in R1C1. With the cursor still in R1C1, type C (for Copy), F (for From) and press the Tab key. Proceed by typing :R20C7 followed by↑ Enter← and watch the results.

I must once more conclude that Multiplan is only as good as the person who uses it. To get the best out of the program you need to study it in depth.

Unfortunately however, using the Multiplan manual is not the best way to familiarise yourself with its advanced features.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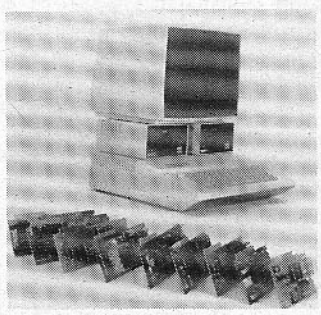

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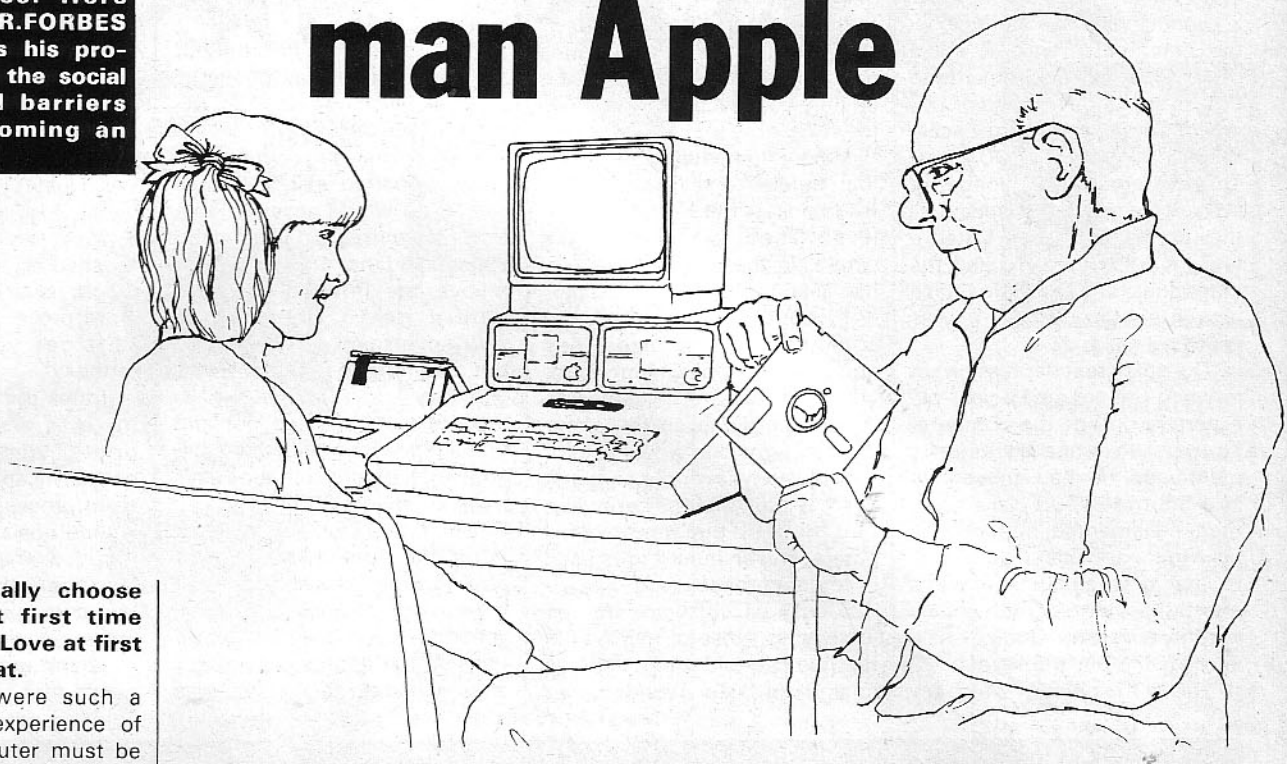
**FOR newcomers to computing the learning curve, as well as the buying curve, can be extremely daunting in prospect – regardless of whether you are in your early teens or mid seventies. Here retired doctor R.FORBES JONES charts his progress through the social and financial barriers towards becoming an Apple owner.**

# That old man Apple



**YOU don't usually choose your wife. Not first time round, anyway. Love at first sight sees to that.**

But if there were such a thing, then the experience of choosing a computer must be considered sheer hell in comparison.

The pain is even more refined when you know that both of you are going to live out your lives together, for at 75 years of age this is a near certainty for me.

But to go back to the beginning. My grandchildren in the US were into computers in a big way both at school and in the home and this grandad was beginning to feel that the 3000 plus nautical miles were somehow becoming 3000 mental miles.

I could put up with my son in New Jersey with his big powerful computer at home. After all, I was just his poor old dad with lots of quaint ideas – centuries old.

And from my viewpoint I was his wily old dad who knew how to handle most of the come-uppance situations as they arose.

But children – and especially grandchildren – are not so easily handled. There is no situation in which an oldie is likely to be shown up in all his technological nakedness as when a child takes him by the hand and leads him to his – or his dad's – home computer and after a few deft manipulations asks whether you would like to have a go.

If you recoil, saying no thank you, and let nothing but sheer ignorance engulf you in your retreat, then you are doomed.

But if you can trot out some apparently knowledgeable questions on RAM or ROM or k then all is not lost. This is more likely to change defeat into victory, especially if you can strike a question that the child can't answer.

No matter if you don't know the answer yourself so long as you have landed on the right question.

But perhaps *your* grandchild is one of those who is more likely to turn round and ask, "What is the answer?"

Impasse? Not quite, for this is when you have to pull out your last card – the friendly educationist's one – with a "Now it's much better if you go away and look it up for yourself" lofty sort of approach. Then you can move on to your "rather busy just now" gambit.

As it happened I didn't feel I wanted to rely too much on guile. In any case, I had succumbed to that disease that sometimes afflicts the aged — a need to know a little of the new world that had sprung up around me.

Oh! I knew all about computers, for had I not run a management game in an American university, with a computer manager to supply daily printouts for me and the students?

But that computer was big! And it lived coddled and nursed in a huge, air conditioned room. From its very size it was nothing that I could remotely think of as something I should think of wanting to possess.

With a burgeoning need to know beginning to create its own pressure I just had to yield to the impulse and sign up for a beginners' computer class.

Before I went to the first class I joined the ranks of those who thought I surely must be out of my tiny mind. But after the first few nights I began to enjoy it – at least enough to repeat the dose at one level higher.

But all that did not make me a programmer. To be fair, I could do a simple nested loop, was able to use subscripted variables, managed to work in some subroutines into a program and even wrote a program that played "God save the Queen".

Impressed? Good! Then my test has worked. I can now face the grandchildren.

One frustrating thing I found during that first night or two at the computer class was that learning about computers without a computer was like learning to play the piano but only being able to have a go at an instrument when you went to the music teacher's place.

And so was born the next burgeoning need – the absolute necessity for me to have my own computer.

Were they not now being advertised all over the place? Were they not now dirt cheap?

When the schoolgirl across the road invited me over to use her micro, her very kindness only brought it home to me how much I really wanted one.

That marked the point at which I descended into my own exquisite hell. I had to be sensible. I had to buy magazines and familiarise myself with what was going on.

A small fortune went in this way, each edition of one or the other leading to a firm decision – yes, that's the one for me – or condemning me to the depths as one or other preview ferreted out the weaknesses of my choice.

Naturally I started with the cheapest, for that – on paper – would do all I would want of a computer. A grown-up neigh-

bour of a mature 14 years of age advised me not to get a cheap one for he had grown out of his in no time.

Honour and my standing in the community was at stake here. Were my requirements to be less than those of a lad of 14?

So I had to move up the scale to the more than £100 class. The excitement and wonder of even contemplating spending all that money on myself lasted a few months while I culled the magazines and went for each new breakthrough as it was launched.

The next great depression set in when the young 18-year-old expert in one of the computer shops I haunted casually mentioned he had moved up into the over £200 class. Even then, he lamented, he found his new toy extravagant on Basic.

I had to laugh but there was a slightly demented note in my mirthless cackle. Quite, I said and left the place forever.

This is the point at which my whole American family descended upon us for three weeks. Number One son, from the great height of his own $5,000 machine, said: "Don't be daft, Dad. If you are going to buy one, buy a good one. Otherwise, in no time you will find it too small for you".

Where and when had I heard that before? I recalled it was way back at the less than £50 level. Then he pointed out where, in the nearby town, he had seen the sign of the Apple.

I vaguely remembered the comments in the magazines about the Apple. American, wasn't it? Always, I seemed to recall, referred to in the affectionate terms one would use for very old, very favourite persons.

Dear old Apple! The important first of the home computers. Never much advertised in my magazines.

Plenty of software but an underlying sense of murmuring that the dear old thing might be finding the new world it had brought upon itself was proving too much for it. Not yet RIP for the Grand Old Thing, but the headstone was being chiselled out.

Anyway all that was only of academic interest as the price was not even remotely in my orbit of thinking.

Came the day when the family departed and I told my wife Eve I would never be able to forgive myself but I had made up my mind that the only way to relieve the internal pressure would be to invest in a well-advertised, over-priced, but seemingly reliable £400 machine.

I suggested we go out and find a place that sells this thing and buy it before someone says I will surely grow out of it.

Good, said Eve, but let's look in on that Apple place our son said he saw. The salesman took me through all sorts of esoteric gymnastics on the if-this-pertains or that-contingency-arises approach and while all that was going on Eve's voice in the background was saying go on buy it – give yourself a treat. What's money for? You know what Number One son said.

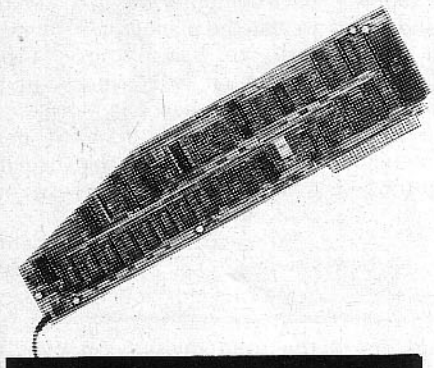
Was I peeved at myself for letting myself in for this? Was I upset at having my cool judgement influenced by sirenic noises floating up my back? Or was I just revelling in the joys of yielding to temptation?

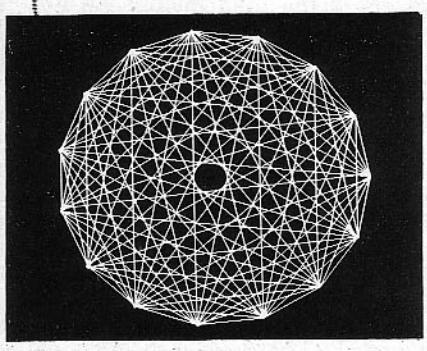
My feeble resistance was brushed aside. My claim that I would never be able to afford a word processor was met with: "I'll get you one for your birthday".

I took the Apple. Then I shut my eyes and took with it the printer and disc drive. My birthday came and with it the word processor.

And don't I now give thanks for the woman of my life and for the strength given to me to overcome my weakness for looking at the cheap ones.

Thank goodness I've grown out of that.



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# Discover a new dimension to your surface pictures

**Making a 3D image seems simple – but there's more to it than meets the eye, according to PETER GORRY**

**A BIT of a rest this month for those who have worn their fingers to the bone typing in all the graph package routines from the last three issues of *Apple User.***

This time we'll be taking a look at two packages from Penguin Software. But first, have you ever been impressed by those "three dimensional" surface pictures and wondered how they are done?

Here's a chance to do your own.

At the heart of drawing realistic 3D surfaces of the type shown here is a so-called "hidden line algorithm". This is just a fancy way of describing a recipe which ensures your program doesn't draw lines you can't see!

It turns out that this apparently simple task is one of the hardest problems in computer graphics.

Although there are many solutions to the problem, they share a common attribute. They take a lot of computation, which makes them very slow.

The program given in Listing I uses a simple algorithm which should really be described as a hidden pixel (screen point) algorithm.

This is because we define the surface by using only a series of points. Putting them close to each other gives the impression of lines.

The problem now resolves to deciding whether or not to plot a point – that is, is it visible or not?

We can simplify the problem even further by adopting a fixed viewpoint from which to portray the surface.

The secret is then to think of the object as an image on the screen – not as it is in real life.

Since the Apple screen has 280 points along the horizontal and 192 points vertically, the job of the program is to match up a point on the object to one on the screen and to decide if it is visible.

It's easier to see how the program works by referring to Figure I. This shows a simple flat grid as it would appear on the screen.

I have chosen it to occupy a total of 240 pixels along the horizontal. The length of the front edge is 140 pixels. The right edge is now drawn at 45 degrees (100 along, 100 up).

It is a relatively simple task to decide which point on the screen corresponds to a particular point on the grid.

A "real" surface is made by pushing and pulling the grid points up and down from their flat base.

This only moves the point vertically on the screen. It always keeps the same horizontal value.

We can now imagine the picture made up of 240 vertical screen columns. Grid points are confined to a column and they can only move up and down it.

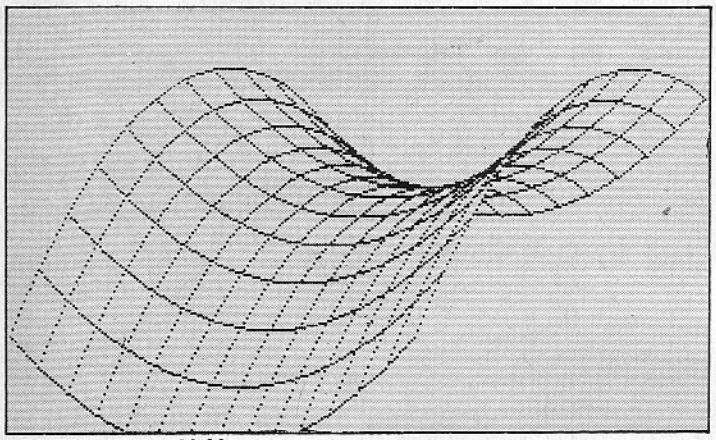
The trick is to draw the surface from the front to the back, taking note of the maximum and minimum values plotted so far in each column. The array P(240,2) is used to hold the minimum and maximum values for each column.

If a new point lies between the two values, it cannot be visible since something nearer to the viewer has already covered it.

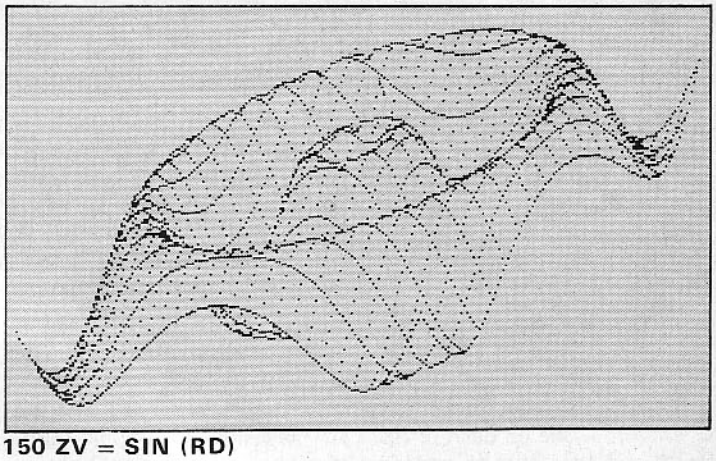
Only if it lies outside the range will it be visible and hence need plotting.

```
100 REM 3-D SURFACE PROGRAM
110 DIM P (240,2)
120 GOTO 1000: REM PROGRAM
    STAR T
125 REM COORD CALC ROUTINE
130 X = DX * B:Y = DY * A:
    REM X,Y COORDS
140 REM RD=SQR (X * X + Y *
    Y): REM RADIAL DISTANCE
150 ZV = X * X - Y * Y
155 RP = A + B + 120: REM
    ARRAY INDEX
160 R = A + B + XC: REM
    SCREEN X
170 T = YC - A - ZV * DZ:
    REM SCREEN Y
180 RETURN
200 REM PLOT/UPDATE ROUTINE
210 IF T > = P(RP,1) THEN
    P(RP,1) = T: GOTO 240
220 IF T < = P(RP,2) THEN
    P(RP,2) = T: GOTO 240
230 RETURN : REM HIDDEN
240 IF (T > =ST) AND (T <
    =SB) THEN HPLOT R,T
250 RETURN
1000 REM MAIN PROGRAM
1010 GOSUB 2000: REM INPUT
     RANG ES
1020 GOSUB 3000: REM SET
     INITIA L VALUES
1030 HGR : HCOLOR= 3: POKE -
     16 302,0: REM SET UP
     SCREEN
1035 HPLOT 0,0 TO 279,0 TO
     279,1 91 TO 0,191 TO 0,0
1040 REM NOW THE PROGRAM
     ITSELF
1050 FOR K= -50 TO 50 STEP
     S: A = K: REM HORIZONTAL
     INDEX
1060 FOR I = -70 TO 70:B =
     I: REM NOW THE HORIZONTAL
     LINE
1070 GOSUB 130: REM CALC
     COORD S
1075 GOSUB 210: REM PLOT
     ROUTINE
1080 NEXT : REM I
1085 IF K = 50 THEN GOTO
     1140
1090 FOR L = 1 TO LS:A = K +
     L: REM HORIZONTAL INDEX
1100 FOR I = -70 TO 70 STEP
     S: B = I: REM COLUMN
     LINES
1110 GOSUB 130
1115 GOSUB 210
1120 NEXT : REM I
1130 NEXT : REM L
1140 NEXT : REM K
1150 CALL -198: REM BEEP FOR
     FINISH
1160 END
2000 REM RANGE INPUT ROUTINE
2010 TEXT: HOME : PRINT :
     PRINT
2020 PRINT "FUNCTION GRAPHED
     -R TO R FOR X AND Y"
2030 PRINT : INPUT "RANGE
     ="; RN
2040 PRINT : INPUT "VERTICAL
     MAGNIFICATION =";ZF
2050 PRINT : INPUT "GRID
     SIZE (4,5,10,20) =";S
2060 DX = RN / 70:DY = RN /
     50:DZ = ZF / DX
2070 LS = S - L:XC = 140:YC
     = 100:ST = 0:SB = 191
2080 RETURN
3000 REM SET UP INITIAL
     PLOTTING VALUES
3010 PRINT : INPUT "SUPRESS
     UNDER-SURFACE Y/N ? ";A$
3020 PRINT : PRINT
     "CALCULATING INITIAL
     VALUES"
3040 K = - 50:A = K
3050 FOR I = -70 TO 70:B =
     I: GOSUB 130
3060 P(RP,1) = T:P(RP,2) =T:
     REM SET MIN = MAX =
     F(X,Y)
3070 PRINT ",";: NEXT
3080 B = 70
3090 FOR K = - 49 TO 50:A =
     K: GOSUB 130
3100 P(RP,1) = T:P(RP,2) =T
3105 PRINT ",";: NEXT
3110 IF A$ = "Y" THEN FOR I
     = 0 TO 240:P(I,1) = 191:
     NEXT
3120 RETURN
```

*Listing I: This program uses a 'hidden pixel' alogorithm*



**150 ZV = X*X–Y*Y**



**150 ZV = SIN (RD)**

*Functions from the example program in listing I*

The question of what initial values to put into P( ) is easily answered, since from our vantage point nothing can obscure the front and right hand edges.

They may lie off the screen, but this is a separate problem and checked for in line 240.

We thus set the minimum and maximum values equal to the surface heights along the edges. Alternatively if we set the minimum value to the bottom of the screen it has the effect of suppressing the "underneath" of the surface.

This option is selected in line 3010. You sometimes lose an edge line in this mode because the algorithm is so simple.

The function is set in line 150 and can be a function of X and Y or a radial distance RD.

If the latter is required, you must remove the first REM in line 140 so that it is calculated.

The size of the grid can also be set in pixels: 4 = fine, 20 = coarse. It ranges from –R to R in both directions and a separate vertical magnification can be selected.

The program's speed is heavily dependent on the function chosen and the grid size. It can vary from a few minutes to over 15.

I recommend a range of 5-10, grid size of 20 and a small magnification factor (0.1) as good first tries.

Only when you are satisfied with the parameters should you do a fine grid.

Pictures can be saved to disc simply by a BSAVE. For example:

```
BSAVE PICNAME, A$2000,
L$1FFF
```

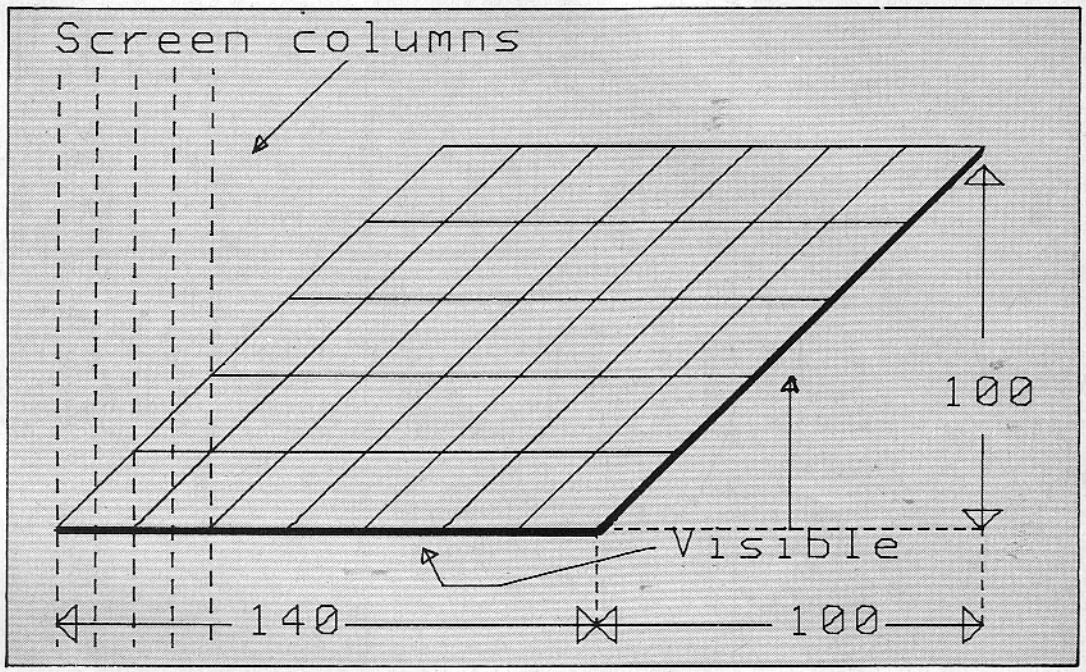



*Figure I: A simple, flat grid as it would appear on the Apple screen*

# PUT AN IMAGE ON PAPER – OR SHOW IT ON SCREEN

**PAPER Graphics and Transitions are two new products from Penguin Software, a company which has developed a solid reputation for good graphics software. These two products are no exception.**

Paper Graphics is a set of programs for outputting hi-res pictures to a printer.

At first glance this might seem unnecessary since so many printer interface cards now offer graphics dumps.

However if your interface card/printer combination doesn't offer graphical output that's of little comfort.

Paper Graphics supports over 100 dot matrix, thermal, ink jet and letter quality printers with a bewildering array of interface cards. It can thus provide graphical output for many who had no way of achieving it before.

However even if you can already print hi-res pictures, don't think Paper Graphics has nothing to offer you – it does.

It allows you to do just about anything to the image before you print it, and you choose its size, position and orientation on the paper too.

The programs are menu-driven and easy to use. The first task is to configure the system, which means telling it which printer and interface card you have and what slot it is in. You are now ready to begin printing hi-res pictures using Option 1 on the menu.

This program asks you for the paper width (inches) and offers a choice of print densities (dots

per inch). These values can be reset at any time.

Loading and viewing pictures is simplicity itself and the software also supports "packed" pictures.

These are ones that have been compressed to take up less disc space using a special picture-packer (also supplied).

Once the picture has been loaded you can perform several types of manipulation on the image. It can be rotated, flipped, mirrored or inversed.

Two hi-res images can be set at one time, one on each hi-res page, and they can be printed out individually or together.

The pictures can be printed upright or rotated and they can be separately magnified in the horizontal and vertical directions up to a maximum scale of nine times, paper width permitting (Figure II and III).

You can also choose to plot out just a part of the image, in which case the part is selected using box cursors.

Finally its position on the paper is selected from left, right or centre justified, or manually in inches.

If you have decided on a set format you don't have to go through the whole selection process each time.

First you save the format parameters to disc and use the Quick printing option from the menu instead. This keeps the work required to print a picture to an absolute minimum.

The GRAPHICS.QUICK code can also be used from within your own programs so you can incorporate a customised printer routine into all your software.

The only problem is that it has to occupy a set chunk of memory ($6000-$6600). A relocatable version that installed itself below HIMEM would be much better.

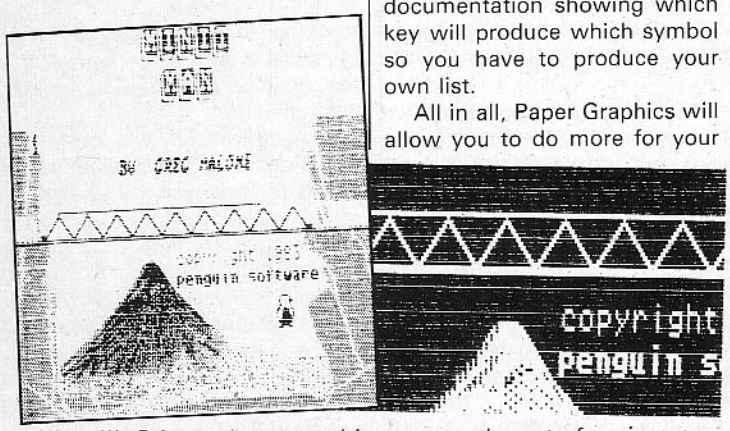



*Figure III: Print a compressed image or only part of an image*

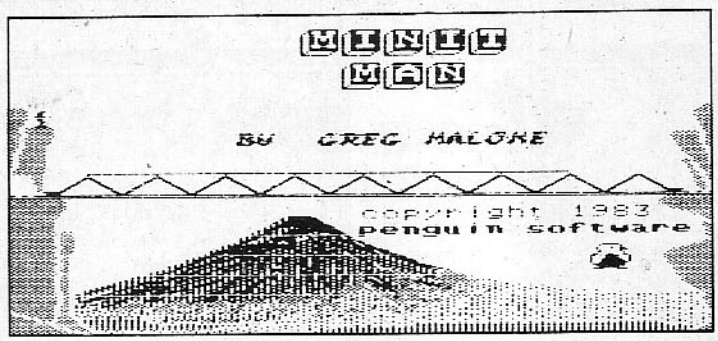



*Figure II: A 'horizontally magnified' hi-res screen dump*

Hi-res pictures can also be edited using the Graphic Composer, which is Option 3 on the menu.

This enables you to alter the image in a number of ways such as re-positioning, cropping, framing all or part of the picture, erasing and filling rectangular windows, and adding text.

The Graphic Composer is perhaps the least polished of the options and it could certainly be improved.

Re-positioning erases the picture as it moves off the screen area, so if you go a little too far and want to come back – bad luck.

The windowing and border routines use cursors to select diagonal corners.

Unfortunately this is done one corner at a time. There is no indication of where the first corner is when you come to set the second.

This is dealt with much more effectively in the printing section so I don't know why it's so poor here.

The text annotation section is passable but rather clumsy to use. Two character sets are available – the alternate character set bears Greek and mathematical symbols.

Unfortunately there is no documentation showing which key will produce which symbol so you have to produce your own list.

All in all, Paper Graphics will allow you to do more for your hi-res printing than you would have thought possible.

It strikes me that there is one glaring omission from the product however – the facility to produce double-res graphics dumps from the Apple IIe, especially since so few interface cards offer this at present.

★ ★ ★

*Are you the sort of person who likes to bore relatives with slide shows of last year's holidays? Well here's your chance to do the same with your favourite hi-res pictures.*

Transitions is a package for creating real time, slide show format, hi-res presentations. It can operate in auto and manual modes with up to eight disc drives on line at one time.

It offers variable delays, six background colours and up to 44 different ways of achieving a transition from one picture to another.

You can also set it to loop back to the beginning when it's through.

The package is aimed at people who want to create professional-looking graphics presentations with minimum effort.

It also enables the Apple to produce a continuous advertising display in a truly eye-catching form.

The package uses normal hi-res pictures (or packed ones – but you can't mix types in one presentation). So graphs, diagrams, charts, pictures and logos can be taken from a wide variety of sources for incorporation into one presentation.

The programs are again menu-driven and just as easy to use. There are several options for viewing and sorting pictures on a disc.

These vary from looking at each picture in turn on a normal hi-res page to being presented with mini versions of the pictures together with their titles. You can see nine or 16 such mini pictures on one screen.

I was surprised just how recognisable a picture is – even reduced to 1/16th of its original area.

The Slide Show uses the pictures in the order they appear on the disc, but the Sort option with the mini-picture catalog makes ordering the disc very simple.

The heart of the system is the Slide Show Editor, used to set up the parameters for each picture change in turn.

Implementing a picture swap involves setting up values for the following parameters:

- Clear the screen to any of the six background colours with any of the 44 possible transitions.
- Bring in the new picture using any transition.
- Vary the speed of each transition separately.
- Set delays for the time a picture remains on the screen.
- Set up repetitive picture conditions.

The first option can be bypassed if required.

The Editor operates in four main modes – Auto, Manual, Step and Test. These are used at different stages of development of the show, from Test at the most basic (single picture testing) to Auto for the finished product.

Once the show has been constructed, the parameters are saved to disc and we are ready to run the presentation.

This only requires that you specify the order the disc drives are to be used, and whether you want looping at the end.

Finally the back of the disc contains a master copy of an Automatic Packed Picture Slide Show program which can be used to create a bootable presentation disc.

To produce such a disc you have to copy the master onto your fresh disc. You then add the packed pictures (a picture-packer is provided), use the Choose and Sequence module to set the picture order, and the Editor to create the transition sequences.

Booting the disc will then run through the slide show automatically.

*Now if I can just find my best pictures, the relatives are in for a real treat!*

# We unpack the Apple IIc

**APPLE has launched its second new micro within the space of three months.**

The Apple IIc is essentially a lightweight Apple IIe with all the spaces and the slots taken out – but with 128k memory and a lot of standard accessories built-in.

At last Apple has put into one box just about everything most people would want from a traditional 6502 micro except for an integral screen and portable battery power supply.

And both of these are promised for later in the year.

In doing so it has thrust the incredibly successful and long-lived Apple II firmly to the forefront of the mid-1980s markets.

The Apple IIc, aimed at the businessman and professional user, will cost around £800.

With it Apple is meeting market competitors such as IBM head on without compromising either standards or originality.

As a side effect its release could bring the price of an Apple IIe, itself just over a year old, tumbling.

There will still be a ready market for the Apple IIe in places such as universities and industry which require the use of internal interface slots.

The Apple IIc was announced on April 24 and is promised to be available in quantity in the UK in early May.

It is just as exciting as the Macintosh, but for different reasons.

Apple describe it as a transportable. But weighing only seven and a half pounds and taking up the same space as the lid of the older Apple II we reckon it is more of a portable transportable.

It has 80 columns, 128k RAM, a built-in disc drive with controller, two serial interface ports, a built-in mouse card, a full size keyboard and a carrying handle.

What it doesn't have is any of the internal peripheral slots that are the hallmark of the earlier Apple IIs. Instead peripherals such as printers and modems plug into the back of the machine.

Applesoft is in ROM, together with the familiar auto-start ROM containing the monitor.

**DAVID CREASEY and MAX PARROTT find it's half the size but twice the memory . . . no slots, but disc drive and lots of other exciting goodies built in**

The monitor is not identical to that in the Apple IIe. For example, the tape routines have been removed, but the defined entry points for routines have been kept.

Apple hopes that this means at least 16,000 programs (about 80 per cent of the traditional Apple software base) can be used with the new machine.

Most of the remaining 20 per cent of programs will not function because they use hardware not available on the Apple IIc.

As there is no provision for a Z80 card, CP/M-based packages will not run on the Apple IIc.

The hi-res screens and DOS take their usual place in the lower 64k of memory. ProDOS,

# The takeawa
# out-prices t

*The Apple IIc is slimline and easy to carry. The fold away handle doubles as a stand.*

the new operating system, is provided and new software, such as Appleworks, takes full advantage of the available 128k RAM.

The machine measures 11 × 12 × 2½in. It doesn't have a built-in power supply but the external unit measures only 3 × 5¼ × 2½in. and will travel easily in the canvas IIc carrier bag. Other manufacturers are already designing a portable battery supply.

Also on the drawing board is a hard carrying case which incorporates a modem.

The Apple IIc will become truly portable later in the year with the release – hopefully by September – of its own flat screen. This takes LCD technology forward by leaps and bounds.

The screen clips on top and provides a remarkable 80 columns by 24 lines as well as Apple's double hi-res graphics (560 × 192 pixels).

The screen is fast and although monochrome, several shades of grey are supported.

Once the flat screen and the portable battery supply are available you will be able to run your favourite graphics games while on the move – and keep them to yourself by using the headphone capability!

All you now need is a power supply. The Apple IIc will run off a 12 volt battery supply and can even be run off a car cigar lighter, although Apple do not recommend this.

The carrying handle, which folds onto the back of the case when not in use, has a dual function. It clips under the machine to act as a stand, providing the optimum keyboard angle for typing.

This positioning is crucial to the proper operation of the machine as it allows air convection for the cooling vents.

**NO other micro available – including the BBC B, the Apricot and the PC Junior – can match the Apple IIc specifications for the same price.**

Even an Apple IIe system set up to match the IIc would cost around £1,500 compared to the price tag of the new machine, which will sell for $1,295 in the USA and for around £800 in the UK. This price had not been confirmed when *Apple User* went to press.

But just as important as the price is the way the new micro will be sold.

It is being marketed as a self-contained, consumer-orientated "take it away and plug it in" product.

It is far more saleable than any previous Apple product and it will be difficult to miss the eye-catching bright red Apple IIc box in any High Street shop or dealer premises.

It can be sold over the counter, even by an inexperien-

*Pached into the tiny Apple IIc are the equivalent of the contents of all these boxes containing the Apple IIe and its components*

## What the Apple IIc offers:

- *Transportable eight-bit micro (the "c" stands for compact).*
- *65C02 processor (CMOS version of 6502 chip).*
- *128k RAM (CMOS), plus Applesoft in ROM.*
- *16 colour output with double hi-res colour as standard in 40 or 80 columns mode.*
- *Built-in switchable 40/80 column character display.*
- *Weight 7½lbs.*
- *Dimensions 11 × 12 × 2½in.*
- *Case colouring white.*
- *Full size keyboard (same layout and functions as IIe but with different symbols on keycaps) with full Ascii set and auto-repeat.*
- *External power supply transforms mains voltage to 12 volts. Machine will also work directly from 12 volt battery. Power unit, measuring 3 x 5 x 2½in, supplied with own connector cord.*
- *Built-in 5¼ in, half height disc drive (143k) with disc drive controller.*
- *Connector port on rear for external disc drive.*
- *Built-in carrying handle (also used as a stand for correct positioning of keyboard when in use).*
- *Built-in mouse port, including 80k ROM-based mouse software. Mouse plus MousePaint software is optional extra. Can also be used as joystick/games controller port.*
- *Two identical built-in serial interface ports, which can be configured up to 19,200 Baud, for printers, modems or plotters. Baud rate is set in EEprom under software control, though original values are retained when power is turned off.*
- *Standard video output.*
- *RGB output also used to drive external modulator provided with system for use with domestic TV.*
- *Volume control and headphone socket.*
- *No internal interface slots. Therefore no CP/M capability or obvious hard disc or networking capabilities.*
- *No cassette tape facility.*
- *No Integer Basic.*
- *No parallel output. Most printers currently in use with the Apple IIe, including Epson and Apple DMP, only support parallel output. However both the Apple Scribe and Imagewriter printers plug directly into the serial port.*

# y Apple that e opposition

ced salesman.

Apple say that while the Macintosh is easy to use, the marketing platform for the IIc is that it is easy to learn.

Because it is difficult for salesmen to educate people at the point of sale, Apple has had to build into the IIc box all the things people will need including top-grade learning material.

"The IIc is a total solution in a box incorporating everything needed to start using the computer right away", said Neil Davison of Apple UK.

"One of its most exciting features is the interactive owner's guide. Most computers come with a big, thick manual. The IIc comes with a small, thin manual and five interactive learning discs".

You can take an Apple IIc home (literally pick it up in one hand) and start using it without having to learn how to connect a disc drive or interface cards for printers or 80 column display.

You simply plug it into a power supply and a monitor or TV screen and start working with the five double-sided tutorial discs supplied.

Initial distribution will be through Apple's well-established dealer network as well as through High Street stores like Lasky's and W.H. Smiths.

"People will not have to go out of their way to see an Apple IIc", said Davison. "We will put it where people shop".

He said the Apple IIc was an in-store product that would sell itself. But at the same time Apple intended to spend "an enormous amount of money" on advertising this year to establish the Apple brand.

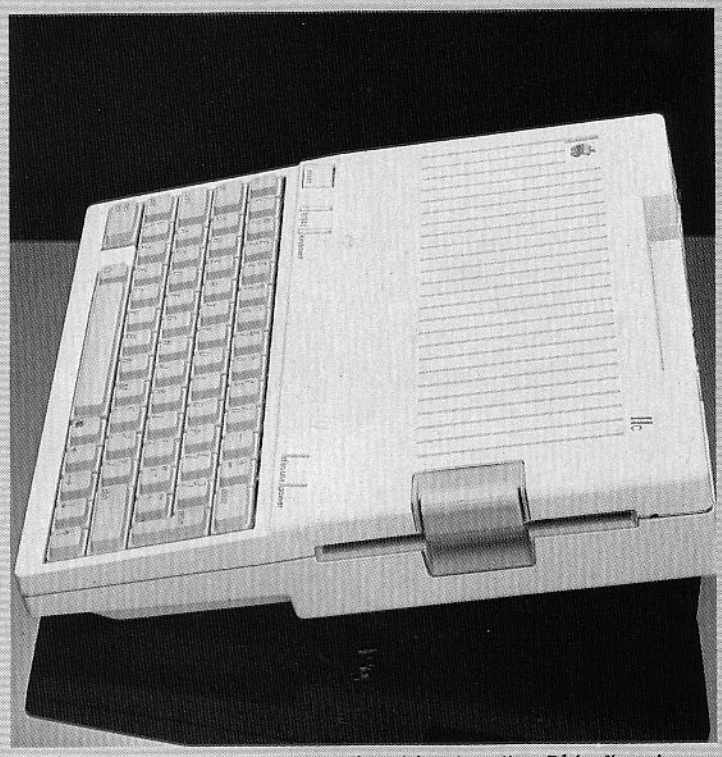
Servicing the IIc will be just as easy as using it.

Apple's policy is to have modular repairs. A dealer will simply remove a faulty mother board, disc drive or keyboard – the three main components – and replace them.

Faulty components will then be sent back to the factory to be "re-manufactured".

In theory an Apple IIc owner will be able to carry his machine into his local dealers and have the repair done while he waits – although the normal turnaround time is 24 hours.

If you are used to delving inside an older Apple note that unlike the IIe and II Plus, the IIc is a closed box. If you open it you invalidate your warranty, which is valid for one year.



*The side-mounted half-height disc drive handles 5¼in floppies*

## What extras you can buy

- Half height second disc drive (access times are faster than those of drives supplied with the IIe).
- Nine inch green monitor IIc with stand allowing it to tilt.
- Joystick and hand-controller (standard Apple).
- Mouse (with Mousepaint software).
- Apple Imagewriter and new Scribe colour printer.
- Apple Plotter.
- Canvas carrying case.
- Applesoft and technical reference manuals.

## What extras now being planned

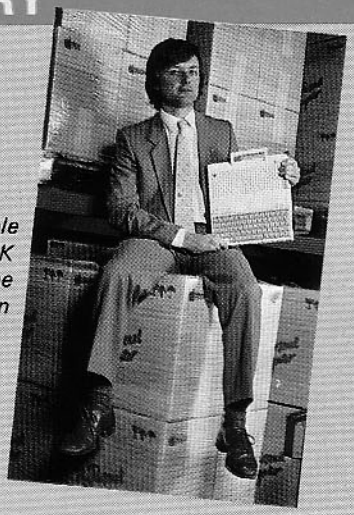
- LCD flatscreen to clip onto the top of the new micro. Supports 80 × 24 lines or 560 × 192 pixels (double hi-res graphics). Has fast response and in general behaves as normal monochrome monitor. Screen could be expensive, possibly costing up to £500 on its release, scheduled for September.
- Re-chargeable battery pack (not from Apple).
- Briefcase, with built-in modem, to carry IIc (not from Apple).
- RGB colour monitor.

## What software is available now

- Three-in-one integrated package, Appleworks, which Apple claims will be as important to the IIc as Visicalc was for the original Apple II.
- Logo II.
- Pascal Version 1.2.
- Two levels of third-party software programs:
  - ☐ Co-marketed products. The result of six-months pre-launch liaison between Apple and independent software houses in the US, they have been specially written to take advantage of the IIc's 128k memory and/or use of the mouse, and/or double hi-res graphics.
  - ☐ Co-announced products – non-Apple programs that have proven compatibility and suitability for the IIc. These can carry the official Apple stamp of approval in the form of a sticker: "Runs on the IIc".
- The IIc is claimed to be compatible with 16,000 IIe/II+ programs (80 per cent). It will not run software that requires hardware plug-in devices or a card in a slot, such as CP/M-based programs.

## What comes with the IIc system

- *RF modulator.*
- *External mains power supply.*
- *ProDOS operating system disc and manual.*
- *Instruction manual and interactive tutorial. Discs include System Utilities and five double-sided tutorial discs: Apple Presents the IIc, Inside Story (explains how a computer works), Apple at Work (interactive demo of Appleworks integrated software program), Apple at Play (collection of home/recreational software demonstrations including financial budgeting and two games), Getting Down to Basic, Exploring Logo (a new Logo is released for the machine).*



*A powerful transportable – in the hands of UK marketing manager for the Apple IIc, Neil Davison*

# All the IIc lacks is a parallel printer port

## A status symbol?

*WHO is going to buy a IIc? Apple says that in the UK it is directed primarily at the professional user such as a journalist or surveyor, or at the manager who might want to take work home.*

*This reflects a difference in marketing emphasis compared with the United States, where the IIc is designed to cater primarily for the consumer market.*

*It is also aimed at the top end of the consumer market – the second or third time micro purchaser who has been bitten by the bug and who now wants a "proper" machine with a disc drive and a wide range of ready-to-run software.*

*However because of its portability and its power it is just as likely to be popular in schools and for people who run courses.*

*"We are positioning the IIc as the ultimate in price/performance for a 6502 machine, and of course it will run thousands of Apple programs", said Neil Davison of Apple UK.*

*"Status is also very important. A percentage of the British market (two million home computers) will want to upgrade to a REAL computer.*

*"I see a switch from people saying, 'I have a computer at home', to saying, 'I have an Apple at home", he said.*

A MINOR niggle about the Apple IIc, particularly among existing Apple users, could be its lack of a parallel printer port.

But this is unlikely to bother the first time purchaser.

He will also be a first time printer buyer and so will have a choice from a limited range of machines, including Apple's Imagewriter or the Scribe colour printer, both of which use a serial interface.

However many popular printers currently used with Apples, including Epson and Apple's own Dot Matrix Printer, will only accept parallel input.

Existing users who have a parallel printer and want to use it with the Apple IIc will have to modify their machine or replace it – both unattractive options.

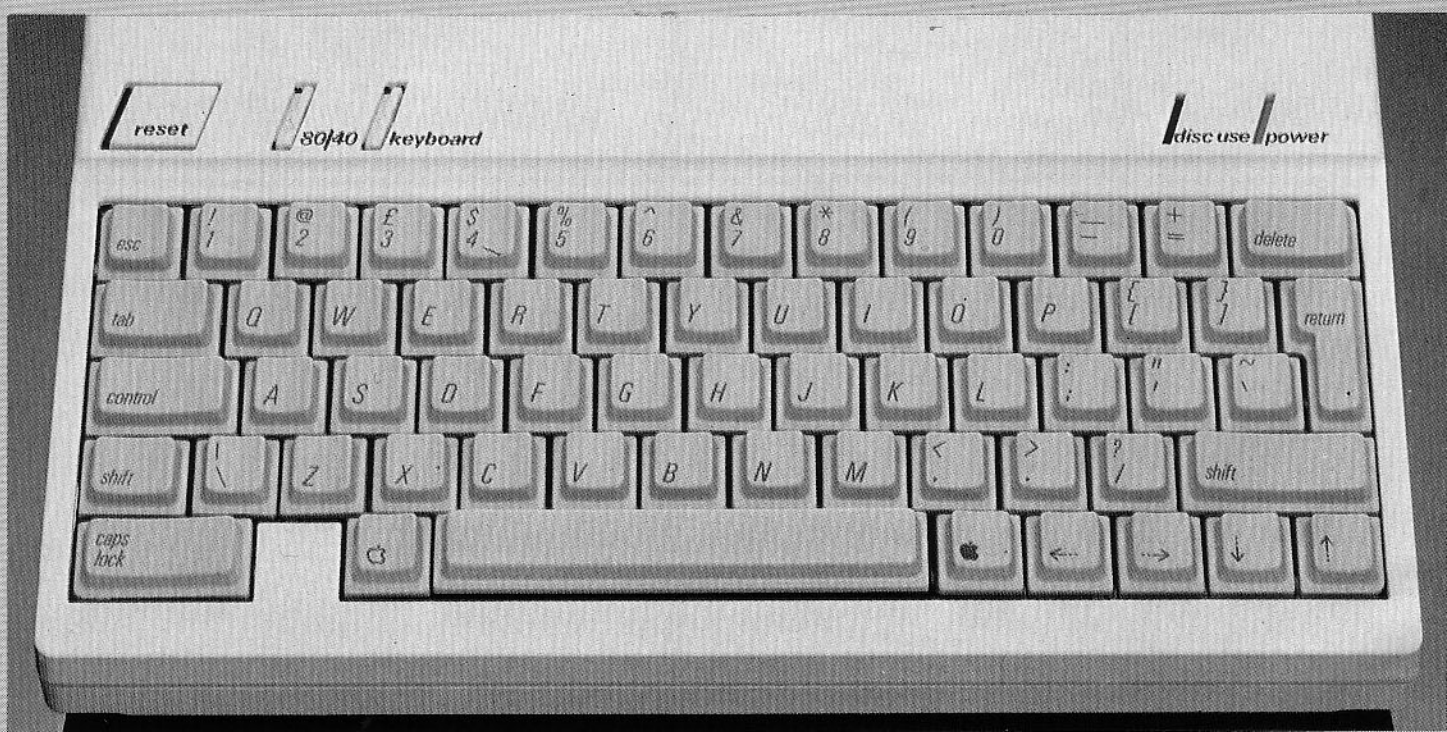
Apple's move away from the parallel interface began with the release of Macintosh.

It is not alone in taking th serial path. The still to b released Sinclair QL, for exam ple, also lacks a parallel printe port. Serial transmission of dat does in fact offer some ad vantages.

Data can be transmitted ove long distances – even b telephone – and serial output t a printer requires only four wire at the most.

Parallel data transfer ca only be carried out ove comparatively short distances - feet rather than miles – an requires a much more com plicated cable made up of nin or more separate wires.

In the past parallel outpu could be faster than serial, bu with the introduction of ne integrated circuits serial outpu has now taken the lead.




*The keyboard is the same size as the Apple IIe's and important keys have labels rather than symbols. Out of the way but easy to use and to see are the Reset, 40/80 column display, £ or # display switches and the Power and Disc Drive in Use lights.*

# ZOWIE!

## Marvel makes its mark

*I WAS talking to Scott Adams the other day. Sorry, I couldn't resist it – Trevor was right!*

*Who is Trevor, did you say? Well, if you're at all interested in adventure games, you'll know who Scott Adams is, which is the point Trevor was trying to make.*

*He (Trev, not Scott) maintained that I'm a name dropper. He doesn't know a thing about micros, but he can spot a name dropper when he sees one.*

*Anyway, just to prove that I mention people who aren't famous, please note that I have mentioned Trevor too. He is distinctly not famous, although the Plege family has achieved a level of notoriety in certain areas.*

*Meanwhile, back at the column, you might like to know that Adventure International is due to release a series of adventure games based on the characters from Marvel Comics.*

*Each game will be packaged with a comic explaining the story so far, and the comic will end where the game begins.*

*The first one to be released will feature the Incredible Hulk, with Spiderman and Captain America to follow.*

*Scott has also released number 13 in his famous series, "The Sorcerer of Claymorgue Castle", and number 14 is on the way. Both are described as being for the advanced adventurer, following on from the first 12 in the series.*

*However, the Marvel series will apparently be suitable for the relative beginner but with something for the more experienced player.*

*I can't wait to see the Marvel series, and I'd be delighted to see* ***you*** *too – how about Apple '84 in Slough? All the best people will be there . . . Trevor's giving it a miss.*

**Cliff McKnight**

# Missing Ring lacked that SAVEing grace

**THERE'S a Hoyt Axton song with the delightful refrain: "Work your fingers to the bone, what do you get? Bony fingers!" and it comes to mind after the marathon session of Missing Ring I've just completed.**

I've fought orcs, goblins, fire beetles, hell hounds an Evil Mage and several other varieties of nasty.I've mapped all the rooms except two (which seem totally impenetrable), amassed vast quantities of gold, gems, keys and magic items, and now I know why it's called Missing Ring – I can't find the damn thing anywhere!

Apparently, if you believe the instruction leaflet, there is a fabulous magical ring somewhere in the enchanted palace and it is your job to find it.

Up to five characters can join in the search, and since these are independent it's possible for five players to play a game. Or you can play alone and control up to five characters yourself.

This gives you the opportunity of going "mob-handed", or you can have your characters going separate ways if you want.

There are two complete sets of control keys, so two people can play a game easily if they don't mind being very close. With five players, I think it would get a bit like musical chairs!

The party for any game can be made up from a set of nine characters – elf with bow, dwarf with hammer, president with "destruct" button, the usual sort of thing.

If you have any characters from previous games who have made it out of the labyrinth they can be pressed into service again, replete with gold, experience points and all the other trappings of adventuring which they have earned.

Each character has its own distinctive shape to move around the labyrinth, although they're so small that it's hard to tell a hammer from an axe in the heat of the fight.

Wizards carry a staff, and dwarfs are smaller (no, really) than other races. The characters have different stances for left and right movement, and also a fighting stance with bow or whatever at the ready.

When it is a character's turn to move, it flashes on the screen. In fighting stance, this gives me the impression the character is jumping up and down, which is amusing.

However, you can't laugh too long because there is a time element to each move. If you delay too long, either you can't move very far or the play passes to the next character.

With five characters all in one room, play moves along at a reasonable pace. Things slow down a bit if they have all split up because a different room has to be generated for each.

You can work up quite a lather trying to get a few characters to the scene of a fight to lend a hand.

Attacking is quite easy, involving no more than a space bar unless your fighter has a bow. In that case you are given a cursor to position before releasing the arrow with space bar.

However, unless you've got a bow you must be right next to the nasty before you can attack. With five characters all attacking the same large nasty who is positioned over the treasure chest, the resulting blob is hard to distinguish!

As well as the nasties already mentioned, there are also some interesting variations on old themes. For example, there is a "skelleton" and a "wraight", all of which suggests that the ring is sat on top of the dictionary.

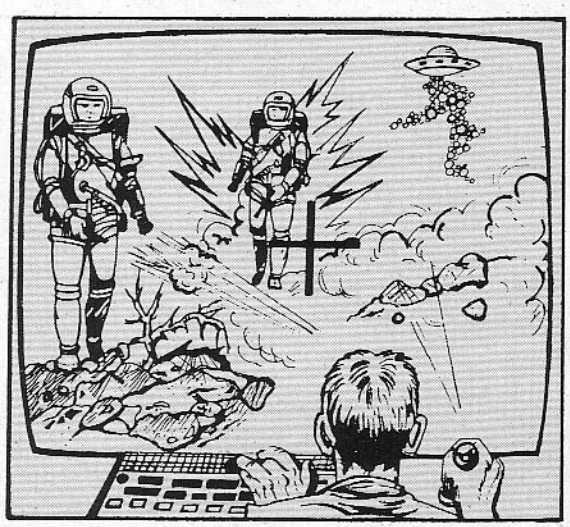
As with most games of this type, I find the fighting is a bit boring. (No doubt the random number generator has a whale of a time.)

Fighting apart, Missing Ring is fun if you like that sort of thing, and finding the ring is obviously difficult.

Unfortunately, I had other difficulties with the game which detracted from my enjoyment of it. For example, my saved games had a habit of mysteriously disappearing, which tended to make me jump up and down like the characters.

On a couple of occasions the game hung completely and had to be rebooted, and once I had booting problems which took a couple of tries to get past.

There also seem to be some program features which took me by surprise. For example, the amount of gold a character had varied while at the Merchant's, even without buying anything.



In fact, the gold accounting seemed generally lax, as did the medical diagnosis.

On one occasion I found a goblet and drank from it. I was informed that I "feel better" yet my "health" remained unchanged.

Funnily enough, the same thing also happened when I drank what I was then informed was "poison".

With 80 rooms to visit, some locked and some with secret doors, Missing Ring is not a five-minute game. It took me five minutes of casting spells and hitting the space-bar to dispose of the Evil Mage.

If I'd had more success with the "save" facility I might have enjoyed it a whole lot more.

**Cliff McKnight**

*Title: The Missing Ring*
*Author: Terry Romine*
*Publisher: Datamost*
*Requirements: Apple II.*

# Colouring at push of a button

IF you've got a colour monitor and don't mind your tiny tots playing with the Apple, you'll find Color Me provides them with a hi-res colouring book.

The package contains 25 pictures, each titled in upper case. By using the joystick or paddle the child can choose one of the four commands.

P moves to the next picture, C will colour the picture with a set of stored colours, K will store the currently displayed colour information for future use with the C command, and E will erase the colour, leaving the picture to be recoloured.

Colouring is achieved by moving a cursor to one of the 32 colour blocks at the bottom of the screen and pressing the paddle button.

The cursor is then moved to the area of picture where the colour is wanted, and a press of the button causes it to be filled in.

It really is that simple. Any child who can turn a paddle and press the button can manage.

*Color Me . . . provides children with a hi-res colouring book*

Pictures can also be called by their number rather than paging through the complete set, and a list of the pictures and numbers is given in the instruction leaflet.

The children enjoyed it for brief periods, although once the novelty wore off it tended to be ignored just like a paper colouring book.

Many children seem to prefer the free expression available on a blank piece of paper rather than be limited by a picture.

However if the package had a print facility at least it could double as a traditional colouring book for use in the car and so forth.

If you have a printer interface card that supports graphics dumps, you can get prints of individual pictures by booting the program, loading the required picture, using Esc to jump out to Basic and then dumping graphics screen 1.

Color Me is a nice idea which does what it sets out to do. I would have thought the potential market was limited in Britain, but it can at least be used again and again.

Is there an Apple version of the dot-to-dot books too, I wonder?

**Cliff McKnight**

*Title: Color Me*
*Authors: Cherie and Verne Bauman*
*Publisher: Versa Computing*
*Requirements: DOS 3.3 and paddles/joystick*

# A plague on your houses...

HAVE you ever tried to imagine a new game idea? It's not easy, as the paucity of different games on the market attests.

Consequently, a recent package from Krell Software caught my attention. Before I tell you about it, though, let me tell you *my* fantasy of how it was dreamed up.

The software department guys'n'gals are sat round having a brain-storming session. *"How about a skunk having to cross the road?"... "No, Loudon Wainwright III has the dead skunk market sewn up." "Well, how about having to shoot down . . . no, I guess not".*

Suddenly, a quiet voice from the back says: *"How about a game based on the spread of the plague?"* Total silence for almost a minute, then the suggestions for Frogger clones slowly start to be made again.

I mean, talk about going down like a lead balloon, who would imagine Black Death? Well, someone did, although the Krell style involves not crediting authors.

Yes, the scourge of the 14th century can now be yours in the comfort of your own living room . . . or is that dying room?

Black Death simulates the spread of an epidemic through a population, with players fighting the spread by choosing strategies for innoculation.

It is not just a game, though. The manual claims it is designed to teach basic principles of epidemiology and public health decision making.

The game starts with an instruction to read the manual, not because the controls are complex but because the underlying model needs to be appreciated.

If you are going to change any of the parameters from their default values it helps to know what you're doing.

Next is the option to change the parameters, with the default values being displayed.

For example, if you'd like to increase your chance of success, you may want to decrease the contagion probability from its default value of 0.8.

If you think your hypodermic isn't too clean you may want to increase the probability of a fatal innoculation from 0.05.

When you've done all that you might as well make a medicinal cup of tea because the program then takes just over

two minutes to fill the text screen with a 39 x 19 matrix of 0s, 1s and 2s.

These represent the population, with 0 signifying a well person, and the numbers 1-9 signifying increasing levels of sickness. After 9, the + sign is used to indicate death. Vaccinated people are represented with a * and recovered people with a !

Now it's your turn, with up to five innoculations or five therapies possible, administered by using I-J-K-M to move a cursor to the patient and using V to innoculate or T to therapise.

Up to six players can participate, each having a supply of vaccine, so you can develop group strategies if you want, and there's a save game facility if you can't finish in a single session.

Once each player has "moved", it's the infection's turn. Each number on the matrix is updated depending on the state of its neighbours and the various probabilities.

This takes a little less than the original two minutes, although it still slows the game down somewhat.

Numbers 0, 1, 2 and 9 are displayed normally, 3, 4 and 5 are displayed flashing and 6, 7 and 8 are displayed inverse. This means that after a few turns there is an awful lot of flashing on the screen which I found distracting. It also makes the flashing cursor difficult to locate at times.

There is an alternative display in colour on the graphics screen, but trying to make sense of it in monochrome was impossible.

Even in colour, trying to remember what each colour stood for once the display became complicated was not easy.

Three other factors detract from the colour display. Firstly, there is no cursor visible so any movement *must* be done on the text screen.

Secondly, unlike the text screen, any action taken does not appear immediately – the graphic display is only updated once each reporting period.

Thirdly, the movement to graphics seems to use the equivalent of POKEing –16302, so that the status text no longer accompanies the display. Why not use –16301 and use a mixed mode?

Effectively, then, the colour display is a pretty picture to look at between bouts of playing the game.

So what happens when the game ends? Unfortunately I can't tell you, because I've never managed to get that far. The original disc supplied for review had a bug which caused the game to run indefinitely.

Krell were very prompt and efficient in providing a replacement, but it seems to have the same problem.

I think Black Death is a good idea but not very well implemented. It is very slow because of the updating required between moves, and the problems with the disc are obviously more than one-off.

*You notice how I've resisted the temptation to say that the game is plagued with difficulties?*

**Cliff McKnight**

*Title: Black Death*
*Price: US $49.95*
*Publisher: Krell Software*


From Keyzone 80 column cards
Expandable at the flick of a switch (for IIe)

Upgrade Kit 8x64k. Fit the chips and slide the switch. £40

Extendable 80 column card for aux slot
Full 80 column features but supplied without 64k RAM
To upgrade plug in 8x64 chips (available from Keyzone £40) and slide the switch
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Standard 80 column card for aux slot of IIe.
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Card for slot 3 of Apple ][+/IIe
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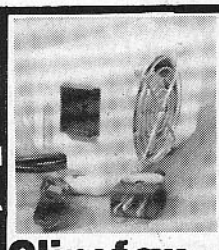
read and write registers, which can be software programmed, giving new scope to standard Apple graphics facilities. Text and background of 16 colours. Foreground colours can be hidden within the background colour – Animation can be achieved with just a few simple pokes. Apple colour in prom is the default condition of the card. Redefined colours are stored in ram of up to 255 user defined colours.

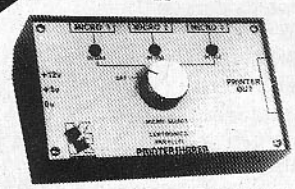
4-CHANNEL A/D CONVERTER
8 Bit £100-00
10 Bit £110-00
12 Bit £120-00



Smallest, quietest fan for Apple. Mains suppressor fitted. Powers up Apple plus 1 external equipment socket. (plug supplied free) Optional 4 way socket with plugs (Turnkey boot system) £8·50

Slimfan £42·50
Clip on cooling fan

Printer Sharer 3 MICROS To 1 PRINTER



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**The screen display of the basic Apple is limited to 40 characters across and 24 lines down, but for anyone using their machine for serious business applications this small display is a major disadvantage.**

**There are a large number of hardware products which increase the number of characters displayed across the screen to 80. These range in price from £45-£160.**

**In this review NEVILLE ASH looks at the Ultraterm card from Videx. Priced at £299, it offers far more facilities than any other device and is suitable for both the Apple II and IIe.**

# Ultraterm – a mighty boost for Apple II

**VIDEX has produced a card which, on the specification alone, seems to have brought the Apple II and IIe not only right up to date, but also ahead of far more sophisticated micros at far higher prices.**

When using an Apple for word processing one of the drawbacks has been that you see on screen only around half the lines that will appear on a single page.

Now, using the Ultraterm, it's possible to see up to 48 lines at a time on screen.

And if I want to use Visicalc, instead of being restricted to a limited number of columns, I can see from A to O or even A to Y – quite a dramatic difference.

Before going any further, the price you have to pay for these extra features is £299 – more than twice the price of an average Apple II+ 80 column card.

So for this amount Ultraterm should be something special. While it is an above average product it's a dramatic jump from the price of a basic 80 column card for the IIe.

It is already possible, using Visicalc and a special utility, to increase the number of columns on the screen – but to nothing like the same extent as by using Ultraterm.

For word processing, the more lines and words you can see at the same time the better. So Ultraterm overcomes another of the so called drawbacks to the Apple system. Now for word processing the Apple is even better!

### *Setting up*

Unlike its predecessor, the Videoterm 80 column card, the Ultraterm has two cables, both connected by a single socket towards the end of the card, although not right at the end like Videoterm.

One cable fits into the Apple video socket and the other connects to the video cable.

The Ultraterm is virtually the same size as the Videoterm. Once connected, dip switches need not be adjusted in the normal way, although they are there when needed.

It makes a nice change to be able to fit an extra card without having to make special adjustments.

Other manufacturers should remember that interface cards are usually fitted by first-timers who want the product to simply work without involving them in anything technical.

### *The demonstration*

Ultraterm is supplied with a demonstration disc which shows the full potential of the card provided that you have the appropriate monitor.

According to the Videx manual the monitor should have a bandwidth of 15 MHz to produce a really sharp display.

The demonstration shows the effect of the larger number of columns and the greater depth of copy. Monitors with colour displays are recommended.

However I used an old Hitachi 12in monitor and found no problem with the demonstration. If a 9in one is used the characters might be too small to read clearly.

I took the Ultraterm card to my local dealer and looked at a display produced by his Apple Monitor III. It was far better than my Hitachi, and much clearer too.

Videx provides a list of the monitors they have tested with their card which produce a sharp display in the 132 column mode. They are Apple Monitor III and Monitor II (their top recommendations), NEC JB range (the 9in and 12in 902M and 1201M) and the Amdek 300A.

If you do not own any of these I recommend you test the card at your dealers or ask distributors Pete and Pam whether your monitor is compatible.

It also appears that for technical reasons the card works best with green or amber displays.

To use Applewriter II with the Ultraterm requires a special pre-boot disc. Visicalc users also need a special disc.

However users of Wordstar are in luck. If they want to take advantage of the 80 x 48 mode – very good for word processing – they only need go through the Wordstar Install program. At the end of the operation answer the message: "Are the modifications to Wordstar now complete?" with NO.

Then you will be asked for details of the addresses which need to be changed. This is known as the "patcher."

Word processing packages that require an 80 column card as standard can be used – but do not get the benefit of Ultraterm's extra features.

The package also runs any normal 40 column program, such as Bookkeeper from Hilderbay, with no ill effects.

According to the manual, when you turn on your Apple you access the Ultraterm card by pressing PR#3 or by running

| Address | Data |
|---|---|
| 248 | 30 *sets 48-line mode* |
| 284 | 2 |
| 285 | 1B |
| 286 | 2B |
| 28B | 2 |
| 28C | 1B |
| 28D | 29 |
| 0 | *Entering a zero tells the patcher that you have finished.* |

*An example of the "patcher"*

a utility program that writes a special datafile or modifies some of the software on your boot disc.

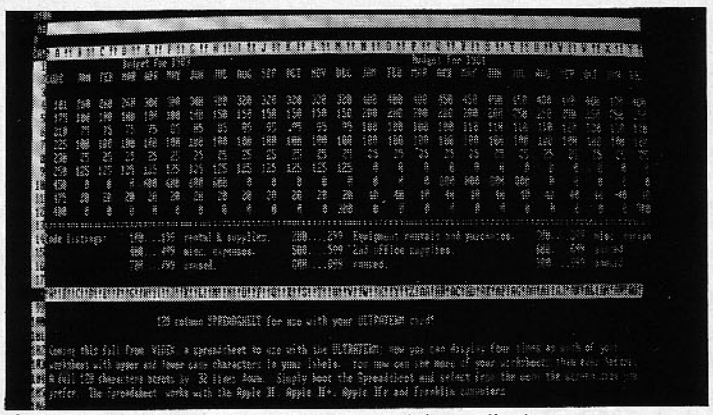
What did I do? Nothing. Just went along as normal and there was no problem at all.

Load the disc, switch on and on comes the display. But I would have needed the special boot discs for using Applewriter and Visicalc to get the best from the card.

The manual supplied is far better than my Videx Videoterm one and is a good example of the right way to produce a manual.

It's a pity that you have to have a special pre-boot disc for Visicalc and Applewriter II. They could have been on the demo disc.

Even so, Ultraterm makes more difference to the Apple than any other peripheral other than the Accelerator – and that's saying something.



*An example of a 128 column spreadsheet display*

# MEM/DOS

## Vive le French connection, says NEVILLE ASH

WOULD you be interested in an operating system for the Apple which offered multi-user, multi-access and single user operating systems for a single floppy disc up to 120mbytes of hard disc?

A system which would also bring the power of a mini-computer to the Apple II and III, so that they could not only compete but provide a more practical solution than larger more expensive computers?

The MEM/DOS system has one thing in common with CP/M. It consists of a card which fits into the back of the Apple.

In many other ways it is superior to CP/M, being far more user friendly, but it hasn't had the mass publicity given to the product from Digital Research.

Anyone who has programmed in Basic and found the end result a long program requiring lots of error checking must have wondered whether there was an easier way of programming.

Users have wanted programs which could be used on floppy discs, hard discs and then extended to multi-user systems with a minimum of bother. Programmers have wanted facilities just normally not available with the Apple II or III.

But any new system must already have these features, not merely the promise that they will be available in the near future. Because in the world of micros this can mean never.

MEM/DOS is an operating system which copes with all these facilities and yet doesn't come from the West Coast of the United States. It isn't even British.

In fact the product is manufactured in the South of France by Memsoft and marketed by Dynatech Microsoftware, based in Guernsey.

In France there are more than 4,500 users and the numbers are growing fast. So what does MEM/DOS offer which makes it so popular?

It can be used by professionals to create complex multi-file applications for single or multi-user environments. Because the finished program can be produced faster, the end product can be priced far more competitively.

The system appeals to the enthusiast who wants ease of coding and operation, while being able to utilise the facilities from a powerful operating system. In this way he can create smaller programs which have professional performance.

MEM/DOS will appeal to end users who won't even know it exists other than using an application program which runs fast, is error trapped and can easily be expanded as their needs inevitably increase.

This multi-user, multi-access and single user operating system for the Apple II, IIe and III comes on a 20k ROM card which is plugged in to an Apple slot. It is used in place of Apple DOS or ProDOS and extends Applesoft.

The system provides powerful file handling combined with very fast record access and economy of disc space usage.

You can create full index sequential files with up to 10 keys and sub-keys and there are sophisticated facilities for generating screen layouts and print formats.

Masks are created in free format and saved complete with variable names effectively creating the input/output program. Then a single command can input or display a whole screenful.

MEM/DOS provides all these functions for either a single user on floppy discs or up to 16 users accessing up to 120mbytes of hard disc, with complete software compatibility at all levels.

Once the MEM/DOS card has been fitted inside the Apple it can be left there just like the Z80 card for CP/M. But unlike the Z80 card it opens more doors, especially in multi-user and hard disc applications.

Systems designers benefit from vastly improved disc access times. With a hard disc system retrieval times are virtually instantaneous even with a multi-user configuration.

The ISAM – Indexed Sequential Access Method – produces fast access to records by way of their keys. It supports up to 10 keys for each file in its multi key form and each one can be up to 255 bytes in length.

The key can be made of sub-keys which can be extracted and used for record retrieval. Equally a single key ISAM file can have its key made up from more than one variable and an extract function will allow access via these sub-key variables.

By using MEM/DOS the file handling gives additional packing on disc, variable length records, virtual elimination of sorting, no volume numbers or virtual discs and 16 record lock modes on hard disc.

Any software designed using MEM/DOS will be fully compatible with a range of hardware from $5\frac{1}{4}$in floppy right through to 120mbytes of hard disc, claim Dynatech.

Programmers changing over to MEM/DOS would gain from the vastly reduced amount of code they need to write. Single statements execute complete screen displays, data input, file write, file read, and so on.

If you were using Applesoft whole subroutines would have to be written. The data input programming is automated by the use of these masks.

They allow screen layouts to be created in free format and store this layout of disc complete with the variable names and validation codes. A whole screenful of data can be input with a single command.

These masks take the long-winded work out of print formatting. Handling errors is completely different too. The program uses a unique status flag system for an unsuccessful operation.

MEM/DOS allows program overlays and chaining and also backs up the programmer with a range of utilities.

The package consists of three parts – the card, one $5\frac{1}{4}$in floppy disc and the manual. The card is installed in any vacant slot from 1 to 5.

Unlike the Apple standard, MEM/DOS refers to the first disc drive as drive 0. On booting the main menu presents a choice of options including Basic, mask and file utilities and demos, and handlers for hard disc systems.

Utilities include a full disc copy, catalog, disc format, auto copy, tests and terminal boot.

Use the full disc copy to back up the master MEM/DOS disc. Once this has been done a new disc can be formatted to use with the system. MEM/DOS works in either the 40 or 80 column mode.

One of the utilities supplied on the master disc is called Util. Running it displays the mask menu.

You must first give the mask a name, then specify the drive number, whether 40 or 80 columns are being used, and finally select one of the 10 options from the master list.

These are Visualise, Create, then Delete, Modification, Load, Save, Catalog, Explanations, Hard copy and Finish.

A single letter is pressed to select any option.

Starting off with C, the action of pressing the key clears the screen and positions the cursor in the left hand corner. Now the mask can be created.

Pressing Escape saves the mask and returns control to the menu. However if any errors have been created in the mask, the system will bleep when Escape is pressed and the mask won't be saved.

This is an excellent method of error checking. You are forced to eliminate errors before you go any further.

For ease of working it is important to avoid extensive disc swopping as this can result in corruption of the disc dictionary. Instead either copy Util and its mask UtilM onto the work disc, or have the work disc in Drive 0 and the Master disc (with Util) in Drive 1.

The mask usually consists of text together with areas of the screen – windows – reserved for input or output. However a mask can also be created comprising solely text or no text at all. In this case it would purely consist of windows.

Text is entered exactly as it is displayed. The limits of the windows are shown by the symbols 1/8 and 3/8.

A Basic variable is associated with each window which will take the value of any data assigned to that window during the use of the mask in a particular program.

To distinguish variable names from the text they are enclosed with quotation marks. This Basic variable must be a similar data type to the actual data as any mismatch will cause the variable to be rejected.

MEM/DOS also has a range of eight control characters which can be used with a particular variable.

This illustrates the fundamental use of the masks. They can be increased in sophistication with virtually no limits other than the facilities required by the programmer and the application.

Additional options are available when using the mask facility in 80 column mode. These include test a mask, printer set-up, alter slot number and save over a mask.

Creating and saving masks is very easy. I had expected MEM/DOS to be more complicated.

The only similarity between CP/M amd MEM/DOS is that both require a special interface card when used with the Apple.

In specification MEM/DOS offers more than CP/M, has been designed with the Apple in mind and is far more user friendly.

A multiplexer is available serving up to 16 users. Planned for future release are MEM/PLOT, a graphics developmen language, MEM/TEXT, a wor processor and the MEM/NE local area network system.

MEM/DOS is a versatil system which gives the Apple the capabilities of a mini computer at a fraction of th cost.

Systems designers, pro grammers and end users woul all gain from the off the pe application packages it ca create and the possibility o having customised program made quicker and cheaper t run on the Apple.

It deserves further invest gation by Apple users. They wi be pleasantly surprised.

*Product: MEM/DOS language card, disc, manual.*
*Description: Operating system for the Apple II.*
*Price: £330.*
*Distributor: Dynatech Microsoftware, Rue du Commerce, Bouet, St. Peter Port, Guernsey, Channel Islands. Tel: 0481-20155.*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# Pascal has a very powerful alternative to a succession of nested IFs

By GORDON FINDLAY

**THE IF-THEN statement is very useful for making a two way choice, but it tends to become a bit cumbersome to decide between a lot of alternatives.**

The commonest occasion for a many-way choice is, I suppose, in deciding which option to take from a menu.

Let's try writing a menu with just four options numbered 1, 2, 3 and 4.

I won't specify what the options are – you can imagine adding, replacing, deleting or searching in a data file, or four games, or four options in a teaching program, or whatever most interests you.

First, display the menu on the screen:

```
WRITELN('1:  ------');
WRITELN('2:  ------');
WRITELN('3:  ------');
WRITELN('4:  ------');
```

Then prompt for a choice:

```
WRITELN('YOUR CHOICE:');
```

and get the choice – an integer variable called CHOICE should have been declared at the beginning of the program:

```
READLN(CHOICE);
```

Now the interesting bit! The program needs to do one of four things, depending on the value of CHOICE. The four can be represented by statement-1, statement-2, etc.

Here's how to do it with just IF-THENs:

```
IF CHOICE = 1 THEN statement-1
ELSE IF CHOICE = 2 THEN
        statement-2
ELSE IF CHOICE = 3 THEN
        statement-3
ELSE statement-4;
```

Now that isn't too digestible. Each of the "statements" could represent quite a large block of program, bracketed together with BEGIN-END.

What is more, no error-checking has been incorporated. What happens if the operator gave five as his choice, either out of ignorance, or through a typing error?

Pascal provides a very powerful alternative to this succession of nested IFs. The CASE statement takes the value of a particular variable, such as CHOICE, and selects from a list of alternatives.

Here is how the menu given earlier might look with a CASE statement:

```
WRITELN('1:  ------');
WRITELN('2:  ------');
WRITELN('3:  ------');
WRITELN('4:  ------');
WRITELN('YOUR CHOICE:');
READLN(CHOICE);
CASE CHOICE OF
  1: statement-1;
  2: statement-2;
  3: statement-3;
  4: statement-4
END;
```

At the CASE line the value of CHOICE is checked and the program jumps to the line with the label corresponding to this value.

If the value of CHOICE happened to be 3 the line labelled "3:" is the one selected.

Did you notice the END to finish the list off? That END doesn't have a matching BEGIN. The word CASE does the job instead. Nor is there a semi-colon before the END.

In strictly "standard" Pascal a value of five for CHOICE should give an execution error – which is fairly catastrophic in the Apple system, as the whole system is re-initialised.

Apple Pascal is a little more forgiving. If the list of statements after CASE doesn't have one with a matching label, the program jumps to a position just after the last in the list.

That's better than nothing, but other versions of Pascal have a better provision – the 'otherwise' clause.

Each of the lines that I have represented by 'statement-1' and so on can be a BEGIN-END group, containing as much or as little program as you like.

Each line can have several labels, but watch the punctuation:

```
CASE CHOICE OF
  1,2,3: something here;
  4,5  : something else
END;
```

Wouldn't it be nice to have the operator type a letter instead of a digit? That would decrease the number of errors a lot! We need to be able to get a single letter from the keyboard, using READLN or something.

We could declare a new version of CHOICE as a STRING[1], but that's a bit of a kludge.

There is a special data type in Pascal for variables which represent a single letter or other character. This is the CHAR data type. Using it, CHOICE may be declared:

```
VAR CHOICE:CHAR;
```

and input as:

```
READLN(CHOICE);
(or READ(CHOICE)).
```

Now the menu can look like this:

```
WRITELN('A (DD RECORDS');
WRITELN('D (ELETE');
WRITELN('S (EARCH');
WRITELN('E (XIT');
WRITELN('YOUR CHOICE:');
READLN(CHOICE);
CASE CHOICE OF
   'A':statement-1;
   'D':statement-2;
   'S':statement-3;
   'E':statement-4
END;
```

Notice that the value of CHOICE is a character – that is, one of the symbols that Pascal can handle, including numbers, punctuation and letters.

The options in the case statement are labelled with characters this time, and of course character values need to be surrounded with SINGLE quote marks.

The Basic programmers among you note that these are single quotes, not doubles as are used in Basic.

Character variables can be used for more than just menus of course. Functions are provided in Pascal for handling them. Here are the simplest:

ORD(X) – gives the Ascii value of the variable.

CHR(I) – the reverse of ORD – gives the character for a particular Ascii code.

Here is a simple program to display the characters corresponding to particular Ascii values:

```
PROGRAM SHOWASCII;
VAR I: INTEGER;
    X: CHAR;
BEGIN
   FOR I := 32 TO 127 DO
     BEGIN
        X := CHR(I);
        WRITELN(I,'  ', X)
     END
END.
```

This program displays the character-numerical equivalents far too fast for anyone to read. Remember that Ctrl-S can be used to temporarily halt output.

The range (32 to 127) of

Ascii values in the program was chosen to avoid any problems. Try other ranges, such as 0 to 31, or 128 to 256.

Character variables can be used in all sorts of places. Here is a program to do the reverse of the previous program:

```
PROGRAM SHOWCHARS;
VAR I: INTEGER;
    X: CHAR;
BEGIN
    FOR X := 'A' TO 'Z' DO
    BEGIN
       I := ORD(X);
       WRITELN(X,'  ', I)
    END
END.
```

Notice that a character variable can be used in a FOR statement, just like an integer. This is an example of a powerful Pascal characteristic – anything which could make sense does.

Characters look a lot like strings of length 1. Unfortunately they are handled internally quite differently. A CHAR variable occupies one byte of storage, but a STRING[1] is actually stored as two bytes – the first byte containing the length.

The practical effect of this is that strings and characters cannot be mixed.

Here is something which I wanted to do:

```
VAR CH: CHAR;
    INPUT : STRING;
. . .
FOR CH := 'A' TO 'Z' DO
   BEGIN
   IF POS(CH,INPUT) <> 0 THEN
   ... . .
   END;
```

The intention was to check which letters were in the input string. The loop variable cannot be a string, but the POS function needs a string. Some regard it as a pity that there is no easy way to convert from character to string, others (purists) disagree.

● Next month's Pascal Tutorial examines Turtlegraphics, Pascal drawing commands and mixing graphics with text.

## Change drive with ease

appletip

IN DOS 3.3 it is easy to change the current disc drive in use without having to go to the trouble of writing instructions into the disc access commands.

Simply POKE 43624 together with the appropriate disc drive number.

However, take care that only permissable values (such as 1 or 2 on a two drive system) are used.

**Derek Turner**


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# From the grain of an idea ..the Sand Project

## The story of one firm's role in the development of Macintosh

FOLLOWING its recent announcement of a full line of productivity software to run on the Apple Macintosh, Microsoft has revealed just how closely it has been involved in the development of the computer from its conception nearly three years ago.

Four applications programs and one high-level language have already been written, and Microsoft says it is firmly committed to producing further software for the new micro.

The software currently offered includes enhanced versions of Microsoft Multiplan and Microsoft Word, and two new applications – Microsoft File, a database management program, and Microsoft Chart, a graphics program. Microsoft Basic is also being made available.

All are designed to take full advantage of the hardware and software concepts employed by Macintosh – a mouse and high-resolution graphics screen, "pop-up" menus and icons.

From the very beginning of the project Microsoft contributed to almost every aspect of the machine. The challenge for them was to adapt existing programs and to create new applications to make full use of its superior graphics capability.

The firm became involved in July 1981 when Steve Jobs, chairman and founder of Apple Computer, contacted Bill Gates, the Microsoft chairman, to discuss a new top-secret project conceived at Apple.

A brief demonstration of a working prototype immediately convinced Gates that he wanted his company to be intimately involved in the development of Macintosh.

"We were greatly interested in the prospect of working on the project," Gates said. "The demo we were shown was impressive, and the pricing strategy was very aggressive.

"We knew that Macintosh was going to have immense mass appeal".

So in January 1982, the Microsoft team started work on what was code-named the Sand Project.

There are two theories for the origin of this name. One is that it came from an idea of Jobs' for a futuristic factory in which sand would produce a computer.

The second is that it was chosen to reflect the vast number of users who would be attracted to Macintosh.

Gates' team was closely involved in the development of the new computer well before its actual launch, both in adopting existing programs and creating new applications.

"We wanted to have a full range of applications programs ready for Macintosh at its launch," said Gates. "So we became involved in the development, debugging, and fine tuning of the machine.

"Both Microsoft and Apple have reaped the benefits of a close working relationship of this nature.

"We benefited by having four applications programs ready at its launch as well as our Basic language. Apple was able to draw on our experience in software development to help fine tune their machine".

Jeff Harbers, Microsoft's engineering development manager, was in charge of the Sand Project.

"From the beginning we've felt ourselves part of Apple's engineering team", he said. "We've been able to contribute on almost every aspect of their machine.

"For example, Apple developed its own operating system for the Macintosh. But some of the ideas for the disc formats and file directories came from Bill Gates".

The most significant feature of Macintosh is its graphics-oriented human interface. Most personal computers today are designed to run software primarily in text mode rather than in graphics mode. This is because of the amount of computer power required to run bit-mapped graphics.

Although it is possible to equip other computers with this kind of advanced graphics, it has been too complex and expensive for most users to do.

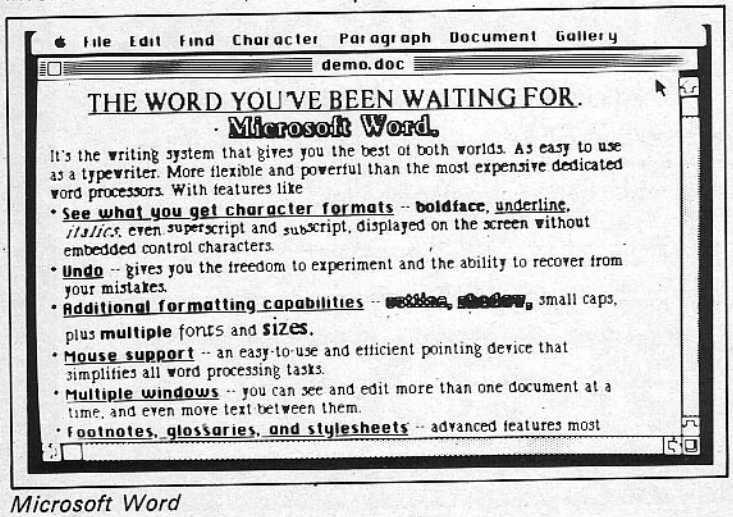
To overcome this Apple uses a 32-bit Motorola 68000 microprocessor for the central processing unit of Macintosh. This has the power to drive a sophisticated bit-mapped graphics display because of its large direct addressing capability.

Microsoft's development team was faced with the challenge of creating products that made full use of this superior graphics capability for the benefit of the end-user.

"The first product we adapted to utilise the advanced graphics was Multiplan, our financial spreadsheet software", said Harbers. "We had a version of it running on the Mac as early as July, 1982".

That was 18 months before Macintosh made its public debut.

In an effort to adapt Mult




*Microsoft Word*

plan for Macintosh, Microsoft made many suggestions to Apple over the next year. Apple also made their contribution to Microsoft on applications programs.

Microsoft engineers for their part would uncover a technique to enhance the capability of their applications software on Macintosh and would talk to their Apple counterparts about it. Apple proved very receptive to their ideas.

"I think if you look at what the original Macintosh was and what is being introduced now, you might not recognise it as being the same thing", said Harbers.

"Steve Jobs' basic concept is still there, but changes in both hardware and software were the result of our recommendations".

Changes Microsoft recommended concerned the way applications interfaced to the system.

"The original software interface couldn't do all the things we felt our software was capable of achieving", said Harbers.

"We were drawing on our experience in designing software that is both easy-to-use and offers many benefits to the end-user. Everything we recommended was designed to take advantage of Macintosh's advanced graphics capability".

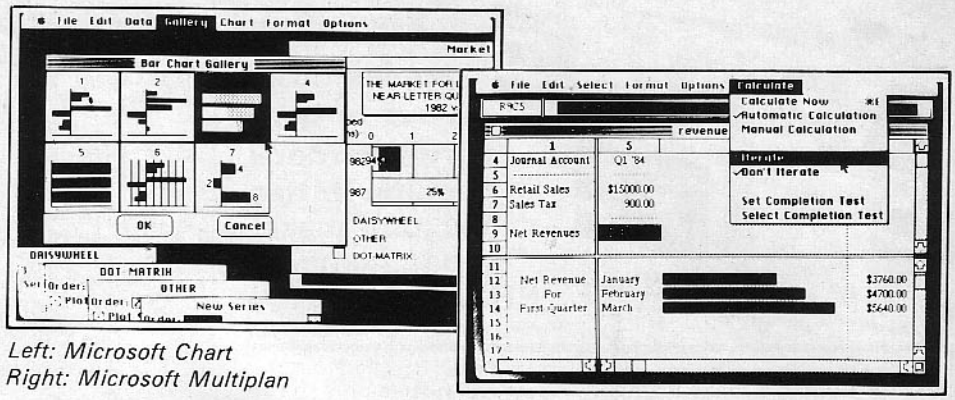
Microsoft suggested changes in the working of the dialogue boxes, menus, and windows, and in the interaction of the mouse with the system. In order to implement these changes, alterations were constantly being made in the toolbox ROM and operating system.

"We regarded our role as being to provide an independent third party viewpoint to the development process", said Harbers. "We based all our contributions on our experience as applications developers rather than computer manufacturers".

Over the course of 1982 and 1983, work continued under tight security at Microsoft and Apple. Today, after two years of intensive work on Macintosh, Bill Gates remains impressed.

"The way the menus and graphics work is so compelling that you're encouraged to learn the next feature – you want to try it out and see if it can really work the way you think it will", he said.

"It's fun and exciting, and it fulfills Apple's intention of providing its users with highly personal, interactive, state-of-the-art computers".




*Left: Microsoft Chart*
*Right: Microsoft Multiplan*

# apple classifieds

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**SILENTYPE PRINTER** complete with interface card and some paper. Mint condition, in original boxes. Phone 0442 66050 £135.

**APPLE II+** PAL color encoder card, fully boxed, unused. At £53. Tel: Cramlington (0670) 712817 evenings.

**WANTED** used Eicon 8" floppy disk drive. Computer Modelling Marlow 75511.

**APPLE II+ IIe** softwares, invoicing, sales, purchase, nominal ledger £50 each and others. Phone 08894 4965 after 6pm.

**COMPLETE APPLE II+ SYSTEM** with 2 disk drives, 16k RAM card, colour monitor, and £100's of software (Applesoft, Compiler, Toolkit, Graforth, Applewriter, games galore). Ten months old. All for £1,100. Phone Harpenden 61779.

**APPLE III 256k**, monitor III, SOS including Apple II emulation software, extra disk III drive. RRP £2,690.00. Plus VAT. Only ever used once. Accept £1,500 + VAT for quick cash sale. Jon Wilkinson, work phone 05806 4278.

**SOFTWARE UNIVERSAL** (TV) Rental Management for Apple II/III by Diskwise. Brand new, offers to Phil 0733 64281 daytime, 0733 235530 after 6pm.

**3 DOUBLE DENSITY MEGASTORES,** 2 of them unused, now surplus to requirements. Offers invited. Ring Mr B. Dean, Clitheroe 22192.

**MOUNTAIN MUSIC SYSTEM** £175, also Bag of Tricks, C.I.A. Files, various utilities, games books and manuals for the Apple IIe. Tel: 248 3170 and 267 3077.

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**VISICALC** for APPLE II or IIe, warranty, less than half price at only £50. Tel: 581 0306 London.

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# APPLE RAID!

**Scrumping apples turns out to be a very hazardous pastime in this exciting maze-chase game by PHILIP BENSON**

**APPLE Raid is a maze chase game which was inspired by Pacman. It is deceptively simple, but as author Philip Benson says, it requires considerable concentration to achieve high scores.**

**As an Apple raider you are scrumping in a hover car. However the game is set in the year 2083 – a time when Apple orchards are patrolled by Androids, known as the Guardians, and if you are caught you face instant destruction – albeit with a chance to have another go!**

**You will not be able to run the game after you have typed in the listing and saved it to disc until you initialise the high score routine, but this only has to be done once.**

**To do this type HGR2: GOTO 1510 RETURN. When the drive stops whirring press CTRL RESET followed by RUN RETURN.**

**No REMarks have been included in the listing, but if you are interested in knowing what does what, some details are given below.**

### VARIABLES

| | |
|---|---|
| **AD** | Flag (either 1 or –1) to move the Guardian in pursuit alternatively up/down/left/right. LINES 500, 550 |
| **S & HS** | Score and high score. The high score is BLOADed from disc onto the HGR2 screen and is PEEKed from there. |
| **TR** | Number of stationary Guardians on the screen (TR+1 = track number). |
| **DL** | Is Activate a delay which is reduced, giving the impression that the game is getting faster. LINE 490 |
| **BT** | Number of fruit eaten. |
| **UDF's** | Simply give initial positions on screen for figures and also select the correct BP(x) array position relative to the screen. |
| **X,Y,** | Your present co-ordinates OX,OY are old positions. |
| **A,B** | Guardian's present position OA,OB are old positions. |
| **R** | ROT value for turning hover car. |
| **K,Z** | Immobile Guardian's position generators. |
| **MG** | Randomness flag. |
| **WW & WQ** | Past and present scores during bonus routine. |

### PROGRAM DETAILS

| | |
|---|---|
| **870,1030** | Clears HGR2 and POKEs shape table (4) onto that screen to save memory. POKEs sound m/c into low memory. |
| **1040,1230** | Textual introduction. |
| **100,210** | Screen set-up. |
| **310,610** | Actual game. Test for key depressions. Your move and Guardian's move. Test for collision. Change AD flag. |
| **620,650** | Out-of-time routine. |
| **660,670** | Bonus routine. |
| **760,790** | Another game? |
| **1240,1360** | Screen cleared tune. |
| **1470,1530** | New high score routine. |

```
0  REM  APPLE RAID *
10  GOSUB 870
20  PRINT  CHR$ (4)"BLOAD
   ARHSC,A16477"
30  GOSUB 1040
40  DEF  FN Z(X) = (X / 20 +
   ((Y / 20) - 1) * 13): DIM
   BP(91):S = 0:BT = 0:TR =
   0:DL = 2
50  DEF  FN R(K) = (K / 20 +
   ((Z / 20) - 1) * 13)
60  DEF  FN T(A) = (A / 20 +
   ((B / 20) - 1) * 13)
70  HOME
80  HS = 256 *  PEEK (16477)
   +  PEEK (16478): HGR
90  AD = 1:MG =  INT ( RND
   (1) * 10) + 1
100  SCALE= 1: ROT= 0:AX =
   20:VX = 0:VY = 0
110  FOR B = 1 TO 91:BP(B) =
   1: NEXT B
120  HCOLOR= 3
130  HPLOT 0,0 TO 279,0 TO
   279,159 TO 0,159 TO 0,0
140  FOR Y = 10 TO 150 STEP
   20
150  FOR X = 10 TO 270 STEP
   20
160  XDRAW 3 AT X,Y:K =
   PEEK ( - 16336)
170  NEXT X
180  NEXT Y
190  FOR X = 20 TO 260 STEP
   20: FOR Y = 20 TO 140
   STEP 20: XDRAW 2 AT X,Y:K
   =  PEEK ( - 16336): NEXT
   Y: NEXT X
200  VTAB 21: PRINT
   "************************
   ********** HIGH
   SCORE:       SCORE:
   TRACK:
   ************************
   **********";
210  VTAB 22: HTAB 26: PRINT
   S: VTAB 22: HTAB 14:
   PRINT HS: VTAB 22: HTAB
   38: PRINT TR + 1
220  X =  INT (( RND (1) *
   13) + 1) * 20:Y =  INT ((
   RND (1) * 7) + 1) * 20
230  OX = X:OY = Y:RO = 0:R
   = 0
240  XDRAW 1 AT (OX),OY
250  A =  INT (( RND (1) *
   13) + 1) * 20:B =  INT ((
   RND (1) * 7) + 1) * 20:
   IF (A = X) + (B = Y) THEN
   250
260  OA = A:OB = B
270  BT = 0: IF TR > 0 THE
   GOSUB 1370: GOTO 290
280  XDRAW 4 AT (OA),OB:
   XDRAW 2 AT (OA),OB
290  POKE  - 16368,0: WAIT
   - 16384,128
300  XDRAW 2 AT (OA),OB
310  FOR T = 1 TO 1000
320  Z =  FRE (0)
330  K =  PEEK ( - 16384)
340  IF K = 201 THEN VY =
   20:VX = 0:R = 0
350  IF K = 205 THEN VY =
   20:VX = 0:R = 32
360  IF K = 202 THEN VX =
   20:VY = 0:R = 48
370  IF K = 203 THEN VX =
   20:VY = 0:R = 16
380  IF K = 160 THEN VX =
   0:VY = 0
390  X = X + VX: IF X > 27
   THEN X = 20
400  IF X < 10 THEN X = 26
410  Y = Y + VY: IF Y > 15
   THEN Y = 20
420  IF Y < 10 THEN Y = 14
430  ROT= RO: XDRAW 1 AT
   (OX),OY: ROT= R: XDRAW
   AT X,Y
440  D =  FN Z(X): IF BP(D
   = 1 THEN BP(D) = 0: XDR
   2 AT X,Y:S = S + 10: VT
   22: HTAB 26: PRINT S:BT
   BT + 1: IF BT = (91 - T
   THEN 660
460  IF BP(D) = 2 THEN
   GOSUB 810: GOTO 680
470  IF (X = A) * (Y = B)
   THEN  GOSUB 810: GOTO 6
480  OX = X:OY = Y:RO = R
490  IF T / DL =  INT (T /
   DL) THEN  NEXT T
500  IF A = X THEN 520
510  IF AD =  - 1 OR (Y =
   THEN 540
520  IF Y > B THEN B = B +
   AX: GOTO 560
530  IF Y < B THEN B = B -
   AX: GOTO 560
540  IF (X > A) THEN A = A
   AX
550  IF (X < A) THEN A = A
   AX
560  IF BP( FN T(A)) = 2
   THEN A = OA:B = OB
570  XDRAW 4 AT (OA),OB:
   XDRAW 4 AT A,B
580  IF (X = A) * (Y = B)
   THEN  GOSUB 810: GOTO 6
```

```
590  OA = A:OB = B:AD = AD *
   - 1
600  IF T > 1000 THEN 620
610  NEXT T
620  TEXT : HOME : POKE  -
   16368,0: PRINT
   "************************
   ****************
   ** YOU ARE OUT OF
   ALLOCATED TIME UNITS. **
   **          YOUR
   SCORE:";S: VTAB 5: HTAB
   40: PRINT "*";
630  PRINT "*
   **          HIGH
   SCORE:";HS: VTAB 7: HTAB
   40: PRINT "*";
640  PRINT "*
   ** DO YOU WISH TO
   RECONTEST FOR SUPREME **
   MASTERSHIP OF APPLE RAID?
   **
   ************************
   ****************";
650  GOSUB 760: CLEAR : GOTO
   40
660  WW = S:S = S + (1000 -
   T):DL = DL + 2:TR = TR +
   1: GOSUB 1240:WQ = S: FOR
   C = WW TO WQ STEP 15:
   VTAB 22: HTAB 26: PRINT
   C: POKE 768, INT ( RND
   (1) * 100) + 90: POKE
   769,5: CALL 770: NEXT
670  VTAB 22: HTAB 26: PRINT
   S: POKE 768, INT ( RND
   (1) * 100) + 90: POKE
   769,5: CALL 770: FOR C =
   1 TO 500: NEXT : GOTO 70
680  TEXT : HOME
690  PRINT
   "************************
   ****************
   **   THE GUARDIAN HAS
   ELIMINATED YOU.   **
   *";
700  PRINT "*          YOUR
   SCORE:";S: VTAB 5: HTAB
   40: PRINT "**
   *";
710  PRINT "*          HIGH
   SCORE:";HS: VTAB 7: HTAB
   40: PRINT "**
   *";
720  PRINT "* DO YOU WISH TO
   RECONTEST FOR SUPREME **
   MASTERSHIP OF APPLE RAID?
   **
   ************************
   ****************";
730  PRINT : GOSUB 760
740  CLEAR : PRINT
750  GOTO 40
760  POKE  - 16368,0
770  IF S > HS THEN  GOTO
   1470
780  K =  PEEK ( - 16384):
   IF K = 217 THEN  POKE  -
   16368,0: RETURN
790  IF K = 206 THEN  POP :
   TEXT : HOME : VTAB 24:
   POKE  - 16368,0: END
800  GOTO 780
810  FOR RP = R TO (R + 128)
   STEP 8
820  ROT= RP
830  XDRAW 1 AT X,Y
840  K =  PEEK ( - 16336)
850  NEXT RP
860  RETURN
870  HGR2 : HGR : POKE
   232,16: POKE 233,64
880  SCALE= 1: ROT= 0
890  FOR X = 16400 TO 16476
900  READ Y
910  POKE X,Y
920  NEXT X
930  DATA
   4,0,10,0,34,0,40,0,58,0
940  DATA
   58,54,62,62,36,36,37,44,36
   ,44,36,44,18,50,54,53,46,5
   4,54,39,39,36,23,0
950  DATA 42,36,63,54,21,0
960  DATA
   18,53,45,36,39,44,36,63,62
   ,39,63,54,53,62,54,45,44,0
970  DATA
   22,18,37,44,44,37,60,39,39
   ,60,55,62,62,55,46,53,53,4
   6,0
980  FOR X = 770 TO 792
990  READ Y
1000  POKE X,Y
1010  NEXT X
1020  DATA
   173,48,192,136,208,5,206,1
   ,3,240,9,202,208,245,174,0
   ,3,76,2,3,96,0,0
1030  RETURN
1040  TEXT : HOME
1050  PRINT
   "************************
   ****************";
1060  PRINT "*";: FLASH :
   PRINT "
   APPLE RAID
   ";: NORMAL : PRINT "*";
1070  PRINT
   "************************
   ****************";
1080  PRINT : PRINT "YOU ARE
   GOING " CHR$
   (34)"SCRUMPING" CHR$
   (34)" IN THE YEAR
   2083.SINCE 1983,THINGS
   HAVE CHANGED.    ORCHARDS
   ARE NOW GUARDED BY
   ANDROIDS    CALLED ";:
   INVERSE : PRINT "THE
   GUARDIANS";: NORMAL :
   PRINT "."
1090  PRINT : PRINT "WHEN
   THE GAME STARTS YOU HAVE
   A CHANCE  TO COME TO
   TERMS WITH THE
   SURROUNDINGS. THE GAME
   WILL NOT START UNTIL YOU
   PRESS A KEY."
1100  HTAB 11: PRINT "KEY
   DIRECTION": HTAB 11:
   PRINT
   "------------------"
1110  HTAB 11: PRINT " I
   UP"
1120  HTAB 11: PRINT " J
   LEFT"
1130  HTAB 11: PRINT " K
   RIGHT"
1140  HTAB 11: PRINT " M
   DOWN"
1150  HTAB 11: PRINT "SPACE
   BAR   STOP"
1160  PRINT "YOU MUST PICK
   UP THE SMALL DOTS BETWEEN
   THE ROBOT GARDENERS USING
   YOUR HOVER CAR";
1170  PRINT "        ";:
   FLASH : PRINT "HIT ANY
   KEY TO CONTINUE";: NORMAL
   : GET Q$
1180  HOME
1190  PRINT "EACH FRUIT
   (DOT) IS WORTH 10
   POINTS."
1200  PRINT : PRINT "YOU
   HAVE A MAXIMUM OF 1000
   TIME UNITS TO CLEAR ALL
   THE FRUITS AND THE TIME
   YOU   HAVE LEFT IS ADDED
   TO YOUR SCORE EACH   TIME
   YOU CLEAR THE SCREEN."
1210  PRINT : PRINT "ONE
   IMMOBILE GUARDIAN IS
   ADDED EACH TIME THE
   ORCHARD IS CLEARED AND
   THE TRACK    NUMBER WILL
   INCREASE RESPECTIVELY."
1220  VTAB 23: HTAB 9: FLASH
   : PRINT " HIT ANY KEY TO
   START";: NORMAL : GET ZZ$
1230  HOME : RETURN
1240  POKE 768,128: POKE
   769,120: CALL 770
1250  POKE 768,96: POKE
   769,120: CALL 770
1260  POKE 768,76: POKE
   769,240: CALL 770
1270  POKE 768,76: POKE
   769,120: CALL 770
1280  POKE 768,76: POKE
   769,120: CALL 770
1290  POKE 768,76: POKE
   769,180: CALL 770
1300  POKE 768,85: POKE
   769,120: CALL 770
1310  POKE 768,76: POKE
   769,120: CALL 770
1320  POKE 768,85: POKE
   769,120: CALL 770
1330  POKE 768,96: POKE
   769,240: CALL 770
1340  VTAB 22: HTAB 38:
   PRINT TR + 1
1350  FOR YY = 1 TO 1000:
   NEXT
1360  RETURN
1370  IF MG / 2 =  INT (MG /
   2) THEN  FOR P = 1 TO 5:
   NEXT P: XDRAW 4 AT
   (OA),OB: XDRAW 2 AT
   (OA),OB
1380  FOR P = 1 TO TR
1390  K =  INT (( RND (1) *
   13) + 1) * 20:Z =  INT ((
   RND (1) * 7) + 1) * 20
1400  IF (K = X) + (K = A) +
   (Z = Y) + (Z = B) + (BP(
   FN R(K)) = 2) THEN 1390
1410  BP( FN R(K)) = 2
1420  XDRAW 4 AT K,Z: XDRAW
   2 AT K,Z
1430  NEXT P
1440  IF MG / 2 =  INT (MG /
   2) THEN  RETURN
1450  XDRAW 4 AT (OA),OB:
   XDRAW 2 AT (OA),OB
1460  RETURN
1470  VTAB 20: HTAB 11:
   INVERSE : PRINT "NEW HIGH
   SCORE!!!!": NORMAL
1480  D$ =  CHR$ (4)
1490  POKE 16477, INT (S /
   256): POKE 16478,S -  INT
   (S / 256) * 256
1500  PRINT D$"UNLOCK ARHSC"
1510  PRINT D$"BSAVE
   ARHSC,A16477,L2"
1520  PRINT D$"LOCK ARHSC"
1530  GOTO 780
```

# WPL can be a first class way to send your mail

**KEVIN FARRELL has written a set of program files to help you compile semi-standardised letters using Applewriter II.**

**AS a word processor Applewriter II has been quite extensively reviewed, not always very favourably. Its cursor handling, for example, has been criticised by writers who do not fully understand it.**

One feature of Applewriter II which has not been given its due credit is its word processing language, called WPL.

The Applewriter handbook gives examples of how WPL can be used with a list of names and addresses to send circular letters.

However with a little effort it can also be a very useful tool in sending letters of a semi-standard variety such as retailers or club secretaries might wish to send.

The kind of letter I refer to here is one which is assembled out of a group of sentences or phrases chosen from a numbered selection of phrases (see, for example Figure I).

I have written a set of program files which enable me to manage replies to a large number of enquiries, orders, applications etc.

The programs also serve as a database of names and addresses and automatically keep records of what was sent to whom and when.

To set up such a system requires the writing of four separate text files, all of which may be set up by using Applewriter and saving the result to disc.

The four files required are:

- A file of names and addresses (Call this file "People").
- A file of phrases which might be used in any letter.
- A file containing a "skeleton letter".
- A file containing the WPL program. (Called "aa".)

In addition two scratch files called TEMP and TEMPSKEL are required. To avoid an initial error, blank files with these names should be saved to disc.

Having written these files all that is required is to first initiate the WPL program and then to type the personal identifier for the person to whom a letter is to be written.

This is followed by several numbers which are the code numbers of the sentences or phrases which are required for his particular letter.

The Applewriter program will then read in the skeleton letter, add the correct name and address, add the numbered phrases and type the letter out.

The codes for the phrases used will be recorded against the person's file together with a date which will form an adequate record of what letter has been sent.

Detailed instruction for setting up each of these files are as follows:

### PEOPLE

This is a file of names and addresses set up according to some simple rules (see Figure II). The file is created simply by using Applewriter in its normal manual mode.

Each entry must be preceded by a "$" to indicate the start of a new entry. The $ should be followed on the same line by an "identifier" for the particular person.

Anything can be used as an identifier, such as membership number or even a nickname, but the user must be able to trace the person by that identifier.

I have chosen to use the first six letters of the person's surname followed by all his initials with no capital letters or punctuation as my standard identifier.

The next lines should contain the name and address exactly as it would appear on an envelope, but note that there must be one space on each side of the initials.

Each entry concludes with a "+" sign. In use a record of which phrases have been sent is generated and placed before the final + sign.

### PHRASES

This is a file of parts of a letter. These can be complete paragraphs, sentences or just phrases (see Figure III). The rules for phrases are:

Each phrase is numbered with its number in diamond brackets < >.

At the start of the file an indication of the total number of phrases in the file should be given, for example, £32 at the top would indicate that 32 phrases are present.

Any "phrase" which is a complete paragraph or which must inherently form the start of a new paragraph should have % as its first letter.

A phrase which is a complete sentence should start with a capital letter and finish with a full stop.

A phrase which is the start of a sentence but which is inherently incomplete should start with a capital letter and end with "+".

A phrase which is always a continuation should start with its first letter a "–", and should end with a full stop unless it is still incomplete when it should end in "+".

Phrases beginning with I may be used as continuations or starts of sentences.

A phrase containing an asterisk between brackets, (*) will cause the program to stop while an individual item is typed in.

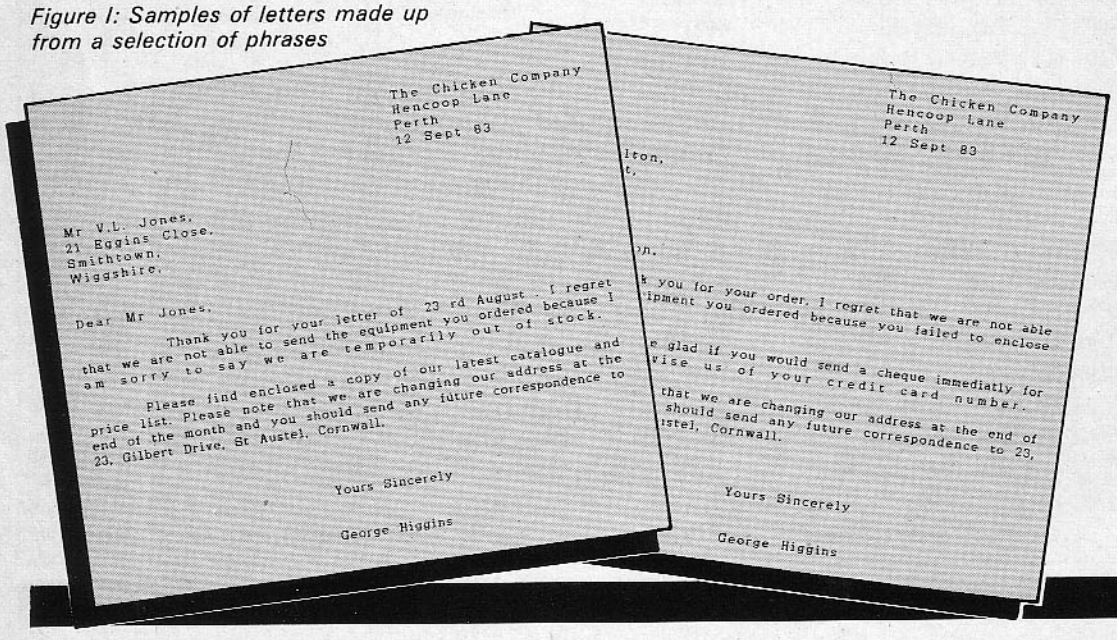
Note that spaces will be inserted between the phrases by the program so should not be present in the phrase file.

### SKEL

A file containing a skeleton letter (see Figure IV). This is a letter without the date or the name and address of the addressee or the "meat" of the letter present.

DDDD indicates to Apple-

*Figure I: Samples of letters made up from a selection of phrases*



PEOPLE

```
$altongt
Mr G.T. Alton.
33 High St,
Reading
Berks
+
$jonesvl
Mr V.L. Jones,
21 Eggins Close,
Smithtown.
Wiggshire.
+
$berthik
Dr J.K. Berth,
22 New Road,
Chatham.
Kent
+
$satchiww
Miss W.W. Satchi,
12 The Crescent
Wigan
Lancs
+
$francilm
Mr L.M. Francis,
56 Penrith Rd,
Norwich.
Norfolk
+
```

*Figure II: Names and addresses file*

PHRASES

```
£21
<1>Thank you for your letter of (*).
<2>Thank you for your order.
<3>I regret that we are not able to send the equipment you
ordered.
<4>Please find enclosed+
<5>-because+
<6>-thank you.
<7>-your cheque.
<8>-you failed to enclose payment.
<9>I am sorry to say we are temporarily out of stock.
<10>I should be glad if you would
<11>-advise me if you wish to cancel your order.
<12>-advise us of your credit card number.
<13>-part of your order. We will despatch the remainder as soon
as our new stock is delivered.
<14>%If you wish to open an account we should require a reference
from a bank.
<15>As you did not enclose the cost of post and packing please
note that you still owe us (*).
<16>Please note that we are changing our address at the end of
the month and you should send any future correspondence to 23,
Gilbert Drive, St Austel, Cornwall.
<17>-send a cheque immediatly for(*).
<18>%
<19>-your order.
<20>-a copy of our latest catalogue and price list.
<21>-or+
```

*Figure III: In this file you should put all the phrases likely to be needed in your letters*

writer where to insert the date. AAAA indicates where to put the name and address of the addressee. XXXX indicates where to put the style and surname.

The phrases are then inserted after the marker SSSS in the order in which their numbers were called by the user.

Finally Applewriter cleans up any spurious markers from the resulting text and prints the letter.

### PROGRAM AA

The complete listing starts on Page 63. The program is called by typing CTRL P immediately followed by "DO" and the name of the program. Upper or lowercase letters will do.

You will be prompted to enter the date which may be in any form.

You will be prompted to enter an identifier and should reply with the identifier of the person to whom you wish to write or with the word "all" if you wish to write to all on your list.

You will be asked for the code numbers of phrases you wish to include in the letter and should reply with these in the order in which you want them to appear.

Clearly the sense of the letter is up to you, and you should have a printout of your list of phrases beside you when working. It is quite easy to write nonsense letters!

The program will then form and print the appropriate letter for you. After which it will prompt for another identifier and so on until you give only RETURN for the identifier when the program will quit.

If "all" is given as the identifier the program will request phrase codes and will formulate the same letter, but personalised to all the people on your list.

If you give no phrase codes but simply enter RETURN at the appropriate time then the program will look for a set of codes stored in with the name and address of the addressee.

This gives the possibility of a different mode of working.

With this mode the required codes – I call these "pending" codes – are first stored against each name and address by putting the list of code numbers between two "–" signs just below the identifier.

Then the WPL program is invoked and "all" given as the identifier with a null response to the request for codes.

The program will then form and print out a succession of letters, each different, as specified by the stored "pending" codes.

After printout, the list of phrases sent and the date is stored in the name and address file beneath each entry and any "pending" codes deleted.

The program listing starting on Page 63 should be typed as a text file by Applewriter exactly as in the listing.

Note carefully that the majority of the lines begin with a single space.

Check that the length of the text file containing this program does not exceed 2048 characters as given in the Applewriter top-line display.

It should then be saved to disc under some name. I use "aa" because it is easy to type.

The WPL language is not well constructed for comments and has no line numbers but any line beginning without a space is a labelled line and I use these to describe the operation of the program.

The listing starts with the "subroutines" and the program avoids these by starting with a jump to "main".

PRNSUB is a printout subroutine and ANALIN is a line which puts a special formatting header which sets up font etc on my Anadex printer.

This line can be omitted or changed to suit any particular printer.

NUMSUB is a routine which counts and numbers each entry in the "people" file.

GETSUB is a routine which gets the name and address of the identified person off the "people" file and onto a file called "temp" for use later.

PHRSUB puts the date on the letter and gets phrases requested off the "phrase" file according to the codes entered and puts them into the letter.

NAMSUB puts the name and address on the letter and the name without initials at the start of the letter.

SAVSUB saves a record of the printed letter and the date back onto the "people" file.

ASTSUB looks for asterisks between brackets in the finished letter and call for an entry to be specially typed in if found.

PENSUB looks for any "pending" phrase codes in the "temp" file which need attention for the particular person concerned.

MAIN is an initial start to the main program and requests the

```
Programming in WPL

     SKEL

                                   The Chicken Company
                                   Hencoop Lane
                                   Perth
                                   DDDD

AAAA

Dear XXXX,

     SSSS

                         Yours Sincerely

                         George Higgins
```

*Figure IV: The skeleton letter, showing where each part of the letter is to appear*

date to be entered.

MNLOOP is the real start to which the program keeps returning after each letter is printed to see if there is more to be done.

DOALL is the alternative routine when "all" is used as the identifier.

This program has certainly saved me a lot of time in drafting letters, but of course many variations are possible.

Using WPL it is possible to write quite simple routines to make entry of new names and addresses foolproof, and to facilitate the addition of further phrases.

WPL is no more than an "EXEC" file for the word processor but it really does amount to quite a powerful facility.

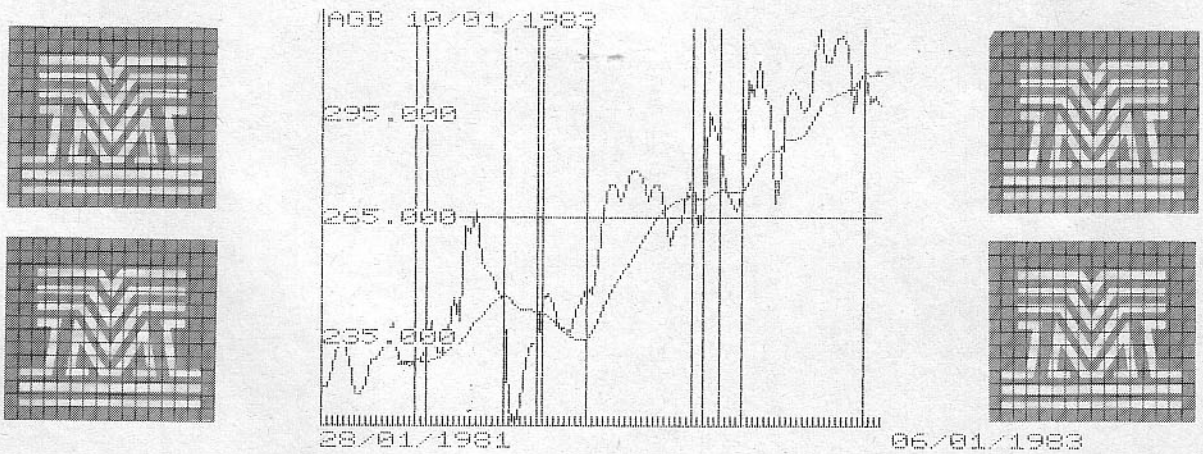
```
start pgo main

prnsub b
analin ga
 p dummy printer sub
 pyd
 pnp
 prt

numsub ny
 1 people
 b
 f<$£=£<$<a
 ?
 psz 1
dolop f/$/$£(z)£/
 y?
 pgo dolfnd
 s people
 prt
dolfnd psz +1
 y?
 f/SSSS/SSSS£$b£/
 y?
 b
 pgo dolop

getsub
 ny
 pyd
 lpeople/$c/+/
 pgo fndpe
 pgo errpeo
fndpe f<<"$d"<
 y?
 s temp
 pnd
 prt
errpeo pin no data on $c
 paserror=$c
 pnd
 prt
phrsub
 b
 f<DDDD<$d<
 f/SSSS/
 ?
 f/./£/a
 ?
  f/££/£/a
 ?
 pls phrases&£&(&n=$c
 psx $c
loop b
 f/£(x)£/£/
 y?
 pgo phrqd
 pgo notrqd
phrqd l phrases&<(x)>&(&n
 pgo phfnd
 pin no such phrase as number (x)
 pgo getph
phfnd f//£/
 y?
 pgo loop
notrqd psx -1
 pgo loop
 b
 f/SSSS//
 y?
 f<£%<£>>        <a
 ?
 f/£//a
 ?
 f<+-< <a
 ?
 f<.-< <a
 ?
```


# SHARES ANALYSIS PROGRAM




LAST PRICE : 302.000 COMMENT : SELL

The Shares Analysis Program will aid investors to analyse market trends and show market variations graphically. Share prices can be adjusted with a 'rights' and 'scrip' issue and smoothing factors can be entered to graph share trends more clearly. The system, in accordance to share trend, will recommend to BUY or SELL.

*Further details from:*

## MICRO-TECHNIC

**Cleveland Scientific Institution Building, Corporation Road,**
**Middlesbrough, Cleveland. TS1 2RG.**
**Telephone: (0642) 221501/2**

```
 f<+I< I<a
 ?
 f<.<. <a
 ?
 prt
namsub b
 f/AAAA//
 y?
 ltemp<><+<n
 f/XXXX/XX/
 y?
 ltemp<><,<n
 b
 f<XX<<
 y?
 f< = < <
 y?
 prt

savsub ny
 l people
 b
 f/$c/
 ?
 f<>-=-<<
 y?
 b
 b
 f/$c/
 ?
 f<+<+$b on$d+<
 y?
 s people
 prt

astsub b
 f/(*)/
 ?
 pgo getin
 pnd
 prt
getin pyd
 pin (*)??=$c
 f<(*)< $c <
 y?
 pgo astsub

pensub pls temp/-/-/n=$b
 pgo fndpnd
 prt
fndpnd f<>-=-<<
 y?
 stemp
 prt
doall pin enter phrase codes=$b
 pcs/$b//
 pgo nophal
 lskel
 psr phrsub
 stempskel
nophal ny
 psr numsub
loopal psz -1
 pgo cont
 pgo mnloop
cont ny
 pas£(z)£=$c
 psr getsub
 pcs/$b//
 pgo trypen
 ny
 l tempskel
rest b
 psr namsub
 psr astsub
 psr prnsub
 psr savsub
 pgo loopal

trypen psr pensub
 pcs/$b//
 pgo loopal
 ny
 l skel
 psr phrsub
 psr namsub
 psr astsub
 psr prnsub
 psr savsub
 pas=$b
 pgo loopal
main ny
 plstemp<"<"<n=$d
 ?
 pin if date is not $d then please   enter date =$c
 pcs/$c//
 pgo mnloop
 pas$c=$d
 f<<"$d"<
 y?
 stemp
mnloop ny
 pin enter identifier:=$a
 pcs/$a//
 pgo quit
 pnd
 pcs/$a/all/
 pgo doall
 pas$a=$c
 psr getsub
 pcs/$c/error/
 pgo mnloop
getph pin enter phrase codes:=$b
 pcs/$b//
 psr pensub
 pcs/$b//
 pgo nopend
backin ny
 lskel
 psr phrsub
 psr namsub
 psr astsub
 psr prnsub
 pas$a=$c
 psr savsub
 pgo mnloop
nopend pin no phrases pending for $a
 pgo mnloop

quit pqt
```

# Lander 'beeps' on ITT earn our sympathy

*MY father owns two ITT 2020 micros with Apple DOS 3.2 disc drives and has therefore been a subscriber to Windfall and now Apple User since it was first issued.*

*Since the magazine has been published for almost three years these micros have become out of date, so my father has had them updated.*

*Each month when the magazine arrives I flip through it looking for program listings which could be of use to either my father or myself and then spend an afternoon, or sometimes waste an afternoon, typing them onto the computer.*

*I use the term "waste" because the majority of listings either do not run or do not function properly while running.*

*As an example, the program which I have just typed into the computer, which did not work and which prompted me to write this letter, is the Lander program in the December 1983 issue.*

*The program LOADS and RUNS, but then there is a beep and a line of numbers in integer appear.*

*I have checked my typing thoroughly and found no typing errors, so I must attribute the reason for it not running either to a wrong line in the program or to a lack of language in the computer.*

*This is not the only occasion on which this has happened, there are numerous others. In the Darts program (March, 1983) the target crosswires left a trail across the screen so the board became unclear.*

*The computer allowed only one shot at the board before it broke and also the board has no double ring, no treble ring and only two shaded segments.*

*In future could you please indicate whether a program printed in your magazine will run on the ITT 2020 and, if it will not, why it will not, so that I can alter it.* – **David Hall, Great Dunmow, Essex.**

● We sympathise with you for having ITT 2020s but generally speaking most of our readers own and therefore send in programs for Apples. The main areas where difficulties lie with ITT 2020s are the slow running and the hi-res graphics.

From the ITT's Palsoft you cannot string together HPLOT TOs, hence you will have to split any such lines. Also you may have to adjust plotting co-ordinates to gain the intended perspectives.

We don't have any ITTs on which to check programs and frankly we don't think it is worth purchasing one.

Perhaps an interested reader would write in and let us know whether DRAW and XDRAW work on an ITT.

**Max Parrott**

# Leap year solved

*I REFER to Max Parrott's formulae on page 47 of Apple User, February 1984. His first program needs another line:*

***50 DAY = DAY * 7.1 :***
***D = INT(DAY)***

*More seriously, the second program does not appear to allow for all the leap year rules. A centennial – that is a year which can be divided by 100 – is NOT a leap year unless it can also be divided by 400. Thus 1900 is not a leap year, but 2000 is.*

*The combination of both programs to produce "birth" days therefore produces errors between, for instance, 1.3.1900 and 31.12.1900.*

*I would be interested in his comments.* – **K. Archer, Area Engineer IBA, South West England.**

● Yes, I'm sorry, both programs do contain errors. The first doesn't need your line 50. Instead line 40 should have read:

***40 DAY = DAY – 7* INT(DAY/7)***

The second program, as you say, does not allow for the year 1900 not being a leap year. However, by these rules, the next such year is 2100 so any program using dates from March 1, 1900 to February 28, 2100 should be usable without any modification.

**Max Parrott**

## Graphics AND text

*AS a teacher of chemistry I need to have the facility to make up notes and examination papers which include both graphics and text.*

*At present I use Applewriter 1.1 to compile the text and enter diagrams by hand.*

*Can you suggest a solution to this problem? Is there a word processing package which will handle graphics as well as text?*

*My system includes Apple IIe, two disc drives, an Apple DMP printer and Versawriter graphics tablet.* – **I.G. Dalgleish, Largs, Ayrshire.**

*FOLLOWING a traffic accident about seven years ago I am disabled and confined to a wheelchair, having lost the use of both my arms and legs.*

*Naturally this was a devastating injury which put an abrupt end to a relatively trouble-free existence.*

*Since then I have had to build a new life. I opted for an academic path and have gained tremendous satisfaction plus a degree from studying with the Open University.*

*I was introduced to the world of computers about three years ago by a fellow student at the OU who foresaw the benefits I would reap from using one.*

*I researched the matter and the net result was the purchase of an Apple II, twin disc drives, and an Epson MX-80 F/T Type II printer.*

*I use Applewriter II to adapt the system to word processing.*

*The Apple has revolutionised my existence by enabling me to be virtually independent in all my notetaking, essay-writing, correspondence and business affairs.*

*Without it I would not have completed my degree either as quickly or as successfully.*

*Having included a computing element in my degree profile I can now work at an elementary level with the Basic facilities of the system and have enjoyed constructing some simple programs.*

*More importantly though, I can now understand more complicated programs written by other people, and often try out programs published in Apple User.*

*This year I am undertaking some postgraduate work on the functioning of the brain and spinal cord – a course to which I can directly relate through my own injury.*

*It will necessitate the ability to draw and print sketches and diagrams, to be included with my text interspersed between paragraphs.*

*Applewriter cannot do this for me, and I was hoping that you would recommend to me a suitable graphics package which provides the facility of drawing simple diagrams.*

*I have full keyboard control but am unable to use the games paddles. I understand that a joystick can be used effectively for graphics creation.*

*I use a joystick with my electric wheelchair but would need your advice on which model to link up with my system if you think that a joystick might be useful.*

*The ability to draw and print in colour might also be required. Please would you also recommend to me a suitably good quality colour screen and colour printer or plotter.* – **Terence Rowbottom, Newbury, Berks.**

● The most obvious choice of a system to provide fully integrated text and graphics is one of the Lisa family of micros.

Starting with the new Macintosh at about £2,000, including MacWrite and MacPaint software, it is possible to accomplish what both Mr

Dalgleish and Mr Rowbottom want and more – but without colour.

The mouse control should be easier to control than a joystick because you control ALL the drawing – lines as well as function controls.

Some aspects of the Lisa/Macintosh versatility are now being made available on the Apple II.

For around £150 you can buy an Apple interface card which gives a mouse control and a graphics system similar in operation to MacPaint or LisaDraw.

This may be the answer if you intend to keep your Apple II – otherwise we do not know of any other system which offers a word processing capability with a graphics package.

You could simply print the diagrams and then paste them into the text. After liberal application of Tippex in the right places photocopy the results.

Another approach would be to opt for a random access printer buffer, such as the Pipeline (see *Windfall*, September 1983, page 59).

This allows you to insert text or graphics from a variety of sources into an existing file and then to print it all. This means that you are not confined to any one system for producing the text and graphics.

Presumably your graphics requirements fall into two main areas – graphs and diagrams. For the former we would suggest the use of Apple Business Graphics.

Several systems are available for producing diagrams. The best is undoubtedly BitStik, and since this has a large, robust joystick it solves one of the problems mentioned by our readers. However, neither package is cheap.

Any well-known colour monitor and card would be suitable for your Apple, and the same general advice applies to joysticks.

Colour printers are rather more rare. Ink jet and ribbon/dot matrix machines are available for around £500 which give good – although rather pastel shaded – representations of the screen. And released this month is Apple's own Scribe colour printer.

Make sure when buying a printer/plotter that it is supported by the software packages you have chosen.

There is nothing worse than finding that the lovely picture on the screen cannot be transferred to the printer.

Going back to the top end of the market, the Lisa family of drawing tools, although not immediately set up to provide colour, does provide so many shaded patterns that a colour facility is immaterial if you want simply to differentiate between areas.

**Max Parrott** and **Peter Gorry**

## Text files from Drive 2

*I WAS delighted to see your program to read text files into Applesoft programs on page 31 of the October 1983 issue of Windfall. I have been trying to solve the problem for months.*

*My need is to list the text files from Drive 2 for amendment with new data, etc. Your program appears to only operate to list files in Drive 1. Could you help please?* – **James E. Powell, Purley, Surrey.**

● We think the easiest way to select Drive 2 is to POKE 43624, 2 before reading the file names. To restore to Drive 1 POKE 43624,1.

Take care not to POKE any other numbers to this location, DOS will be very upset. The address assumes a standard 48k or 64k Apple with DOS in the usual place.

## EXEC à la Parrott – a gem!

*WHEN recently the September 1983 issue of Windfall came into my hand and I was leisurely browsing through it I happened to catch page 34 and hurried right away to my Apple to try out "EXEC à la Parrott".*

*When I found that this was really working, I could not understand that this subroutine has not been announced right on the cover at least in golden letters with bell and whistles – it is a gem!*

*As yet the authors not only of the Apple manuals, but also of many other books devoted to Apple, as well as many articles dealing with EXEC files unanimously pretended that a direct input to the EXEC file is impossible with only one exception – a "reading keyboard" subroutine.*

*I like EXEC files very much and am a long time user of a "reading keyboard" subroutine by means of POKE 49152 (–16384), but the "Parrott subroutine" is something new.*

*Only one thing puzzles me. Why, when using an EXEC file in such an "immediate mode" can only 36 characters be entered into the input whereas normally the string length can be up to 239 characters.*

*The same puzzle arises when using POKE 118,0 in the immediate mode. Perhaps Mr Parrott will kindly explain this one time.* – **Jaromir Smeic, Prague.**

● I would dearly like to explain, but I cannot! I looked again at the DOS routines involved ($9E81) and decided that DOS is not involved in the problem.

This was reinforced by switching on the Apple without DOS and finding the same result for the "immediate mode input". Actually, the exact number of allowed characters appears to vary, but hovers around the 36-40 mark.

I assume that the Basic parsing routines on tokenising "input" somehow only allow about 40 more characters to be taken from the input streams. I hope that a reader with more knowledge of Applesoft will enlighten us all.

**Max Parrott**

## If RBOOT is missing . . .

*I READ with interest Max Parrott's reply to a query about the DOS Toolkit high resolution character generator in the January 1984 issue of Apple User.*

*Max said that the following programs are needed off the Toolkit disc: RLOAD, HRCG and a character set. This is not entirely true.*

*HRCG has its own internal character set and RLOAD calls RBOOT from disc, so if RBOOT is missing the whole load will fail.* – **Dave Miller, Finchley, London.**

# Colour solution not perfect

*I WAS interested to read the article by Mr B.A. Baker (Windfall, November 1983) on doubling the horizontal resolution of the Apple hi-res graphics by suitable use of HCOLOR 3 and 7.*

*This technique is less than perfect however because of the way in which these colours operate.*

*To conserve memory usage, only one bit per byte is used to distinguish between HCOLOR 3 and 7, and this governs the displayed colour of all seven displayed bits in that byte.*

*The seven displayed bits form a horizontal line of seven pixels. If a bit is displayed as green – that is MSB zero – and another bit of the same byte is subsequently set to red, the first bit will also switch to red because the MSB has been changed to 1.*

*The effect can clearly be demonstrated by the following sequence of commands:*

```
HGR
HCOLOR = 3
HPLOT 0,0 TO 150, 150
HCOLOR = 7
HPLOT 0,4 TO 150, 154
```

*The first line becomes jagged because some of its pixels lie in the same byte as those of the new line, and hence have been colour changed and shifted by half a pixel while others remain unaffected.*

*This effect will spoil the system proposed by Mr Baker, since for instance the point he places at 53½,0 would be shifted to 53,0 if he plotted another point at 50,0 rather than the 48,0 of his example (which belongs to the previous byte of memory.)*

*Because of this whole problem, my feeling is that it is advisable if at all possible, never to mix colours 0 to 3 with 4 to 7 on the same graphics display.* – **G.H. Keeler, Salford.**

# Blyth updates Omnis

A NEW range of database information systems has been released by Blyth Computers to replace its original Omnis program.

Omnis 1, 2 and 3, each catering for a different sector of the market, are available for the Apple II series (including the new Apple IIc), the Apple III, Macintosh and Lisa micros.

The new products use the same data structure, which allows for the upgrading of software from the basic single screen Omnis 1 up to the powerful multi-screen, multi-file and multi-user Omnis 3 without losing compatibility of data.

Omnis 1, the File Manager, is described as an easy-to-use entry level product.

It has the same flexible screen and report formatting as in other Omnis products and has upwards file and data compatibility with Omnis 2 and 3.

It is suited for tasks such as mailing lists, auction lists, product files, hire records, appointments and diaries. A standard letter/mail merge facility is built-in.

The number of records per file is limited only by disc space. One can have up to 120 fields per record with a maximum of three indexed fields.

Omnis 2, the Information Manager, is the nearest equivalent to the current Omnis. It allows multi-screen records and ten index fields per record.

Blyth says it is capable of advanced error checking on data entry through a wide range of logical functions and operators.

Features include full calculation facilities on both screen records and report layouts, flexible search facilities, multiple update and delete facilities.

It supports hard disc systems and multi-user operation on local area networks.

Flagship of the range is the Omnis 3, sold as a complete database management system and capable of handling easily almost any data processing application.

It supports up to 12 files open at a time and can operate as a relational or hierarchical database system.

Features include flexible screen and report formatting and user-defined entry sequences allowing screen overlays, bespoke messages and menu screens.

Blyth says it can be used for generating complete turnkey or tailor made systems for a wide variety of data processing applications.

Omnis 1 for the Apple II, III and Macintosh micros costs £150 while the Lisa version costs £175.

The Apple II, III and Macintosh versions of Omnis 2 cost £295 (£345 for Lisa) and Omnis 3 costs £445 (£495 for Lisa).

● *Blyth Computers, Wenhaston, Halesworth, Suffolk IP19 9DH. Tel: 050270 371.*

## Editing for the musical

NEW software developed for the Alf Music Cards features extensive editing facilities which make it easier for novices to enter songs and play them back.

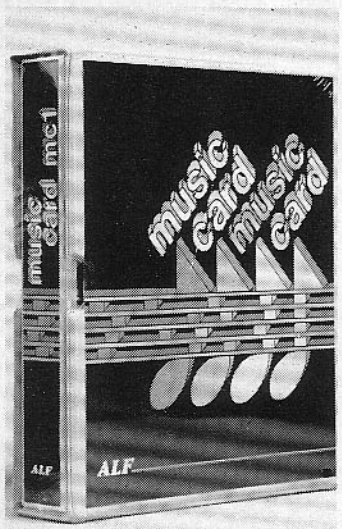
Users can create music without having to learn how to play an instrument by matching the symbols in regular sheet music with those on the screen.

Alf Products claim that using their nine-voice music card MC1 ($169) and the three-voice MC16 ($179) it is easy to put melodies from one song into another, create rounds and repeats without entering the notes more than once, and produce complex additive synthesis sounds.

Playback routines allow the tempo to be changed at any point and allow several songs to be played in sequence.

Other new software features include a program for experimenting with sound envelopes and creating new loudness contours, and a playback routine which can be easily called from an Applesoft program, with or without colour graphics generation.

● *Alf Products, 1315-F Nelson Street, Denver, Colorado 80215.*




## Daisy price dive

THE price of daisywheel printers continues to fall. The Daisy Step 2000 which prints bi-directionally at a maximum 20cps and an average of 16cps Shannon text, costs £289.

It is fully Qume control code compatible and uses Qume multistrike IV or Fabric IV ribbons and Qume or Diablo-compatible daisywheels.

Features include bold and shadow printing, subscripts and superscripts, automatic underlining, programmable horizontal and vertical tabs and character pitches of 10, 12 and 15 cpi.

Proportional spacing is possible under software control.

The printer has a 13 inch platen with a 12 inch print line. It uses either a Centronics or a RS232C serial interface.

Tractor and single sheet feeder units are available as optional extras.

● *Keyaki, Enterprise House, 42-44 Terrace Road, Walton-on-Thames, Surrey KT12 2SD. Tel: 0932-242777.*

## Relationships defined

A RELATIONAL database written especially for the Apple III is Keystrokes, by Brock Software.

With it relationships between different sets of information can be defined easily.

It is possible, for example, to design a simple system that can automatically enter a price, description and supplier name when a part number is entered onto an order form.

Once command sequences that will be used frequently have been defined they can be executed automatically with one key press.

The sequences defined can be up to 60 characters in length and can call other sequences to extend this length. Twenty-six sequences can be defined in memory at any time.

A typical example is the definition of a sequence which automatically configures and prints end-of-month reports when Control-R is pressed.

A merge option allows Keystrokes to be linked with other programs including Visicalc, Applewriter, PFS, Quickfile and DIF compatible products.

The program also features a scratchpad that calculates, stores notes and is equipped with a hand icon to allow for easy movement from one part of the program to another.

Keystrokes is menu-driven and allows a free form input of data. A maximum 32,000 records are allowed for each database, with 90 fields a record and up to 4,096 characters a record.

Features include the automatic calculation of formulas entered into numeric fields.

Keystrokes Database costs £225 and the Report program, which generates reports or lists, £125 from Apple dealers.

Minimum system requirements are a 256k Apple III with a second disc drive or a hard disc.

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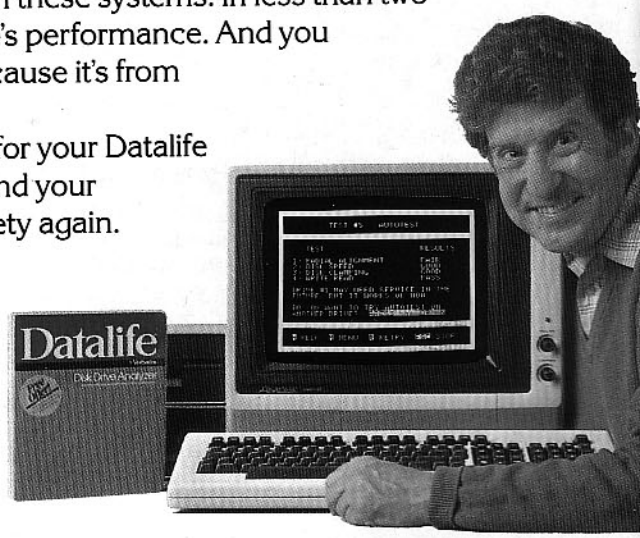


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## Compact co-processor

ANYONE interested in learning to work with the 68000 processor would find the McMill co-processor card for the Apple II a useful starting point.

The board is six inches long and is claimed by manufacturers Stellation Two to be the most compact of its kind yet designed.

It utilises Motorola's 68008 processor which is code compatible with the 68000.

McMill is supplied with complete hardware documentation as well as schematic drawings and Fig Forth software.

Also available for the card is a cross assembler software package from SC Software which incorporates a code de-bugger with a simple trap monitor and a built in line orientated editor.

● *Stellation Two, PO Box 2342, Santa Barbara, California 93120. Tel: (0101) 805-966 1140.*

## Auto slide shows

AUTOMATIC slide shows can be created using Transitions, a graphics presentation system from Penguin.

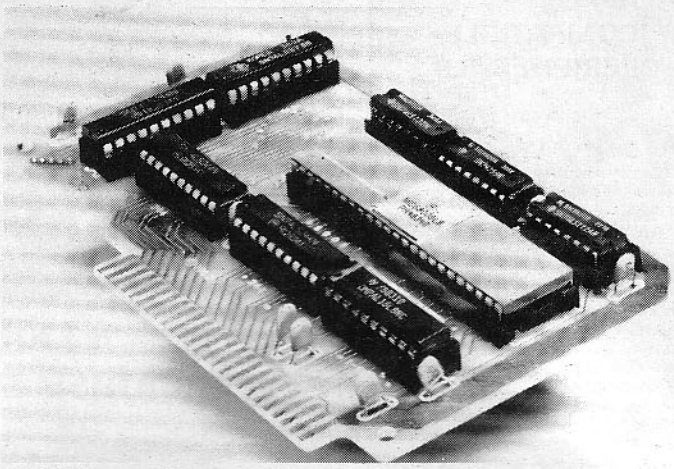
The program saves graphics pictures in packed or standard Apple format and can combine them using up to 44 different screen wipes.

Transitions can access up to eight disc drives and Penguin claims that hundreds of pictures can be shown in a continuous presentation.

It is also possible to produce a graphic catalog, or miniature version of the screen image of any picture disc, for a picture library.

The program, compatible with most other graphics utilities, costs $49.95.

● *Penguin Software, 830 4th Avenue, P.O. Box 311, Geneva IL 60134. Tel: (0101) 312-1984.*



*McMill co-processor card*

## Seeking NANO 6502?

INTEREST in the program Nano 6502 – reviewed in the January issue of *Apple User* – has been phenomenal. Many people have written asking where they can get hold of it.

The program, written by Malcolm Whapshott, is an excellent aid to learning assembly language programming. It costs £35.

Readers report they have had problems contacting distributors Knight Software. It is suggested they contact the author direct at 208 The Chantrys, Farnham, Surrey, Tel: (0252) 725677.

## Spreadsheet made visible

LEARNING to use a spreadsheet can be a daunting process for the beginner. In addition it is often a slow and frustrating job to plan the layout of a large template when only a few lines and columns are visible at any one time.

An aid for Visicalc users is Visible. It is a large chart, not a computer program, with a wipe clean surface marked out with a Visicalc grid so that the text and formulae for each entry position can be planned in advance in relation to the whole.

Price: £5.

● *Solar Systems International, 2nd Floor, Borough House, Rue du Pre, St Peter Port, Guernsey, C.I. Tel: 0481-64475.*

## ICE drives for Apple

TEN and 21mbyte hard disc drives for the Apple II range are being marketed by Apple UK.

Called the Micro-Cube and manufactured by ICE, the drives will handle Apple's new ProDOS operating system as well as SOS (the Apple III operating system), DOS 3.3, Pascal and CP/M.

The 10mybte 3in hard disc drive is a third of the size of Apple's own 5mbyte Profile drive and will sell for around £1,700 – £100 cheaper than the Profile. It is a single-user system.

The 21mbyte version is a $5\frac{1}{4}$in drive with a multiplexor capability that will enable up to eight Apple II or IIIs to share the same drive.

Apple's move to distribute third party drives conforms to its recent decision to stop manufacturing its own drives and to stick to "doing what we do best – which is making computers".

A controller card that will interface the Apple Profile to the IIe is expected to be released by Apple soon.

## Telex connection

SENDING telexes via an Apple is easy using the Telebox II from Data and Control Equipment.

The self-contained unit requires no special software or British Telecom DCE 3 connection and will operate on the SCVF telex lines.

It connects to the Apple via a standard V24.RS232 communication card.

Features include a selection

of automatic retry procedures, a simplified command structure which ensures compatibility with almost any telex system and customer programmable options.

There is an Ascii Baudot printer port, local copy mode, fully buffered background operation, large message store and IBM 2780 and 5520 connection.

● *DCE House, Bessemar Crescent, Rabans Lane, Aylesbury, Bucks. Tel: 0296-32971.*

**ANOTHER direct connect V23 modem on the market links micros into Prestel, Micronet 800 and other viewdata services.**

**The Telemod 2, which has an integral power supply, connects to the telephone line via the British Telecom module extension socket supplied, and to the Apple via an RS232 or serial port.**

**It has a half duplex 1200/1200 baud rate switchable to full duplex 1200/75, is BT approved and costs £84.**

● *OEL, Gilwilly Industrial Estate, Penrith, Cumbria CA11 9BN. Tel: 0768-66748.*